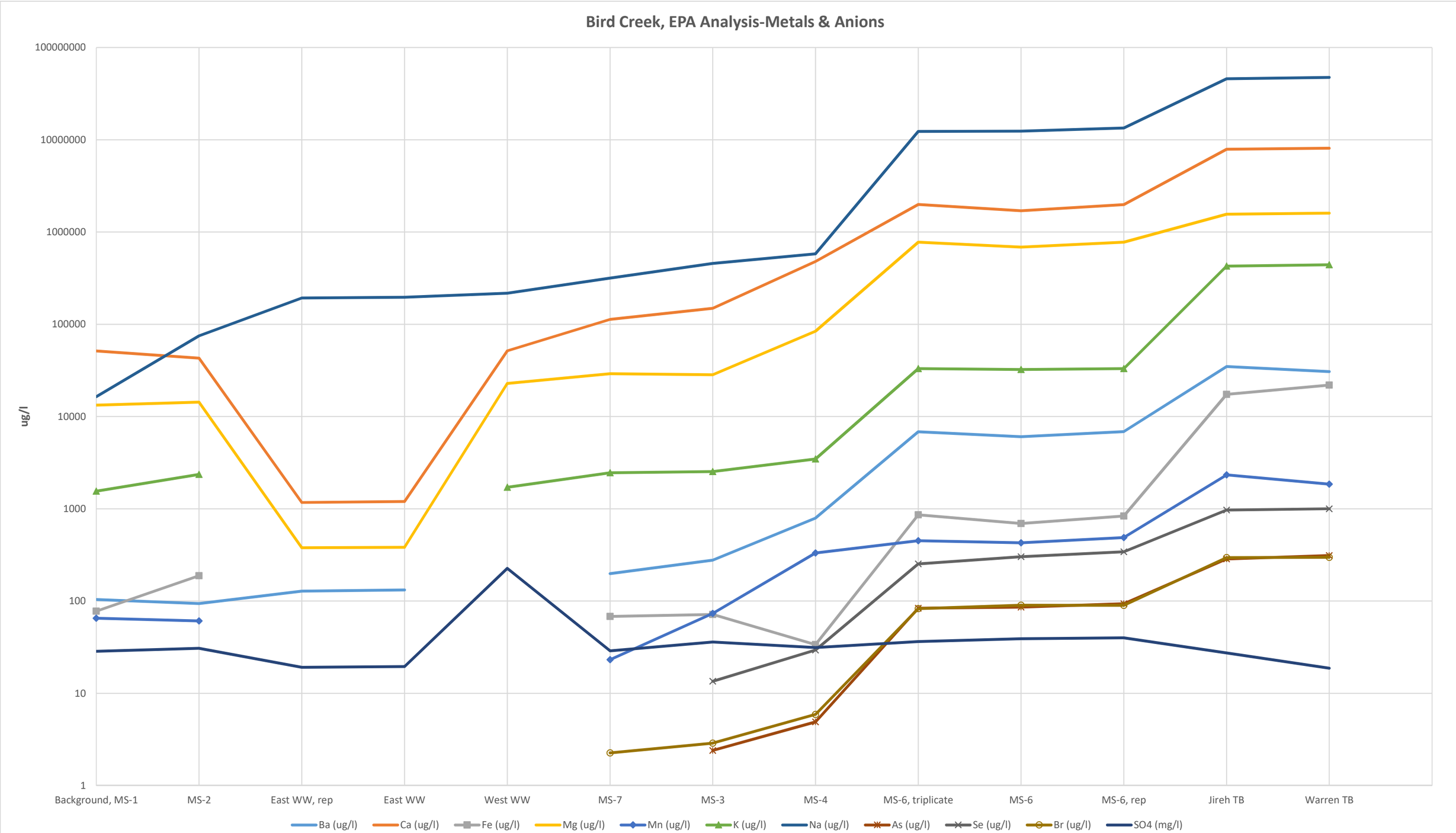
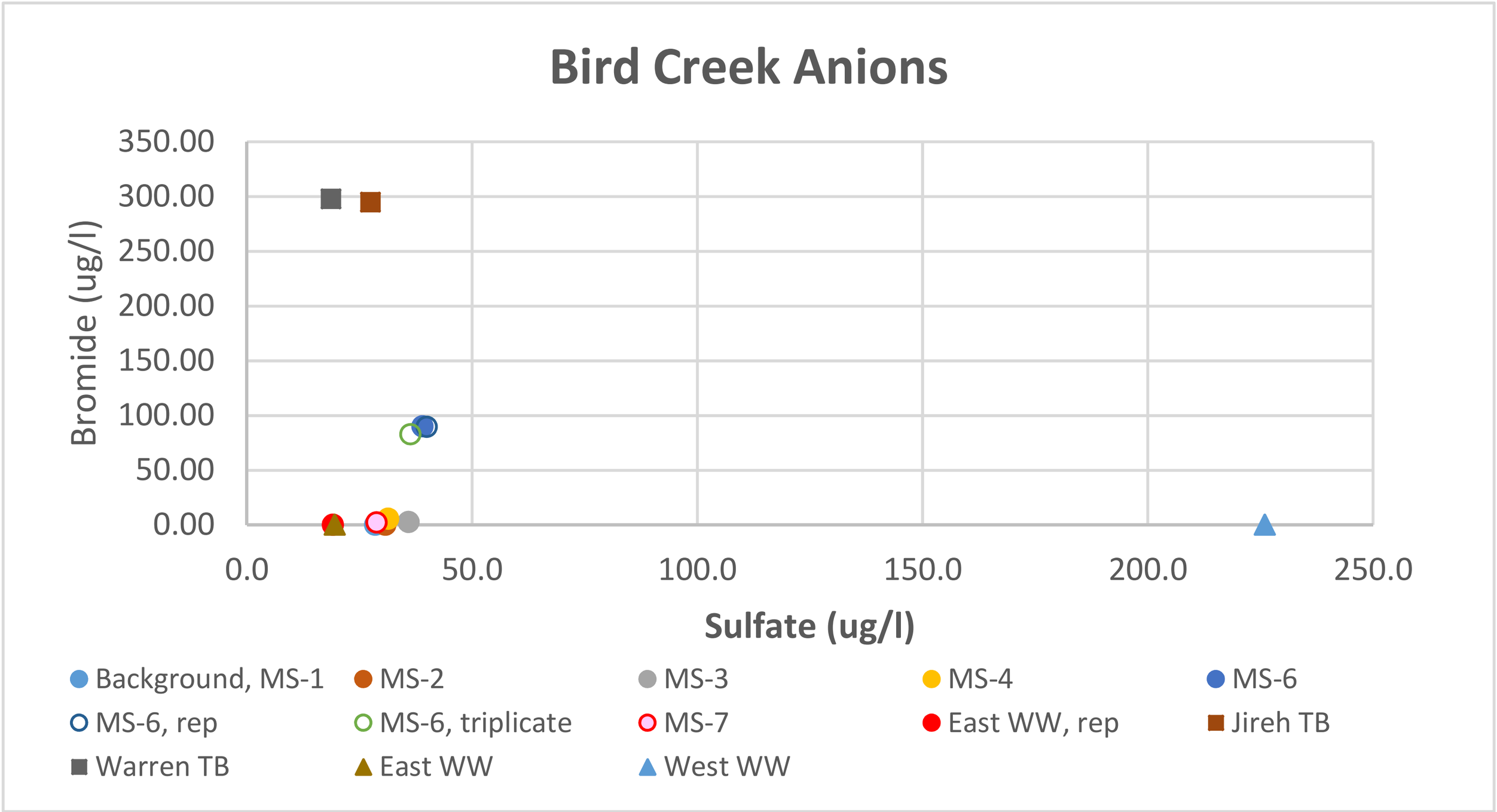
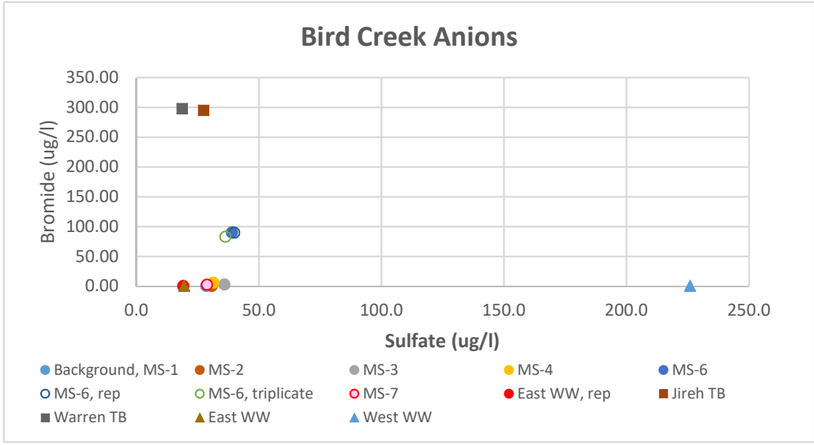

Bird Creek, EPA Analysis-Metals & Anions
ug/gn
100000000
10000000
1000000
100000
10000
1000
100
10
1
Background, MS-1
MS-2
East WW, rep
East WW
West WW
MS-7
MS-3
MS-4
MS-6, triplicate
MS-6
MS-6, rep
Jireh TB
Warren TB
Ba (ug/l)
Ca (ug/l)
Fe (ug/l)
Mg (ug/l)
Mn (ug/l)
K (ug/l)
Na (ug/l)
As (ug/l)
Se (ug/l)
Br (ug/l)
SO4 (mg/l)

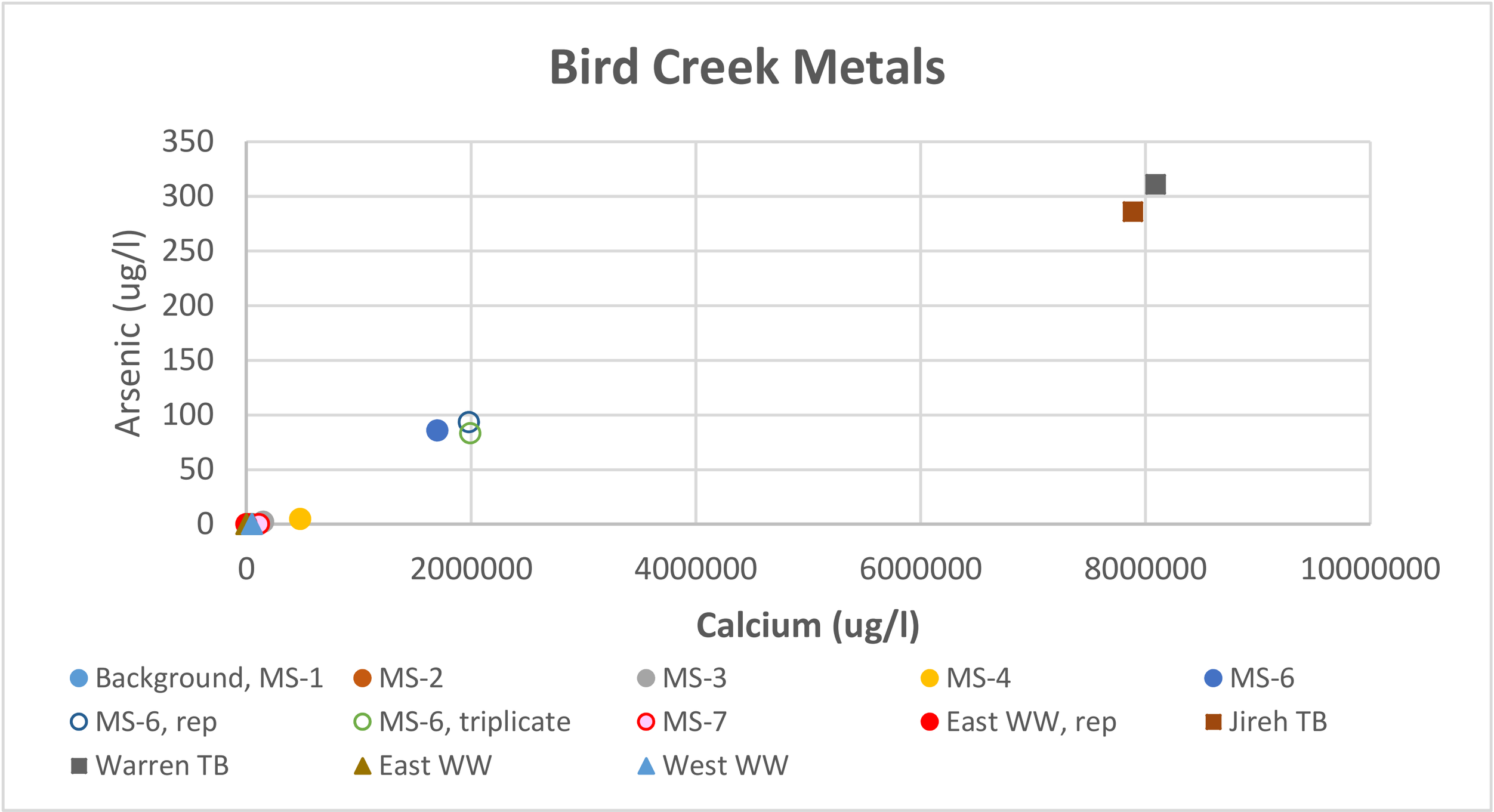
Metal Analysis			Barium	Calcium	Iron	Magnesium	Manganese	Potassium	Sodium	Arsenic	Selenium	Bromide	Sulfate						
			Ba (ug/l)	Ca (ug/l)	Fe (ug/l)	Mg (ug/l)	Mn (ug/l)	K (ug/l)	Na (ug/l)	As (ug/l)	Se (ug/l)	Br (ug/l)	SO_4 (mg/l)	Comments	**Salinity**	**Conductivity**			
Location	Latitude	Longitude													**(ppt)**	**(umhos/cm)**	FieldID	**PREPARED**	**insp_NO**
Background, MS-1	36.8327	-96.496177	104	51300	77.6	13300	65	1550	16400	U	U	U	28.5		1	236	WS-01	6/29/2017	1706039-04
MS-2	36.8321	-96.498664	93.8	42900	188	14300	60.9	2360	75000	U	U	U	30.7		46	43700	WS-05	6/30/2017	1706041-02
East WW, rep	36.8286	-96.493931	128	1170	U	378	U	U	193000	U	U	U	19.1		4	2210	WS-03	6/29/2017	1706039-06
East WW	36.8286	-96.493931	132	1200	U	382	U	U	196000	U	U	U	19.5		1	430	WS-02	6/29/2017	1706039-05
West WW	36.8333	-96.504278	U	51500	U	22800	U	1710	217000	U	U	U	226.0		1	817	WS-12	6/30/2017	1706041-09
MS-7	36.825	-96.499648	198	113000	68.2	29100	23.1	2460	317000	U	U	2.26	28.8		0	618	WS-14: replicate 2	6/30/2017	1706041-08
MS-3	36.8307	-96.499461	277	149000	71.5	28400	73.4	2530	457000	2.4	13.5	2.88	35.9		48	42800	WS-07: replicate 1	6/30/2017	1706041-03
MS-4	36.8299	-96.500244	792	480000	33.7	84000	332	3460	579000	4.9	29.4	5.90	31.3	Ca & Na outside spike recovery	46	42700	WS-17	6/30/2017	1706041-04
MS-6, triplicate	36.8278	-96.501613	6840	1990000	860	777000	450	33100	12300000	83.5	253	82.70	36.3		2	1830	WS-06	6/30/2017	1706041-05
MS-6	36.8278	-96.501613	6040	1700000	693	686000	427	32300	12400000	85.8	302	90.20	39.0		160	110600	WS-08	6/30/2017	1706041-10
MS-6, rep	36.8278	-96.501613	6870	1980000	833	775000	487	33000	13400000	93.6	342	89.80	39.9		160	119200	WS-09	6/30/2017	1706043-02
Jireh TB	36.8465	-96.506097	34800	7890000	17400	1560000	2330	427000	45800000	286	969	295.00	27.4		5	4140	WS-04	6/29/2017	1706039-07
Warren TB	36.8401	-96.499939	30700	8090000	21900	1600000	1850	442000	47400000	311	1000	298.00	18.7		0	588	WS-11	6/30/2017	1706041-07
			U	**685**	**37.2**	U	U	U	U	U	U	U	U		0	1.4	WS-13: Field blank	6/29/2017	1706039-02
			U	**799**	**38.4**	U	U	U	U	U	U	U	U		1	2.6	WS-15: Equip blank	6/29/2017	1706039-03
			U	**304**	U	U	U	U	U	U	U	U	U		0	5	WS-16: Equip blank 2	6/29/2017	1706041-06

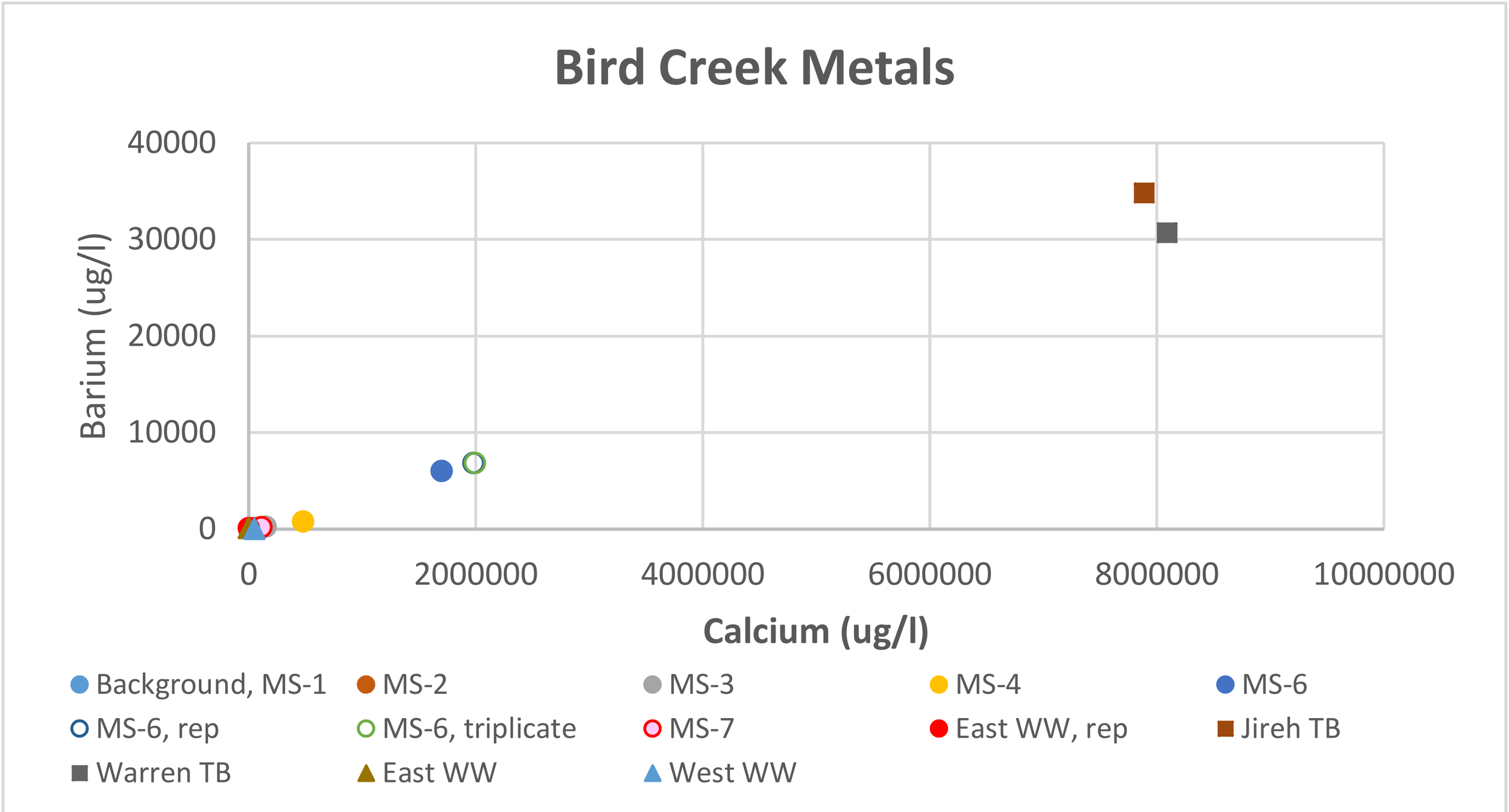
Location	FieldID	Latitude	Longitude	Locational Comments
Background, MS-1	WS-1	36.83266	-96.496177	Background, Monitoring Station 1
East WW	WS-11	36.82859	-96.493931	East Domestic Water Well
East WW, rep	WS-14	36.82859	-96.493931	Replicate; location TBD in field during sampling event
G.horse TB	WS-10	36.82441	-96.486825	Gray Horse Tank Battery
Jireh TB	WS-8	36.84654	-96.506097	Jireh Tank Battery
MS-2	WS-2	36.83214	-96.498664	Monitoring Station 2
MS-3	WS-3	36.83067	-96.499461	Monitoring Station 3
MS-4	WS-4	36.82991	-96.500244	Monitoring Station 4
MS-6	WS-5	36.82781	-96.501613	Monitoring Station 6
MS-6, rep	WS-7	36.82781	-96.501613	Replicate; location TBD in field during sampling event
MS-6, triplicate	WS-17	36.82781	-96.501613	QA/QC
MS-7	WS-6	36.82503	-96.499648	Monitoring Station 7
Warren TB	WS-9	36.84008	-96.499939	Warren American Tank Battery
West WW	WS-12	36.83326	-96.504278	West Domestic Water Well
	WS-13	N/A	N/A	Field Blank
	WS-15	N/A	N/A	Equipment Blank
	WS-16	N/A	N/A	Equipment Blank 2

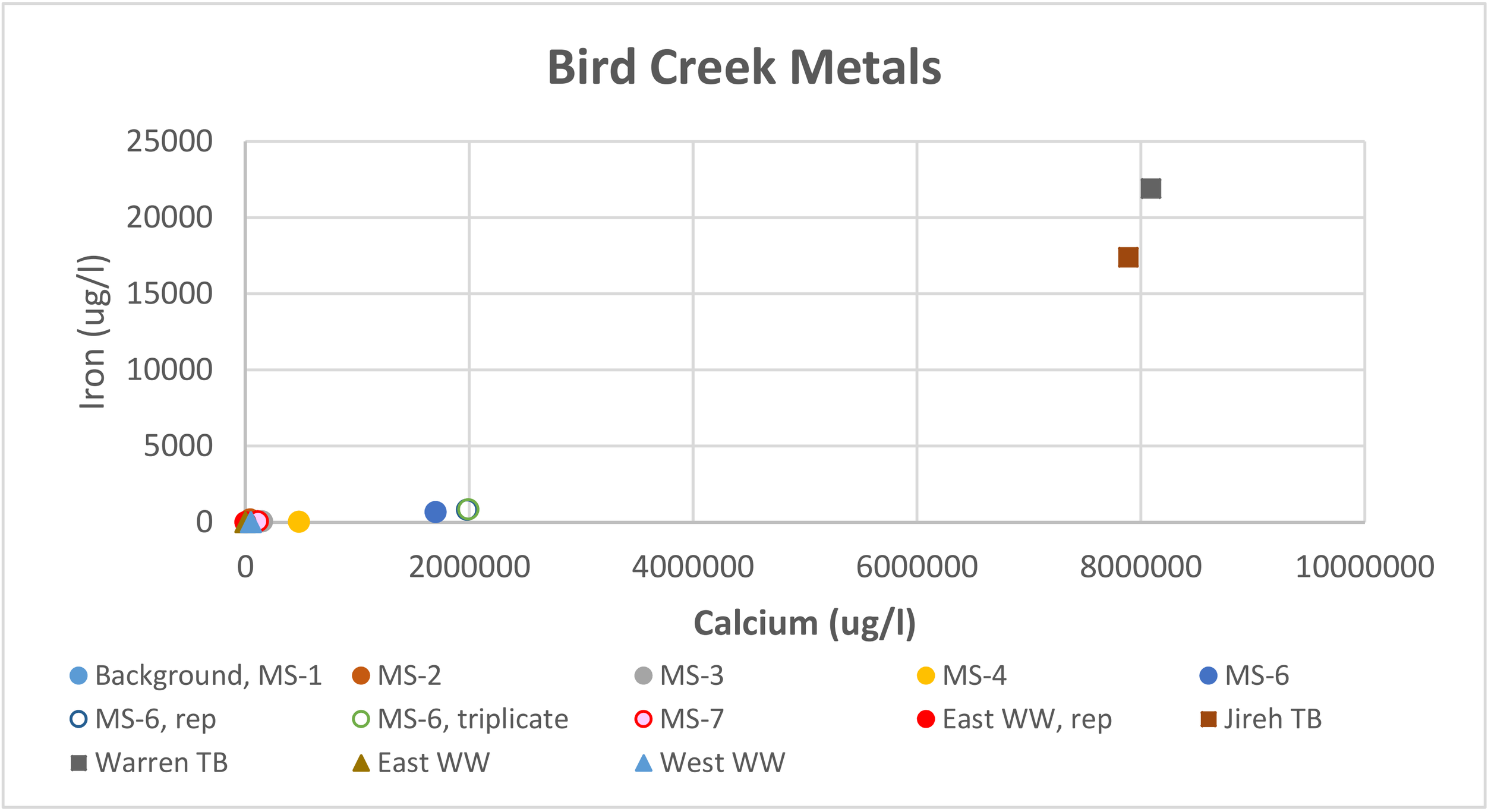

Bird Creek Anions
350.00
300.00
250.00
200.00
150.00
100.00
50.00
0.00
Bromide (ug/l)
0.0
50.0
100.0
150.0
200.0
250.0
Sulfate (ug/l)
Background, MS-1
MS-2
MS-3
MS-4
MS-6
MS-6, rep
MS-6, triplicate
MS-7
East WW, rep
Jireh TB
Warren TB
East WW
West WW

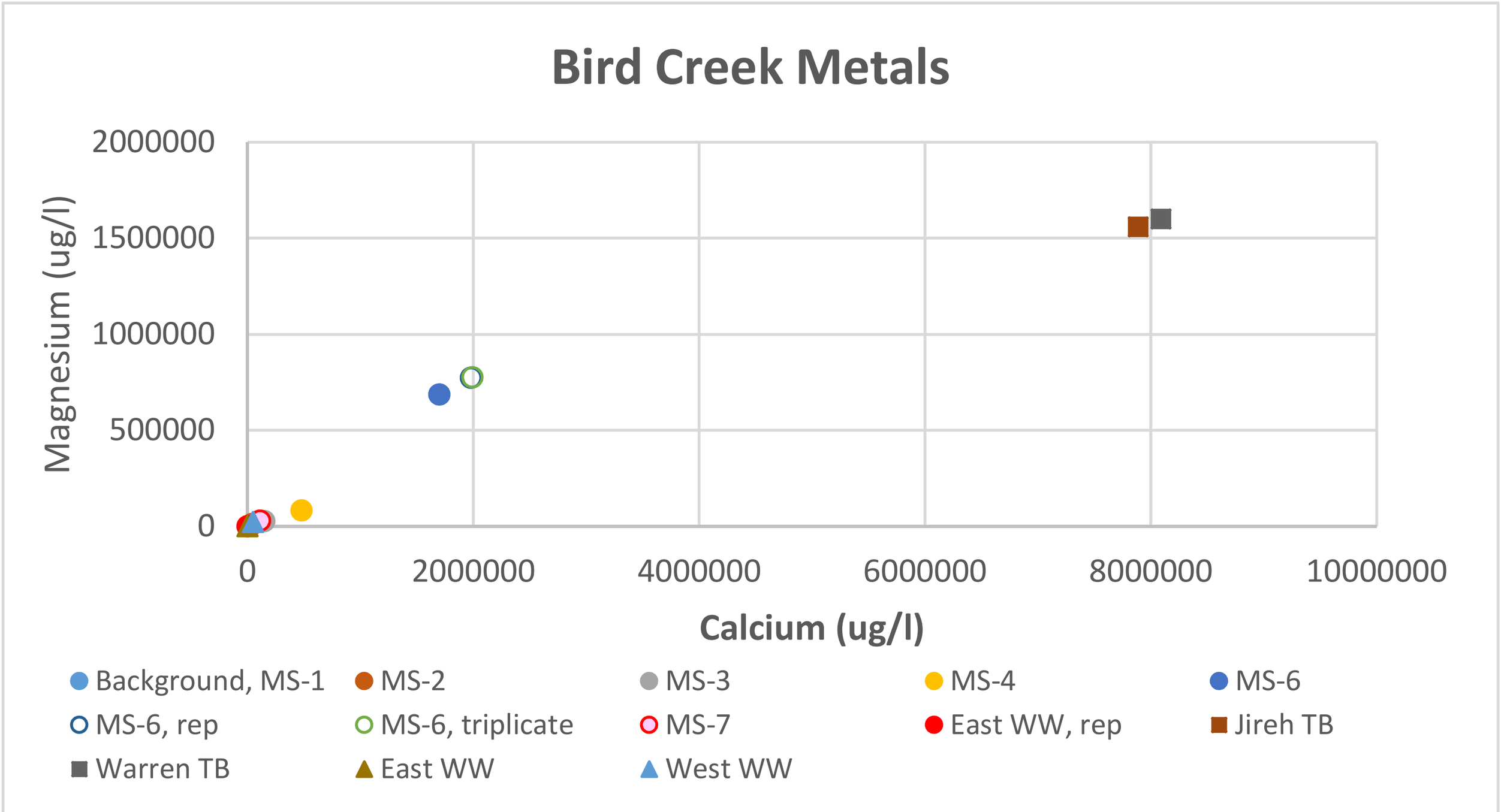
anions (mg/l)			EPA Method	300.1	300.1	300.1	300.1	300.1	300.1
	Report Limit			1	1	1	1	1	1
				Nitrite	Nitrate	Flouride	Bromide	Orthophosphate	Sulfate
Location	FieldID	**PREPARED**	**insp_NO**	NO_2 (mg/l)	NO_3 (mg/l)	F (mg/L)	Br (ug/l)	PO_4 (mg/l)	SO_4 (mg/l)
	Trip Blank 1								
	Trip Blank 2								
	Trip Blank 3								
Backgroun	WS-01	6/29/2017	1706039-04	U	U	U	U	U	28.5
MS-2	WS-02	6/29/2017	1706039-05	U	U	U	U	U	30.7
MS-3	WS-03	6/29/2017	1706039-06	U	U	U	2.88	U	35.9
MS-4	WS-04	6/29/2017	1706039-07	U	U	U	5.90	U	31.3
MS-6	WS-05	6/30/2017	1706041-02	U	U	U	90.20	U	39.0
MS-7	WS-06	6/30/2017	1706041-05	U	U	U	2.26	U	28.8
MS-6, rep	WS-07: replicate 1	6/30/2017	1706041-03	U	U	U	89.80	U	39.9
Jireh TB	WS-08	6/29/2017	1706041-10	U	U	U	295.00	U	27.4
Warren TB	WS-09	6/30/2017	1706043-02	U	U	U	298.00	U	18.7
	WS-10								
East WW	WS-11	6/30/2017	1706041-07	U	U	U	U	U	19.5
West WW	WS-12	6/30/2017	1706041-09	U	U	U	U	U	226.0
	WS-13: Field blank	6/29/2017	1706039-02	U	U	U	U	U	U
East WW, r	WS-14: replicate 2	6/30/2017	1706041-08	U	U	U	U	U	19.1
	WS-15: Equip blank	6/29/2017	1706039-03	U	U	U	U	U	U
	WS-16: Equip blank 2	6/29/2017	1706041-06	U	U	U	U	U	U
MS-6, tripli	WS-17	6/30/2017	1706041-04	U	U	U	82.70	U	36.3

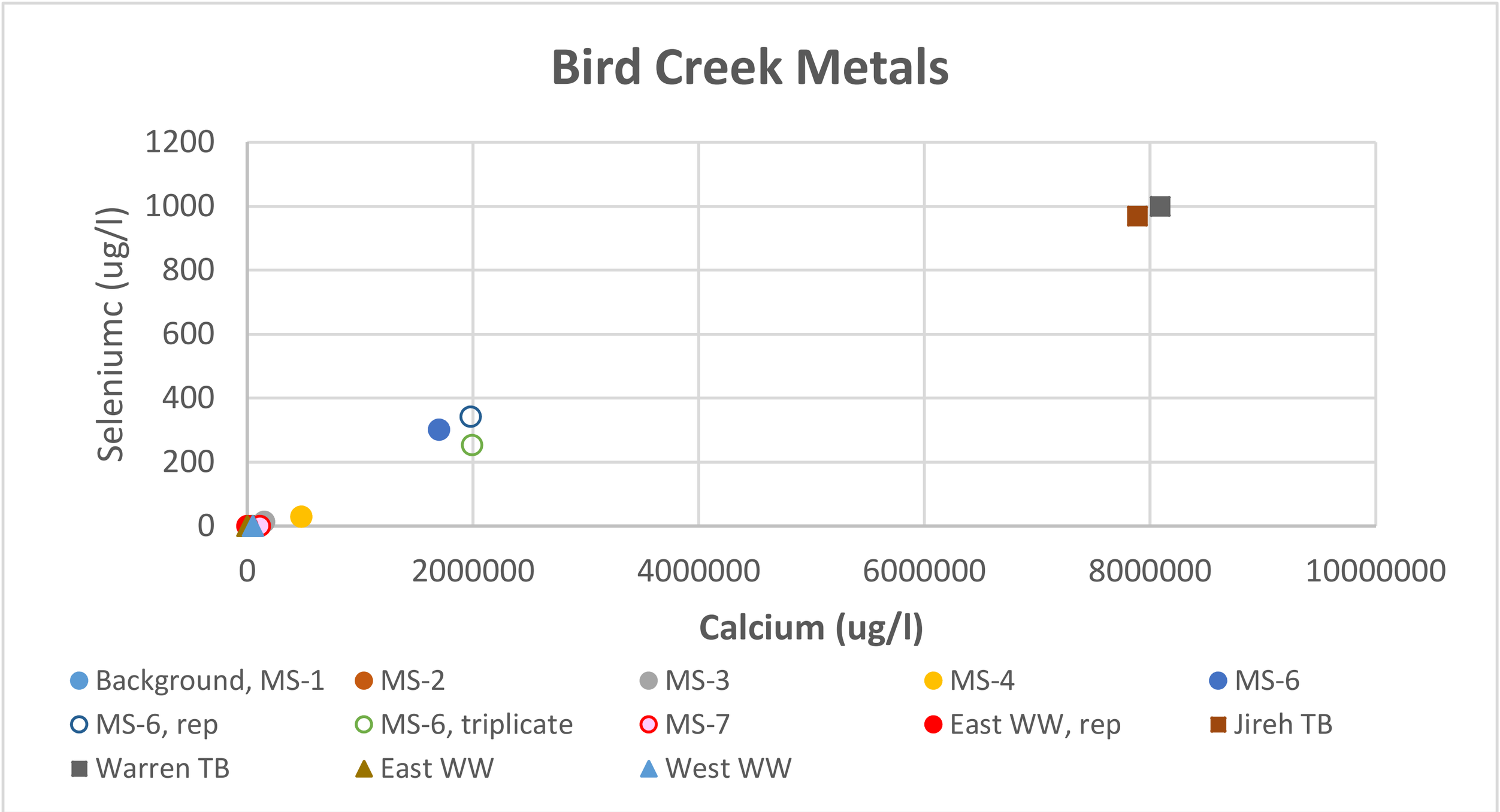


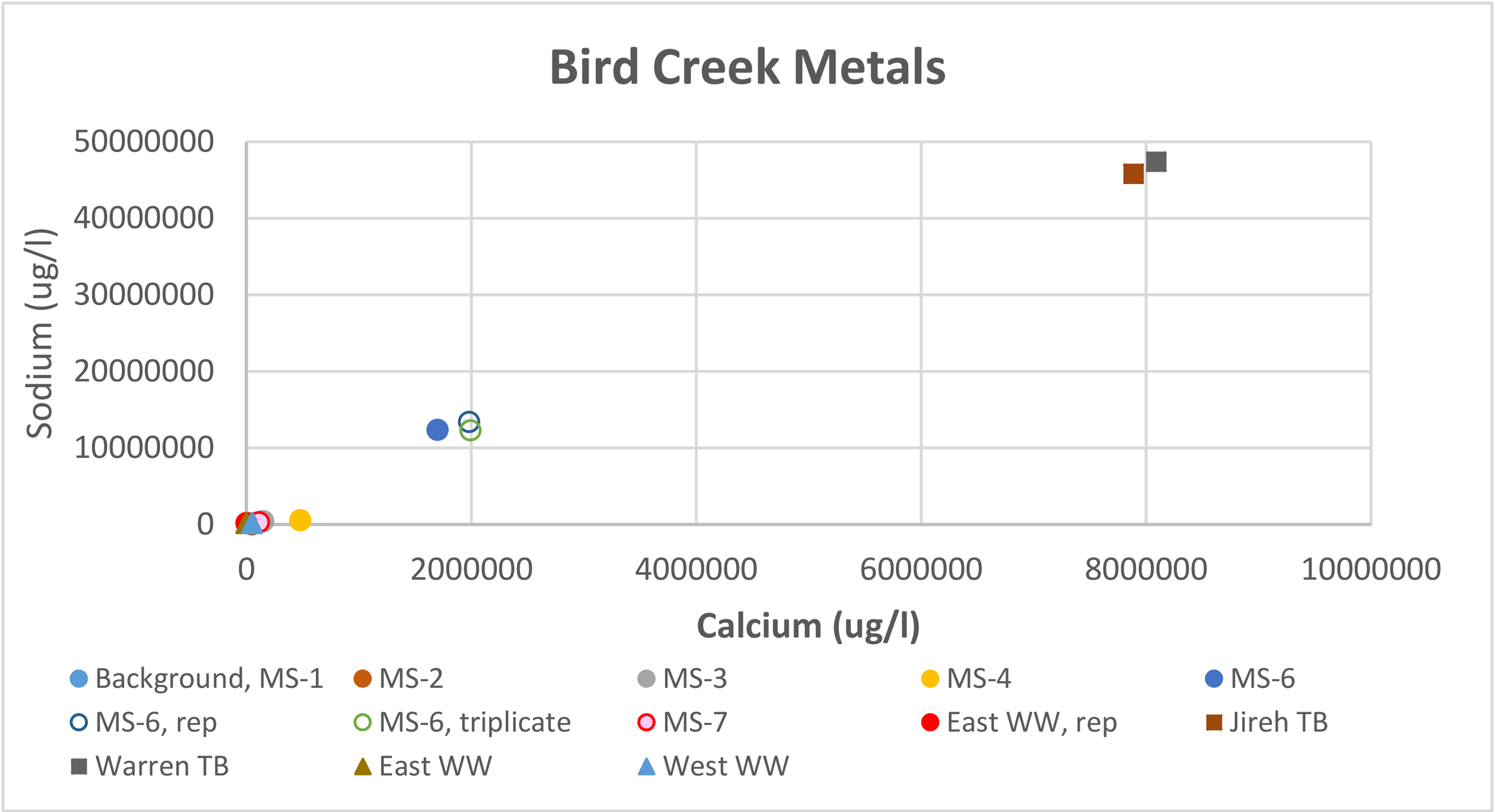

Bird Creek Metals
Arsenic (ug/l)
350
300
250
200
150
100
50
0
0
2000000
4000000
6000000
8000000
10000000
Calcium (ug/l)
Background, MS-1
MS-2
MS-3
MS-4
MS-6
MS-6, rep
MS-6, triplicate
MS-7
East WW, rep
Jireh TB
Warren TB
East WW
West WW


Bird Creek Metals
Barium (ug/l)
40000
30000
20000
10000
0
0
2000000
4000000
6000000
8000000
10000000
Calcium (ug/l)
Background, MS-1
MS-2
MS-3
MS-4
MS-6
MS-6, rep
MS-6, triplicate
MS-7
East WW, rep
Jireh TB
Warren TB
East WW
West WW

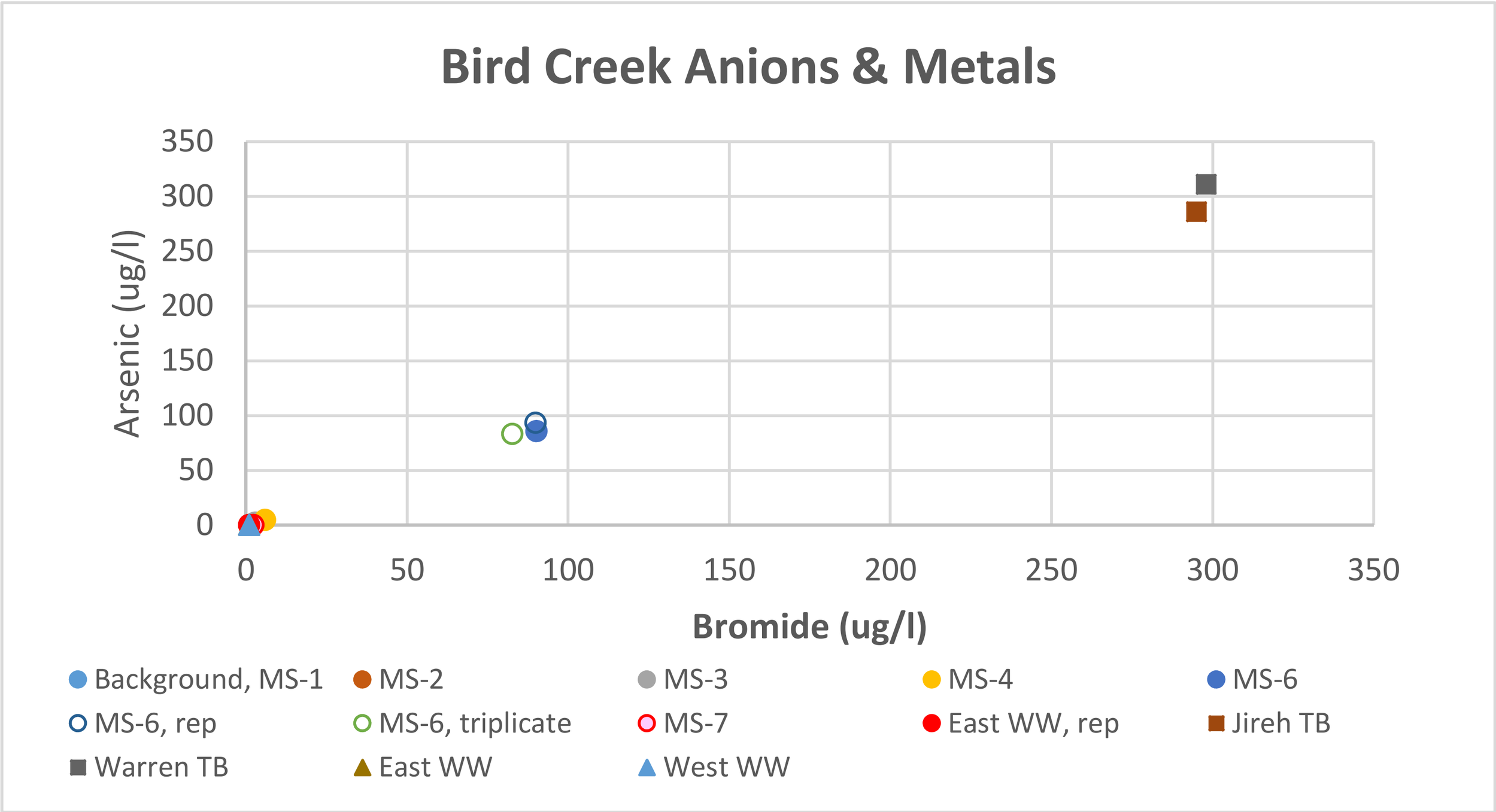

Bird Creek Metals
25000
20000
15000
10000
5000
0
Iron (ug/l)
0
2000000
4000000
6000000
8000000
10000000
Calcium (ug/l)
Background, MS-1
MS-2
MS-3
MS-4
MS-6
MS-6, rep
MS-6, triplicate
MS-7
East WW, rep
Jireh TB
Warren TB
East WW
West WW

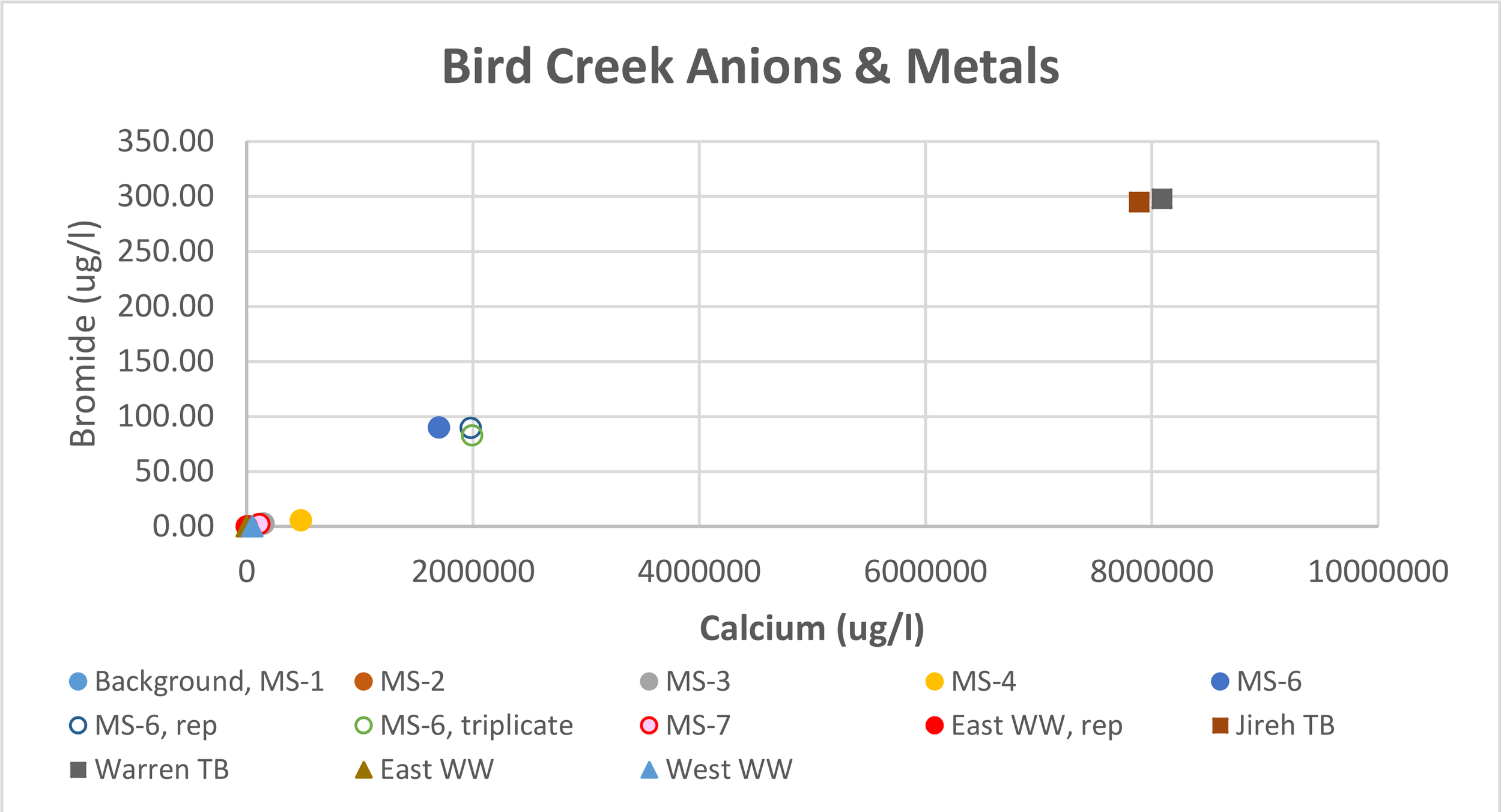

Bird Creek Metals
Magnesium (ug/l)
2000000
1500000
1000000
500000
0
0
2000000
4000000
6000000
8000000
10000000
Calcium (ug/l)
Background, MS-1
MS-2
MS-3
MS-4
MS-6
MS-6, rep
MS-6, triplicate
MS-7
East WW, rep
Jireh TB
Warren TB
East WW
West WW

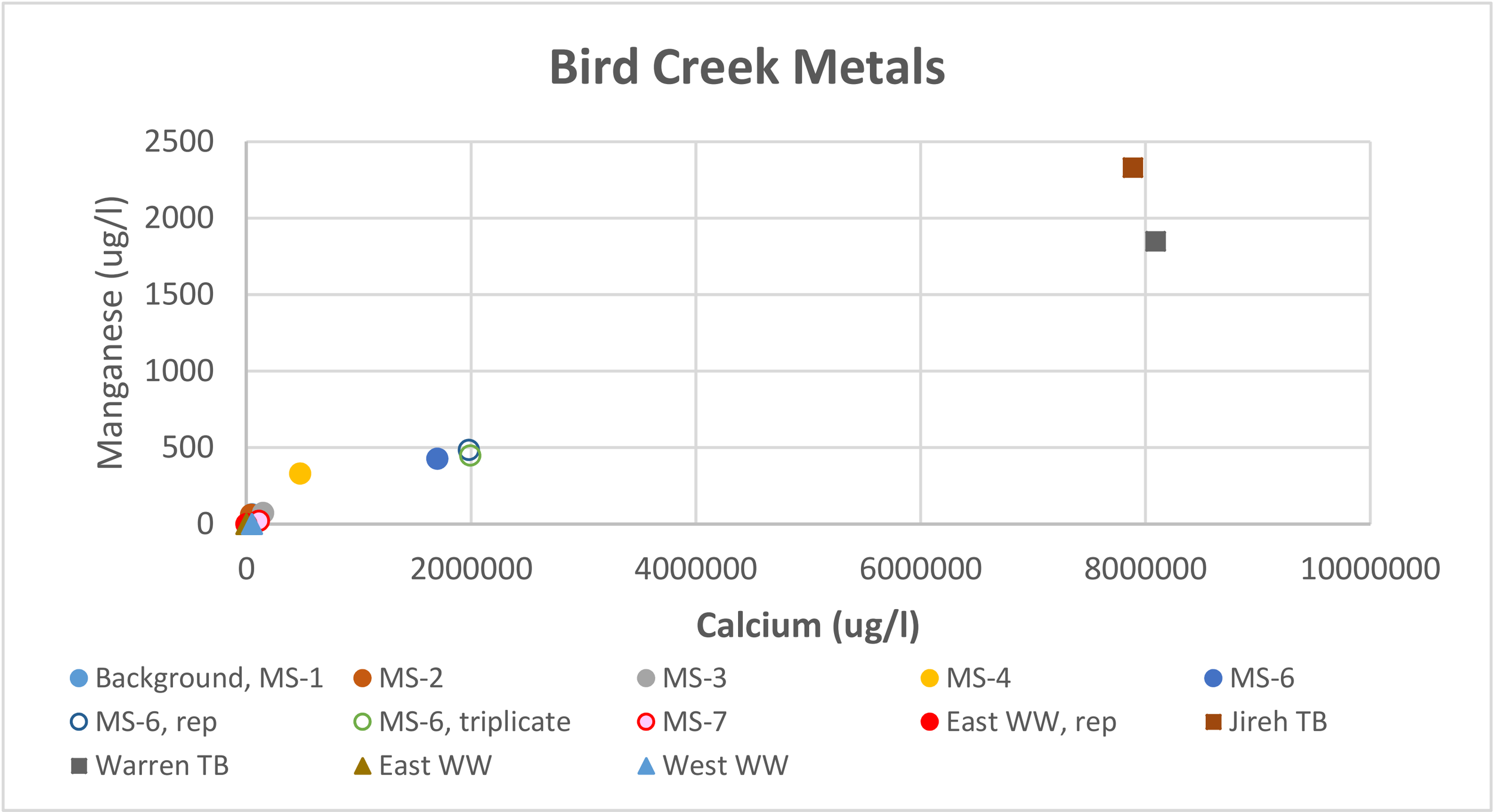

Bird Creek Metals
Selenium (ug/l)
1200
1000
800
600
400
200
0
0
2000000
4000000
6000000
8000000
10000000
Calcium (ug/l)
Background, MS-1
MS-2
MS-3
MS-4
MS-6
MS-6, rep
MS-6, triplicate
MS-7
East WW, rep
Jireh TB
Warren TB
East WW
West WW

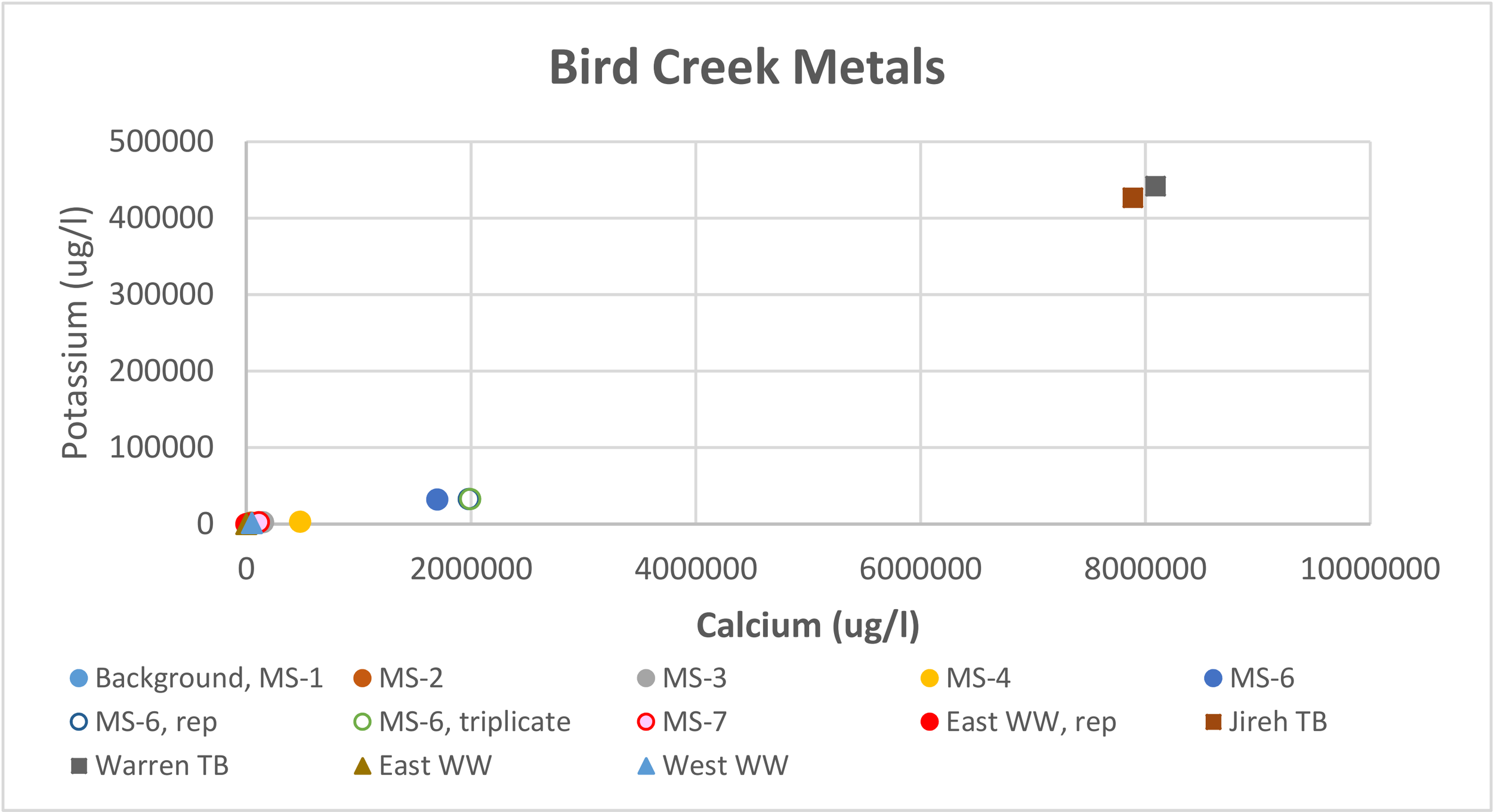

Bird Creek Metals
50000000
40000000
30000000
20000000
10000000
0
Sodium (ug/l)
0
2000000
4000000
6000000
8000000
10000000
Calcium (ug/l)
Background, MS-1
MS-2
MS-3
MS-4
MS-6
MS-6, rep
MS-6, triplicate
MS-7
East WW, rep
Jireh TB
Warren TB
East WW
West WW

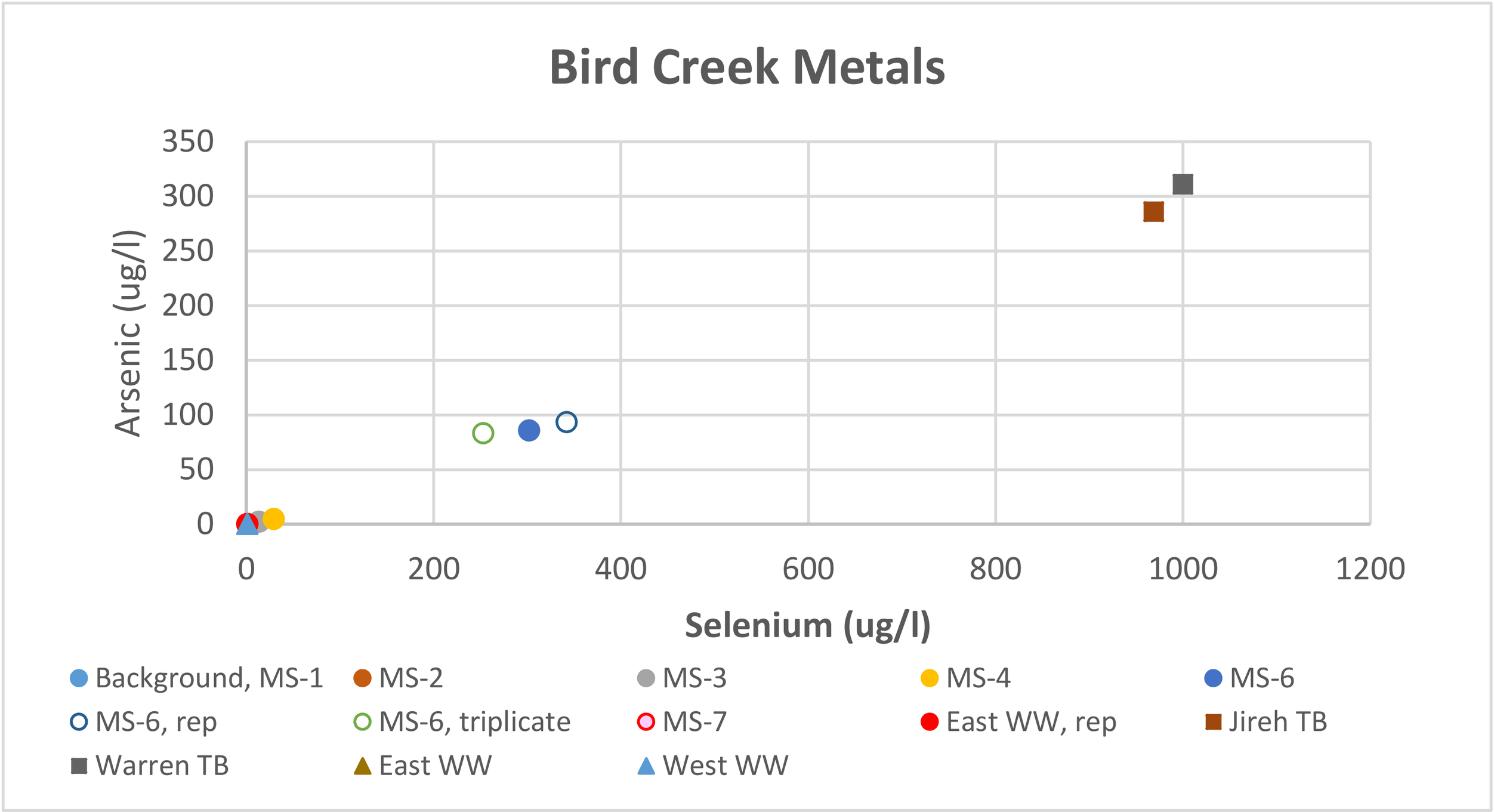
metal analysis: preserved with acid (ug/l)			EPA Method			6010D	6010D	6010D	6010D	6010D	6010D	6010D	6010D	6010D	6010D	6010D	6010D	6010D	6010D	6010D	6010D	6010D	6020B	6020B	6020B	6020B	6020B	70A/7471B	
	Report Limit					100	10	5	5	150	10	20	20	25	150	5	20	1000	10	500	20	20	2	2	2	4	2	0.2	
Metal Analysis						Aluminium	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Magnesium	Manganese	Nickel	Potassium	Silver	Sodium	Vanadium	Zinc	Antimony	Arsenic	Lead	Selenium	Thallium	Mercury	
Location	FieldID	**PREPARED**	**insp_NO**	**Salinity (ppt)**	**Conductivity (umhos/cm)**	Al (ug/l)	Ba (ug/l)	Be (ug/l)	Cd (ug/l)	Ca (ug/l)	Cr (ug/l)	Co (ug/l)	Cu (ug/l)	Fe (ug/l)	Mg (ug/l)	Mn (ug/l)	Ni (ug/l)	K (ug/l)	Au (ug/l)	Na (ug/l)	V (ug/l)	Zn (ug/l)	Sb (ug/l)	As (ug/l)	Pb (ug/l)	Se (ug/l)	Tl (ug/l)	Hg (ug/l)	Comments
	Trip Blank 1																												
	Trip Blank 2																												
	Trip Blank 3																												
Background,	WS-01	6/29/2017	1706039-04	1	236	U	104	U	U	51300	U	U	U	77.6	13300	65	U	1550	U	16400	U	U	U	U	U	U	U	U	
MS-2	WS-02	6/29/2017	1706039-05	1	430	162	93.8	U	U	42900	U	U	U	188	14300	60.9	U	2360	U	75000	U	U	M	U	U	U	U	U	
MS-3	WS-03	6/29/2017	1706039-06	4	2210	U	277	U	U	149000	U	U	U	71.5	28400	73.4	U	2530	U	457000	U	U	U	2.4	U	13.5	U	U	
MS-4	WS-04	6/29/2017	1706039-07	5	4140	U	792	U	U	480000	U	U	U	33.7	84000	332	U	3460	U	579000	U	U	U	4.9	U	29.4	U	U	
MS-6	WS-05	6/30/2017	1706041-02	46	43700	U	6040	U	U	1700000	U	U	U	693	686000	427	U	32300	U	12400000	U	U	U	85.8	U	302	U	U	
MS-7	WS-06	6/30/2017	1706041-05	2	1830	U	198	U	U	113000	U	U	U	68.2	29100	23.1	U	2460	U	317000	U	U	U	U	U	U	U	U	
MS-6, rep	WS-07: replicate 1	6/30/2017	1706041-03	48	42800	U	6870	U	U	1980000	U	U	U	833	775000	487	U	33000	U	13400000	U	U	U	93.6	U	342	U	U	
Jireh TB	WS-08	6/30/2017	1706041-10	160	110600	U	34800	U	U	7890000	U	U	U	17400	1560000	2330	U	427000	U	45800000	U	U	U	286	U	969	U	U	
Warren TB	WS-09	6/30/2017	1706043-02	160	119200	U	30700	U	U	8090000	U	U	U	21900	1600000	1850	U	442000	U	47400000	U	U	U	311	U	1000	U	U	
	WS-10																												
East WW	WS-11	6/30/2017	1706041-07	0	588	U	132	U	U	1200	U	U	U	U	382	U	U	U	U	196000	U	U	U	U	U	U	U	U	
West WW	WS-12	6/30/2017	1706041-09	1	817	U	U	U	U	51500	U	U	U	U	22800	U	U	1710	U	217000	U	U	U	U	U	U	U	U	
	WS-13: Field blank	6/29/2017	1706039-02	0	1.4	U	U	U	U	**685**	U	U	U	**37.2**	U	U	U	U	U	U	U	U	U	U	U	U	U	U	
East WW, rep	WS-14: replicate 2	6/30/2017	1706041-08	0	618	U	128	U	U	1170	U	U	U	U	378	U	U	U	U	193000	U	U	U	U	U	U	U	U	
	WS-15: Equip blank	6/29/2017	1706039-03	1	2.6	U	U	U	U	**799**	U	U	**35.3**	**38.4**	U	U	U	U	U	U	U	**60.9**	U	U	**2.9**	U	U	U	
	WS-16: Equip blank 2	6/29/2017	1706041-06	0	5	U	U	U	U	**304**	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	
MS-6, triplica	WS-17	6/30/2017	1706041-04	46	42700	U	6840	U	U	1990000	U	U	U	860	777000	450	U	33100	U	12300000	U	U	U	83.5	U	253	U	U	Na outside spike recovery


Bird Creek Anions & Metals
Arsenic (ug/l)
350
300
250
200
150
100
50
0
0
50
100
150
200
250
300
350
Bromide (ug/l)
Background, MS-1
MS-2
MS-3
MS-4
MS-6
MS-6, rep
MS-6, triplicate
MS-7
East WW, rep
Jireh TB
Warren TB
East WW
West WW


Bird Creek Anions & Metals
Bromide (ug/l)
350.00
300.00
250.00
200.00
150.00
100.00
50.00
0.00
0
2000000
4000000
6000000
8000000
10000000
Calcium (ug/l)
Background, MS-1
MS-2
MS-3
MS-4
MS-6
MS-6, rep
MS-6, triplicate
MS-7
East WW, rep
Jireh TB
Warren TB
East WW
West WW


Bird Creek Metals
Manganese (ug/l)
2500
2000
1500
1000
500
0
0
2000000
4000000
6000000
8000000
10000000
Calcium (ug/l)
Background, MS-1
MS-2
MS-3
MS-4
MS-6
MS-6, rep
MS-6, triplicate
MS-7
East WW, rep
Jireh TB
Warren TB
East WW
West WW


Bird Creek Metals
Potassium (ug/l)
500000
400000
300000
200000
100000
0
0
2000000
4000000
6000000
8000000
10000000
Calcium (ug/l)
Background, MS-1
MS-2
MS-3
MS-4
MS-6
MS-6, rep
MS-6, triplicate
MS-7
East WW, rep
Jireh TB
Warren TB
East WW
West WW


Bird Creek Metals
Arsenic (ug/l)
350
300
250
200
150
100
50
0
0
200
400
600
800
1000
1200
Selenium (ug/l)
Background, MS-1
MS-2
MS-3
MS-4
MS-6
MS-6, rep
MS-6, triplicate
MS-7
East WW, rep
Jireh TB
Warren TB
East WW
West WW

Location	FieldID	**Collected**	**PREPARED**	**insp_NO**	Comment
	Trip Blank 1	6/27/2017		1706039-01	
	Trip Blank 2	6/28/2017	6/29/2017	1706041-01	
	Trip Blank 3	6/29/2017	6/30/2017	1706043-01	
Background, MS-1	WS-01	6/27/2017	6/29/2017	1706039-04	
MS-2	WS-02	6/27/2017	6/29/2017	1706039-05	
MS-3	WS-03	6/27/2017	6/29/2017	1706039-06	
MS-4	WS-04	6/27/2017	6/29/2017	1706039-07	
MS-6	WS-05	6/28/2017	6/30/2017	1706041-02	
MS-7	WS-06	6/28/2017	6/30/2017	1706041-05	
MS-6, rep	WS-07: replicate 1	6/28/2017	6/30/2017	1706041-03	
Jireh TB	WS-08	6/28/2017	6/30/2017	1706041-10	
Warren TB	WS-09	6/29/2017	6/30/2017	1706043-02	
G.horse TB	WS-10	not taken			
East WW	WS-11	6/28/2017	6/30/2017	1706041-07	not currently used
West WW	WS-12	6/28/2017	6/30/2017	1706041-09	not currently used
	WS-13: Field blank	6/27/2017	6/29/2017	1706039-02	
East WW, rep	WS-14: replicate 2	6/28/2017	6/30/2017	1706041-08	
	WS-15: Equip blank	6/27/2017	6/29/2017	1706039-03	
	WS-16: Equip blank 2	6/28/2017	6/29/2017	1706041-06	
MS-6, triplicate	WS-17	6/28/2017	6/30/2017	1706041-04	

Semi-Volatiles: ug/l			EPA Method	Surrogate: Result								Surrogate: % Recovery								Targets			
	Report Limit																			10	10	10	10
				2-Fluorophenol	Phenol-d5	2-Chlorophenol-d4	1,2-Dichlorobenzene-d4	Nitrobenzene-d5	2-Fluorobiphenyl	2,4,4-Tribromophenol	Terpheyl-d14	2-Fluorophenol	Phenol-d5	2-Chlorophenol-d4	1,2-Dichlorobenzene-d4	Nitrobenzene-d5	2-Fluorobiphenyl	2,4,4-Tribromophenol	Terpheyl-d14	Benzaldehyde	Phenol	Bis(2-chloroethyl)ether	2-Chlorophenol
Location	FieldID	**PREPARED**	**insp_No/CAS**									42-109	46-110	47-103	33-100	42-126	50-104	59-142	61-125	100-52-7	108-95-2	111-44-4	95-57-8
	Trip Blank 1																						
	Trip Blank 2																						
	Trip Blank 3																						
Backgroun	WS-01	6/29/2017	1706039-04	42.7	41.9	44.9	28	28.6	30	59.1	49.5	57.4	56.3	60.3	56.5	57.7	60.4	79.3	99.7	U	U	U	U
MS-2	WS-02	6/29/2017	1706039-05	46.5	44.4	49.1	29.5	31.5	32.5	62.8	50.5	59.2	56.6	62.6	56.4	60.3	62.2	80	96.6	U	U	U	U
MS-3	WS-03	6/29/2017	1706039-06	53	53.9	56.3	34.1	35.7	39.2	67	54.1	65.7	66.9	69.8	63.5	66.4	73.1	83.1	101	U	U	U	U
MS-4	WS-04	6/29/2017	1706039-07	57.6	56.8	60.3	35.6	37.5	39.6	78.6	58.1	70.1	69.1	73.4	65.1	68.5	72.2	95.7	106	U	U	U	U
MS-6	WS-05	6/30/2017	1706041-02	54.1	60.3	55.7	36.9	42.7	43.3	64.2	57.4	66.4	74.1	68.4	68	78.6	79.8	78.9	106	U	U	U	U
MS-7	WS-06	6/30/2017	1706041-05	59.8	57.1	61.4	36.1	38.3	38.2	75.3	55.4	73.9	70.5	75.9	66.9	71	70.8	92.9	103	U	U	U	U
MS-6, rep	WS-07: replicate 1	6/30/2017	1706041-03	54	54.9	53.4	38.3	39.8	40.8	60.8	58.4	65.1	66.2	64.3	69.3	72	73.7	73.3	106	U	U	U	U
Jireh TB	WS-08	6/29/2017	1706041-10	103	106	111	69	85.1	93.5	157	101	68.8	70.9	73.9	69	85.1	93.5	104	101	U	10.5	111-44-4	95-57-8
Warren TB	WS-09	6/30/2017	1706043-02	53.9	54.2	58.2	39.6	43.1	48.7	88.4	63	65.9	66.3	71.2	72.7	79	89.4	108	116	U	6.8	U	U
	WS-10																						
East WW	WS-11	6/30/2017	1706041-07	67.1	37.7	69.5	42	44.5	45.4	80.4	52.3	84.4	47.4	87.4	79.2	83.9	85.6	101	98.6	U	U	U	U
West WW	WS-12	6/30/2017	1706041-09	59.2	58.1	61.4	36.7	38.3	38.9	78.5	55	73.4	72	76.1	68.3	71.3	72.4	97.3	102	U	U	U	U
	WS-13: Field blank	6/29/2017	1706039-02	56.6	56.1	59.7	35.7	37	38.8	76.9	53.3	72.5	71.9	76.5	68.7	71.2	74.6	98.6	102	U	U	U	U
East WW, r	WS-14: replicate 2	6/30/2017	1706041-08	61.4	60.6	63.7	36.1	40.1	40.5	78.5	56.9	76.1	75.1	78.9	67	74.5	75.3	97.2	106	U	U	U	U
	WS-15: Equip blank	6/29/2017	1706039-03	57.7	58.1	61.2	33.8	39	40.3	74.5	49.2	77.9	78.5	82.7	68.6	79	81.7	101	99.7	U	U	U	U
	WS-16: Equip blank 2	6/29/2017	1706041-06	58.7	60.3	63.4	36	40.5	43.6	78.9	54.9	71.8	73.7	77.6	66.1	74.4	80	96.6	101	U	U	U	U
MS-7, tripli	WS-17	6/30/2017	1706041-04	45.5	46.4	46.8	32	34.1	37	53.6	57.2	57	58.1	58.6	60	64	69.5	67.1	107	U	U	U	U

10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	4	10	10	10	10
1,3-Dichlorobenzene	1,4-Dichlorobenzene	Benzyl alcohol	1,2-Dichlorobenzene	2-Methylphenol	Bis(2-chloro-1-methylethyl)ether	Acetophenone	3 &/or 4-Methylphenol	N-Nitroside-n-propylamine	Hexachloroethane	Nitrobenzene	Isophrone	2-Nitrophenol	2,4-dimethylphenol	Bis(2-chloroethoxy)methane	2,4-dichlorophenol	1,2,4-Trichlorobenzene	Napthalene	4-Chloroaniline	Hexachlorobutadiene	Caprolactam	4-Chloro-3-methylphenol
541-73-1	106-46-7	100-51-6	95-50-1	95-48-7	108-60-1	98-86-2	108-39-4/106-44-5	621-64-7	67-72-1	98-95-3	78-59-1	88-75-5	105-67-9	111-91-1	120-83-2	120-82-1	91-20-3	106-47-8	87-68-3	105-60-2	59-50-7
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
541-73-1	106-46-7	100-51-6	95-50-1	28.5	U	U	16.7	U	U	U	U	U	44.8	U	U	U	48.5	U	U	U	U
U	U	U	U	17.8	U	U	17.2	U	U	U	U	U	37.9	U	U	U	26.9	U	U	U	U
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U

4	4	10	10	10	10	10	16	16	4	10	16	4	40	26	10	10	4	10	10	16	40	10	10
2-Methylnaphthalene	1-Methylnaphthalene	Hexachlorocyclopentadiene	2,4,6-Trichlorophenol	2,4,5-Trichlorophenol	2-Chloronaphthalene	1,1'-Biphenyl	2-Nitroaniline	Demethyl phthalate	acenaphthalene	2,6-Dinitrotoluene	3-Nitroaniline	Acenaphthalene	2,4-Dinitrophenol	4-Nitrophenol	Dibenzofuran	2,4-Dinitrotoluene	Fluorene	Diethyl phthalate	4-Chlorophenyl phenyl ether	4-Nitroaniline	4,6-Dinitro-2-methylphenol	N-Nitrosodiphenylamine/Diphenylamine	4-Bromopheyl phenyl ether
91-57-6	90-12-0	77-47-4	88-06-2	95-95-4	91-58-7	92-52-4	88-74-4	131-11-3	208-96-8	606-20-2	99-09-2	83-32-9	51-28-5	100-02-7	132-64-9	121-14-2	86-73-7	84-66-2	7005-72-3	100-01-6	534-52-1	96-30-6/122-39-4	101-55-3
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
111	75.6	U	U	U	U	16.7	U	U	U	U	U	U	U	U	U	U	8.1	U	U	U	U	U	U
40.6	28.1	U	U	U	U	5.6	U	U	U	U	U	U	U	U	U	U	2.5	U	U	U	U	U	U
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U

							8270D	8270D	8270D	8270D	8270D	8270D	8270D	8270D	8270D	8270D	8270D	8270D	8270D	8270D	8270D
10	10	10	4	4	10	10	2.1	2.1	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	
Hexachlorobenzene	Altrazine	Pentachlorophenol	Phenanthrene	Anthracene	Carbazole	Di-n-butyl-phthalte	Fluoranthene	Pyrene	Butyl benzyl phthalate	Benzo (a) anthracene	3,3'-dichlorobenzidine	Chrysene	Bis(2-ethylhexyl)phthalate	Di-n-octyl phthalate	Benzo (b) fluoroanthene	Benzo (k) fluoranthene	Benzo (a) pyrene	Indeno (1,2,3-cd) pyrene	Dibenz (a,h) anthracene	Benzo (g,h,i) perylene	Sulfur
118-74-1	1912-24-9	87-86-5	85-01-8	120-12-7	86-74-8	84-74-2	206-44-0	129-00-0	85-68-7	56-55-3	91-94-1	218-01-9	117-81-7	117-84-0	205-99-2	207-08-9	50-32-8	193-39-5	53-70-3	191-24-2	7704-34-9
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	
U	U	U	18.4	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	
U	U	U	6.1	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	
U	U	U	U	U	U	U	U	U	U	U	U	U	7.5	U	U	U	U	U	U	U	
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	4.5

Semi-Volatiles: ug/l			EPA Method	8270D	8270D	8270D	8270D	8270D	8270D	8270D	8270D	
	Report Limit											
				Dichlorobenzoic acid isomer	2-(2-Butoxyethoxy)-ethyl alcohol	2-Monostearin	Unkown Iodinated Hydrocarbon	Sulfer, mol.	2-(2-Butoxyethoxy)-ethyl acetate	Diethyltoluamide		numerous others
Location	FieldID	**PREPARED**	**insp_No/CAS**		124-17-4	62-61-4		105-50-0	124-17-4	134-62-3		
	Trip Blank 1											
	Trip Blank 2											
	Trip Blank 3											
Backgroun	WS-01	6/29/2017	1706039-04	16								
MS-2	WS-02	6/29/2017	1706039-05	24								
MS-3	WS-03	6/29/2017	1706039-06									
MS-4	WS-04	6/29/2017	1706039-07									
MS-6	WS-05	6/30/2017	1706041-02					5				
MS-7	WS-06	6/30/2017	1706041-05									
MS-6, rep	WS-07: replicate 1	6/30/2017	1706041-03									
Jireh TB	WS-08	6/29/2017	1706041-10									30 compounds from 63 - 330 ug/l
Warren TB	WS-09	6/30/2017	1706043-02									30 compounds from 22 - 120 ug/l
	WS-10											
East WW	WS-11	6/30/2017	1706041-07									
West WW	WS-12	6/30/2017	1706041-09									
	WS-13: Field blank	6/29/2017	1706039-02	**19**		**6**						
East WW, r	WS-14: replicate 2	6/30/2017	1706041-08									
	WS-15: Equip blank	6/29/2017	1706039-03			**8**	**16**					
	WS-16: Equip blank 2	6/29/2017	1706041-06							**7**	**10**	
MS-7, tripli	WS-17	6/30/2017	1706041-04					4				Probably false Sulfer reading

TPH: ug/l	EPA Method	1005		Surrogate: Result		Surrogate: % Recovery		Targets				
	Report Limit							4640	4640	4640	13900	
Location	FieldID	**PREPARED**	**insp_NO**	1-Chlorooctane	1-Chlorooctadecane	1-Chlorooctane	1-Chlorooctadecane	Gasoline Range Organics	Diesel Range Organics	Oil Range Organics	TPH	Comments
	Trip Blank 1											
	Trip Blank 2											
	Trip Blank 3											
Backgroun	WS-01	6/29/2017	1706039-04	8280	7600	87.2	80.1	U	U	U	U	
MS-2	WS-02	6/29/2017	1706039-05	7690	7170	82.5	77	U	U	U	U	
MS-3	WS-03	6/29/2017	1706039-06	8400	7770	90.5	83.9	U	U	U	U	
MS-4	WS-04	6/29/2017	1706039-07	8460	7800	90.2	83.2	U	U	U	U	
MS-6	WS-05	6/30/2017	1706041-02	7970	7420	86.1	80.1	U	U	U	U	
MS-7	WS-06	6/30/2017	1706041-05	8160	7610	87.6	81.7	U	U	U	U	
MS-6, rep	WS-07: replicate 1	6/30/2017	1706041-03	7320	6780	80.4	74.4	U	U	U	U	
Jireh TB	WS-08	6/29/2017	1706041-10	7550	7440	89.5	88.3	15800	71700	21100	109000	Contained high salinity, large unresolved HC lumps.
Warren TB	WS-09	6/30/2017	1706043-02	9280	9930	110	118	13300	24200	U	37500	B,K Contained high salinity, large unresolved HC lumps. Biased by previous run.
	WS-10											
East WW	WS-11	6/30/2017	1706041-07	8420	7750	90.8	83.5	U	U	U	U	
West WW	WS-12	6/30/2017	1706041-09	8220	7670	86.3	80.5	U	U	U	U	
	WS-13: Field blank	6/29/2017	1706039-02	7900	7340	83.7	77.7	U	U	U	U	
East WW, r	WS-14: replicate 2	6/30/2017	1706041-08	7810	7230	84.9	78.5	U	U	U	U	
	WS-15: Equip blank	6/29/2017	1706039-03	6940	6320	75.9	69.2	U	U	U	U	
	WS-16: Equip blank 2	6/29/2017	1706041-06	6780	7050	72.7	75.6	U	U	U	U	
MS-7, tripli	WS-17	6/30/2017	1706041-04	7960	7330	87	80.1	U	U	U	U	

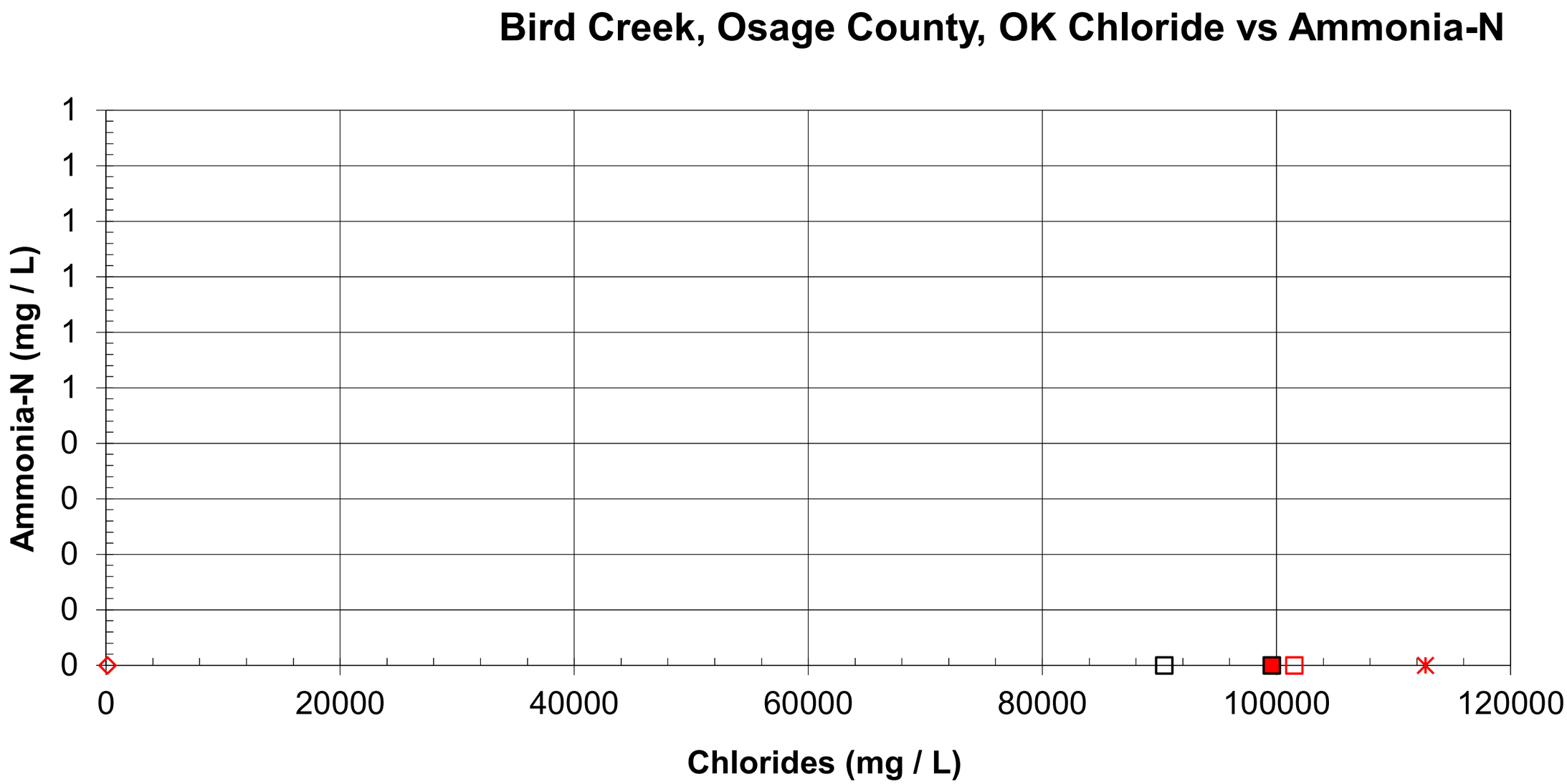
Volatiles: ug/l		EPA Method	8260C		Surrogate: Result		Surrogate: % Recovery			Targets											
	Report Limit									5.0	5.0	2.0	5.0	2.0	2.0	2.0	2.0	2.0	10.0	2.0	2.0
				1,2-Dichloroethane-d4	Tolulene-d8	4-Bromofluorobenzene	1,2-Dichloroethane-d4	Tolulene-d8	4-Bromofluorobenzene	Dichlorodifluoromethane	Chloromethane	Vinyl Chloride	Bromomethane	Chloroethane	Trichlorofluoromethane	1,2-Dichloroethane-d4	Carbon disulfide	1,1,2-Trichloro-1,2,2-trifluoroethane	Acetone	Methylene chloride	Methyl acetate
Location	FieldID	**PREPARED**	**insp_No/CAS**	ug/l	ug/l	ug/l	86-117	85-113	73-115	75-71-8	74-87-3	75-01-04	74-83-9	75-00-3	75-69-4	75-35-4	75-15-0	76-13-1	67-64-1	75-09-2	79-20-9
	Trip Blank 1	6/29/2017	1706039-01	46.8	49.7	45.9	93.7	99.4	91.9	U	U	U	U	U	U	U	U	U	U	U	U
	Trip Blank 2	6/29/2017	1706041-01	46.6	50.2	45.6	93.2	100	91.2	U	U	U	U	U	U	U	U	U	U	U	U
	Trip Blank 3	6/30/2017	1706043-01	47.2	51.2	47.2	94.3	102	94.3	U	U	U	U	U	U	U	U	U	12.7	U	U
Backgroun	WS-01	6/29/2017	1706039-04	45.2	49	44.8	90.5	97.9	89.5	U	U	U	U	U	U	U	U	U	U	U	U
MS-2	WS-02	6/29/2017	1706039-05	44	47.2	43	88	94.5	85.9	U	U	U	U	U	U	U	U	U	U	U	U
MS-3	WS-03	6/29/2017	1706039-06	43.5	47.2	43.4	87.1	94.3	89.8	U	U	U	U	U	U	U	U	U	U	U	U
MS-4	WS-04	6/29/2017	1706039-07	45.3	48.8	44.1	90.6	97.6	88.2	U	U	U	U	U	U	U	U	U	U	U	U
MS-6	WS-05	6/30/2017	1706041-02	47.6	50.6	46.4	95.2	101	92.8	U	U	U	U	U	U	U	U	U	13.6	U	U
MS-7	WS-06	6/30/2017	1706041-05	43.6	46.9	42.8	87.2	93.8	85.6	U	U	U	U	U	U	U	U	U	U	U	U
MS-6, rep	WS-07: replicate 1	6/30/2017	1706041-03	50.2	54.7	50.2	100	109	100	U	U	U	U	U	U	U	U	U	11.3	U	U
Jireh TB	WS-08	6/29/2017	1706041-10	44.7	47.4	46.7	89.5	94.7	93.4	U	U	U	U	U	U	U	U	U	1210	U	2330
Warren TB	WS-09	6/30/2017	1706043-02	44.4	49.2	47.4	88.9	98.3	94.8	U	U	U	U	U	U	U	U	U	1790	U	U
	WS-10																				
East WW	WS-11	6/30/2017	1706041-07	49.5	53.7	49.2	99.1	107	98.5	U	U	U	U	U	U	U	U	U	U	U	U
West WW	WS-12	6/30/2017	1706041-09	49.7	51.6	47.2	99.4	103	94.3	U	U	U	U	U	U	U	U	U	U	U	U
	WS-13: Field blank	6/29/2017	1706039-02	46.5	49.5	45.6	92.9	98.9	91.2	U	U	U	U	U	U	U	U	U	U	U	U
East WW, r	WS-14: replicate 2	6/30/2017	1706041-08	47.3	50.1	46.4	94.6	100	92.8	U	U	U	U	U	U	U	U	U	U	U	U
	WS-15: Equip blank	6/29/2017	1706039-03	44.3	47.3	43.4	88.5	94.6	86.7	U	U	U	U	U	U	U	U	U	U	U	U
	WS-16: Equip blank 2	6/29/2017	1706041-06	43.8	45.6	41.7	87.6	91.1	83.4	U	U	U	U	U	U	U	U	U	U	U	U
MS-7, tripli	WS-17	6/30/2017	1706041-04	48.3	51.4	46.9	96.6	103	93.8	U	U	U	U	U	U	U	U	U	12.7	U	U

2.0 trans-1,2-dichloroethene	2.0 cis-1,2-Dichloroethene	2.0 Methyl tert-butyl ether	2.0 1,1-Dichloroethane	5.0 2-Butanone	2.0 Chloroform	2.0 1,2-Dichloroethane	2.0 1,1,1-Trichloroethane	2.0 Cyclohexane	2.0 Carbon tetrachloride	2.0 Benzene	2.0 Trichloroethene	2.0 Methylcyclohexane	2.0 1,2-Dichloropropane	2.0 Bromodichloromethane	2.0 cic-1,3-Dichloropropene	2.0 trans-1,3-Dichloropropene	2.0 1,1,2-Trichloroethane	2.0 Dibromochloroethane	2.0 Bromoform	5.0 4-Methyl-2-pentanone	2.0 Toluene	2.0 Tetrachloroethene
156-60-5	156-59-2	1634-04-4	75-34-3	78-93-3	67-66-3	107-06-2	71-55-6	110-82-7	56-23-5	71-43-2	79-01-6	108-87-2	78-87-5	75-27-4	10061-01-5	10061-02-6	79-00-5	124-48-1	75-25-2	108-10-1	108-88-3	127-18-4
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
U	U	U	U	5.5	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
U	U	U	U	162	U	U	U	46.9	U	531	U	57.8	U	U	U	U	U	U	U	22.1	265	U
U	U	U	U	123	U	U	U	144	U	1390	U	96.4	U	U	U	U	U	U	U	287	655	U
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U

5.0	2.0	2.0	2.0	4.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	5.0	5.0	
2-Hexanone	1,2-Dibromoethane	Chlorobenzene	Ethylbenzene	meta-/para-Xylene	ortho-Xylene	Styrene	Isopropylbenzene	1,1,2,2-Tetrachloroethane	1,3-Dichlorobenzene	1,4-Dichlorobenzene	1,2-Dichlorobenzene	1,2-Dibromo-3-chloropropane	1,2,4-Trichlorobenzene	COMMENTS
591-78-6	106-93-4	108-90-7	100-41-4		95-47-6	100-42-5	98-82-8	79-34-5	541-73-1	106-46-7	95-50-1	96-12-8	120-82-1	
U	U	U	U	U	U	U	U	U	U	U	U	U	U	
U	U	U	U	U	U	U	U	U	U	U	U	U	U	
U	U	U	U	U	U	U	U	U	U	U	U	U	U	
U	U	U	U	U	U	U	U	U	U	U	U	U	U	
U	U	U	U	U	U	U	U	U	U	U	U	U	U	
U	U	U	U	U	U	U	U	U	U	U	U	U	U	
U	U	U	U	U	U	U	U	U	U	U	U	U	U	
U	U	U	U	U	U	U	U	U	U	U	U	U	U	
U	U	U	U	U	U	U	U	U	U	U	U	U	U	Acetone: FB, J; in trip blank 3
U	U	U	U	U	U	U	U	U	U	U	U	U	U	Acetone: FB, J; in trip blank 3
U	U	U	26.8	156	80.3	U	5.4	U	U	U	U	U	U	Acetone: J
U	U	U	59.4	362	181	U	9.2	U	U	U	U	U	U	Acetone: J
U	U	U	U	U	U	U	U	U	U	U	U	U	U	
U	U	U	U	U	U	U	U	U	U	U	U	U	U	
U	U	U	U	U	U	U	U	U	U	U	U	U	U	
U	U	U	U	U	U	U	U	U	U	U	U	U	U	Acetone, Methyl acetate, 2-Butaone, 4-Methyl-2-pentane: J ph2: Vinyl Chloride & Styrene may be biased low.
U	U	U	U	U	U	U	U	U	U	U	U	U	U	
U	U	U	U	U	U	U	U	U	U	U	U	U	U	
U	U	U	U	U	U	U	U	U	U	U	U	U	U	

Volatiles: ug/l EPA Method 8260C

Location	Tentative Identifications / FieldID	PREPARED	insp_No/CAS	Unknown 1	TIC: Isobutane	TIC: Butane	2-Methylbutane	Pentane	Unknown alcohol	Unknown 2	TIC: Hexane	TIC: Methylcyclopentane	TIC: Ethyl acetate	TIC: Heptane	C8H16 isomer	TIC: Octane	Nonane	C9H12 (01) isomer	C9H12 (02) isomer	Decane	C9H12 (03) isomer	C9H12 (04) isomer	C9H12 (05) isomer	Undecane	C10H14 (01) isomer	C10H14 isomer	Dodecane
					75-28-5	106-97-8	78-78-4	109-66-0			110-54-3	96-37-7	141-78-6	142-82-5		111-65-9	111-84-2			124-18-5				1120-21-4			112-40-3
	Trip Blank 1	6/29/2017	1706039-01																								
	Trip Blank 2	6/29/2017	1706041-01																								
	Trip Blank 3	6/30/2017	1706043-01																								
Backgroun	WS-01	6/29/2017	1706039-04																								
MS-2	WS-02	6/29/2017	1706039-05																								
MS-3	WS-03	6/29/2017	1706039-06																								
MS-4	WS-04	6/29/2017	1706039-07																								
MS-6	WS-05	6/30/2017	1706041-02																								
MS-7	WS-06	6/30/2017	1706041-05																								
MS-6, rep	WS-07: replicate 1	6/30/2017	1706041-03																								
Jireh TB	WS-08	6/30/2017	1706041-10		73	67	18	63	34		51	66		27	21	22	31	56	28	39	120	57		54	19	32	60
Warren TB	WS-09	6/30/2017	1706043-02		280	300	100	160	31	23	76	180	26	30		26	23	69	33		22	150	69	22		25	
	WS-10																										
East WW	WS-11	6/30/2017	1706041-07																								
West WW	WS-12	6/30/2017	1706041-09																								
	WS-13: Field blank	6/29/2017	1706039-02																								
East WW, r	WS-14: replicate 2	6/30/2017	1706041-08																								
	WS-15: Equip blank	6/29/2017	1706039-03																								
	WS-16: Equip blank 2	6/29/2017	1706041-06																								
MS-7, tripli	WS-17	6/30/2017	1706041-04																								



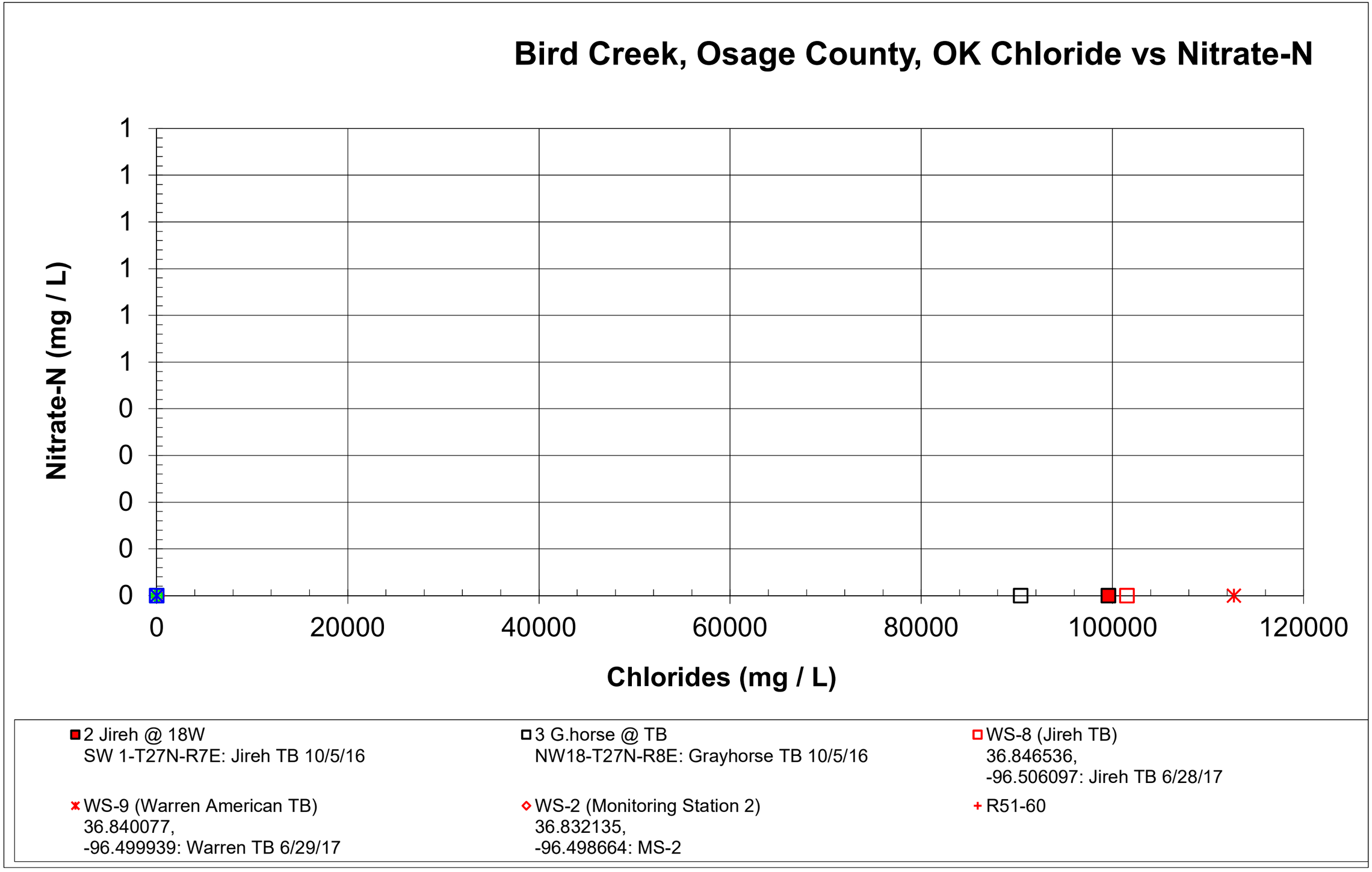
2 Jireh @ 18W
SW 1-T27N-R7E: Jireh TB 10/5/16

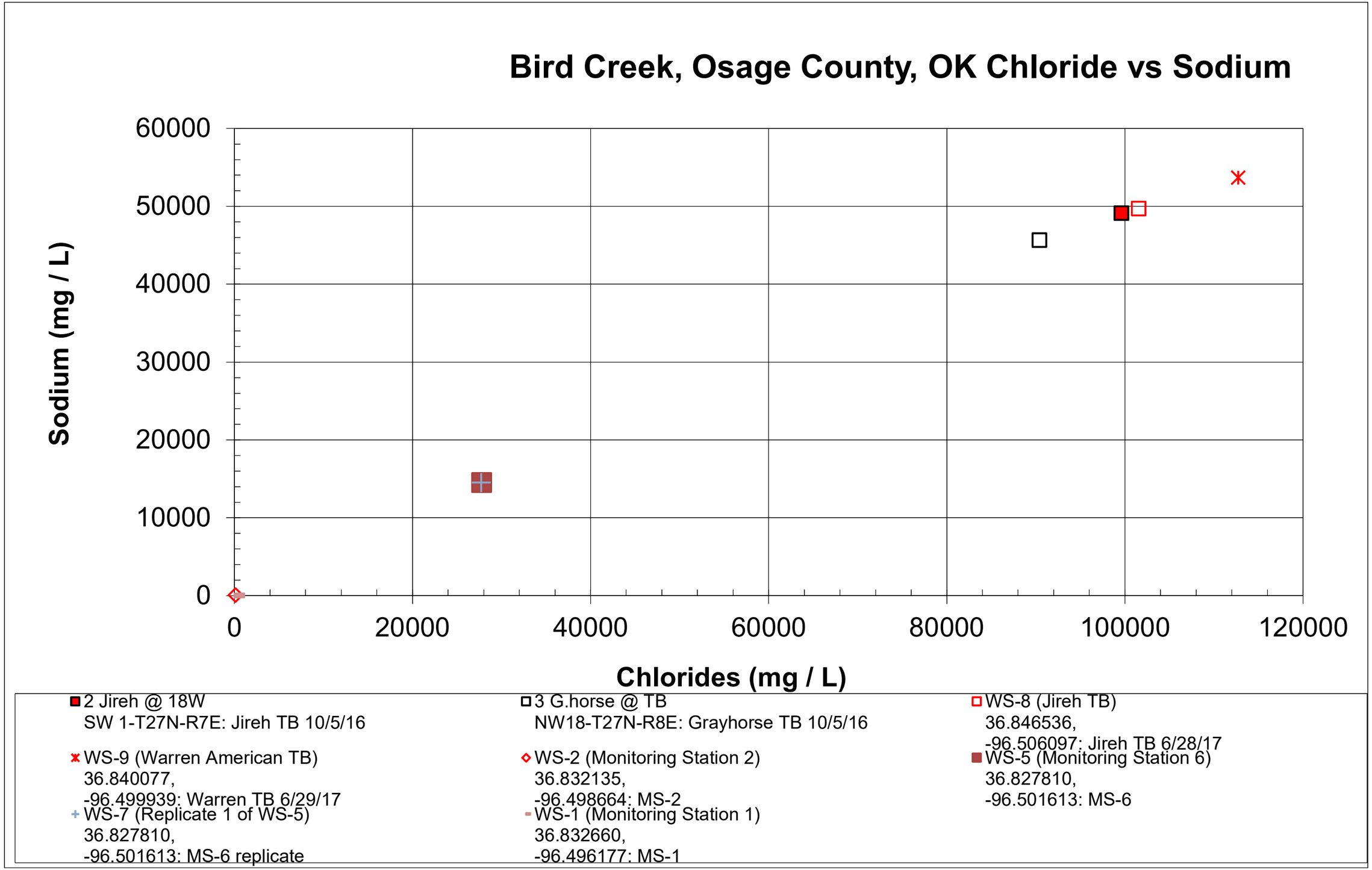
3 G.horse @ TB
NW18-T27N-R8E: Grayhorse TB 10/5/16

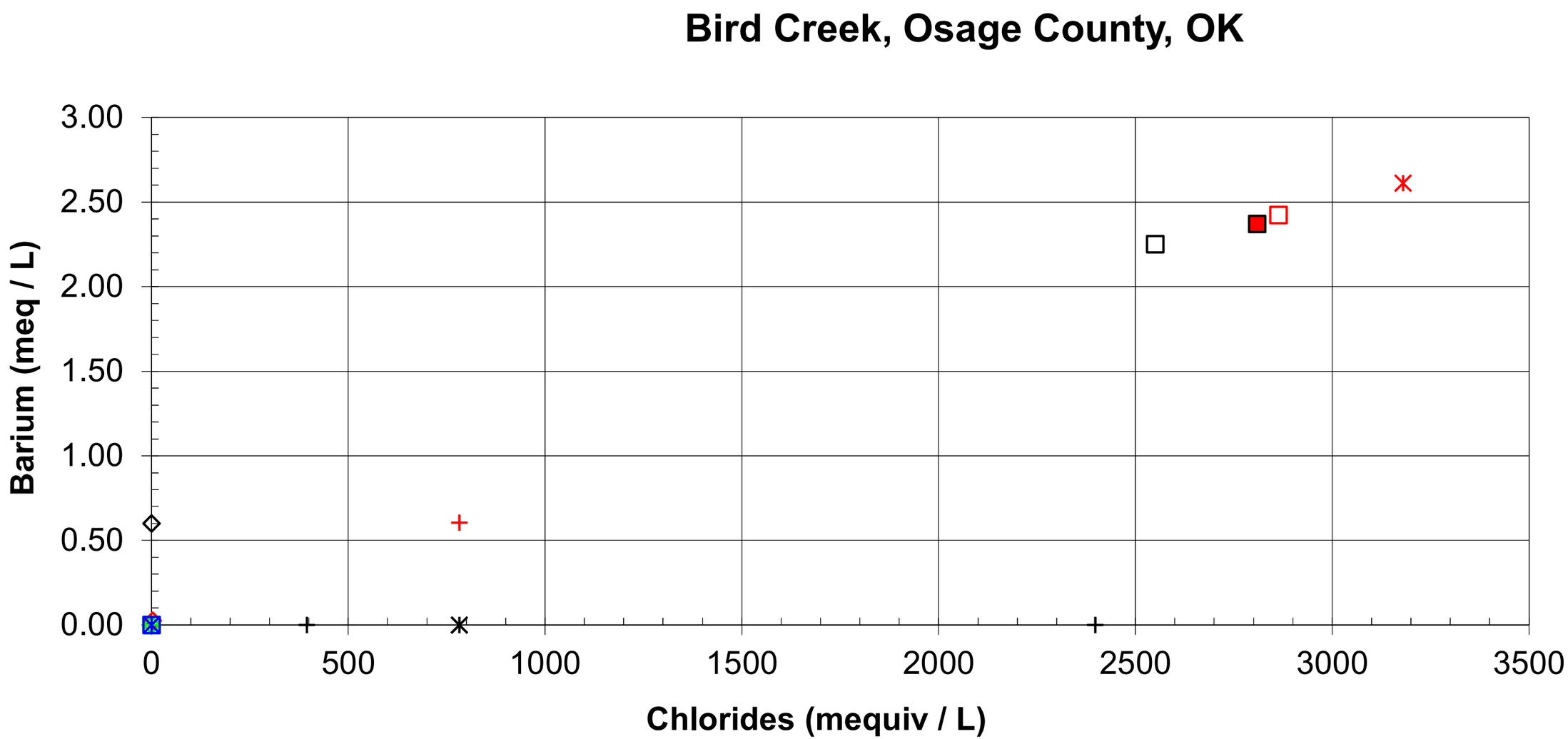
WS-8 (Jireh TB)
36.846536,
-96.506097: Jireh TB 6/28/17

WS-9 (Warren American TB)
36.840077,
-96.499939: Warren TB 6/29/17

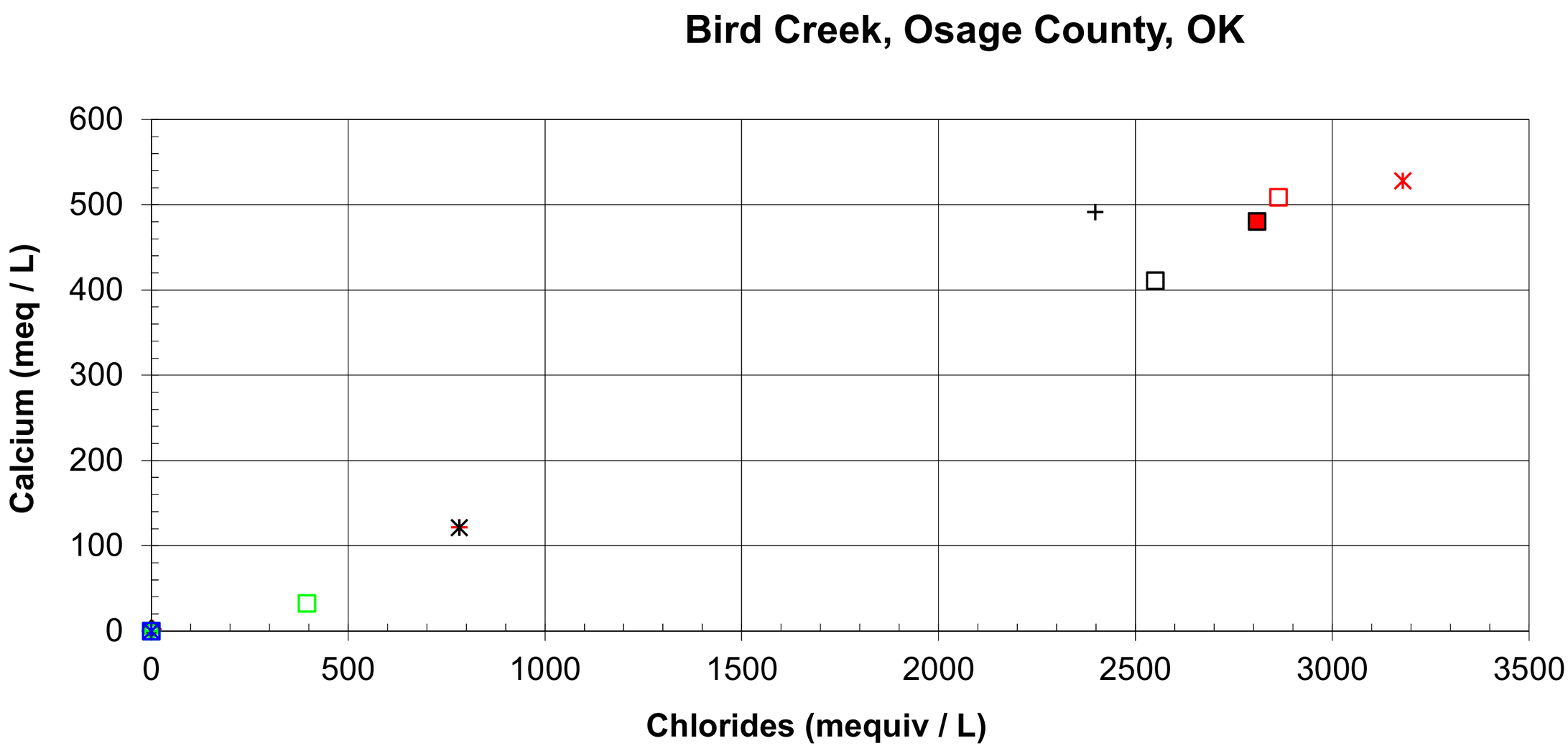
WS-2 (Monitoring Station 2)
36.832135,
-96.498664: MS-2


Bird Creek, Osage County, OK Chloride vs Nitrate-N
Nitrate-N (mg / L)
1
1
1
1
1
1
0
0
0
0
0
0
20000
40000
60000
80000
100000
120000
Chlorides (mg / L)
2 Jireh @ 18W
SW 1-T27N-R7E: Jireh TB 10/5/16
3 G.horse @ TB
NW18-T27N-R8E: Grayhorse TB 10/5/16
WS-8 (Jireh TB)
36.846536,
-96.506097: Jireh TB 6/28/17
WS-9 (Warren American TB)
36.840077,
-96.499939: Warren TB 6/29/17
WS-2 (Monitoring Station 2)
36.832135,
-96.498664: MS-2
R51-60

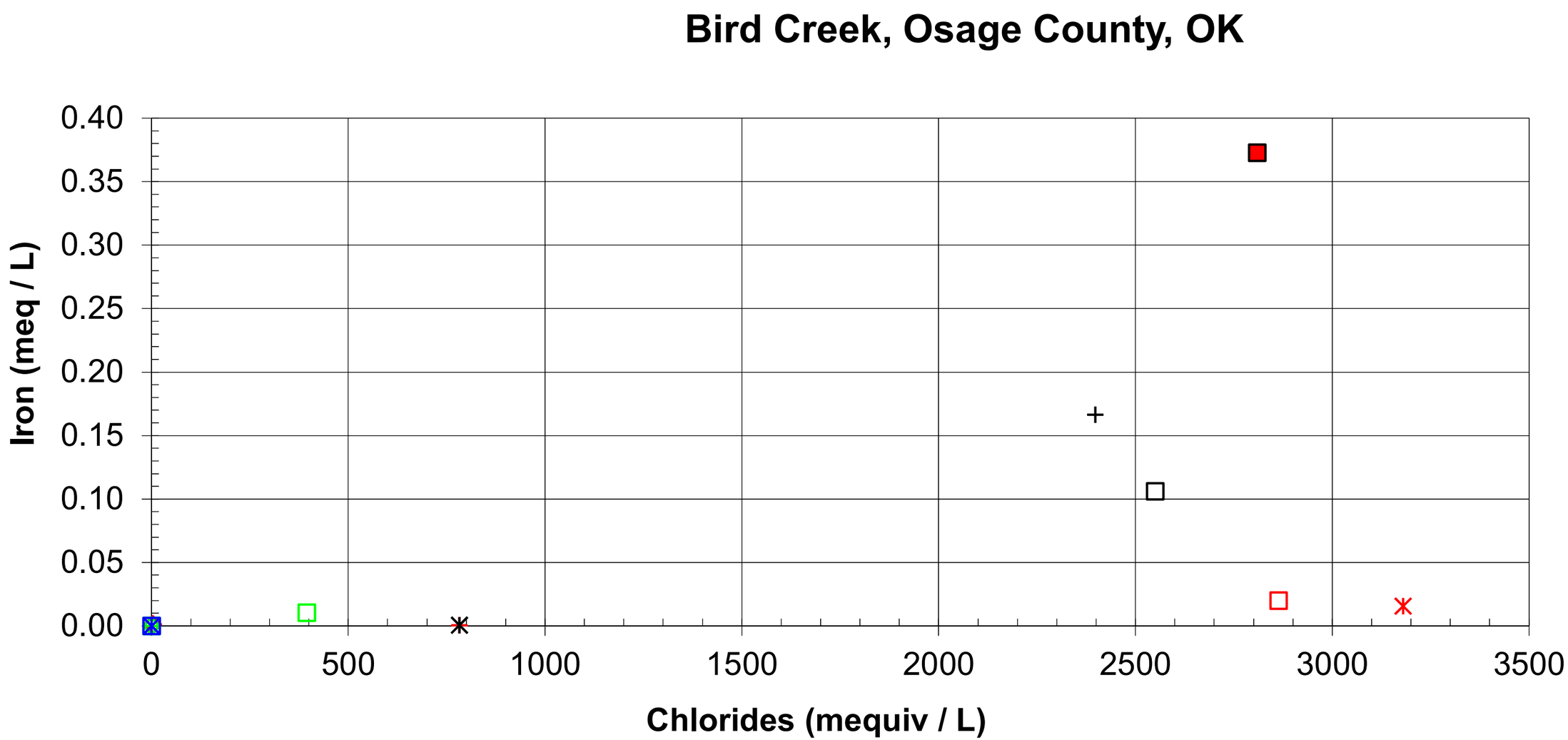

Bird Creek, Osage County, OK Chloride vs Sodium
Sodium (mg / L)
60000
50000
40000
30000
20000
10000
0
0
20000
40000
60000
80000
100000
120000
Chlorides (mg / L)
2 Jireh @ 18W
SW 1-T27N-R7E: Jireh TB 10/5/16
3 G.horse @ TB
NW18-T27N-R8E: Grayhorse TB 10/5/16
WS-8 (Jireh TB)
36.846536,
-96.506097: Jireh TB 6/28/17
WS-9 (Warren American TB)
36.840077,
-96.499939: Warren TB 6/29/17
WS-2 (Monitoring Station 2)
36.832135,
-96.498664: MS-2
WS-5 (Monitoring Station 6)
36.827810,
-96.501613: MS-6
WS-7 (Replicate 1 of WS-5)
36.827810,
-96.501613: MS-6 replicate
WS-1 (Monitoring Station 1)
36.832660,
-96.496177: MS-1



- 2 Jireh @ 18W
  SW 1-T27N-R7E: Jireh TB 10/5/16
- 3 G.horse @ TB
  NW18-T27N-R8E: Grayhorse TB 10/5/16
- WS-8 (Jireh TB)
  36.846536,
  -96.506097: Jireh TB 6/28/17
- WS-9 (Warren American TB)
  36.840077,
  -96.499939: Warren TB 6/29/17
- WS-2 (Monitoring Station 2)
  36.832135,
  -96.498664: MS-2
- WS-5 (Monitoring Station 6)
  36.827810,
  -96.501613: MS-6
- WS-7 (Replicate 1 of WS-5)
  36.827810,
  -96.501613: MS-6 replicate
- WS-1 (Monitoring Station 1)
  36.832660,
  -96.496177: MS-1
- Row 11-90



2 Jireh @ 18W SW 1-T27N-R7E: Jireh TB 10/5/16	3 G.horse @ TB NW18-T27N-R8E: Grayhorse TB 10/5/16	WS-8 (Jireh TB) 36.846536, -96.506097: Jireh TB 6/28/17
WS-9 (Warren American TB) 36.840077, -96.499939: Warren TB 6/29/17	WS-2 (Monitoring Station 2) 36.832135, -96.498664: MS-2	WS-5 (Monitoring Station 6) 36.827810, -96.501613: MS-6
WS-7 (Replicate 1 of WS-5) 36.827810, -96.501613: MS-6 replicate	WS-1 (Monitoring Station 1) 36.832660, -96.496177: MS-1	Grayhorse TB



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  -96.506097: Jireh TB 6/28/17
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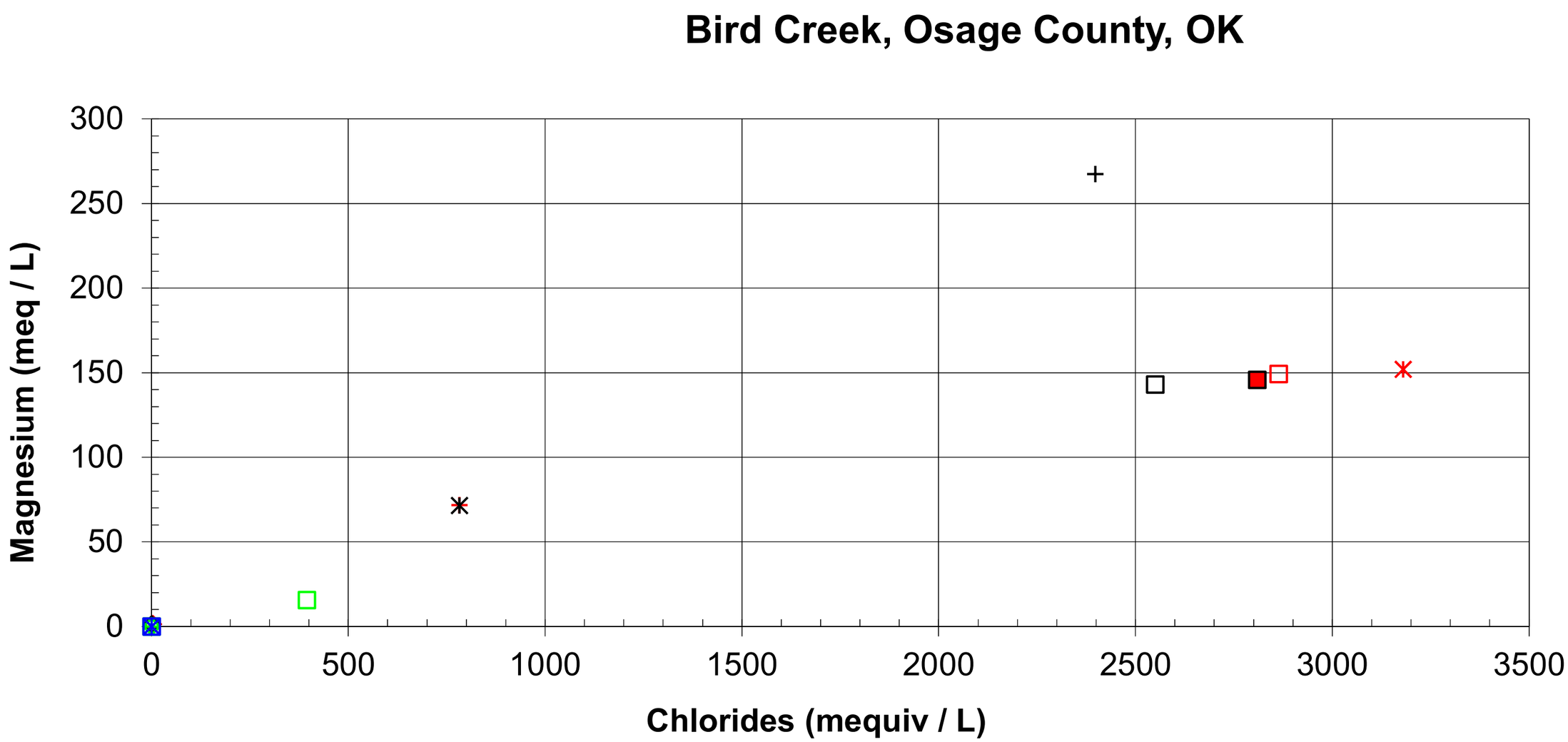
  -96.499939: Warren TB 6/29/17
- WS-2 (Monitoring Station 2)
  36.832135,
  -96.498664: MS-2
- WS-5 (Monitoring Station 6)
  36.827810,
  -96.501613: MS-6
- WS-7 (Replicate 1 of WS-5)
  36.827810,
  -96.501613: MS-6 replicate
- WS-1 (Monitoring Station 1)
  36.832660,
  -96.496177: MS-1
- Grayhorse TB



- 2 Jireh @ 18W
  SW 1-T27N-R7E: Jireh TB 10/5/16
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  -96.506097: Jireh TB 6/28/17
- WS-9 (Warren American TB)
  36.840077,
  -96.499939: Warren TB 6/29/17
- WS-2 (Monitoring Station 2)
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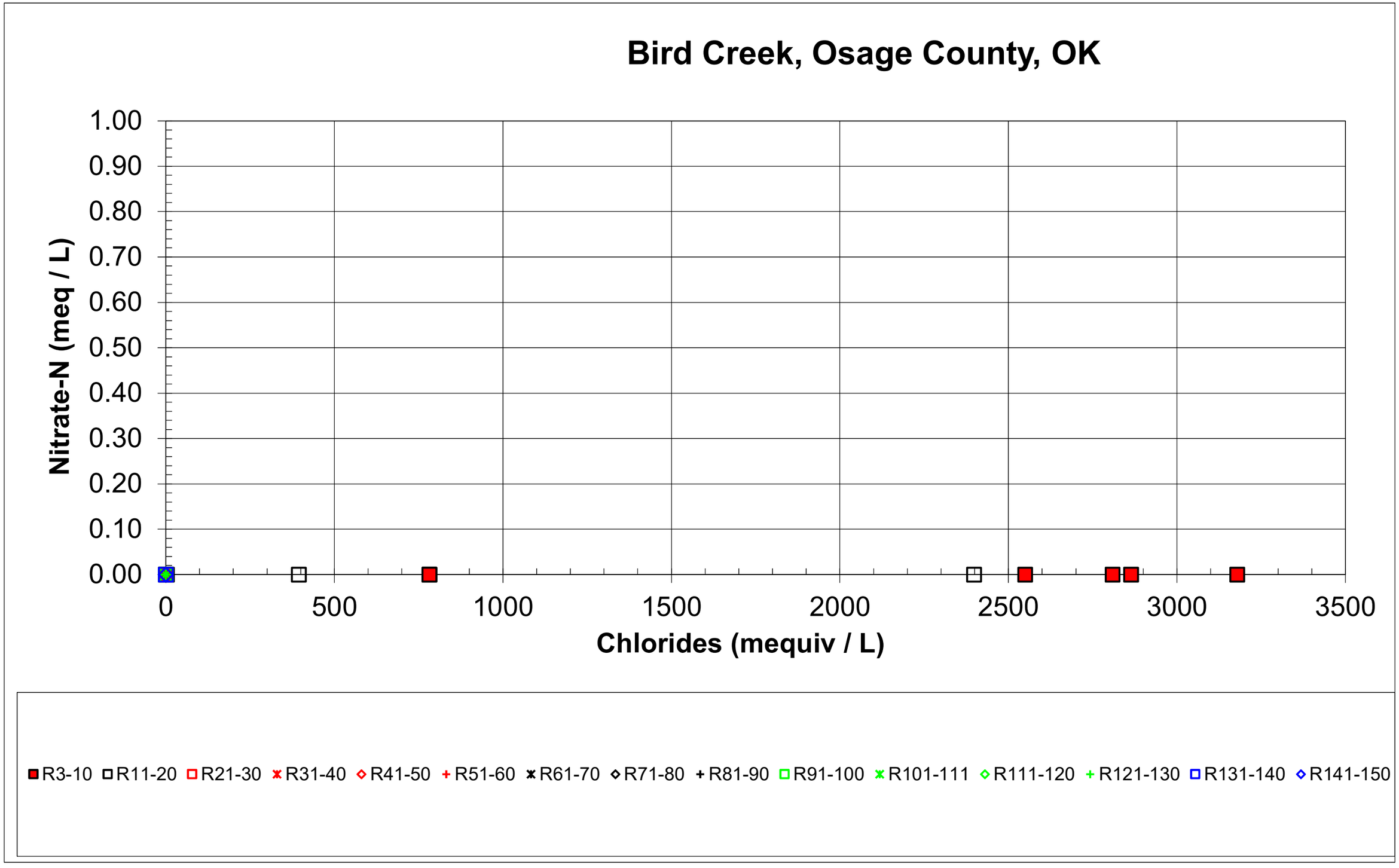
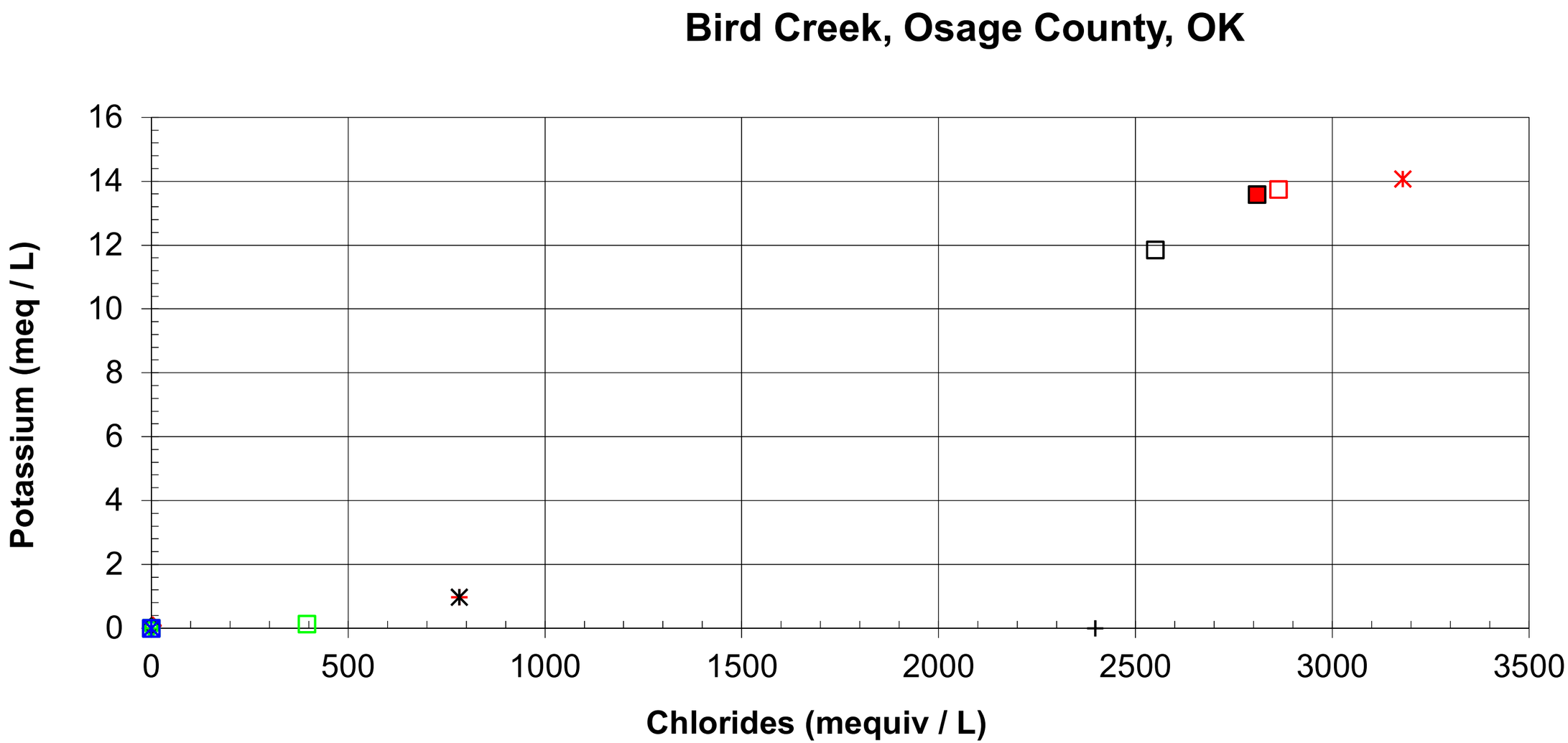
  -96.498664: MS-2
- WS-5 (Monitoring Station 6)
  36.827810,
  -96.501613: MS-6
- WS-7 (Replicate 1 of WS-5)
  36.827810,
  -96.501613: MS-6 replicate
- WS-1 (Monitoring Station 1)
  36.832660,
  -96.496177: MS-1
- Grayhorse TB: G.horse Bass smp


Bird Creek, Osage County, OK
Nitrate-N (meq / L)
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
0
500
1000
1500
2000
2500
3000
3500
Chlorides (mequiv / L)
R3-10
R11-20
R21-30
R31-40
R41-50
R51-60
R61-70
R71-80
R81-90
R91-100
R101-111
R111-120
R121-130
R131-140
R141-150



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  NW18-T27N-R8E: Grayhorse TB 10/5/16
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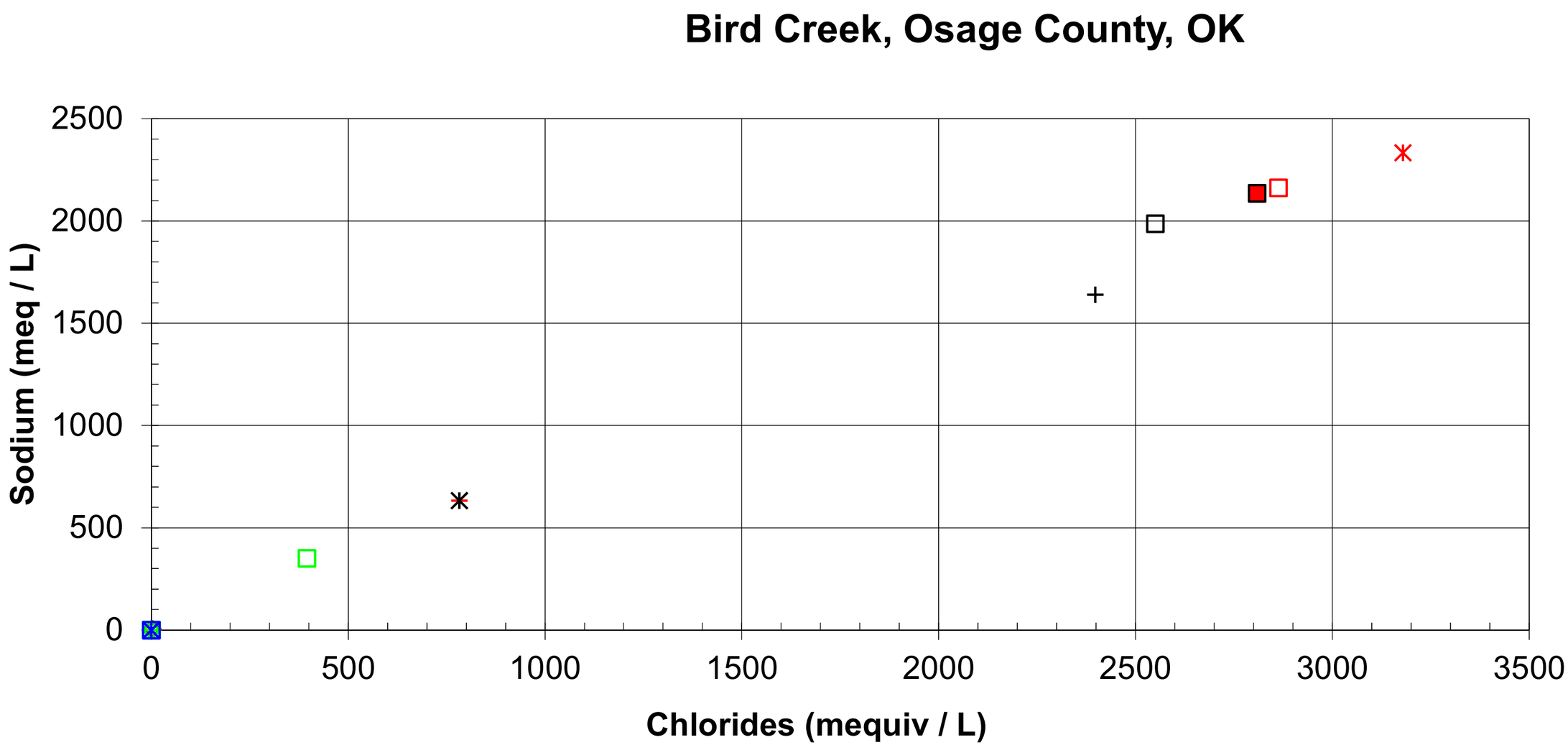
  -96.506097: Jireh TB 6/28/17
- WS-9 (Warren American TB)
  36.840077,
  -96.499939: Warren TB 6/29/17
- WS-2 (Monitoring Station 2)
  36.832135,
  -96.498664: MS-2
- WS-5 (Monitoring Station 6)
  36.827810,
  -96.501613: MS-6
- WS-7 (Replicate 1 of WS-5)
  36.827810,
  -96.501613: MS-6 replicate
- WS-1 (Monitoring Station 1)
  36.832660,
  -96.496177: MS-1
- Grayhorse TB: G.horse Bass smp



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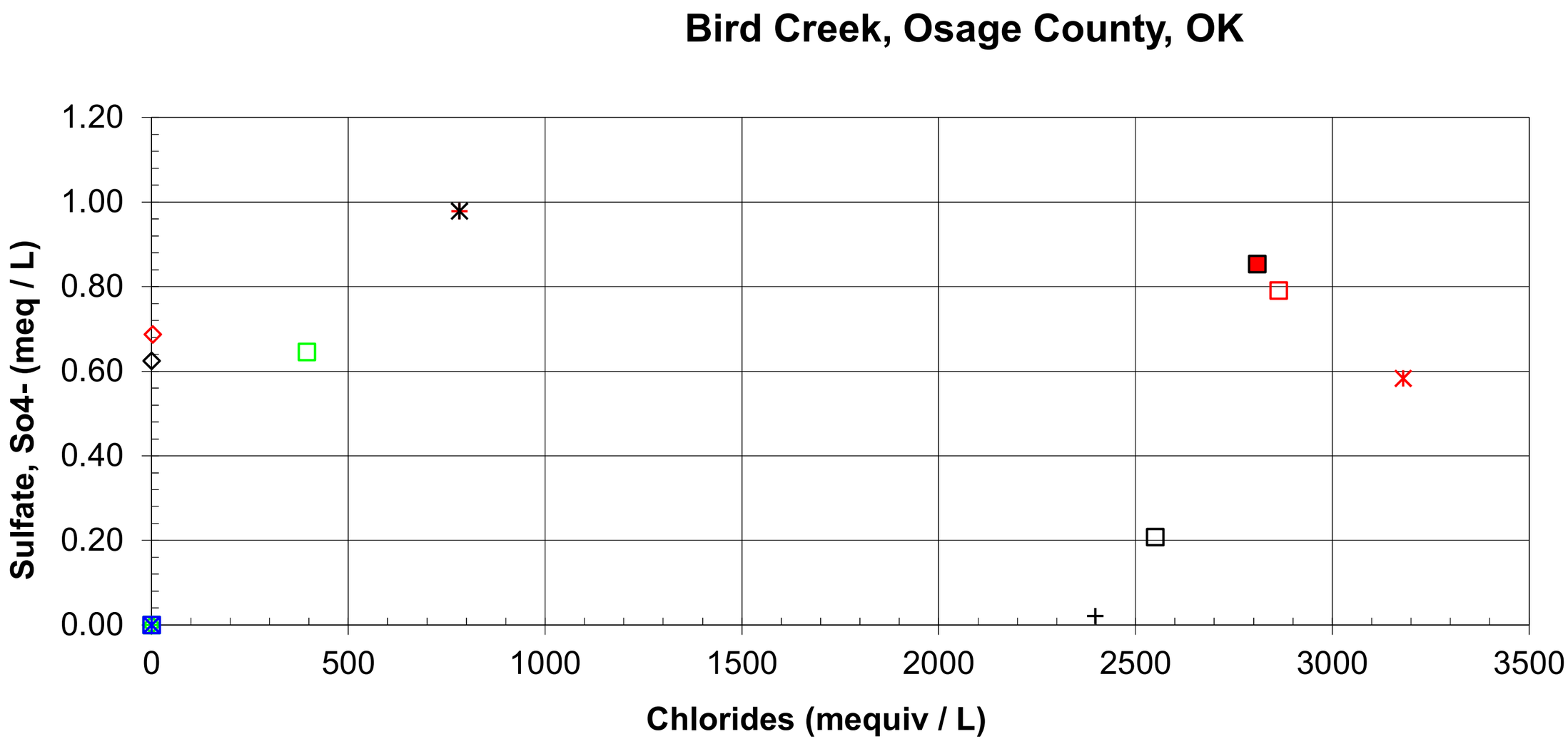
  NW18-T27N-R8E: Grayhorse TB 10/5/16
- WS-8 (Jireh TB)
  36.846536,
  -96.506097: Jireh TB 6/28/17
- WS-9 (Warren American TB)
  36.840077,
  -96.499939: Warren TB 6/29/17
- WS-2 (Monitoring Station 2)
  36.832135,
  -96.498664: MS-2
- WS-5 (Monitoring Station 6)
  36.827810,
  -96.501613: MS-6
- WS-7 (Replicate 1 of WS-5)
  36.827810,
  -96.501613: MS-6 replicate
- WS-1 (Monitoring Station 1)
  36.832660,
  -96.496177: MS-1
- Grayhorse TB



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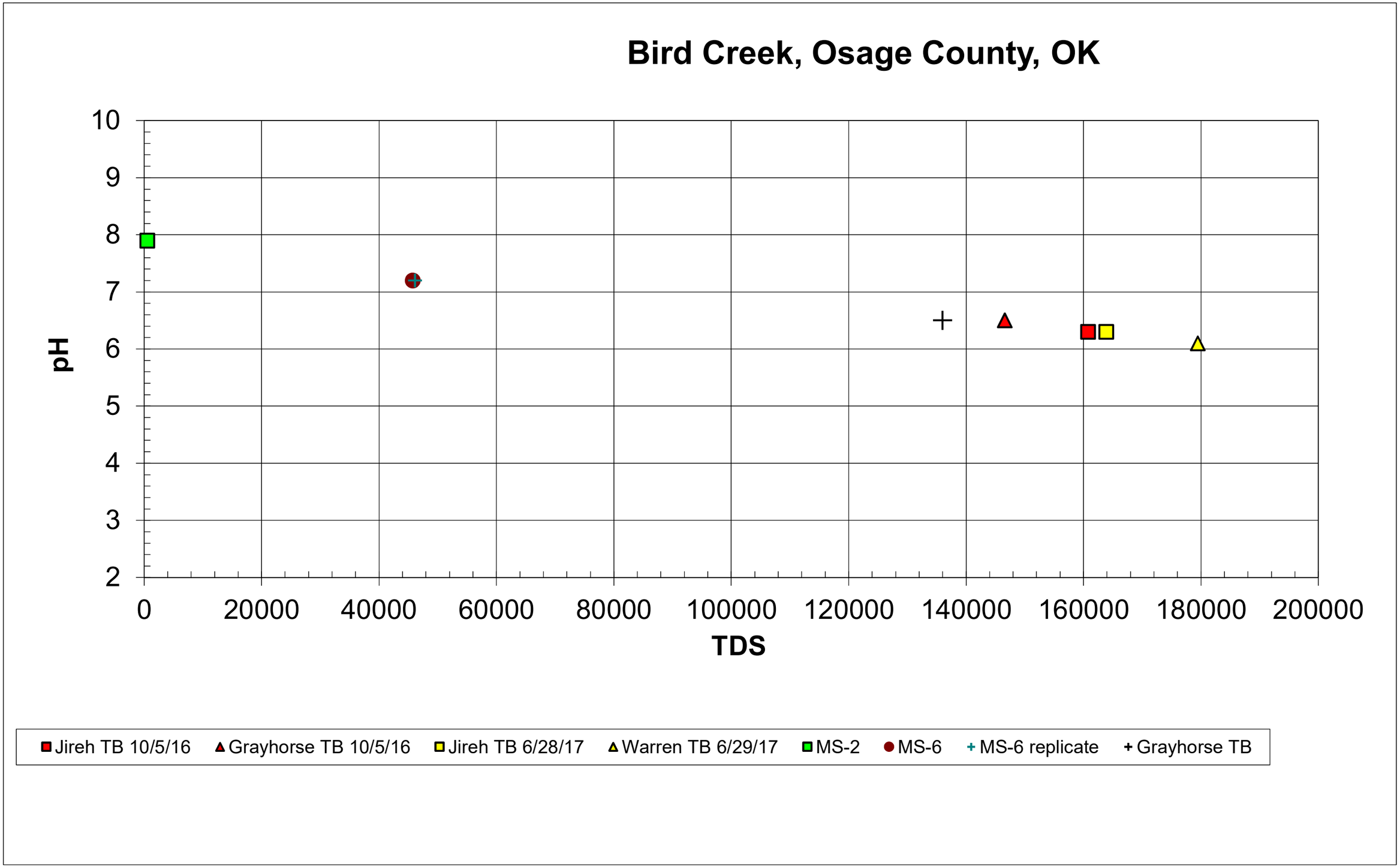
- WS-8 (Jireh TB)
  36.846536,
  -96.506097: Jireh TB 6/28/17
- WS-9 (Warren American TB)
  36.840077,
  -96.499939: Warren TB 6/29/17
- WS-2 (Monitoring Station 2)
  36.832135,
  -96.498664: MS-2
- WS-5 (Monitoring Station 6)
  36.827810,
  -96.501613: MS-6
- WS-7 (Replicate 1 of WS-5)
  36.827810,
  -96.501613: MS-6 replicate
- WS-1 (Monitoring Station 1)
  36.832660,
  -96.496177: MS-1
- Grayhorse TB: G.horse Bass smp


Bird Creek, Osage County, OK
pH
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TDS
Jireh TB 10/5/16
Grayhorse TB 10/5/16
Jireh TB 6/28/17
Warren TB 6/29/17
MS-2
MS-6
MS-6 replicate
Grayhorse TB

fraction	Left Plot			Upper Plot: Cations & Anions = 200%				Right Plot		
	Ca	Mg	Na+K	Na+K	Ca+Mg	SO4+Cl	CO3+HCO3	CO3+HCO3	Cl	SO4
2 Jireh @ 18WSW 1-T27N-R7E: Ji	0.173	0.052	0.774	0.774	0.226	0.999	0.001	0.001	0.999	0.000
3 G.horse @ TBNW18-T27N-R8E:	0.161	0.056	0.783	0.783	0.217	1.000	0.000	0.000	1.000	0.000
WS-8 (Jireh TB)36.846536,-96.506	0.180	0.053	0.768	0.768	0.232	1.000	0.000	0.000	0.999	0.000
WS-9 (Warren American TB)36.84	0.174	0.050	0.775	0.775	0.225	1.000	0.000	0.000	0.999	0.000
WS-2 (Monitoring Station 2)36.832	0.318	0.183	0.499	0.499	0.501	0.559	0.441	0.441	0.464	0.096
WS-5 (Monitoring Station 6)36.827	0.147	0.087	0.766	0.766	0.234	0.999	0.001	0.001	0.997	0.001
WS-7 (Replicate 1 of WS-5)36.827	0.146	0.087	0.767	0.767	0.233	0.999	0.001	0.001	0.997	0.001
WS-1 (Monitoring Station 1)36.832	0.576	0.246	0.178	0.178	0.822	0.162	0.838	0.838	0.025	0.137
Grayhorse TB: G.horse Bass smp	0.205	0.112	0.683	0.683	0.317	0.999	0.001	0.001	0.999	0.000
3' Hole: 3' Bass smp	0.081	0.039	0.879	0.879	0.121	0.994	0.006	0.006	0.992	0.002

	Left Plot			Upper Plot: Cations & Anions = 200%				Right Plot		
	Ca	Mg	Na,K,NH4	Na,K,NH4	Ca+Mg	SO4,Cl,NO3	CO3+HCO3	CO3+HCO3	Cl	SO4+NO3-N
2 Jireh @ 18WSW 1-T27N-R7E: Ji	0.173	0.052	0.774	0.774	0.226	0.999	0.001	0.001	0.999	0.000
3 G.horse @ TBNW18-T27N-R8E:	0.161	0.056	0.783	0.783	0.217	1.000	0.000	0.000	1.000	0.000
WS-8 (Jireh TB)36.846536,-96.506	0.180	0.053	0.768	0.768	0.232	1.000	0.000	0.000	0.999	0.000
WS-9 (Warren American TB)36.84	0.174	0.050	0.775	0.775	0.225	1.000	0.000	0.000	0.999	0.000
WS-2 (Monitoring Station 2)36.832	0.318	0.183	0.499	0.499	0.501	0.559	0.441	0.441	0.464	0.096
WS-5 (Monitoring Station 6)36.827	0.147	0.087	0.766	0.766	0.234	0.999	0.001	0.001	0.997	0.001
WS-7 (Replicate 1 of WS-5)36.827	0.146	0.087	0.767	0.767	0.233	0.999	0.001	0.001	0.997	0.001
WS-1 (Monitoring Station 1)36.832	0.576	0.246	0.178	0.178	0.822	0.162	0.838	0.838	0.025	0.137
Grayhorse TB: G.horse Bass smp	0.205	0.112	0.683	0.683	0.317	0.999	0.001	0.001	0.999	0.000
3' Hole: 3' Bass smp	0.081	0.039	0.879	0.879	0.121	0.994	0.006	0.006	0.992	0.002

Bird Creek, Osage County, OK Multiply values by 1

Location	FieldID	SAMPLE DATE	insp_NO	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Fe (mg/l)	Ba (mg/l)	Carb (ppm)	Bi-carb (ppm)	Sulfates (mg/l)	Cl (mg/l)	NITRATE-N (MG/L)	NITRITE-N (mg/l)	AMMONIUM-N (MG/L)	P-total (mg/l)	TDS	PH	SG	Sr (mg/l)	F (mg/l)	alkalinity	CO2	N2O	Cu (mg/l)	PPA (mg/l CaCO3)	MOA (mg/l CaCO3)	B (mg/l)	TKN	SiO2 (mg/L)	Al (mg/l)	Co (mg/l)	Pb (mg/l)	Mn (mg/l)	Zn (mg/l)	Temp (C)	Temp (F)
2 Jireh @ 18W SW 1-T27N-R7E	Jireh TB 10/5/16	05-Oct-16		9627	1770	49111	531	10.41			104	41	99594					160779	6.3				85			0.1			8.54						2.49	0.85		
3 G.horse @ TB NW18-T27N-R8E	Grayhorse TB 10/5/16	05-Oct-16		8236	1737	45675	463	2.96			64	10	90403					146588	6.5				52			0.1			8.11						2.4	11.34		
WS-8 (Jireh TB) 36.846536, -96.506097	Jireh TB 6/28/17	28-Jun-17		10194	1814	49706	537	0.56	34.8	0	78	38	1E+05					163893	6.3				64			0.07			8.73						2.46	0.19		
WS-9 (Warren American TB) 36.840077, -96.499939	Warren TB 6/29/17	29-Jun-17		10581	1847	53664	550	0.44	30.7	0	73	28	1E+05					179468	6.1				60			0.08			9.41						1.93	0.13		
WS-2 (Monitoring Station 2) 36.832135, -96.498664	MS-2	27-Jun-17		46	16	81	3	0.03	0.094	0	193	33	118					519.4	7.9				158						0.09						0	0		
WS-5 (Monitoring Station 6) 36.827810, -96.501613	MS-6	28-Jun-17		2441	873	14529	38	0.02	6.04	0	61	47	27740					45738	7.2				50			0.04			2.18						0	0.04		
WS-7 (Replicate 1 of WS-5) 36.827810, -96.501613	MS-6 replicate	28-Jun-17		2424	870	14548	38	0.02	6.87	0	61	47	27734					46134	7.2				50			0.04			2.16						0	0.04		
WS-1 (Monitoring Station 1) 36.832660, -96.496177	MS-1	27-Jun-17		54	14	18	2	0	0.104	0	233	30	4					355.6	8.3				191						0.07						0	0		
Grayhorse TB	G.horse Bass smp	09-Nov-16		9850	3250	37671		4.65		0.0	146	1	85000					135974	6.5	1.1	0			0.2														
3' Hole	3' Bass smp	09-Nov-16		648	190	8038	5	0.29		0	146	31	14000					23058	6.5		0																	

mequiv/l

	Ca	Mg	Na	K	Fe	Ba	CO3	HCO3	SO4	Cl	Cations	Anions	Error	check	NH4-N	Sr	NO3-N	NO2-N	Fluoride	B	TKN-N
2 Jireh @ 18WSW 1-T27N-R7E: Jireh TB 10/5/16	480.39	145.65	2136.21	13.58	0.37	0.00	0.00	1.70	0.85	2809.18	2776.20	2811.74	-0.64%	y	0.00	0.00	0.00	0.00	0.00	2.37	0.00
3 G.horse @ TBNW18-T27N-R8E: Grayhorse TB 10/5/16	410.98	142.93	1986.75	11.84	0.11	0.00	0.00	1.05	0.21	2549.94	2552.61	2551.20	0.03%	y	0.00	0.00	0.00	0.00	0.00	2.25	0.00
WS-8 (Jireh TB)36.846536,-96.506097: Jireh TB 6/28/17	508.68	149.27	2162.09	13.73	0.02	0.51	0.00	1.28	0.79	2863.71	2833.80	2865.78	-0.56%	y	0.00	0.00	0.00	0.00	0.00	2.42	0.00
WS-9 (Warren American TB)36.840077,-96.499939: Warren TB 6/29/17	527.99	151.99	2334.26	14.07	0.02	0.45	0.00	1.20	0.58	3179.56	3028.32	3181.34	-2.46%	y	0.00	0.00	0.00	0.00	0.00	2.61	0.00
WS-2 (Monitoring Station 2)36.832135,-96.498664: MS-2	2.30	1.32	3.52	0.08	0.00	0.00	0.00	3.16	0.69	3.33	7.21	7.18	0.24%	y	0.00	0.00	0.00	0.00	0.00	0.02	0.00
WS-5 (Monitoring Station 6)36.827810,-96.501613: MS-6	121.81	71.84	631.98	0.97	0.00	0.09	0.00	1.00	0.98	782.44	826.59	784.42	2.62%	y	0.00	0.00	0.00	0.00	0.00	0.60	0.00
WS-7 (Replicate 1 of WS-5)36.827810,-96.501613: MS-6 replicate	120.96	71.59	632.80	0.97	0.00	0.10	0.00	1.00	0.98	782.28	826.32	784.25	2.61%	y	0.00	0.00	0.00	0.00	0.00		0.00
WS-1 (Monitoring Station 1)36.832660,-96.496177: MS-1	2.69	1.15	0.78	0.05	0.00	0.00	0.00	3.82	0.62	0.11	4.68	4.56	1.35%	y	0.00	0.00	0.00	0.00	0.00	0.60	0.00
Grayhorse TB: G.horse Bass smp	491.52	267.43	1638.60	0.00	0.17	0.00	0.00	2.39	0.02	2397.54	2397.72	2399.95	-0.05%	y	0.00	0.00	0.00	0.00	0.00		0.00
3' Hole: 3' Bass smp	32.34	15.63	349.63	0.13	0.01	0.00	0.00	2.39	0.65	394.89	397.74	397.93	-0.02%	y	0.00	0.00	0.00	0.00	0.00		0.00
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:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00		0.00

Brine Balance

	Cation+NH4	Anion+N	Error	check	Cation+B,NH4	Error	check	Na/Cl	K+2Ca+2Mg+H+Na	SO4+2CO3+Cl+OH	[H+] *1000 meq	pH	[OH-] *1000 meq	SiO2	Al	Co	Pb	Mn	Zn
2 Jireh @ 18WSW 1-T27N-R7E: Jireh TB 10/5/16	2776.20	2811.74	-0.64%	n	2778.57	0.59%	n	0.760438	3401.868702	2810.04	0.000501187	6.30	1.99526E-05	0.00	0.00	0.00	0.00	0.09	0.03
3 G.horse @ TBNW18-T27N-R8E: Grayhorse TB 10/5/16	2552.61	2551.20	0.03%	n	2554.86	-0.07%	n	0.779137	3106.418379	2550.15	0.000316228	6.50	3.16228E-05	0.00	0.00	0.00	0.00	0.09	0.35
WS-8 (Jireh TB)36.846536,-96.506097: Jireh TB 6/28/17	2833.80	2865.78	-0.56%	n	2836.22	0.52%	n	0.754998	3491.731373	2864.50	0.000501187	6.30	1.99526E-05	0.00	0.00	0.00	0.00	0.09	0.01
WS-9 (Warren American TB)36.840077,-96.499939: Warren TB 6/29/17	3028.32	3181.34	-2.46%	n	3030.93	2.42%	n	0.734144	3708.281136	3180.14	0.000794328	6.10	1.25893E-05	0.00	0.00	0.00	0.00	0.07	0.00
WS-2 (Monitoring Station 2)36.832135,-96.498664: MS-2	7.21	7.18	0.24%	n	7.24	-0.41%	n	1.058574	10.82405732	4.02	1.25893E-05	7.90	0.000794328	0.00	0.00	0.00	0.00	0.00	0.00
WS-5 (Monitoring Station 6)36.827810,-96.501613: MS-6	826.59	784.42	2.62%	n	827.20	-2.65%	n	0.807695	1020.235569	783.42	6.30957E-05	7.20	0.000158489	0.00	0.00	0.00	0.00	0.00	0.00
WS-7 (Replicate 1 of WS-5)36.827810,-96.501613: MS-6 replicate	826.32	784.25	2.61%	n	826.32	-2.61%	n	0.808927	1018.871691	783.25	6.30957E-05	7.20	0.000158489	0.00	0.00	0.00	0.00	0.00	0.00
WS-1 (Monitoring Station 1)36.832660,-96.496177: MS-1	4.68	4.56	1.35%	n	5.28	-7.36%	n	6.939543	8.527384281	0.74	5.01187E-06	8.30	0.001995262	0.00	0.00	0.00	0.00	0.00	0.00
Grayhorse TB: G.horse Bass smp	2397.72	2399.95	-0.05%	n	2397.72	0.05%	n	0.68345	3156.501686	2397.56	0.000316228	6.50	3.16228E-05	0.00	0.00	0.00	0.00	0.00	0.00
3' Hole: 3' Bass smp	397.74	397.93	-0.02%	n	397.74	0.02%	n	0.885398	445.7015995	395.53	0.000316228	6.50	3.16228E-05	0.00	0.00	0.00	0.00	0.00	0.00
:								0						0.00	0.00	0.00	0.00	0.00	0.00
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:								0						0.00	0.00	0.00	0.00	0.00	0.00
:								0						0.00	0.00	0.00	0.00	0.00	0.00
:								0						0.00	0.00	0.00	0.00	0.00	0.00
:								0						0.00	0.00	0.00	0.00	0.00	0.00
:								0						0.00	0.00	0.00	0.00	0.00	0.00
:								0						0.00	0.00	0.00	0.00	0.00	0.00
:								0						0.00	0.00	0.00	0.00	0.00	0.00
:								0						0.00	0.00	0.00	0.00	0.00	0.00
:								0						0.00	0.00	0.00	0.00	0.00	0.00
:								0						0.00	0.00	0.00	0.00	0.00	0.00
:								0						0.00	0.00	0.00	0.00	0.00	0.00
:								0						0.00	0.00	0.00	0.00	0.00	0.00
:								0						0.00	0.00	0.00	0.00	0.00	0.00
:								0						0.00	0.00	0.00	0.00	0.00	0.00

:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0	0.00	0.00	0.00	0.00	0.00	0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0	0.00	0.00	0.00	0.00	0.00	0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0	0.00	0.00	0.00	0.00	0.00	0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0	0.00	0.00	0.00	0.00	0.00	0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0	0.00	0.00	0.00	0.00	0.00	0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0	0.00	0.00	0.00	0.00	0.00	0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0	0.00	0.00	0.00	0.00	0.00	0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0	0.00	0.00	0.00	0.00	0.00	0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0	0.00	0.00	0.00	0.00	0.00	0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0	0.00	0.00	0.00	0.00	0.00	0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0	0.00	0.00	0.00	0.00	0.00	0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0	0.00	0.00	0.00	0.00	0.00	0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0	0.00	0.00	0.00	0.00	0.00	0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0	0.00	0.00	0.00	0.00	0.00	0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0	0.00	0.00	0.00	0.00	0.00	0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0	0.00	0.00	0.00	0.00	0.00	0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0	0.00	0.00	0.00	0.00	0.00	0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0	0.00	0.00	0.00	0.00	0.00	0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0	0.00	0.00	0.00	0.00	0.00	0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0	0.00	0.00	0.00	0.00	0.00	0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0	0.00	0.00	0.00	0.00	0.00	0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0	0.00	0.00	0.00	0.00	0.00	0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0	0.00	0.00	0.00	0.00	0.00	0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0	0.00	0.00	0.00	0.00	0.00	0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0	0.00	0.00	0.00	0.00	0.00	0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0	0.00	0.00	0.00	0.00	0.00	0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0	0.00	0.00	0.00	0.00	0.00	0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0	0.00	0.00	0.00	0.00	0.00	0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0	0.00	0.00	0.00	0.00	0.00	0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0	0.00	0.00	0.00	0.00	0.00	0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0	0.00	0.00	0.00	0.00	0.00	0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0	0.00	0.00	0.00	0.00	0.00	0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0	0.00	0.00	0.00	0.00	0.00	0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0	0.00	0.00	0.00	0.00	0.00	0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0	0.00	0.00	0.00	0.00	0.00	0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0	0.00	0.00	0.00	0.00	0.00	0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0	0.00	0.00	0.00	0.00	0.00	0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0	0.00	0.00	0.00	0.00	0.00	0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0	0.00	0.00	0.00	0.00	0.00	0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0	0.00	0.00	0.00	0.00	0.00	0.00
:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0	0.00	0.00	0.00	0.00	0.00	0.00
max	527.99	267.43	2334.26	14.07			0.00	3.82	0.98	3179.56	0.00	0.00	0.00	0.00	0.00	2.61								

	Aluminium	Ammonium	Boron	Barium	Berylium	Calcium	Cesium	Copper	Copper	Copper	Iron	Lead	Lithium	Magnesium	Manganese	Mercury	Nickel	Potassium	Rubidium	Silver	Sodium	Strontium	Tin	Zinc
Cations	**Al**	**NH4**	**B**	**Ba**	**Be**	**Ca**	**Cs**	**Cu(1)**	**Cu(2)**	**Cu(3)**	**Fe**	**Pb**	**Li**	**Mg**	**Mn**	**Hg**	**Ni**	**K**	**Rb**	**Ag**	**Na**	**Sr**	**Sn**	**Zn**
MW	26.9815	18.0383	10.81	137.34	9.012	40.08	132.91	63.546	63.546	63.546	55.847	207.2	6.941	24.305	54.938	200.59	58.71	39.0983	85.47	107.868	22.98977	87.62	118.69	65.37
v	3	1	3	2	2	2	1	1	2	3	2	2	1	2	2	2	2	1	1	1	1	2	2	2
mg/mequiv	8.9938	18.0383	3.6033333	68.67	4.506	20.04	132.91	63.546	31.773	21.182	27.9235	103.6	6.941	12.1525	27.469	100.3	29.355	39.0983	85.47	107.868	22.98977	43.81	59.345	32.685

	Acetate	Arsenate	Bromide	Carbonate	Chloride	Chromate	Cyanide	Dichromate	Fluoride	Hydroxide	Iodide	Nitrate	Oxalate	Permanganate	Phosphate	Silicate	Sulfate	Sulfide	Sulfite	Thiocyanate	Thiosulfate
Anions	**CH3CO2**	**AsO4**	**Br**	**CO3**	**Cl**	**CrO4**	**CN**	**Cr2O7**	**F**	**OH**	**I**	**NO3**	**C2O4**	**MnO4**	**PO4**	**SiO3**	**SO4**	**S**	**SO3**	**SCN**	**S2O3**
MW	59.0445	138.9192	79.909	60.0092	35.453	115.9936	26.0177	215.9878	18.9984	33.0679	126.9044	62.0049	88.0196	118.9356	94.9716	76.084	96.0576	32.06	80.0582	58.0777	112.1182
v	-1	-3	-1	-2	-1	-2	-1	-2	-1	-1	-1	-1	-2	-1	-3	-2	-2	-2	-2	-1	-2
mg/mequiv	59.0445	46.3064	79.909	30.0046	35.453	57.9968	26.0177	107.9939	18.9984	33.0679	126.9044	62.0049	44.0098	118.9356	31.6572	38.042	48.0288	16.03	40.0291	58.0777	56.0591

	CaCO3	**CO2**						Bicarbonate														
MW	100.0892	44.0098		cos(60)	sin(60)	tan(60)		**HCO3**	**H2S**						**HPO4**	**SiO2**						
v	2			0.5	0.866025	1.732051		61.0171	34.0758						95.9726	60.084						
mg/mequiv	50.0446							-1	2	sign?					-2	1						
								61.0171	17.0379						47.9863	60.084						
	C	**H**	**N**	**O**	**S**	**Si**	**As**	**Cr**	**Co**													
MW	12.011	1.0079	14.0067	15.9994	32.06	28.0855	74.9216	51.996	58.933													
									+3													
									19.6443													
	NO3-N	**NO2-N**	**NH4-N**			**NO2**																
MW						46.0055																
v						1																
mg/mequiv		use N value				46.0055																

MCL mg/l	10			45	
	0.713944			0.725749	

Hardness

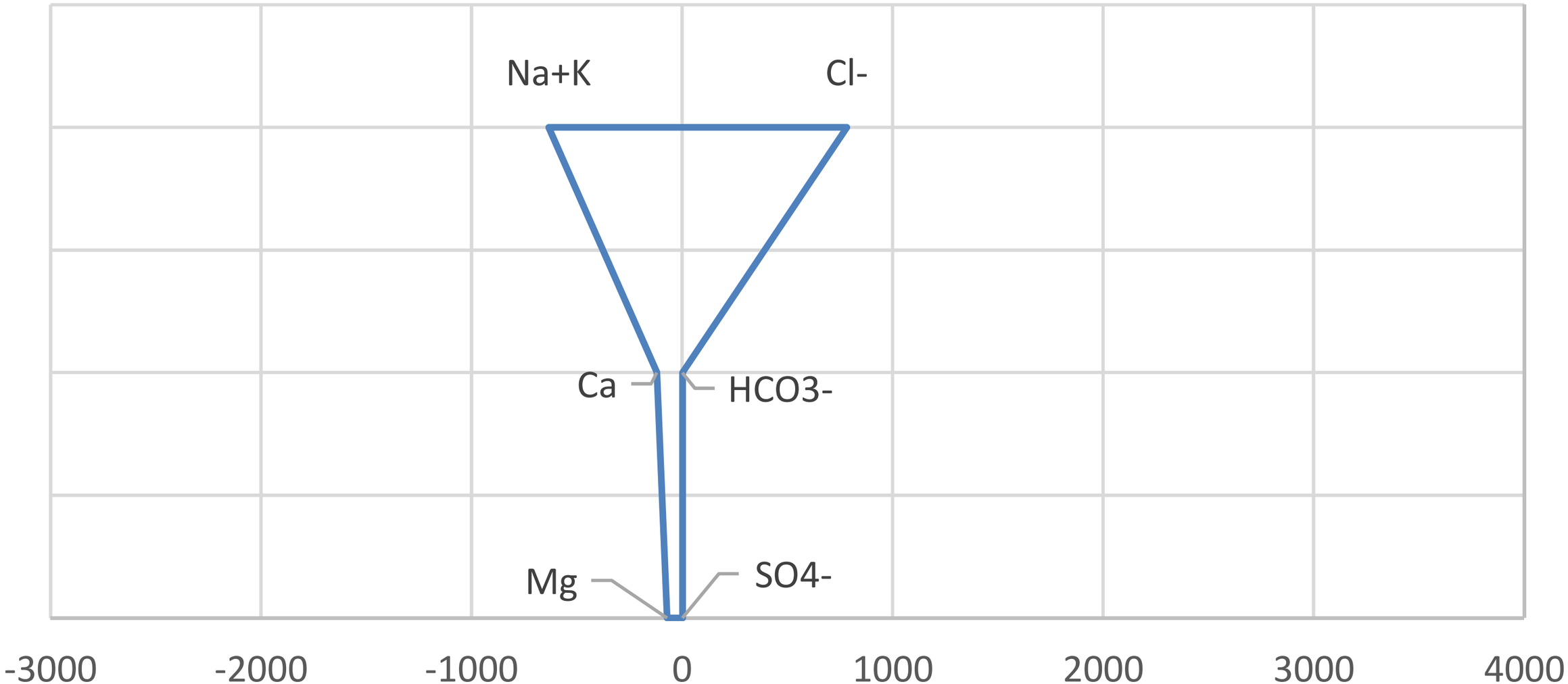
cations	Ca	Mg	Sr	Fe	Mn
	20.04	12.1525	43.81	27.9235	27.469
assoc anions	**HCO3**	SO4	Cl	NO3	SiO3
	61.0171	48.0288	35.453	62.0049	38.04185

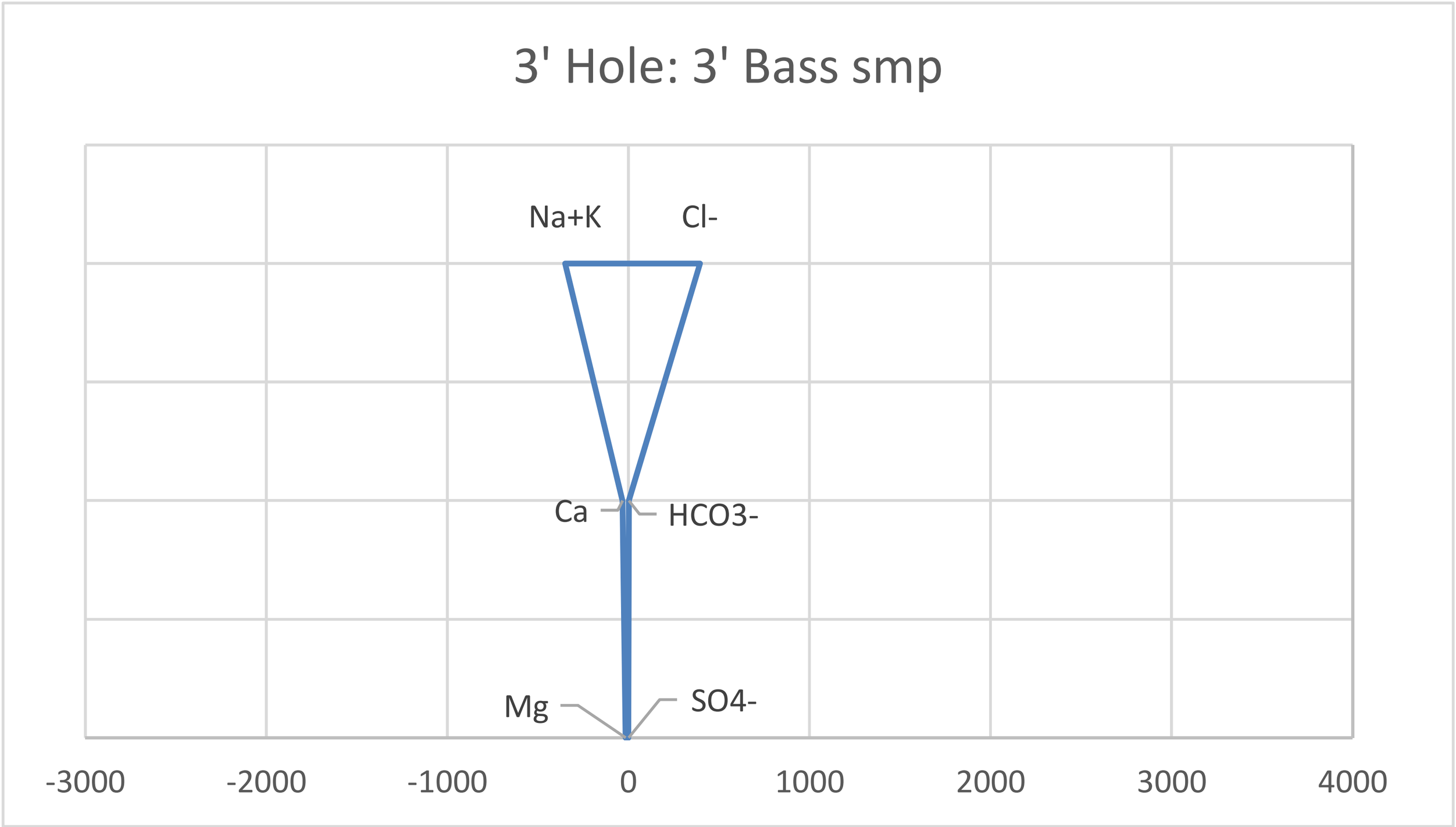
Total Alkalinity	**CO3**	**HCO3**	**OH**			**pH**
	30.0046	61.0171	33.0679	pH >9.0	**MOA**	4.5
	PPA >		PPA >			
	MOA/2		MOA/2		**PPA**	8.3
	PPA =					
	MOA					
	PPA <	PPA <				
	MOA/2	MOA/2				
		PPA = 0				
			PPA = MOA	pH >9.0		
		pH < 8.3				

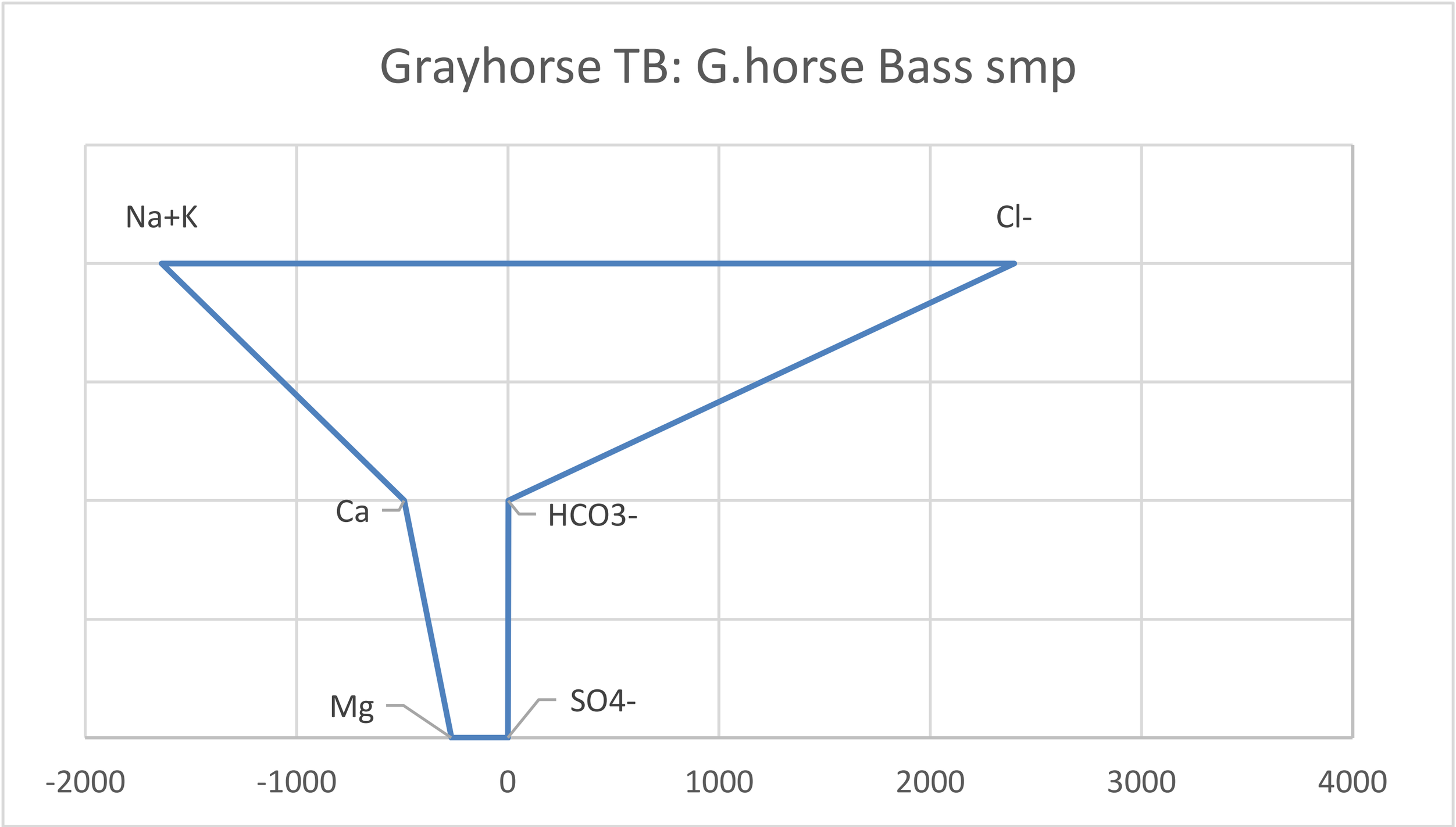
fraction								0 Left Plot		0	0 Right Plot		0	
	0	**%Ca**	**%Mg**	**%Na+K**	**%CO3+HCO3**	**%Cl**	**%SO4**	**Ca**	**Mg**	**Na+K**	**CO3+HCO**	**Cl**	**SO4**	**sum**
2 Jireh @ 18WSW 1-T27N		-8.65%	-2.62%	-38.72%	0.03%	49.96%	0.02%	0.173038	0.052463	0.774364	0.000606	0.99909	0.000304	1.999866
3 G.horse @ TBNW18-T2		-8.05%	-2.80%	-39.15%	0.02%	49.98%	0.00%	0.161003	0.055995	0.782961	0.000411	0.999507	8.16E-05	1.999958
WS-8 (Jireh TB)36.84653(		-8.98%	-2.63%	-38.39%	0.02%	49.96%	0.01%	0.179506	0.052675	0.767813	0.000446	0.999278	0.000276	1.999993
WS-9 (Warren American T		-8.72%	-2.51%	-38.77%	0.02%	49.97%	0.01%	0.174352	0.050188	0.775455	0.000376	0.999441	0.000183	1.999995
WS-2 (Monitoring Station 2		-15.91%	-9.13%	-24.96%	22.03%	23.18%	4.79%	0.318227	0.182529	0.499095	0.440629	0.463656	0.095715	1.999851
WS-5 (Monitoring Station (		-7.37%	-4.35%	-38.29%	0.06%	49.87%	0.06%	0.14736	0.086907	0.765732	0.001274	0.997478	0.001248	1.999999
WS-7 (Replicate 1 of WS-		-7.32%	-4.33%	-38.35%	0.06%	49.87%	0.06%	0.146381	0.086637	0.766981	0.001275	0.997477	0.001248	1.999999
WS-1 (Monitoring Station		-28.78%	-12.31%	-8.91%	41.91%	1.24%	6.85%	0.57568	0.24612	0.1782	0.838138	0.024764	0.137098	2
Grayhorse TB: G.horse Ba		-10.25%	-5.58%	-34.17%	0.05%	49.95%	0.00%	0.204994	0.111537	0.6834	0.000997	0.998994	8.68E-06	1.999931
3' Hole: 3' Bass smp		-4.06%	-1.97%	-43.97%	0.30%	49.62%	0.08%	0.081297	0.039309	0.879368	0.006013	0.992365	0.001622	1.999974
:														0
:														0
:														0
:														0
:														0
:														0

x,y	(1-Ca)	Left Plot		Right Plot		Center Plot		(1-Ca)	alt Left Plot		alt Right Plot		alt Center Plot		short name
2 Jireh @ 18WSW 1-T27N-R7E: Jireh TB 10/5/1	0.827	0.901	0.145	2.299	0.100	1.587	1.334	0.827	0.901	0.145	2.299	0.100	1.587	1.334	Jireh TB 10/5/16
3 G.horse @ TBNW18-T27N-R8E: Grayhorse TE	0.839	0.911	0.148	2.300	0.100	1.591	1.327	0.839	0.911	0.148	2.300	0.100	1.591	1.327	Grayhorse TB 10/5/16
WS-8 (Jireh TB)36.846536,-96.506097: Jireh TB	0.820	0.894	0.146	2.299	0.100	1.584	1.340	0.820	0.894	0.146	2.299	0.100	1.584	1.340	Jireh TB 6/28/17
WS-9 (Warren American TB)36.840077,-96.4999	0.826	0.901	0.143	2.300	0.100	1.588	1.333	0.826	0.901	0.143	2.300	0.100	1.588	1.333	Warren TB 6/29/17
WS-2 (Monitoring Station 2)36.832135,-96.4986	0.682	0.691	0.258	1.812	0.183	1.229	1.191	0.682	0.691	0.258	1.812	0.183	1.229	1.191	MS-2
WS-5 (Monitoring Station 6)36.827810,-96.5016	0.853	0.909	0.175	2.298	0.101	1.582	1.341	0.853	0.909	0.175	2.298	0.101	1.582	1.341	MS-6
WS-7 (Replicate 1 of WS-5)36.827810,-96.50161	0.854	0.910	0.175	2.298	0.101	1.583	1.340	0.854	0.910	0.175	2.298	0.101	1.583	1.340	MS-6 replicate
WS-1 (Monitoring Station 1)36.832660,-96.4961	0.424	0.401	0.313	1.393	0.219	0.870	1.125	0.424	0.401	0.313	1.393	0.219	0.870	1.125	MS-1
Grayhorse TB: G.horse Bass smp	0.795	0.839	0.197	2.299	0.100	1.541	1.413	0.795	0.839	0.197	2.299	0.100	1.541	1.413	G.horse Bass smp
3' Hole: 3' Bass smp	0.919	0.999	0.134	2.293	0.101	1.637	1.238	0.919	0.999	0.134	2.293	0.101	1.637	1.238	3' Bass smp
:															0
:															0
:															0

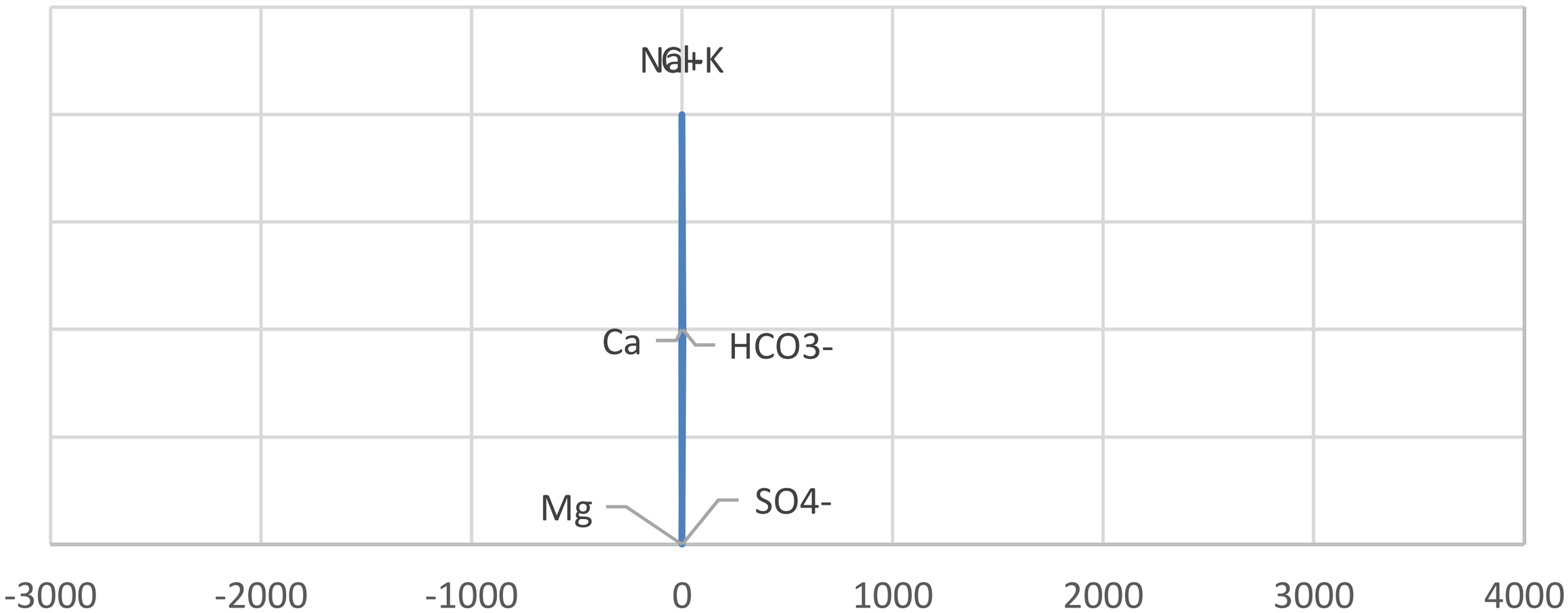
2 Jireh @ 18W
SW 1-T27N-R7E: Jireh TB 10/5/16



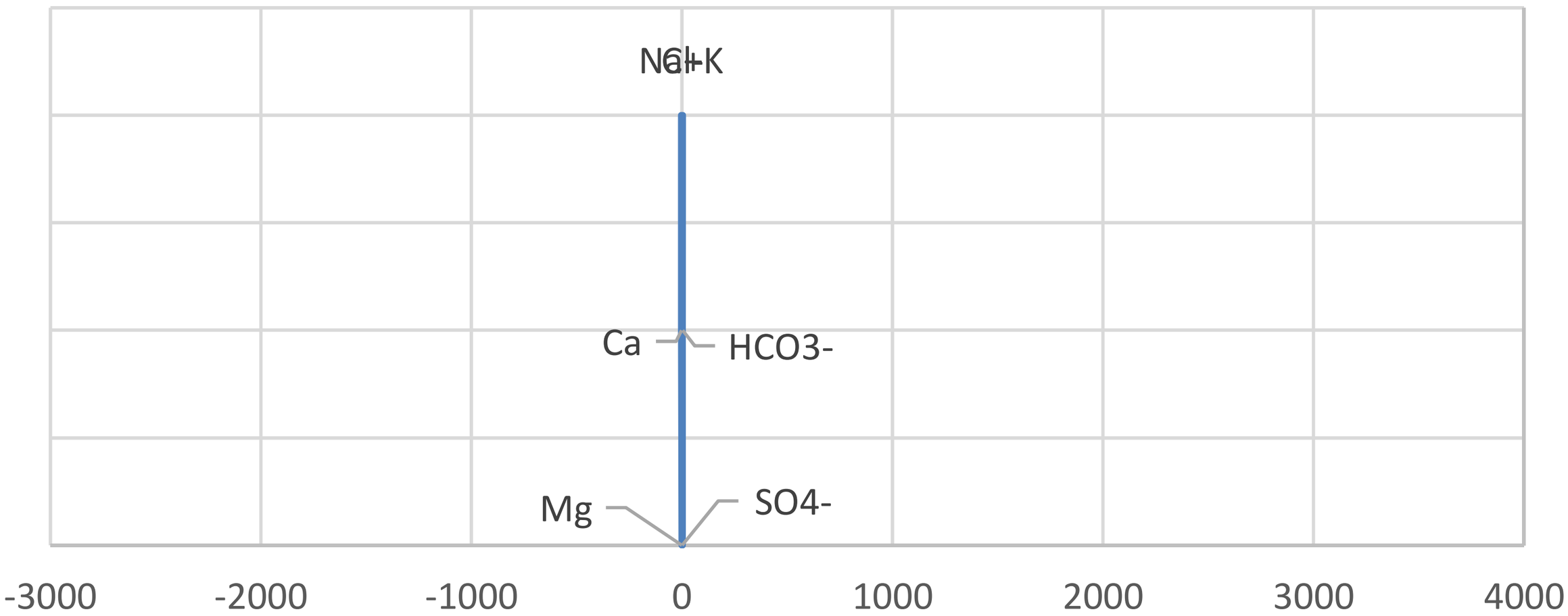

3' Hole: 3' Bass smp
Na+K
Cl-
Ca
HCO3-
Mg
SO4-
-3000
-2000
-1000
0
1000
2000
3000
4000


Grayhorse TB: G.horse Bass smp
Na+K
Cl-
Ca
HCO3-
Mg
SO4-
-2000
-1000
0
1000
2000
3000
4000

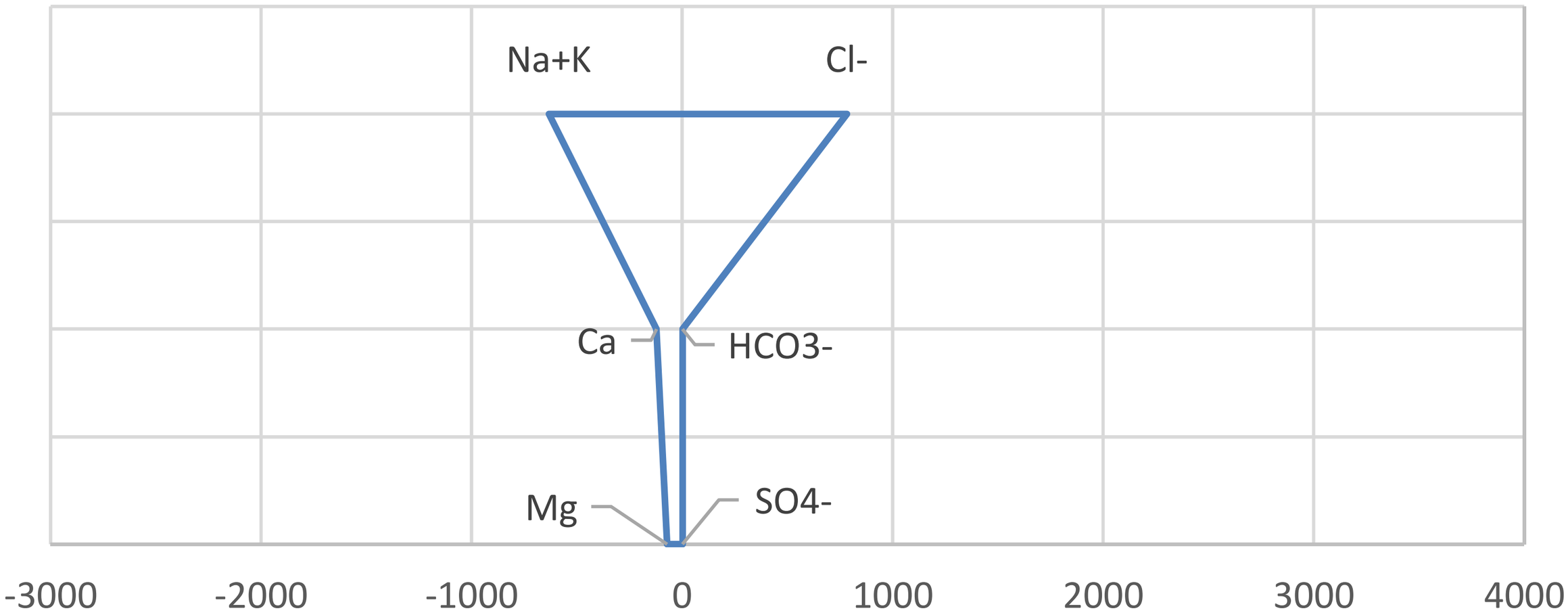
WS-1 (Monitoring Station 1)
36.832660,
-96.496177: MS-1



WS-2 (Monitoring Station 2)
36.832135,
-96.498664: MS-2



WS-5 (Monitoring Station 6)
36.827810,
-96.501613: MS-6



mg/l																		as CaCO3			OH	
Sample_Name	Ca	Mg	Na	K	Fe	Ba	CO3	HCO3	SO4	Cl	NO3-N	NO2-N	NH4-N	P	Cations	Anions	Si	alkalinity	meq	pH	mg/l	HCO3
2 Jireh @ 18WSW 1-T27N-R7E:	9627	1770	49111	531	10.41	0	0.00	104	41	99594	0.00	0.00	0.00	0.00	61039.0	99739.0	10.0	85	1.702	6.30	0.001	103.9
3 G.horse @ TBNW18-T27N-R8	8236	1737	45675	463	2.96	0	0.00	64	10	90403	0.00	0.00	0.00	0.00	56111.0	90477.0	10.0	52	1.04	6.50	0.001	63.5
WS-8 (Jireh TB)36.846536,-96.5	10194	1814	49706	537	0.56	34.8	0.00	78	38	101527	0.00	0.00	0.00	0.00	62251.0	101643.0	10.0	64	1.272	6.30	0.001	77.6
WS-9 (Warren American TB)36.8	10581	1847	53664	550	0.44	30.7	0.00	73	28	112725	0.00	0.00	0.00	0.00	66642.0	112826.0	10.0	60	1.192	6.10	0.000	72.7
WS-2 (Monitoring Station 2)36.83	46	16	81	3	0.03	0.0938	0.00	193	33	118	0.00	0.00	0.00	0.00	146.0	344.0	10.0	158	3.16	7.90	0.026	192.8
WS-5 (Monitoring Station 6)36.82	2441	873	14529	38	0.02	6.04	0.00	61	47	27740	0.00	0.00	0.00	0.00	17881.0	27848.0	10.0	50	0.994	7.20	0.005	60.7
WS-7 (Replicate 1 of WS-5)36.82	2424	870	14548	38	0.02	6.87	0.00	61	47	27734	0.00	0.00	0.00	0.00	17880.0	27842.0	10.0	50	1.006	7.20	0.005	61.4
WS-1 (Monitoring Station 1)36.83	54	14	18	2	0	0.104	0.00	233	30	4	0.00	0.00	0.00	0.00	88.0	267.0	10.0	191	3.812	8.30	0.066	232.5
Grayhorse TB: G.horse Bass sm	9850	3250	37671	0	4.65	0	0.00	146	1	85000	0.00	0.00	0.00	0.00	50771.0	85147.0	10.0			6.50	0.001	#VALUE!
3' Hole: 3' Bass smp	648	190	8038	5	0.29	0	0.00	146	31	14000	0.00	0.00	0.00	0.00	8881.0	14177.0	10.0			6.50	0.001	#VALUE!
:	0	0	0	0	0	0	0.00	0	0	0	0.00	0.00	0.00	0.00	0.0	0.0						
:	0	0	0	0	0	0	0.00	0	0	0	0.00	0.00	0.00	0.00	0.0	0.0						
:	0	0	0	0	0	0	0.00	0	0	0	0.00	0.00	0.00	0.00	0.0	0.0						
:	0	0	0	0	0	0	0.00	0	0	0	0.00	0.00	0.00	0.00	0.0	0.0						
:	0	0	0	0	0	0	0.00	0	0	0	0.00	0.00	0.00	0.00	0.0	0.0						
:	0	0	0	0	0	0	0.00	0	0	0	0.00	0.00	0.00	0.00	0.0	0.0						
:	0	0	0	0	0	0	0.00	0	0	0	0.00	0.00	0.00	0.00	0.0	0.0						
:	0	0	0	0	0	0	0.00	0	0	0	0.00	0.00	0.00	0.00	0.0	0.0						
:	0	0	0	0	0	0	0.00	0	0	0	0.00	0.00	0.00	0.00	0.0	0.0						
:	0	0	0	0	0	0	0.00	0	0	0	0.00	0.00	0.00	0.00	0.0	0.0						
:	0	0	0	0	0	0	0.00	0	0	0	0.00	0.00	0.00	0.00	0.0	0.0						
:	0	0	0	0	0	0	0.00	0	0	0	0.00	0.00	0.00	0.00	0.0	0.0						
:	0	0	0	0	0	0	0.00	0	0	0	0.00	0.00	0.00	0.00	0.0	0.0						
:	0	0	0	0	0	0	0.00	0	0	0	0.00	0.00	0.00	0.00	0.0	0.0						
:	0	0	0	0	0	0	0.00	0	0	0	0.00	0.00	0.00	0.00	0.0	0.0						
:	0	0	0	0	0	0	0.00	0	0	0	0.00	0.00	0.00	0.00	0.0	0.0						
:	0	0	0	0	0	0	0.00	0	0	0	0.00	0.00	0.00	0.00	0.0	0.0						
:	0	0	0	0	0	0	0.00	0	0	0	0.00	0.00	0.00	0.00	0.0	0.0						
:	0	0	0	0	0	0	0.00	0	0	0	0.00	0.00	0.00	0.00	0.0	0.0						
:	0	0	0	0	0	0	0.00	0	0	0	0.00	0.00	0.00	0.00	0.0	0.0						
:	0	0	0	0	0	0	0.00	0	0	0	0.00	0.00	0.00	0.00	0.0	0.0						
:	0	0	0	0	0	0	0.00	0	0	0	0.00	0.00	0.00	0.00	0.0	0.0						
:	0	0	0	0	0	0	0.00	0	0	0	0.00	0.00	0.00	0.00	0.0	0.0						
:	0	0	0	0	0	0	0.00	0	0	0	0.00	0.00	0.00	0.00	0.0	0.0						
:	0	0	0	0	0	0	0.00	0	0	0	0.00	0.00	0.00	0.00	0.0	0.0						
:	0	0	0	0	0	0	0.00	0	0	0	0.00	0.00	0.00	0.00	0.0	0.0						
:	0	0	0	0	0	0	0.00	0	0	0	0.00	0.00	0.00	0.00	0.0	0.0						
:	0	0	0	0	0	0	0.00	0	0	0	0.00	0.00	0.00	0.00	0.0	0.0						
:	0	0	0	0	0	0	0.00	0	0	0	0.00	0.00	0.00	0.00	0.0	0.0						
:	0	0	0	0	0	0	0.00	0	0	0	0.00	0.00	0.00	0.00	0.0	0.0						
:	0	0	0	0	0	0	0.00	0	0	0	0.00	0.00	0.00	0.00	0.0	0.0						
:	0	0	0	0	0	0	0.00	0	0	0	0.00	0.00	0.00	0.00	0.0	0.0						

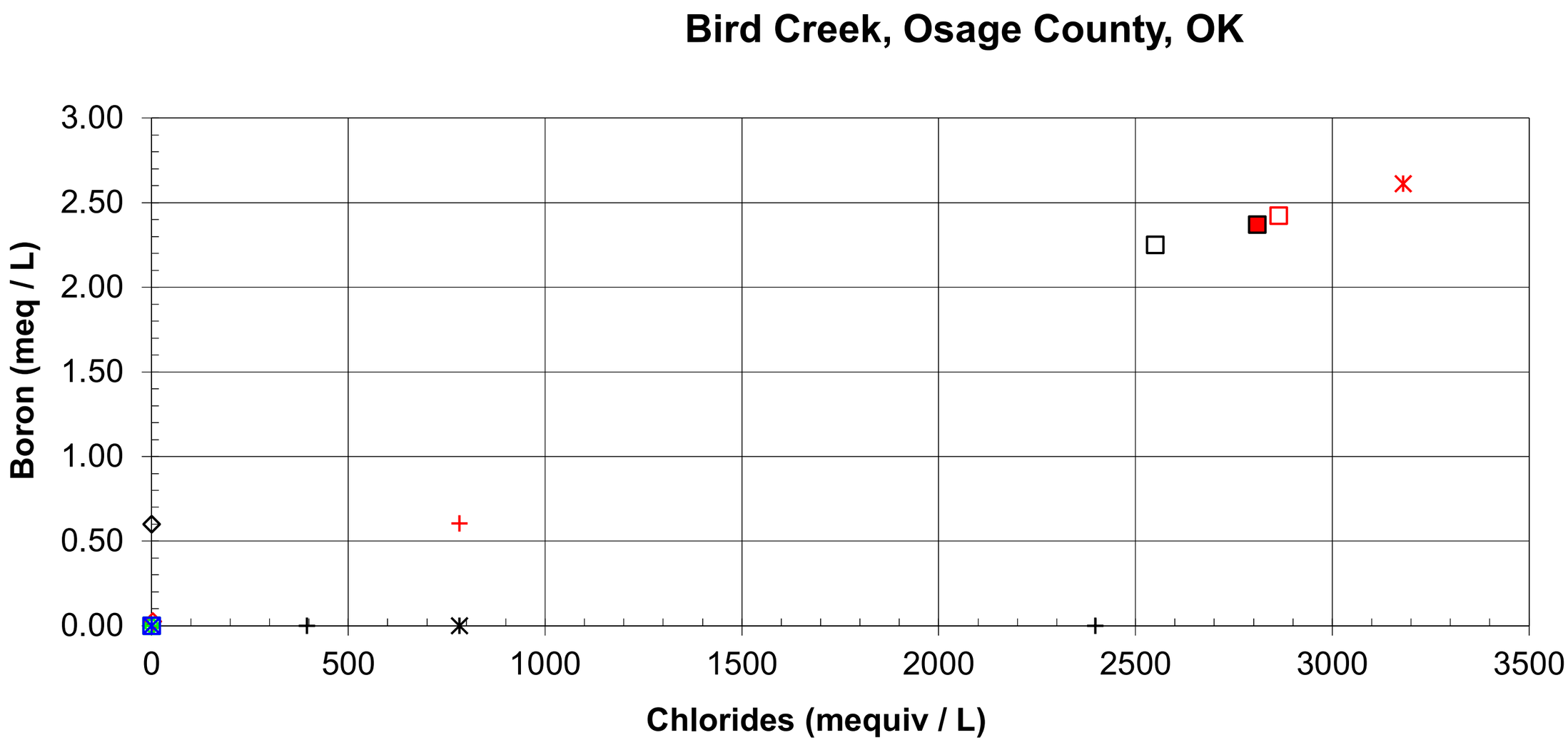
	2 Jireh @ 13	G.horse (	WS-8 (Jire	WS-9 (Wa	WS-2 (Mor	WS-5 (Monitor	WS-7 (Rep	WS-1 (Mor	Grayhorse TB:	G.horse B	3' Hole: 3' Ba	:	:	:	:	:
Na+K	-38.72%	-39.15%	-38.39%	-38.77%	-24.96%	-38.29%	-38.35%	-8.91%	-34.17%	-43.97%						
Ca	-8.65%	-8.05%	-8.98%	-8.72%	-15.91%	-7.37%	-7.32%	-28.78%	-10.25%	-4.06%						
Mg	-2.62%	-2.80%	-2.63%	-2.51%	-9.13%	-4.35%	-4.33%	-12.31%	-5.58%	-1.97%						
Cl-	49.96%	49.98%	49.96%	49.97%	23.18%	49.87%	49.87%	1.24%	49.95%	49.62%						
HCO3-	0.03%	0.02%	0.02%	0.02%	22.03%	0.06%	0.06%	41.91%	0.05%	0.30%						
SO4-	0.02%	0.00%	0.01%	0.01%	4.79%	0.06%	0.06%	6.85%	0.00%	0.08%						

short name	Jireh TB 1(	Grayhorse	Jireh TB 6/	Warren TB	MS-2	MS-6	MS-6 replic	MS-1	G.horse Bass smp	3' Bass smp	0	0	0	0	0	0
Cations	Jireh TB 1(	Grayhorse	Jireh TB 6/	Warren TB	MS-2 Catic	MS-6 Cations	MS-6 replic	MS-1 Catic	G.horse Bass smp Cation	3' Bass smp	0 Cations	0 Cations	0 Cations	0 Cations	0 Cations	0 Cations
Na+K			1													
Ca			0													
Mg			-1													
Anions	Jireh TB 1(	Grayhorse	Jireh TB 6/	Warren TB	MS-2 Anior	MS-6 Anions	MS-6 replic	MS-1 Anior	G.horse Bass smp Anions	3' Bass smp	0 Anions	0 Anions	0 Anions	0 Anions	0 Anions	0 Anions
Cl-			1													
HCO3-			0													
SO4-			-1													

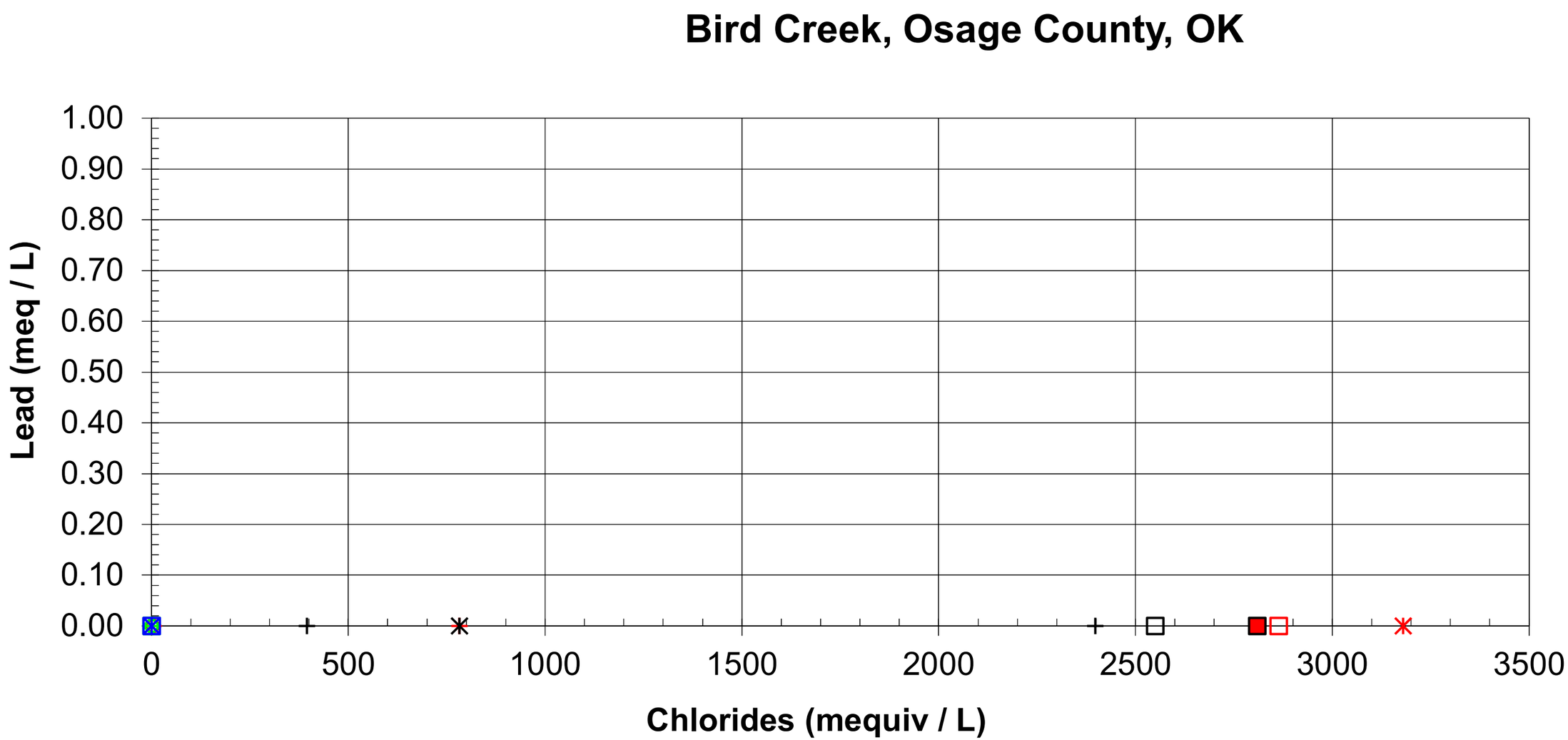
Traditional Stiff Plots (meq/kg)

	2 Jireh @ 13	G.horse (	WS-8 (Jire	WS-9 (Wa	WS-2 (Mor	WS-5 (Monitor	WS-7 (Rep	WS-1 (Mor	Grayhorse TB:	G.horse B	3' Hole: 3' Ba	:	:	:	:	:
Cl-	2809.184	2549.939	2863.707	3179.562	3.32835	782.444363	782.2751	0.112825	2397.540406	394.889008	0	0	0	0	0	0
Na+K	-2149.79	-1998.6	-2175.83	-2348.32	-3.60004	-632.948654	-633.775	-0.83411	-1638.598385	-349.76165	0	0	0	0	0	0
Ca	-480.389	-410.978	-508.683	-527.994	-2.29541	-121.806387	-120.958	-2.69461	-491.5169661	-32.335329	0	0	0	0	0	0
Mg	-145.649	-142.934	-149.27	-151.985	-1.3166	-71.8370706	-71.5902	-1.15203	-267.4346842	-15.634643	0	0	0	0	0	0
SO4-	0.853654	0.208208	0.791192	0.582984	0.687088	0.978579519	0.97858	0.624625	0.020820841	0.64544607	0	0	0	0	0	0
HCO3-	1.70444	1.048886	1.27833	1.196386	3.163048	0.999719751	0.99972	3.818602	2.392771862	2.39277186	0	0	0	0	0	0
Cl-	2809.184	2549.939	2863.707	3179.562	3.32835	782.444363	782.2751	0.112825	2397.540406	394.889008	0	0	0	0	0	0

	Y' value
Cl-	2
Na+K	2
Ca	1
Mg	0
SO4-	0
HCO3-	1
Cl-	2



- 2 Jireh @ 18W
  SW 1-T27N-R7E: Jireh TB 10/5/16
- 3 G.horse @ TB
  NW18-T27N-R8E: Grayhorse TB 10/5/16
- WS-8 (Jireh TB)
  36.846536,
  -96.506097: Jireh TB 6/28/17
- WS-9 (Warren American TB)
  36.840077,
  -96.499939: Warren TB 6/29/17
- WS-2 (Monitoring Station 2)
  36.832135,
  -96.498664: MS-2
- WS-5 (Monitoring Station 6)
  36.827810,
  -96.501613: MS-6
- WS-7 (Replicate 1 of WS-5)
  36.827810,
  -96.501613: MS-6 replicate
- WS-1 (Monitoring Station 1)
  36.832660,
  -96.496177: MS-1
- Row 11-90



- 2 Jireh @ 18W
  SW 1-T27N-R7E: Jireh TB 10/5/16
- 3 G.horse @ TB
  NW18-T27N-R8E: Grayhorse TB 10/5/16
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  36.846536,
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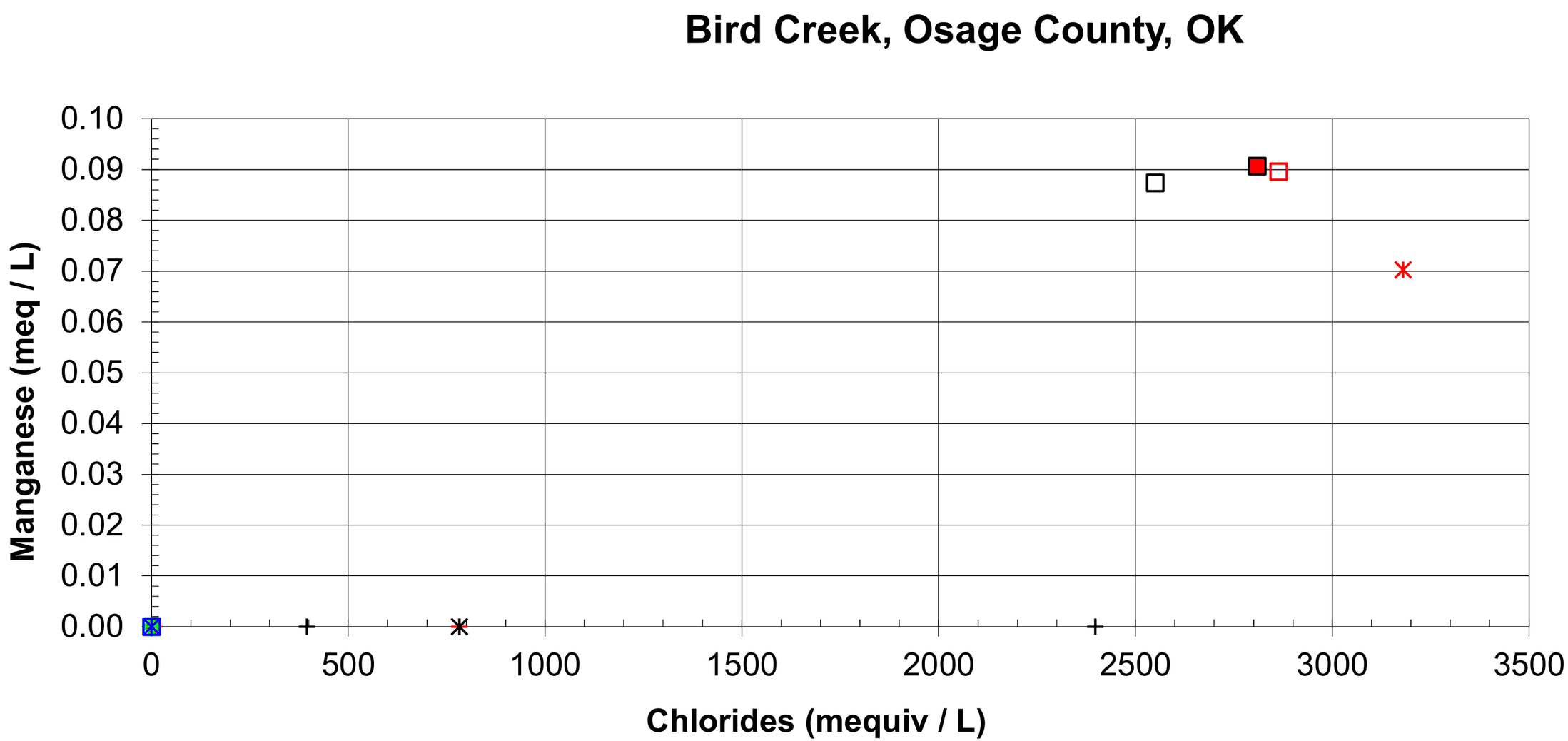
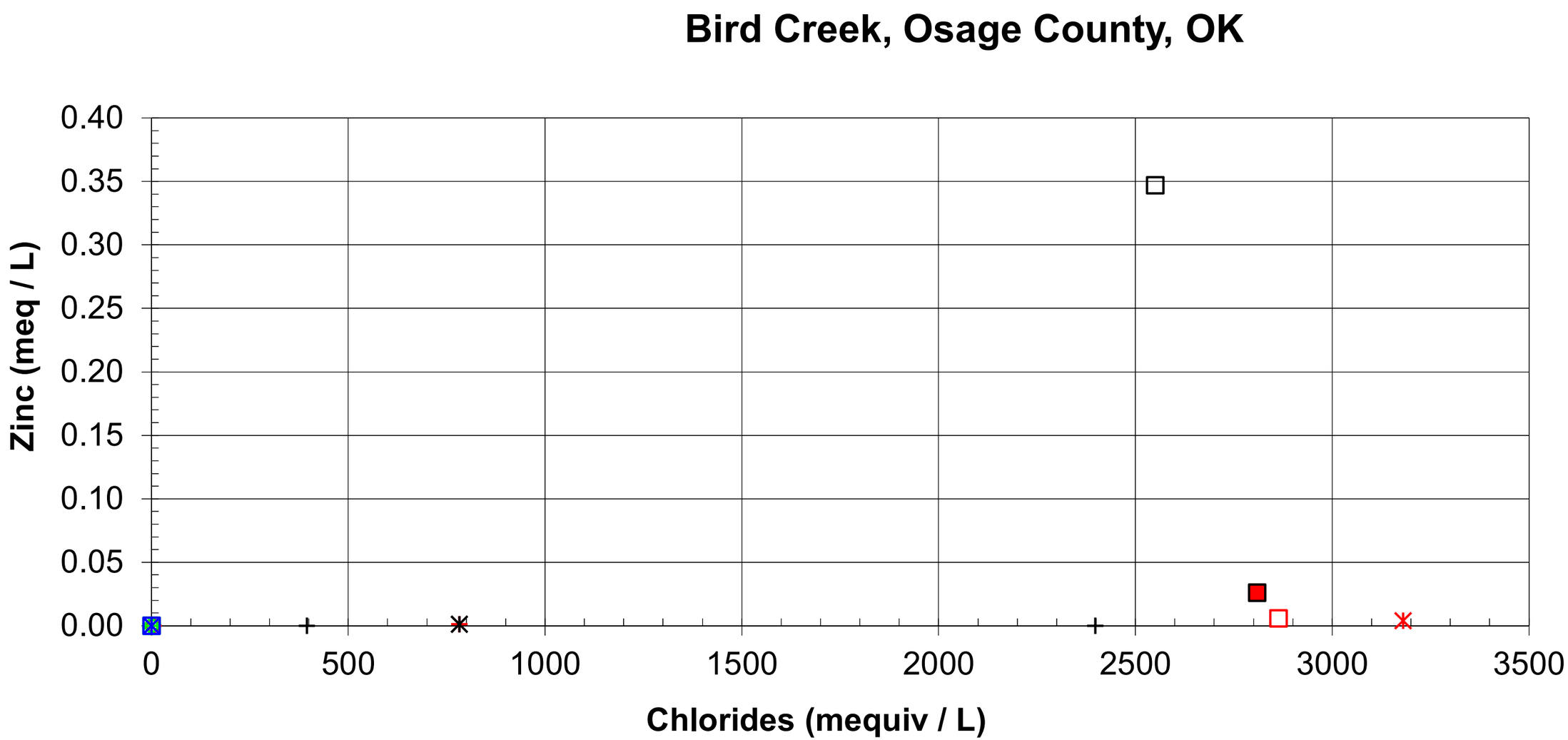
  36.840077,
  -96.499939: Warren TB 6/29/17
- WS-2 (Monitoring Station 2)
  36.832135,
  -96.498664: MS-2
- WS-5 (Monitoring Station 6)
  36.827810,
  -96.501613: MS-6
- WS-7 (Replicate 1 of WS-5)
  36.827810,
  -96.501613: MS-6 replicate
- WS-1 (Monitoring Station 1)
  36.832660,
  -96.496177: MS-1
- Row 11-90



- 2 Jireh @ 18W
  SW 1-T27N-R7E: Jireh TB 10/5/16
- 3 G.horse @ TB
  NW18-T27N-R8E: Grayhorse TB 10/5/16
- WS-8 (Jireh TB)
  36.846536,
  -96.506097: Jireh TB 6/28/17
- WS-9 (Warren American TB)
  36.840077,
  -96.499939: Warren TB 6/29/17
- WS-2 (Monitoring Station 2)
  36.832135,
  -96.498664: MS-2
- WS-5 (Monitoring Station 6)
  36.827810,
  -96.501613: MS-6
- WS-7 (Replicate 1 of WS-5)
  36.827810,
  -96.501613: MS-6 replicate
- WS-1 (Monitoring Station 1)
  36.832660,
  -96.496177: MS-1
- Row 11-90



- 2 Jireh @ 18W
  SW 1-T27N-R7E: Jireh TB 10/5/16
- 3 G.horse @ TB
  NW18-T27N-R8E: Grayhorse TB 10/5/16
- WS-8 (Jireh TB)
  36.846536,
  -96.506097: Jireh TB 6/28/17
- WS-9 (Warren American TB)
  36.840077,
  -96.499939: Warren TB 6/29/17
- WS-2 (Monitoring Station 2)
  36.832135,
  -96.498664: MS-2
- WS-5 (Monitoring Station 6)
  36.827810,
  -96.501613: MS-6
- WS-7 (Replicate 1 of WS-5)
  36.827810,
  -96.501613: MS-6 replicate
- WS-1 (Monitoring Station 1)
  36.832660,
  -96.496177: MS-1
- Row 11-90

Left Plot

0.1	0.1
1.1	0.1
0.6	0.966
0.1	0.1

0.1

0.2	0.1
0.15	0.1866
1.05	0.1866
1	0.1
0.55	0.8794
0.65	0.8794
0.2	0.1

0.2

0.3	0.1
0.2	0.2732
1	0.2732
0.9	0.1
0.5	0.7928
0.7	0.7928
0.3	0.1

0.3

0.4	0.1
0.25	0.3598
0.95	0.3598
0.8	0.1
0.45	0.7062
0.75	0.7062
0.4	0.1

0.4

0.5	0.1
0.3	0.4464
0.9	0.4464
0.7	0.1
0.4	0.6196
0.8	0.6196
0.5	0.1

0.5

0.6	0.1
0.35	0.533
0.85	0.533
0.6	0.1
0.35	0.533
0.85	0.533
0.6	0.1

Right Plot

1.3	0.1
2.3	0.1
1.8	0.966
1.3	0.1

0.1

1.4	0.1
1.35	0.1866
2.25	0.1866
2.2	0.1
1.75	0.8794
1.85	0.8794
1.4	0.1

0.2

1.5	0.1
1.4	0.2732
2.2	0.2732
2.1	0.1
1.7	0.7928
1.9	0.7928
1.5	0.1

0.3

1.6	0.1
1.45	0.3598
2.15	0.3598
2	0.1
1.65	0.7062
1.95	0.7062
1.6	0.1

0.4

1.7	0.1
1.5	0.4464
2.1	0.4464
1.9	0.1
1.6	0.6196
2	0.6196
1.7	0.1

0.5

1.8	0.1
1.55	0.533
2.05	0.533
1.8	0.1
1.55	0.533
2.05	0.533
1.8	0.1

Center Plot

1.2	0.2732
1.7	1.1392
1.2	2.0053
0.7	1.1392
1.2	0.2732

0.9

1.15	0.3598
1.65	1.2258
0.75	1.2258
1.25	0.3598

0.8

1.1	0.4464
1.6	1.3124
0.8	1.3124
1.3	0.4464

0.7

1.05	0.533
1.55	1.399
0.85	1.399
1.35	0.533

0.6

1	0.6196
1.5	1.4856
0.9	1.4856
1.4	0.6196

0.5

0.95	0.7062
1.45	1.5722
0.95	1.5722
1.45	0.7062

0.4

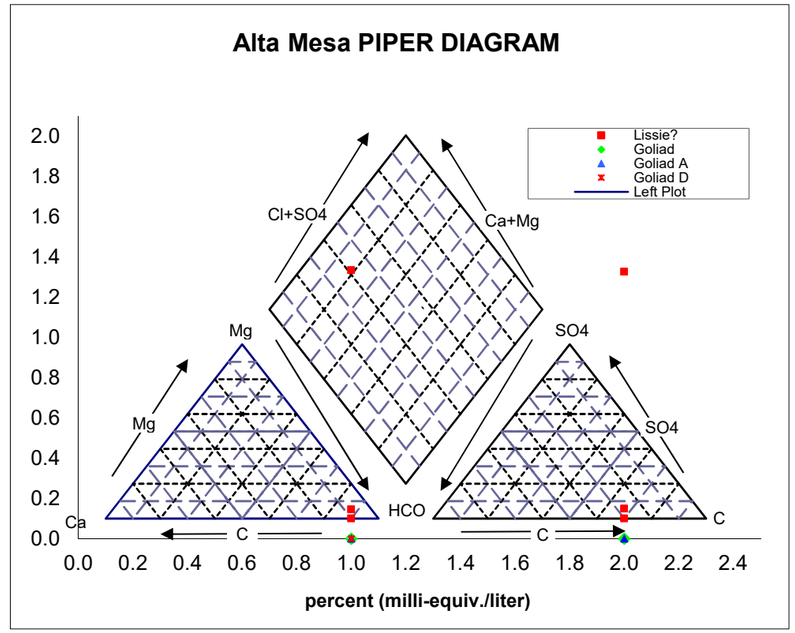
0.9	0.7928
1.4	1.6588
1	1.6588
1.5	0.7928

0.3

0.85	0.8794
1.35	1.7454
1.05	1.7454
1.55	0.8794

0.2

0.8	0.966
1.3	1.8321
1.1	1.8321
1.6	0.966

0.1

0.75	1.0526
1.25	1.9187
1.15	1.9187
1.65	1.0526