

FIGURE 1
BRRMF LAYOUT & LEACHATE
COLLECTION SYSTEM

FIGURE 2
GROUND WATER SAMPLING
LOCATIONS

BRADY ROAD LANDFILL



LEGEND

- ▲ OVERBURDEN PIEZOMETER NEST
- GROUNDWATER WELL



B.M. ELEV.	FIELD BOOK #
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NO. REVISIONS	DATE BY



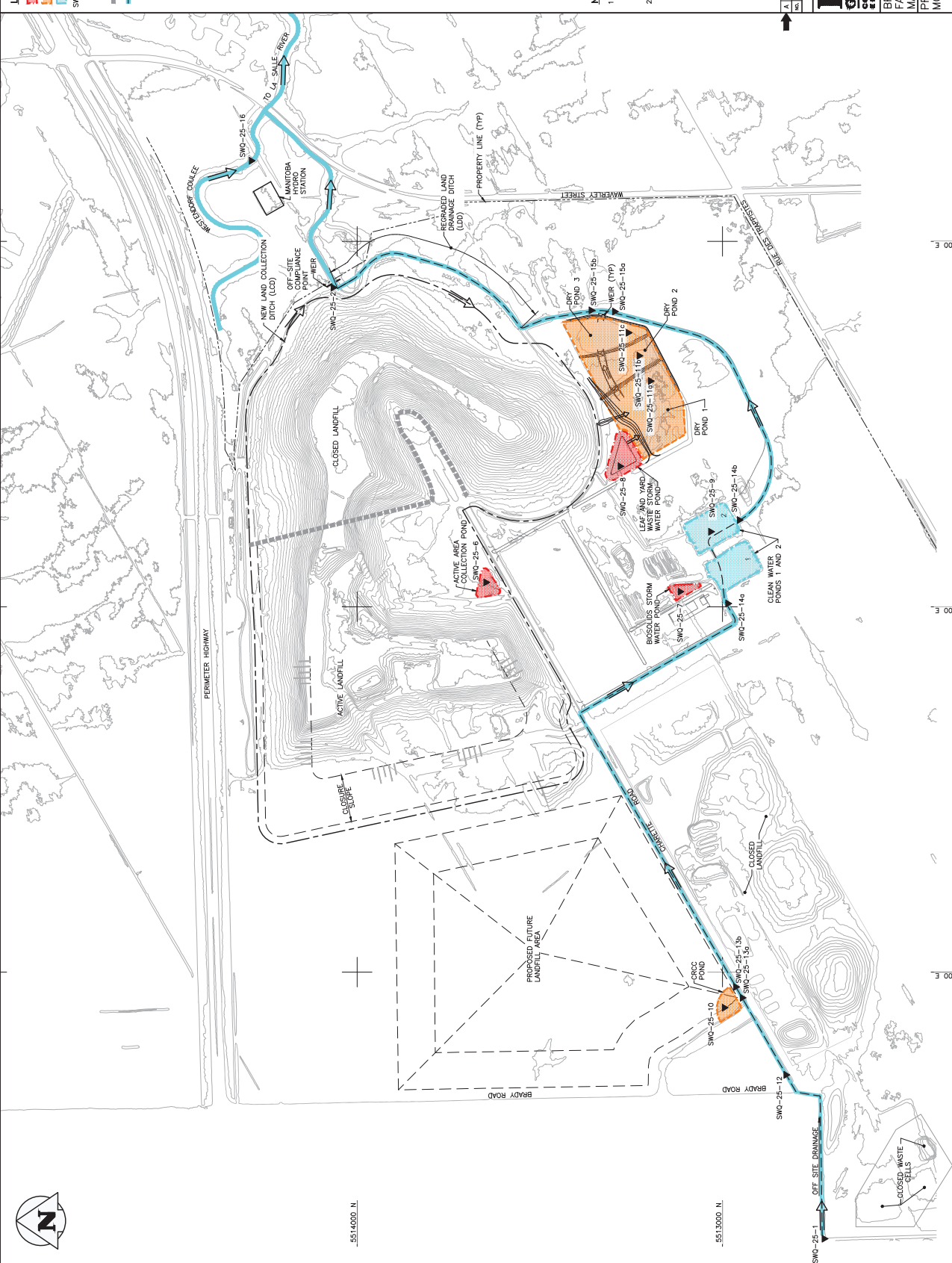
THE CITY OF WINNIPEG
WATER AND WASTE DEPARTMENT

BRADY ROAD LANDFILL
WELL LOCATIONS

SHEET 1 of 1

FIGURE 1_R1

FIGURE 3
SURFACE WATER SAMPLING
LOCATIONS



LEGEND:

- IMPACTED WATER POND
- DRY POND
- CLEAN WATER POND
- SURFACE WATER SAMPLING LOCATION
- SURFACE WATER FLOW DIRECTION
- CLOSED LANDFILL BOUNDARY
- LAND DRAINAGE DITCH

SWO-25-16
 SWO-25-15b
 SWO-25-15a
 SWO-25-14b
 SWO-25-14a
 SWO-25-13c
 SWO-25-13b
 SWO-25-13a
 SWO-25-12
 SWO-25-11c
 SWO-25-11b
 SWO-25-11a
 SWO-25-10
 SWO-25-9
 SWO-25-8
 SWO-25-6
 SWO-25-5
 SWO-25-4
 SWO-25-3
 SWO-25-2
 SWO-25-1

NOTES:

- GEOGRAPHY SOURCES ARE CITY OF WINNIPEG, KGS CONSULTING ENGINEERS, AND ADDITIONAL LANDFILL OPERATING AREA AND ADDITIONAL LANDFILL PERIMETER SURVEY BY KGS GROUP 2013.
- EXACT SURFACE WATER SAMPLING LOCATION TO BE DETERMINED IN FIELD.

SCALE: 1:10000 METRIC
 100 0 100 200 300 400m
 1/4" = 1'-0" IMPERIAL
 1:125000 IMPERIAL
 DATE: 14/05/20
 ISSUED WITH DRAFT REPORT
 NO. 1704/20
 REVISIONS / ISSUE

KGS GROUP
 CONSULTING ENGINEERS
 THE CITY OF WINNIPEG
 WATER AND WASTE DEPARTMENT

BRADY ROAD RESOURCE MANAGEMENT
 FACILITY SURFACE WATER
 MANAGEMENT PLAN
 PROPOSED SURFACE WATER
 MONITORING LOCATIONS

MAY 2014
 FIGURE 10
 A

630000 E.
 630000 E.
 629000 E.

APPENDIX A
2019 INCIDENT REPORTS



May 30, 2019

Mainitoba Sustainable Development Environmental Approvals
2nd Floor- 123 Main Street
Winnipeg, MB R3C 1A5
Canada

Attention: Tracy Braun, Director

Dear Ms. Braun:

RE: Exceedance in leachate head in cell developed after August 1st, 2013.

Please consider this letter as formal notification from the City of Winnipeg to the Province of Manitoba advising that a landfill cell (known as "Cell 31") developed after August 1st, 2013 has temporarily exceeded its maximum leachate head allowance - which is described as leachate levels above the crown of the collection system cell bottom piping for a period greater than seven days.

This notification is required under the auspice of **Environment Act Licence No. 3081R** -specifically clause 98 which reads:

Operation – Landfill Gas Collection and Flaring System

105. The Licencee shall report if the maximum depth of leachate in any waste cell, developed after August 1, 2013, exceeds the maximum head, as indicated in the approved Leachate Management Plan, above the crown of the collection system cell bottom piping; for a period of seven (7) days to an Environment Officer within 24 hours.

Reason for Exceedance:

On April 22, the contractor who hauls leachate from the City of Winnipeg facilities notified the City staff that the centralized leachate tank was not functioning and he was unable to pull any leachate out of main tank. An investigation of the leachate collection system was undertaken and it was determined that the main pump in the leachate lift station had malfunctioned and dislodged from its mounts resulting in the main discharge line into the leachate tank becoming severed. The severing of this main line has resulted in leachate not being able to be pumped into the main tank. As a result of the pump failure the City has shut down the leachate collection system to facilitate immediate repairs.

Cell 31's current design only allows for the leachate produced in the cell to be collected into the centralized leachate tank, so as long as the system is shut down leachate will continue to accumulate in the cell.

Mitigation Plan

Immediate Actions

The existing leachate collection system (series of manholes) is functioning normally, and the city immediately engaged the prior leachate collection methods - manually pumping leachate out of the manholes - in order to maintain compliance with our Environment Act Licence.

Interim Actions

Since the discovery of the leachate tank failure, the city has engaged the original design engineers (KGS Group) to provide an interim solution to get the leachate system back online so as to restart Cell 31's pump to get the leachate levels back into compliance. A preliminary pump and piping design has been developed and is likely to be installed and the system brought back online within the week (June 3-7th) if a suitable contractor can be commissioned.

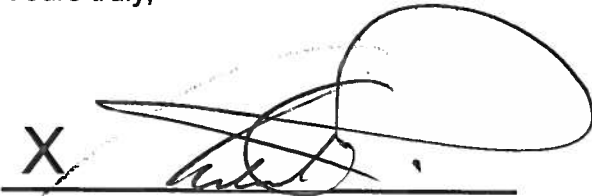
Long Term Actions

The system design engineering team (KGS Group) has indicated the conceptual design used for the interim leachate pumping system will be used as a basis for the final design solution – the main differences being the composition of the piping material. The interim design intends to use composite steel for the piping components – composite steel is readily available and can be custom fit in a relatively short time frame. The long term solution involves the use of stainless steel piping which is considerably harder to find and manufacture to design specifications in short order – thus the desire for the short term composite steel solution. Additionally, after the stainless steel installation having the composite steel components on hand as back up piping components ensures system redundancy and reduces the long term risk of the system being down for any considerable length of time should a pump failure occur in the future.

Once repairs are completed the City will partake in an aggressive pumping schedule to get Cell 31 back into compliance for leachate head, which the City anticipates could be a few weeks.

Should you have any further questions or concerns please feel free to contact Supervisor of Environmental Monitoring and Reporting Chris Kozak at (204) 986-2384 or via email at ckozak@winnipeg.ca.

Yours truly,



X

Michael Gordichuk
Manager Solid Waste Services

APPENDIX B
2019 BRRMF TONNAGE
SPREADSHEET

2018 Actuals for Forecast Purposes
2019 Actuals
Manually entered as not tracked in wasteworks
Mixed manual tracking and WasteWorks tracking

Material Type	WW Material	Item/Acct	January	February	March	April	May	June	July	August	September	October	November	December	Total	WRARS Levy
Domestic Collection - AREA 1-MILLER	DOM REF CT	2400	4830.88	3,897.02	4,573.98	5,706.80	6,177.55	5,541.54	6,207.63	5,743.38	6,007.93	6,403.09	4,896.43	4,760.88	64,747.11	
Domestic Collection - AREA 2-GFL	DOM REF CT	2500	4232.89	3,432.16	4,019.39	4,979.68	5,299.84	4,716.21	5,273.14	4,979.78	5,126.33	5,572.69	4,418.93	4,251.34	56,302.38	
Domestic Collection - BULKY PU-WASTE CONN	DOM REF CT	3500	40.43	27.60	43.18	78.76	119.05	96.85	97.76	101.36	123.27	99.02	56.23	48.75	932.26	
Other (To be Adjusted)	DOM REF CT	*	-2.80					7.13	(4.41)	0.38	0.00		0.00	0.00	0.30	
Subtotal Single Family Collection	DOM REF CT		9,101.40	7,356.78	8,636.55	10,765.24	11,596.44	10,361.73	11,574.12	10,824.90	11,257.53	12,074.80	9,371.59	9,060.97	121,982.05	
Multi-Family NW Area - Waste Connections	APT WT	1093	1700.44	1,489.76	1,637.37	1,940.31	2,024.13	1,760.36	2,110.95	1,960.14	2,059.91	2,200.76	1,662.57	1,767.62	22,314.32	
Multi-Family SW Area - Waste Connections	APT WT	1504	1099.38	965.51	956.94	1,562.03	1,410.25	1,287.90	1,459.96	1,379.83	1,556.95	1,554.15	1,221.74	1,302.20	15,756.84	
Multi-Family E Area - Waste Connections	APT WT	1519	1136.14	995.10	1,174.74	1,001.80	1,281.54	1,128.99	1,332.18	1,281.11	1,267.90	1,329.70	1,045.86	1,021.39	13,996.45	
Subtotal Apt Collection	APT WT		3,935.96	3,450.37	3,769.05	4,504.14	4,715.92	4,177.25	4,903.09	4,621.08	4,884.76	5,084.61	3,930.17	4,091.21	52,067.61	0.0
Total Residential Collection			13,037.36	10,807.15	12,405.60	15,269.38	16,312.36	14,538.98	16,477.21	15,445.98	16,142.29	17,159.41	13,301.76	13,152.18	174,049.66	1,740,496.6
City Refuse - eg. Street Cleaning	CITY REFUS	4	228.20	538.77	469.41	952.70	1,136.63	1,059.75	2,652.48	867.42	643.27	591.37	785.06	187.21	10,112.27	101122.7
Construction / Demolition Waste - City	CITY CNDEM	5	1.39	0.33	0.85	9.67	8.28	207.51	55.01	0.57	77.85	0.94	92.92	13.79	469.11	4691.1
Landscaping - City - trees, etc., & (DE)	TREELFCITY TREES CITY TREES DE 1	6														29712.3
Grit	GRIT	7	579.94	363.59	173.72	215.28	175.16	232.28	218.86	173.97	410.45	138.40	(11.48)	301.06	2,971.23	
Bio solids landfilled	SLUDGE		172.03	98.56	310.73	261.36	239.68	199.02	244.97	179.10	176.90	233.28	192.48	133.83	2,441.94	24419.4
Residue from MRF (EMTERRA)	RESIDUE		4136.09	604.79	0.00	4,379.78	4,359.82	2,090.27	221.23	(12.70)	0.00	0.00	0.00	4,585.80	20,365.08	203650.8
Sweepings	SWEEP		518.83	430.51	328.36	522.02	345.81	503.92	1,223.83	498.46	1,123.48	402.38	227.30	0.00	6,124.90	61249
			0.00	0.00	0.00	7.22	0.00	13.54	0.00	0.00	154.16	0.00	0.00	0.18	175.10	1751
Total City Depts - Charged			5,636.48	2,036.55	1,283.07	6,348.03	6,265.38	4,306.29	4,616.38	1,706.82	2,586.11	1,366.37	1,286.28	5,221.87	42,659.63	
Total Residential + City Depts			18,673.84	12,843.70	13,688.67	21,617.41	22,577.74	18,845.27	21,093.59	17,152.80	18,728.40	18,525.78	14,588.04	18,374.05	216,709.29	#REF!
Dead Animals-Charge	ANIMAL WAS ANIMLS-CHG SRM	8	509.89	727.36	625.89	593.81	689.84	856.80	1,812.44	2,844.66	1,563.08	1,608.43	1,178.55	829.14	13,839.89	YES
Asbestos	ASBESTOS	9	17.78	32.03	16.87	33.59	32.11	67.13	40.08	34.20	187.69	149.50	113.67	16.23	740.88	YES
Charitable Organization - C / special rate	C-CHARITY	18	107.65	150.30	96.06	235.92	162.25	175.01	211.75	187.95	169.99	302.06	139.13	120.75	2,058.82	YES
Commercial / Industrial - all sources	COMM/INDUS	10	3659.13	3,790.77	5,259.20	5,977.68	7,704.70	7,319.11	8,189.20	6,901.45	6,440.22	7,208.02	6,074.26	4,028.39	72,552.13	YES
Commercial Flat Fee	COMM_FF		0.00	0.00	7.17	85.04	40.09	79.94	163.47	36.45	94.00	226.10	33.36	196.58	962.20	
Construction / Demolition Waste	CONST/DEM	11	220.96	119.02	42.71	23.07	11.62	0.00	0.00	45.45	0.00	0.00	0.00	0.00	462.83	YES
Concrete - charged	CONC - CHG	12	0.00	0.00	0.00	29.63	3.33	16.08	14.89	4.78	8.10	2.32	0.00	0.00	79.13	YES
Food waste	FOOD WASTE		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NO
Hospital Waste	HOSP WASTE	13	0.75	0.46	0.68	0.70	0.74	1.14	0.91	1.10	0.54	1.25	0.50	0.53	9.30	YES
Landscaping - Com. - trees, etc., & (DE)	LANDSCAPE TREELFCOMM TREES COMM TREES DE 2	14	4.03	0.00	6.22	11.48	16.23	15.88	14.12	9.05	17.64	4.65	(0.58)	7.69	106.41	YES
Residue - Canada Fiber	RESIDUE-CF										29.61	689.19	600.64	621.23	1,940.67	
Sawdust - Charged	SAWDUST CH	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	YES
Special Waste	HYDRO POLE RECYC-REFU RES/OVER SANDBAG TIRES TOILETS_\$5 TOILETS_CH															NO NO YES YES C? NO NO NO NO
Sewer Grit	WEEDS	17	0.00	0.00	1.27	1.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.88	YES
Manure	SEWER-GRIT MANURE-P	16	0.00	104.86	0.00	0.00	79.91	0.00	0.00	0.00	130.67	0.00	0.00	133.40	448.84	YES
Total Non City Depts - Charged			4,520.19	4,924.80	6,056.07	6,992.53	8,740.82	8,531.09	10,446.86	10,065.09	8,641.54	10,191.52	8,139.53	5,953.94	93,203.98	
Dead Animals - TFW	ANIMALS N/C	20	0.15	1.30	1.61	2.70	2.21	1.95	2.28	1.32	1.14	2.50	3.29	0.83	21.28	NO
Brady Admin Building Construction Material	1777 BRADY		0.34	1.44	0.36	0.42	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.76	
Charitable Organization - TFW	CHARITY	19	65.32	55.93	23.83	26.43	27.06	13.48	40.60	49.50	32.37	49.68	41.61	37.61	463.42	YES
October Fall Storm Wood Waste- NC (City and Private)	C-TREE-EMG											443.01	134.71	8.57	586.29	
Neighbourhood clean ups	CLEAN-UP		0.00	0.00	0.00	0.00	8.34	24.11	0.00	0.00	3.53	0.00	0.00	0.00	35.98	
Total Non City Depts - Not Charged			65.81	58.67	25.80	29.55	37.81	39.54	42.88	50.82	37.04	495.19	179.61	47.01	1,109.73	0.0
Total Non City Depts			4,586.00	4,983.47	6,081.87	7,022.08	8,778.63	8,570.63	10,489.74	10,115.91	8,678.58	10,686.71	8,319.14	6,000.95	94,313.71	0.0

Material Type	WW Material	Item/Acct	January	February	March	April	May	June	July	August	September	October	November	December	Total	Levy
Description		Item/Acct	January	February	March	April	May	June	July	August	September	October	November	December	Total	
BRADY ROAD LANDFILL - VEHICLES / LOADS																
Vehicles - Domestic Refuse - City		1	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0	
Vehicles - Domestic Refuse - Contract	DOM REF CT	2	1458	1219	1336	1437	1485	1315	1540	1432	1412	1,524	1,324	1,366	16,848	
Vehicles - 4R Depot (Brady) - Garbage Area			2306	1863	3563	6091	7567	7309	7564	6900	6702	6105	4081	2910	62,961	
Vehicles - 4R Depot (Brady) - Total			2847	2439	4246	9998	13012	10778	11761	10466	9756	8484	5674	3629	93,090	
Vehicles - 4R Depot (Pacific)			1382	1051	1733	2923	4085	3994	4252	4055	3718	3234	2943	1873	35,243	
Vehicles - 4R Depot (Panet)			2502	1632	2962	5174	7157	7027	7226	6508	6542	6074	4943	3338	61,085	
Vehicles - Commercial / Industrial	COMM/INDUS	10	2803		3729	4515	5597	5168	5490	5243	4616	5,292	4,122	2,931.00	49,506	
Vehicles - Special Waste		17	0		2			0	0	0	0	0		2		
Vehicles - Mud Trucks - Tandem (manually tracked)			1631	1521	1429	105	532	707	655	712	205	593	98	71	8,259	
Vehicles - Mud Trucks - Semi (manually tracked)			604	433	1183	102	306	559	303	354	101	876	57	29	4,907	
OTHER MUNICIPALITIES - VEHICLES / LOADS																
Manitoba Conservation (Falcon Lake)		772	1						0	0	0	0	0	0	1	
RM of Tache		886	0						0	0	0	0	0	0	0	
R. M. of MacDonald / Blackhawk Enterprises		1127	0						0	0	0	0	0	0	0	
R. M. of Springfield / Emterra		1212	0						0	0	0	0	0	0	0	
R. M. of West St.Paul / Emterra		1263	0						0	0	0	0	0	0	0	
TOTAL VEHICLES - ALL PAYING CUSTOMERS			15,534	10,158	20,183	30,345	39,741	36,857	38,791	35,670	33,052	32,182	23,242	16,147	268,941	

		Blue font = formula = don't type in												Total
		January	February	March	April	May	June	July	August	September	October	November	December	Total
Reconcile Monthly Tonnage to WasteWorks Material Analysis report	Total Actual Weight per WW	26,803.34	22,158.27	26,572.35	37,744.21	51,234.39	43,318.31	47,262.49	40,508.96	40,972.48	45,195.54	35,226.96	30,430.69	447,427.99
ss: Removals X 2 (negative here but positive in WW) (BATTERYRMV)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(COMPOSTREM)		0.00	0.00	0.00	(182.52)	(4,084.66)	0.00	(1,262.04)	(1,870.20)	(127.64)	(2,804.10)	0.00	0.00	(10,331.16)
(GLASS REMV)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(LEACH REMV)		(2,869.20)	(3,155.38)	(5,770.18)	(7,424.72)	(7,469.34)	(5,979.12)	(7,629.16)	(5,910.02)	(6,051.54)	(5,613.70)	(6,033.66)	(5,072.40)	(68,978.42)
(ODS REMOVA)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(SCRAP REMV)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(TREESDE-WA)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(TIRES REMV)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MUD TRUCKS MANULLY TRACK		23,587.50	19,196.00	34,723.00	88,755.00	10,037.00	16,614.00	10,772.00	12,239.00	3,504.00	97.50	1,862.50	1,085.00	222,472.50
Less: Items not on tonnage report	RES/REFUSE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WEIGH ONLY					(37.72)	(79.62)	(124.68)	(0.86)	(274.57)	(11.69)				(529.14)
4RDEPTFF WASTEWORKE REPO				(6.82)										(6.82)
4RDEPTFF WRARS LEVY REPO				4.00										4.00
4R MATERIALS		124.76	95.73	112.04	214.25	341.93	242.53	349.69	324.72	266.59	264.35	190.36	107.24	2,634.18
COMM_FF WASTEWORKE REPO				(95.09)										(95.09)
COMM_FF WRARS LEVY REPO				7.17										7.17
ZRATE ADJ		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CASH CUSTOMER		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OTHER ADJUSTMENTS					(1.94)		(2.04)							(3.98)
ACCT 472 ARSON PILOT ZONE		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net		47,646.40	38,294.62	55,546.48	119,066.56	49,979.70	54,069.00	49,492.12	45,017.89	38,552.20	37,139.59	31,246.16	26,550.53	592,601.23
Total per Tonnage Report		47,646.40	38,294.62	55,546.48	119,066.56	49,979.70	54,069.00	49,492.12	45,017.89	38,552.20	37,139.59	31,246.16	26,550.53	592,601.23
Difference should be zero		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

APPENDIX C
2019 PIPER DIAGRAMS

**2019 GROUNDWATER
PIPER DIAGRAMS**

Site: Brady Well #: W4

Dates:

- 11-Jun-14
- 23-Oct-14
- 2-Jun-15
- 26-Oct-15
- 24-May-16
- 26-Oct-16
- 23-May-17
- 19-Oct-17
- 24-May-18
- 16-Oct-18
- 9-May-19
- 7-Oct-19

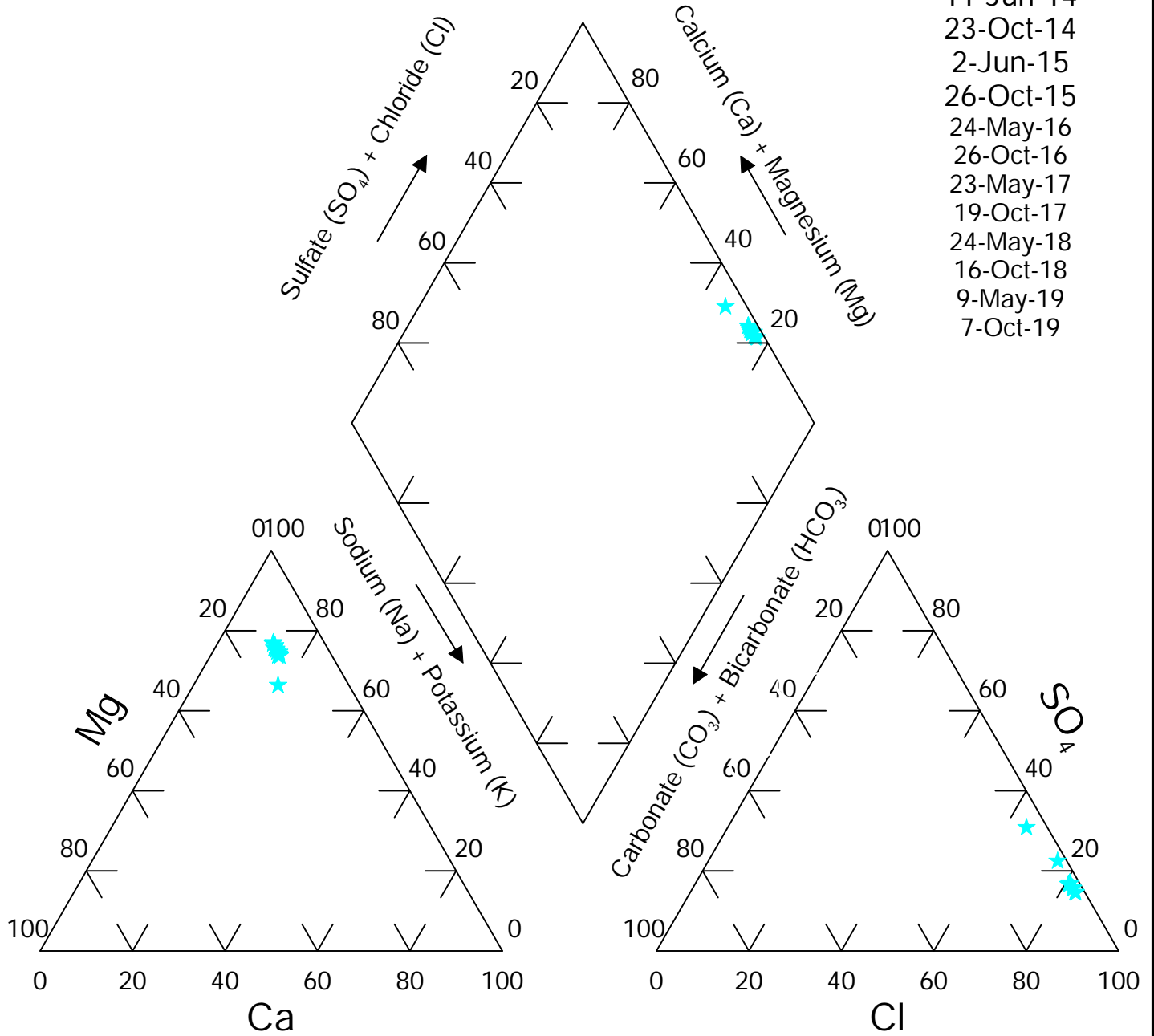


FIGURE: 1P

Site: Brady Well #: W5

- Dates:**
 11-Jun-14
 23-Oct-14
 2-Jun-15
 26-Oct-15
 24-May-16
 26-Oct-16
 23-May-17
 19-Oct-17
 24-May-18
 18-Oct-18
 9-May-19
 7-Oct-19

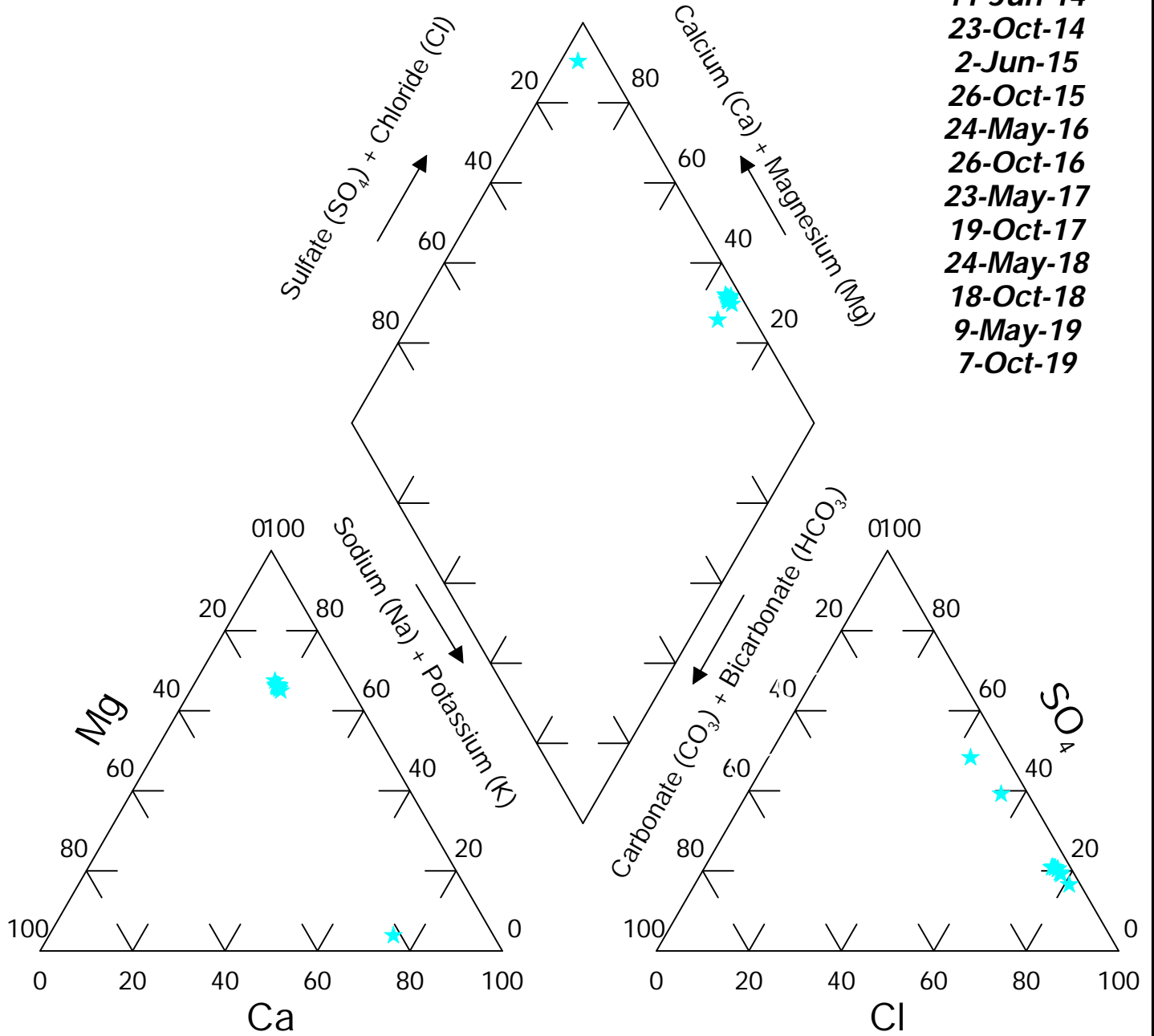


FIGURE: 2P

Site: Brady Well #: W6

Dates:

- 11-Jun-14
- 20-Oct-14
- 3-Jun-15
- 26-Oct-15
- 30-May-16
- 25-Oct-16
- 24-May-17
- 17-Oct-17
- 23-May-18
- 18-Oct-18
- 14-May-19
- 13-Nov-19

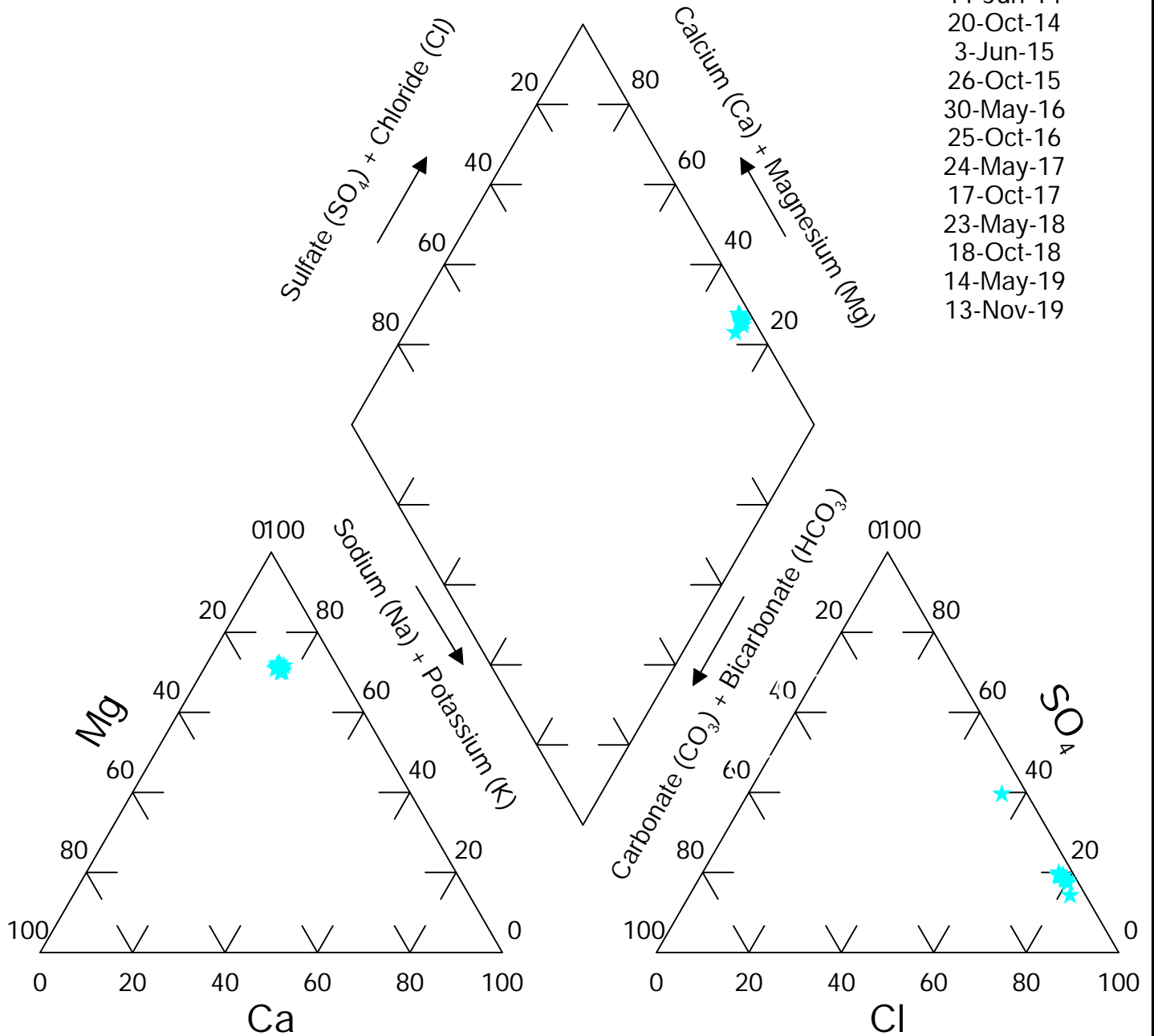


FIGURE: 3P

Site: Brady Well #: W7

- Dates:**
 11-Jun-14
 20-Oct-14
 2-Jun-15
 26-Oct-15
 24-May-16
 24-Oct-16
 24-May-17
 17-Oct-17
 23-May-18
 17-Oct-18
 14-May-19
 13-Nov-19

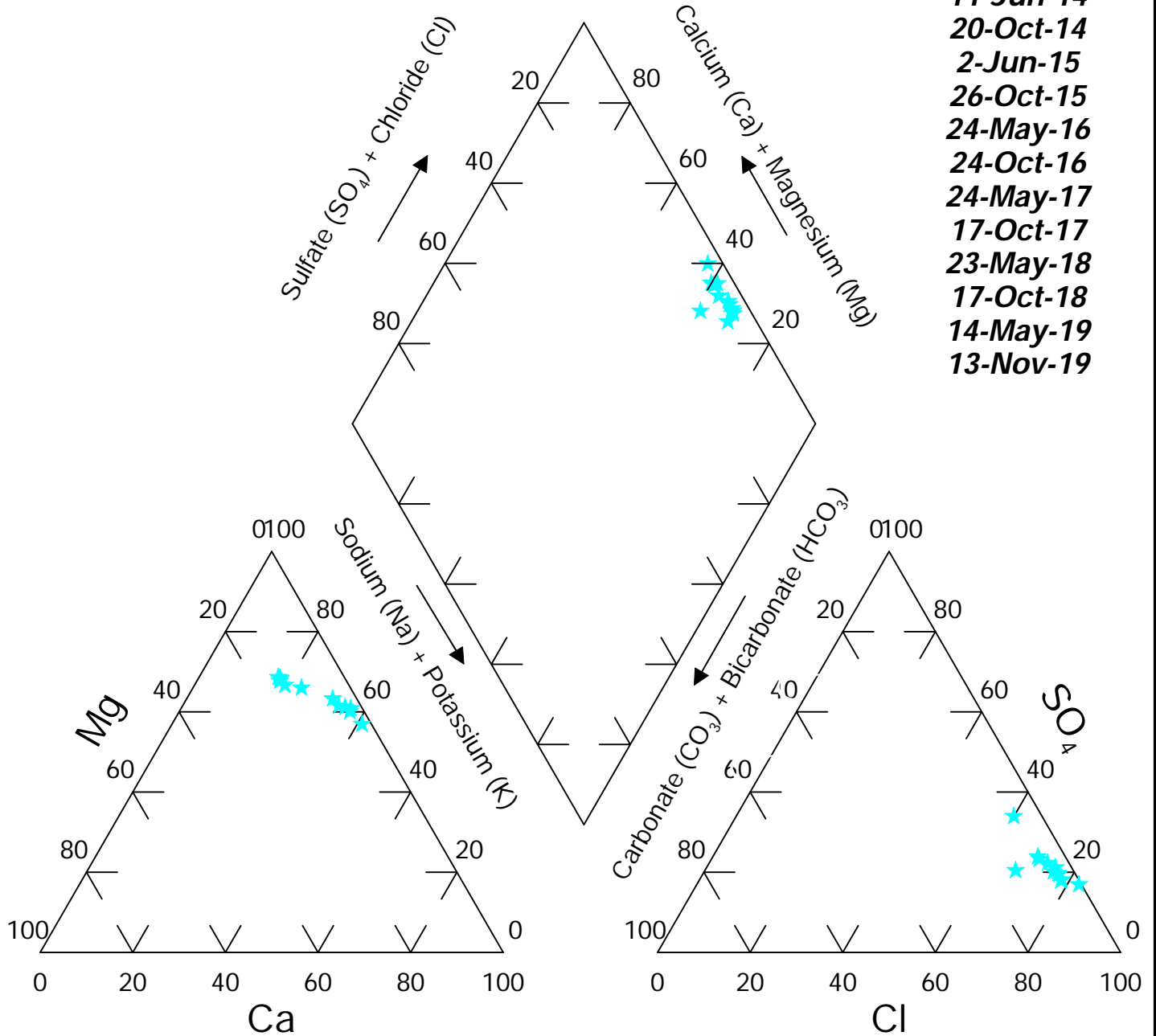


FIGURE: 4P

Site: Brady Well #: W8

- Dates:**
 11-Jun-14
 23-Oct-14
 3-Jun-15
 26-Oct-15
 25-May-16
 24-Oct-16
 24-May-17
 17-Oct-17
 29-May-18
 18-Oct-18
 13-May-19
 13-Nov-19

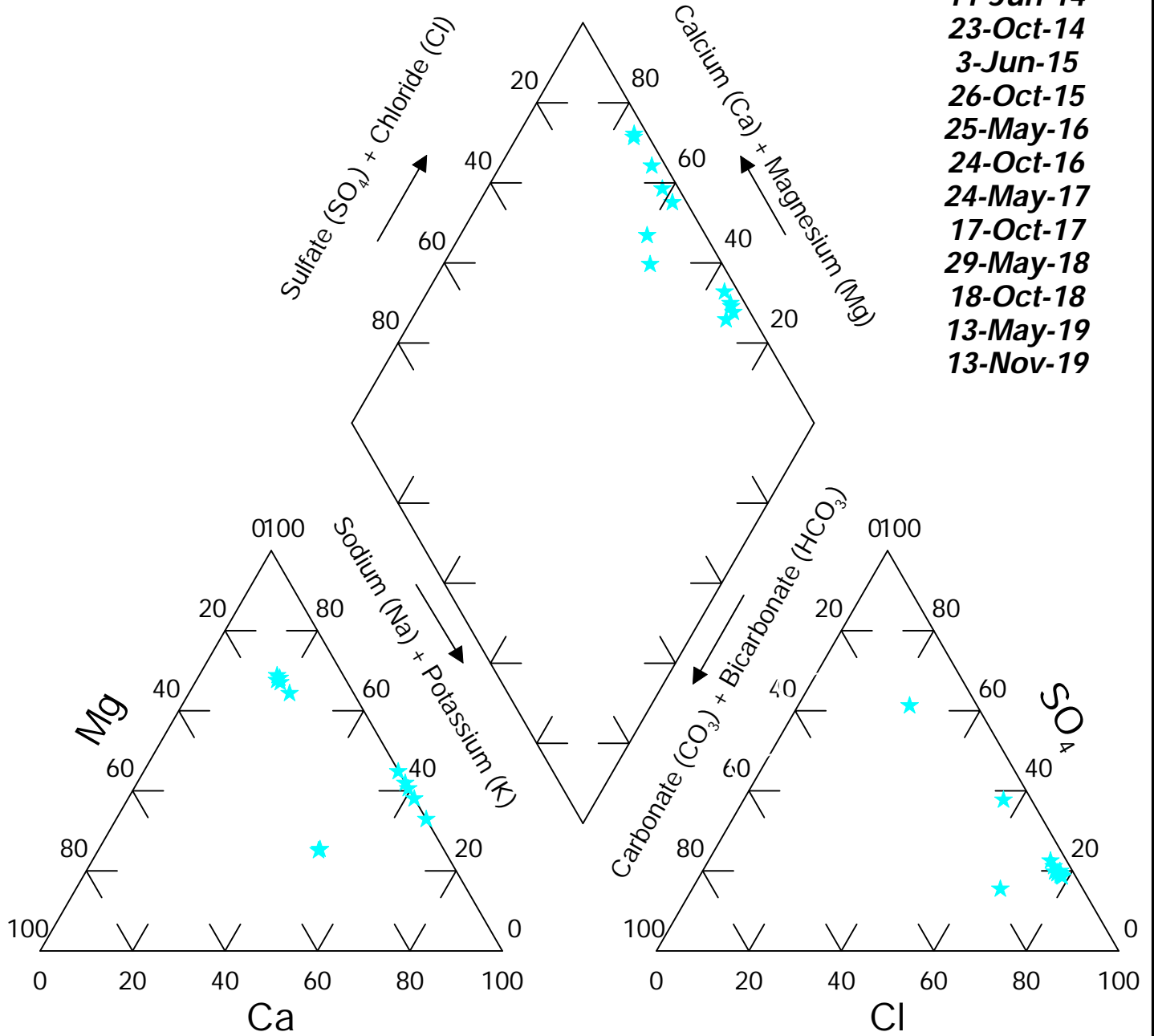


FIGURE: 5P

Site: Brady Well #: W9

- Dates:**
 1-Jun-14
 20-Oct-14
 3-Jun-15
 22-Oct-15
 24-May-16
 26-Oct-16
 23-May-17
 18-Oct-17
 24-May-18
 18-Oct-18
 15-May-19
 8-Oct-19

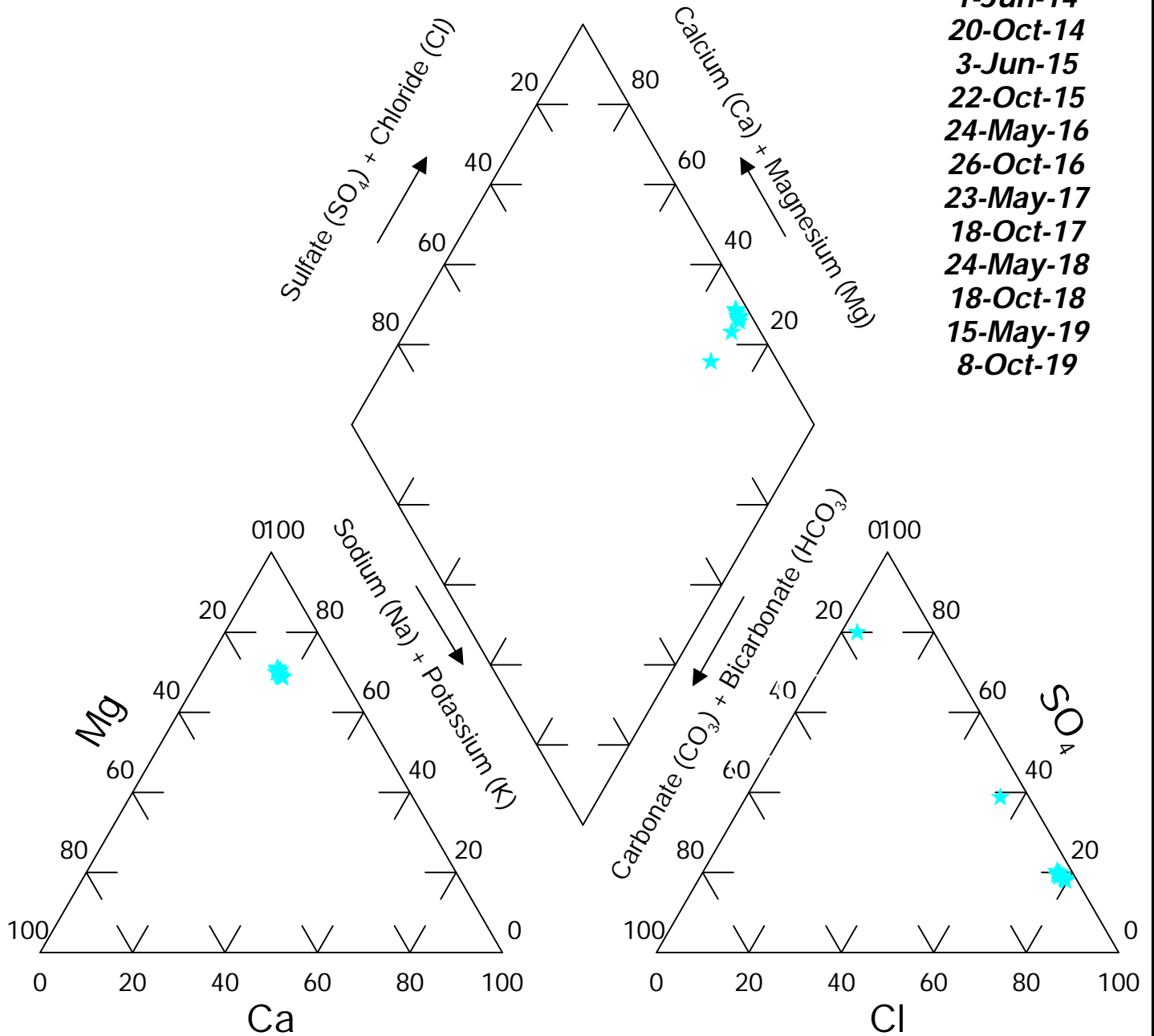


FIGURE: 6P

Site: Brady Well #: W10

Dates:

- 10-Jun-14
- 20-Oct-14
- 3-Jun-15
- 22-Oct-15
- 25-May-16
- 26-Oct-16
- 23-May-17
- 18-Oct-17
- 24-May-18
- 16-Oct-18
- 15-May-19
- 8-Oct-19

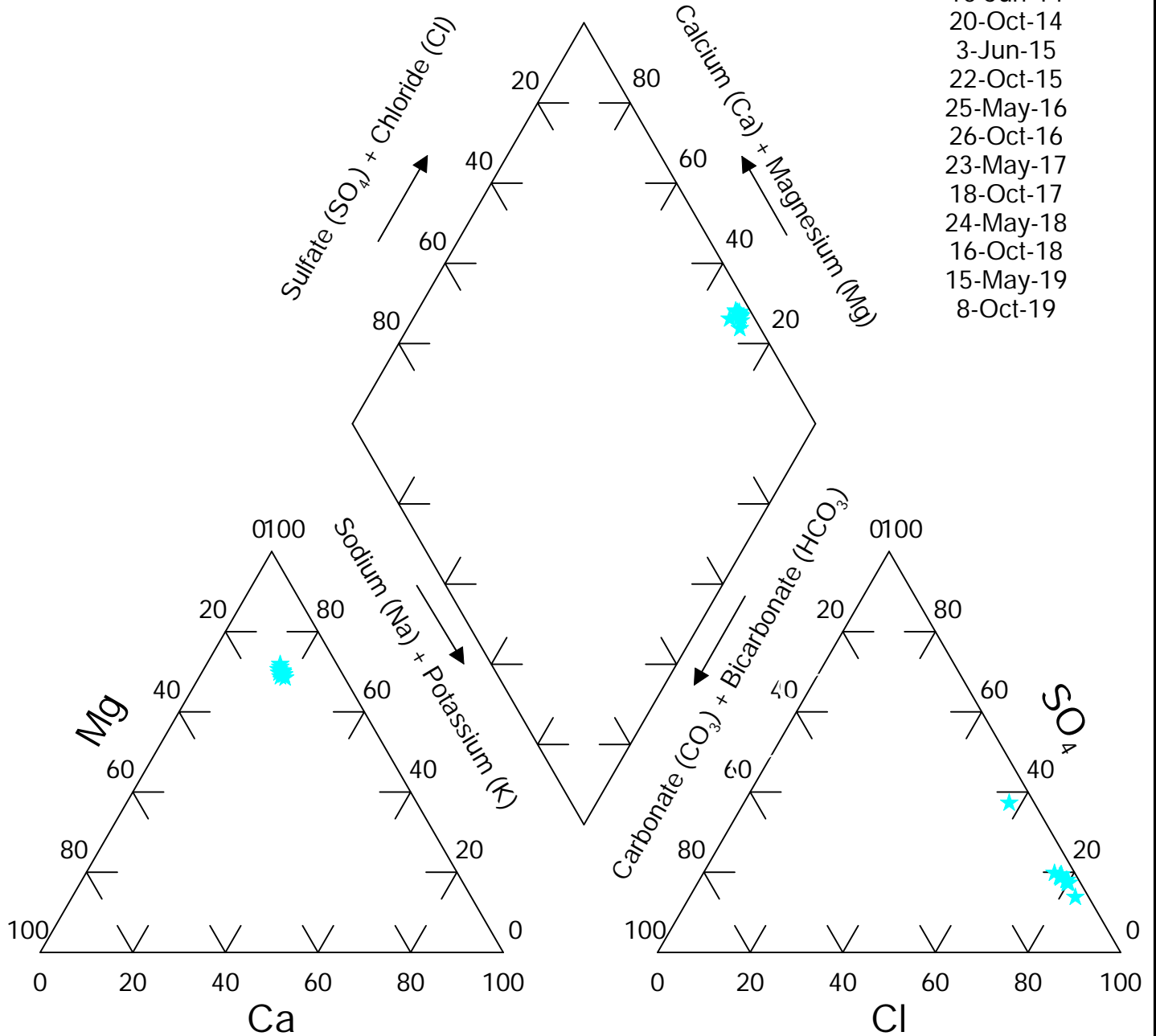


FIGURE: 7P

Site: Brady Well #: W11

Dates:

- 10-Jun-14
- 23-Oct-14
- 2-Jun-15
- 22-Oct-15
- 25-May-16
- 26-Oct-16
- 23-May-17
- 18-Oct-17
- 24-May-18
- 17-Oct-18
- 15-May-19
- 8-Oct-19

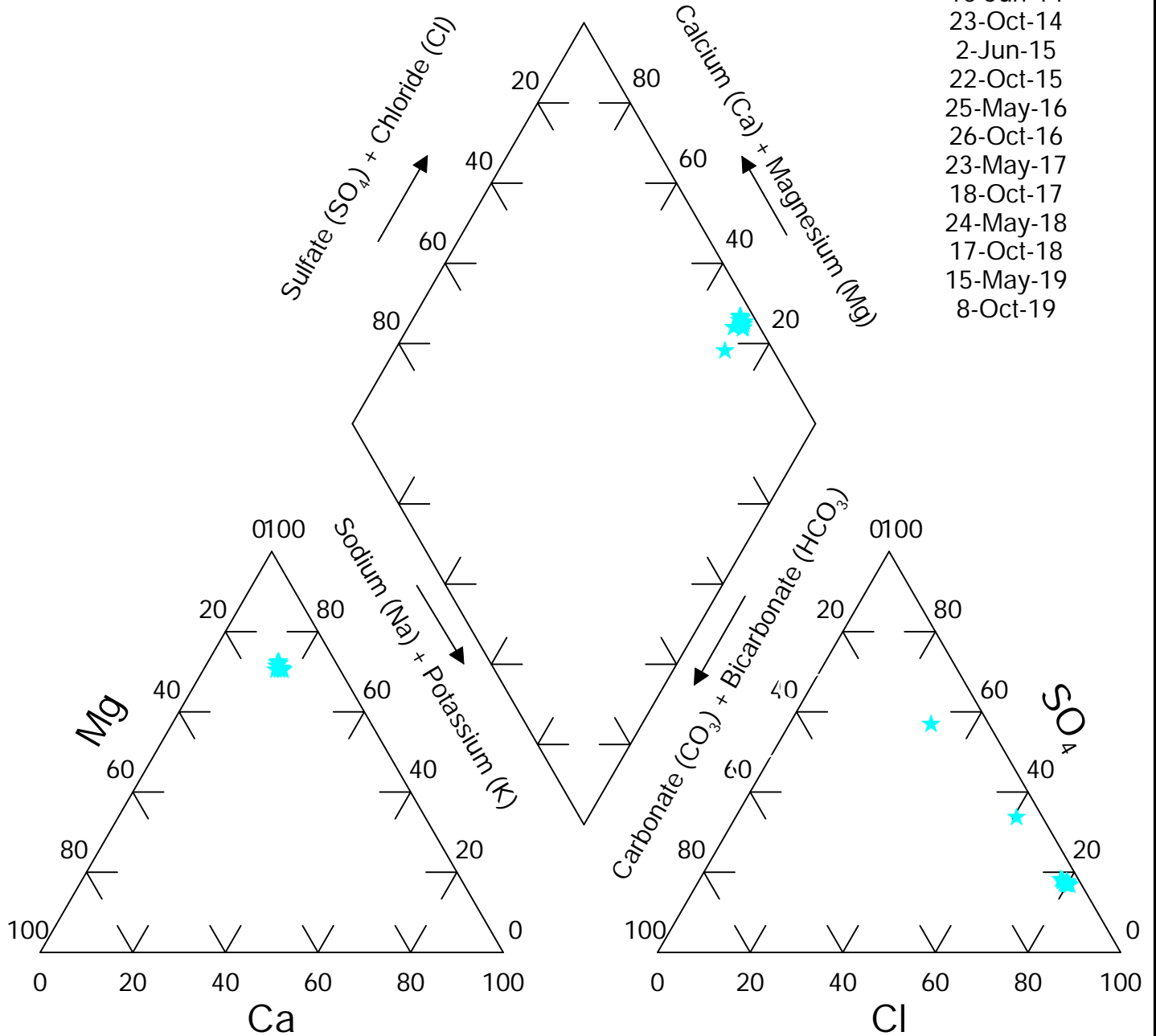


FIGURE: 8P

Site: Brady Well #: W12

Dates:

- 12-Jun-14
- 20-Oct-14
- 3-Jun-15
- 22-Oct-15
- 25-May-16
- 26-Oct-16
- 25-May-17
- 17-Oct-17
- 24-May-18
- 17-Oct-18
- 15-May-19
- 14-Oct-19

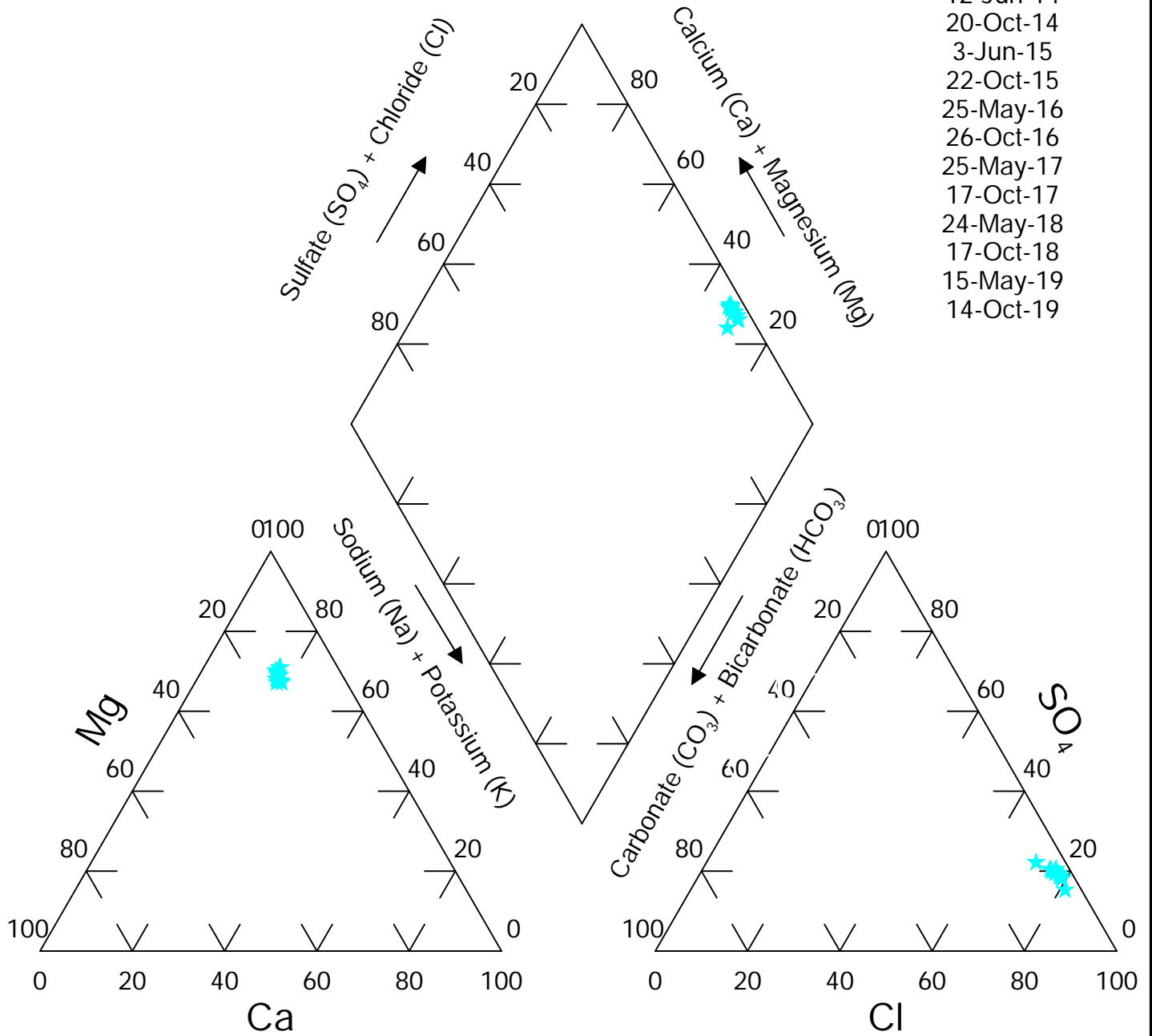


FIGURE: 9P

Site: Brady Location : W13

Dates:
 1-Jun-15
 21-Oct-15
 27-May-16
 24-Oct-16
 24-May-17
 16-Oct-17
 28-May-18
 17-Oct-18
 13-May-19
 8-Oct-19

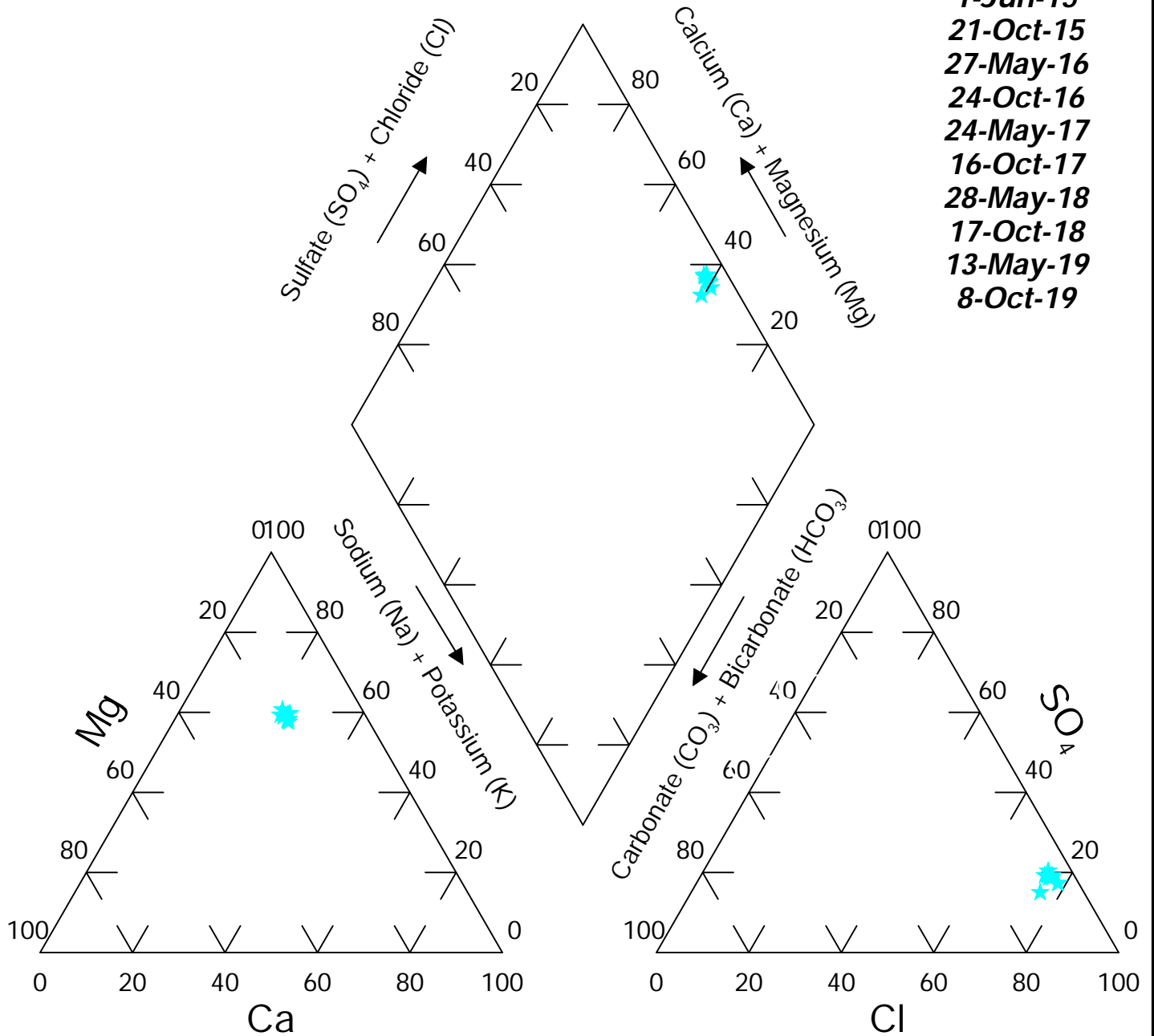


FIGURE: 1z

Site: Brady Location : GWQ25-W14

Dates:
 3-Jun-15
 21-Oct-15
 25-May-16
 26-Oct-16
 25-May-17
 16-Oct-17
 28-May-18
 18-Oct-18
 15-May-19
 13-Nov-19

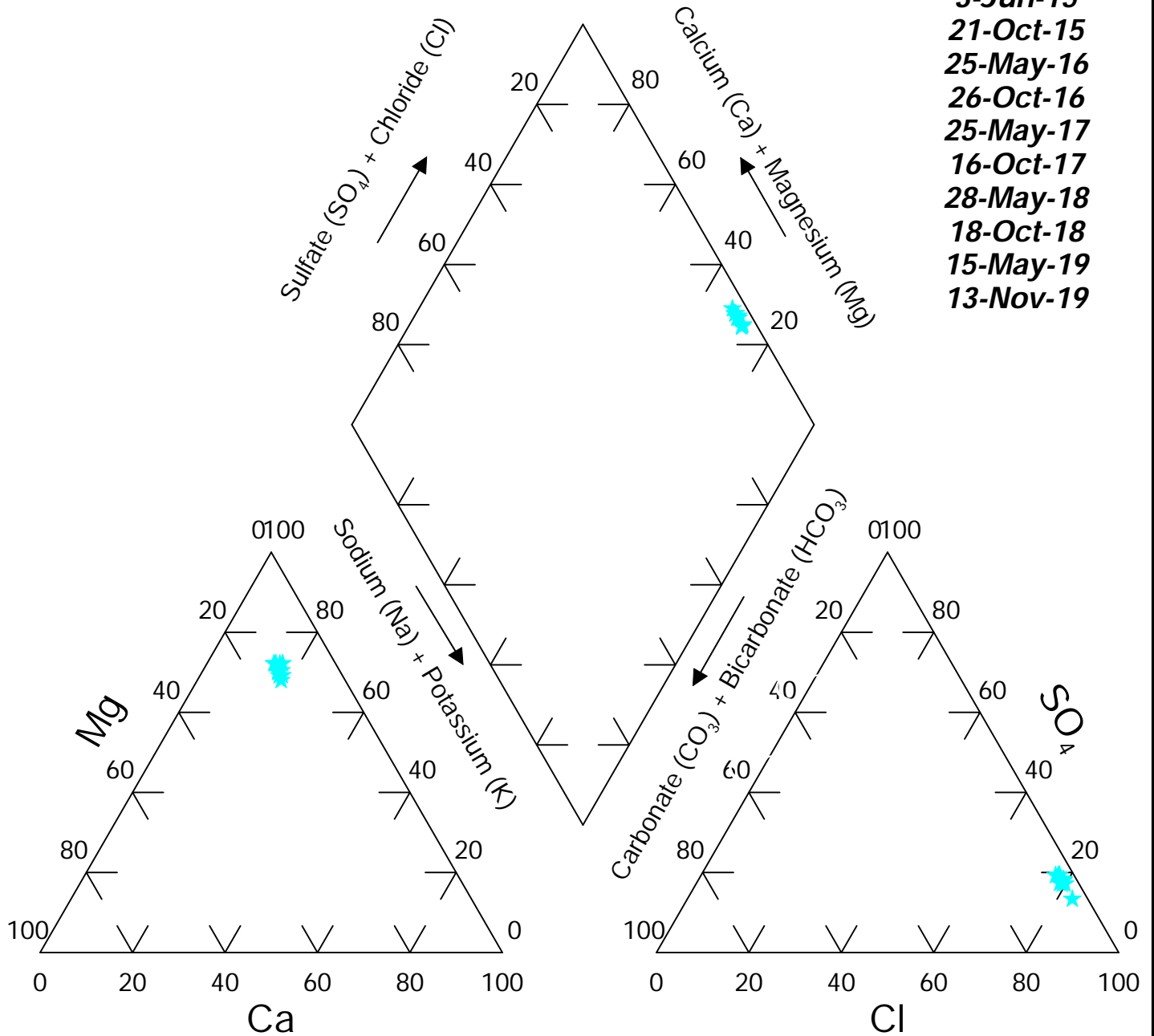


FIGURE: 2z

Site: Brady Location : GWQ25-W15

Dates:
 3-Jun-15
 21-Oct-15
 30-May-16
 25-Oct-16
 25-May-17
 16-Oct-17
 28-May-18
 22-Oct-18
 15-May-19
 13-Oct-19

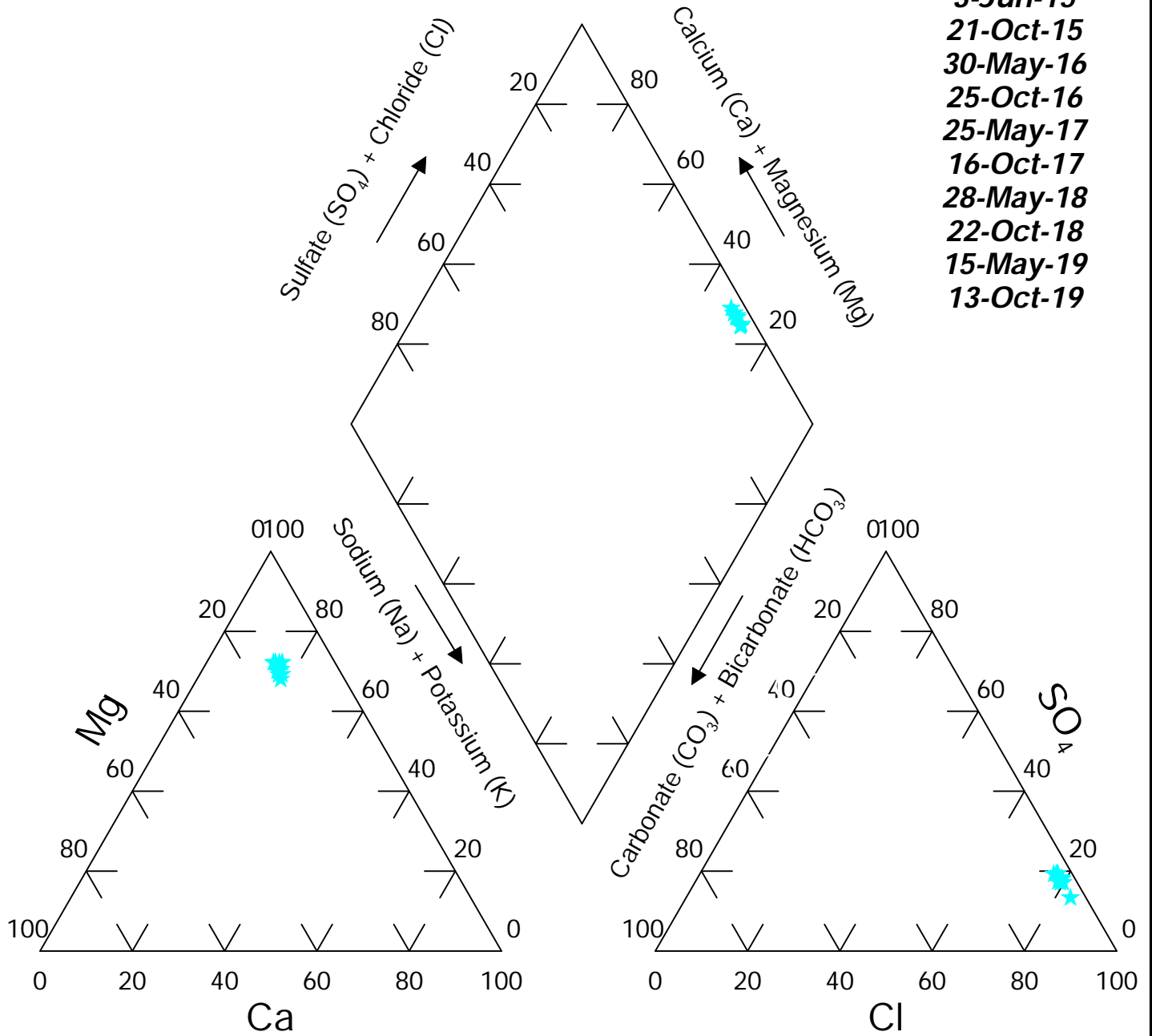


FIGURE: 3z

Site: Brady

Location : GWQ25-W16

Dates:
 4-Jun-15
 21-Oct-15
 30-May-16
 25-Oct-16
 25-May-17
 16-Oct-17
 28-May-18
 22-Oct-18
 15-May-19
 8-Dec-19

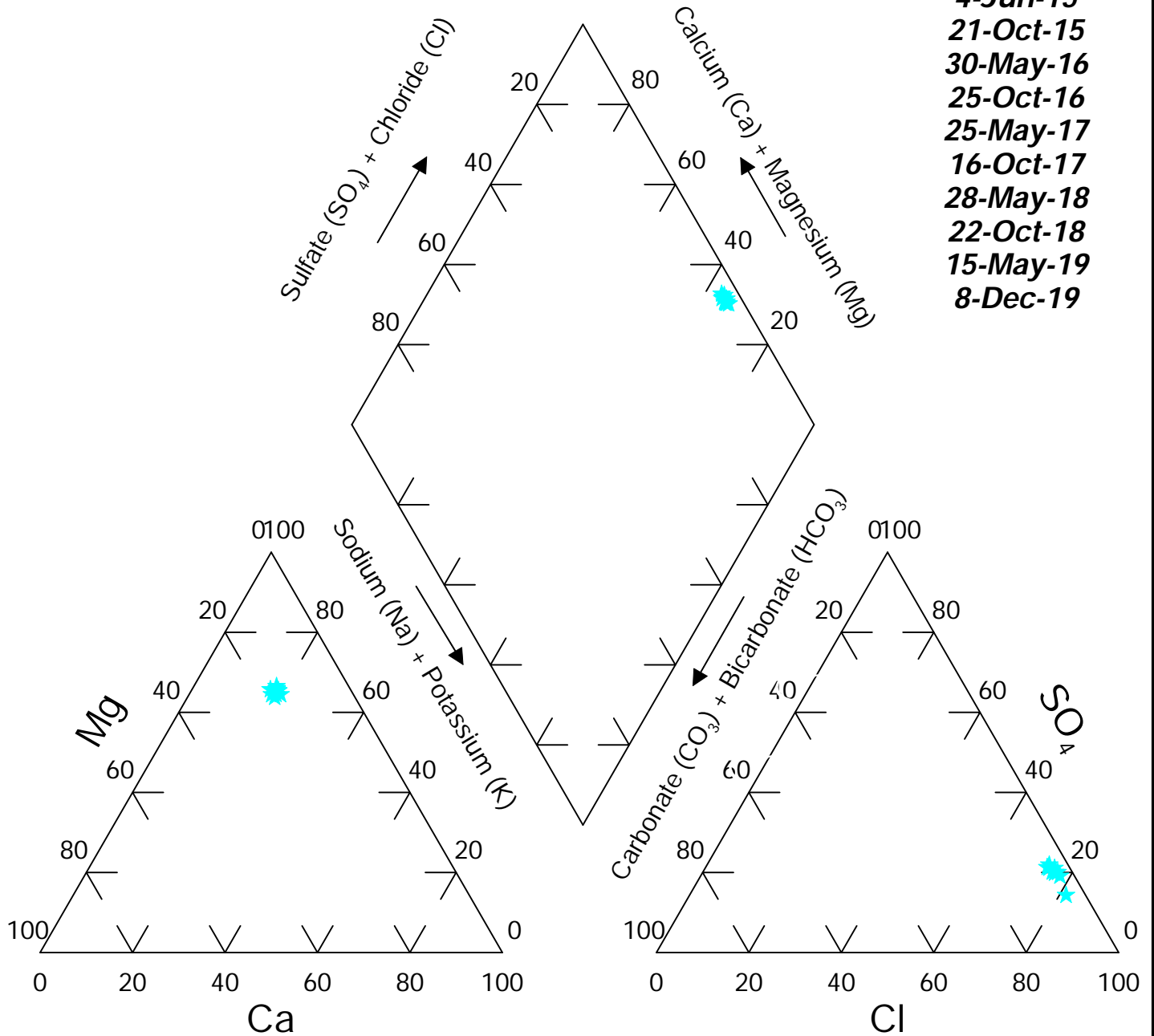
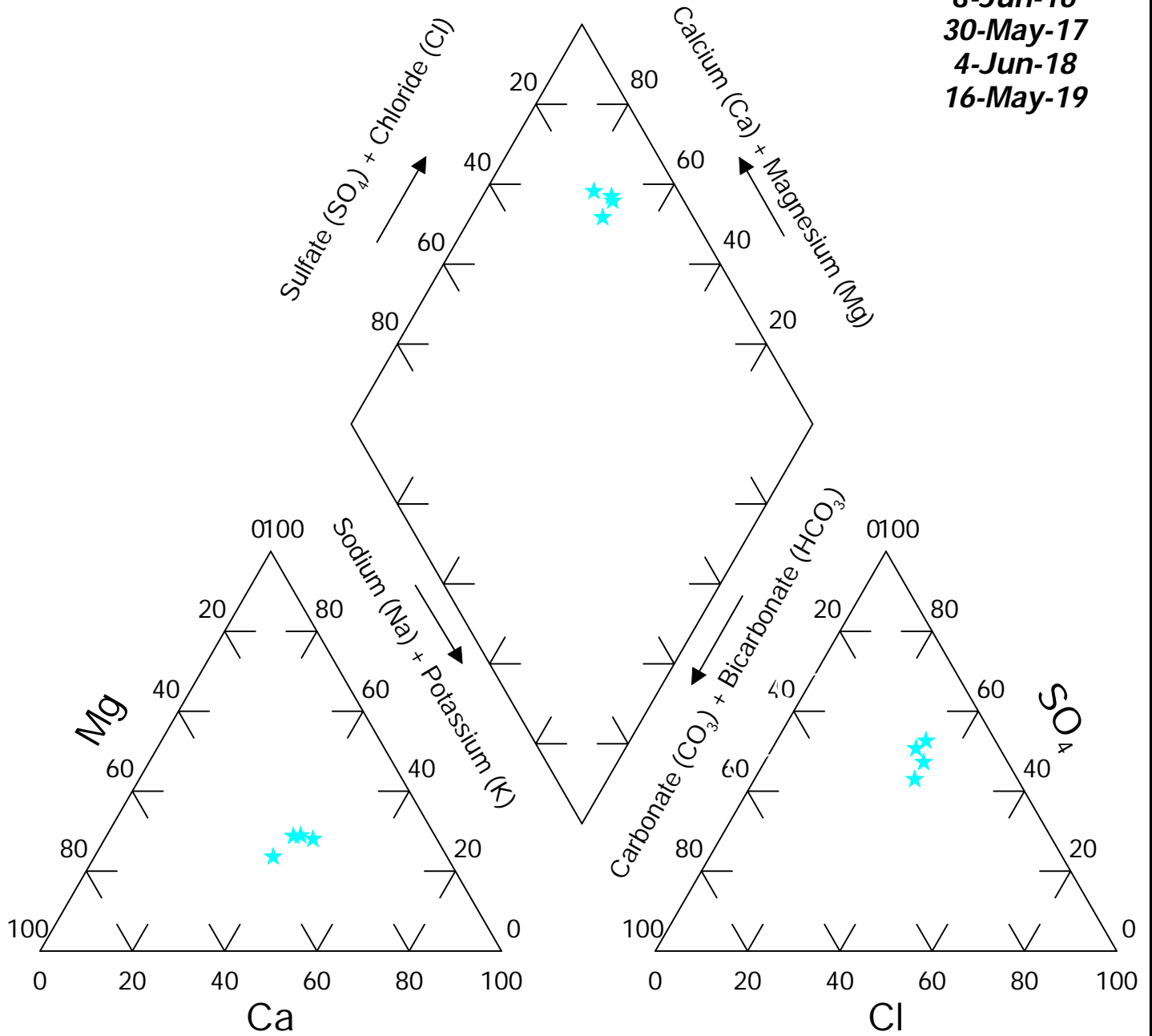


FIGURE: 4z

Site: Brady
Location : GWQ25-4N34-CR

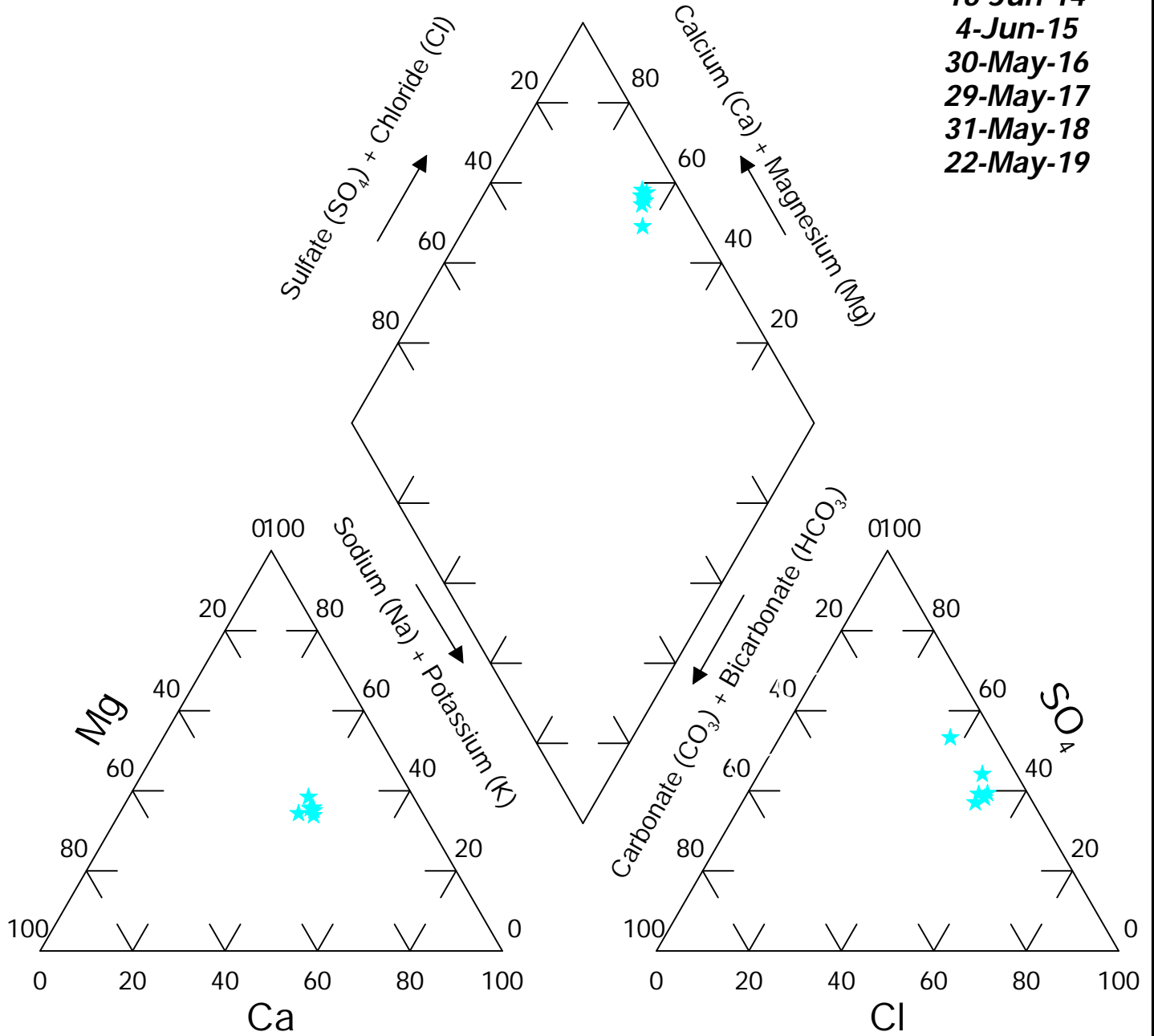
Dates:
8-Jun-16
30-May-17
4-Jun-18
16-May-19



Site: Brady

Location : GWQ25-5N62-D

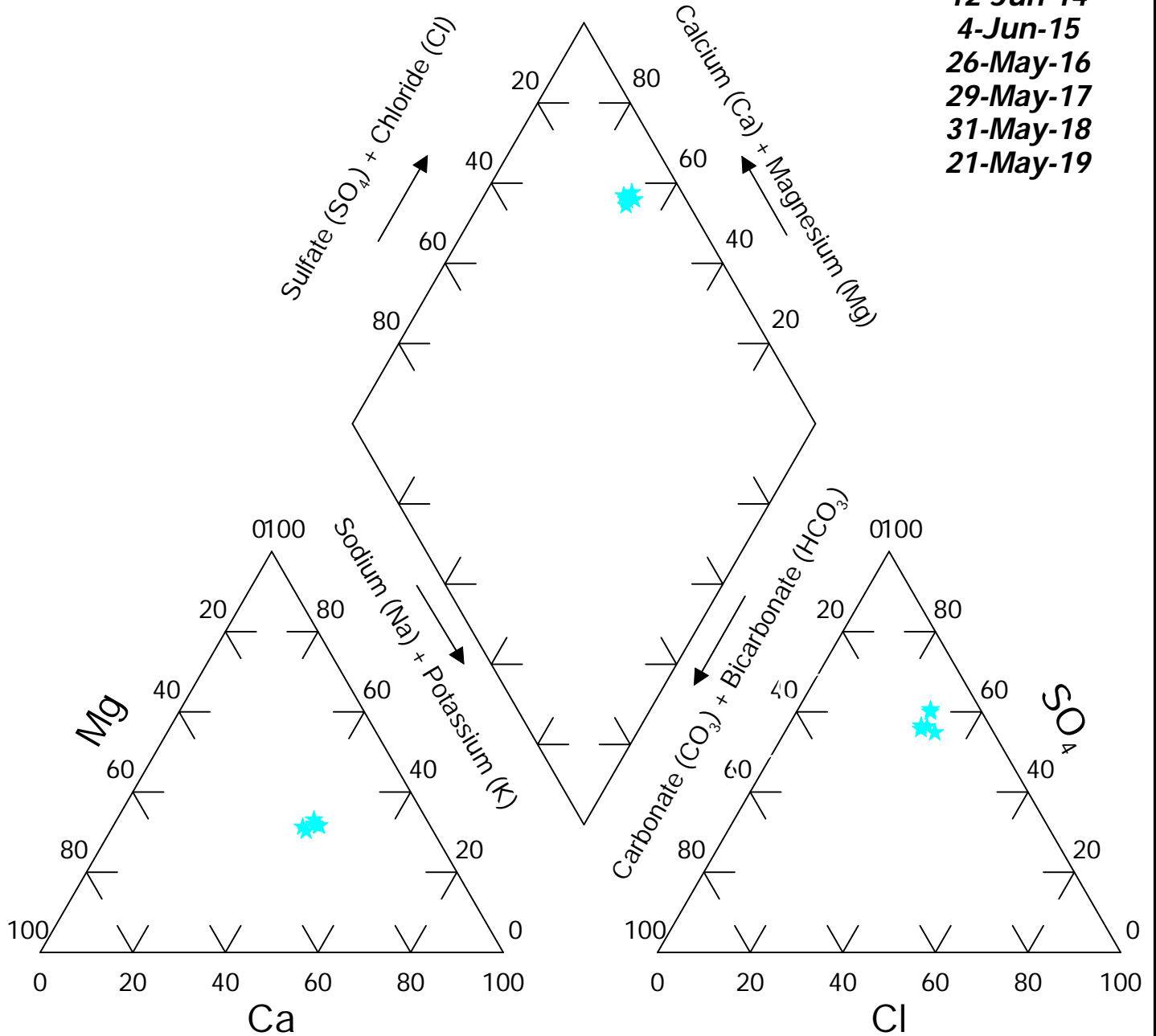
Dates:
 16-Jun-14
 4-Jun-15
 30-May-16
 29-May-17
 31-May-18
 22-May-19



Site: Brady

Location : GWQ25-6N57-DR

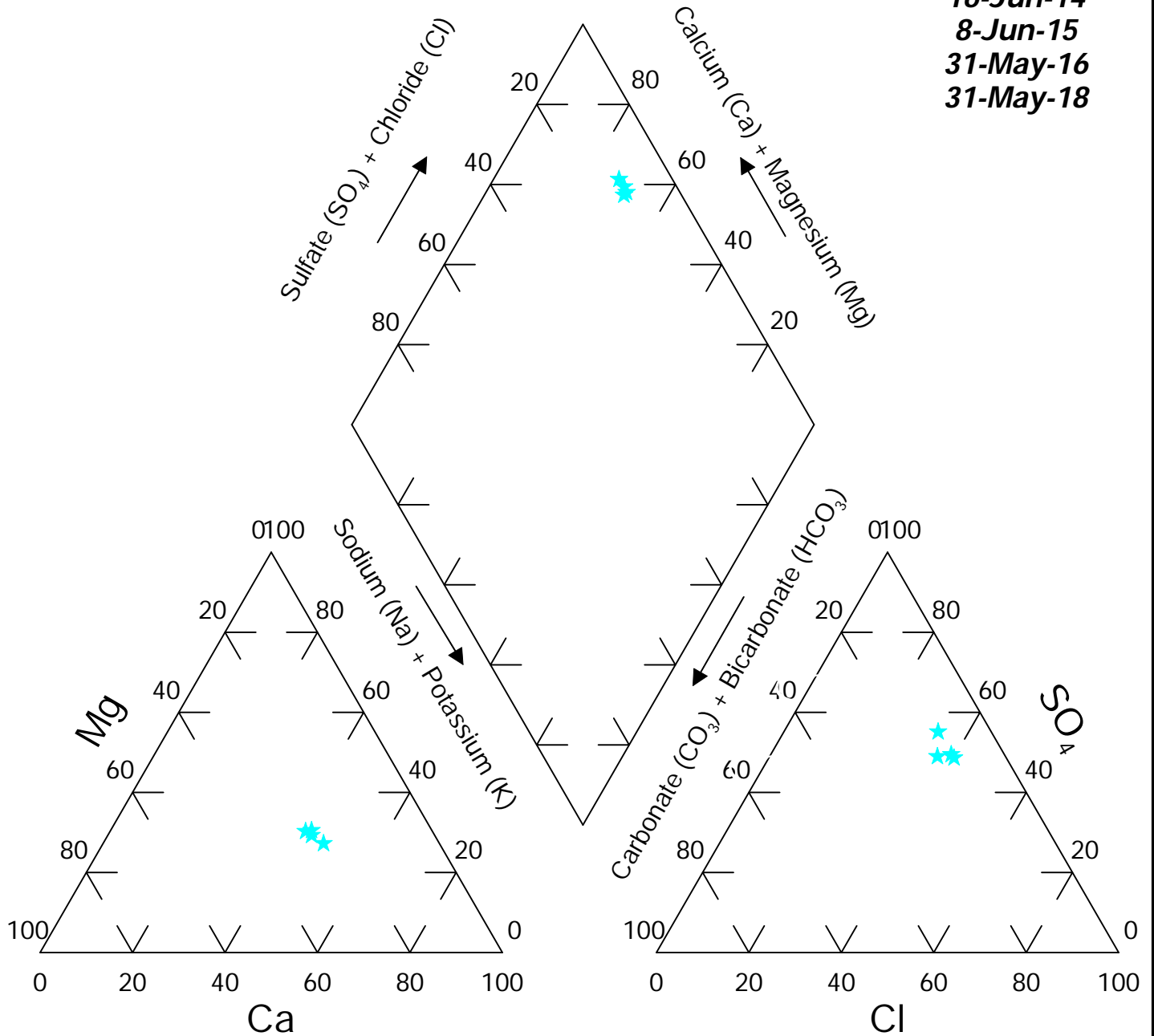
Dates:
12-Jun-14
4-Jun-15
26-May-16
29-May-17
31-May-18
21-May-19



Site: Brady

Location : GWQ25-6N58-DR

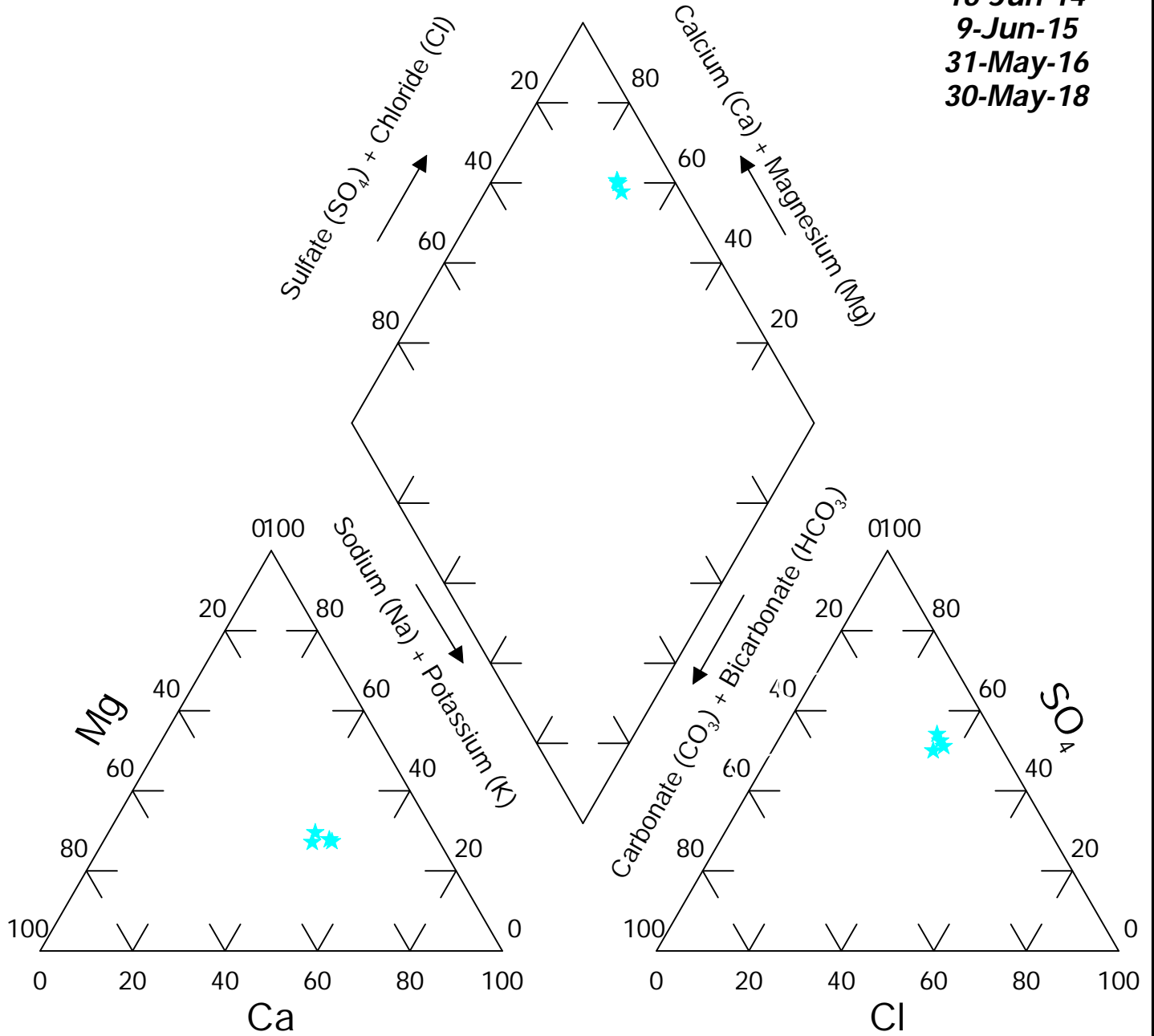
Dates:
16-Jun-14
8-Jun-15
31-May-16
31-May-18



Site: Brady

Location : GWQ25-6N59-DR

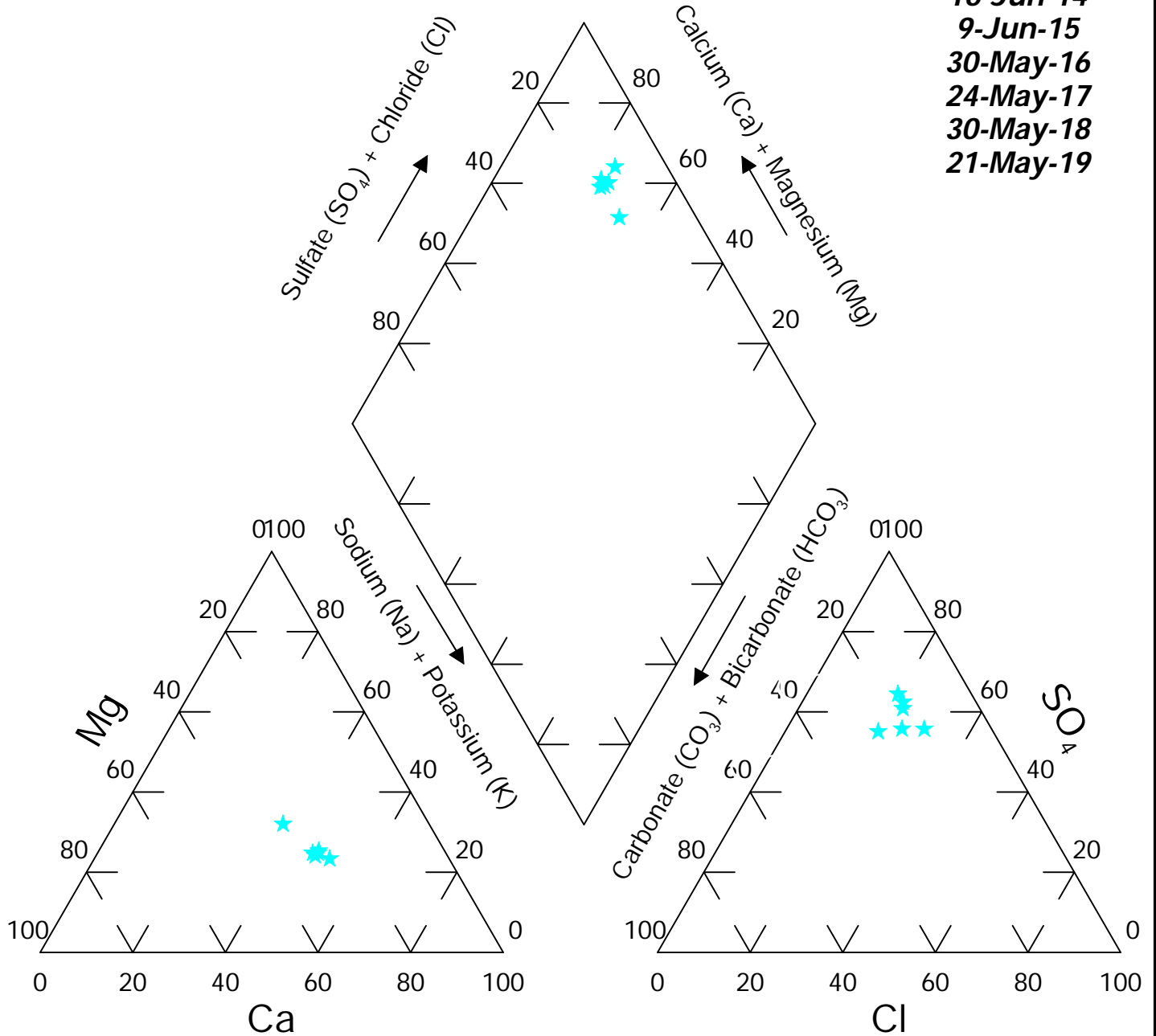
Dates:
 16-Jun-14
 9-Jun-15
 31-May-16
 30-May-18



Site: Brady

Location : GWQ25-6N60-DR

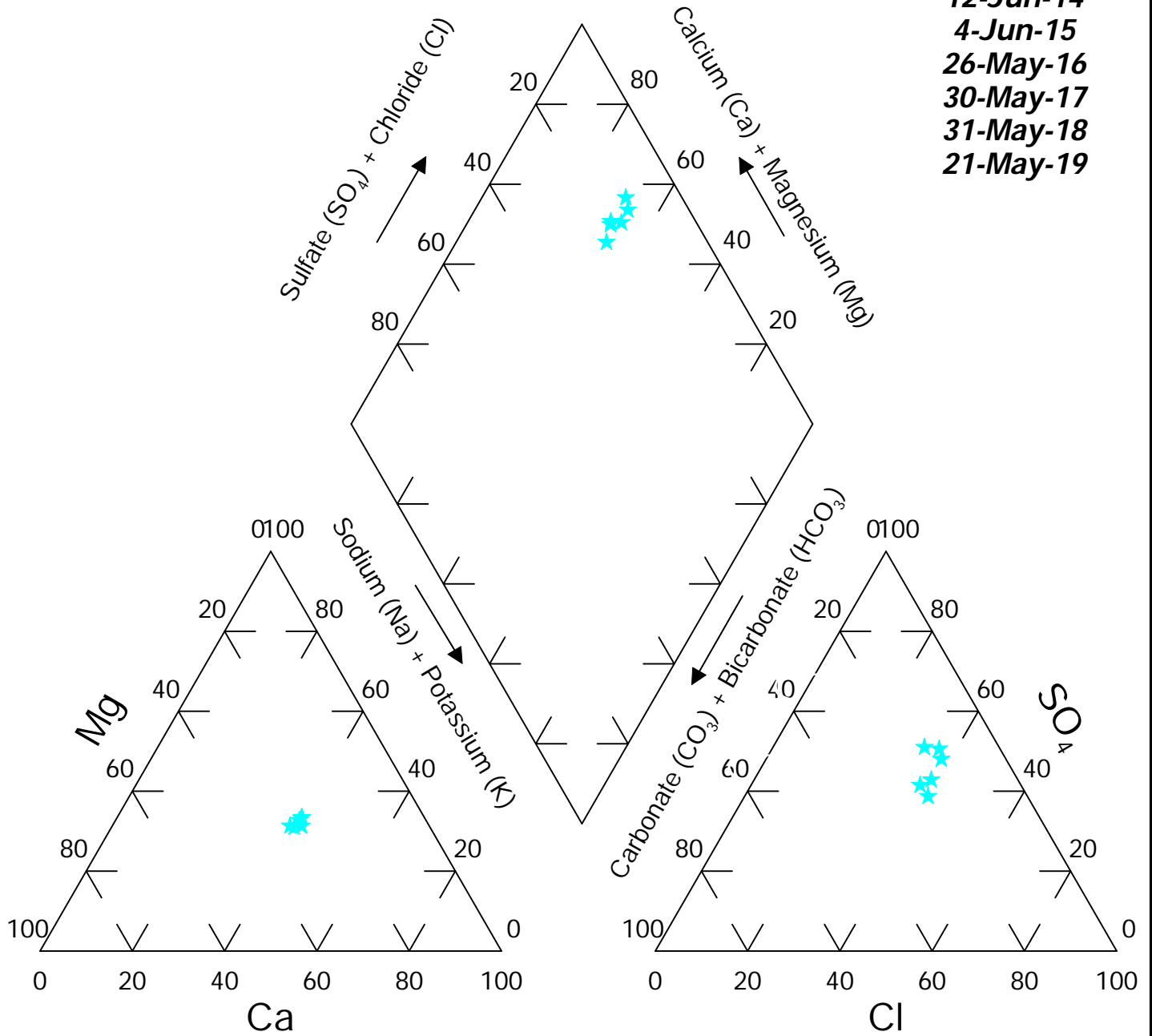
Dates:
16-Jun-14
9-Jun-15
30-May-16
24-May-17
30-May-18
21-May-19



Site: Brady

Location : GWQ25-6N63-E

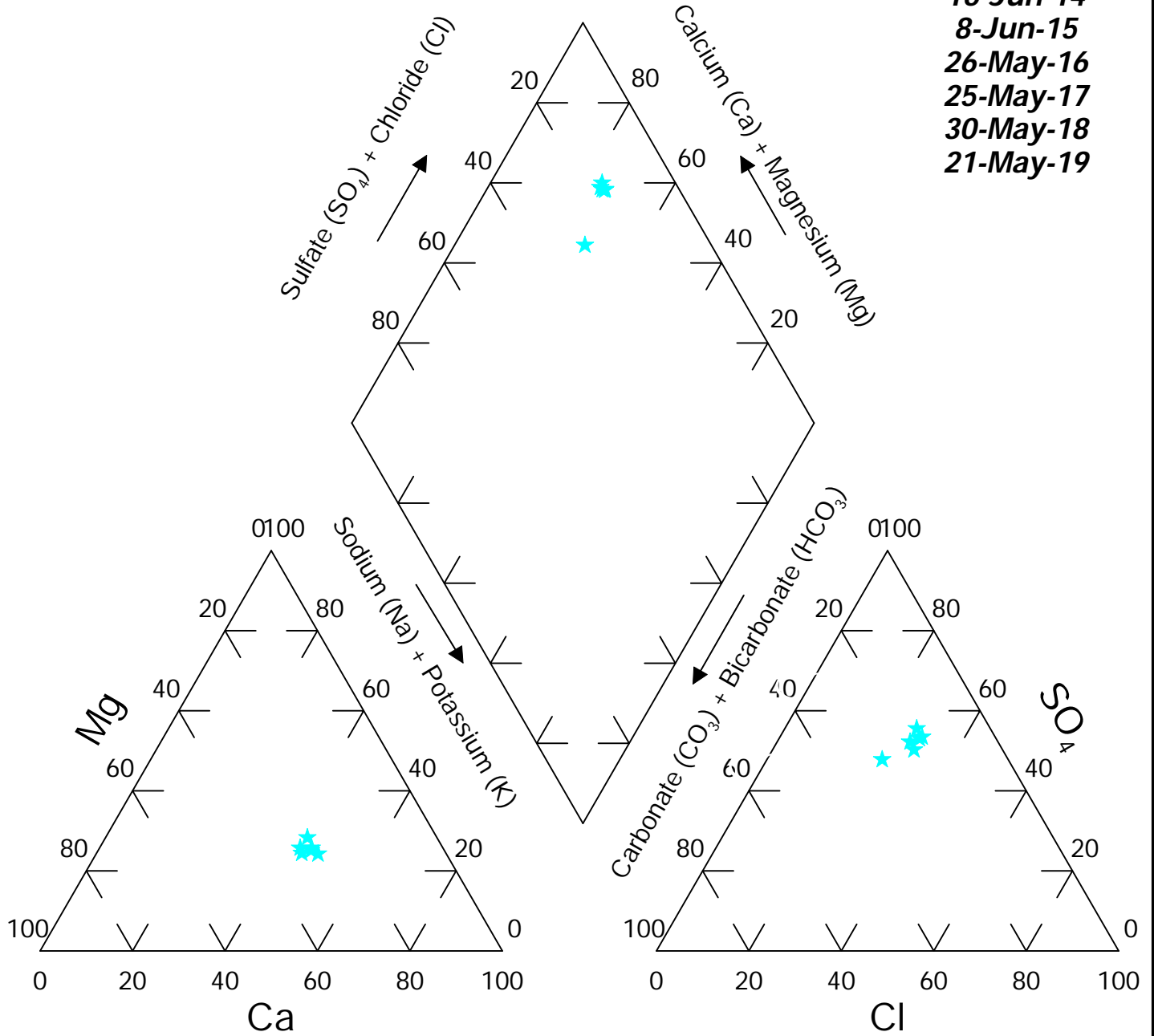
Dates:
 12-Jun-14
 4-Jun-15
 26-May-16
 30-May-17
 31-May-18
 21-May-19



Site: Brady

Location : GWQ25-6N67-E

Dates:
 16-Jun-14
 8-Jun-15
 26-May-16
 25-May-17
 30-May-18
 21-May-19



Site: Brady
Well #: 4N34-D/DR

Dates:
 12-Jun-14
 8-Jun-15
 7-Jun-16
 25-May-17
 4-May-18
 16-May-19

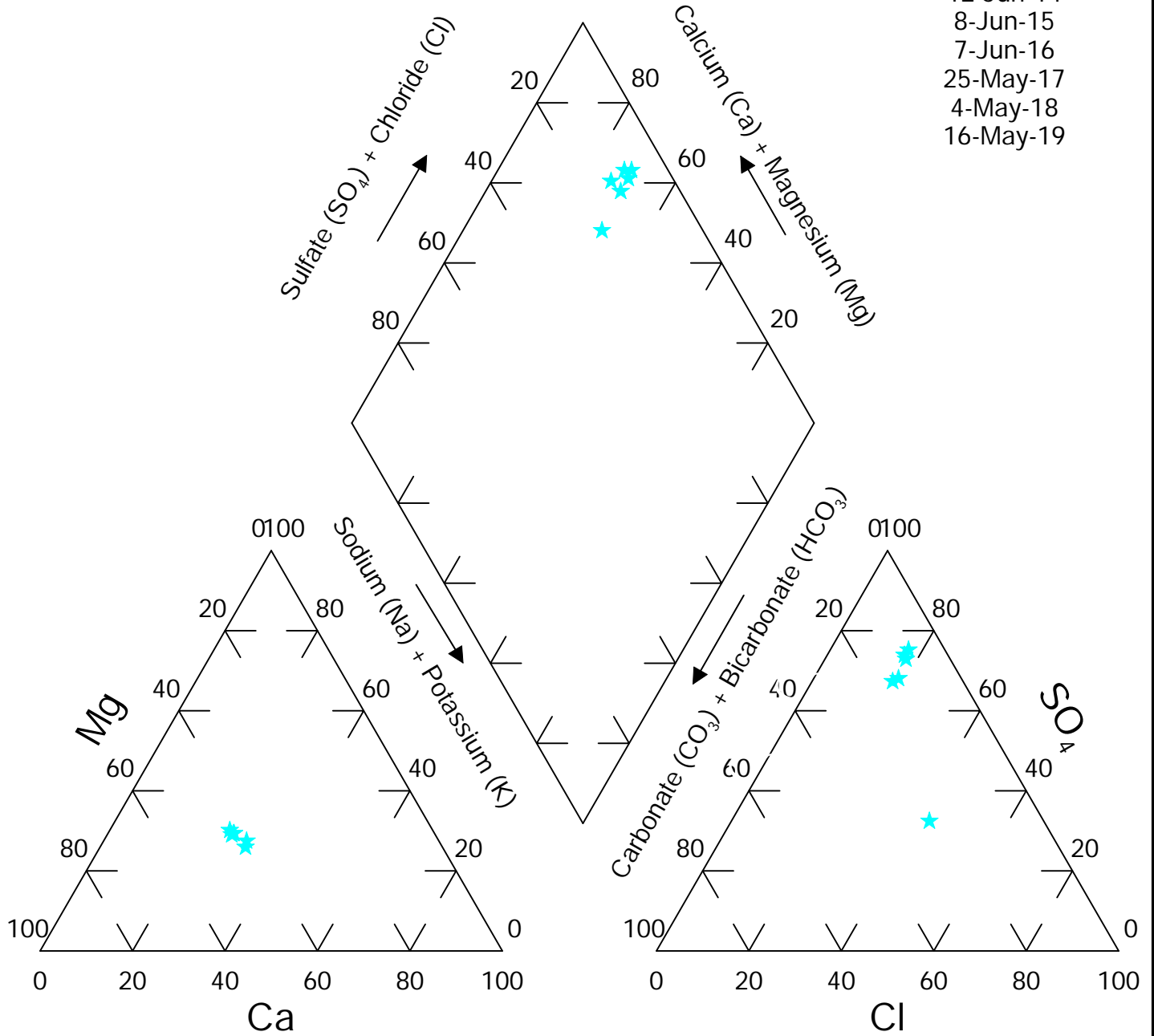


FIGURE: 10P

Site: Brady Well #: 5N62-E

- Dates:**
 16-Jun-14
 23-Oct-14
 4-Jun-15
 15-Oct-15
 30-May-16
 27-Oct-16
 29-May-17
 17-Oct-17
 31-May-18
 15-Oct-18
 22-May-19
 3-Oct-19

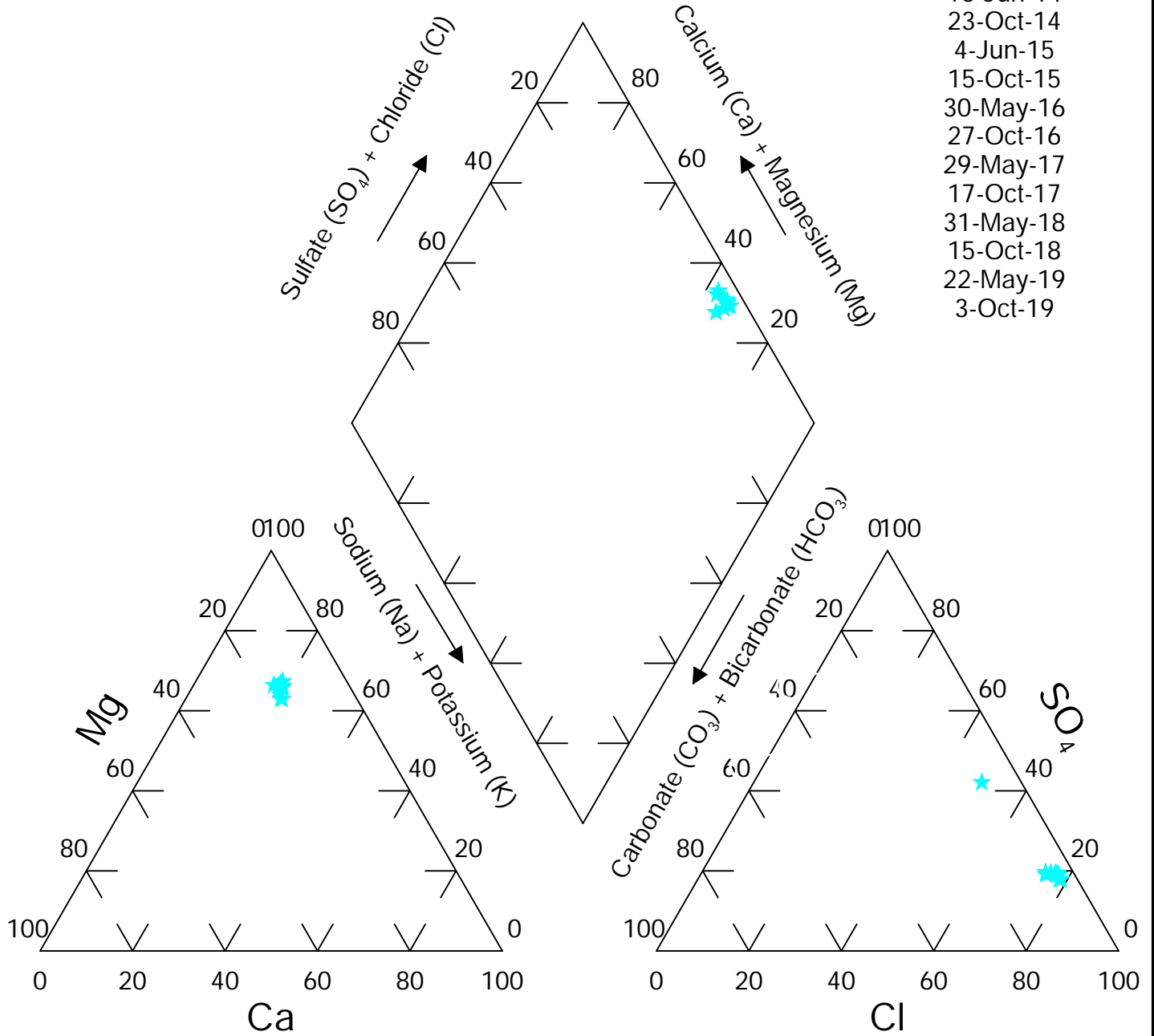


FIGURE: 11P

Site: Brady
Well #: 6N57-F/FR

Dates:
10-Jun-15
26-May-16
24-May-17
30-May-18
21-May-19

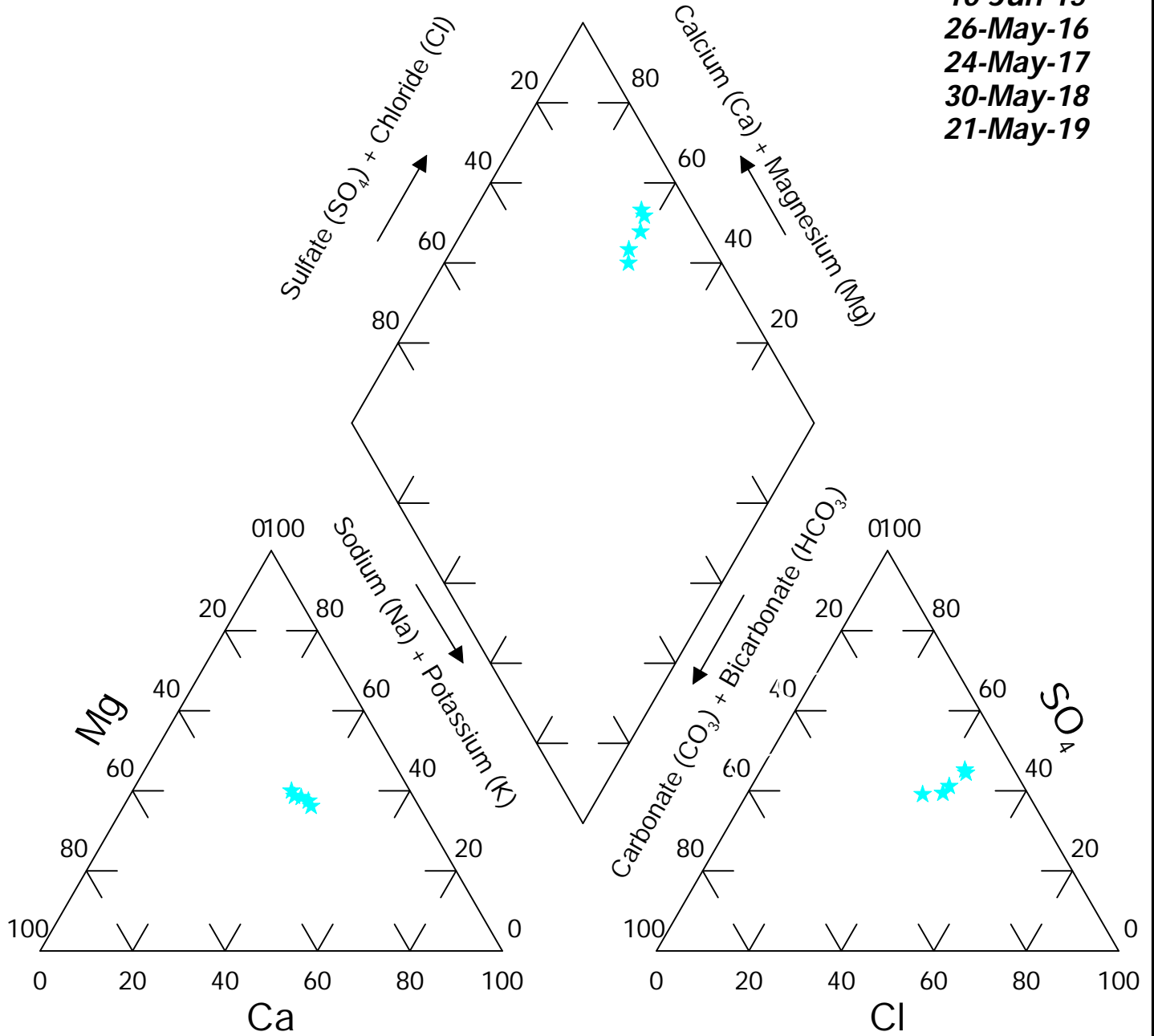
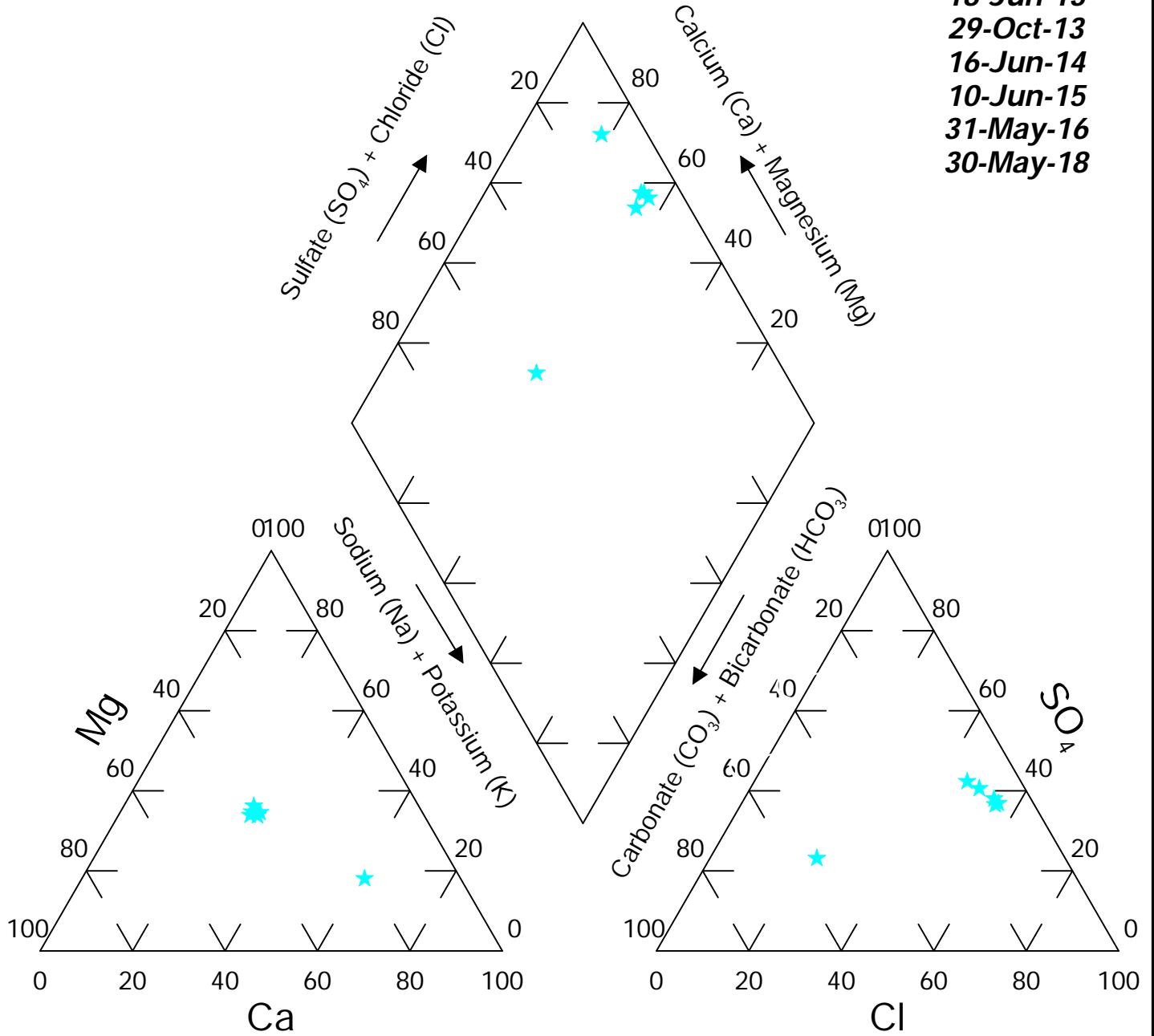


FIGURE: 12P

Site: Brady
Well #: 6N58FR

Dates:
18-Jun-13
29-Oct-13
16-Jun-14
10-Jun-15
31-May-16
30-May-18



Site: Brady
Well #: 6N59-F/FR

Dates:
17-Jun-13
28-Oct-13
16-Jun-14
11-Jun-15
30-May-16
30-May-18

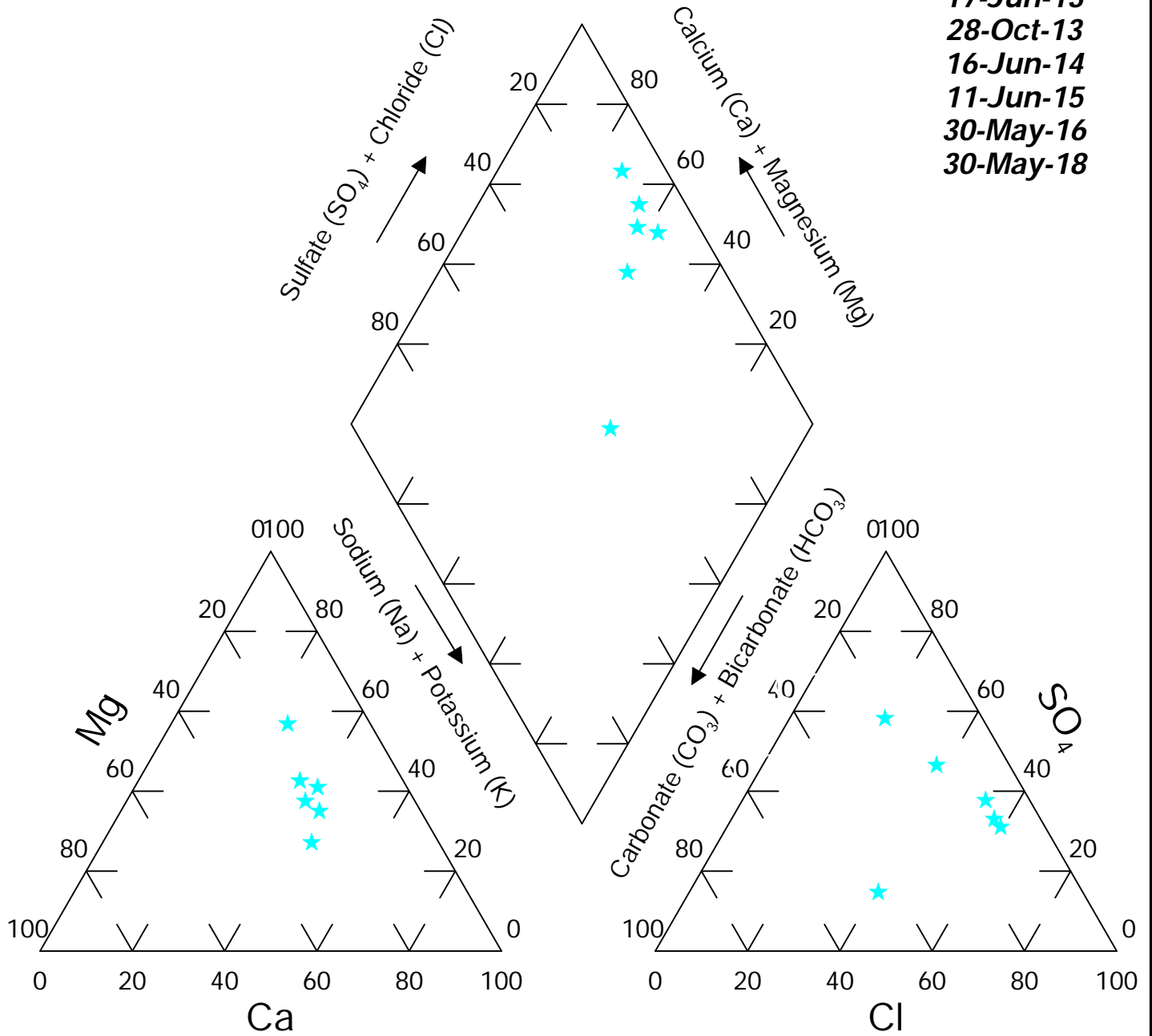


FIGURE: 14P

Site: Brady
Well #: 6N60-E/ER

Dates:
 19-Jun-13
 21-Oct-14
 8-Jun-15
 15-Oct-15
 30-May-16
 27-Oct-16
 24-May-17
 17-Oct-17
 30-May-18
 15-Oct-18

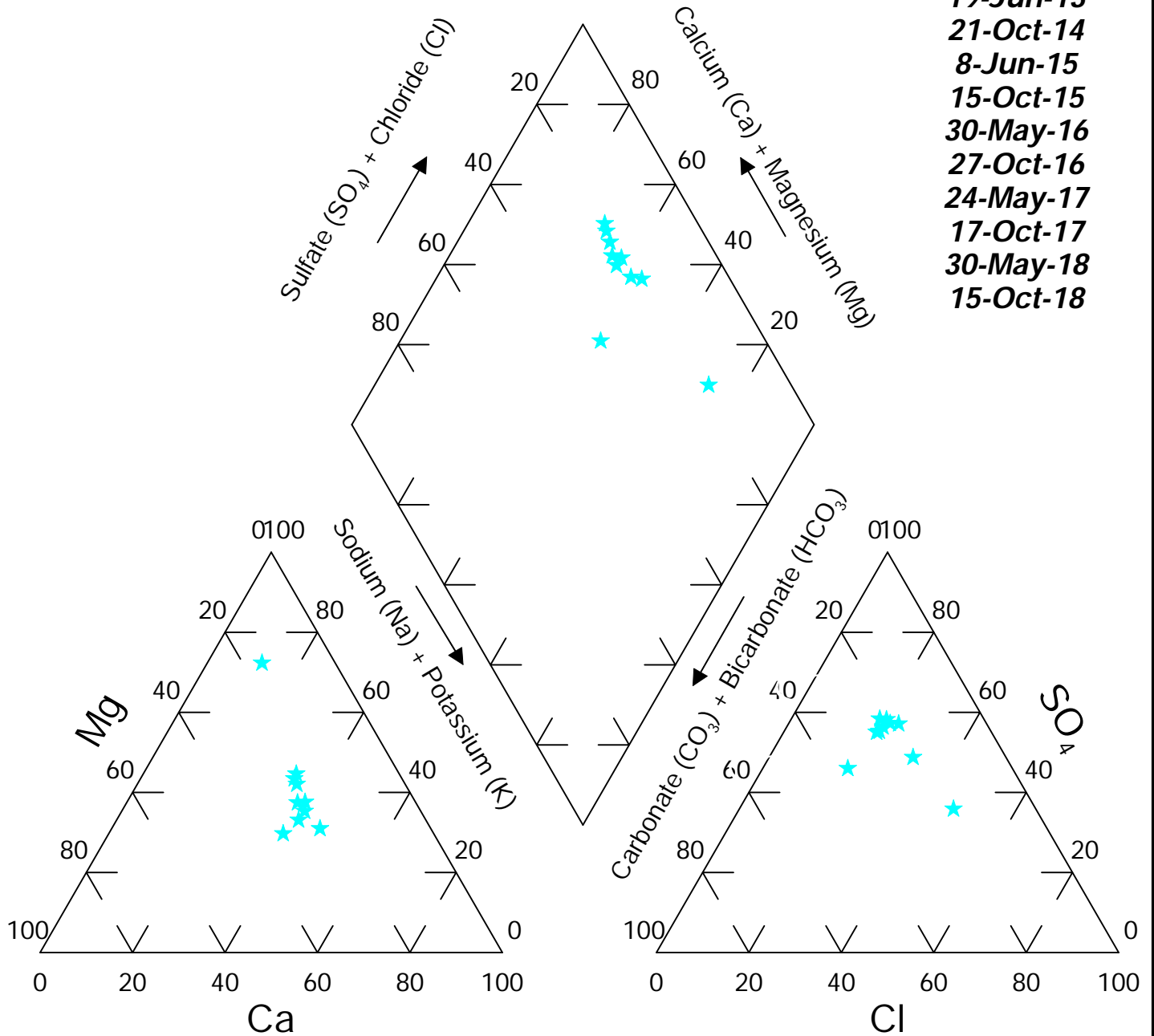


FIGURE: 15P

Site: Brady
Well #: 6N63-F

Dates:
12-Jun-14
4-Jun-15
26-May-16
29-May-17
31-May-18
21-May-19

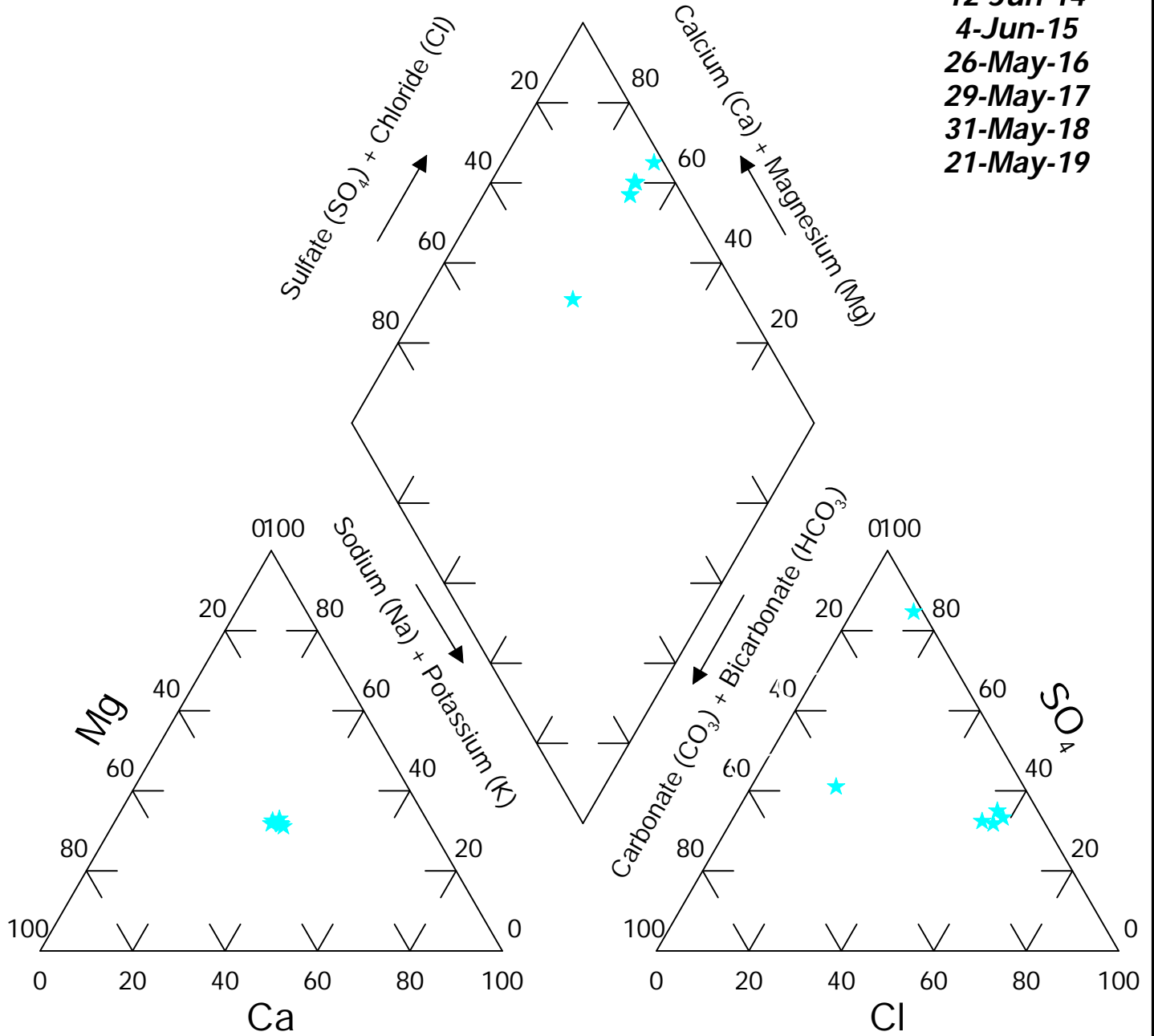


FIGURE: 16P

Site: Brady
Well #: 6N67-F

Dates:
12-Jun-14
8-Jun-15
26-May-16
25-May-17
30-May-18
21-May-19

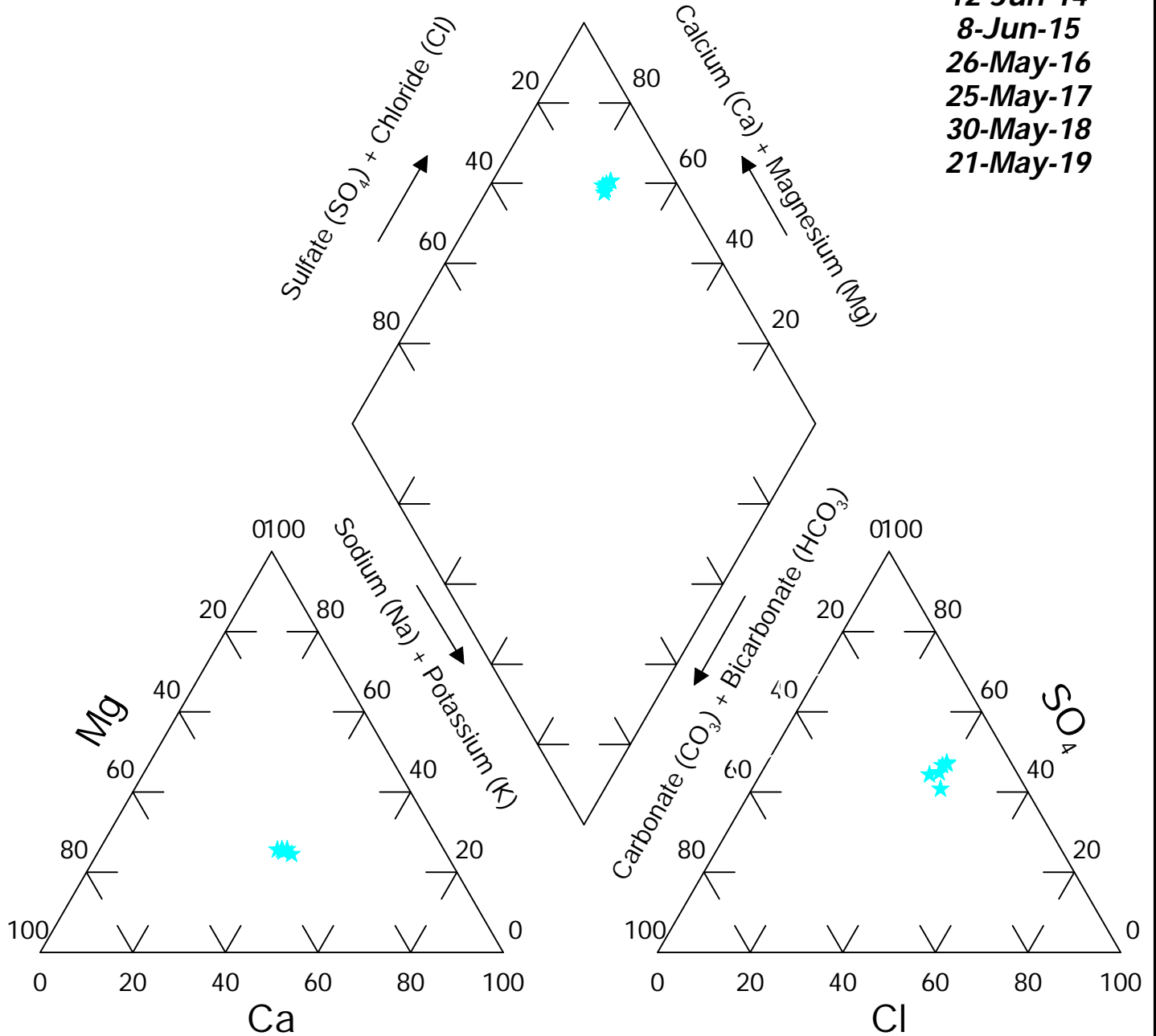
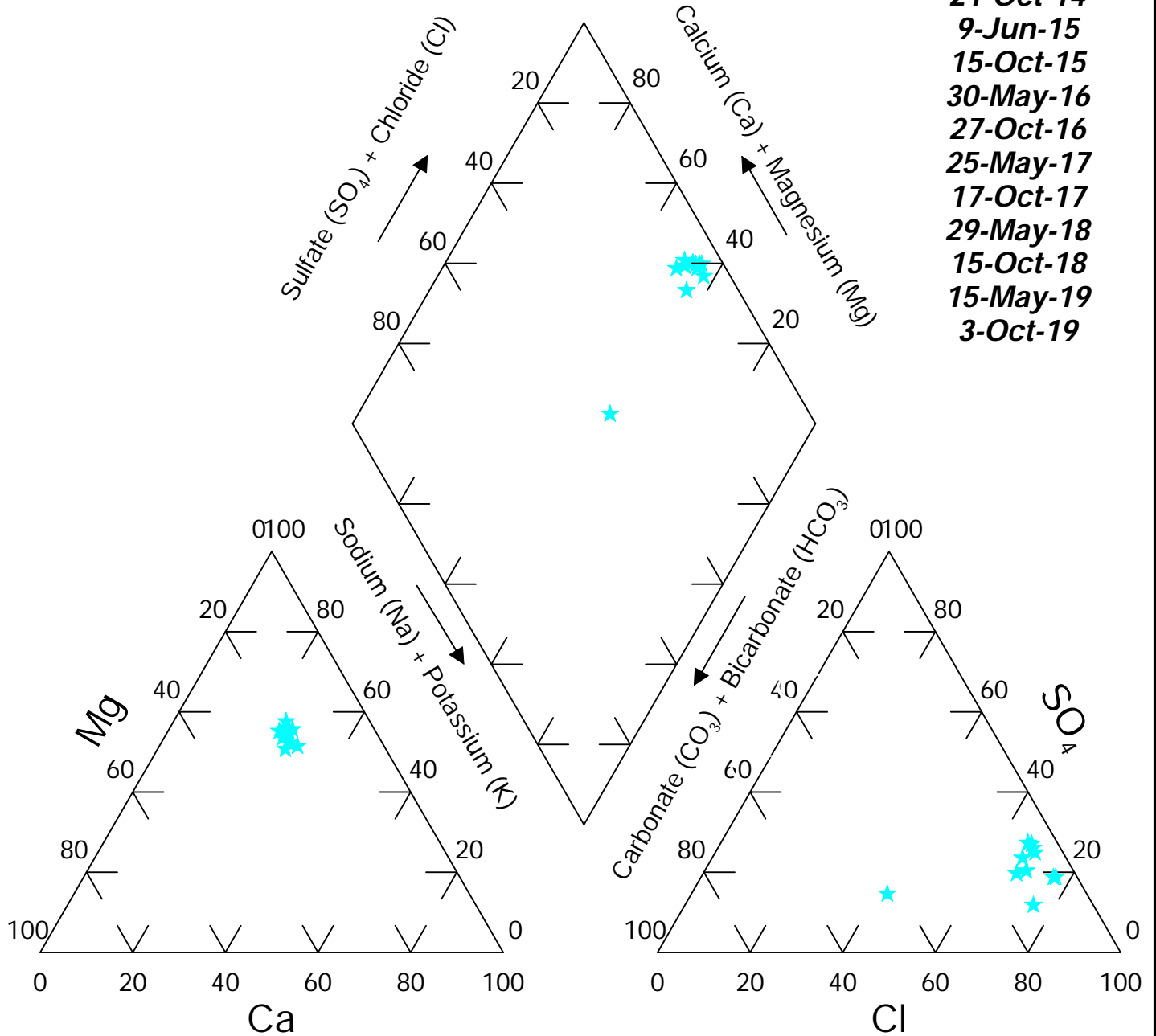


FIGURE: 17P

Site: Brady Well #: 13A

Dates:
 21-Oct-14
 9-Jun-15
 15-Oct-15
 30-May-16
 27-Oct-16
 25-May-17
 17-Oct-17
 29-May-18
 15-Oct-18
 15-May-19
 3-Oct-19



Site: Brady Well #: 14A

Dates:
 21-Oct-14
 4-Jun-15
 15-Oct-15
 30-May-16
 28-Oct-16
 25-May-17
 17-Oct-17
 29-May-18
 16-Oct-18
 15-May-19
 3-Oct-19

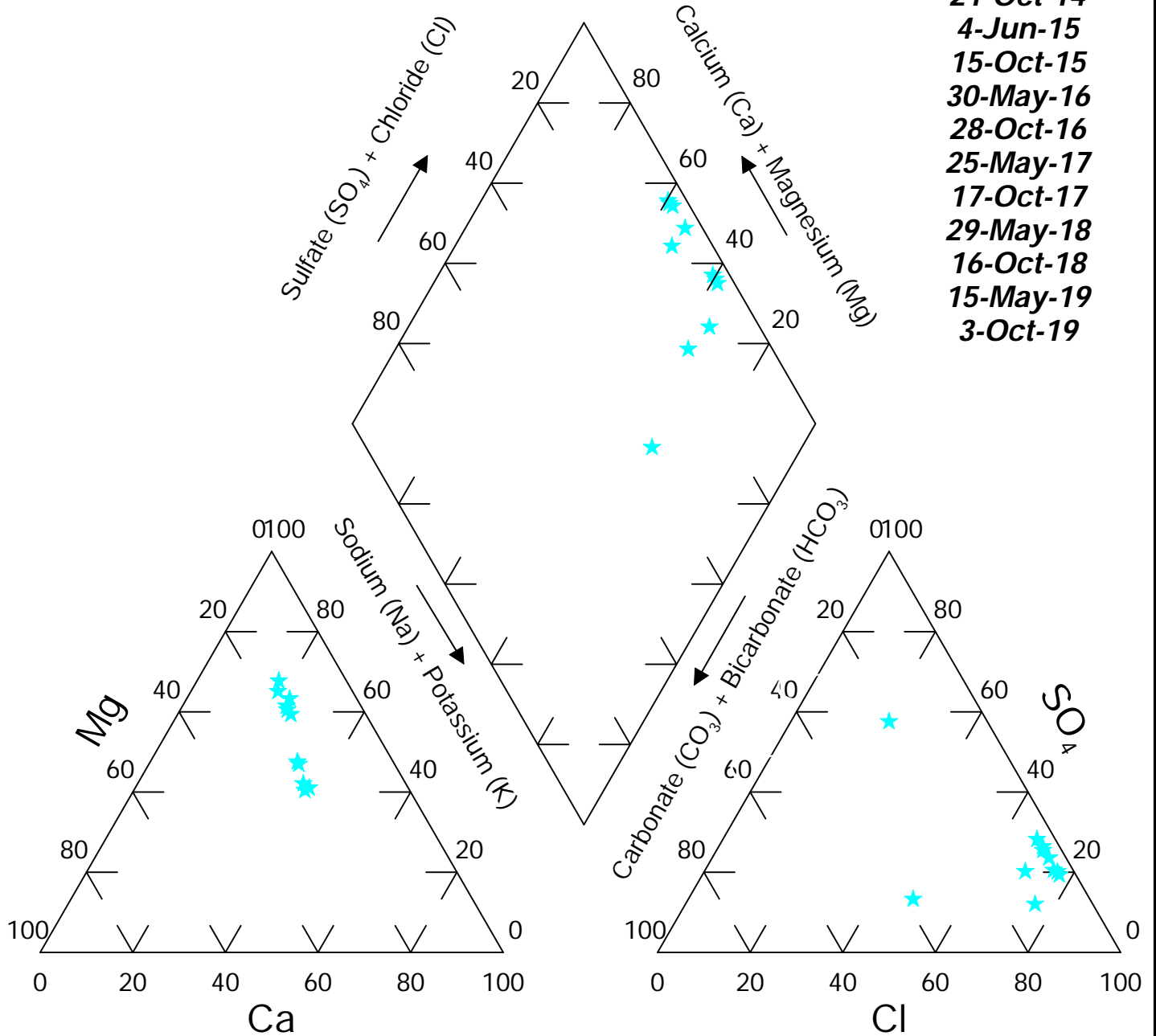
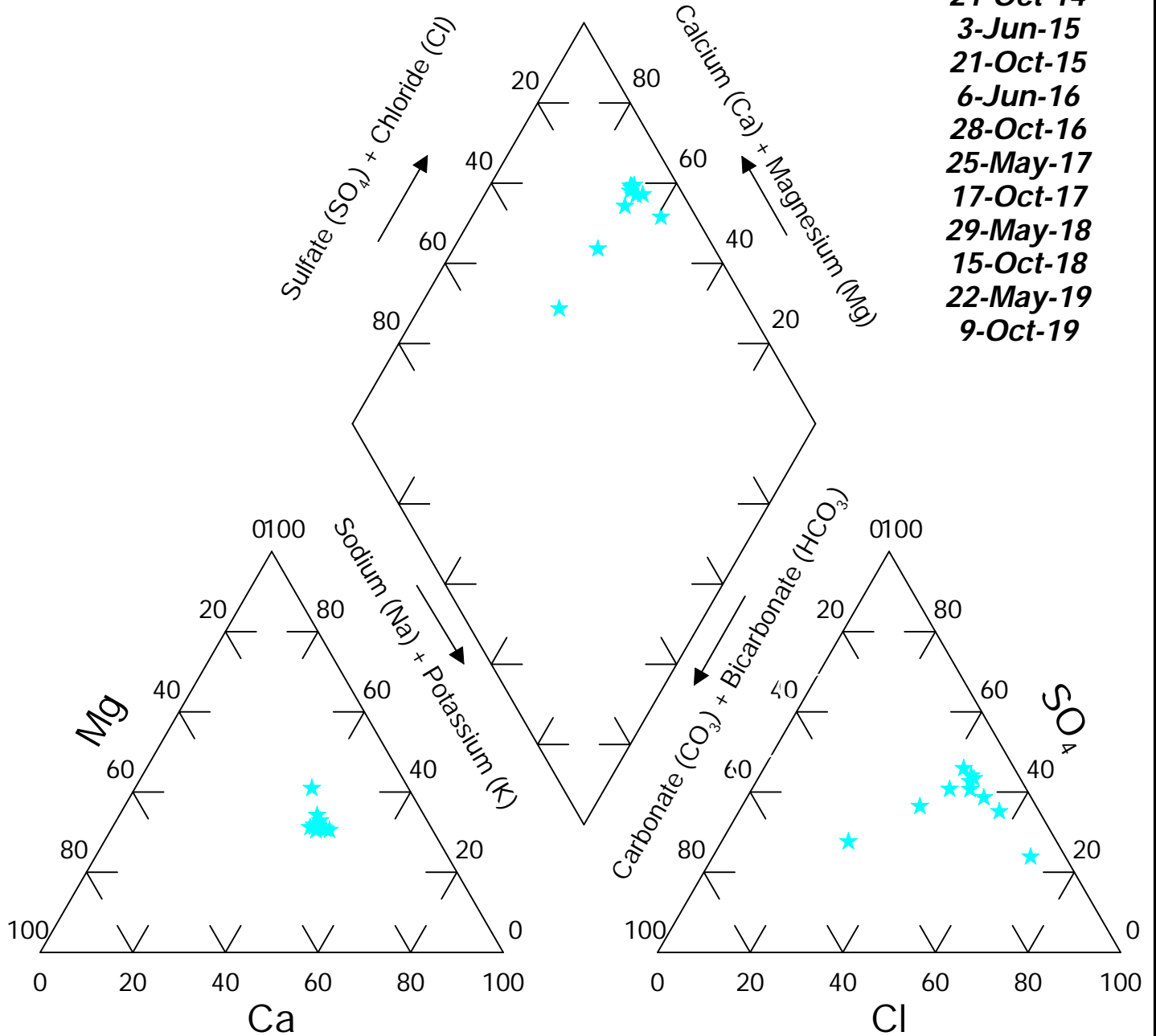


FIGURE: 13P

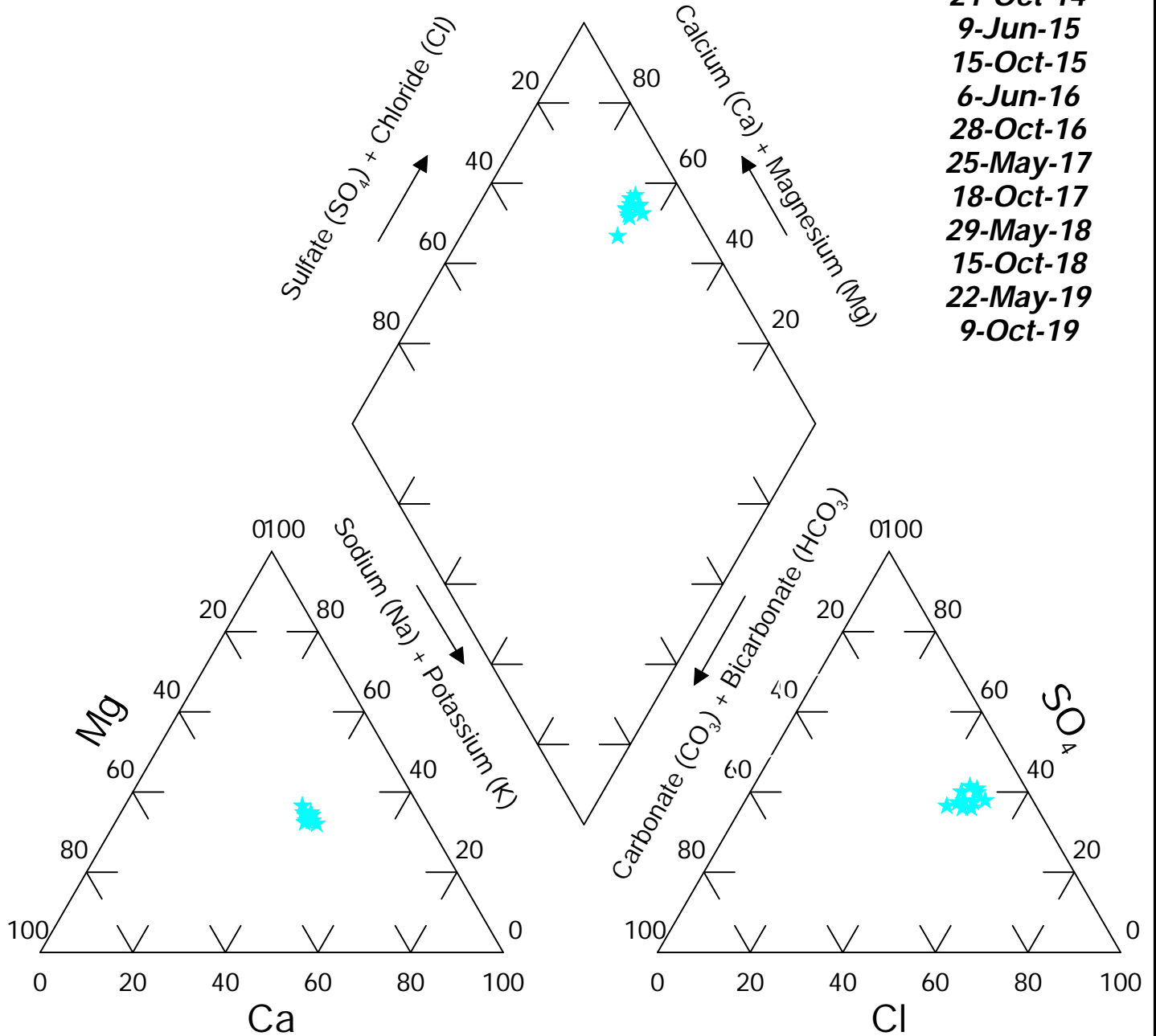
Site: Brady Well #: 15A

Dates:
 21-Oct-14
 3-Jun-15
 21-Oct-15
 6-Jun-16
 28-Oct-16
 25-May-17
 17-Oct-17
 29-May-18
 15-Oct-18
 22-May-19
 9-Oct-19



Site: Brady Well #: 16A

Dates:
 21-Oct-14
 9-Jun-15
 15-Oct-15
 6-Jun-16
 28-Oct-16
 25-May-17
 18-Oct-17
 29-May-18
 15-Oct-18
 22-May-19
 9-Oct-19



**2019 LEACHATE
PIPER DIAGRAMS**

Site: Brady
Location: MH3

Dates:
22-Jul-14
2-Sep-15
8-Sep-16
26-Sep-17
31-Jul-18
11-Sep-19

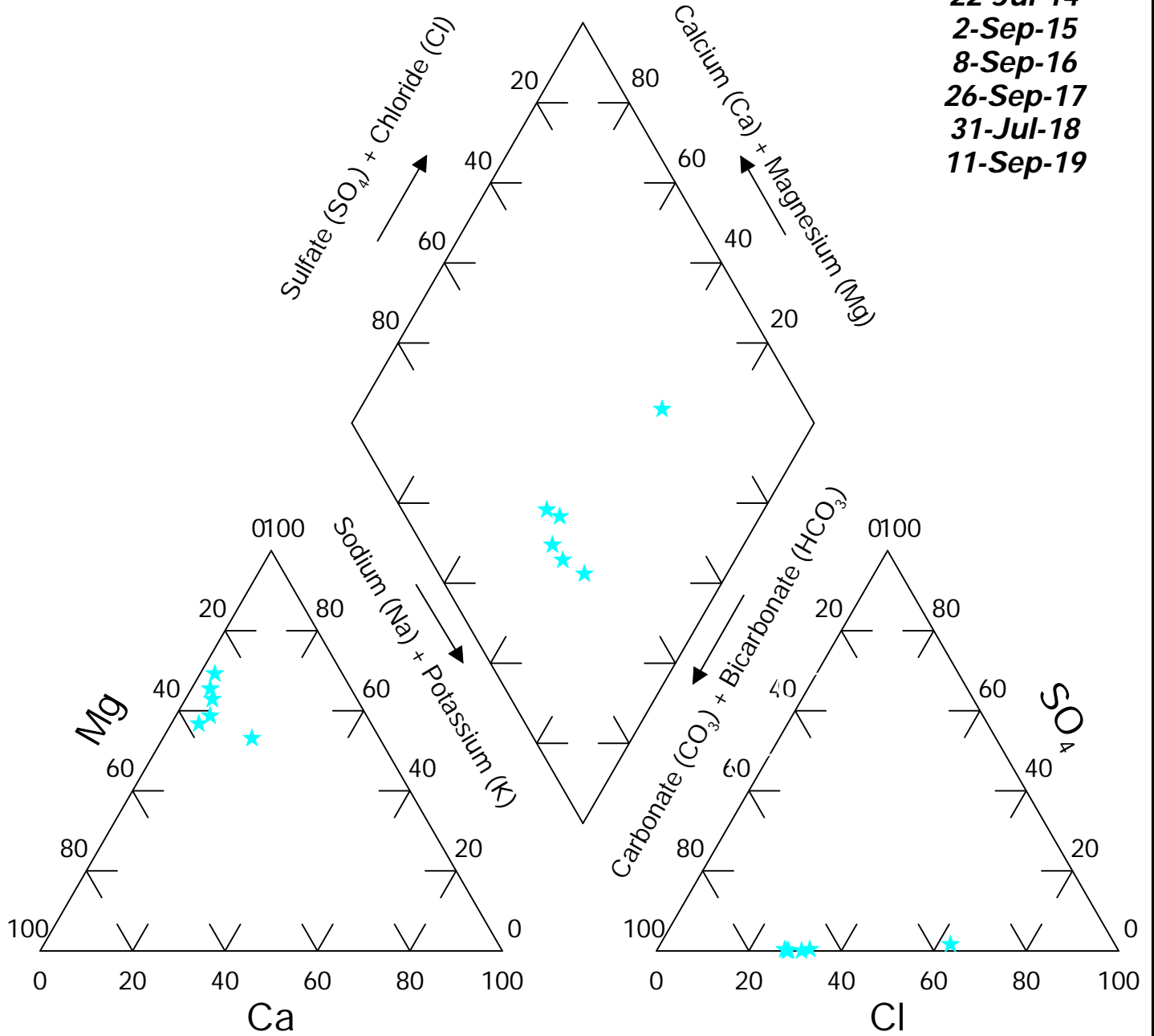


FIGURE: 18P

Site: Brady Location: MH8

Dates:
 22-Jul-14
 2-Sep-15
 7-Sep-16
 26-Sep-17
 31-Jul-18
 11-Sep-19

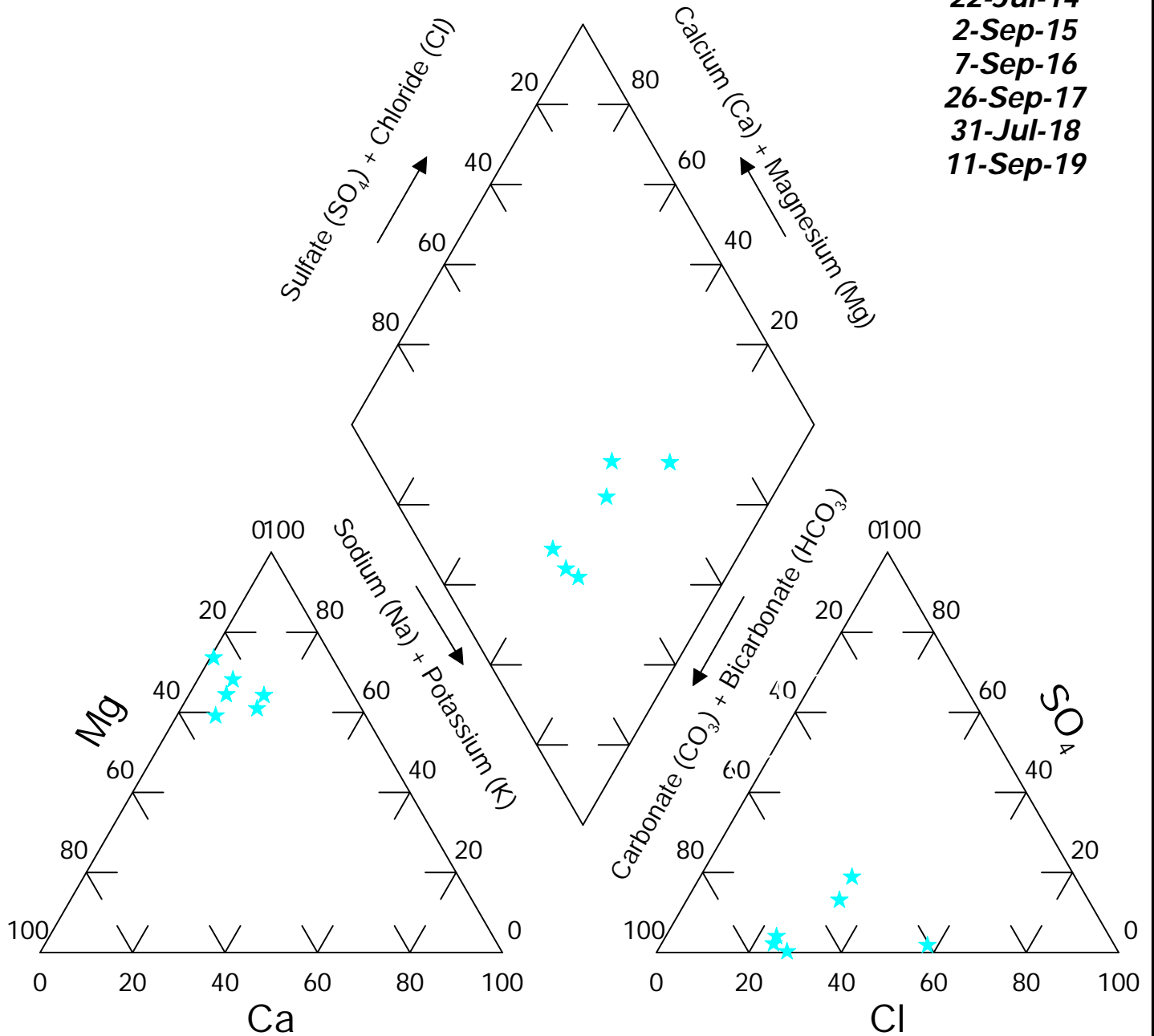


FIGURE: 19P

Site: Brady

Location: MH13

Dates:
 22-Jul-14
 2-Sep-15
 9-Sep-16
 26-Sep-17
 31-Jul-18
 12-Sep-19

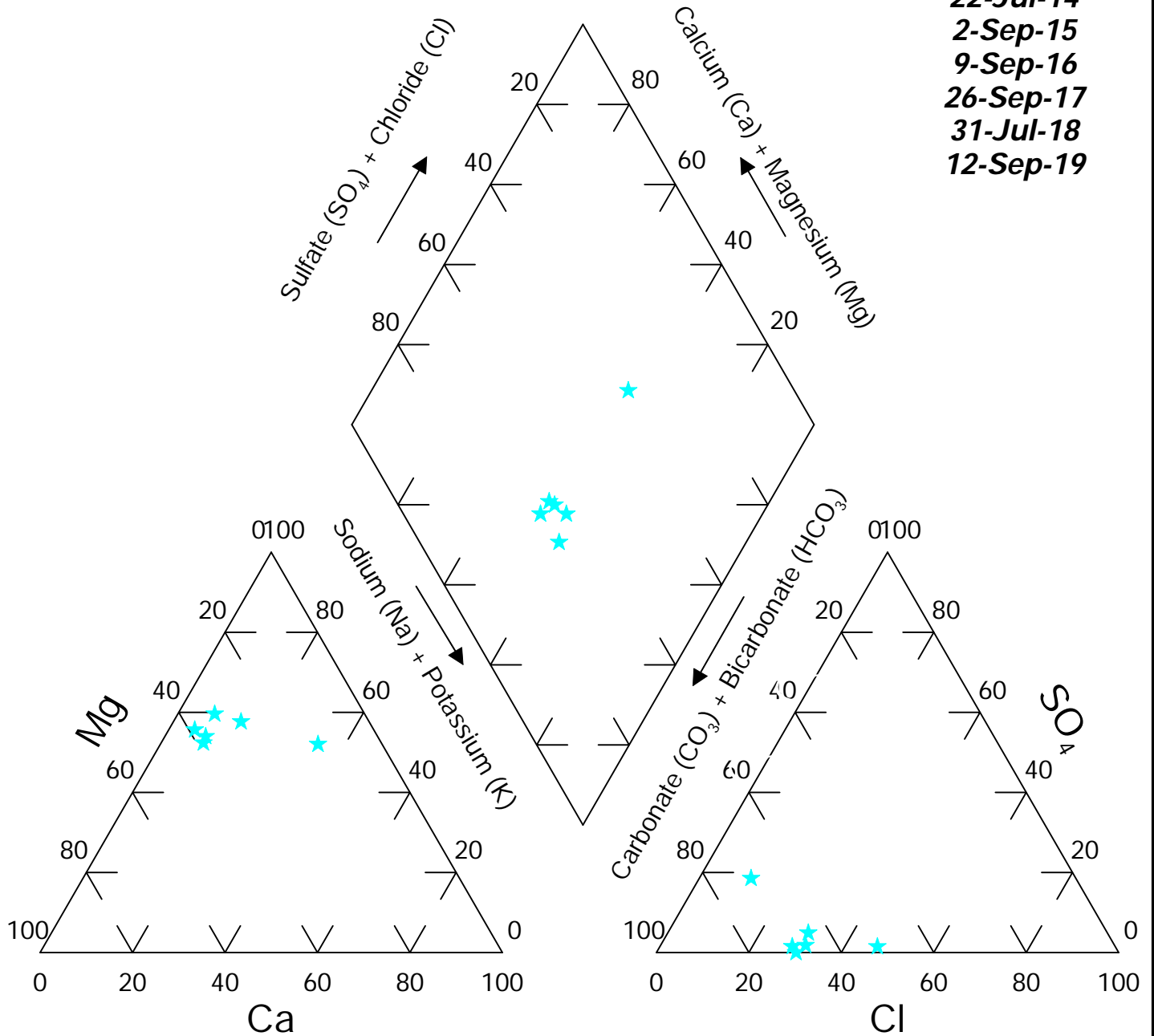


FIGURE: 20P

Site: Brady
Location: MH24

Dates:
22-Jul-14
2-Sep-15
7-Sep-16
26-Sep-17
31-Jul-18
11-Sep-19

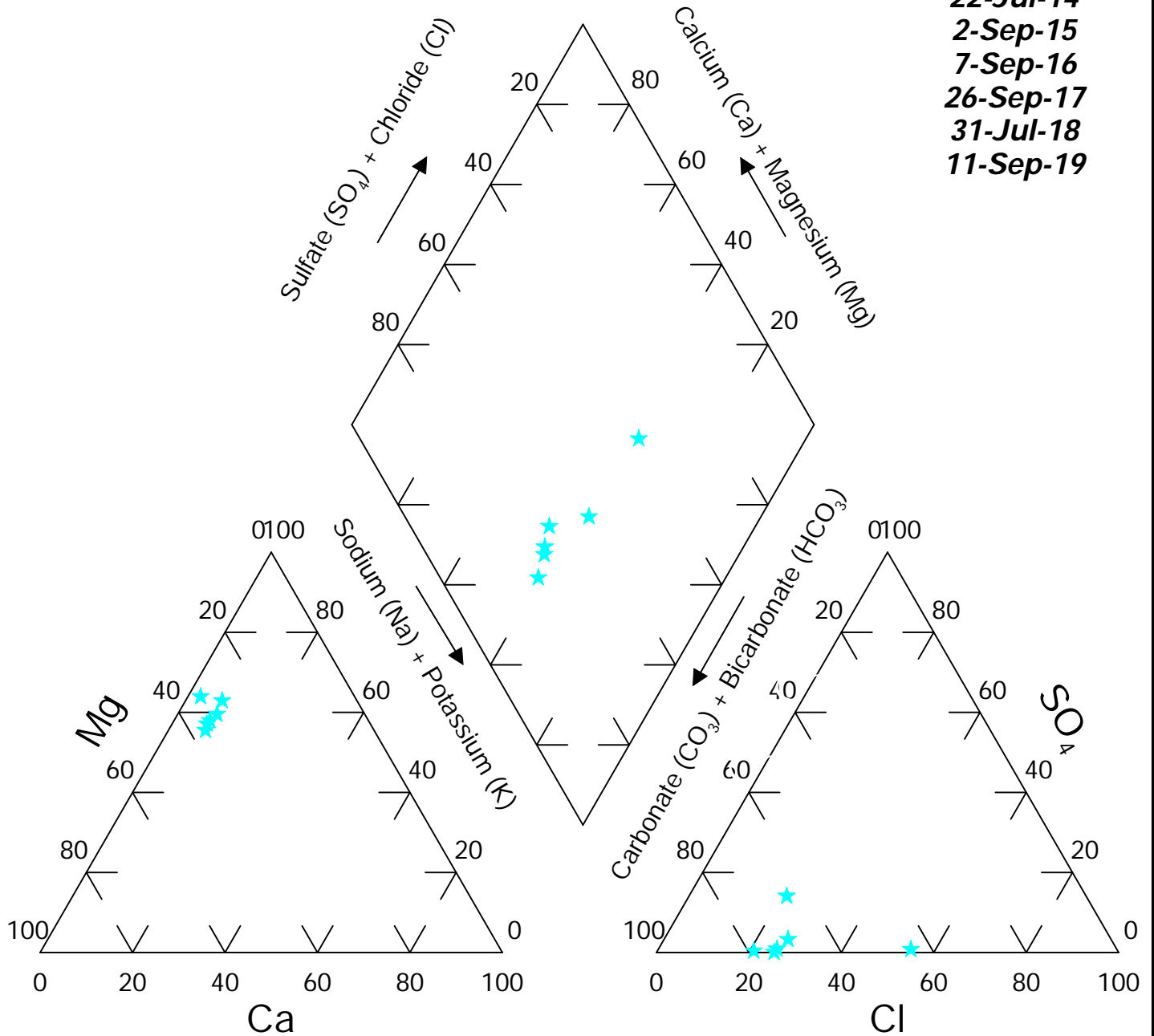


FIGURE: 21P

Site: Brady Location: MH27

Dates:
 22-Jul-14
 2-Sep-15
 7-Sep-16
 26-Sep-17
 31-Jul-18
 11-Sep-19

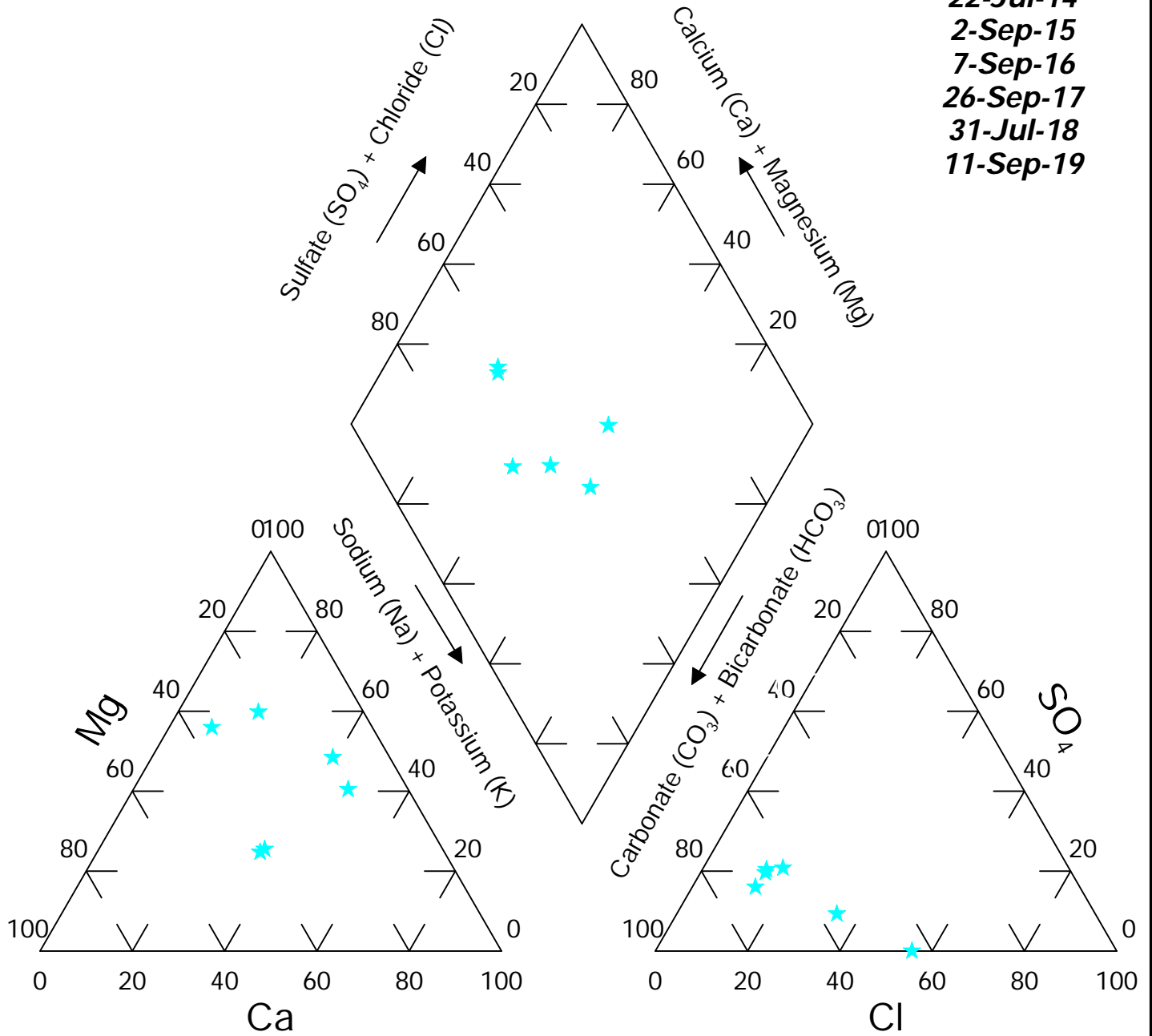


FIGURE: 22P

Site: Brady Location: MH31

Dates:
 22-Jul-14
 2-Sep-15
 7-Sep-16
 26-Sep-17
 31-Jul-18
 11-Sep-19

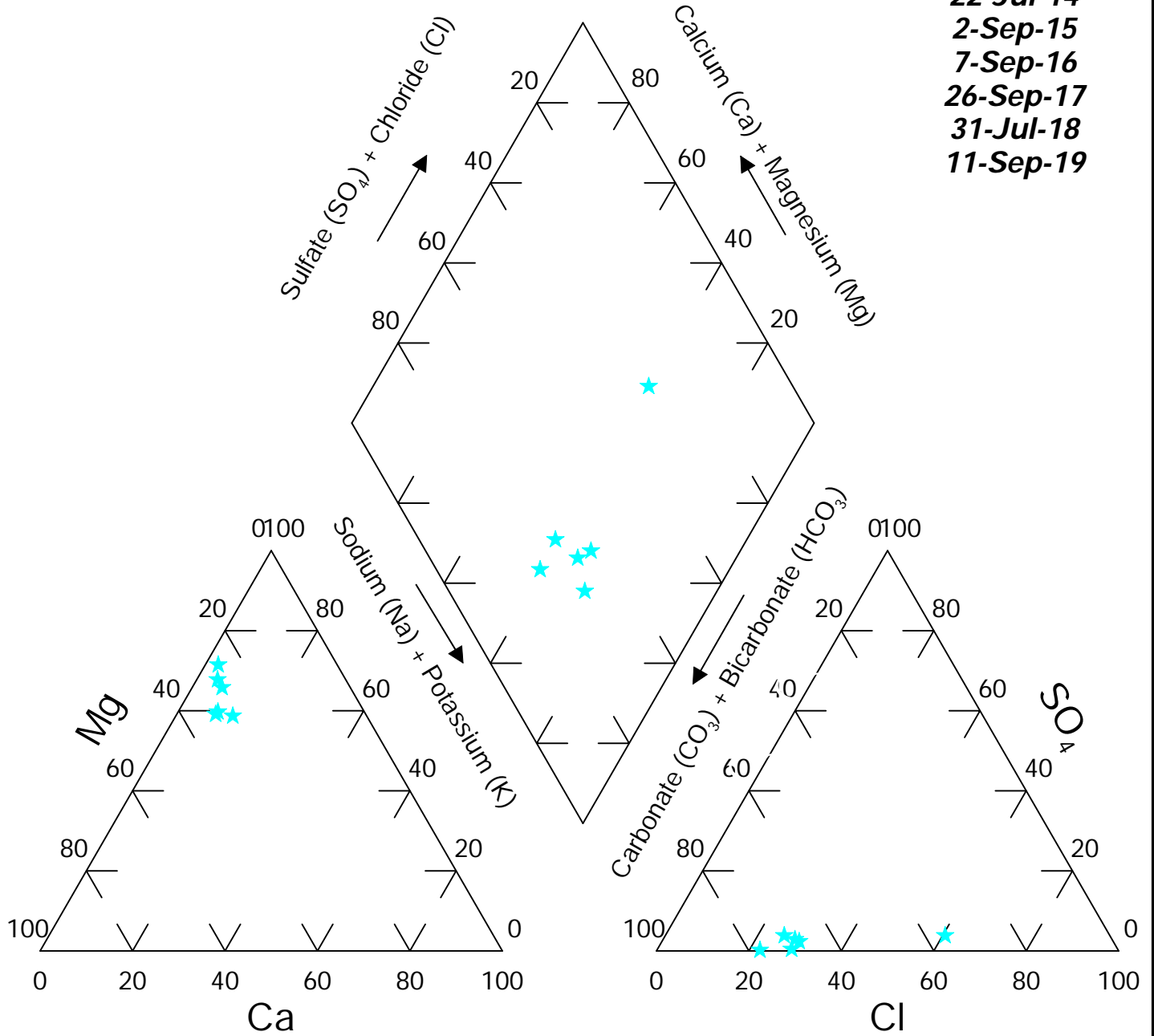


FIGURE: 23P

Site: Brady Location: MH34

Dates:
 22-Jul-14
 2-Sep-15
 8-Sep-16
 26-Sep-17
 31-Jul-18
 11-Sep-19

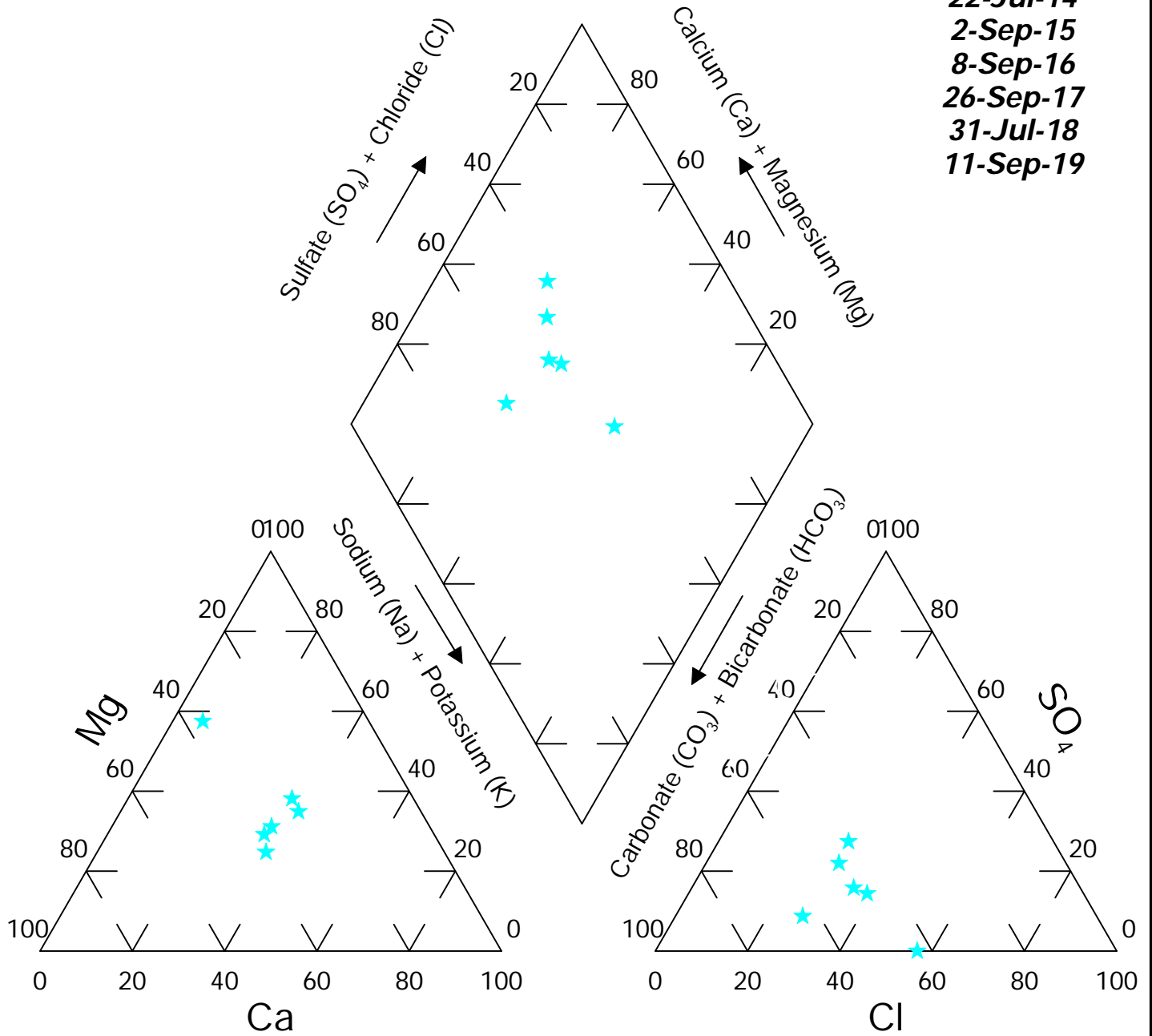


FIGURE: 24P

Site: Brady
Location: MH46

Date:
31-Jul-18
11-Sep-19

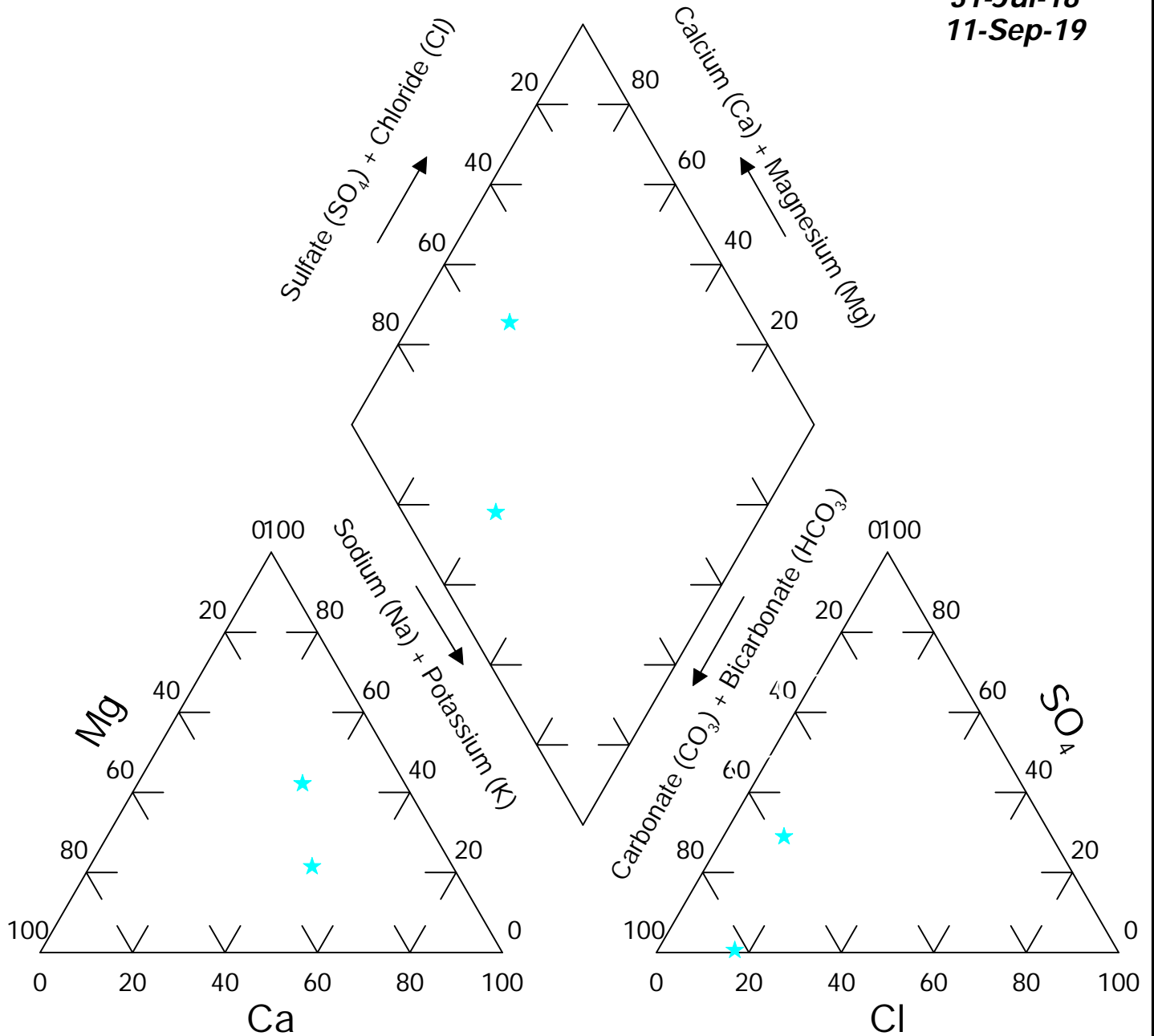


FIGURE: 21P

Site: Brady Location: *Riser 1*

Dates:
 29-Oct-15
 8-Sep-16
 26-Sep-17
 31-Jul-18
 10-Sep-19

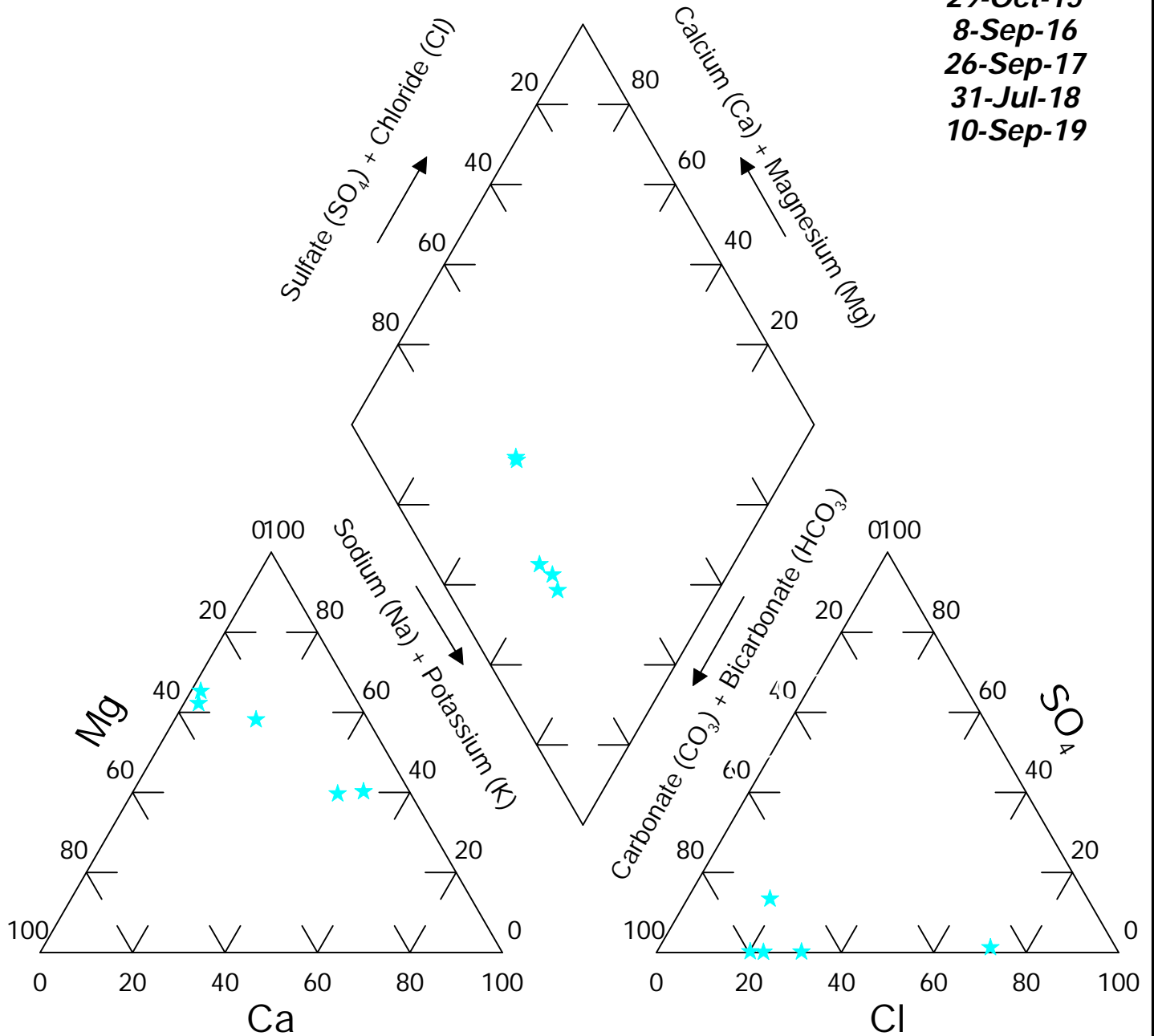
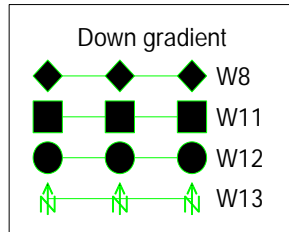
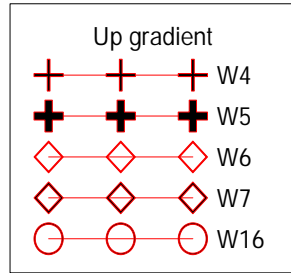
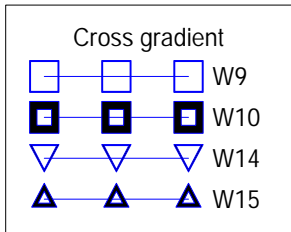
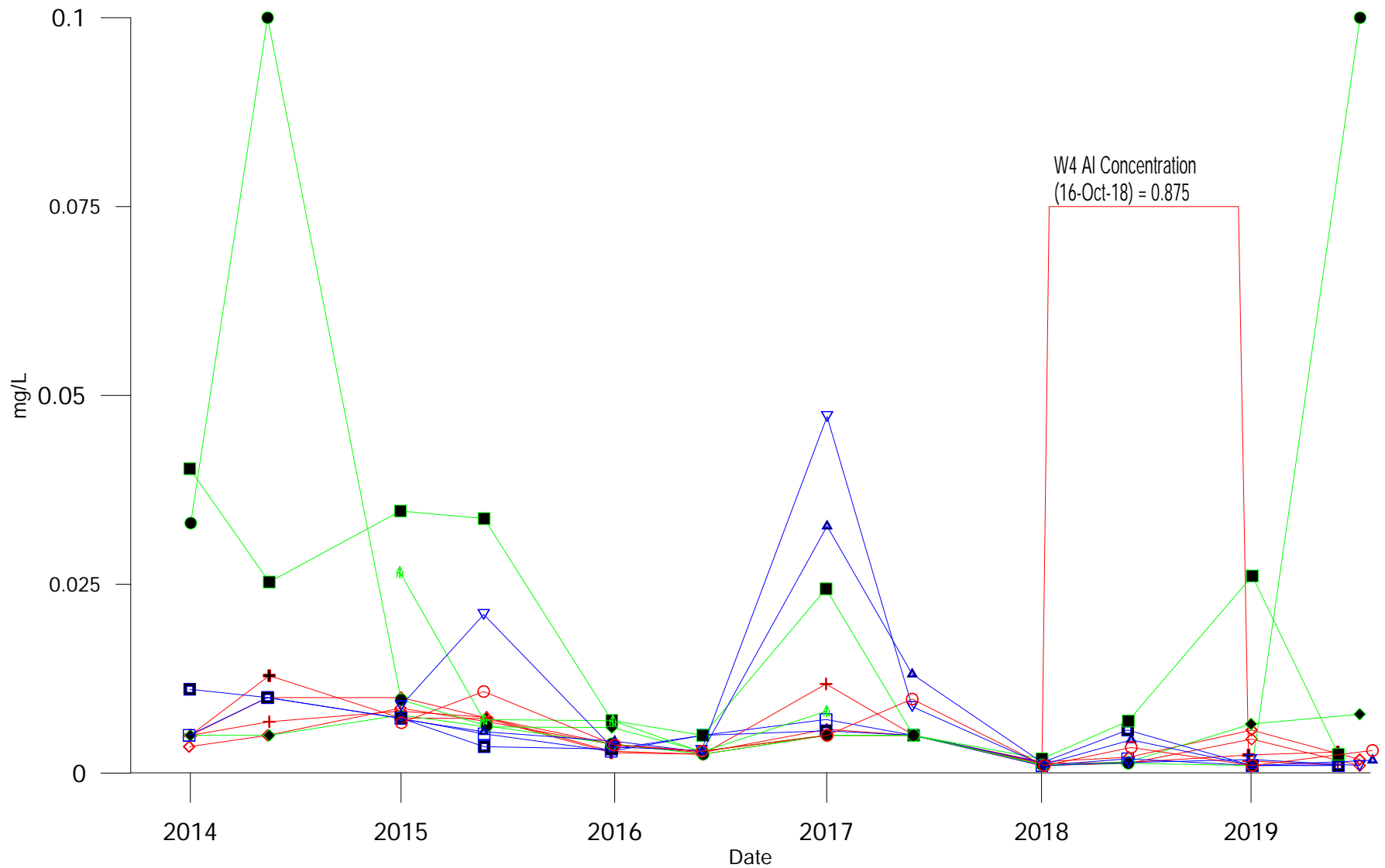


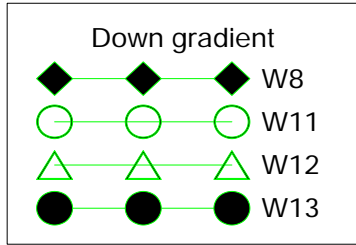
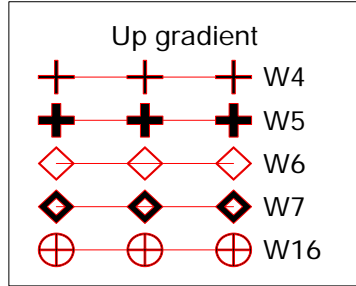
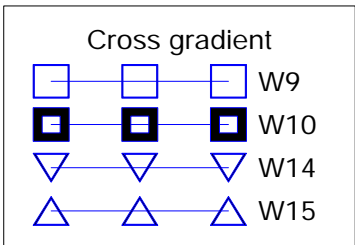
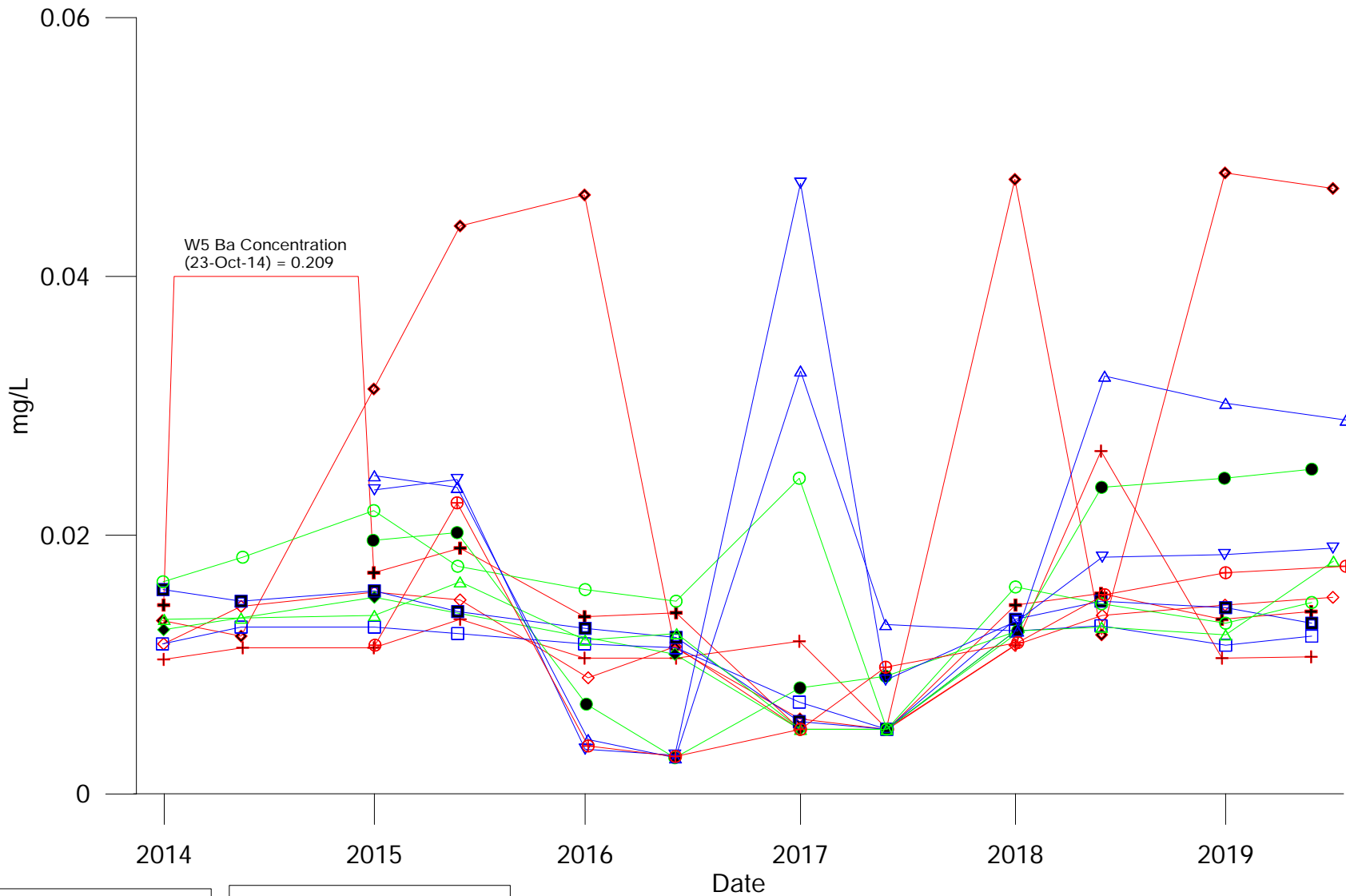
FIGURE: 18P

APPENDIX D
2019 TIME VS
CONCENTRATION GRAPHS

**2019 GROUNDWATER
TIME VS CONCENTRATION GRAPHS**

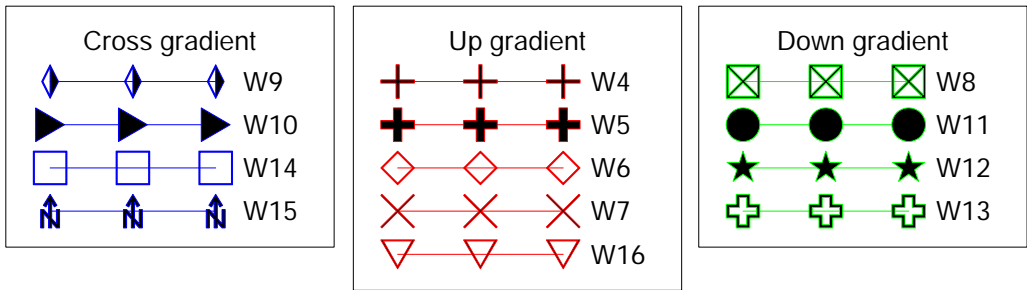
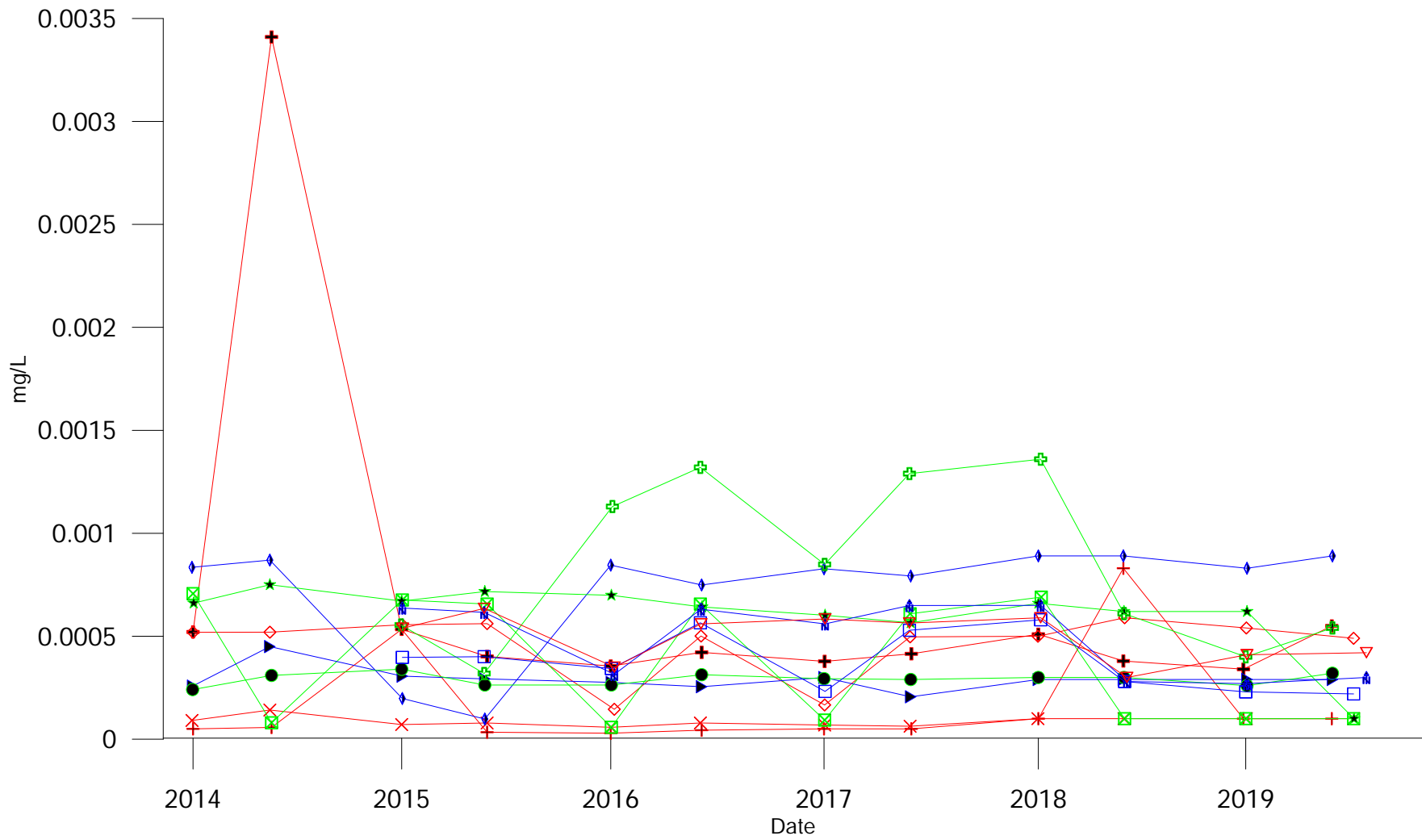


	City Of Winnipeg Solid Waste Services	
	BRADY ROAD RESOURCE MANAGEMENT FACILITY	
Dissolved Aluminium Concentration Bedrock Wells		
APRIL 2020	FIGURE 1	REV 0



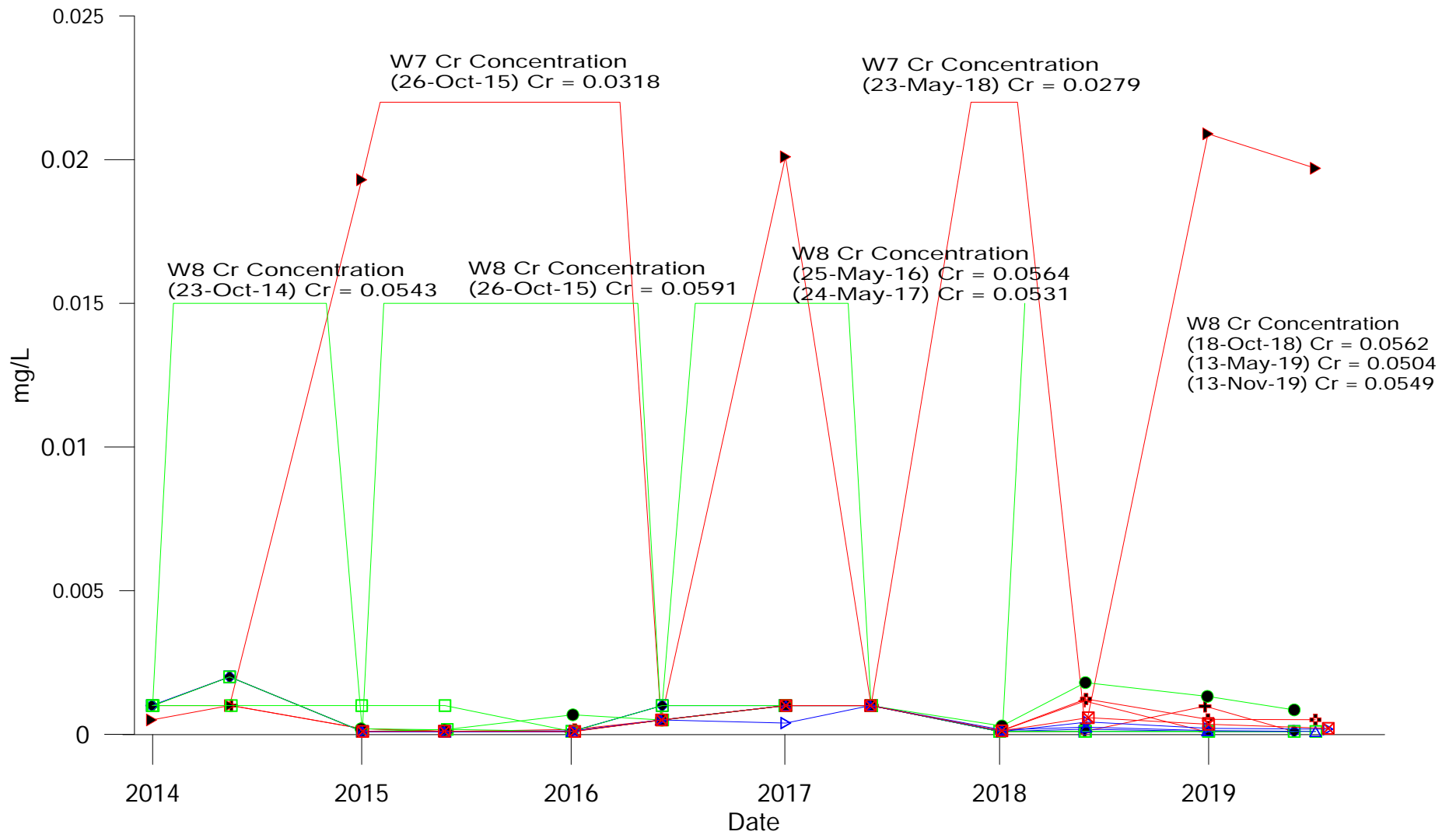
Barium MOE Criteria = 29 mg/L

	City of Winnipeg Solid Waste Services	
	BRADY ROAD RESOURCE MANAGEMENT FACILITY	
Dissolved Barium Concentration Bedrock Wells		
APRIL 2020	FIGURE 2	REV 0

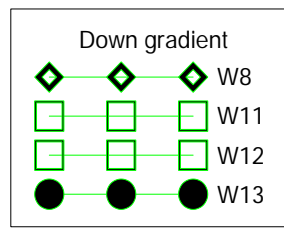
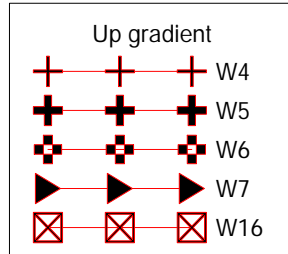
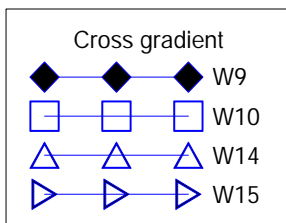


MOE Cobalt Criteria = 0.066 mg/L

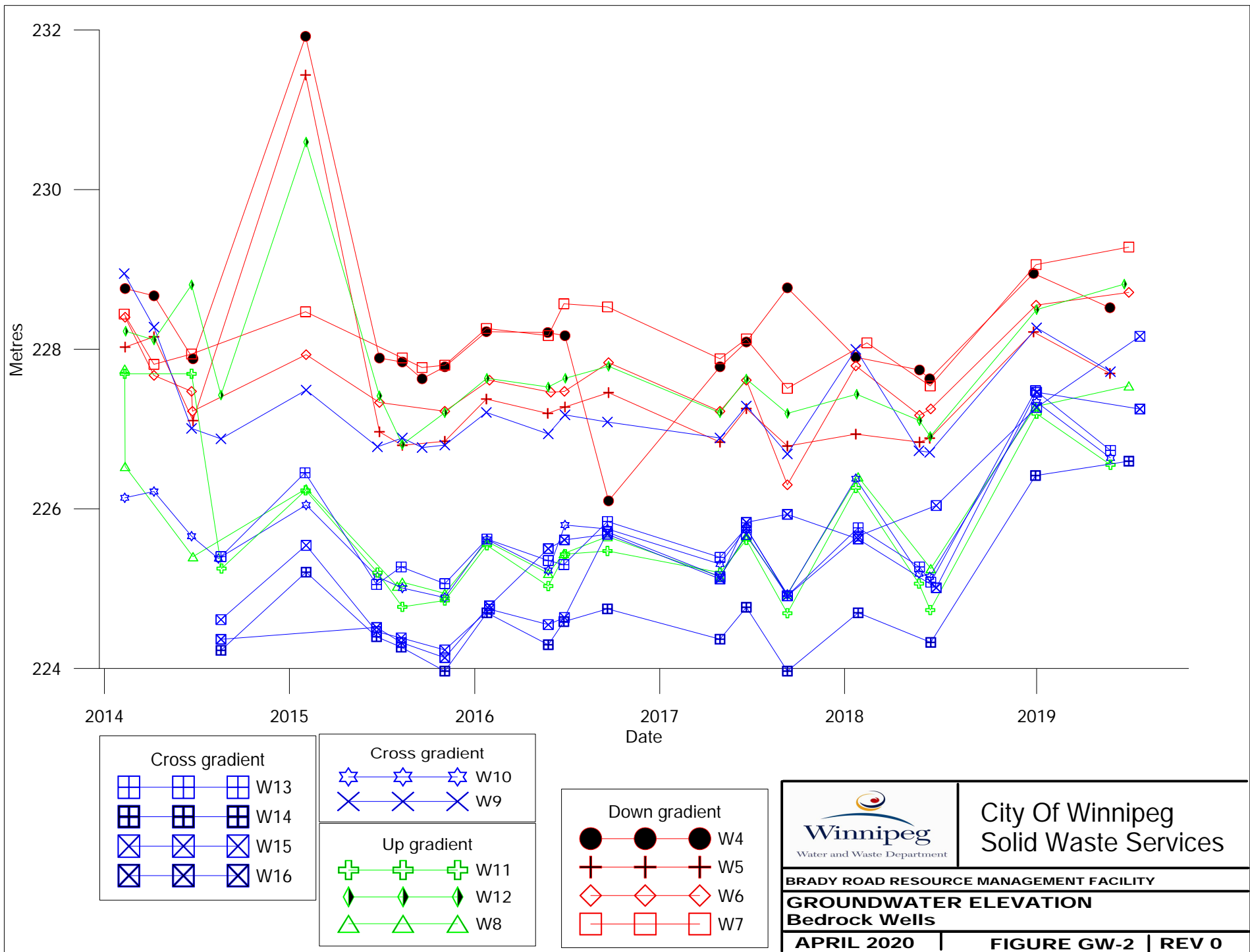
	City Of Winnipeg Solid Waste Services	
	BRADY ROAD RESOURCE MANAGEMENT FACILITY	
Dissolved Cobalt Concentration Bedrock Wells		
APRIL 2019	FIGURE 3	REV 0



Chromium MOE Criteria = 0.81 mg/L



	City Of Winnipeg Solid Waste Services	
	BRADY ROAD RESOURCE MANAGEMENT FACILITY	
Dissolved Chromium Concentration Bedrock Wells		
APRIL 2020	FIGURE 4	REV 0



Cross gradient

- W13
- W14
- W15
- W16

Cross gradient

- W10
- W9

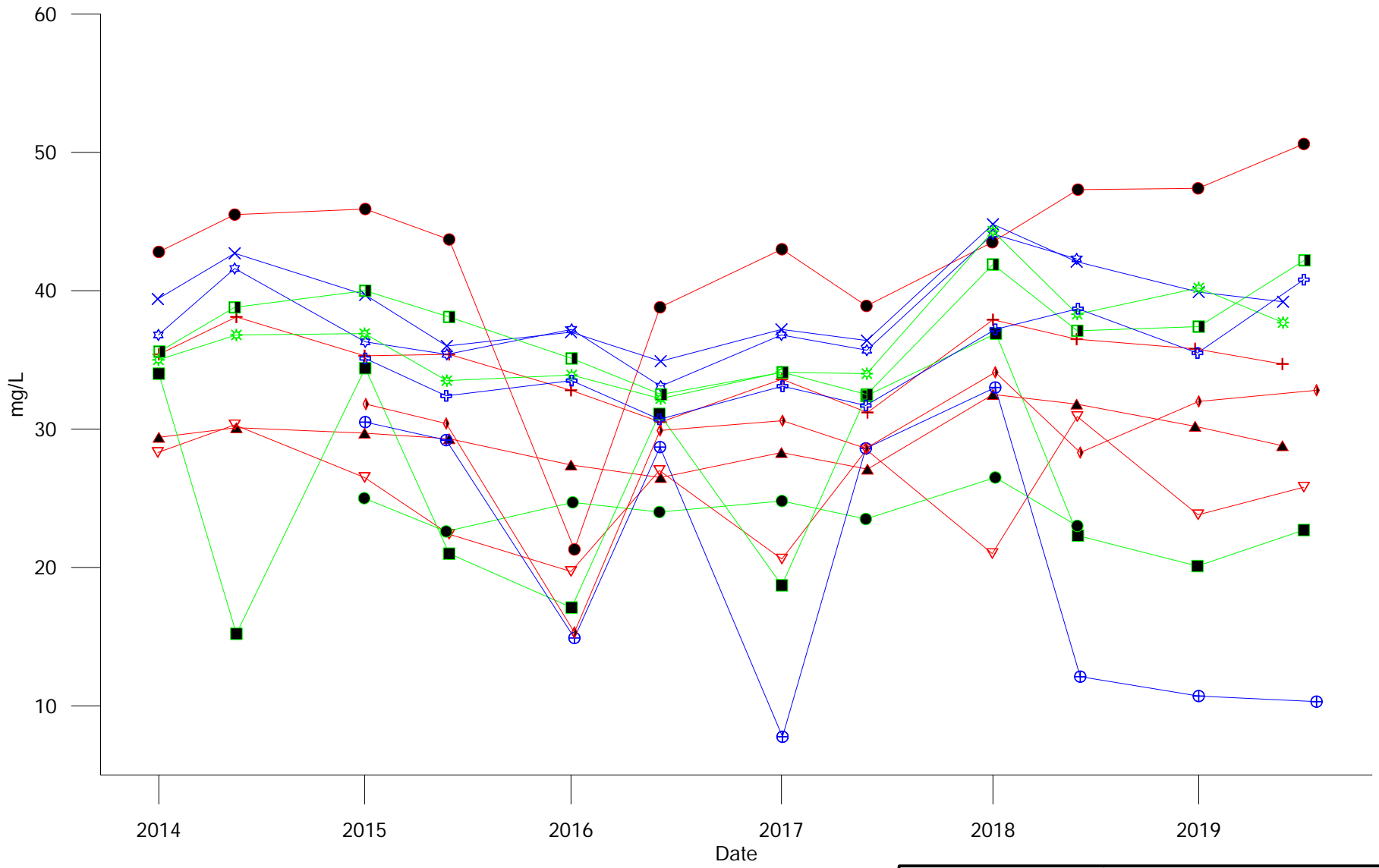
Up gradient

- W11
- W12
- W8

Down gradient

- W4
- W5
- W6
- W7

	City of Winnipeg Solid Waste Services
	BRADY ROAD RESOURCE MANAGEMENT FACILITY
GROUNDWATER ELEVATION Bedrock Wells	
APRIL 2020	FIGURE GW-2 REV 0



Cross gradient

- W9
- W10
- W14
- W15

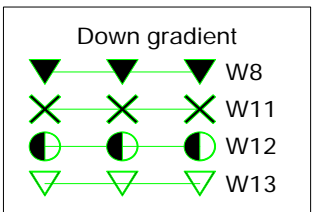
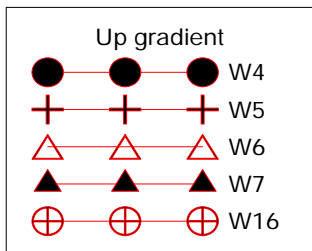
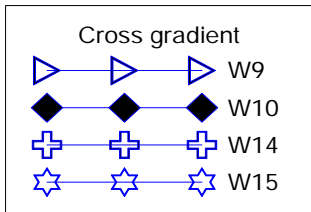
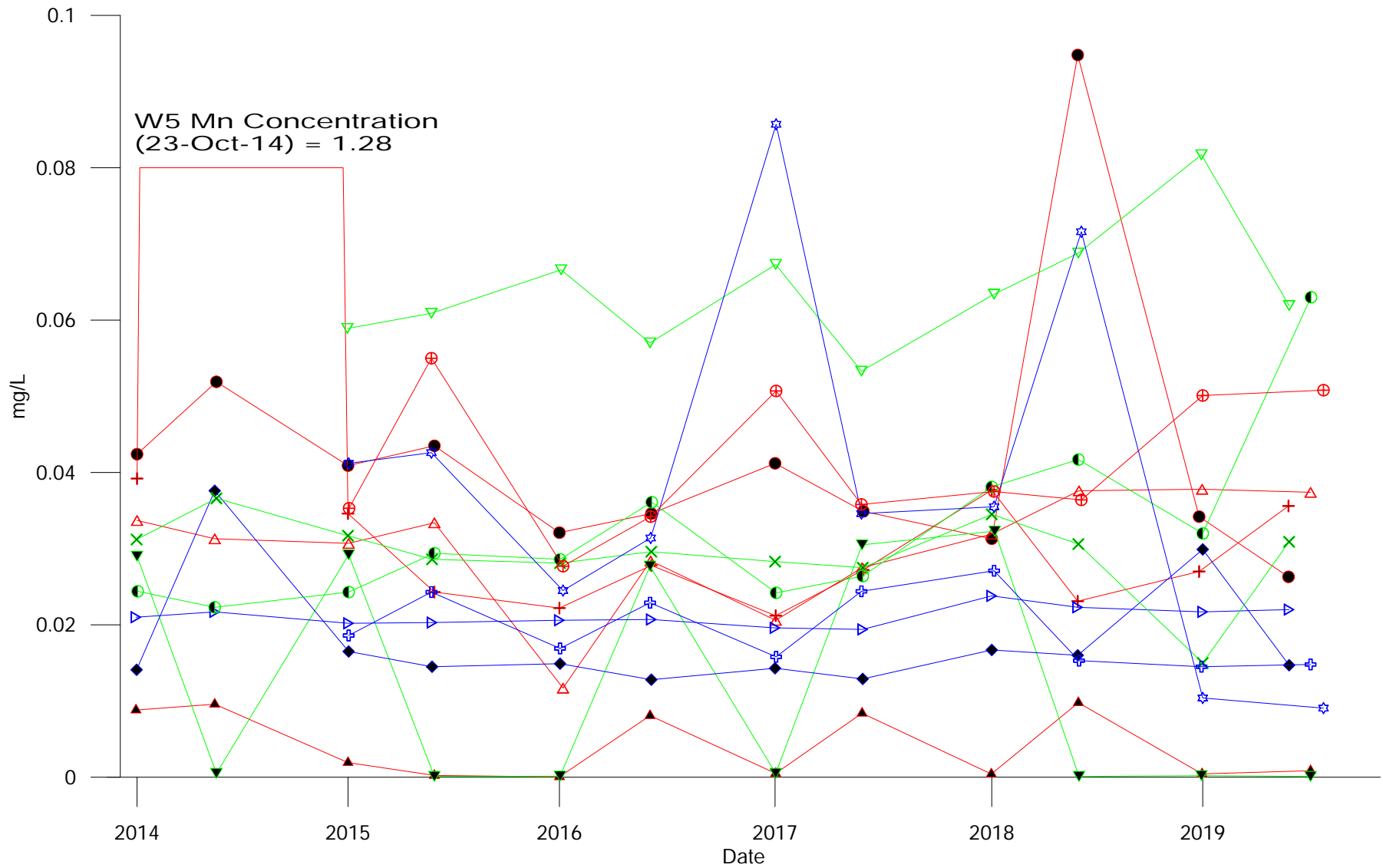
Up gradient

- W4
- W5
- W6
- W7
- W16

Down gradient

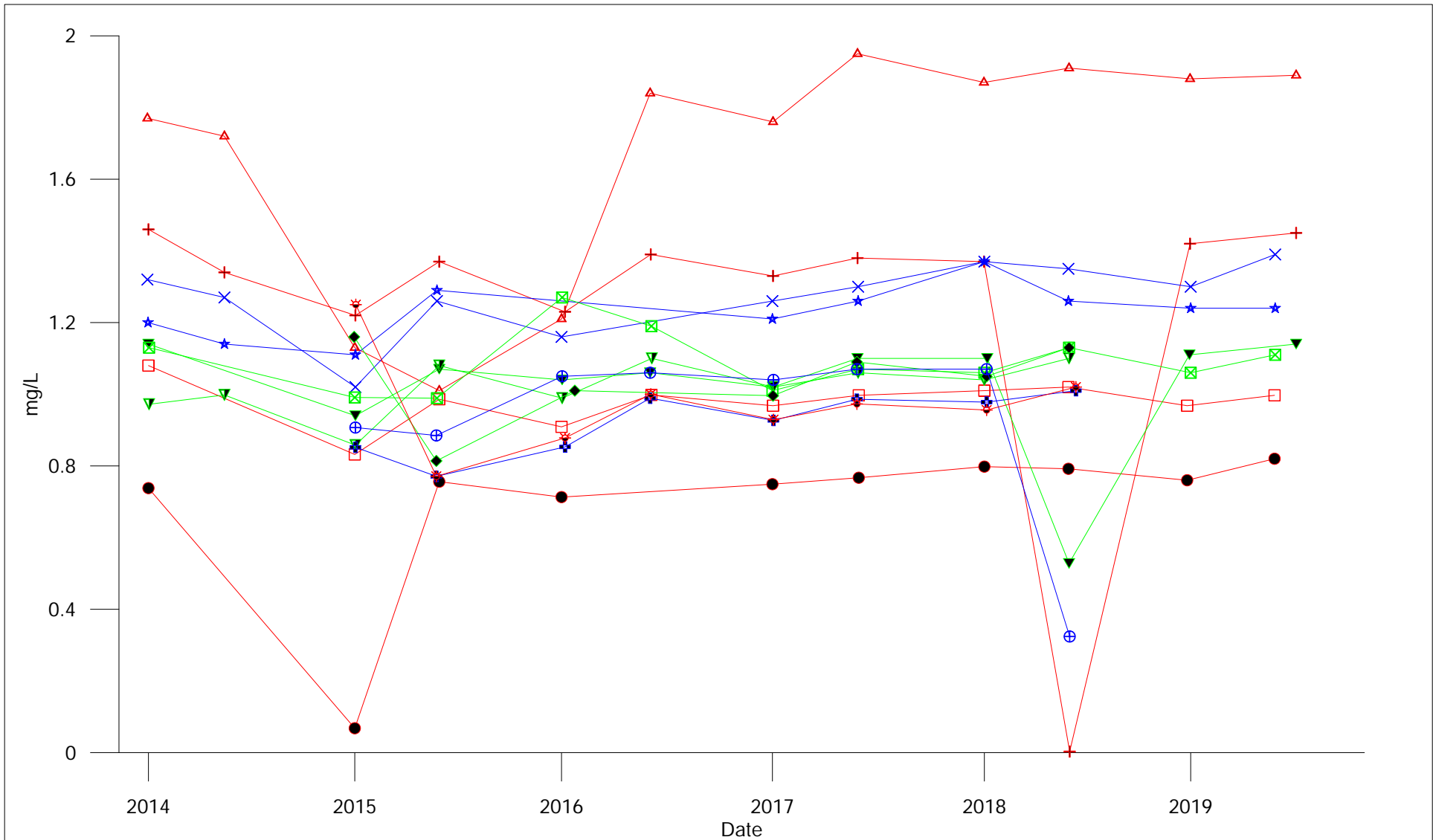
- W8
- W11
- W12
- W13

	City Of Winnipeg Solid Waste Services	
	BRADY ROAD RESOURCE MANAGEMENT FACILITY	
Dissolved Potassium Concentration Bedrock Wells		
APRIL 2020	FIGURE 5	REV 0



City Of Winnipeg
Solid Waste Services

BRADY ROAD RESOURCE MANAGEMENT FACILITY		
Dissolved Manganese Concentration Bedrock Wells		
APRIL 2020	FIGURE 7	REV 0



Cross gradient

- W9
- W10
- W14
- W15

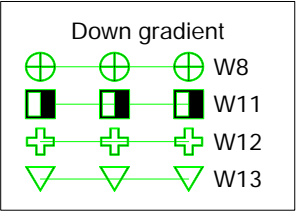
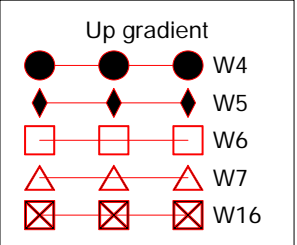
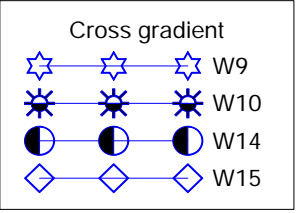
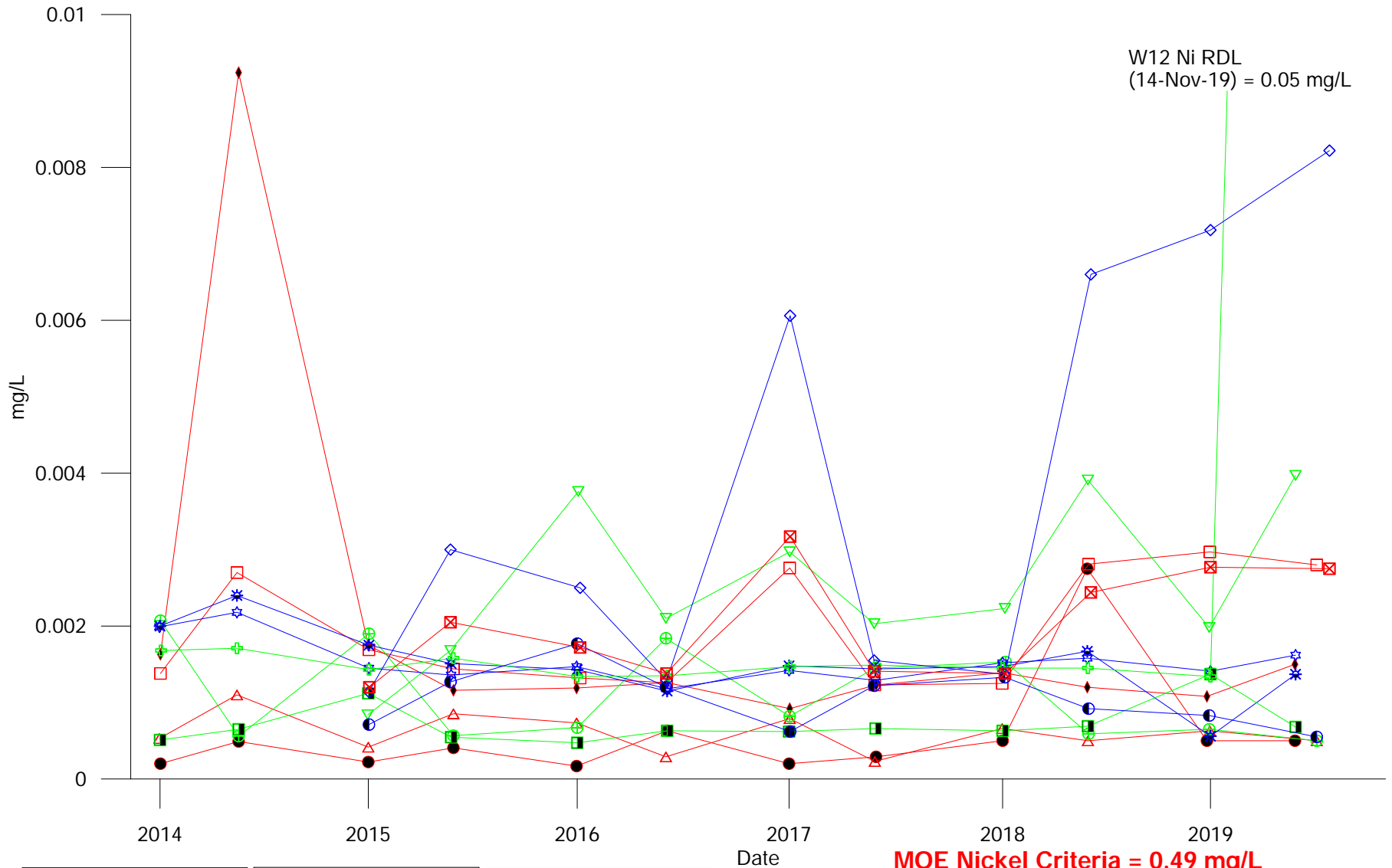
Up gradient

- W4
- W5
- W6
- W7
- W16

Down gradient

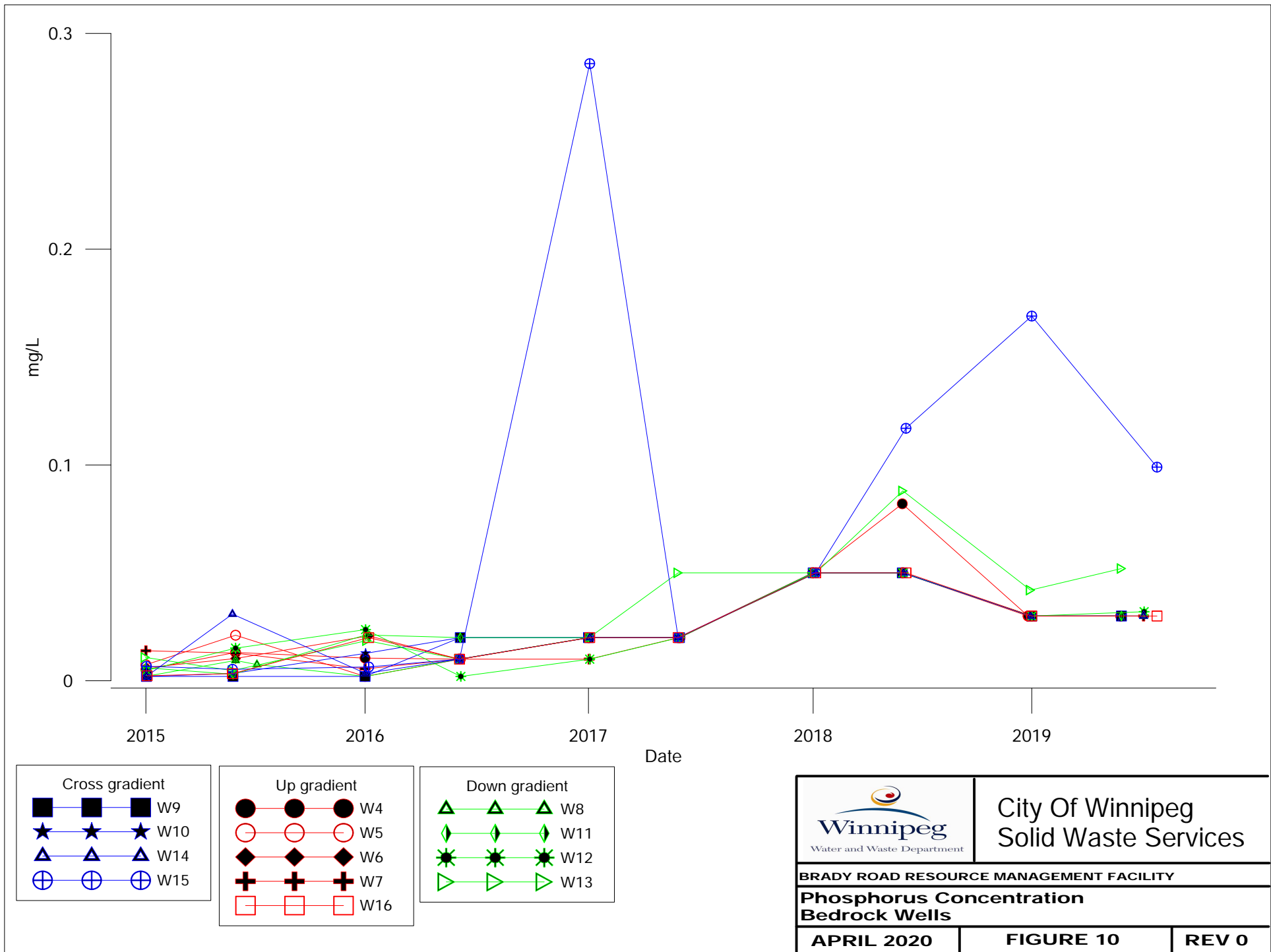
- W8
- W11
- W12
- W13

	City Of Winnipeg Solid Waste Services	
	BRADY ROAD RESOURCE MANAGEMENT FACILITY	
Ammonia Concentration Bedrock Wells		
APRIL 2020	FIGURE 8	REV 0



MOE Nickel Criteria = 0.49 mg/L

	City Of Winnipeg Solid Waste Services	
	BRADY ROAD RESOURCE MANAGEMENT FACILITY	
Dissolved Nickel Concentration Bedrock Wells		
APRIL 2020	FIGURE 9	REV 0



Cross gradient

- W9
- ★ W10
- ▲ W14
- ⊕ W15

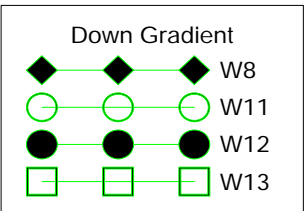
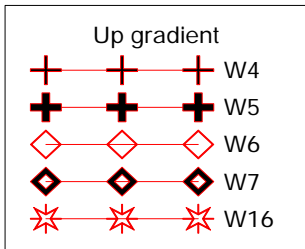
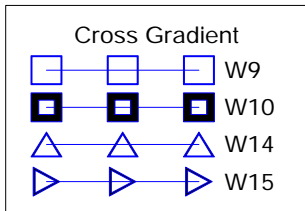
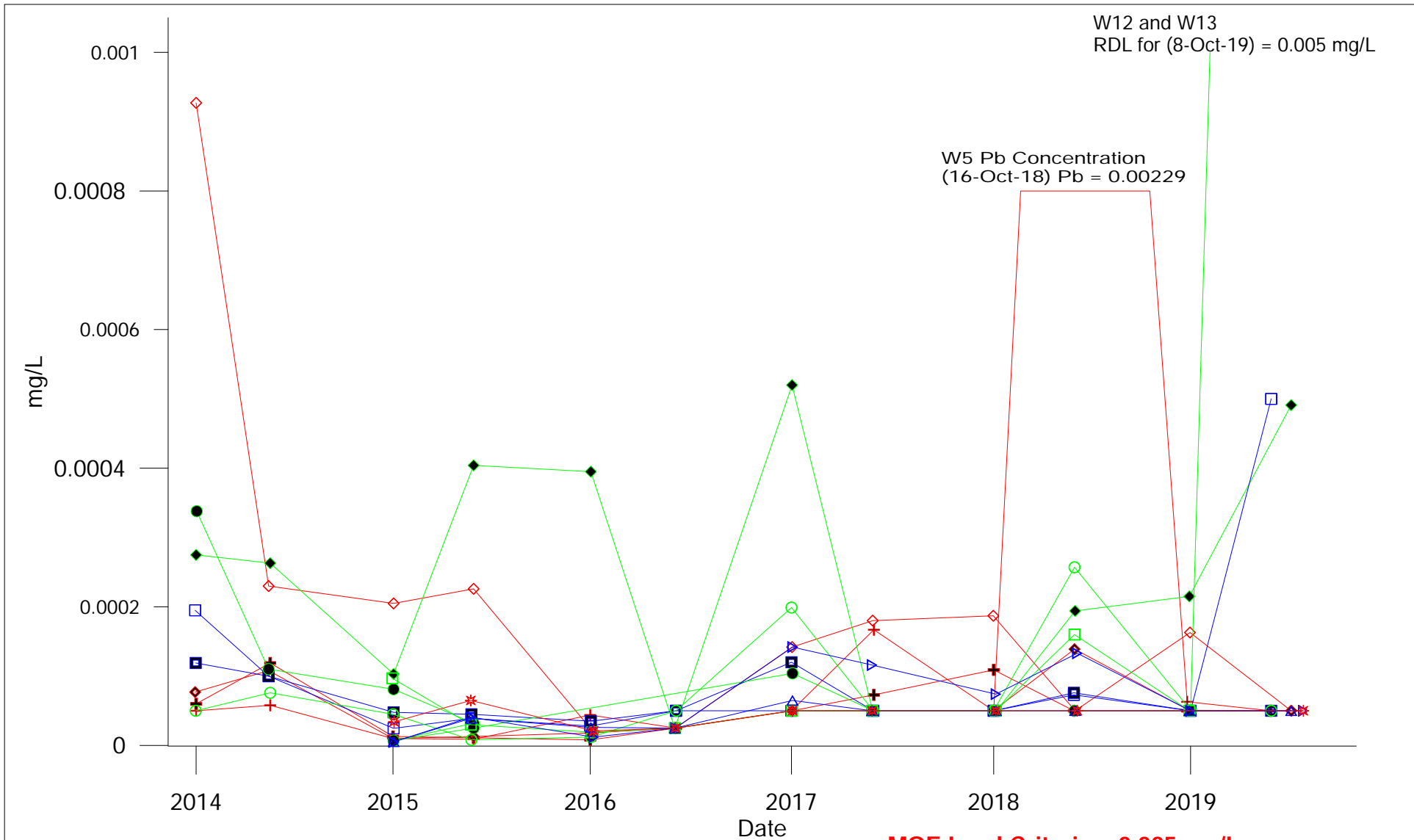
Up gradient

- W4
- W5
- ◆ W6
- ⊕ W7
- W16


Down gradient

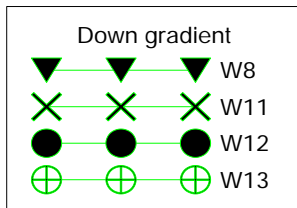
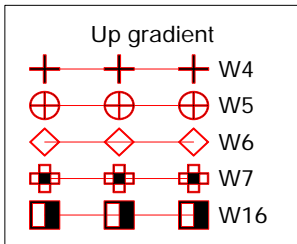
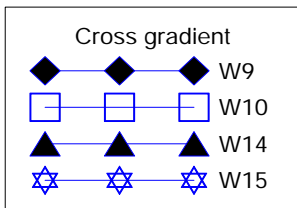
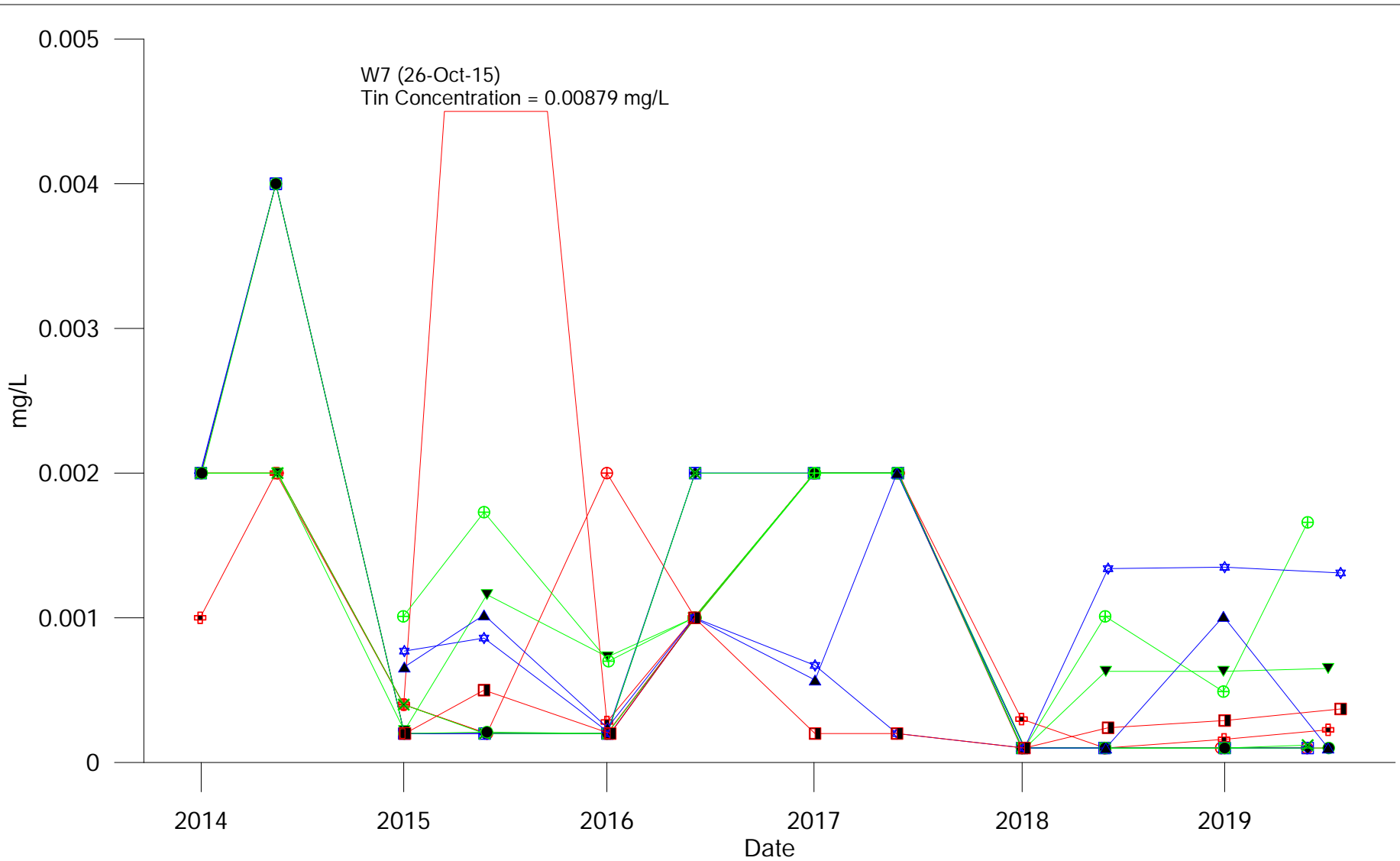
- ▲ W8
- ◇ W11
- ✱ W12
- ▷ W13

		City Of Winnipeg Solid Waste Services	
BRADY ROAD RESOURCE MANAGEMENT FACILITY			
Phosphorus Concentration Bedrock Wells			
APRIL 2020	FIGURE 10	REV 0	

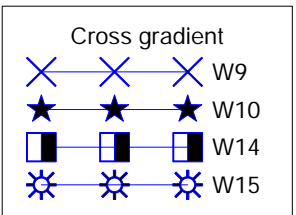
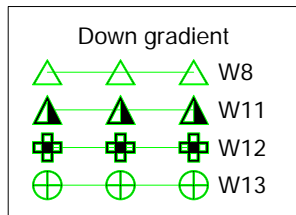
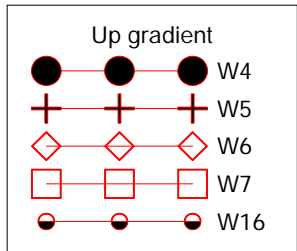
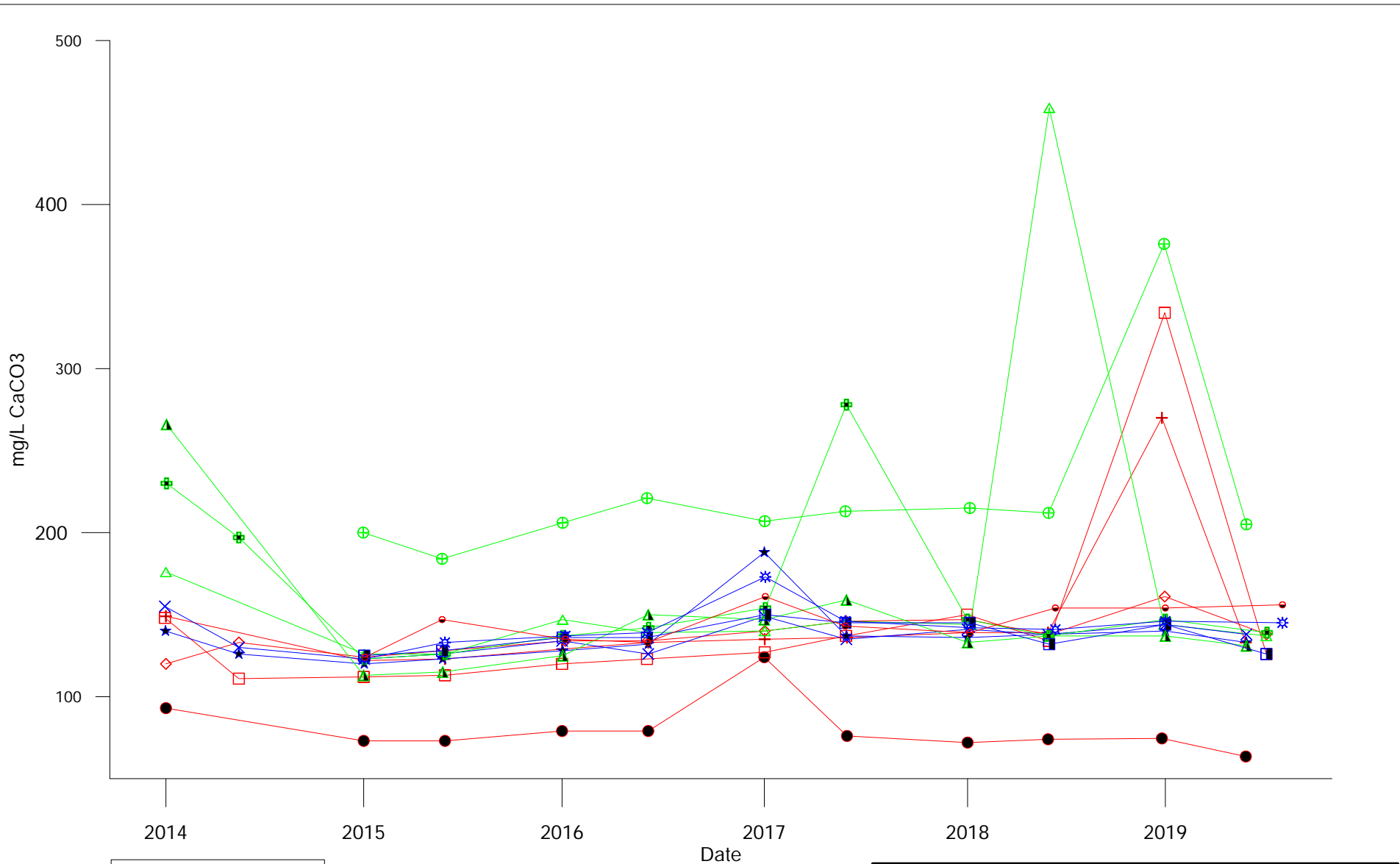


MOE Lead Criteria = 0.025 mg/L

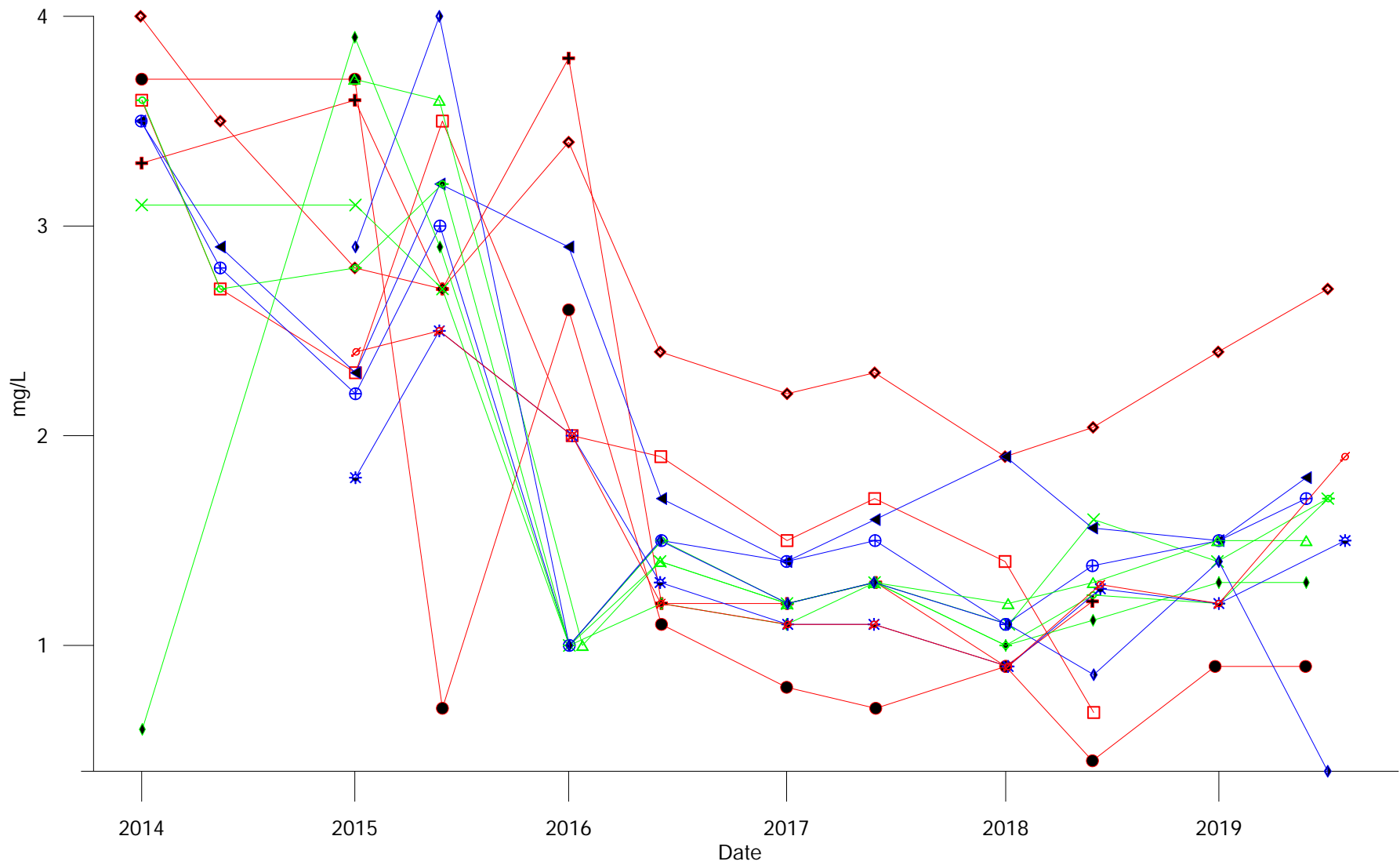
		City Of Winnipeg Solid Waste Services	
BRADY ROAD RESOURCE MANAGEMENT FACILITY			
Dissolved Lead Concentration Bedrock Wells			
APRIL 2020		FIGURE 6	
		REV 0	



	City Of Winnipeg Solid Waste Services	
	BRADY ROAD RESOURCE MANAGEMENT FACILITY	
Dissolved Tin Concentration Bedrock Wells		
APRIL 2020	FIGURE 11	REV 0



	City Of Winnipeg Solid Waste Services	
	BRADY ROAD RESOURCE MANAGEMENT FACILITY	
Total Alkalinity Bedrock Wells		
APRIL 2020	FIGURE 12	REV 0



Cross gradient

- ◀ W9
- ⊕ W10
- ◇ W14
- ✱ W15

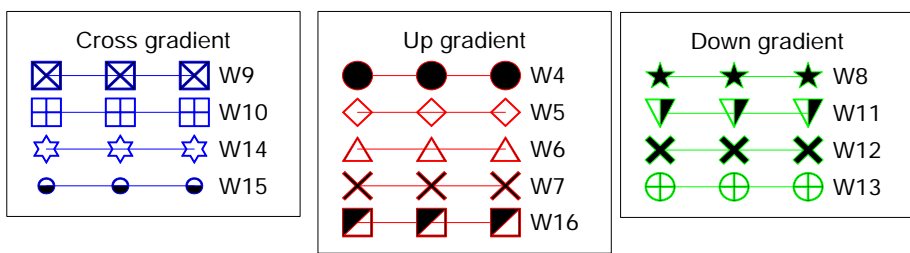
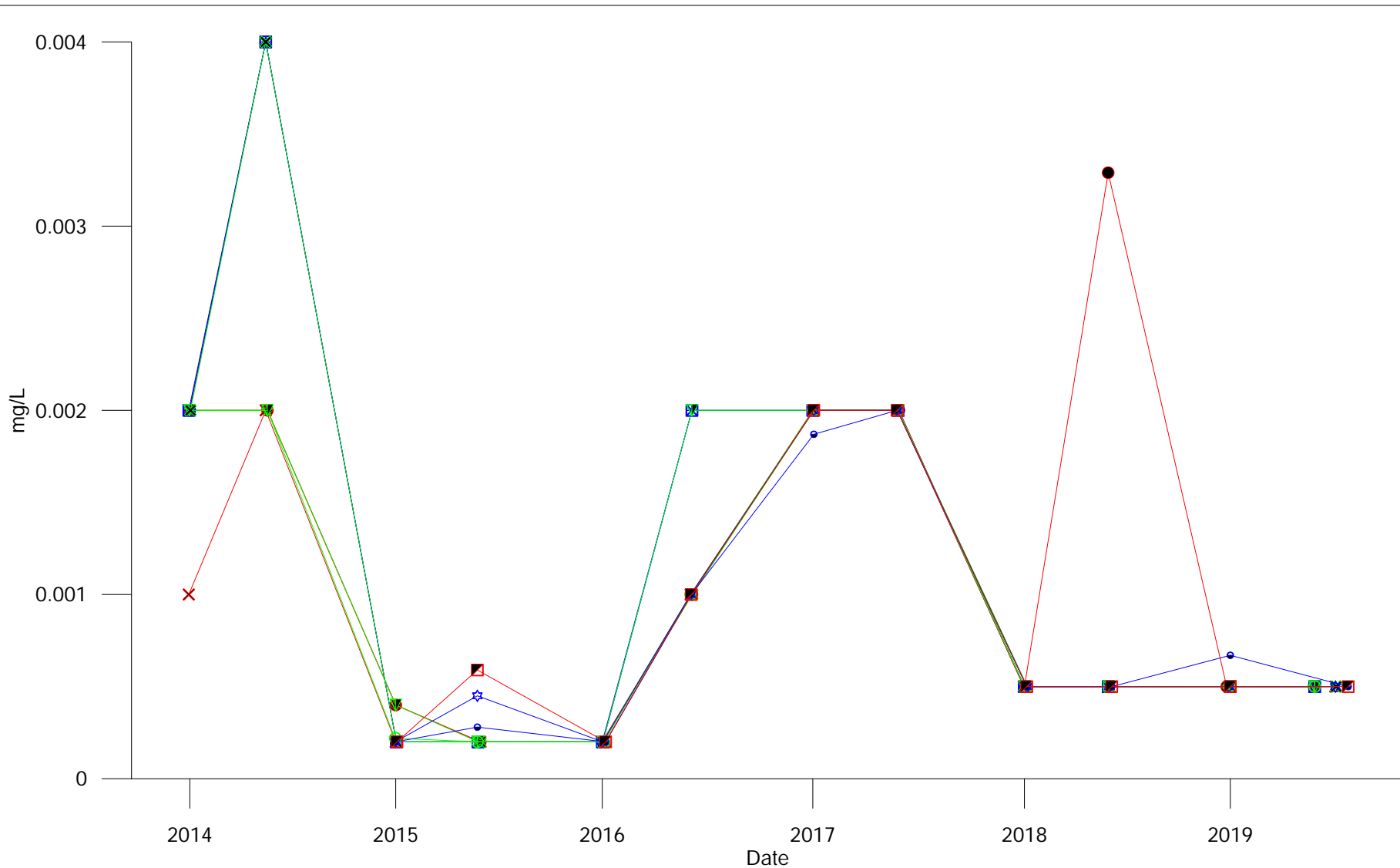
Up gradient

- W4
- + W5
- W6
- ◊ W7
- ∅ W16

Down gradient

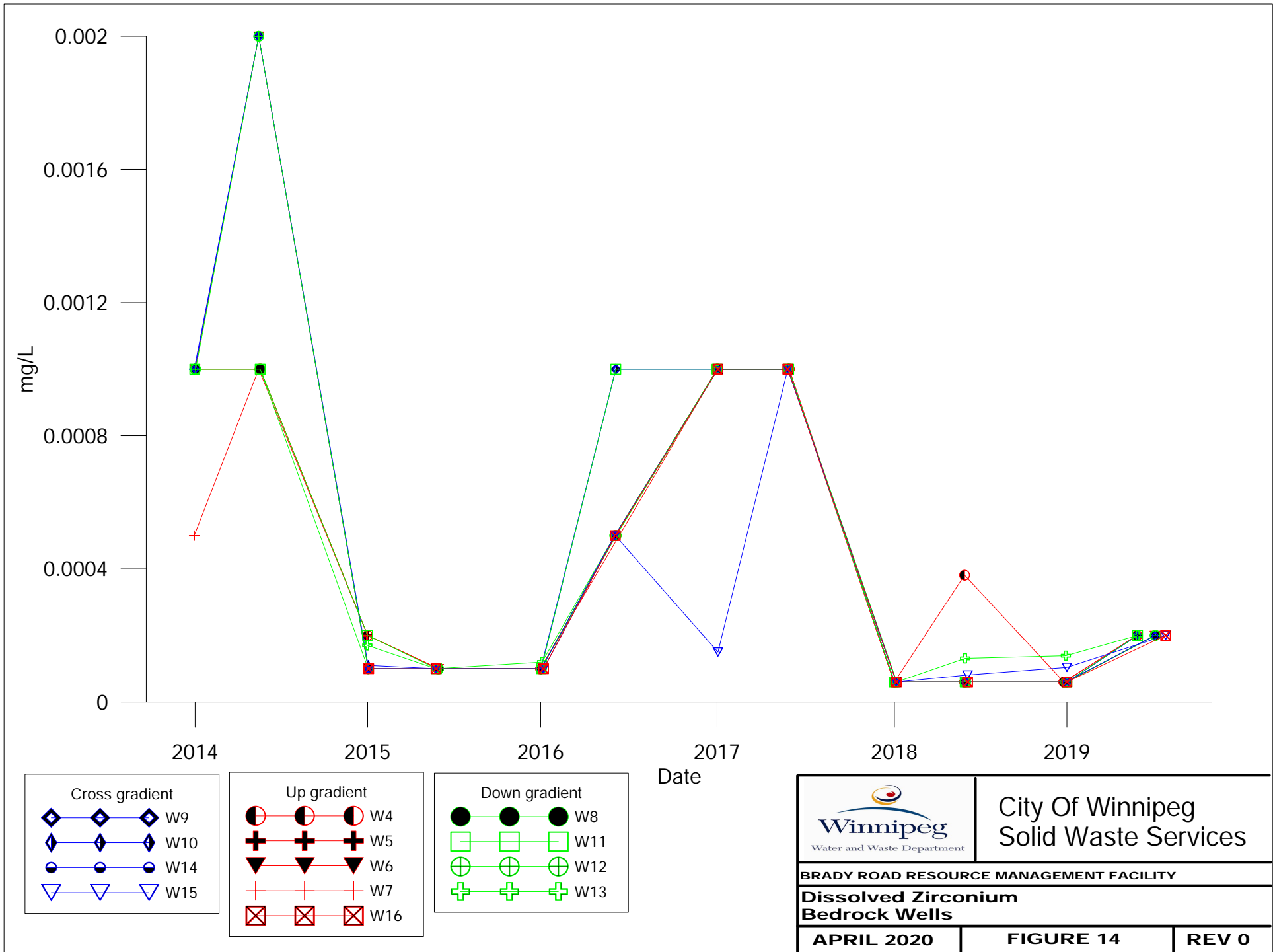
- × W8
- ◆ W11
- W12
- △ W13

	City Of Winnipeg Solid Waste Services	
	BRADY ROAD RESOURCE MANAGEMENT FACILITY	
TKN Concentration Bedrock Wells		
APRIL 2020	FIGURE 12	REV 0

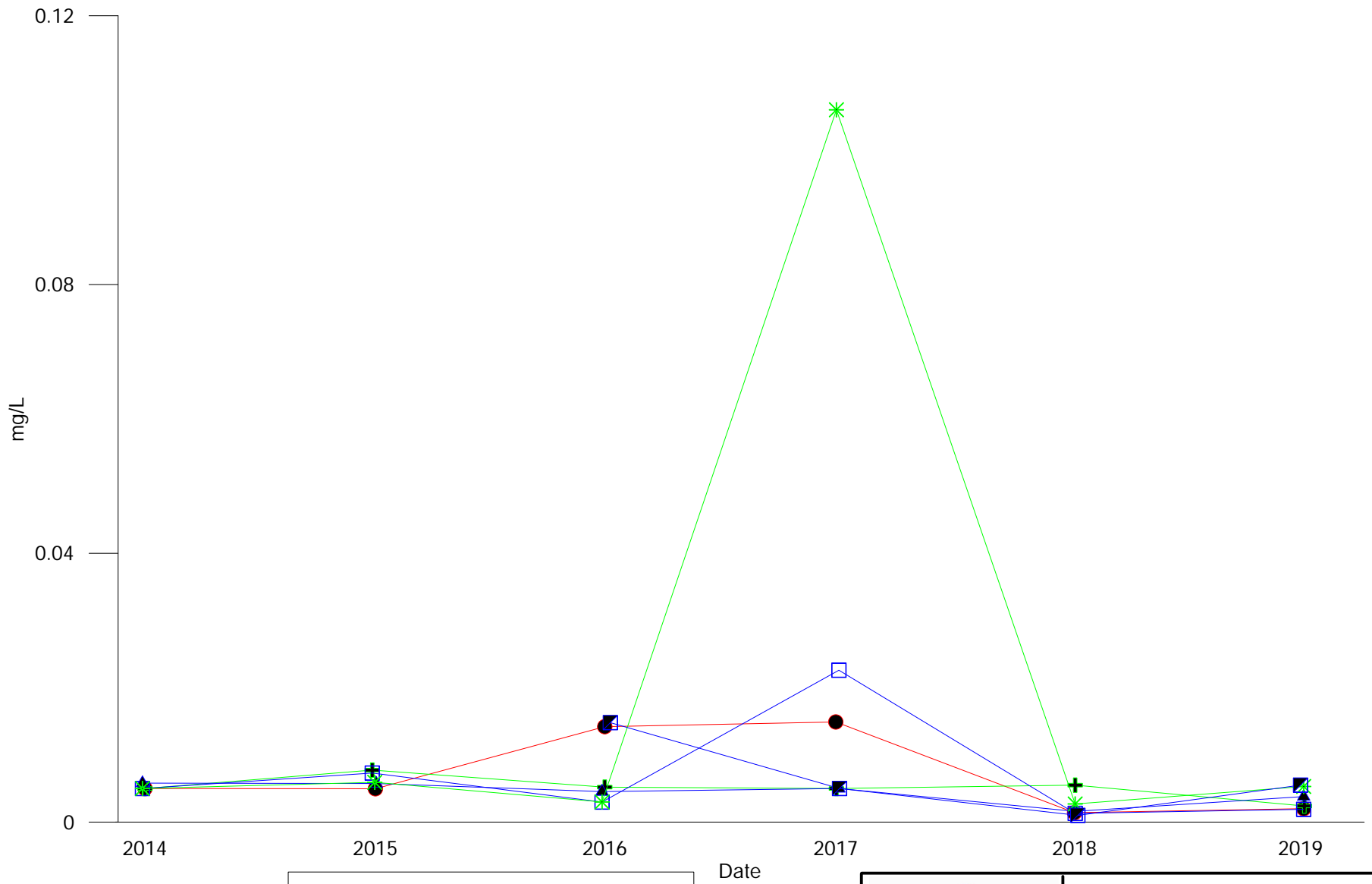


Vanadium MOE Criteria = 0.25 mg/L

	City Of Winnipeg Solid Waste Services	
	BRADY ROAD RESOURCE MANAGEMENT FACILITY	
Dissolved Vanadium Bedrock Wells		
APRIL 2020	FIGURE 13	REV 0

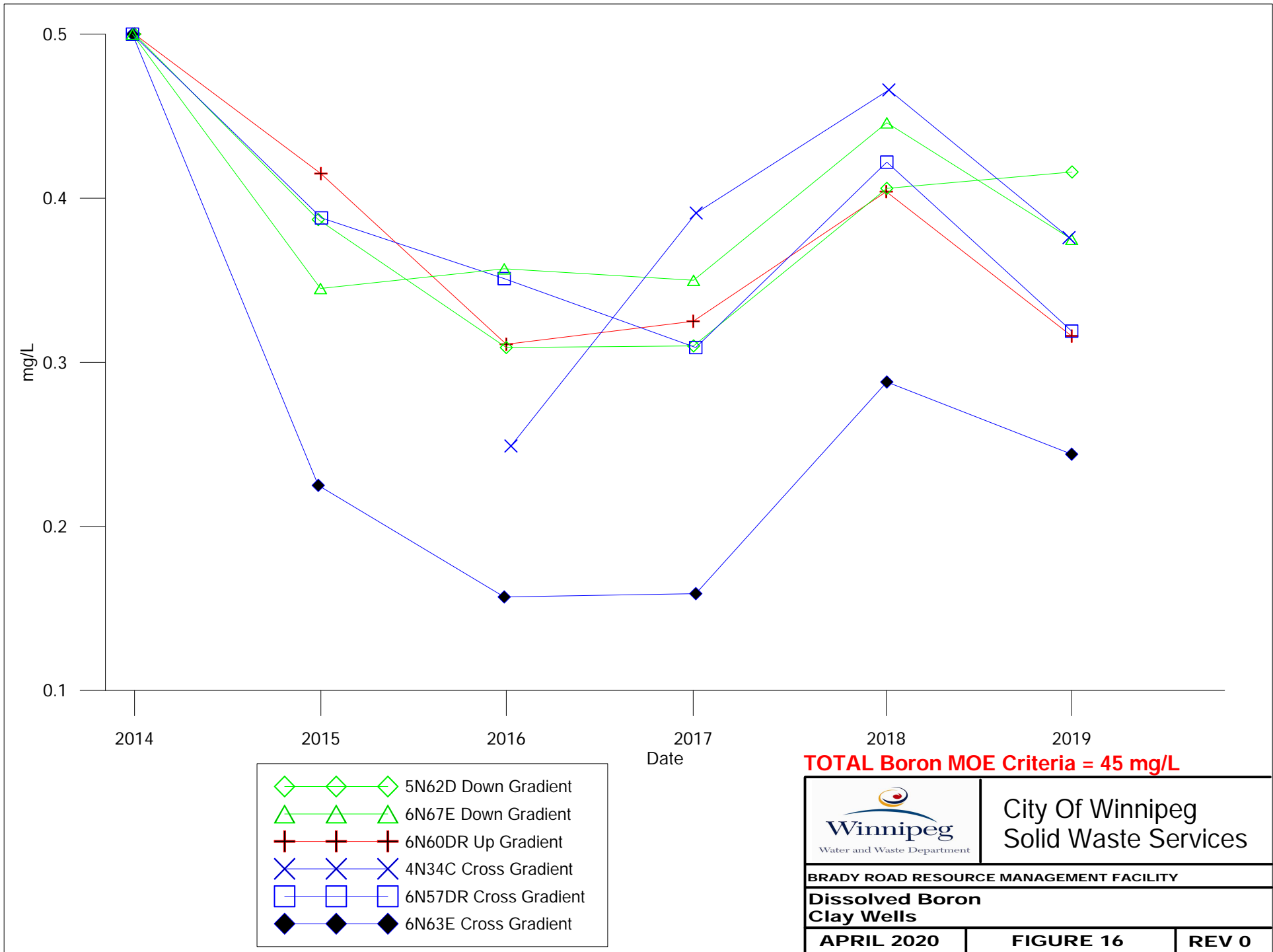


	City Of Winnipeg Solid Waste Services	
	BRADY ROAD RESOURCE MANAGEMENT FACILITY	
Dissolved Zirconium Bedrock Wells		
APRIL 2020	FIGURE 14	REV 0



- + + + 5N62D Down Gradient
- * * * 6N67E Down Gradient
- ● ● 6060DR Up Gradient
- ▲ ▲ ▲ 6N57DR Cross Gradient
- □ □ 6N63E Cross Gradient
- ▣ ▣ ▣ 4N34C Cross Gradient

	City Of Winnipeg Solid Waste Services
BRADY ROAD RESOURCE MANAGEMENT FACILITY	
Dissolved Aluminium Clay Wells	
APRIL 2020	FIGURE 15
REV 0	



TOTAL Boron MOE Criteria = 45 mg/L



City Of Winnipeg
Solid Waste Services

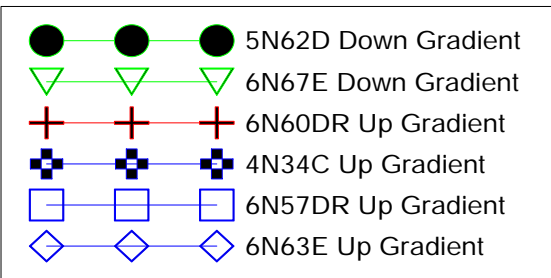
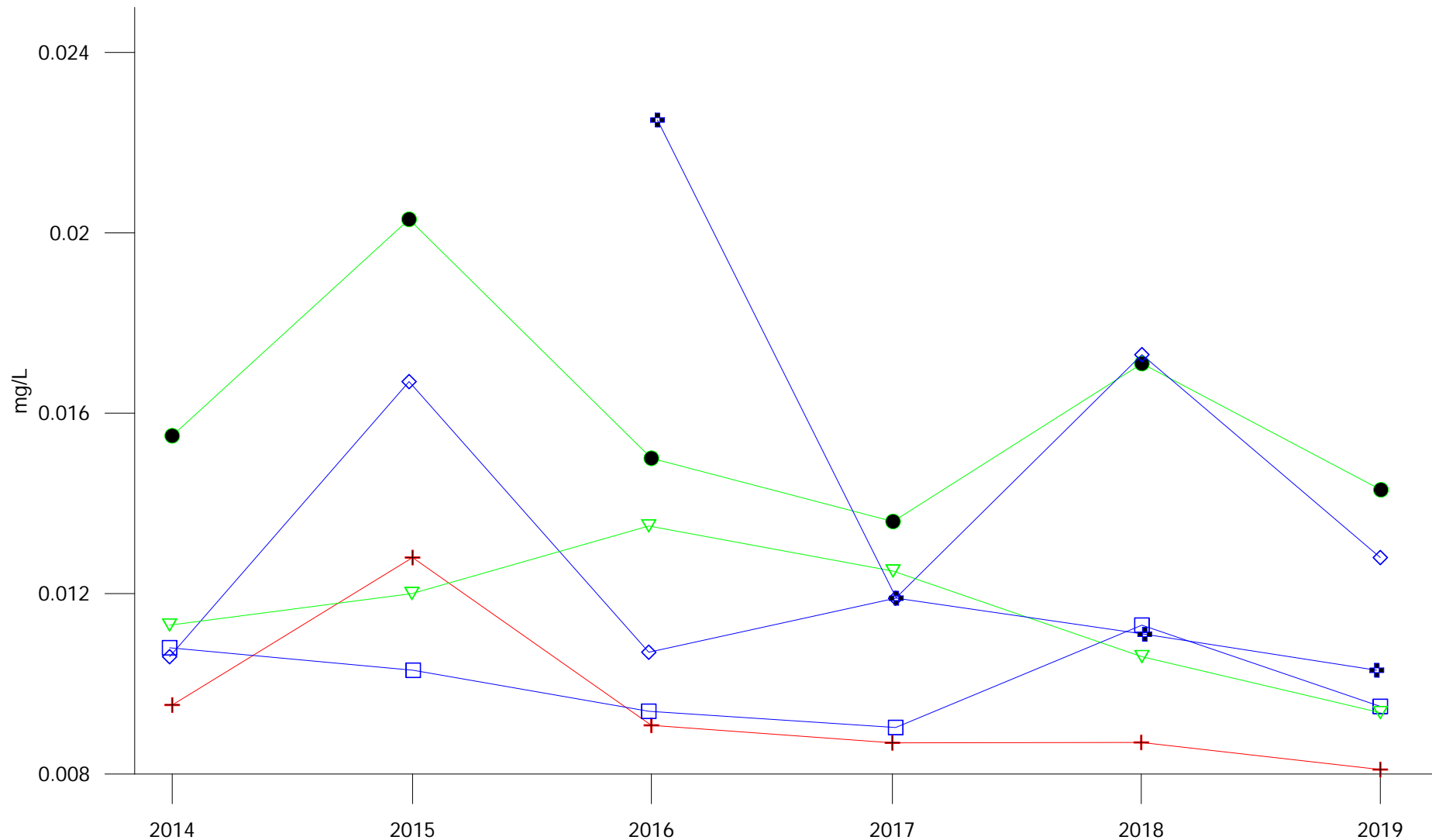
BRADY ROAD RESOURCE MANAGEMENT FACILITY

Dissolved Boron
Clay Wells

APRIL 2020

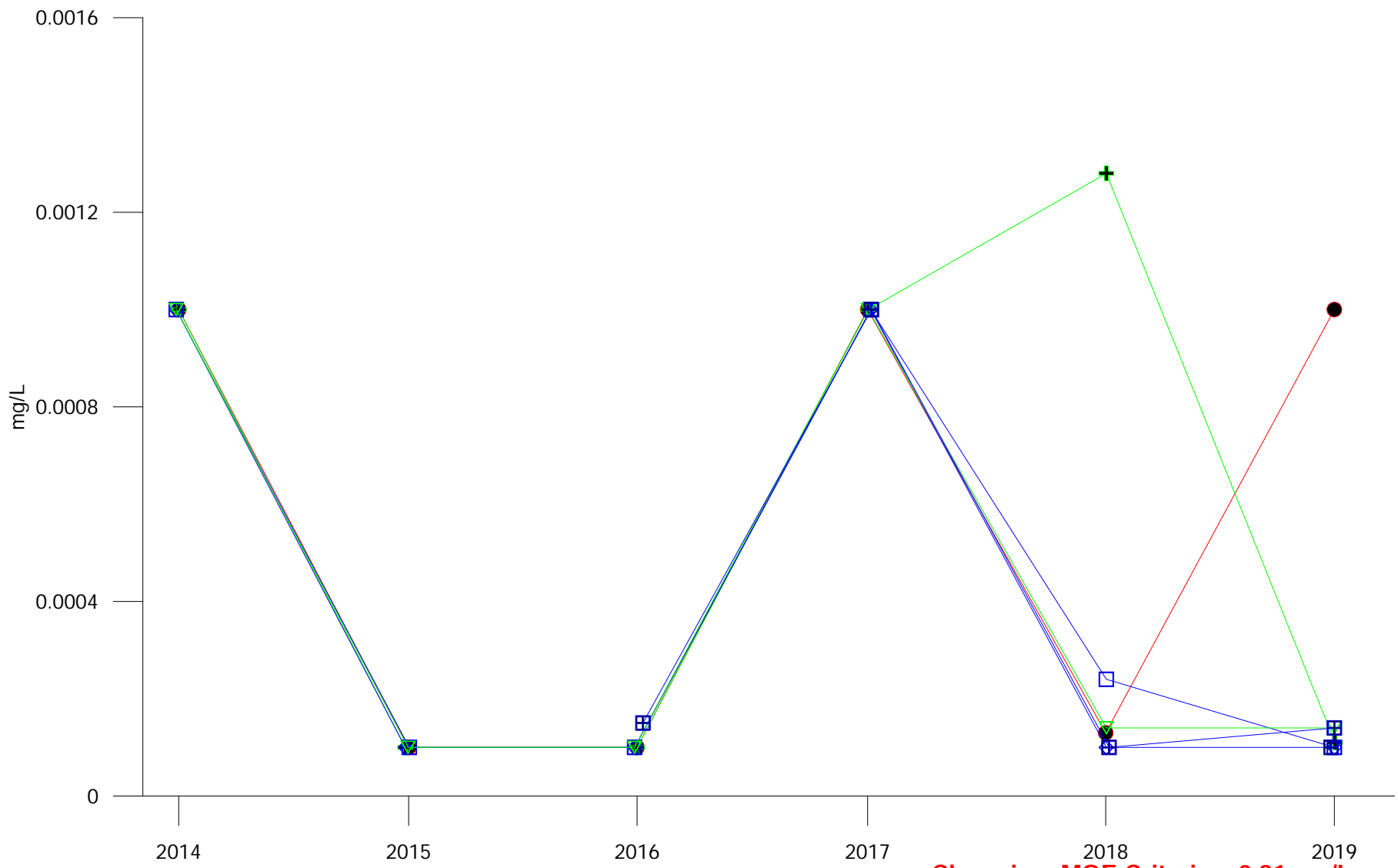
FIGURE 16

REV 0



Barium MOE Criteria = 29 mg/L

	City Of Winnipeg Solid Waste Services	
	BRADY ROAD RESOURCE MANAGEMENT FACILITY	
Dissolved Barium Clay Wells		
APRIL 2020	FIGURE 17	REV 0

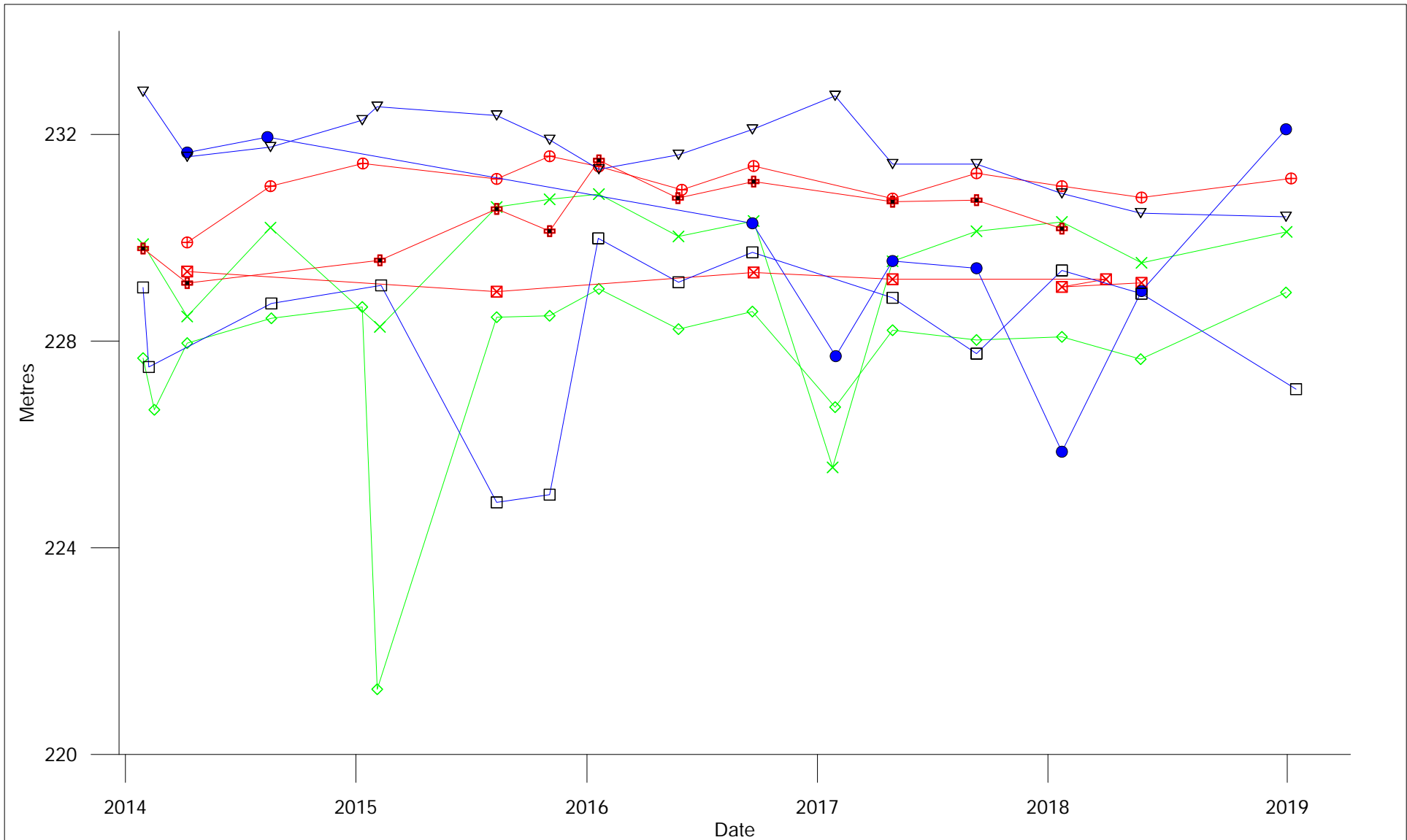


Date

Chromium MOE Criteria = 0.81 mg/L

- + + + 5N62D Down Gradient
- ▽ ▽ ▽ 6N67E Down Gradient
- ● ● 6N60DR Up Gradient
- ⊠ ⊠ ⊠ 4N34C Cross Gradient
- □ □ 6N57DR Cross Gradient
- ◇ ◇ ◇ 6N63E Cross Gradient

	<p>City Of Winnipeg Solid Waste Services</p>
<p>BRADY ROAD RESOURCE MANAGEMENT FACILITY</p>	
<p>Dissolved Chromium Clay Wells</p>	
<p>APRIL 2020</p>	<p>FIGURE 18</p>
<p>REV 0</p>	



Down gradient

- 5N62D
- 6N67E

Cross gradient

- 4N34CR
- 6N57DR
- 6N63E

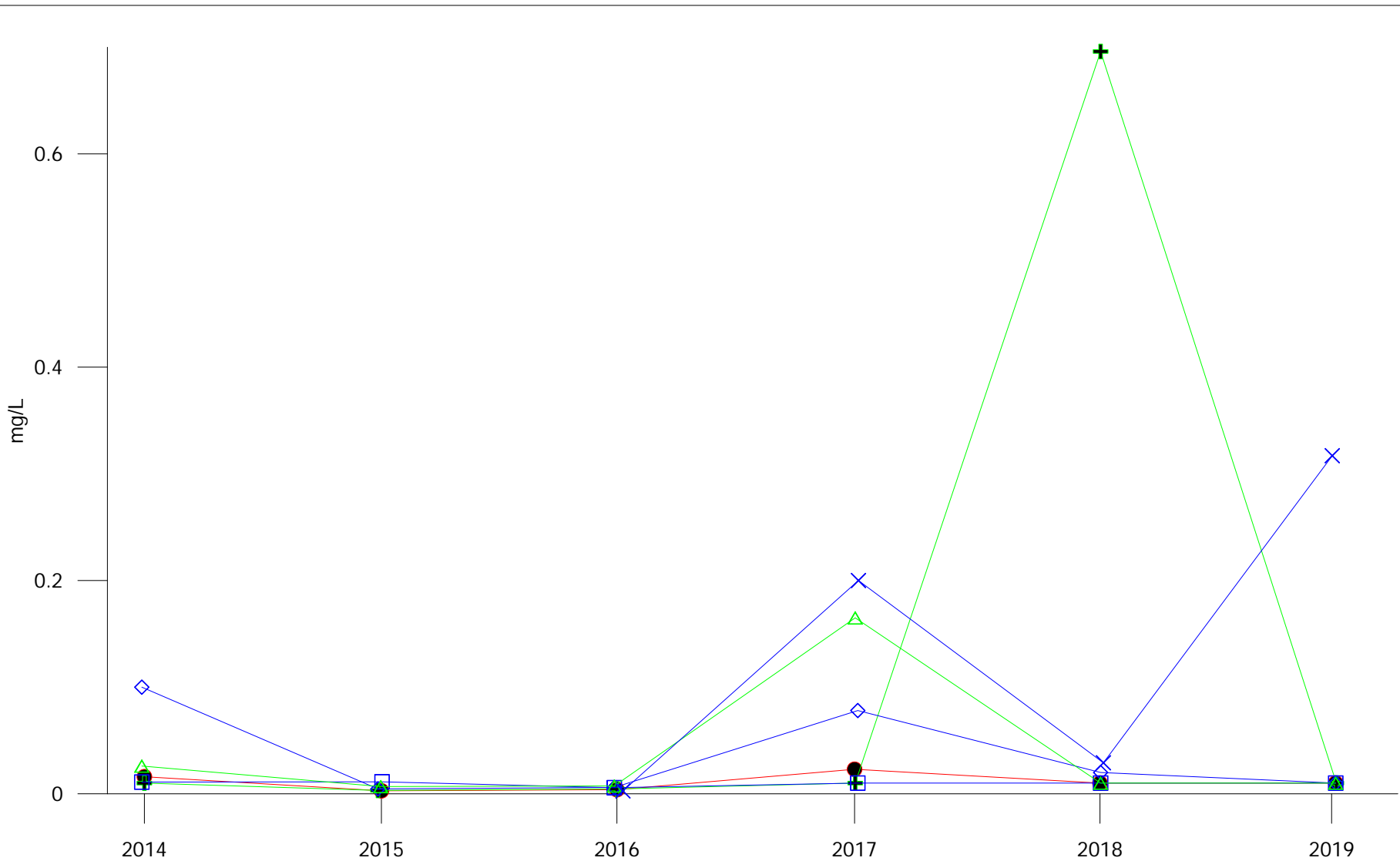
Up gradient

- 6N58DR
- 6N59DR
- 6N60DR



City Of Winnipeg
Solid Waste Services

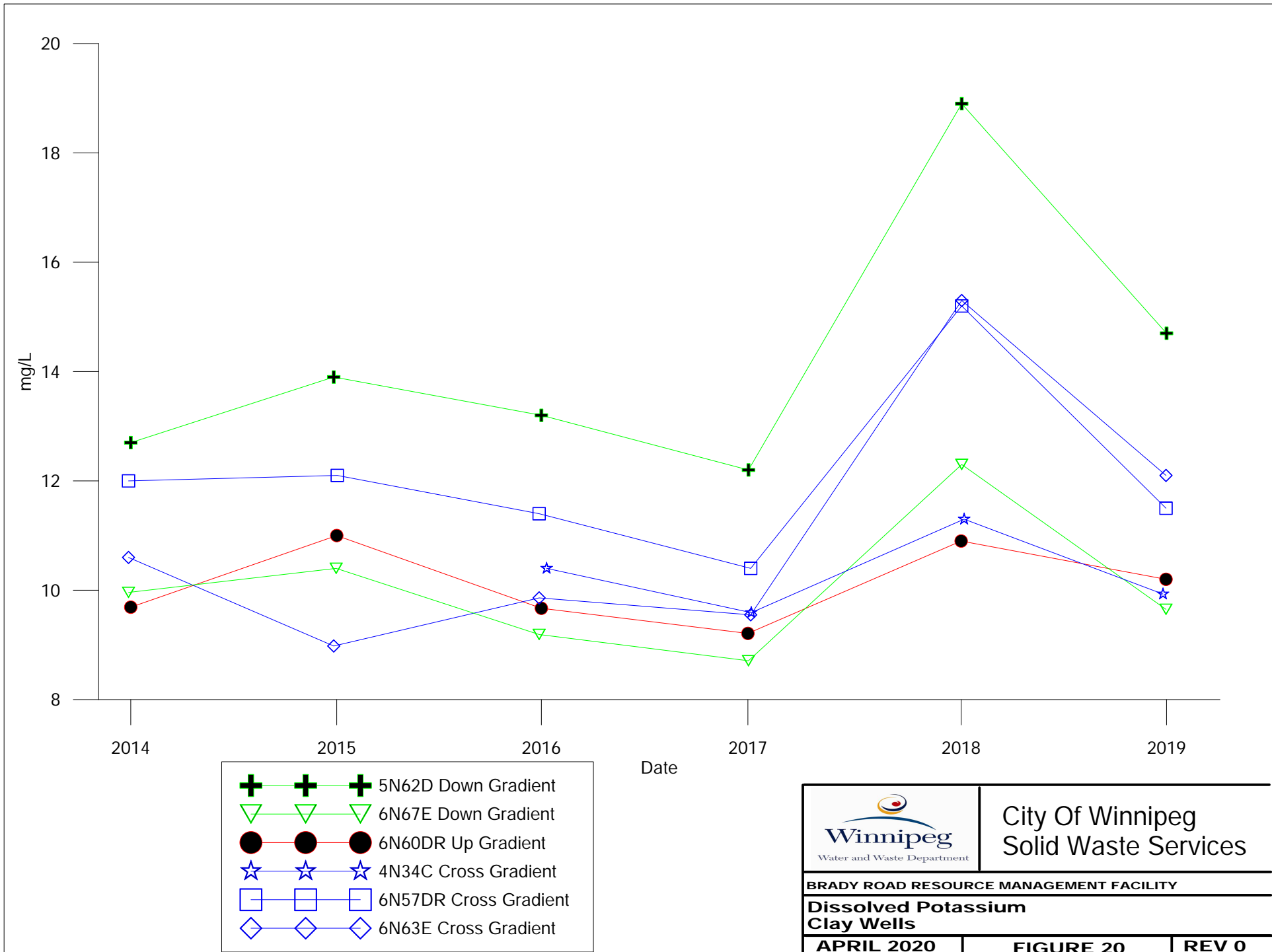
BRADY ROAD RESOURCE MANAGEMENT FACILITY
**GROUNDWATER ELEVATIONS
 CLAY WELLS**
 APRIL 2020 | FIGURE GW-3-1 REV 0



- + + + 5N62D Down Gradient
- △ △ △ 6N67E Down Gradient
- ● ● 6N60DR Up Gradient
- × × × 4N34C Up Gradient
- □ □ 6N57DR Up Gradient
- ◇ ◇ ◇ 6N63E Up Gradient

Date

	City Of Winnipeg Solid Waste Services	
	BRADY ROAD RESOURCE MANAGEMENT FACILITY	
Dissolved Iron Clay Wells		
APRIL 2020	FIGURE 19	REV 0

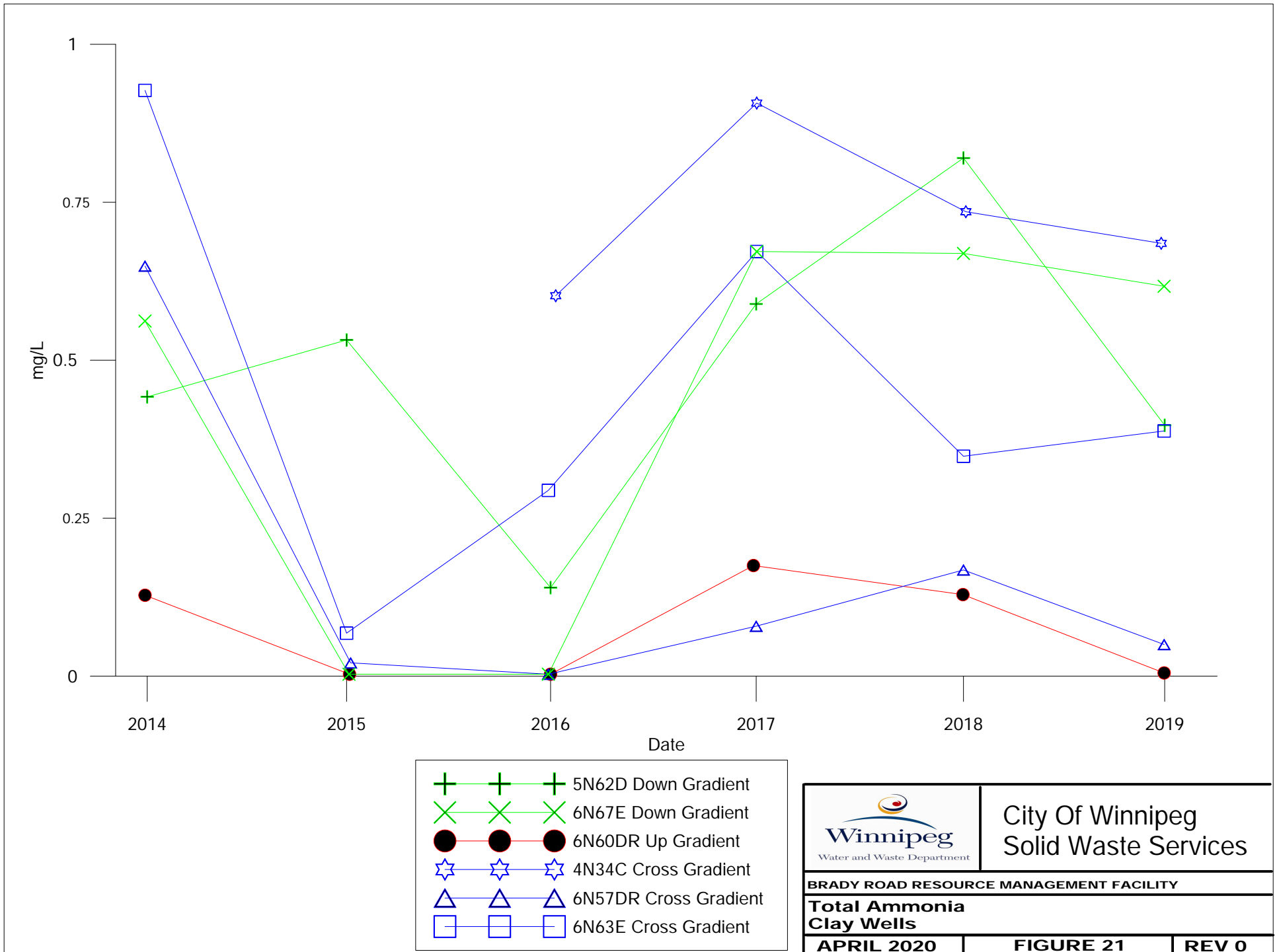


City Of Winnipeg
Solid Waste Services

BRADY ROAD RESOURCE MANAGEMENT FACILITY

Dissolved Potassium
Clay Wells

APRIL 2020 | FIGURE 20 | REV 0



City Of Winnipeg
Solid Waste Services

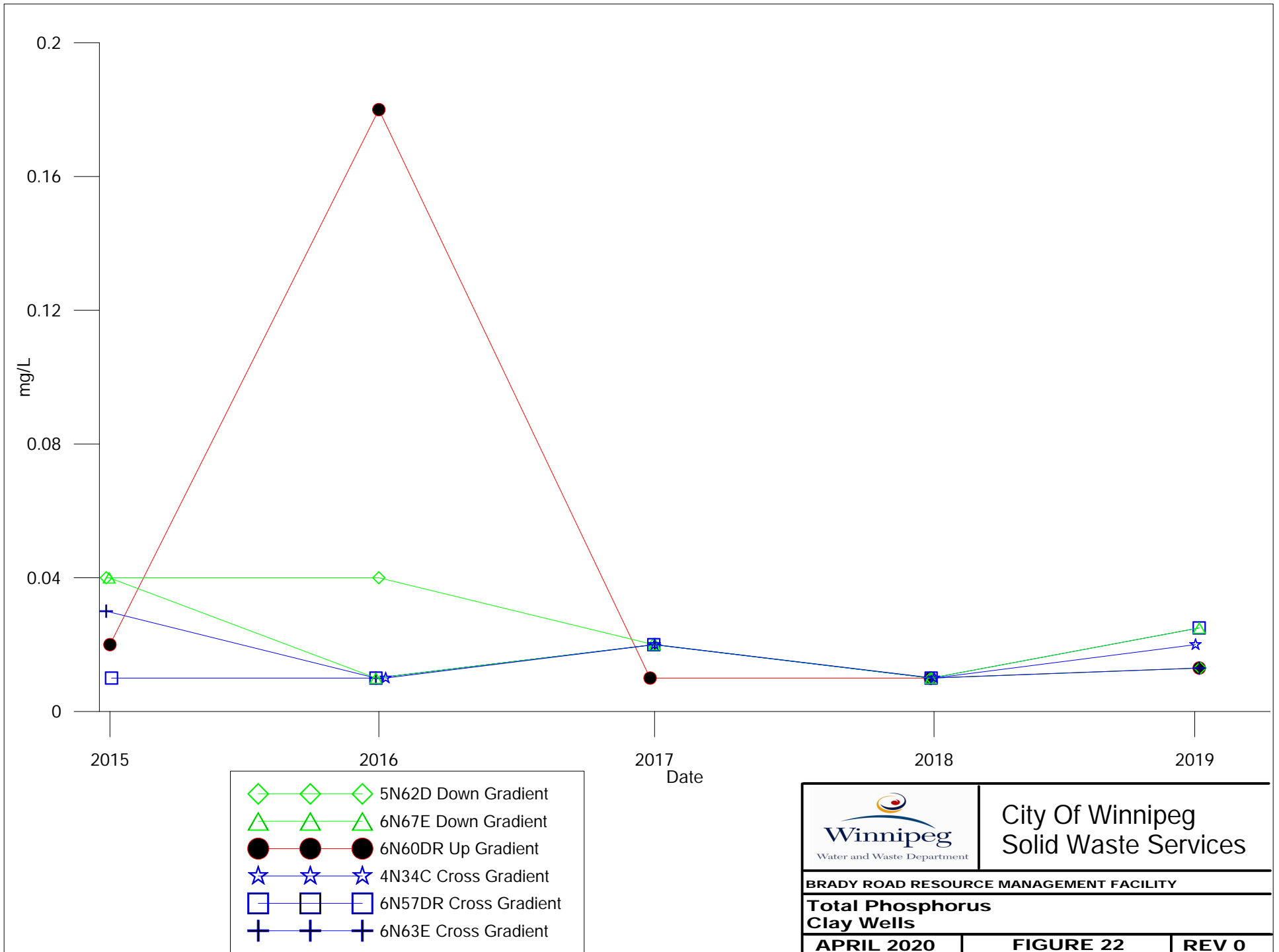
BRADY ROAD RESOURCE MANAGEMENT FACILITY

**Total Ammonia
Clay Wells**

APRIL 2020

FIGURE 21

REV 0



City Of Winnipeg
Solid Waste Services

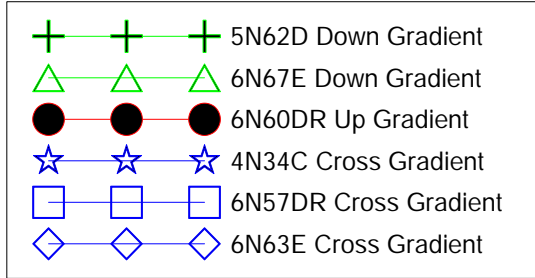
BRADY ROAD RESOURCE MANAGEMENT FACILITY

Total Phosphorus
Clay Wells

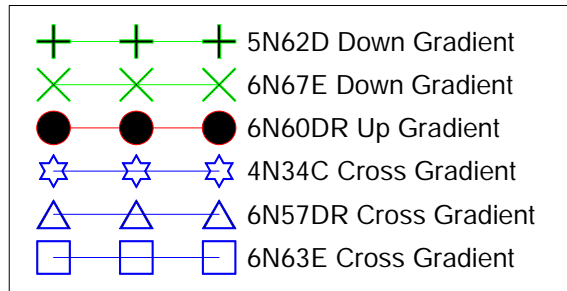
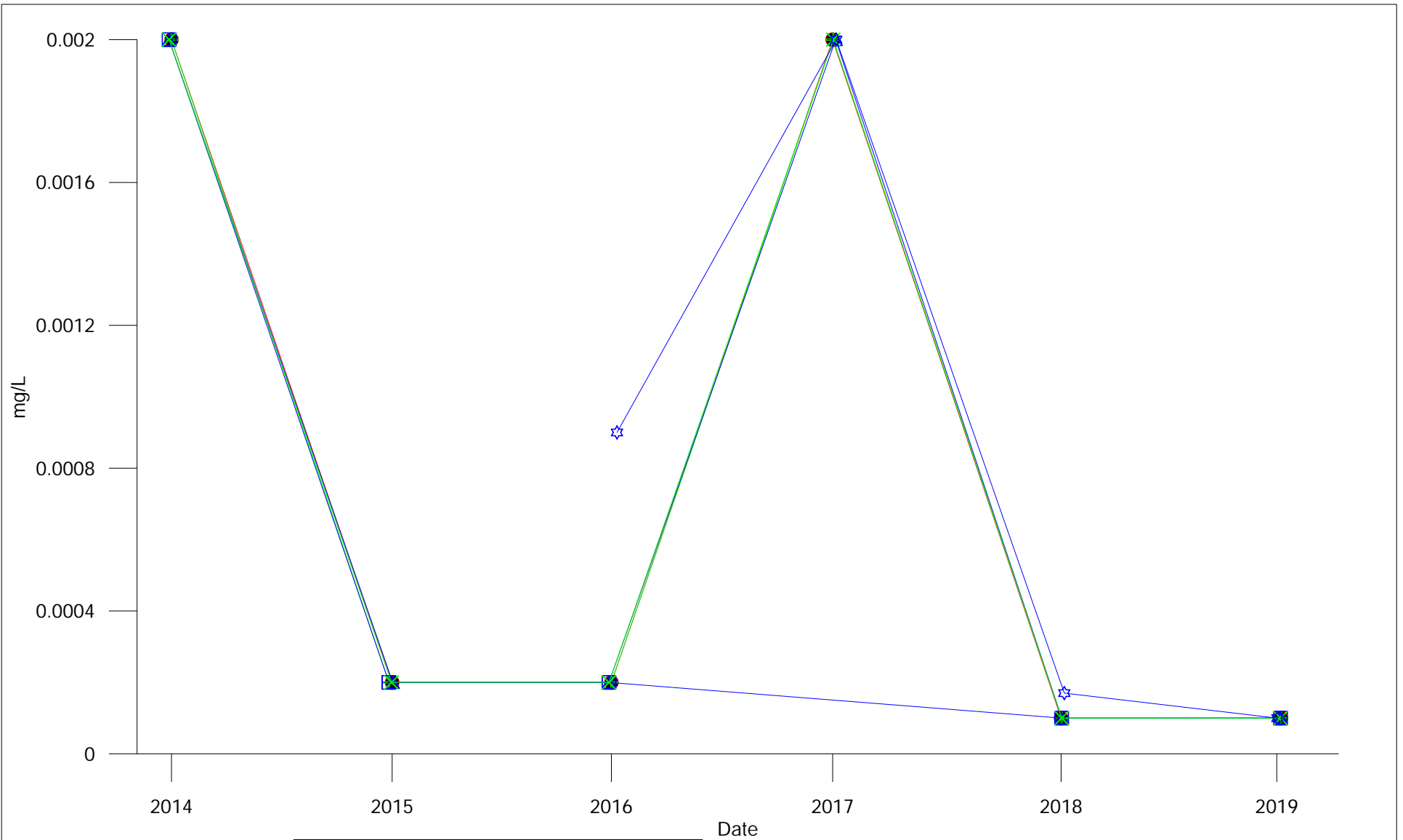
APRIL 2020

FIGURE 22

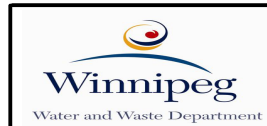
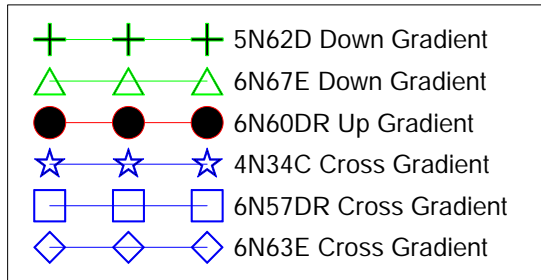
REV 0



	City Of Winnipeg Solid Waste Services	
	BRADY ROAD RESOURCE MANAGEMENT FACILITY	
Dissolved Rubidium Clay Wells		
APRIL 2020	FIGURE 23	REV 0



	City Of Winnipeg Solid Waste Services	
	BRADY ROAD RESOURCE MANAGEMENT FACILITY	
Dissolved Tin Clay Wells		
APRIL 2020	FIGURE 24	REV 0



City Of Winnipeg
Solid Waste Services

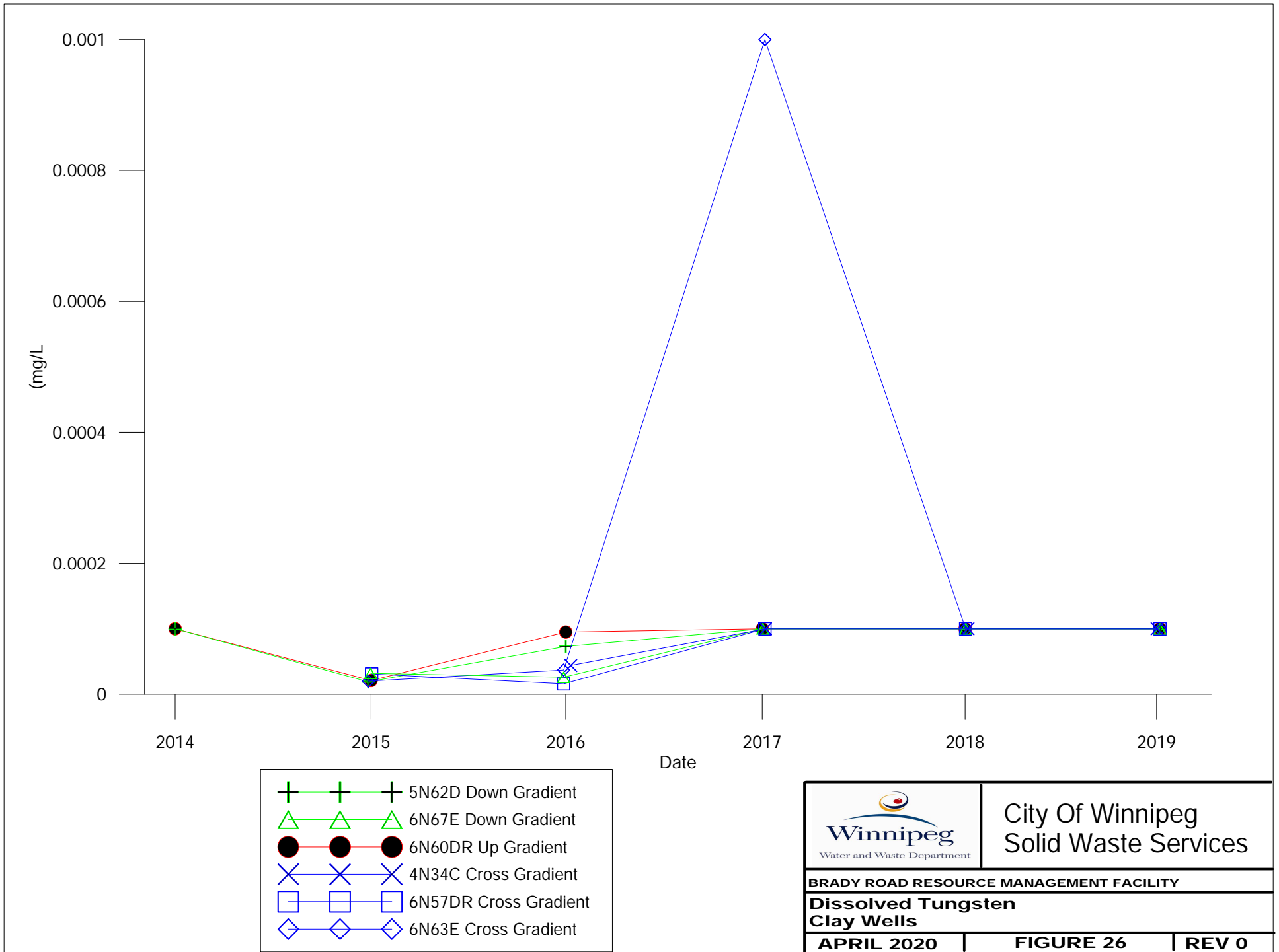
BRADY ROAD RESOURCE MANAGEMENT FACILITY

Total Kjeldahl Nitrogen
Clay Wells

APRIL 2020

FIGURE 25

REV 0



- + + + 5N62D Down Gradient
- △ △ △ 6N67E Down Gradient
- ● ● 6N60DR Up Gradient
- × × × 4N34C Cross Gradient
- □ □ 6N57DR Cross Gradient
- ◇ ◇ ◇ 6N63E Cross Gradient

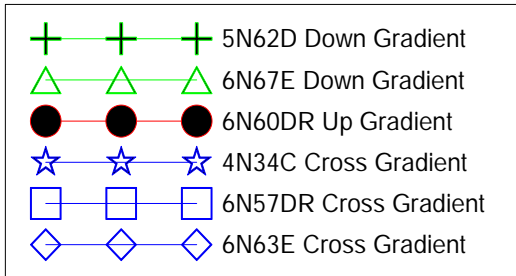
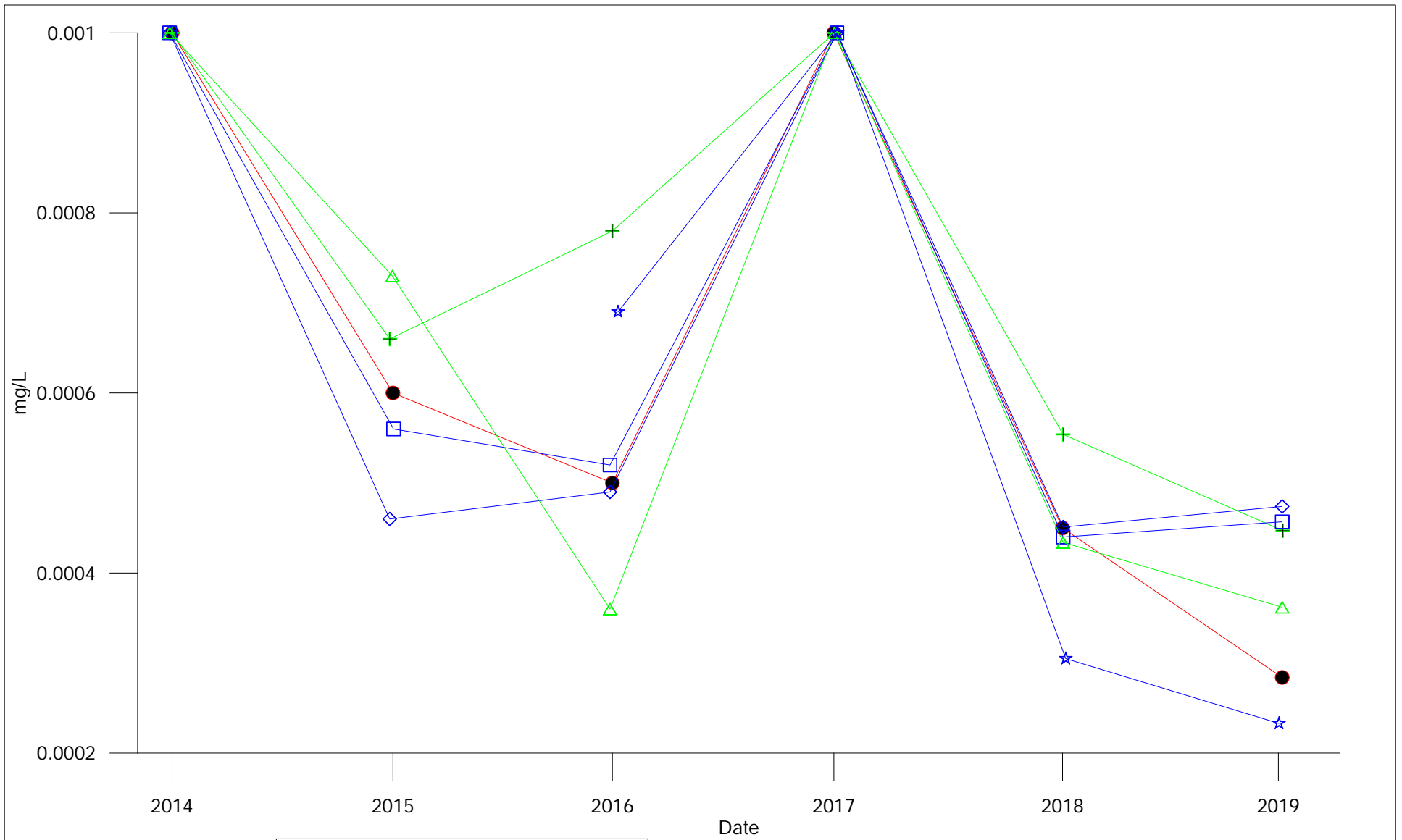


City Of Winnipeg
Solid Waste Services

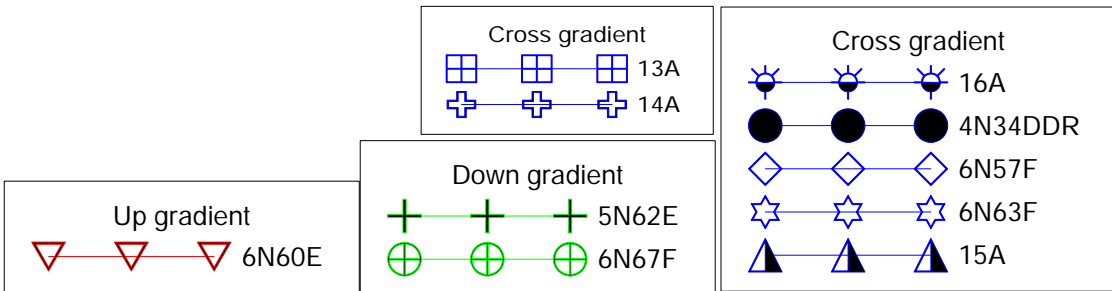
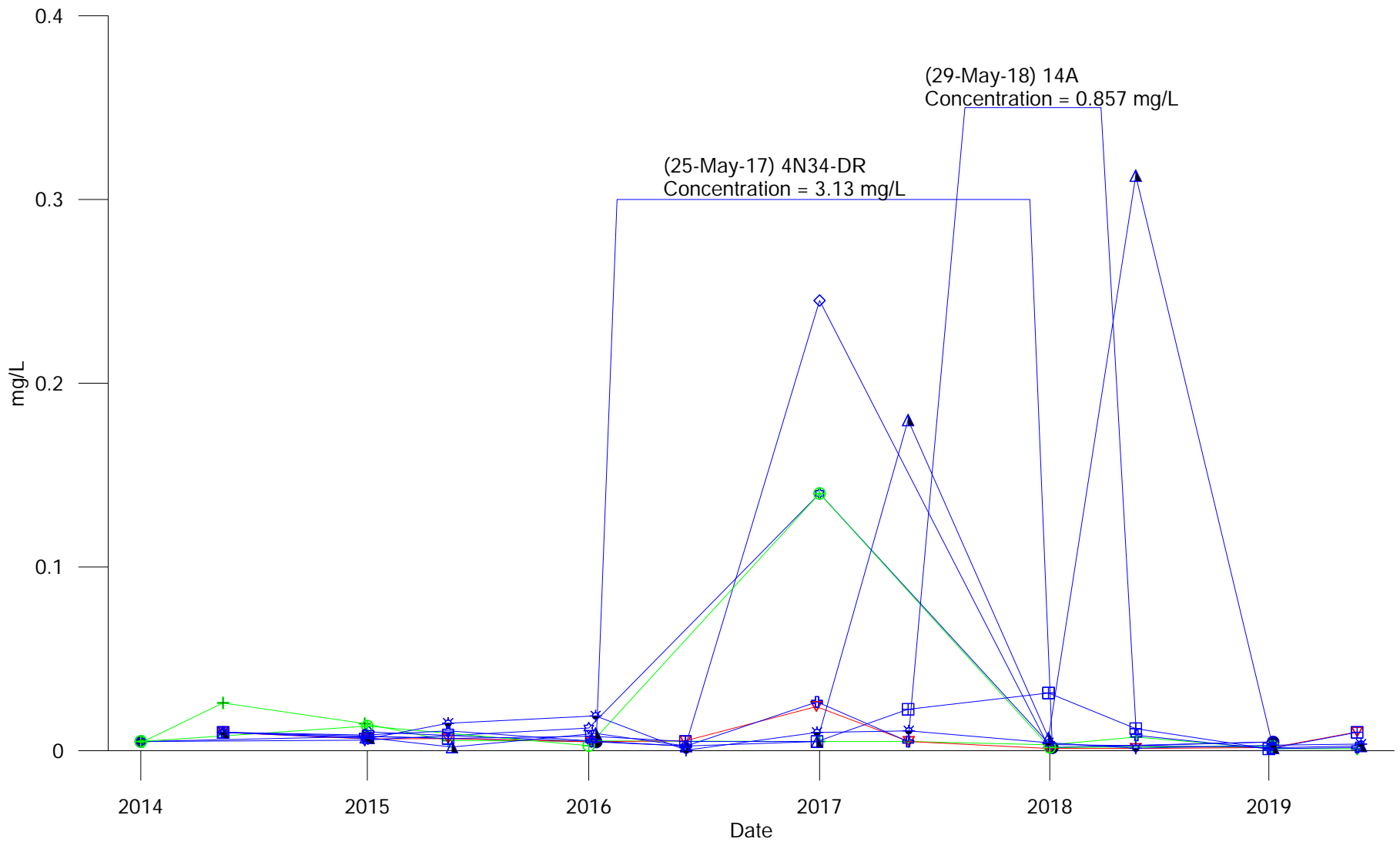
BRADY ROAD RESOURCE MANAGEMENT FACILITY

Dissolved Tungsten
Clay Wells

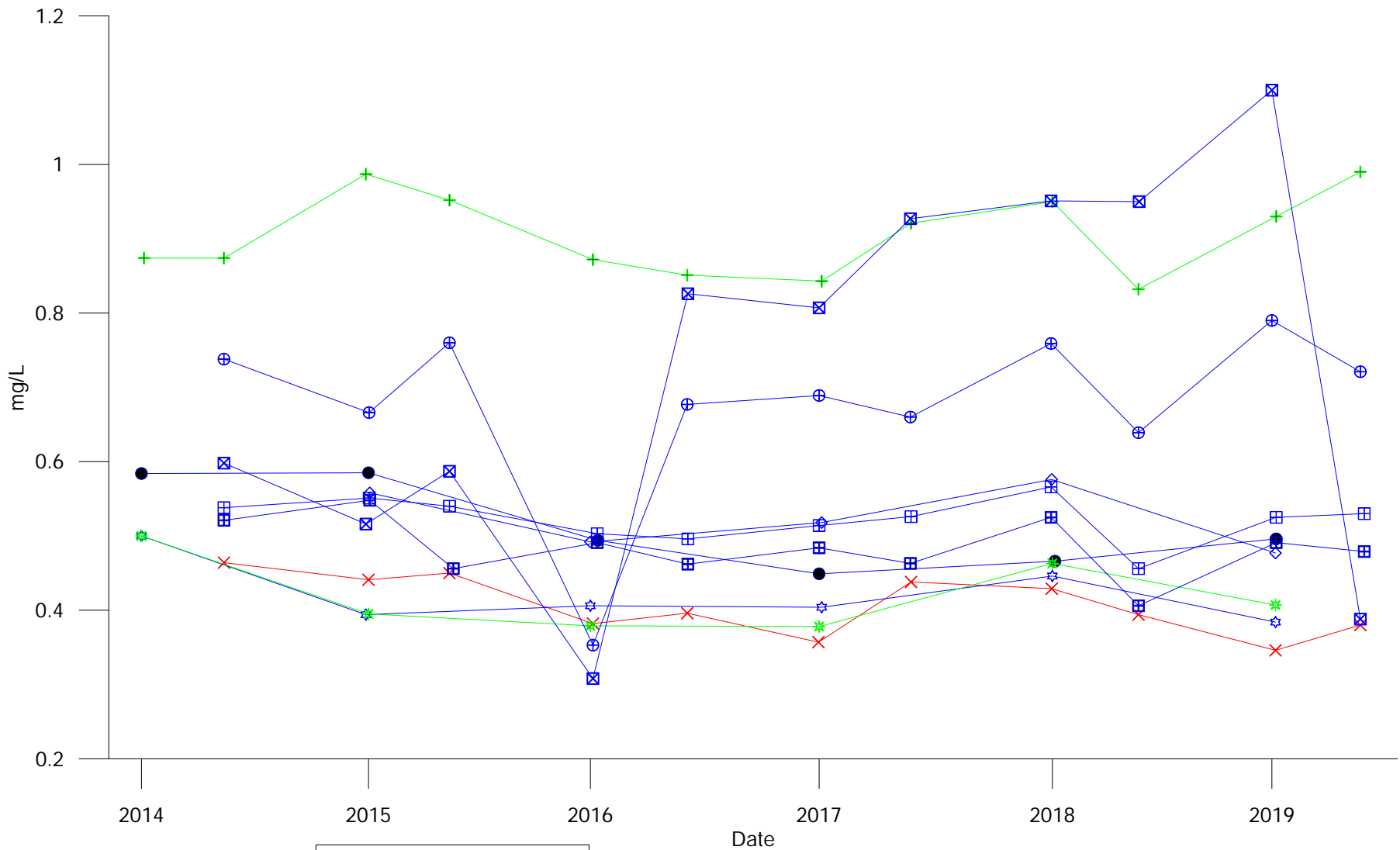
APRIL 2020 | FIGURE 26 | REV 0



	City Of Winnipeg Solid Waste Services	
	BRADY ROAD RESOURCE MANAGEMENT FACILITY	
Dissolved Zirconium Clay Wells		
APRIL 2020	FIGURE 27	REV 0



	<p>City Of Winnipeg Solid Waste Services</p>	
	<p>BRADY ROAD RESOURCE MANAGEMENT FACILITY</p>	
<p>Dissolved Aluminium Till Wells</p>		
<p>APRIL 2020</p>	<p>FIGURE 28</p>	<p>REV 0</p>



Up gradient
 X—X—X 6N60EER

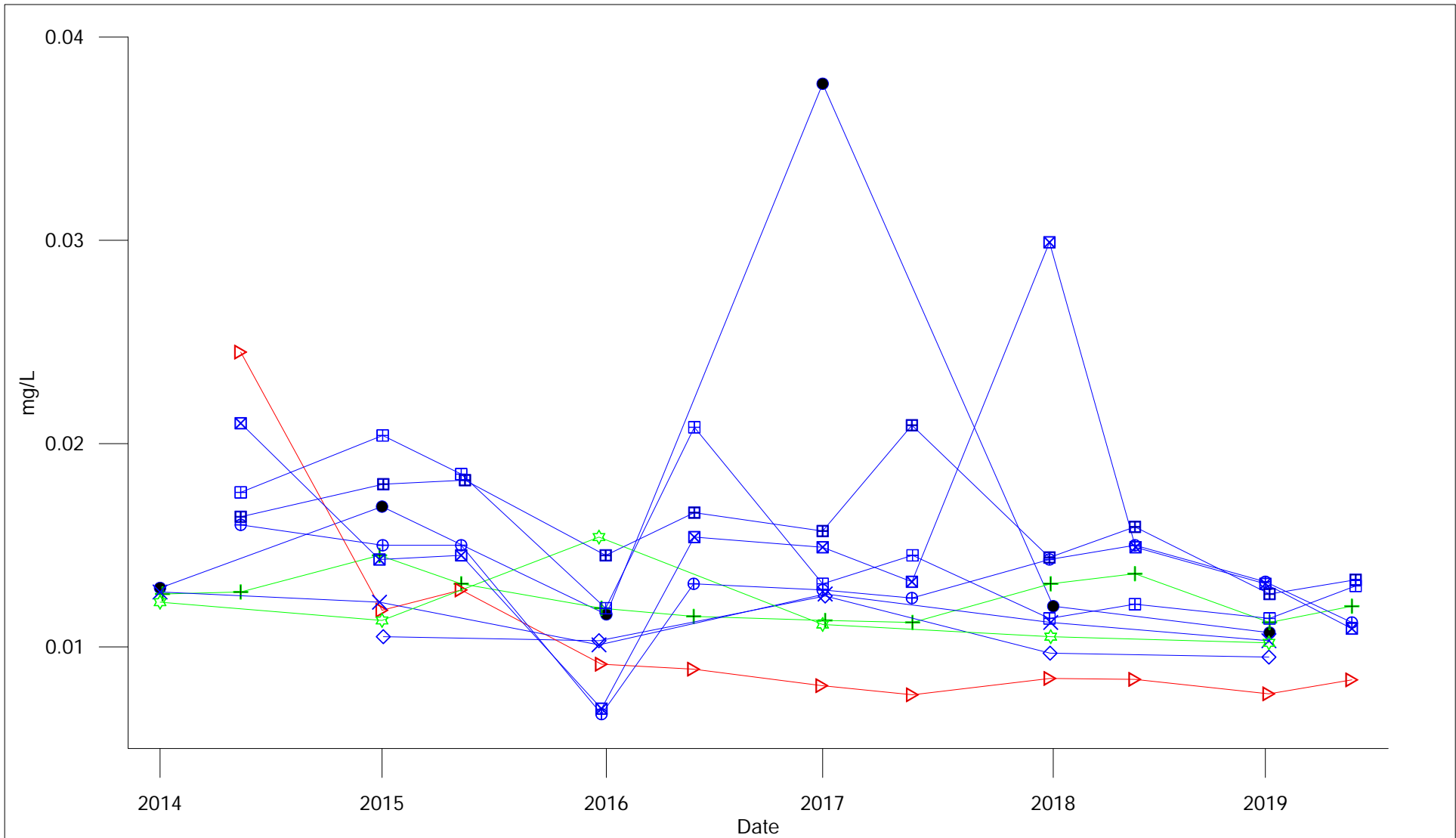
Down gradient
 +—+—+ 5N62E
 ——* 6N67F

Cross gradient
 ⊕—⊕—⊕ 13A
 ⊠—⊠—⊠ 14A

Cross gradient
 ⊞—⊞—⊞ 15A
 ⊠—⊠—⊠ 16A
 ●—●—● 4N34DDR
 ◇—◇—◇ 6N57F
 ☆—☆—☆ 6N63F

Boron MOE Criteria = 45 mg/L

	City Of Winnipeg Solid Waste Services	
	BRADY ROAD RESOURCE MANAGEMENT FACILITY	
Dissolved Boron Till Wells		
APRIL 2020	FIGURE 29	REV 0



Up gradient
 6N60EER

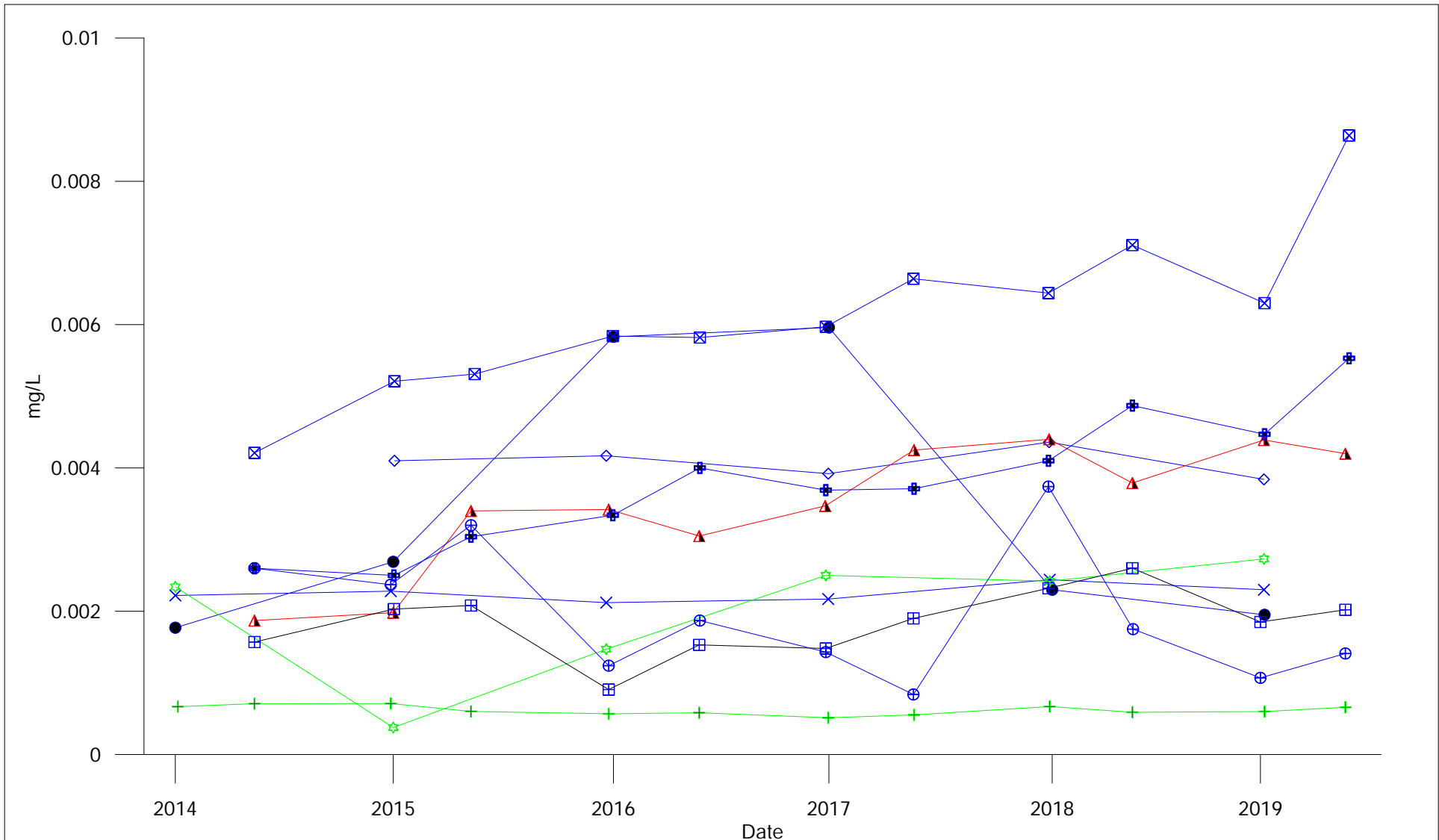
Down gradient
 5N62E
 6N67F

Cross gradient
 13A
 14A

Cross gradient
 15A
 16A
 4N34DDR
 6N57F
 6N63F

Barium MOE Criteria = 29 mg/L

	City Of Winnipeg Solid Waste Services	
	BRADY ROAD RESOURCE MANAGEMENT FACILITY	
Dissolved Barium Till Wells		
APRIL 2020	FIGURE 30	REV 0



Up gradient
 6N60EER

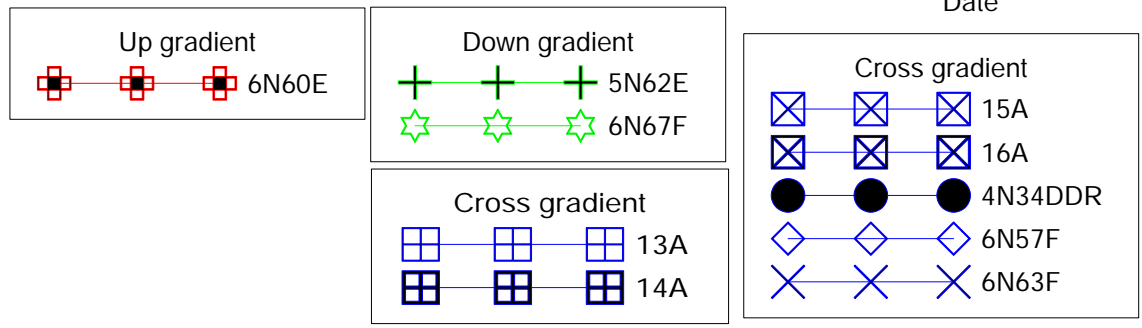
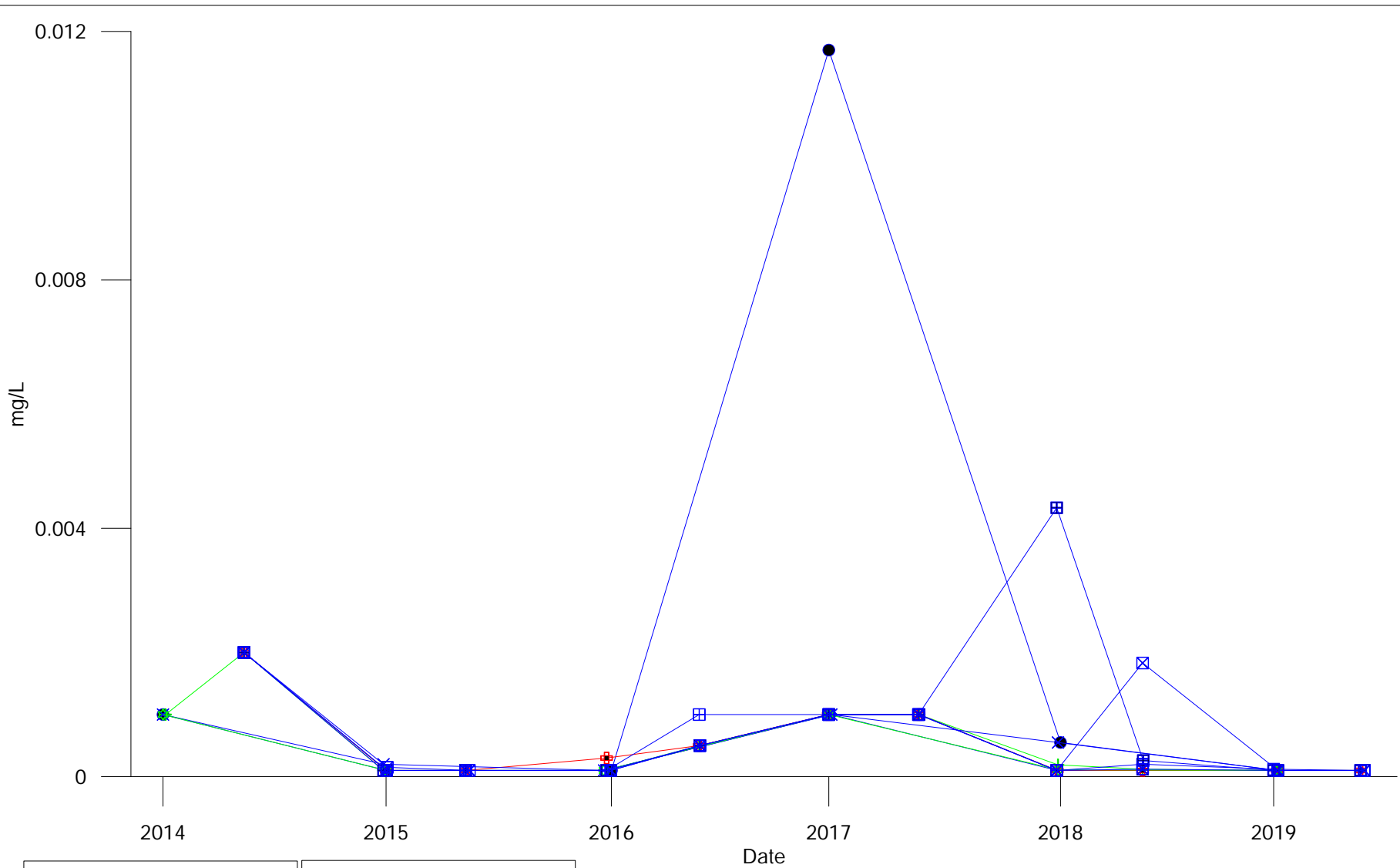
Down gradient
 5N62E
 6N67F

Cross gradient
 13A
 14A

Cross gradient
 15A
 16A
 4N34DDR
 6N57F
 6N63F

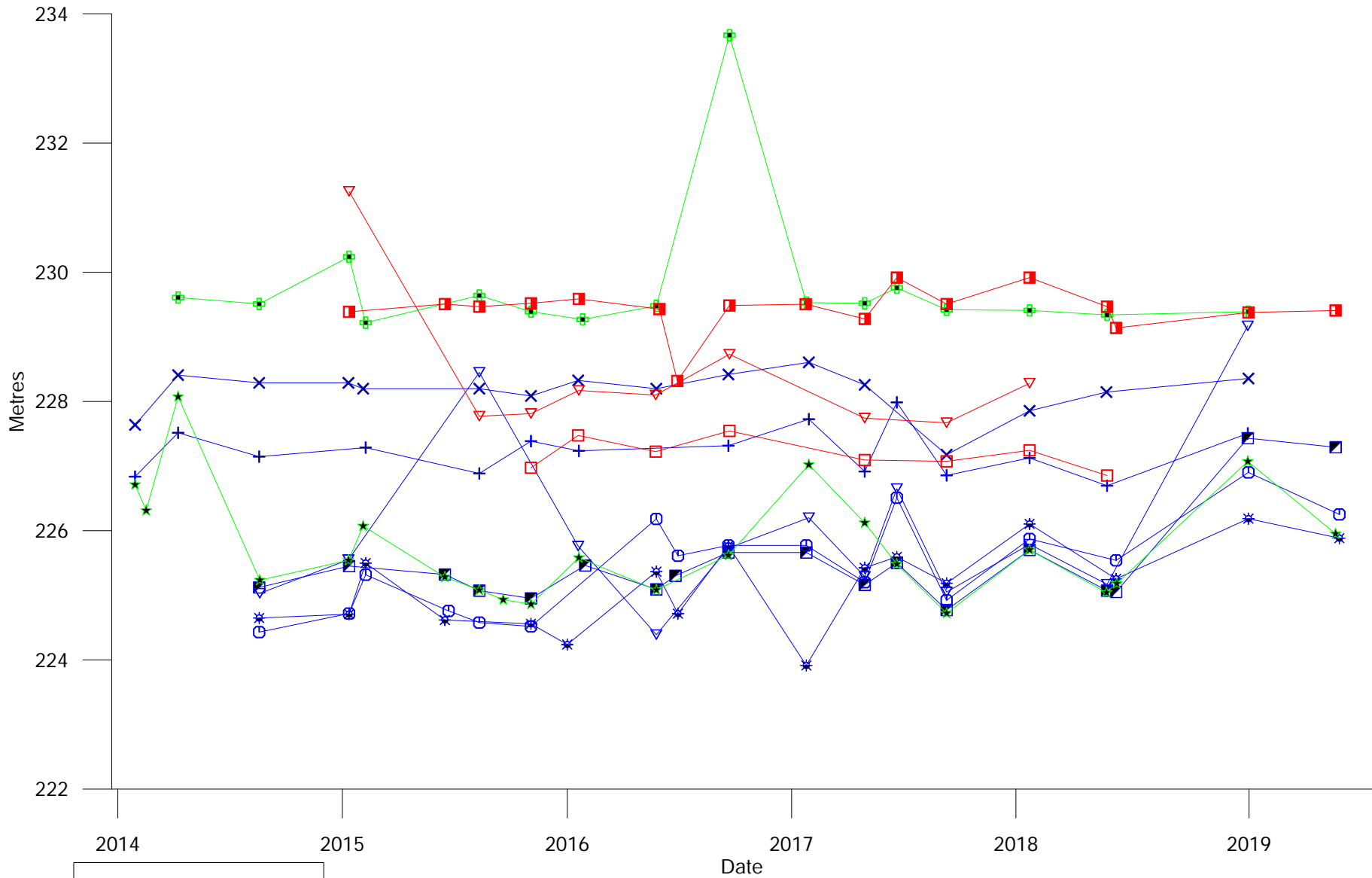
Cobalt MOE Criteria = 0.066 mg/L

	City Of Winnipeg Solid Waste Services	
	BRADY ROAD RESOURCE MANAGEMENT FACILITY	
Dissolved Cobalt Till Wells		
APRIL 2020	FIGURE 31	REV 0



Chromium MOE Criteria = 0.81 mg/L

	<p>City Of Winnipeg Solid Waste Services</p>
<p>BRADY ROAD RESOURCE MANAGEMENT FACILITY</p>	
<p>Dissolved Chromium Till Wells</p>	
<p>APRIL 2020</p>	<p>FIGURE 32</p>
<p>REV 0</p>	

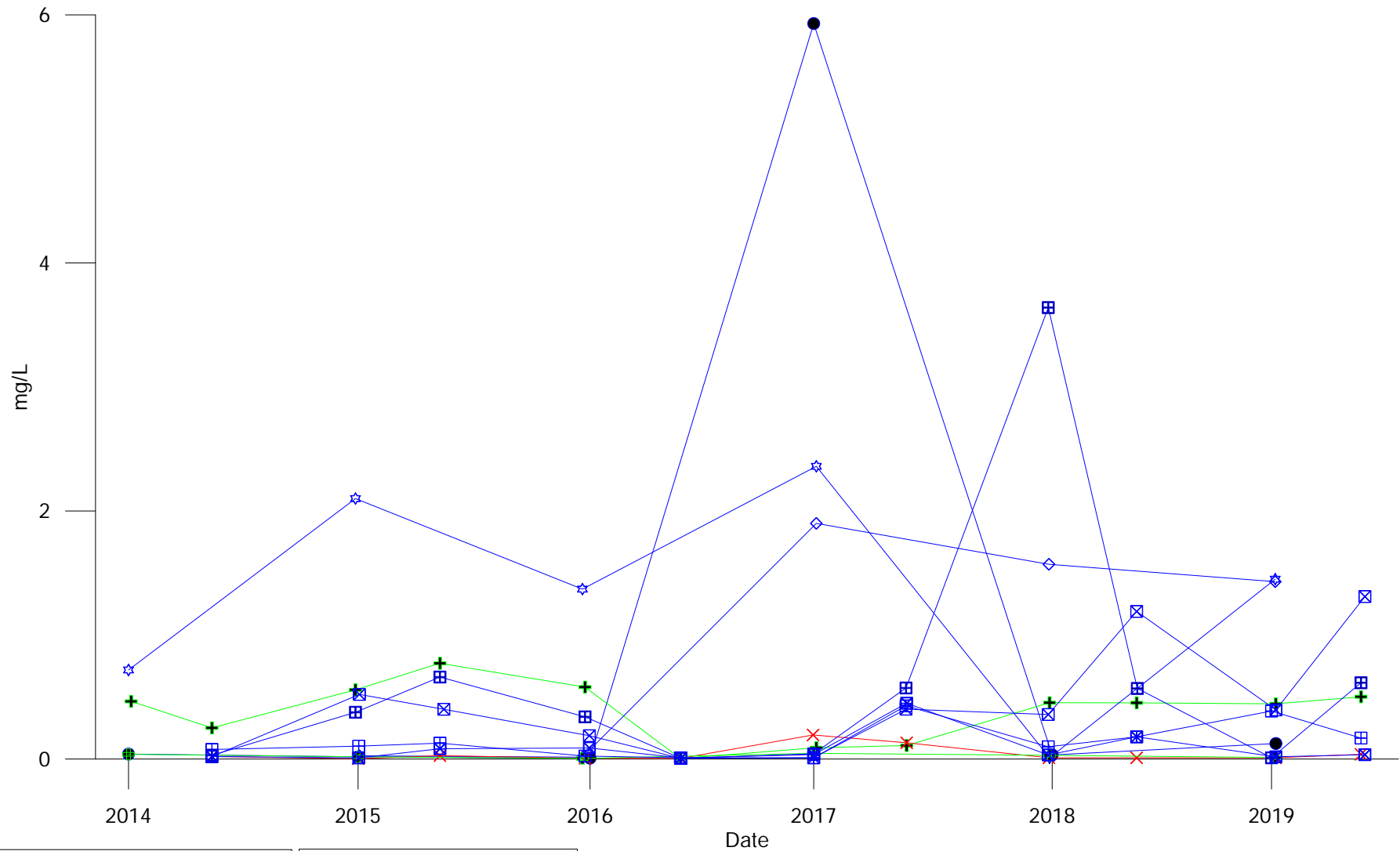


Cross gradient		

Up gradient		

Down gradient		

	City Of Winnipeg Solid Waste Services
	BRADY ROAD RESOURCE MANAGEMENT FACILITY
GROUNDWATER ELEVATION TILL WELLS	
APRIL 2020	FIGURE GW-1-1 REV 0



Up gradient
 X—X—X 6N60EER

Down gradient
 +—+—+ 5N62E
 +—+—+ 6N67F

Cross gradient
 □—□—□ 13A
 □—□—□ 14A

Cross gradient
 □—□—□ 15A
 □—□—□ 16A
 ●—●—● 4N34DDR
 ◇—◇—◇ 6N57F
 ☆—☆—☆ 6N63F

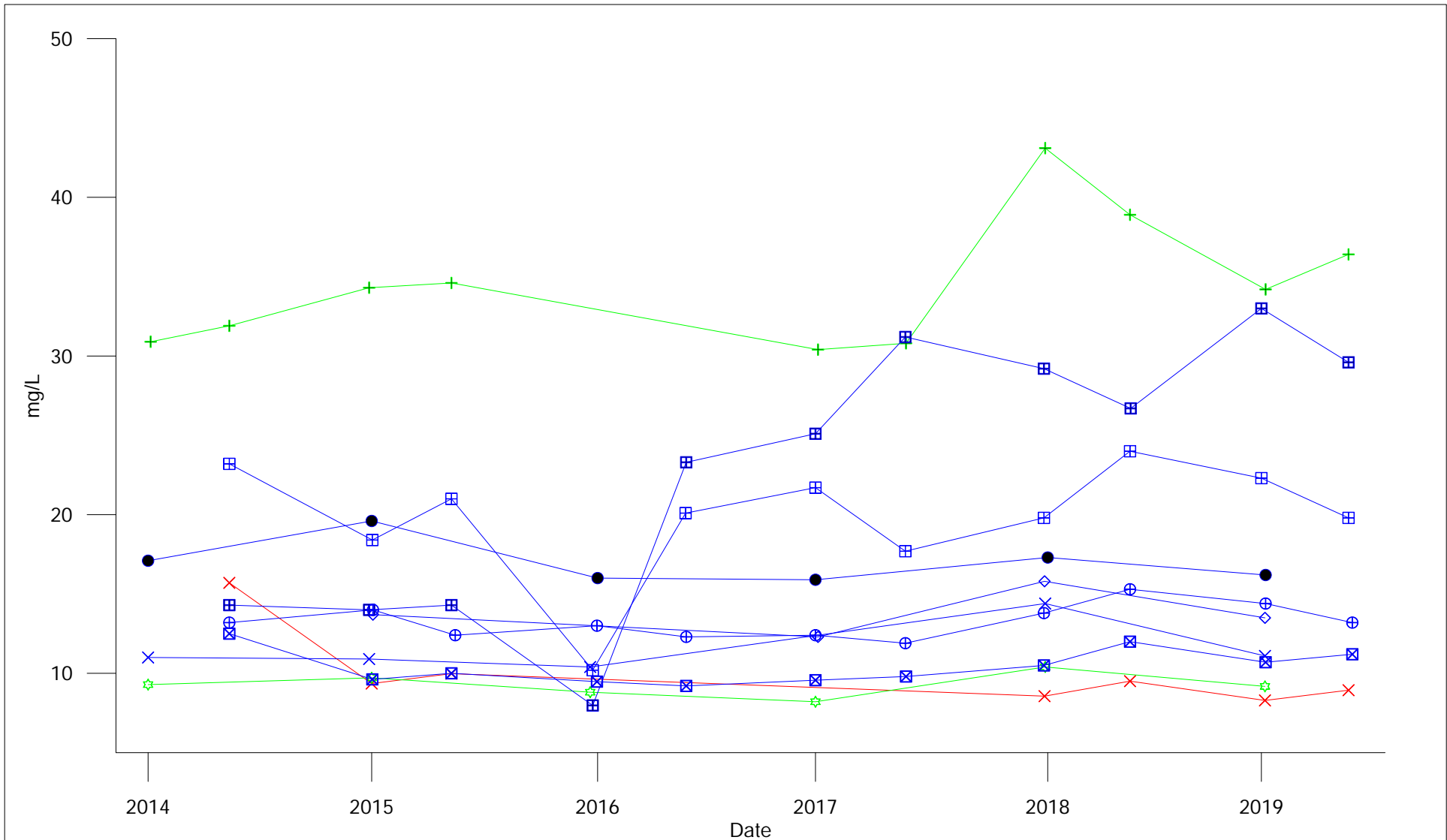


City Of Winnipeg
 Solid Waste Services

BRADY ROAD RESOURCE MANAGEMENT FACILITY

Dissolved Iron
 Till Wells

APRIL 2020 | FIGURE 33 | REV 0



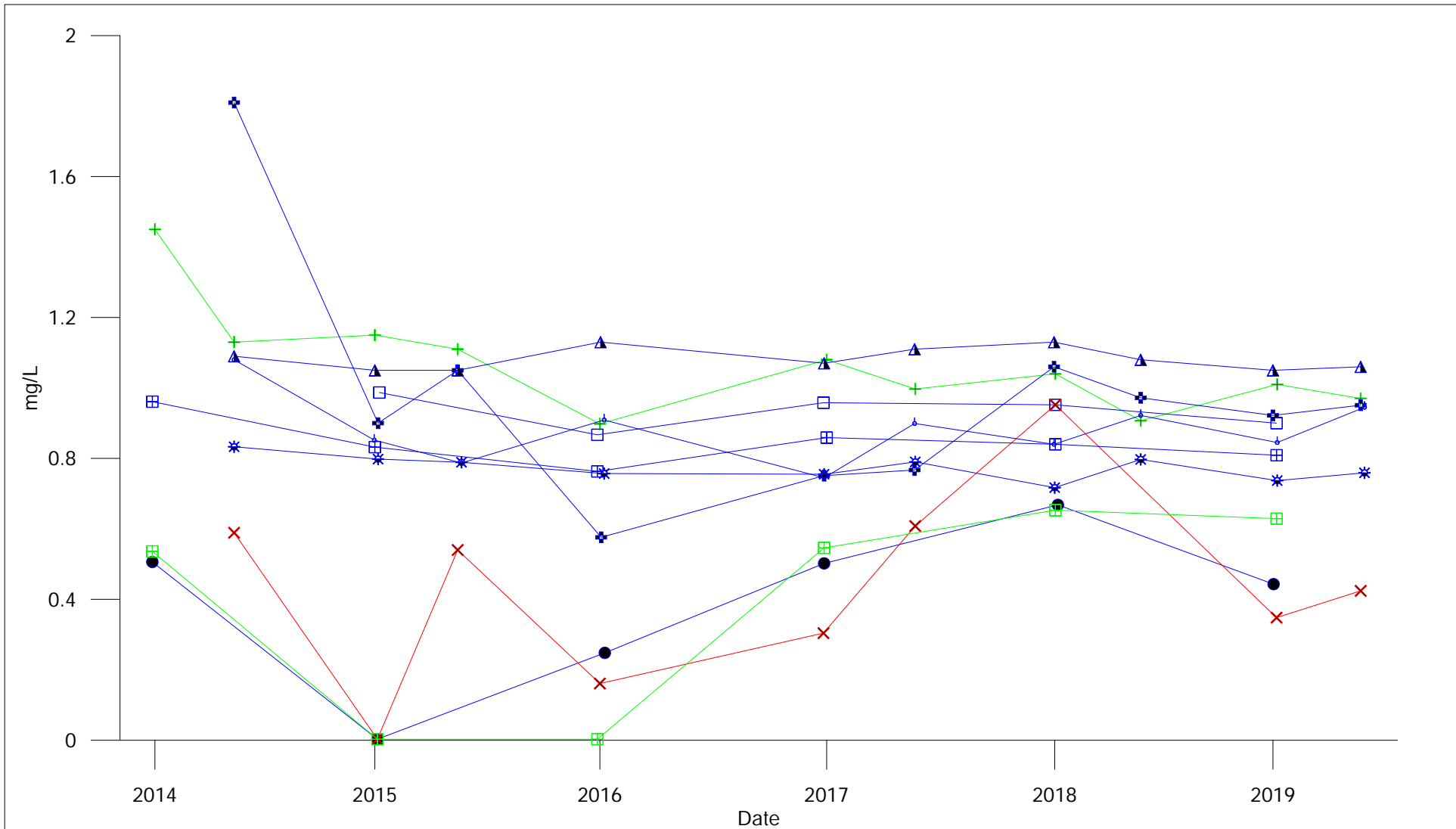
Up gradient
 X X X 6N60EER

Down gradient
 + + + 5N62E
 * * * 6N67F

Cross gradient
 [] [] [] 13A
 [] [] [] 14A

Cross gradient
 ⊕ ⊕ ⊕ 15A
 ⊠ ⊠ ⊠ 16A
 ● ● ● 4N34DDR
 ◇ ◇ ◇ 6N57F
 X X X 6N63F

	City Of Winnipeg Solid Waste Services	
	BRADY ROAD RESOURCE MANAGEMENT FACILITY	
Dissolved Potassium Till Wells		
APRIL 2020	FIGURE 34	REV 0



Up gradient
 6N60EER

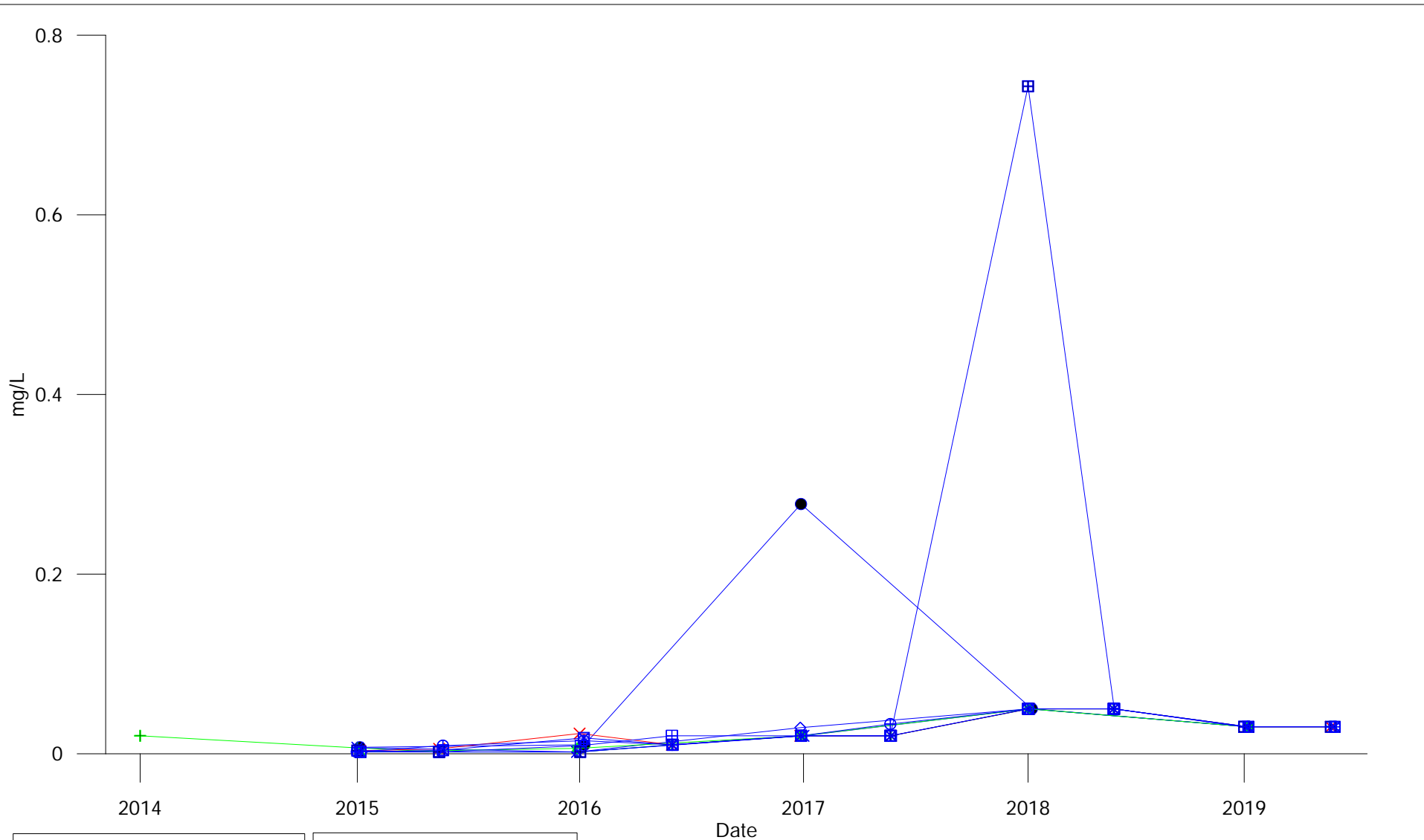
Cross gradient
 13A
 14A

Down gradient
 5N62E
 6N67F

Cross gradient
 15A
 16A
 4N34DDR
 6N57F
 6N63F



City Of Winnipeg
 Solid Waste Services



Up gradient
 X—X—X 6N60EER

Down gradient
 +—+—+ 5N62E
 ☆—☆—☆ 6N67F

Cross gradient
 □—□—□ 13A
 ⊞—⊞—⊞ 14A

Cross gradient
 ⊠—⊠—⊠ 16A
 ●—●—● 4N34DDR
 ◇—◇—◇ 6N57F
 ——* 6N63F
 ⊕—⊕—⊕ 15A



City Of Winnipeg
 Solid Waste Services

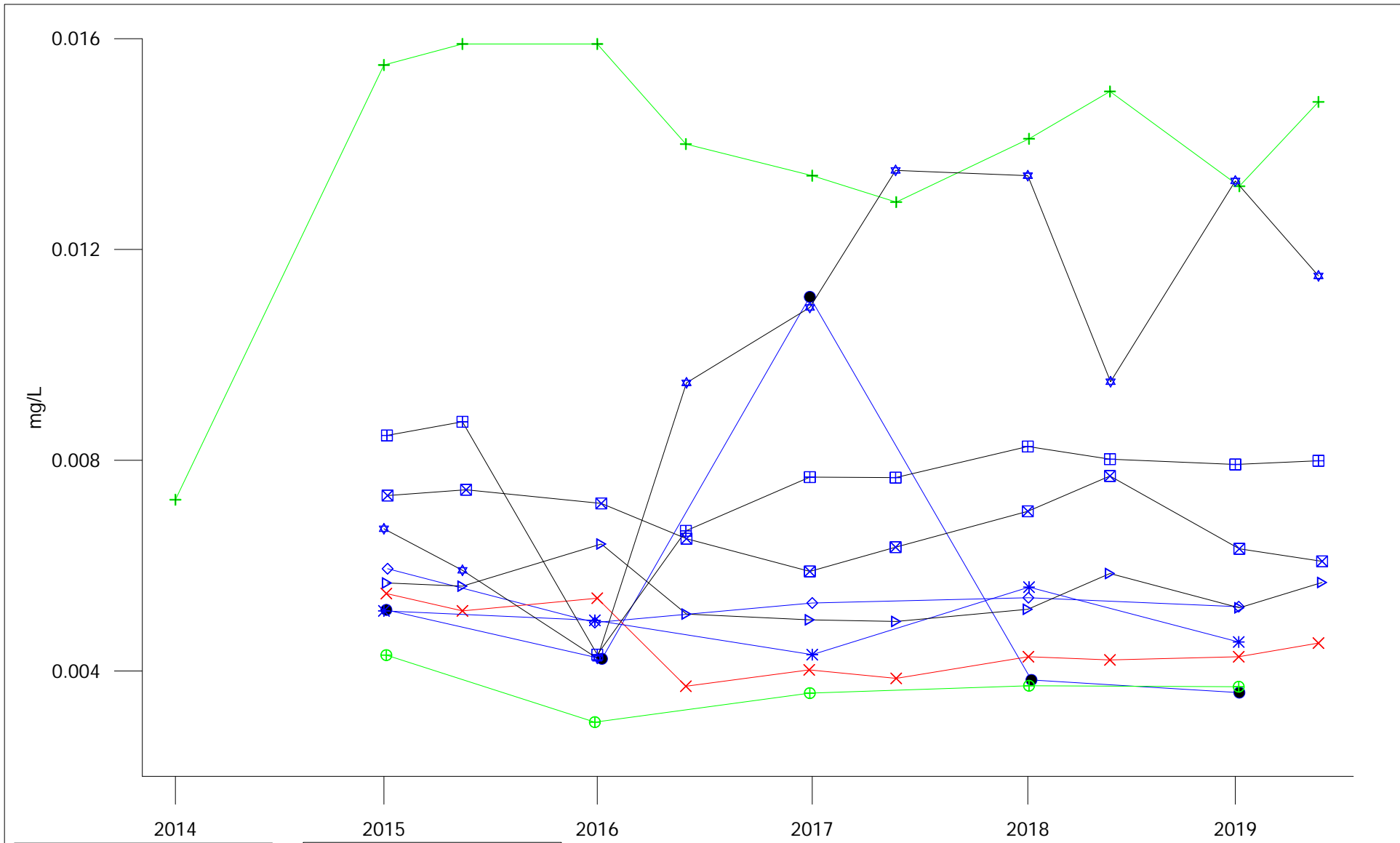
BRADY ROAD RESOURCE MANAGEMENT FACILITY

Phosphorus
 Till Wells

APRIL 2020

FIGURE 35

REV 0



Up gradient
 X—X—X 6N60E

Down gradient
 +—+—+ 5N62E
 ⊕—⊕—⊕ 6N67F

Cross gradient
 ⊠—⊠—⊠ 15A
 ▽—▽—▽ 16A

Cross gradient
 ●—●—● 4N34DDR
 ◇—◇—◇ 6N57F
 ——* 6N63F
 ⊠—⊠—⊠ 13A
 ☆—☆—☆ 14A

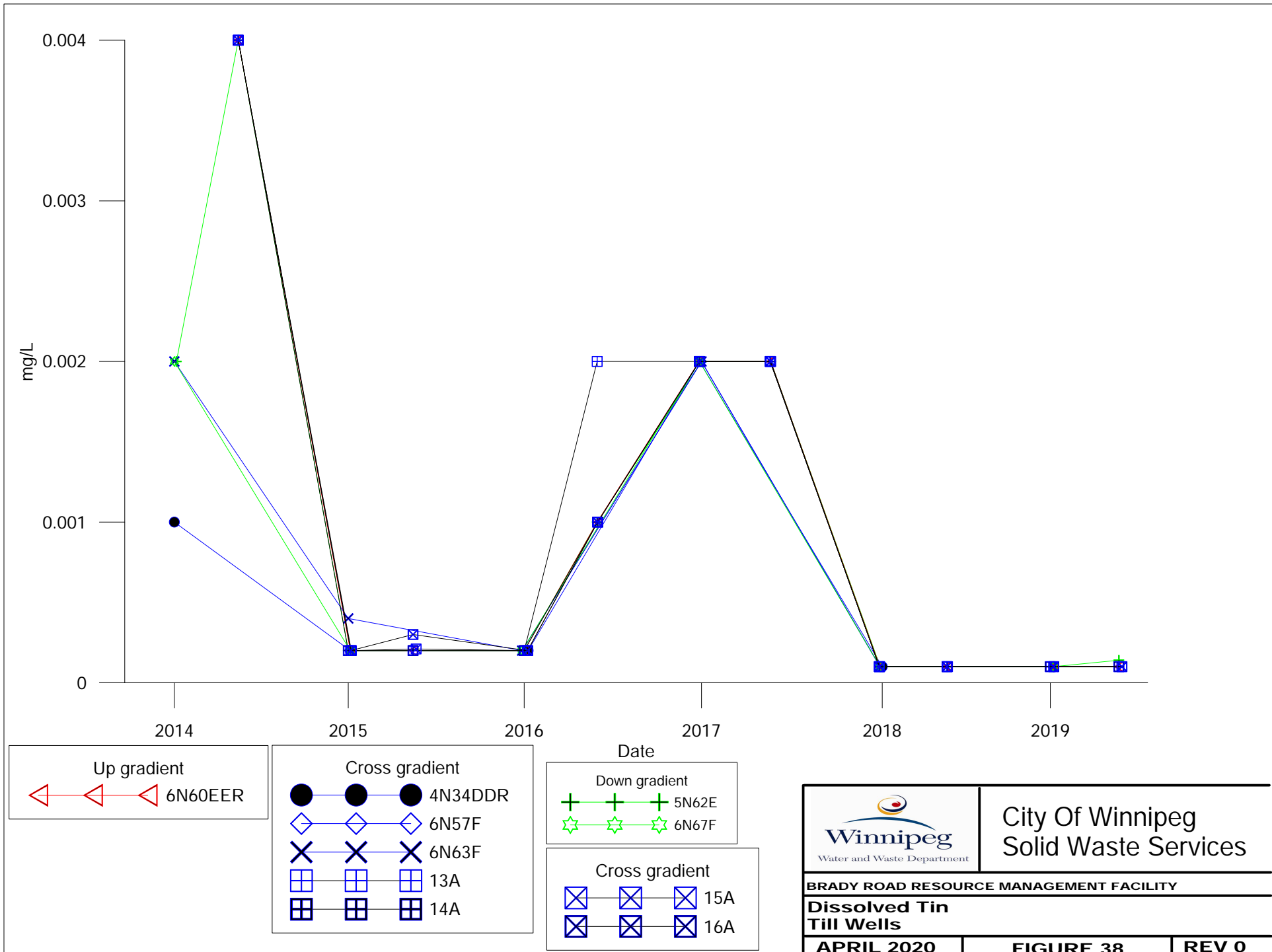


City Of Winnipeg
 Solid Waste Services

BRADY ROAD RESOURCE MANAGEMENT FACILITY

Dissolved Rubidium
 Till Wells

APRIL 2020 | FIGURE 36 | REV 0



City Of Winnipeg
Solid Waste Services

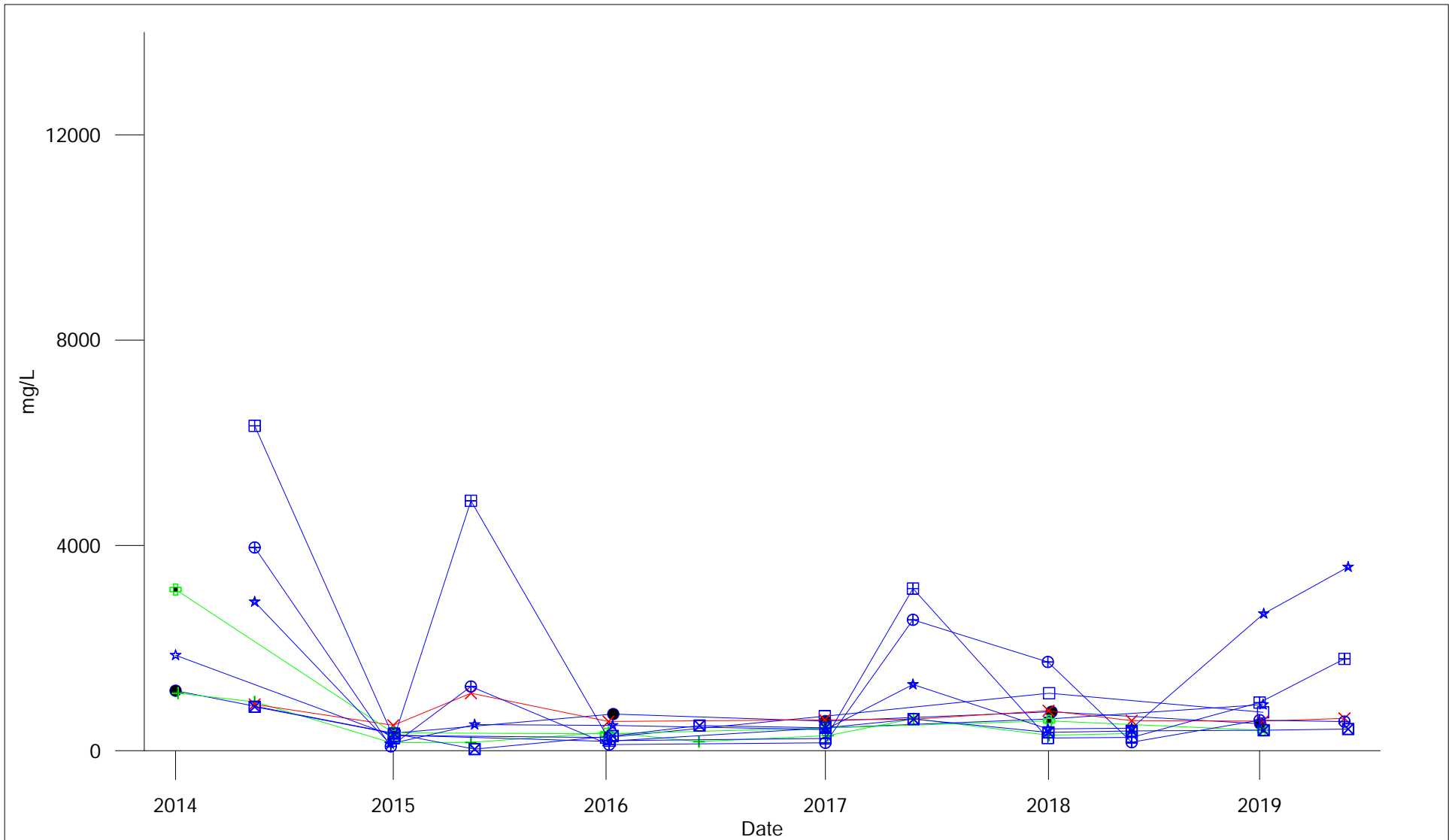
BRADY ROAD RESOURCE MANAGEMENT FACILITY

Dissolved Tin
Till Wells

APRIL 2020

FIGURE 38

REV 0



Up gradient
 X X X 6N60E

Down gradient
 + + + 5N62E
 ⊕ ⊕ ⊕ 6N67F

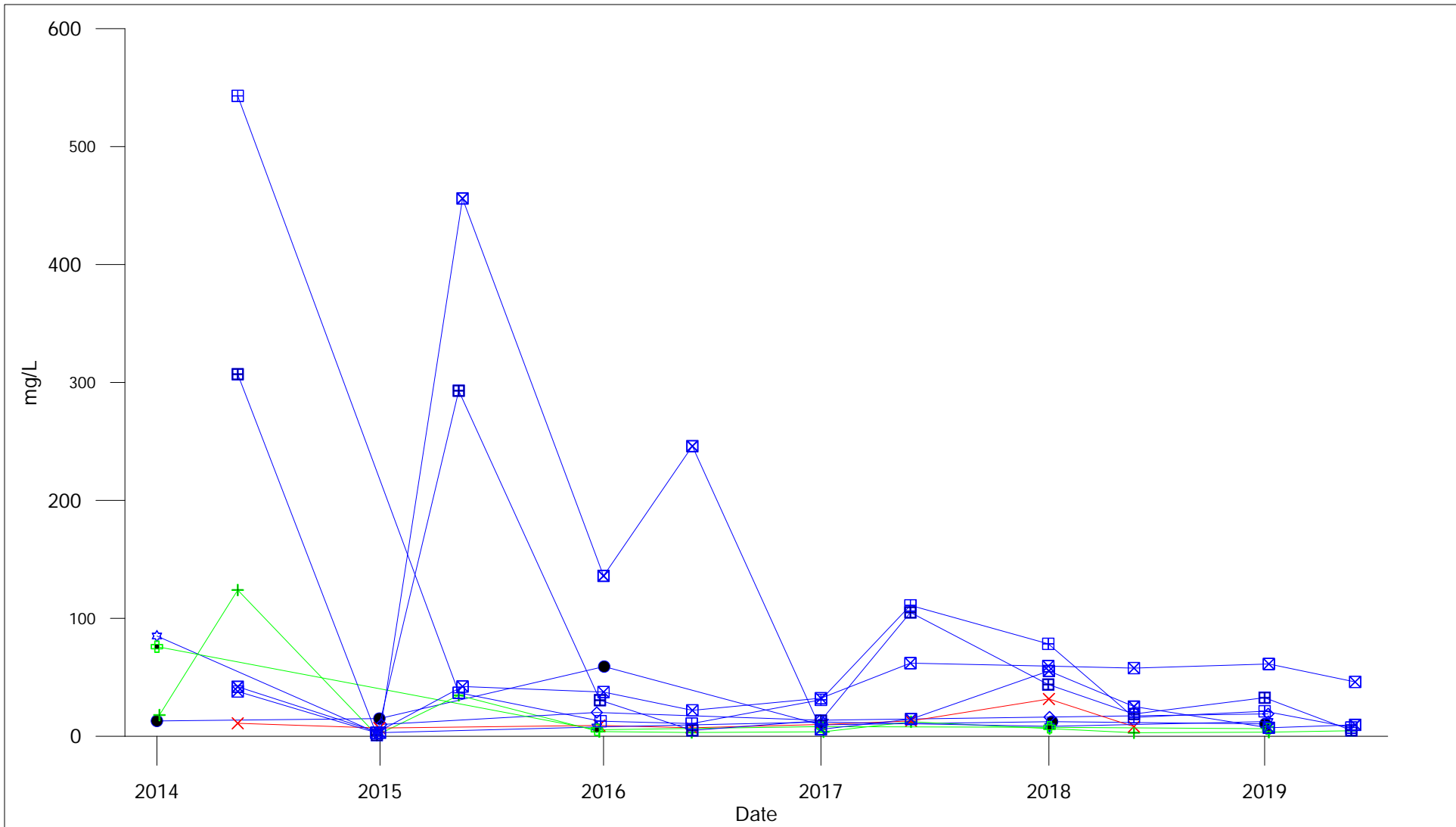
Cross gradient
 ⊞ ⊞ ⊞ 13A
 ⊕ ⊕ ⊕ 14A

Cross gradient
 ☆ ☆ ☆ 15A
 ⊠ ⊠ ⊠ 16A
 ● ● ● 4N34DDR
 □ □ □ 6N57F
 ☆ ☆ ☆ 6N63F



City Of Winnipeg
 Solid Waste Services

BRADY ROAD RESOURCE MANAGEMENT FACILITY		
Total Alkalinity Till Wells		
APRIL 2020	FIGURE 40	REV 0



Up gradient
 X X X 6N60E

Down gradient
 + + + 5N62E
 ■ ■ ■ 6N67F

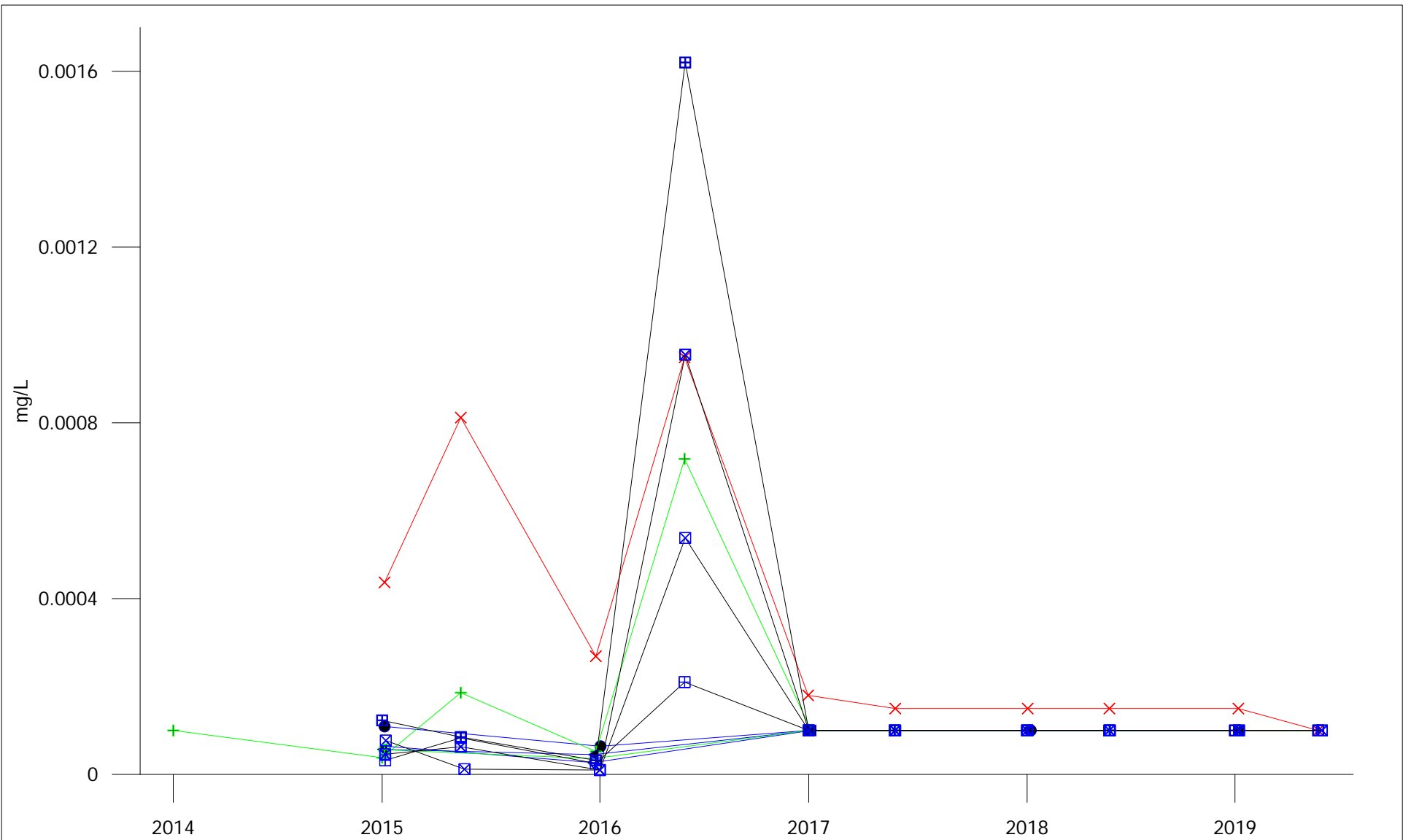
Cross gradient
 □ □ □ 13A
 ▣ ▣ ▣ 14A

Cross gradient
 □ □ □ 15A
 □ □ □ 16A
 ● ● ● 4N34DDR
 ◇ ◇ ◇ 6N57F
 ☆ ☆ ☆ 6N63F

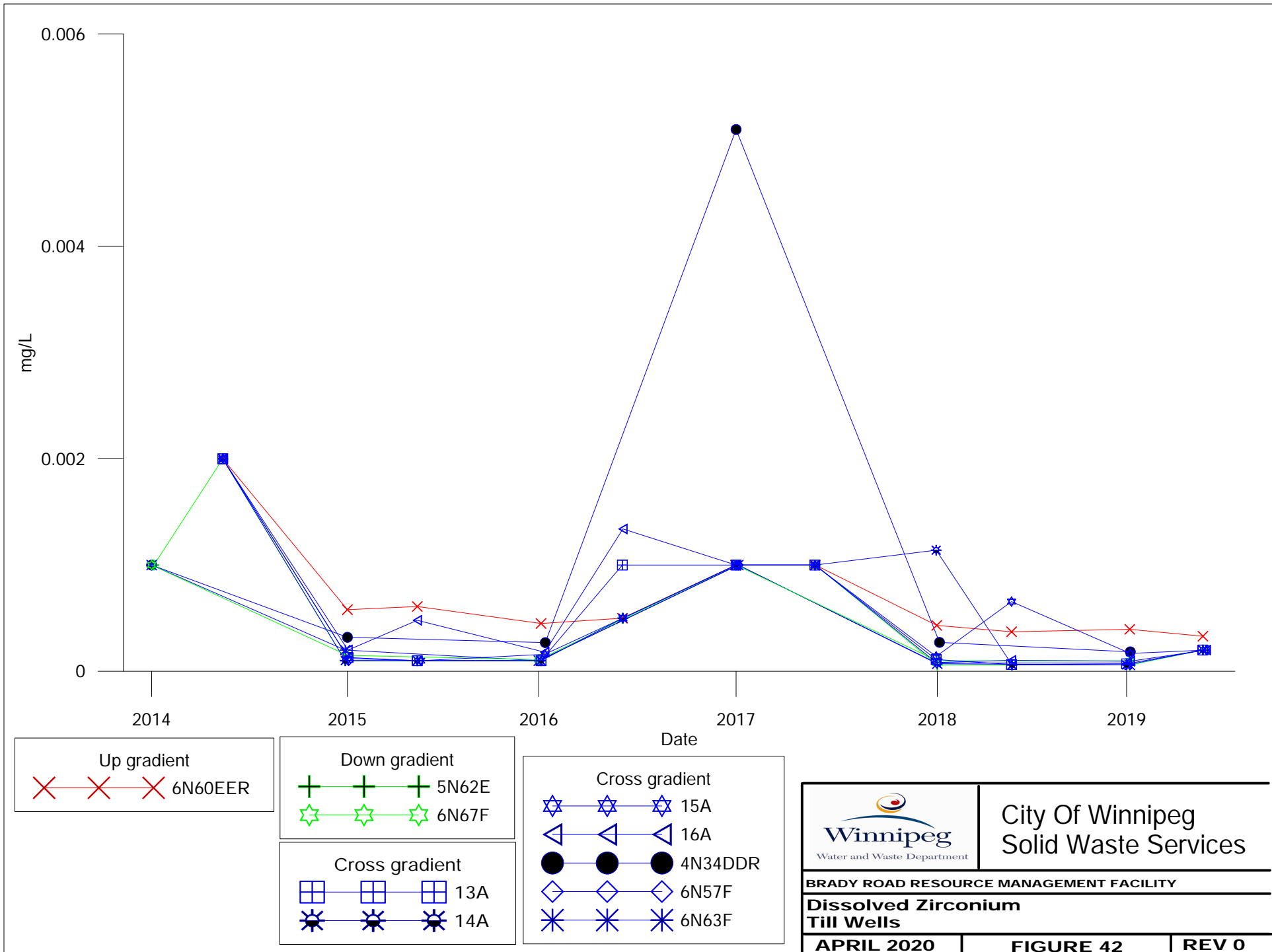


City Of Winnipeg
 Solid Waste Services

BRADY ROAD RESOURCE MANAGEMENT FACILITY
**Total Organic Carbon
 Till Wells**
 APRIL 2020 | FIGURE 39 | REV 0

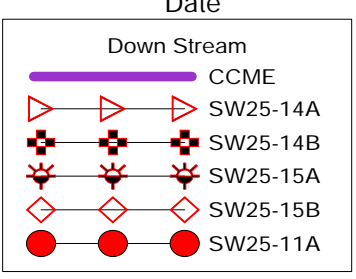
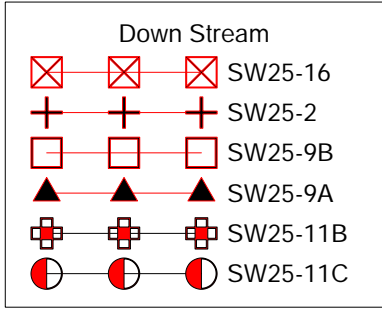
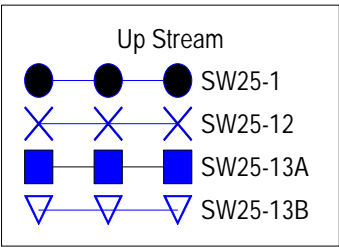
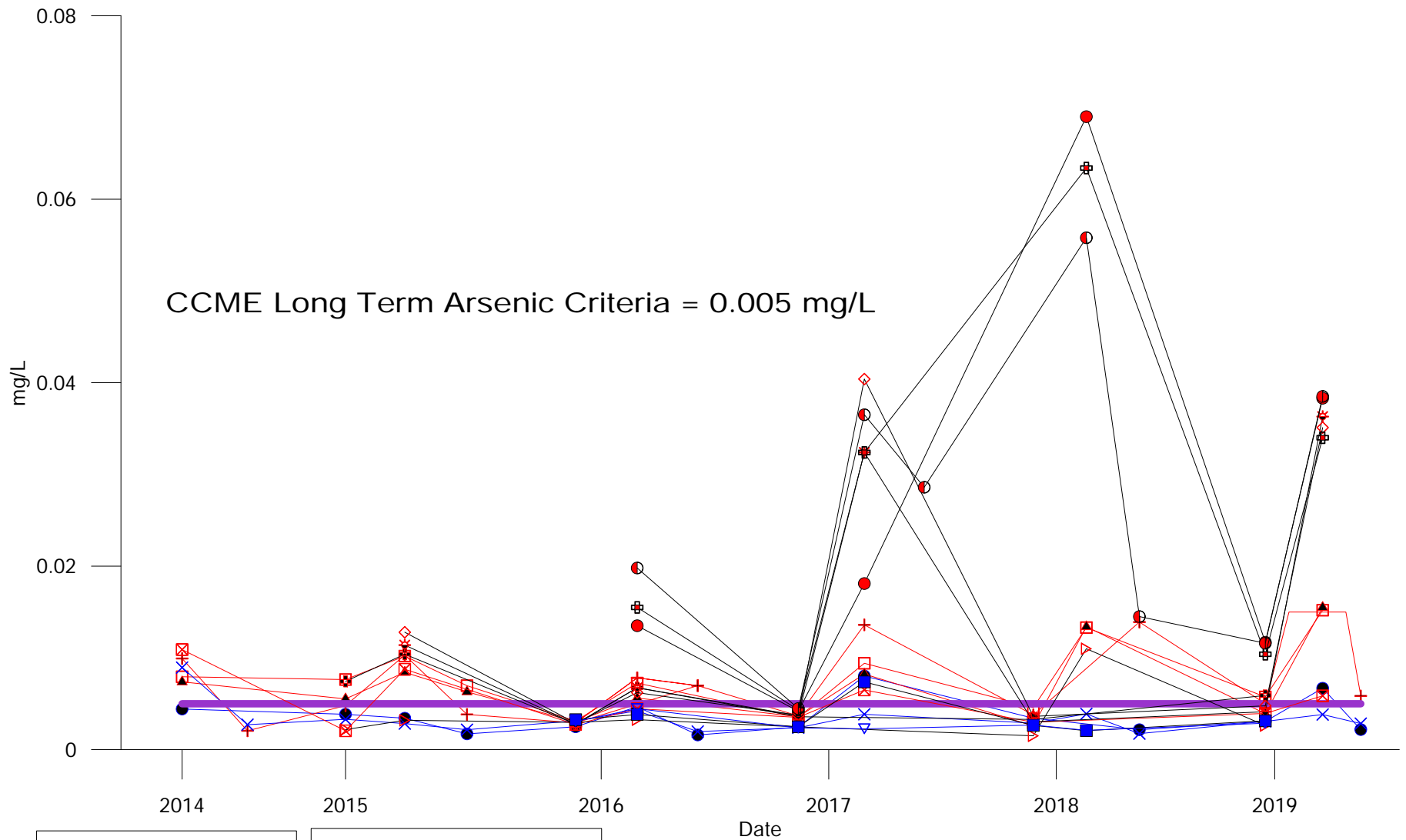


<p>Up gradient</p> <p>6N60E</p>	<p>Down gradient</p> <p>5N62E</p> <p>6N67F</p>	<p>Cross gradient</p> <p>4N34DDR</p> <p>6N57F</p> <p>6N63F</p> <p>13A</p> <p>14A</p>	<p>Cross gradient</p> <p>15A</p> <p>16A</p>	<p>City Of Winnipeg Solid Waste Services</p> <hr/> <p>BRADY ROAD RESOURCE MANAGEMENT FACILITY</p> <p>Dissolved Tungsten Till Wells</p> <hr/> <p>APRIL 2020 FIGURE 41 REV 0</p>
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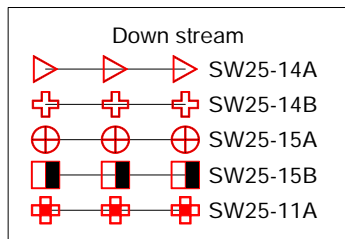
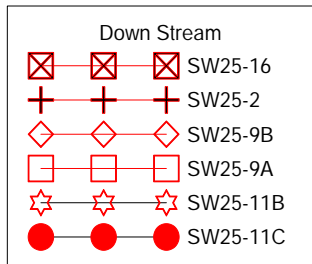
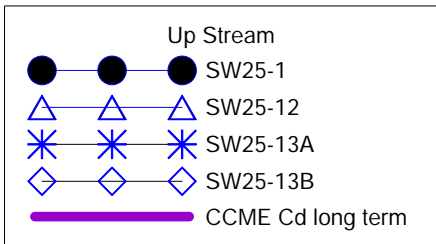
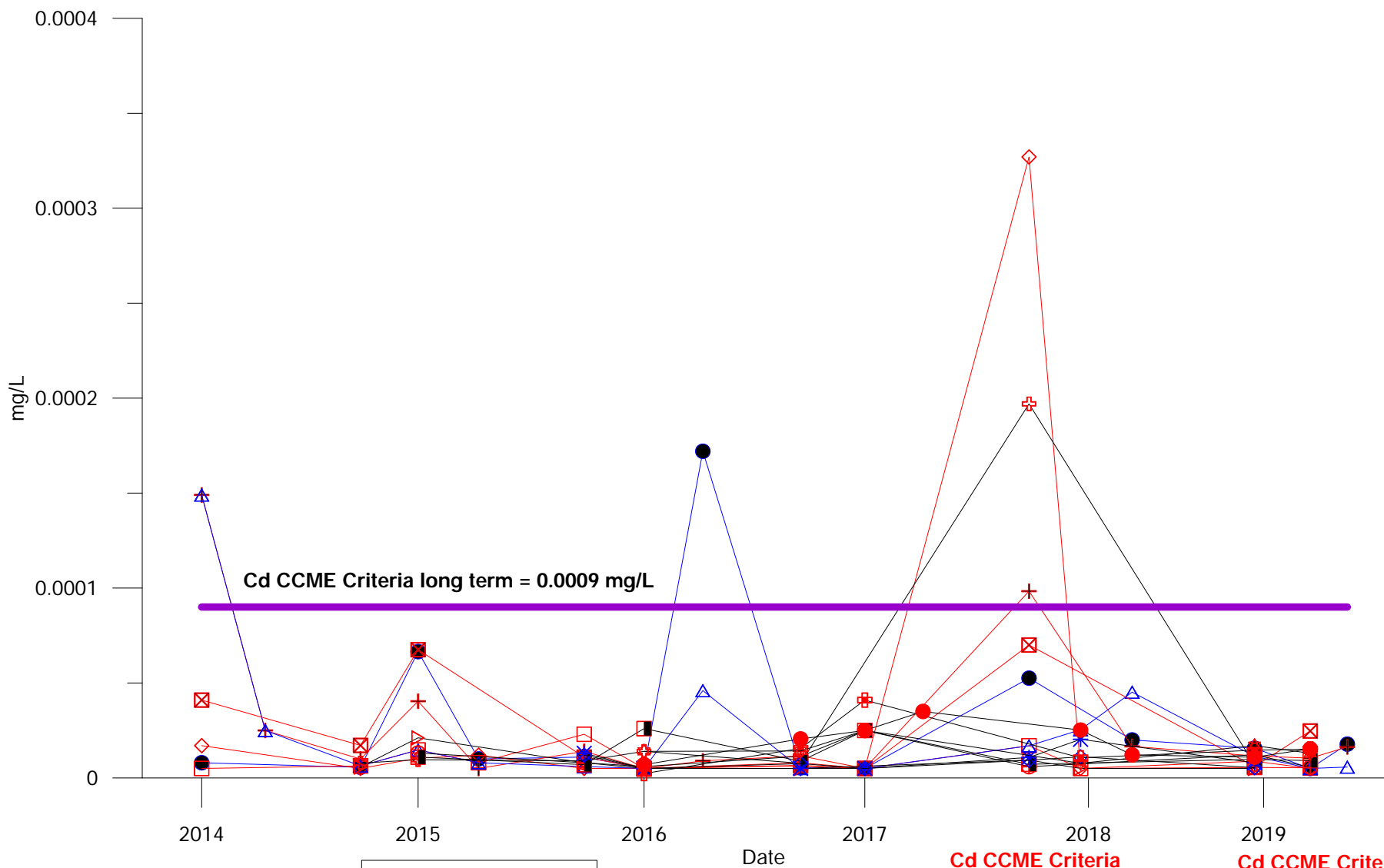


City Of Winnipeg
Solid Waste Services

**2019 SURFACE WATER
TIME VS CONCENTRATION GRAPHS**



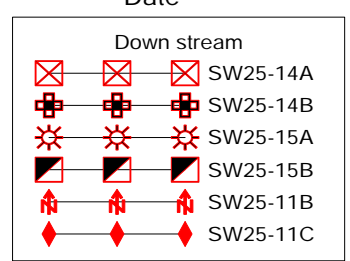
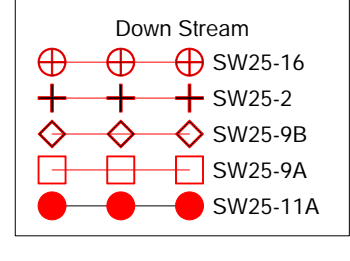
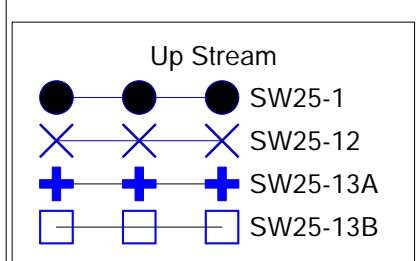
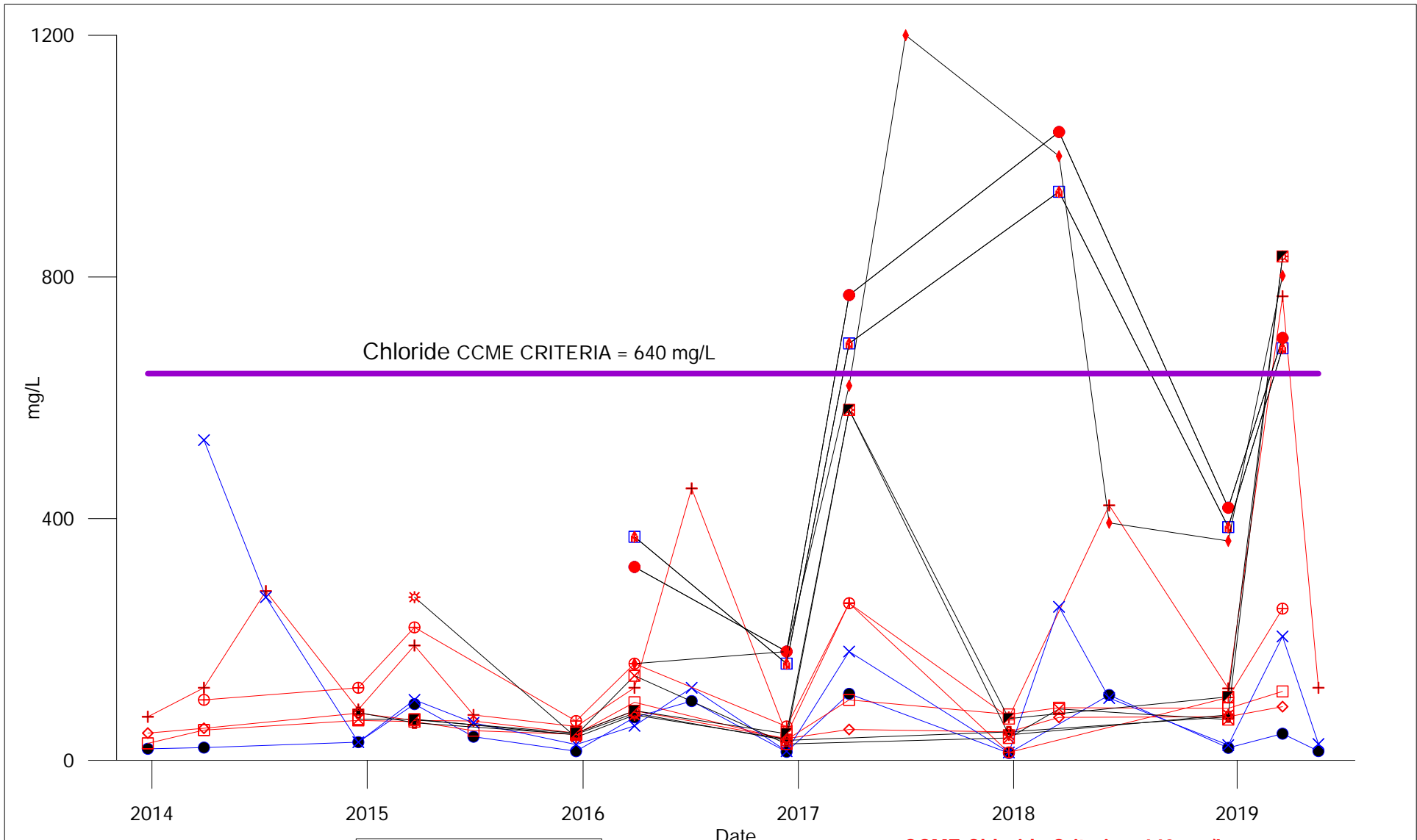
	City Of Winnipeg Solid Waste Services	
	BRADY ROAD RESOURCE MANAGEMENT FACILITY	
Dissolved Arsenic Surface Water		
APRIL 2020	FIGURE 43	REV 0



**Cd CCME Criteria
0.001 mg/L short term**

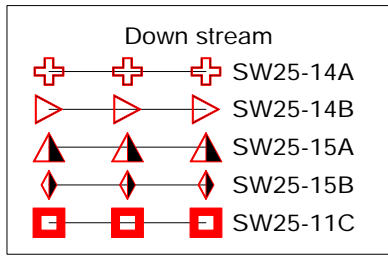
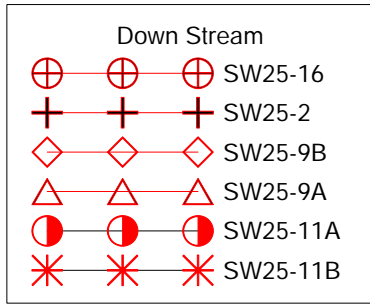
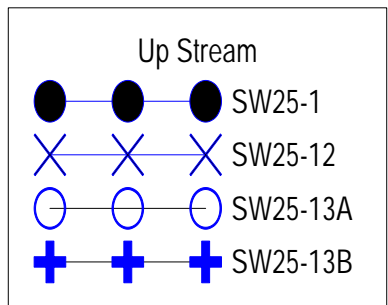
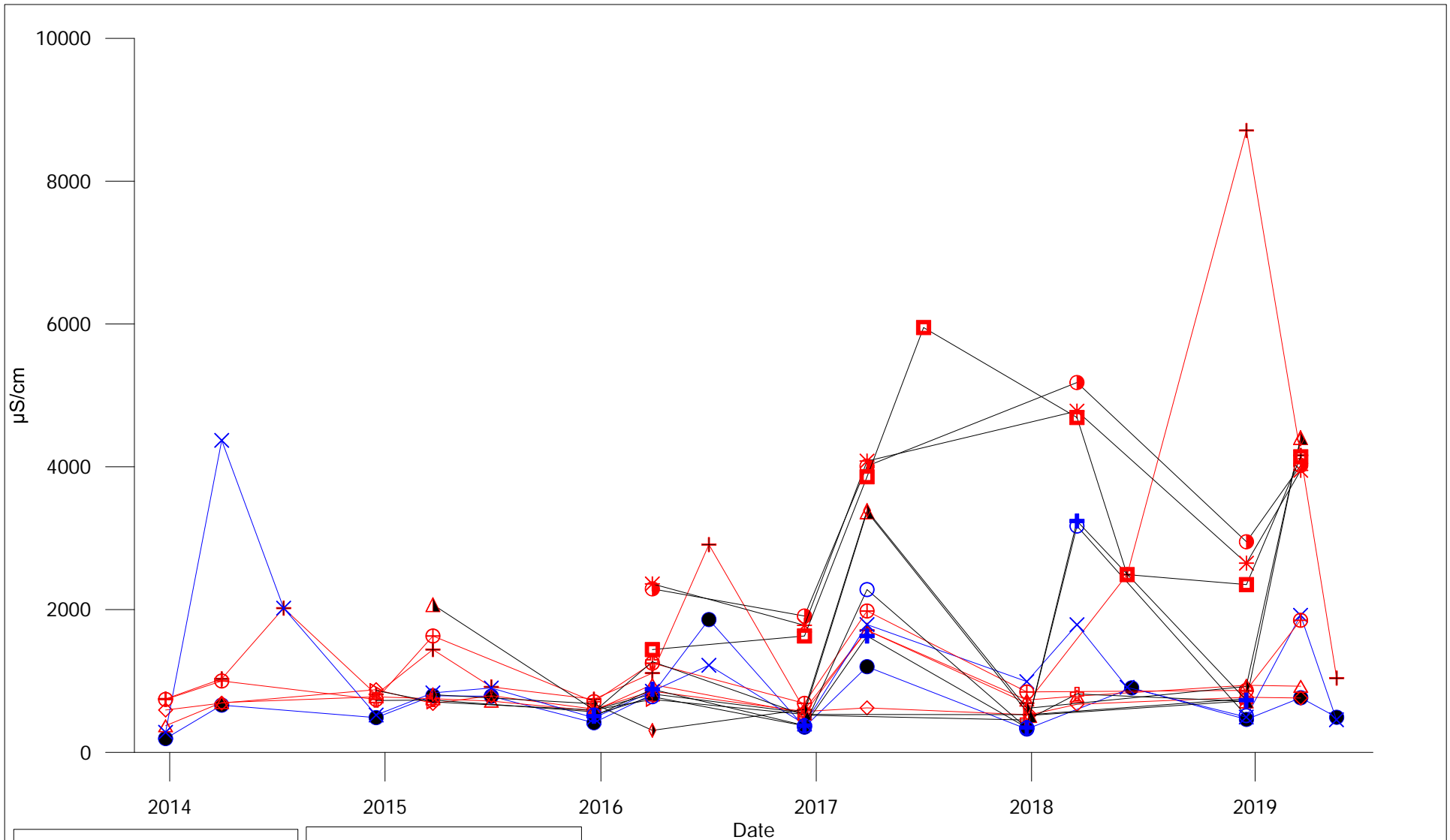
**Cd CCME Criteria
0.0009 Long Term**

	City Of Winnipeg Solid Waste Services	
	BRADY ROAD RESOURCE MANAGEMENT FACILITY	
Dissolved Cadmium Surface Water		
APRIL 2020	FIGURE 44	REV 0



CCME Chloride Criteria = 640 mg/L

		City Of Winnipeg Solid Waste Services	
BRADY ROAD RESOURCE MANAGEMENT FACILITY			
Chloride Surface Water			
APRIL 2020	FIGURE 45	REV 0	



City Of Winnipeg
Solid Waste Services

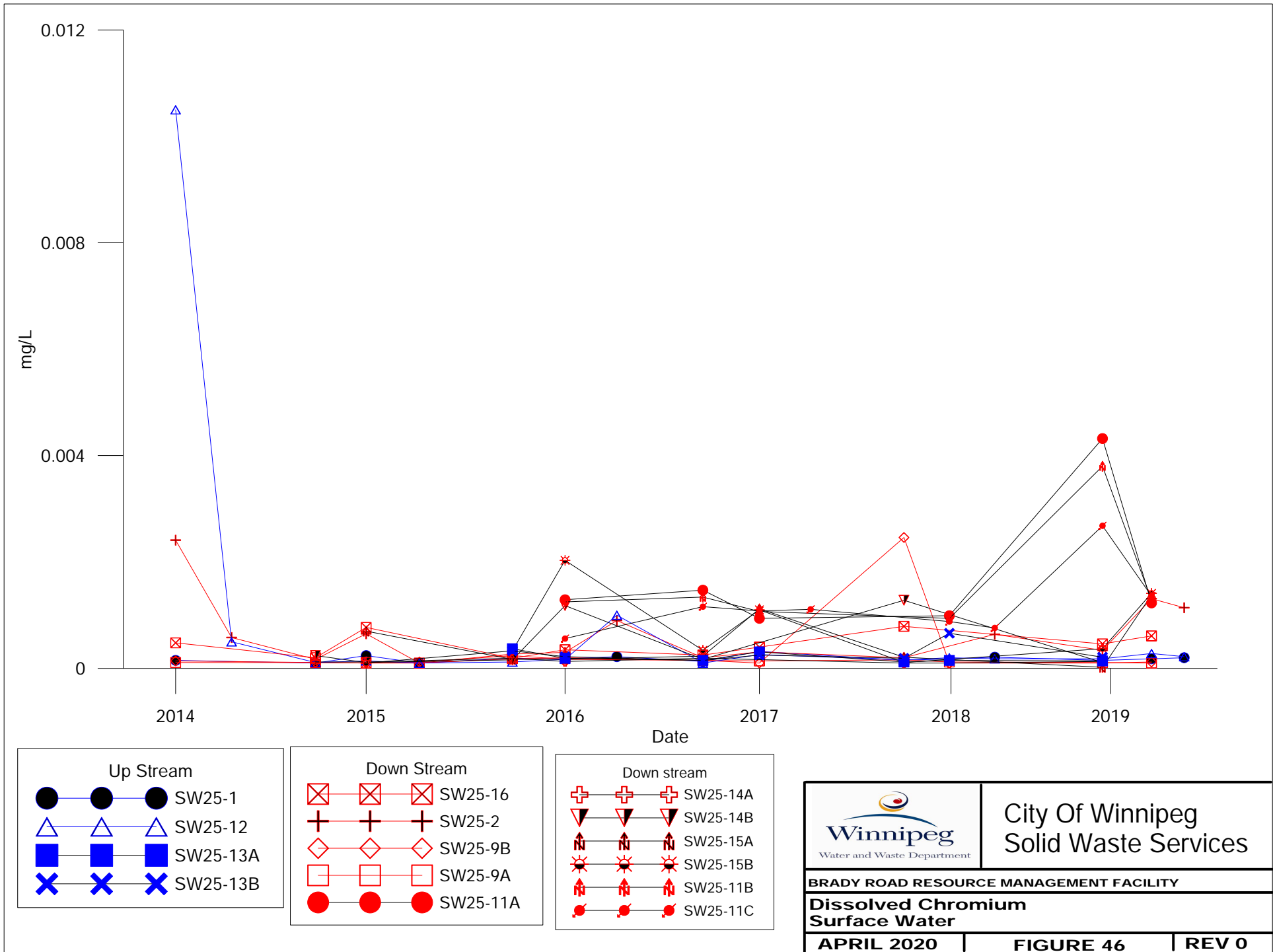
BRADY ROAD RESOURCE MANAGEMENT FACILITY

Specific Conductance
Surface Water

APRIL 2020

FIGURE 51

REV 0



City Of Winnipeg
Solid Waste Services

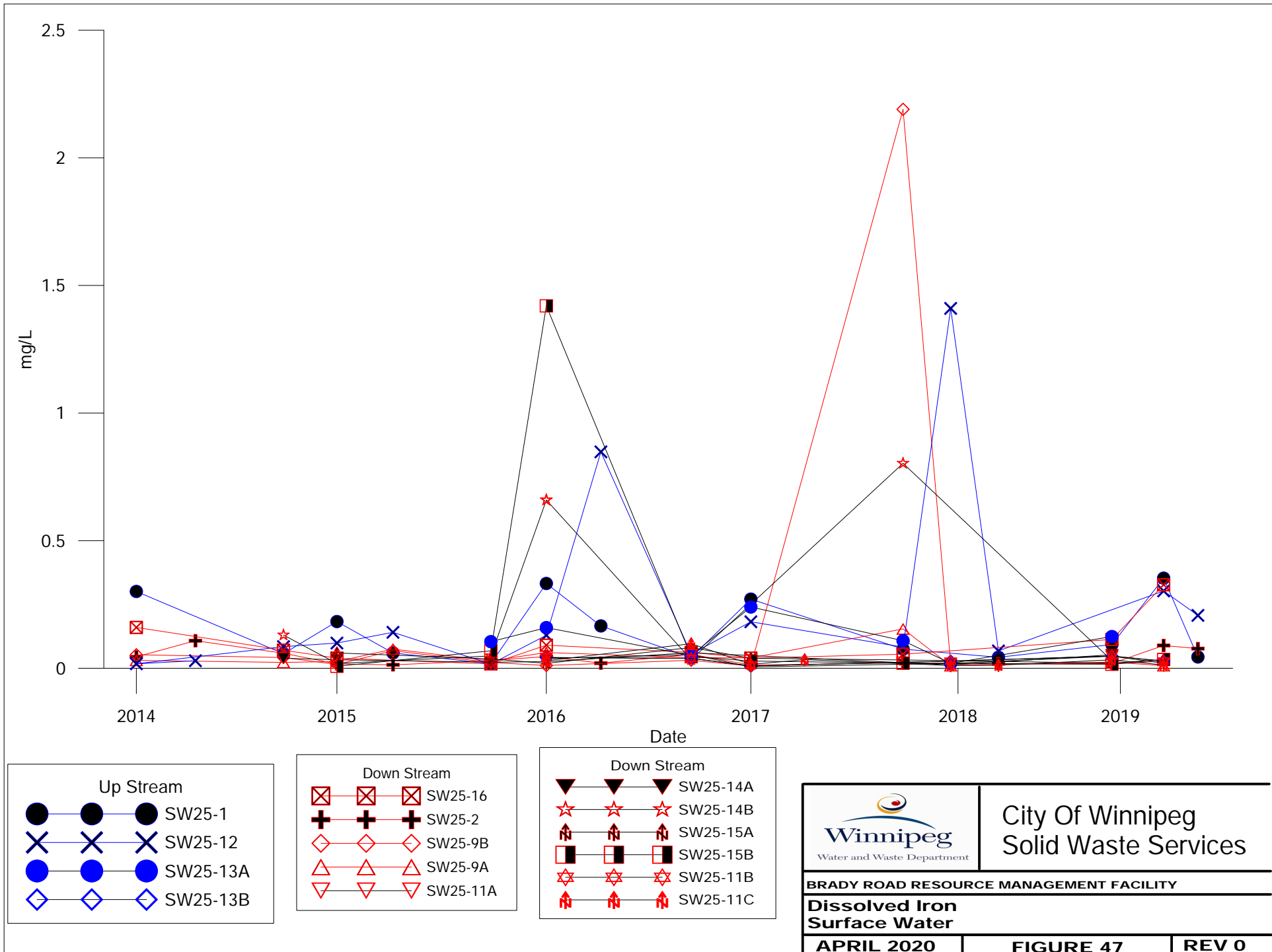
BRADY ROAD RESOURCE MANAGEMENT FACILITY

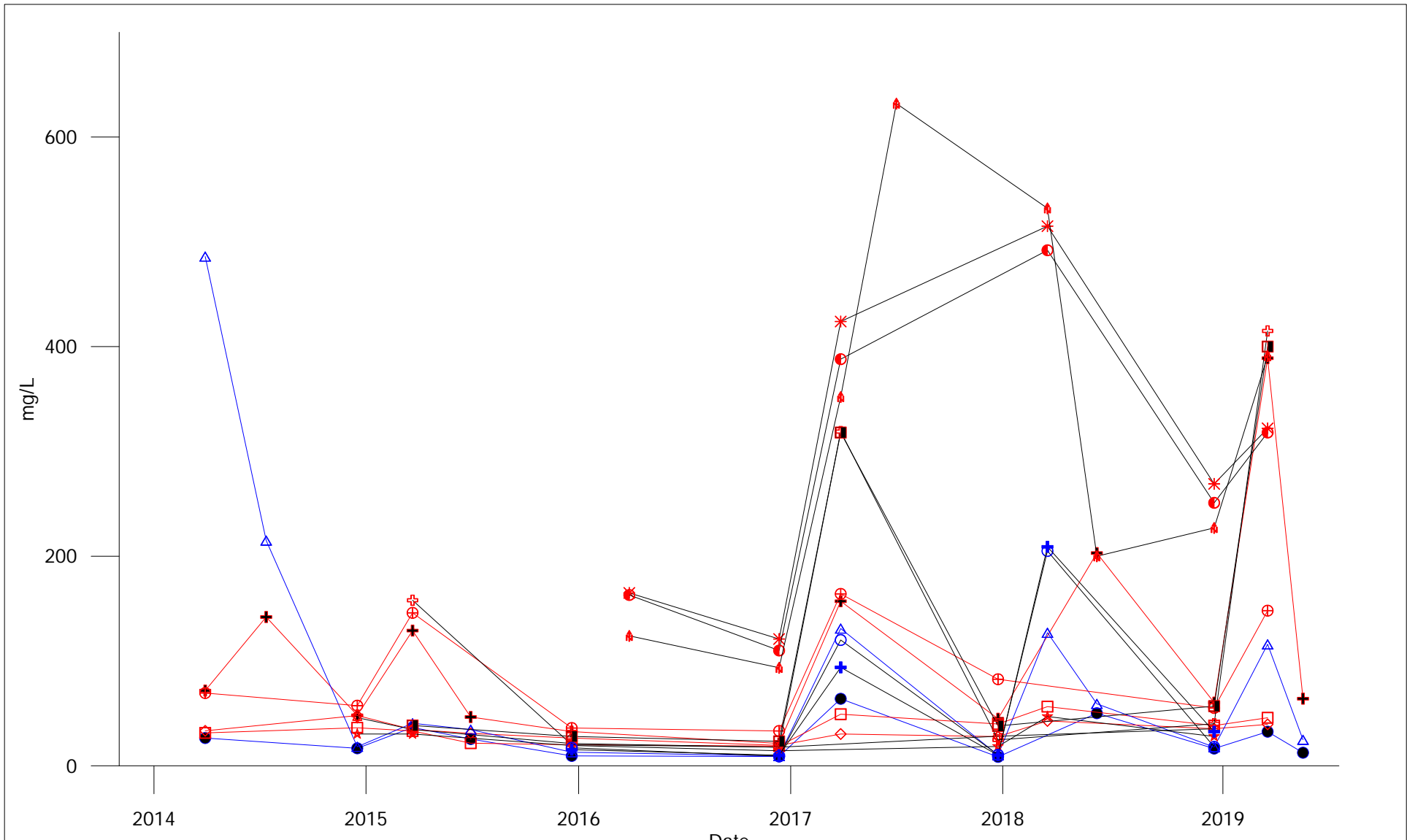
Dissolved Chromium
Surface Water

APRIL 2020

FIGURE 46

REV 0





Up Stream

- SW25-1
- △ SW25-12
- SW25-13A
- ⊕ SW25-13B

Down Stream

- ⊕ SW25-16
- ⊕ SW25-2
- ◇ SW25-9B
- SW25-9A
- * SW25-11A
- SW25-11B

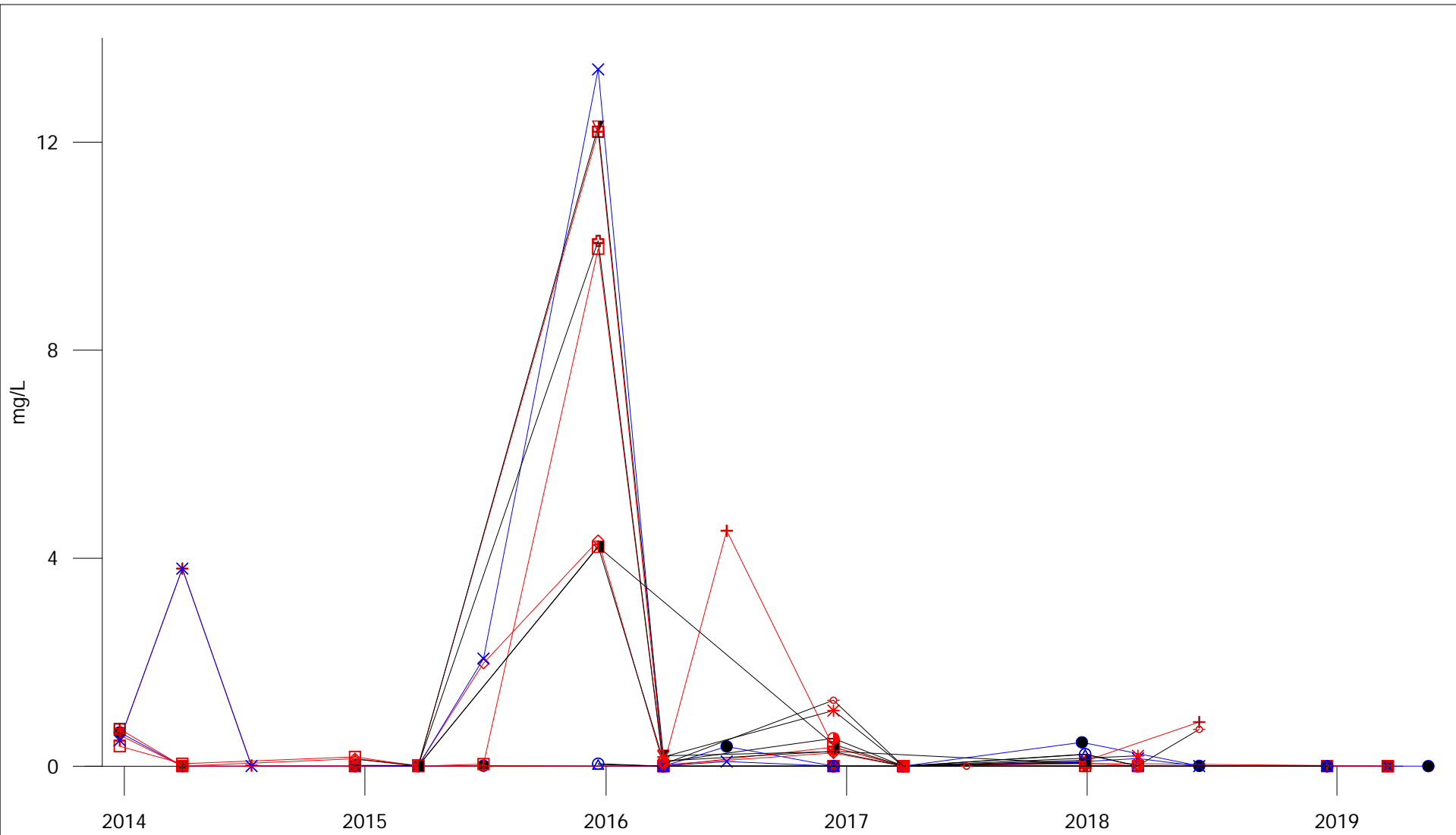
Down stream

- ☆ SW25-14A
- ☆ SW25-14B
- ⊕ SW25-15A
- SW25-15B
- ♠ SW25-11C



**City Of Winnipeg
Solid Waste Services**

BRADY ROAD RESOURCE MANAGEMENT FACILITY
**Dissolved Sodium
Surface Water**
APRIL 2020 | FIGURE 50 | REV 0



Up Stream

- SW25-1
- × SW25-12
- SW25-13A
- △ SW25-13B

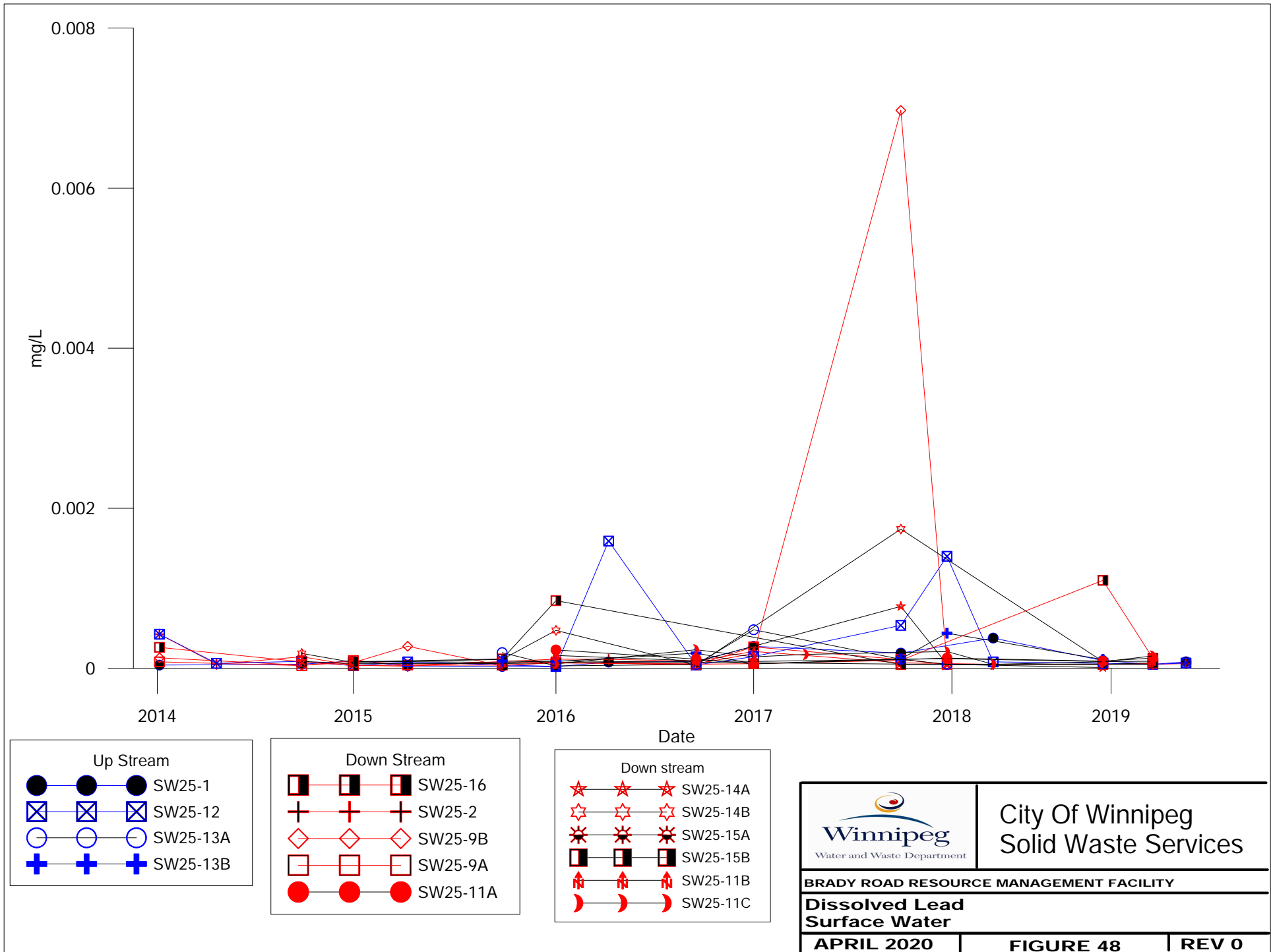
Down Stream

- ⊠ SW25-16
- ⊕ SW25-2
- ◇ SW25-9B
- SW25-9A
- ◐ SW25-11A
- ✱ SW25-11B

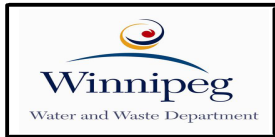
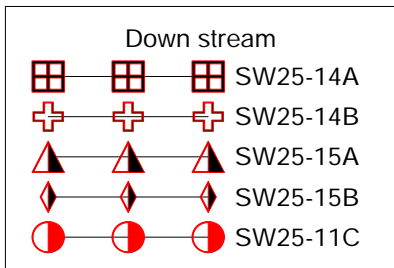
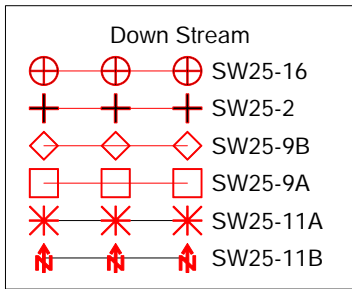
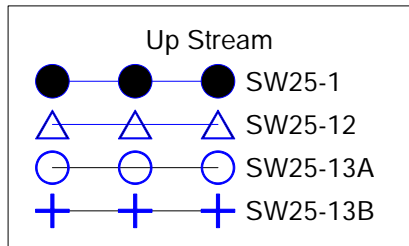
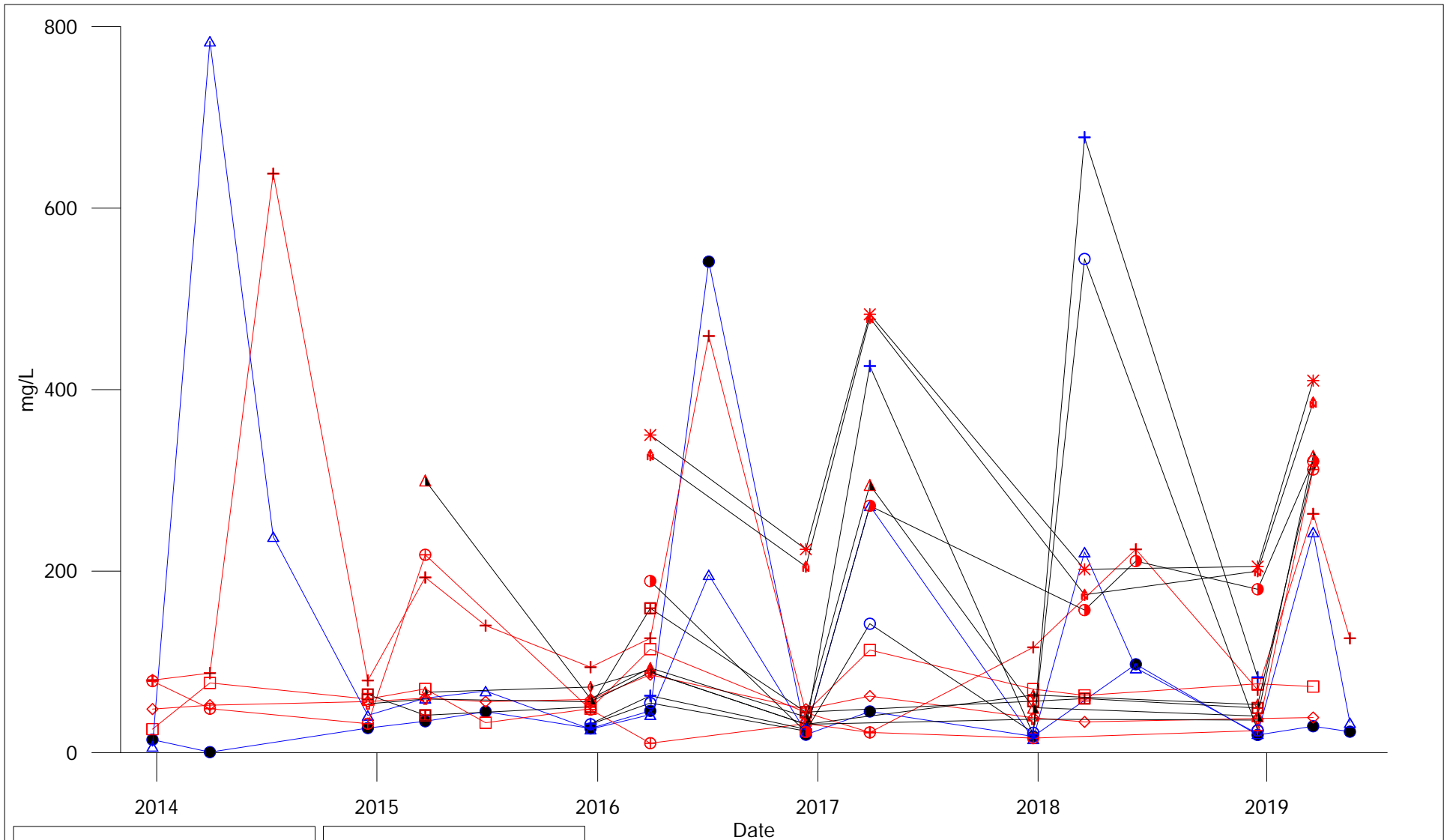
Down stream

- ⊕ SW25-14A
- ☆ SW25-14B
- ▼ SW2-15A
- ◼ SW25-15B
- SW25-11C

	City Of Winnipeg Solid Waste Services	
	BRADY ROAD RESOURCE MANAGEMENT FACILITY	
Nitrate Nitrite as Nitrogen Surface Water		
APRIL 2020	FIGURE 49	REV 0



	City Of Winnipeg Solid Waste Services	
	BRADY ROAD RESOURCE MANAGEMENT FACILITY	
Dissolved Lead Surface Water		
APRIL 2020	FIGURE 48	REV 0



City Of Winnipeg
Solid Waste Services

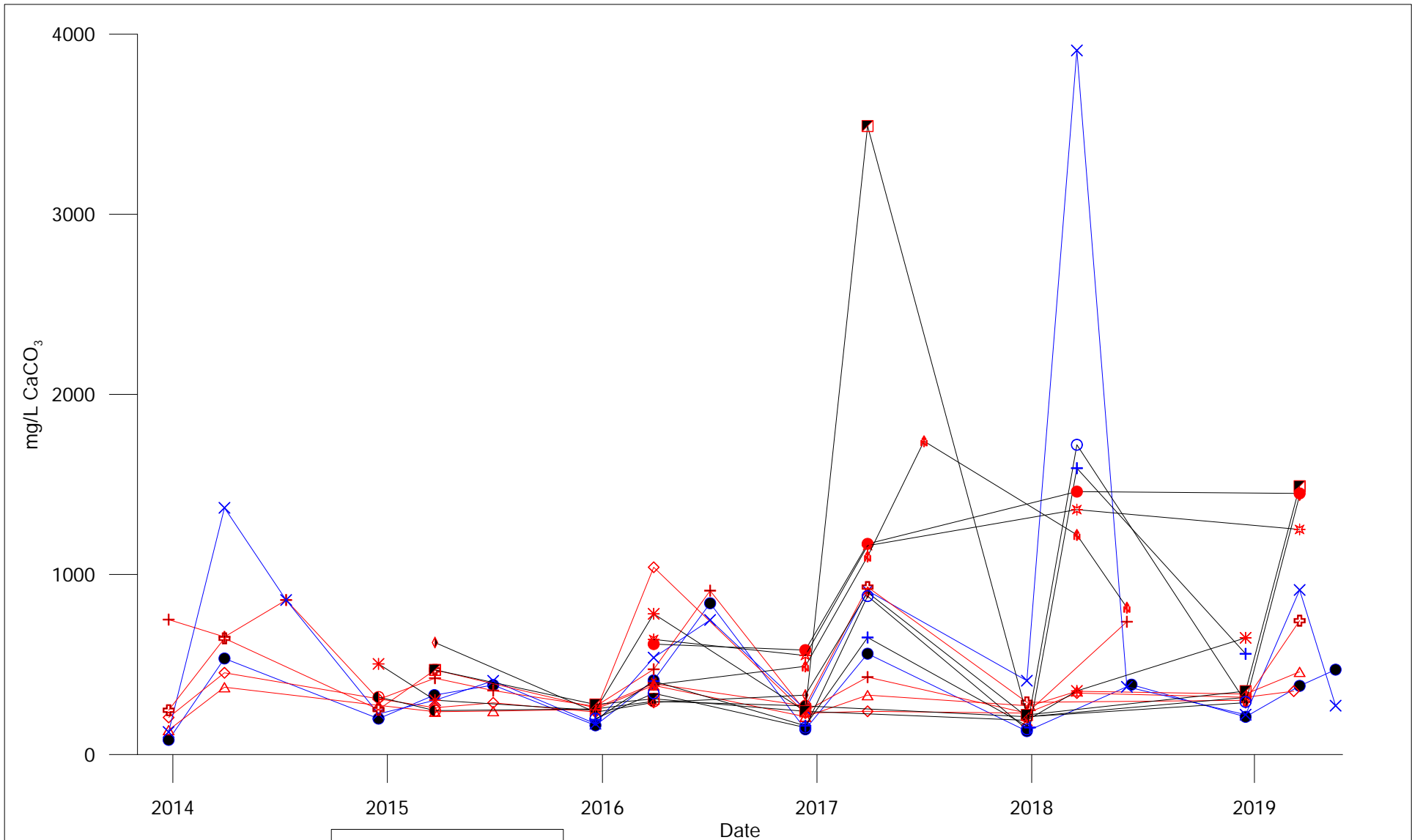
BRADY ROAD RESOURCE MANAGEMENT FACILITY

Sulfate Surface Water

APRIL 2020

FIGURE 52

REV 0



Up Stream	
●	SW25-1
×	SW25-12
○	SW25-13A
+	SW25-13B

Down Stream	
⊕	SW25-16
+	SW25-2
◇	SW25-9B
△	SW25-9A
●	SW25-11A
✱	SW25-11B

Down stream	
◐	SW25-14B
◑	SW25-15A
◒	SW25-15B
⬆	SW25-11C
✱	SW25-14A



City Of Winnipeg
Solid Waste Services

APPENDIX E
2019 LANDFILL GAS
COLLECTION AND FLARING
REPORT

**2019 ANNUAL MONITORING REPORT
CITY OF WINNIPEG**

**BRADY ROAD RESOURCE MANAGEMENT FACILITY
LANDFILL GAS COLLECTION AND FLARING SYSTEM**

Prepared for

THE CITY OF WINNIPEG

Prepared by

INTEGRATED GAS RECOVERY SERVICES INC.

March 9, 2020



**2019 ANNUAL MONITORING REPORT
CITY OF WINNIPEG**

**BRADY ROAD RESOURCE MANAGEMENT FACILITY
LANDFILL GAS COLLECTION AND FLARING SYSTEM**

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APPENDIX A Plant and Flare Data

1.0 INTRODUCTION

The City of Winnipeg operates the Landfill Gas Collection and Flaring System at the Brady Road Resource Management Facility in Winnipeg, Manitoba, which operates under Manitoba Conservation Licence 3081. After a short commissioning phase, the system became operational full time in August 2013 after approval to operate was received by the Office of the Fire Commissioner.

Operation of the system including maintenance and monitoring was completed by Comcor Environmental Limited (Comcor) on behalf of its partner Integrated Gas Recovery Services (IGRS).

This report outlines work performed and data collected during the operation of the Landfill Gas Collection and Flaring System during 2019.

2.0 LANDFILL GAS COLLECTION SYSTEM

There are two main components of the LGCFS that require monitoring. These include:

- Landfill Gas Collection Wellfield
- Mechanical System

The purpose and procedures associated with the monitoring of each of these components are discussed separately below. The recommended monitoring frequency is presented in Table 1.

Table 1: Summary of Monitoring Frequency

System Component	Monitoring Frequency
Wellfield Monitoring	Monthly
Remote Mechanical System Monitoring	Weekly
Mechanical System Monitoring	Weekly

2.1 Wellfield System Monitoring

The wellfield system monitoring consists of measuring vacuum/pressure in each well and lateral pipe, as well as the percentage of methane, oxygen and carbon dioxide in the landfill gas, and parts per million of carbon monoxide and hydrogen sulphide at each location. These measurements were taken using a proper gas meter/analyzer such as a Landtec GEM-5000, or equivalent. Vacuum fluctuations were noted, as it can be an indication of water within in the piping system.

Each wellhead was monitored for the velocity of gas using an anemometer. The measured velocities were used to calculate landfill gas flow rates by multiplying the velocity by the pipe cross-sectional area.

The monitoring data collected during the monthly round is beneficial to determine if the wellfield is operating as intended. Changes to the wellhead valve position were made to ensure maximum gas collection from the landfill. The system was monitored and field balanced by a technician experienced in the operation of this type of system.

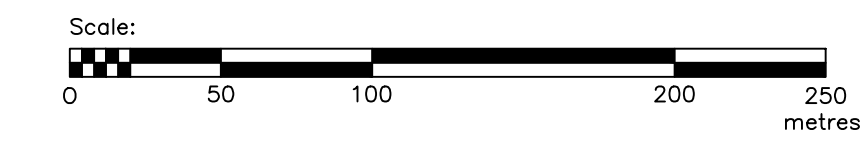
In July 2019, a tender was issued by the City of Winnipeg for an expansion of the landfill gas southern header and leachate collection system, including pump drain traps and buried valve assemblies. Figure 1 presents the approximate existing wellfield conditions at the site as as-builts including the 2019 expansion have yet to be finalized.

During 2019, there were no elevated levels of Carbon Monoxide (CO) (>500 ppm). Previous elevated levels occasionally found at GW 2-13 and GW 1-7 as noted in the 2018 Annual Report were remediated. The highest CO levels at GW 1-7 and 2-13 during the 2019 monitoring period



LEGEND

- ROADS
 - HYDRO POLES
 - MANHOLES
 - BUILDINGS
 - PERIMETER DITCHES/POND EDGE
 - FENCE
-
- GRAVITY DRAIN TRAP c/w 75mm HDPE DRAIN LINE TO LEACHATE MANHOLE AND DESIGNATION.
 - EXISTING LEACHATE MANHOLE c/w 100mm HDPE SUB-LATERAL PIPE, FLOW CONTROL ASSEMBLY AND DESIGNATION.
 - DUAL-PURPOSE WELL - LANDFILL GAS EXTRACTION & LEACHATE PUMP c/w 100mm SUB-LATERAL PIPE AND DESIGNATION.
 - FLOW CONTROL ASSEMBLY AND DESIGNATION.
 - ABOVE-GROUND WELL HEAD AT LEACHATE MANHOLE c/w 100mm HDPE SUB-LATERAL PIPE AND DESIGNATION.
 - LANDFILL GAS EXTRACTION WELL c/w 100mm HDPE SUB-LATERAL PIPE, COMPRESSED AIR AND FORCEMAIN PIPING AND DESIGNATION.
 - 250mm LANDFILL GAS LATERAL, 75mm FORCEMAIN & 75mm COMPRESSED AIR IN SAME TRENCH.
 - GRAVITY DRAIN TRAP DRAINING TO WASTE, AND DESIGNATION.
 - LANDFILL GAS EXTRACTION WELL c/w 100mm HDPE SUB-LATERAL PIPE AND DESIGNATION.
 - 450mm LANDFILL GAS HEADER, 75mm CONDENSATE PUMP DISCHARGE, 75mm COMPRESSED AIR & WELLFIELD FORCEMAIN, SIZE AS INDICATED ON PLAN. IN SAME TRENCH.



<p>COMCOR ENVIRONMENTAL LIMITED Consulting Engineers and Landfill Gas Specialists 320 Pinebush Road, Suite 12, Cambridge, Ontario N1T 1Z6 tel (519) 621-6669 • fax (519) 621-9944</p>		<p>City of Winnipeg Brady Road Resource Management Facility</p>	<p>FIGURE 1 EXISTING SITE CONDITIONS</p>
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were 316 ppm in June and 185 in April respectively. From mid 2016 to October 2017, GW1-7 was closed due to low methane levels and high CO. The CO levels dropped in late 2017 and the temperature readings were within a more typical range so the well was cracked for gas collection. The highest CO levels at 1-7 tends to occur during spring and summer. Elevated carbon monoxide within landfill gas can be an indicator of a subsurface fire within the waste. There was no indication of a subsurface fire in 2019.

An assessment of the wellfield monitoring data in late 2018 and early 2019 indicated that there were a number of wells on Lateral 6 and Lateral 7 without vacuum. As part of the 2019 Southern Header Extension project, repairs to both Lateral 6 and Lateral 7 were completed. As suspected, the Lateral 6 pipe was pinched between wells 6-55 and 6-66. The pipe was excavated, inspected for pinching or breakage, and replaced. Upon investigation of Lateral 7, it was determined that a portion of the piping had been crushed by heavy machinery and required replacement. Similar to the Lateral 6 repairs, the pipe was excavated, inspected and replaced. The repairs at Lateral 6 and Lateral 7 were finalized in October 2019 and successfully restored the loss of vacuum.

The wellfield monitoring data and valve positions can be found in Table 2.

Pump counter measurements were recorded on a monthly basis at all dual purpose gas/leachate collection wells. Due to the lack of a functioning pump counter, pump counter readings were not recorded at PDT4 throughout the 2019 reporting year, at PDT7 from June to December and at GW 3-29 from January to April. However, the pumps were checked on a monthly basis and were found to be operational at all inspections. Due to flooding, pump counter readings were not recorded at PDT5 from September to December. Included in the 2019 Southern Header Extension project, PDT10, PDT11 and PDT12 were installed and measurements were recorded beginning in October. Table 3 presents the pump counter measurements recorded at both the pump drain traps and dual purpose wells in 2019. The following wells are currently fitted with pneumatic pumps for leachate removal: H-4, 1-9, 1-10, H-11, 2-18, 3-27, 3-29 and 3-30. Dual purpose well locations were chosen based on the incidence of elevated leachate levels in the surrounding area. Additional well locations were designed with compressed air and forcemain coming up to the well which allows for pumps to be relocated, as necessary. Comcor is currently retained to complete the design for a landfill gas collection system expansion which will include retrofitting all existing wells to dual-purpose wells, as well as the installation of 19 new dual purpose wells within Cells 30 and 31.

Water level monitoring requirements are for water levels to be measured on a semi-annual basis. Table 4 presents the water levels measured quarterly in 2019. The percent of open screen available for gas collection at each well is estimated based on water levels.

Based on pump counters and water levels recorded throughout 2019, dual purpose well pumps continue to remove leachate consistently. Most of the monitored dual-purpose wells have open screen percentages on average 40%. In August and June 2018, pumps at wells 3-27 and 3-30 respectively, were reinstalled due to suspicion that they may not be functioning as designed as a result of leachate and siltation residue making the pump inoperable. The pumps operated as intended in 2019.

Table 2: Wellfield Monitoring Data

Units			23/Jan/19	28/Feb/19	22/Mar/19	22/Apr/19	28/May/19	24/Jun/19	18/Jul/19	24/Aug/19	19/Sep/19	29/Oct/19	25/Nov/19	29/Dec/19	
Weather Conditions				cloudy	clear	sunny	sunny	cloudy	cloudy	clear	cloudy	cloudy	cloudy	cloudy	
Ambient Temperature °C				-21	-3	18	24	21	27	17	10	3	-21	-8	
Control Panel	<i>Flow Rate</i>	<i>CFM</i>		800	800	800	800	800	800	800	900	900	800	800	
	<i>CH₄</i>	<i>%</i>		43.1	50.0	47.5	52.2	51.4	54.0	49.4	52.3	43.0	43.1	42.9	
	<i>O₂</i>	<i>%</i>		2.4	1.5	2.6	0.8	1.3	0.5	2.2	1.1	2.6	2.4	4.0	
	<i>Wellfield Vac</i>	<i>"H₂O</i>		30.5	12.1	15.6	13.1	8.9	6.9	5.2	13.1	19.5	30.5	6.4	
	<i>Outlet Press.</i>	<i>"H₂O</i>		3.0	2.6	3.2	3.2	3.2	3.2	3.3	3.0	4.1	3.0	4.6	
LOCATIONS															
H-1	<i>Well</i>	<i>"H₂O</i>	0.49	0.57	0.11	-3.97	-7.11	-4.80	-3.28	-3.29	-6.38	-2.82	1.26	-2.12	
well bore seal	<i>Lateral</i>	<i>"H₂O</i>	-18.48	0.00	-27.73	-11.19	-14.50	-8.90	-6.39	-4.70	-11.42	-7.95	Surging	-3.64	
	<i>CH₄</i>	<i>%</i>	62.5	63.1	49.0	56.1	41.0	53.3	51.8	50.7	46.9	42.3	58.5	50.6	
	<i>CO₂</i>	<i>%</i>	37.2	36.4	28.7	36.9	34.5	34.5	35.6	33.8	36.3	27.6	35.6	40.6	
	<i>O₂</i>	<i>%</i>	0.2	0.4	4.4	0.4	0.1	0.0	0.0	1.4	1.2	3.5	1.2	7.7	
	<i>BAL (N₂)</i>	<i>%</i>	10.0	0.0	17.8	6.5	26.3	12.2	12.7	14.0	15.7	26.6	4.6	1.1	
	<i>CO</i>	<i>PPM</i>	3	2	4	13	13	11	16	10	8	8	8	9	
	<i>H₂S</i>	<i>PPM</i>	-	49	23	11	17	18	19	9	14	21	12	15	
	<i>Vel Max</i>	<i>m/s</i>	-	-	0.85	2.70	-	-	-	1.31	2.61	1.41	Surging	Surging	
	<i>Vel Min</i>	<i>m/s</i>	-	-	0.82	2.51	-	-	-	1.83	2.82	1.30	Surging	Surging	
	<i>Flow</i>	<i>CFM</i>	-	-	7.890280313	24.61578469	-	-	-	14.8	25.7	12.8	Surging	Surging	
	<i>Temp</i>	<i>°C</i>	-	-	-	23.1	-	-	-	20.5	19.7	3.5	Surging	Surging	
	<i>Comments</i>		closed	closed	closed->cracked	cracked->1/2T	1/2->cracked	cracked->1/2T	1/2T	1/2T	1/2->cracked	cracked	cracked->1/2T	1/2T	
	H-2	<i>Well</i>	<i>"H₂O</i>	0.84	0.10	-1.83	0.43	-1.79	-1.11	-1.44	-1.63	-3.04	-0.82	-0.25	-1.69
	Lateral	<i>"H₂O</i>		-18.66	-23.30	-25.51	-11.09	-14.20	-8.94	-6.02	-4.96	-11.27	-7.45	Surging	-4.02
		<i>CH₄</i>	<i>%</i>	55.0	59.7	36.8	59.3	47.4	53.5	51.0	54.2	46.7	55.8	59.3	53.4
<i>CO₂</i>		<i>%</i>	34.1	40.1	28.2	40.2	36.7	38.6	37.5	38.5	36.8	37.8	40.5	42.8	
<i>O₂</i>		<i>%</i>	2.9	0.3	5.4	0.1	0.2	0.0	0.0	0.0	0.3	1.1	0.2	3.8	
<i>BAL (N₂)</i>		<i>%</i>	7.0	0.0	29.6	0.5	15.7	7.9	11.6	7.3	16.1	5.3	0.0	0.0	
<i>CO</i>		<i>PPM</i>	5	20	6	7	14	11	12	9	10	7	5	6	
<i>H₂S</i>		<i>PPM</i>	-	7	9	6	15	23	18	12	13	20	15	18	
<i>Vel Max</i>		<i>m/s</i>	0.78	5.50	4.35	2.75	-	-	-	1.99	2.20	3.50	Surging	Surging	
<i>Vel Min</i>		<i>m/s</i>	0.64	5.50	4.18	2.60	-	-	-	3.28	2.40	3.22	Surging	Surging	
<i>Flow</i>		<i>CFM</i>	6.709100625	51.97190625	40.30185094	25.27724531	-	-	-	24.9	21.7	31.8	Surging	Surging	
<i>Temp</i>		<i>°C</i>	-10.6	8.0	10.5	22.0	-	-	-	24.9	23.4	14.5	Surging	Surging	
<i>Comments</i>			cracked	cracked	cracked->closed	closed->cracked	cracked	cracked->1/2T	1/2T	1/2T	1/2T->cracked	cracked->1/2T	1/2->1T	1T	
H-3		<i>Well</i>	<i>"H₂O</i>	-14.82	-20.10	-6.95	-7.70	-10.00	-6.68	-4.14	-3.79	-7.07	-2.84	-3.28	-0.98
Lateral		<i>"H₂O</i>		-17.02	-23.60	-26.42	-9.78	-12.34	-8.23	-4.79	-9.56	-6.78	-6.08	-6.08	-2.93
		<i>CH₄</i>	<i>%</i>	48.9	23.7	54.4	54.1	50.0	51.7	53.6	55.5	52.5	58.2	57.9	54.2
	<i>CO₂</i>	<i>%</i>	36.3	16.1	39.9	40.0	37.9	38.8	40.1	41.1	40.2	41.0	41.9	45.8	
	<i>O₂</i>	<i>%</i>	2.9	12.5	1.1	1.0	1.3	1.0	0.5	0.6	0.7	0.8	0.2	0.0	
	<i>BAL (N₂)</i>	<i>%</i>	0.0	45.0	4.6	0.5	10.8	8.5	5.8	2.9	6.6	0.0	0.0	0.0	
	<i>CO</i>	<i>PPM</i>	6	6	27	22	54	53	50	22	19	14	10	14	
	<i>H₂S</i>	<i>PPM</i>	-	3	7	6	6	7	10	6	7	19	12	12	
	<i>Vel Max</i>	<i>m/s</i>	4.96	2.00	3.53	3.33	-	-	-	1.60	2.86	2.13	2.37	2.46	
	<i>Vel Min</i>	<i>m/s</i>	4.43	1.50	3.13	3.18	-	-	-	2.06	3.23	2.07	2.14	2.71	
	<i>Flow</i>	<i>CFM</i>	44.36510906	-	31.46662688	30.75791906	-	-	-	17.3	28.8	19.8	21.3	24.4	
	<i>Temp</i>	<i>°C</i>	7.0	2.0	8.6	22.9	-	-	-	18.4	19.8	13.4	6.3	5.4	
	<i>Comments</i>		1/2 T	1/2T	1/2T->1T	1T	1T	1T->no change	1T	1T	1T	1T	1T	1T	
	H-4 DP	<i>Well</i>	<i>"H₂O</i>	-11.68	-0.33	-0.12	0.78	-1.94	0.40	-0.35	-2.98	-9.16	-6.18	-5.90	-0.42
	Lateral	<i>"H₂O</i>		-16.92	-28.90	-25.93	-9.80	-12.38	-8.22	-5.20	-4.42	-9.42	-6.25	-6.49	-2.61
		<i>CH₄</i>	<i>%</i>	24.3	35.8	53.4	58.4	41.9	57.0	56.4	57.9	54.1	58.2	58.6	56.9
<i>CO₂</i>		<i>%</i>	17.2	24.6	37.7	41.2	31.0	40.5	40.7	41.1	39.8	41.9	41.0	42.9	
<i>O₂</i>		<i>%</i>	12.7	9.8	1.9	0.0	4.4	0.2	0.0	0.0	1.2	0.1	0.4	0.1	
<i>BAL (N₂)</i>		<i>%</i>	46.7	29.4	7.1	0.3	22.6	2.4	2.8	0.9	4.9	0.0	0.0	0.1	
<i>CO</i>		<i>PPM</i>	0	1	2	3	26	16	13	9	16	9	5	8	
<i>H₂S</i>		<i>PPM</i>	-	10	15	42	18	37	34	22	19	28	20	21	
<i>Vel Max</i>		<i>m/s</i>	PORT	0.90	1.46	2.84	-	-	-	1.50	2.47	2.81	2.38	1.99	
<i>Vel Min</i>		<i>m/s</i>	BLOCKED	0.80	1.26	2.76	-	-	-	1.81	2.82	2.69	1.83	2.62	
<i>Flow</i>		<i>CFM</i>	WITH	-	12.851235	26.458425	-	-	-	15.6	25.0	26.0	19.9	21.8	
<i>Temp</i>		<i>°C</i>	ICE	-7.0	10.9	21.2	-	-	-	20.8	23.4	7.6	6.5	6.2	
<i>Comments</i>			closed	closed	closed->cracked	cracked->1/2T	1/2->cracked	cracked->1/2T	1/2->1T	1->2T	2T	2T	2T	2T	

Table 2: Wellfield Monitoring Data

Units			23/Jan/19	28/Feb/19	22/Mar/19	22/Apr/19	28/May/19	24/Jun/19	18/Jul/19	24/Aug/19	19/Sep/19	29/Oct/19	25/Nov/19	29/Dec/19
1-5 well bore seal	Well	"H ₂ O	0.37	0.30	0.44	-2.56	-3.77	-1.36	-0.17	-1.57	-2.91	0.00	-0.13	-0.86
	Lateral	"H ₂ O	-13.31	0.20	0.38	-9.92	-12.58	-8.24	-5.57	-4.37	-8.96	-7.11	-6.29	-3.24
	CH ₄	%	58.0	48.0	59.9	56.3	39.1	50.6	56.2	52.7	44.0	57.7	52.3	52.9
	CO ₂	%	40.3	31.3	40.0	39.2	32.8	38.5	40.3	40.6	36.6	42.1	38.0	46.1
	O ₂	%	0.1	5.6	0.0	0.4	1.6	0.3	0.0	0.0	1.0	0.0	2.0	0.8
	BAL (N ₂)	%	0.0	15.2	0.0	4.0	26.5	10.6	3.5	6.6	18.4	0.0	7.7	0.2
	CO	PPM	4	2	3	6	15	9	9	5	6	6	4	6
	H ₂ S	PPM		176	166	18	14	14	34	12	14	25	14	14
	Vel Max	m/s	KANAFLEX	KANAFLEX	NO LAT VAC	3.09	-	-	-	1.97	1.77	2.79	3.25	2.41
	Vel Min	m/s	IS	IS	NO LAT VAC	2.92	-	-	-	2.13	1.90	2.59	2.86	2.98
	Flow	CFM	FROZEN	FROZEN	#VALUE!	28.39555969	-	-	-	19.4	17.3	25.4	28.9	25.5
	Temp	°C	-	-	-	22.0	-	-	-	21.4	25.3	12.8	13.1	13.0
	Comments		no change	no change	closed -> 1/2T	1/2T	1/2->cracked	cracked -> no change	cracked->1/2T	1/2T	1/2->cracked	cracked -> 1/2T	1/2T	1/2T
	1-6 DP	Well	"H ₂ O	0.46	-2.60	0.47	-2.29	-2.71	0.47	0.37	-1.15	-1.79	1.31	0.54
Lateral		"H ₂ O	-17.34	-22.70	-27.78	-9.47	-13.06	-8.32	-5.57	-4.48	-9.85	-6.87	-6.86	-2.44
CH ₄		%	59.9	23.0	59.5	46.8	27.5	57.9	58.6	45.2	33.1	60.3	60.1	54.6
CO ₂		%	39.8	18.7	40.4	32.0	24.7	40.3	38.6	32.9	30.4	39.7	39.0	41.2
O ₂		%	0.2	12.1	0.1	2.4	3.0	0.0	0.0	1.9	2.0	0.1	0.0	3.8
BAL (N ₂)		%	0.0	42.0	0.0	18.7	44.9	1.7	2.3	20.0	34.5	0.0	0.9	0.4
CO		PPM	4	25	3	6	15	8	9.0	7	5	5	3	7
H ₂ S		PPM		5	280	37	40	286	157.0	39	49	81	84	90
Vel Max		m/s	KANAFLEX	KANAFLEX	2.06	3.32	-	-	-	1.52	-	2.56	2.21	1.42
Vel Min		m/s	IS	IS	1.92	3.22	-	-	-	1.85	-	2.17	1.71	2.04
Flow		CFM	FROZEN	FROZEN	18.80438063	30.89966063	-	-	-	15.9	-	22.3	18.5	16.3
Temp		°C	-	-	5.5	22.7	-	-	-	27.8	-	-0.1	6.6	8.9
Comments			no change	1/2T-> closed	closed -> 1/2T	1/2T	1/2->closed	closed -> cracked	cracked->1/2T	1/2->cracked	1/2->closed	closed -> cracked	cracked->1T	1T
1-7		Well	"H ₂ O	0.27	-0.87	-1.21	0.47	0.10	-0.16	-0.07	-0.16	-0.68	0.18	0.10
	Lateral	"H ₂ O	-18.98	-27.10	-25.09	-9.05	-13.71	-8.44	-6.07	-4.15	-9.70	-6.20	-6.29	-3.68
	CH ₄	%	54.7	34.3	29.7	56.6	53.4	51.7	51.4	54.7	41.4	55.4	46.3	54.8
	CO ₂	%	44.8	34.4	32.9	43.4	42.5	42.2	43.3	43.1	41.5	44.2	35.7	44.9
	O ₂	%	0.2	3.3	1.4	0.0	0.6	0.4	0.0	0.0	0.3	0.3	3.7	0.2
	BAL (N ₂)	%	0.0	27.9	36.0	0.0	3.5	5.7	5.3	2.2	16.9	0.0	14.3	0.1
	CO	PPM	4	45	228	202	204	316	277	187	164	114	50	56
	H ₂ S	PPM		9	9	17	23	26	23	15	15	80	13	14
	Vel Max	m/s	0.61	7.60	2.20	1.13	-	-	-	2.47	2.46	3.07	3.37	3.12
	Vel Min	m/s	0.44	7.20	2.08	1.09	-	-	-	2.75	2.66	2.96	3.08	3.42
	Flow	CFM	4.960954688	69.9258375	20.22179625	10.48887563	-	-	-	24.7	24.2	28.5	30.5	30.9
	Temp	°C	-7.0	19.5	10.7	24.1	-	-	-	24.5	25.6	10.2	12.0	13.4
	Comments		cracked	cracked	cracked -> closed	closed -> cracked	cracked->1/2	1/2 -> no change	1/2T	1/2T	1/2->cracked	cracked -> 1/2T	1/2T	1/2T
	1-8	Well	"H ₂ O	0.53	0.20	-0.99	0.02	-1.19	0.07	0.12	-0.26	-1.28	-1.56	0.11
Lateral		"H ₂ O	-18.40	-29.50	-26.00	-8.84	-13.07	-8.28	-6.06	-4.32	-10.55	-6.76	-6.43	-3.23
CH ₄		%	58.4	52.8	45.5	58.8	26.0	58.4	56.8	57.2	48.5	49.7	57.4	54.9
CO ₂		%	40.1	41.4	39.5	41.3	23.1	41.3	41.9	41.4	41.7	39.3	42.1	45.0
O ₂		%	0.8	2.3	1.0	0.0	8.3	0.2	0.0	0.3	0.7	0.6	0.4	0.1
BAL (N ₂)		%	0.0	0.0	13.9	0.0	42.6	0.0	1.3	1.1	9.0	10.4	0.0	0.0
CO		PPM	0	5	29	14	16	6	31	13	20	25	6	9
H ₂ S		PPM		145	86	108	49	263	112	79	57	63	42	41
Vel Max		m/s	0.69	-	3.47	5.98	-	-	-	1.89	1.92	1.87	5.54	5.42
Vel Min		m/s	0.56	-	3.32	5.80	-	-	-	2.08	2.08	2.15	5.16	6.01
Flow		CFM	5.905898438	-	32.08084031	55.65718688	-	-	-	18.8	18.9	19.0	50.6	54.0
Temp		°C	-6.8	-	6.7	26.5	-	-	-	31.0	32.7	30.6	20.1	22.4
Comments			cracked	cracked	cracked	cracked -> 1T	1->closed	closed -> cracked	cracked	cracked->1/2T	1/2->cracked	cracked	cracked->1T	1T
1-9 DP		Well	"H ₂ O	-1.30	-1.38	0.06	-0.87	-5.60	-0.68	0.04	-0.17	-0.29	-0.37	0.70
	Lateral	"H ₂ O	-18.16	-24.10	-28.22	-11.54	-14.19	-8.72	-6.09	-4.83	-10.86	-7.19	-7.32	-2.16
	CH ₄	%	55.7	13.3	61.5	61.2	25.5	40.9	55.7	5.3	9.6	56.6	60.8	53.9
	CO ₂	%	37.4	8.9	38.3	36.0	23.3	31.2	35.8	4.8	8.4	34.5	38.9	45.9
	O ₂	%	0.7	15.0	0.1	0.8	4.3	2.0	0.1	17.1	14.5	1.6	0.1	0.2
	BAL (N ₂)	%	6.3	62.8	0.0	2.2	46.9	25.9	8.5	73.0	67.4	7.3	0.0	0.0
	CO	PPM	13	10	5	4	48	38	25	3	4	10	8	4
	H ₂ S	PPM		8	179	6	18	3	104	1	0	52	17	17
	Vel Max	m/s	3.00	-	3.52	2.15	-	-	-	-	-	1.68	1.55	1.36
	Vel Min	m/s	2.91	-	3.10	2.05	-	-	-	-	-	1.61	1.49	1.52
	Flow	CFM	27.92308781	-	31.27763813	19.84381875	-	-	-	-	-	15.5	14.4	13.6
	Temp	°C	19.1	-	8.4	25.7	-	-	-	-	-	12.5	13.7	12.6
	Comments		no change	closed	closed -> 1/2T	1/2T -> 1T	1->closed	closed -> no change	closed->cracked	cracked->closed	closed	closed -> cracked	cracked->1T	1T

Table 2: Wellfield Monitoring Data

Units			23/Jan/19	28/Feb/19	22/Mar/19	22/Apr/19	28/May/19	24/Jun/19	18/Jul/19	24/Aug/19	19/Sep/19	29/Oct/19	25/Nov/19	29/Dec/19	
1-10 DP	Well	"H ₂ O	0.15	0.20	too tall	-6.15	-2.36	0.03	-1.82	-2.87	-8.73	-5.45	-3.96	0.24	
	Lateral	"H ₂ O	-17.54	-22.82	-29.53	-11.14	-14.22	-8.94	-6.20	-4.94	-11.27	-7.43	-7.45	-2.67	
	CH ₄	%	67.2	68.5	55.2	41.0	24.8	67.7	578.0	57.2	47.9	60.6	59.3	57.9	
	CO ₂	%	30.8	30.4	30.9	27.1	17.9	30.7	34.6	34.8	34.9	37.6	35.3	40.4	
	O ₂	%	0.4	0.5	2.5	5.3	8.5	0.7	0.3	1.0	1.4	0.2	30.1	0.2	
	BAL (N ₂)	%	2.0	0.0	11.3	26.5	48.8	1.6	7.3	7.0	15.8	1.6	2.4	1.5	
	CO	PPM	0	0	7	8	12	6.0	23	10	9	11	8	12	
	H ₂ S	PPM		125	2	8	2	52.0	14	20	15	31	5	6	
	Vel Max	m/s	-	0.44	2.39	1.03	-	-	-	1.18	2.49	2.14	3.14	2.59	
	Vel Min	m/s	-	0.00	2.21	0.97	-	-	-	1.42	2.60	1.95	2.39	2.61	
	Flow	CFM	-	-	21.73370625	9.4494375	-	-	-	12.3	24.0	19.3	26.1	24.6	
	Temp	°C	-	-12.4	10.9	22.8	-	-	-	14.5	19.2	7.1	12.3	13.9	
	Comments		closed no change	closed -> 1/2T	1/2T -> 1T	1T->1/2T	1/2->closed	closed -> cracked	cracked->1/2T	1/12->1T	1/2T	1/2T -> 1T	1->2T	2T	
	H-11 DP	Well	"H ₂ O	9.17	-28.20	-20.50	-20.08	-6.43	-2.85	-3.04	-2.69	-8.87	-5.85	-5.84	-1.69
Lateral		"H ₂ O	-18.86	-29.70	-30.20	-9.66	-12.46	-8.59	-5.36	-4.49	-9.23	-6.84	-6.84	-2.87	
CH ₄		%	58.0	28.0	35.1	56.6	46.7	52.5	52.0	55.6	47.7	56.9	57.3	55.3	
CO ₂		%	41.7	28.1	26.7	42.8	34.6	38.8	37.7	40.8	38.8	37.8	40.5	42.6	
O ₂		%	0.2	9.2	4.9	0.0	2.7	1.0	0.9	0.4	2.1	1.3	0.5	2.0	
BAL (N ₂)		%	0.0	40.6	33.4	0.6	16.0	7.7	9.4	3.2	14.3	4.0	1.6	0.1	
CO		PPM	2	3	2	4	16	16	6	2	9	2	1	5	
H ₂ S		PPM		21	20	146	111	126	92	81	15	40	77	81	
Vel Max		m/s	KANAFLEX	1.23	1.83	4.24	-	-	-	1.83	2.49	1.84	2.69	Surging	
Vel Min		m/s	IS	0.44	1.76	3.89	-	-	-	2.06	2.60	1.68	2.15	Surging	
Flow		CFM	FROZEN	FROZEN	16.96174031	38.41196344	-	-	-	18.4	24.0	16.6	22.9	Surging	
Temp		°C	-	-13.0	13.6	21.7	-	-	-	22.4	25.3	1.6	11.4	surging	
Comments			no change	2T -> cracked	cracked -> closed	closed -> cracked	cracked	cracked -> no change	cracked->1/2T	1/2->1T	1->1/2T	1/2T -> 1T	1T	1T	
H-12		Well	"H ₂ O	port frozen	-30.00	5.80	1.44	-7.42	-4.65	-1.96	-4.99	0.14	2.58	-1.65	-1.06
	Lateral	"H ₂ O	well bore seal	-18.18	-29.60	-30.41	-9.06	-12.55	-8.42	-5.60	-7.18	-9.37	-6.53	Surging	-1.97
	CH ₄	%	44.1	0.4	62.3	61.1	49.7	51.0	52.2	48.3	57.3	60.4	41.4	42.6	
	CO ₂	%	26.5	0.1	37.7	38.2	33.5	34.0	35.4	32.4	38.1	39.6	27.9	40.8	
	O ₂	%	6.9	21.5	0.0	0.0	2.8	2.3	1.5	3.1	0.3	0.0	5.4	5.0	
	BAL (N ₂)	%	22.2	78.0	0.0	0.6	13.9	12.7	10.8	16.2	4.2	0.0	25.3	11.6	
	CO	PPM	3	2	5	4	3	10	6	5	9	4	2	4	
	H ₂ S	PPM		0	101	45	12	22	30	11	39	36	16	19	
	Vel Max	m/s	0.00	0.00	1.35	2.40	-	-	-	1.70	1.13	2.19	1.13	Surging	
	Vel Min	m/s	0.00	0.00	1.30	2.22	-	-	-	1.83	1.26	2.08	Surging	Surging	
	Flow	CFM	-11.4	-11.4	12.52050469	21.82820063	-	-	-	16.7	11.3	20.2	Surging	Surging	
	Temp	°C	-	-	12.8	23.5	-	-	-	21.1	25.1	8.1	Surging	Surging	
	Comments		valve is frozen	valve is frozen	frozen -> 20%	20->30%	30%	30%	30%	30%	30->20%	20->30	30	30->20%	20%
	2-13	Well	"H ₂ O	-1.79	-8.20	-0.23	-0.01	-3.35	-5.05	-4.50	-5.68	-6.98	-5.66	-5.66	-1.06
Lateral		"H ₂ O	-18.72	frozen	buried	-9.18	-12.71	-8.49	-5.95	-7.24	-9.10	-6.11	-6.11	-2.62	
CH ₄		%	58.0	21.9	57.7	56.4	58.3	59.2	56.4	58.1	57.9	58.2	58.20	57.5	
CO ₂		%	40.6	16.3	42.2	40.2	39.8	39.9	40.0	40.1	40.3	41.1	41.60	41.6	
O ₂		%	1.1	14.2	0.0	0.6	0.4	0.3	0.3	0.0	0.1	0.7	0.20	0.9	
BAL (N ₂)		%	0.0	47.0	0.0	2.8	1.6	0.6	3.4	1.6	1.8	0.0	0.00	0.0	
CO		PPM	30	11	130	185	148	151	109	175	142	50	40.00	52	
H ₂ S		PPM		63	0	244	130	118	118	39	85	90	73.00	70	
Vel Max		m/s	3.92	-	buried	1.89	-	-	-	3.50	4.51	3.81	3.61	3.42	
Vel Min		m/s	3.60	-	buried	1.41	-	-	-	4.27	6.91	3.54	4.14	4.24	
Flow		CFM	35.529885	-	#VALUE!	15.59157188	-	-	-	36.71	53.96	34.73	36.62	36.19	
Temp		°C	16.7	-	buried	24.2	-	-	-	25.0	29.4	17.9	6.7	8.2	
Comments			1/2 T	1/2T -> closed	closed -> cracked	cracked->1/2T	1/2->3/4	3/4 -> 1T	1T	1T	1->2T	2T	2T	2T	
2-14		Well	"H ₂ O	-0.16	-0.37	0.62	0.14	-0.23	-0.03	-0.08	-0.66	-0.88	-0.55	0.08	0.10
	Lateral	"H ₂ O	-17.81	-25.30	-30.83	-9.25	13.78	-8.91	-6.40	-4.08	-8.64	-6.24	Surging	-1.62	
	CH ₄	%	40.0	31.0	58.3	55.0	45.3	56.5	54.6	40.7	42.2	43.6	58.5	53.8	
	CO ₂	%	28.7	22.6	41.8	39.4	33.4	40.2	40.2	30.5	32.8	35.0	41.5	46.2	
	O ₂	%	6.3	20.0	0.0	0.8	3.3	0.3	0.4	5.1	3.6	4.9	0.0	0.0	
	BAL (N ₂)	%	25.2	26.2	0.0	4.8	18.0	3.1	4.8	23.7	21.3	16.5	0.0	0.0	
	CO	PPM	6	5	15	16	13	7	10	5	10	8	7	14	
	H ₂ S	PPM		23	78	35	32	42	42	19	23	24	41	40	
	Vel Max	m/s	5.55	-	1.28	2.40	-	-	-	4.37	3.89	1.69	Surging	Surging	
	Vel Min	m/s	5.32	-	1.21	2.18	-	-	-	5.39	1.24	2.98	Surging	Surging	
	Flow	CFM	51.35769281	-	11.76454969	21.63921188	-	-	-	46.11	24.24	22.06	Surging	Surging	
	Temp	°C	-3.7	-	-	22.3	-	-	-	26.7	27.3	25.3	Surging	Surging	
	Comments		no change	2T -> closed	closed -> 1/2T	1/2T	1/2->cracked	cracked -> 1/2T	1T	1->1/2T	1->1/2T	1/2T	1/2T	1/2T	

Table 2: Wellfield Monitoring Data

	Units	23/Jan/19	28/Feb/19	22/Mar/19	22/Apr/19	28/May/19	24/Jun/19	18/Jul/19	24/Aug/19	19/Sep/19	29/Oct/19	25/Nov/19	29/Dec/19	
2-15	Well	"H ₂ O	0.15	0.30	-1.68	0.39	-0.29	-0.69	-0.51	-0.82	-1.48	-0.98	-0.10	0.3
	Lateral	"H ₂ O	FROZEN	0.20	-28.74	-9.18	-14.54	-8.93	-6.74	-4.07	-10.99	-6.50	-5.80	-3.5
	CH ₄	%	58.4	58.6	26.9	58.5	53.7	52.1	54.8	43.1	51.0	50.2	58.8	55.1
	CO ₂	%	41.2	41.3	22.4	40.8	39.6	39.0	40.5	32.3	38.5	39.3	41.0	44.9
	O ₂	%	0.3	0.1	8.6	0.0	0.7	0.9	0.2	4.2	1.0	1.5	0.1	0.0
	BAL (N ₂)	%	0.0	0.0	42.1	0.6	6.1	7.9	4.5	20.4	9.4	9.0	0.0	0.0
	CO	PPM	6	7	37	14	31	32	22	20	22	26	12	10.0
	H ₂ S	PPM		13	5	18	17	11	13	10	17	12	18	18.0
	Vel Max	m/s	KANAFLEX	KANAFLEX	7.53	1.26	-	-	-	1.03	1.90	1.68	4.62	4.9
	Vel Min	m/s	IS	IS	7.01	1.20	-	-	-	1.24	1.71	1.72	5.48	5.2
	Flow	CFM	FROZEN	FROZEN	68.69741063	11.62280813	-	-	-	10.73	17.06	16.06	47.72	47.72
	Temp	°C	-	-	6.9	21.3	-	-	-	19.8	21.0	22.6	14.1	16.2
	Comments		1/2T -> no change	1/2T	1/2T -> closed	closed -> cracked	cracked -> 1/2	1/2T -> 3/4T	3/4 -> 1T	1 -> 1/2T	1 -> 1/2T	1/2T	1/2 -> 1T	1T
	2-16	Well	"H ₂ O	-0.77	-0.10	-0.32	0.95	-0.03	-0.32	-0.09	-0.65	-1.59	0.56	-0.06
Lateral		"H ₂ O	-17.61	-27.60	-27.45	-9.11	-12.92	-7.77	-5.56	-3.54	-9.39	-5.67	-6.50	-3.86
CH ₄		%	41.1	41.3	41.3	58.3	56.7	31.0	55.6	52.1	44.4	58.3	58.0	57.2
CO ₂		%	29.6	29.8	31.7	41.4	41.0	38.4	40.9	38.9	36.3	41.8	41.3	40.2
O ₂		%	5.9	6.6	4.5	0.0	0.1	0.8	0.4	0.9	1.3	0.0	0.7	0.2
BAL (N ₂)		%	22.9	26.6	22.4	0.3	2.3	9.8	3.1	8.2	18.0	0.0	0.0	2.4
CO		PPM	0	0	13	31	14	31	32	12	14	10	9	6
H ₂ S		PPM		29	26	43	44	32	39	19	26	35	24	25
Vel Max		m/s	4.39	11.50	6.08	3.65	-	4.74	-	5.84	6.07	5.12	6.62	6.62
Vel Min		m/s	4.26	10.20	5.70	3.38	-	-	-	5.28	4.27	5.04	7.11	7.83
Flow		CFM	40.86881719	102.5263969	55.65718688	33.21477281	-	-	-	47.34	47.77	52.49	57.78	68.27
Temp		°C	9.7	7.0	8.4	23.4	-	-	-	24.4	27.1	17.7	16.5	19.6
Comments			1T	1T	1T -> cracked	cracked -> 1/2T	1/2 -> 3/4	3/4T -> no change	3/4 -> 1T	1T	1 -> 1/2T	1/2T -> 1T	1 -> 2T	1T
2-17		Well	"H ₂ O	-2.29	-2.84	-2.65	1.84	-0.12	-1.24	-2.47	-1.11	-2.68	-1.50	-1.81
	Lateral	"H ₂ O	-18.64	-25.00	-27.44	-9.28	-14.43	-9.74	-7.01	-4.14	-10.75	-5.14	-5.55	-2.64
	CH ₄	%	57.2	47.0	38.5	59.6	56.3	56.3	56.3	31.7	55.2	54.1	58.1	54.1
	CO ₂	%	38.0	34.2	29.1	39.9	39.3	39.3	40.9	22.8	40.0	38.4	40.2	40.2
	O ₂	%	1.6	3.6	5.7	0.5	0.2	0.6	1.1	8.6	0.3	3.6	0.8	5.0
	BAL (N ₂)	%	2.7	15.0	26.8	0.0	4.2	3.8	1.7	36.9	45.0	3.9	0.9	0.7
	CO	PPM	4	3	10	7	9	5	6	4	6	5	5	5
	H ₂ S	PPM		6	3	72	16	11	10	9	10	5	7	7
	Vel Max	m/s	2.63	-	5.81	1.83	-	-	-	2.73	1.88	2.47	3.61	4.02
	Vel Min	m/s	2.40	-	5.51	1.75	-	-	-	2.85	1.41	2.82	4.33	4.49
	Flow	CFM	23.76533531	-	53.48381625	16.91449313	-	-	-	26.4	15.5	25.0	37.5	40.2
	Temp	°C	-2.9	-	8.9	16.6	-	-	-	19.0	22.9	23.1	12.7	14.2
	Comments		1.25T -> no change	1T	1T -> closed	closed -> cracked	cracked -> 1/2	1/2T -> 1T	1T	1 -> 1/2T	1/2 -> 1T	1T	1T	1T
	2-18	Well	"H ₂ O	-1.03	-1.04	-0.71	0.28	-0.30	-0.17	-0.48	-0.47	-1.04	-0.59	-0.12
Lateral		"H ₂ O	-17.54	-23.27	-29.11	-11.46	-14.36	-10.18	-7.18	-4.20	-10.65	-6.11	-8.77	-2.22
CH ₄		%	47.8	16.4	28.7	60.2	45.9	51.0	42.0	51.5	33.8	48.5	37.9	34.8
CO ₂		%	33.6	14.8	24.6	39.3	34.8	36.8	34.7	38.0	31.9	36.2	33.4	40.6
O ₂		%	3.5	11.5	5.6	0.4	1.1	1.0	1.4	0.6	2.5	1.1	1.1	6.4
BAL (N ₂)		%	14.9	57.0	41.2	0.0	18.2	11.2	22.0	9.9	31.8	14.2	27.5	18.2
CO		PPM	10	23	25	5	21	11	14	10	19	21	15	16
H ₂ S		PPM		15	28	121	39	41	32	31	20	48	40	42
Vel Max		m/s	5.63	-	3.45	2.30	-	-	-	1.51	-	0.45	-	Surging
Vel Min		m/s	3.63	-	2.96	2.10	-	-	-	1.79	-	0.96	-	Surging
Flow		CFM	43.75089563	-	30.28544719	20.7887625	-	-	-	15.59	-	6.66	-	Surging
Temp		°C	-3.7	-	7.8	21.5	-	-	-	29.0	-	31.4	-	Surging
Comments			1T -> no change	1T -> 1/2T	1/2T -> closed	closed -> cracked	cracked	cracked -> 1/2T	1/2 -> cracked	cracked -> 1/2T	1/2T -> cracked	cracked	cracked -> closed	closed
3-19		Well	"H ₂ O	-5.29	-26.20	1.84	2.62	1.55	-3.73	-1.95	-2.21	6.17	4.16	0.98
	Lateral	"H ₂ O	-17.37	-26.50	-20.90	-9.04	-11.45	-6.92	-4.92	-6.54	-8.77	-4.32	-2.81	-4.46
	CH ₄	%	42.3	0.9	58.9	58.7	57.7	53.1	55.7	41.4	57.9	58.9	58.1	58.5
	CO ₂	%	29.2	5.0	41.7	41.2	40.6	37.3	39.7	29.7	40.7	40.9	41.9	40.1
	O ₂	%	6.4	21.7	0.0	0.1	0.0	1.6	0.4	5.0	0.1	0.3	0.0	1.2
	BAL (N ₂)	%	22.2	76.9	0.0	0.0	1.7	7.9	4.2	23.9	1.3	0.0	0.0	0.2
	CO	PPM	4	4	6	6	5	6	8	6	8	9	6	6
	H ₂ S	PPM		2	32.0	46	29	26	36	13	37	39	25	25
	Vel Max	m/s	3.28	-	5.51	4.21	-	-	-	1.34	4.23	6.00	5.90	6.17
	Vel Min	m/s	3.10	-	5.30	4.08	-	-	-	1.58	4.10	5.73	7.10	7.20
	Flow	CFM	30.14370563	-	51.07420969	39.16791844	-	-	-	13.80	39.36	55.42	61.42	63.17
	Temp	°C	6.0	-	-	22.1	-	-	-	21.4	15.5	11.2	12.9	13.1
	Comments		1T -> 1/4T	cracked -> closed	closed -> 1/2T	1/2T	1/2 -> 1	1T -> no change	1T	1 -> cracked	cracked -> 1/2T	1/2T -> 1T	1 -> 2T	2T

Table 2: Wellfield Monitoring Data

	Units	23/Jan/19	28/Feb/19	22/Mar/19	22/Apr/19	28/May/19	24/Jun/19	18/Jul/19	24/Aug/19	19/Sep/19	29/Oct/19	25/Nov/19	29/Dec/19	
3-20	Well	"H ₂ O	8.03	-10.90	-8.68	17.57	6.74	1.78	1.66	-0.34	-1.66	-3.76	-2.44	0.62
	Lateral	"H ₂ O	FROZEN	-23.30	-25.78	-9.13	-12.09	-7.11	-5.02	-7.79	-8.36	-5.59	-3.76	-3.41
	CH ₄	%	56.8	46.9	36.2	56.4	57.1	57.3	55.4	54.5	55.2	57.3	56.7	57.9
	CO ₂	%	42.5	34.0	27.6	43.3	42.4	42.5	41.7	39.9	41.7	42.7	43.3	41.9
	O ₂	%	0.4	5.0	7.3	0.4	0.2	0.2	0.0	0.3	0.1	0.0	0.0	0.2
	BAL (N ₂)	%	0.0	12.3	28.9	0.0	0.3	0.0	2.8	6.1	2.9	0.0	0.0	0.0
	CO	PPM	15	12	16	17	24	22	34	30	29	17	18	22
	H ₂ S	PPM		4	3	5	6	5	7	4	6	9	11	12
	Vel Max	m/s	KANAFLEX	5.60	9.80	2.73	-	-	-	4.41	7.19	5.19	4.06	3.84
	Vel Min	m/s	IS	5.30	9.34	2.58	-	-	-	5.07	6.83	4.96	5.57	4.99
	Flow	CFM	FROZEN	FROZEN	90.43111688	25.08825656	-	-	-	44.79	66.24	47.96	45.50	41.72
	Temp	°C	-	-16.0	9.9	18.8	-	-	-	19.8	16.2	8.1	8.0	6.6
	Comments		1/4T	1/4T	1/4T->closed	closed->cracked	cracked->1/2	1/2T->1T	1T	1T	1->2T	2T	2T	2T
	3-21	Well	"H ₂ O	0.10	-25.90	1.74	-3.41	0.21	0.04	0.37	-0.10	0.75	0.05	0.05
Lateral		"H ₂ O	-18.63	-26.30	-21.35	-9.27	-11.89	-7.37	-5.33	-8.05	-8.76	-5.29	-3.82	-2.72
CH ₄		%	53.4	23.7	57.0	17.8	54.0	40.0	55.2	42.2	55.8	52.0	56.2	53.6
CO ₂		%	39.2	17.2	42.7	13.9	41.7	31.2	42.7	32.9	43.3	39.6	43.8	44.6
O ₂		%	2.5	13.0	0.3	13.2	0.3	5.3	0.0	4.2	0.1	2.0	0.0	1.4
BAL (N ₂)		%	1.3	45.2	0.0	55.2	3.9	23.5	2.1	20.7	0.8	6.4	0.0	0.4
CO		PPM	3	4	4	0	5	1	7	5	5	7	2	2
H ₂ S		PPM		7	12	0	25	1	27	2	23	16	16	16
Vel Max		m/s	1.63	-	0.54	-	-	-	-	0.00	0.00	0.46	1.58	1.24
Vel Min		m/s	1.53	-	0.42	-	-	-	-	0.56	0.00	0.00	1.90	1.82
Flow		CFM	14.93011125	-	4.53573	-	-	-	-	2.6	0.0	2.2	16.4	14.5
Temp		°C	-10.5	-	18.3	-	-	-	-	28.6	13.6	2.0	3.7	3.9
Comments			cracked	cracked->closed	closed->cracked	cracked->closed	closed->cracked	cracked->closed	closed->cracked	cracked->closed	closed->cracked	cracked	cracked->1T	1T
3-22		Well	"H ₂ O	-12.74	-15.50	-15.83	0.01	-2.20	-3.76	-4.41	-5.60	-6.38	-5.98	-2.55
	Lateral	"H ₂ O	-15.96	23.20	-23.88	-13.69	-12.19	-7.02	-4.88	-6.46	-7.43	-6.70	-3.48	-3.24
	CH ₄	%	55.1	34.6	39.7	58.2	58.1	57.5	56.9	56.6	56.6	57.1	58.0	56.9
	CO ₂	%	40.1	31.3	35.6	40.7	41.3	41.1	40.8	41.3	41.3	39.9	42.0	42.4
	O ₂	%	0.1	2.9	0.4	0.0	0.0	0.0	0.1	0.1	0.0	0.3	0.0	0.7
	BAL (N ₂)	%	4.5	30.3	24.3	0.0	0.5	1.5	1.9	2.4	2.0	2.7	0.0	0.0
	CO	PPM	11	17	23	0	56	64	40	41	59	68	19	6
	H ₂ S	PPM		42	35	63	44	92	99	44	59	51	71	65
	Vel Max	m/s	7.99	11.20	12.40	-	-	-	-	4.96	7.49	5.21	Surging	Surging
	Vel Min	m/s	7.47	10.20	11.60	-	-	-	-	7.07	5.86	6.33	Surging	Surging
	Flow	CFM	73.04415188	101.1089813	113.39325	-	-	-	-	56.84	63.07	54.52	Surging	Surging
	Temp	°C	-2.4	-11.0	5.8	-	-	-	-	24.9	27.3	29.5	Surging	Surging
	Comments		1T	1T	1T->closed	closed->1/2T	1/2->1	1T->2T	2T	2T	2T	2T	2T	2T
	3-23	Well	"H ₂ O	-10.58	-18.30	-18.25	-10.01	-4.68	-3.33	-3.27	-5.52	-6.25	-6.10	-2.00
Lateral		"H ₂ O	-14.12	-24.90	-24.64	-11.05	-10.88	-7.44	-3.72	-6.14	-6.59	-6.53	Surging	-2.63
CH ₄		%	37.9	13.5	34.9	51.0	54.0	55.4	57.7	59.1	58.3	57.7	59.4	57.1
CO ₂		%	25.2	13.8	35.4	40.0	40.3	39.9	40.4	39.5	37.5	38.2	40.3	41.2
O ₂		%	2.4	16.2	1.5	1.0	0.4	0.1	0.0	0.0	0.0	0.3	0.3	1.2
BAL (N ₂)		%	23.8	53.6	28.1	8.0	5.2	4.6	2.0	1.4	4.2	3.8	0.0	0.5
CO		PPM	3	0	5	4	14	16	20	7	5	6	4	22
H ₂ S		PPM		4	15	11	14	40	68	49	41	59	62	70
Vel Max		m/s	4.54	7.36	6.50	-	-	-	-	2.14	2.48	3.11	Surging	Surging
Vel Min		m/s	4.26	6.34	5.50	-	-	-	-	3.26	3.55	3.43	Surging	Surging
Flow		CFM	41.577525	64.72864688	56.696625	-	-	-	-	25.51	28.49	30.90	Surging	Surging
Temp		°C	20.5	-20.6	12.2	-	-	-	-	27.7	24.3	25.6	Surging	Surging
Comments			1/4T no change	1/4T	1/4T->closed	closed->1/2T	1/2T	1/2T->1T	1T	1->2T	2T	2T	2T	2T
3-24		Well	"H ₂ O	0.10	-0.10	0	0.59	0.30	-0.03	0.40	12.12	-0.24	-0.13	0.41
	Lateral	"H ₂ O	-15.84	-26.00	-25.27	-13.65	-11.67	-7.27	-5.13	-7.1	-7.26	-6.20	-4.18	-3.10
	CH ₄	%	0.4	0.3	0	57.1	57.9	22.3	58.1	55.8	37.9	41.5	56.9	51.2
	CO ₂	%	0.3	0.1	0.1	42.8	42.1	16.3	41.9	40.9	28.3	34.1	43.1	39.6
	O ₂	%	17.0	21.9	21.8	0.1	0.0	11.5	0.0	0.2	6.1	8.6	0.0	0.0
	BAL (N ₂)	%	81.5	77.7	78.1	0.0	0.0	49.9	0.0	3	27.7	15.8	0.0	9.2
	CO	PPM	0	0	1	47	81	28	61.0	64	38	44	36	40
	H ₂ S	PPM	-	0	0	22	54	46	104.0	63	76	91	57	55
	Vel Max	m/s	-	-	1.15	-	-	-	-	1.64	-	-	0.73	0.49
	Vel Min	m/s	-	-	0.95	-	-	-	-	1.86	-	-	0.98	1.24
	Flow	CFM	-	-	9.921909375	-	-	-	-	16.54	-	-	8.08	8.17
	Temp	°C	-	-	4.4	-	-	-	-	29.9	-	-	0.7	0.9
	Comments		closed no change	closed	closed	closed->cracked	cracked->1/2	1/2T->closed	closed->cracked	cracked->1/2T	1/2->closed	closed	closed->cracked	cracked

Table 2: Wellfield Monitoring Data

	Units	23/Jan/19	28/Feb/19	22/Mar/19	22/Apr/19	28/May/19	24/Jun/19	18/Jul/19	24/Aug/19	19/Sep/19	29/Oct/19	25/Nov/19	29/Dec/19	
3-25	Well	"H ₂ O	-15.87	-27.90	-24.50	-8.58	-10.89	-6.93	-5.32	-2.87	-6.57	-5.97	-3.80	0.72
	Lateral	"H ₂ O	-16.69	FROZEN	-25.90	-14.01	-1148.00	-7.86	-5.66	-3.25	-6.77	-6.12	-3.32	-2.94
	CH ₄	%	53.2	29.9	45.1	56.6	55.1	54.0	53.9	57.3	53.1	54.3	58.2	56.9
	CO ₂	%	38.9	25.1	38.3	39.4	38.4	37.8	38.7	39.7	37.8	36.9	39.1	41.7
	O ₂	%	1.7	9.2	1.3	1.6	1.1	1.1	0.9	0.1	1.7	0.9	1.2	1.2
	BAL (N ₂)	%	6.2	34.8	15.3	2.4	5.4	7.1	6.5	2.8	7.3	7.9	1.5	0.2
	CO	PPM	1.25T->no change	0	4	3	10	14	0	4	17	12	2	2
	H ₂ S	PPM		19	20	8	16	25	35	25	29	25	32	26
	Vel Max	m/s	6.70	-	6.70	-	-	-	-	-	SURGING	2.55	SURGING	Surging
	Vel Min	m/s	6.28	-	1.30	-	-	-	-	-	SURGING	2.74	SURGING	Surging
	Flow	CFM	61.32684938	-	37.79775	-	-	-	-	-	SURGING	25.0	SURGING	Surging
	Temp	°C	2.4	-	-	-	-	-	-	SURGING	16.3	SURGING	Surging	
	Comments		1T -> no change	1T	1T -> 1/2T	1/2->1T	1T	1T -> 2T	2T	2T	2T	2T	2T	2T
3-26	Well	"H ₂ O	8.56	-28.90	-25.43	-8.55	-12.82	-7.87	-5.50	-3.66	-5.25	-5.70	-4.33	0.06
	Lateral	"H ₂ O	-14.17	-29.40	-26.73	-8.70	-12.87	-8.03	-5.74	-3.69	-5.62	-6.04	-4.42	-2.67
	CH ₄	%	59.4	0.3	58.6	59.2	57.0	57.8	56.4	50.8	55.8	57.1	57.6	58.7
	CO ₂	%	39.9	0.1	38.5	393.0	38.2	38.8	38.6	35.0	38.5	36.1	37.8	38.6
	O ₂	%	0.3	22.0	0.9	0.4	0.6	0.4	0.7	2.1	0.8	1.8	1.5	1.0
	BAL (N ₂)	%	0.0	77.6	2.0	1.1	4.1	3.0	4.3	12.1	4.9	5.0	3.1	1.6
	CO	PPM	6	0	6	4	3	5	4	9	23	14	4	4
	H ₂ S	PPM		0	61	54	24	43	40	26	37	36	37	40
	Vel Max	m/s	KANAFLEX	3.20	1.25	0.92	-	-	-	0.56	SURGING	4.21	0.71	0.46
	Vel Min	m/s	IS	0.98	0.79	0.87	-	-	-	1.09	SURGING	4.53	0.63	0.99
	Flow	CFM	FROZEN	FROZEN	9.63842625	8.457246563	-	-	-	7.80	SURGING	6.33	6.33	6.85
	Temp	°C	-	-20.1	6.6	16.2	-	-	-	24.5	-	26.3	5.7	7.4
	Comments		3T no change	3T	3T -> 2T	2T	2T	2T -> no change	2T	2T	2T	2T	2T	2T
3-27 DP	Well	"H ₂ O	-12.53	-26.90	-6.90	-9.68	-9.95	-6.87	-3.75	-1.10	-3.89	-0.68	-4.06	-0.44
	Lateral	"H ₂ O	-15.62	-31.00	-7.92	-11.39	-11.46	-7.60	-5.24	-3.30	-6.10	-5.47	-3.95	-2.61
	CH ₄	%	49.3	51.1	51.5	49.6	48.0	50.3	41.5	51.2	50.1	51.2	54.3	52.4
	CO ₂	%	37.6	40.5	41.4	42.2	42.4	39.8	41.8	48.7	48.7	43.0	41.0	42.6
	O ₂	%	2.9	2.0	0.7	1.4	0.2	0.2	0.5	0.6	0.2	0.9	0.0	0.0
	BAL (N ₂)	%	9.4	5.5	6.4	6.8	9.4	7.6	18.3	6.4	1.0	4.9	4.7	5.0
	CO	PPM	1	3	5	4	13	10	19	5	2	6	4	5
	H ₂ S	PPM		34	20	31	18	48	31	44	29	31	80	26
	Vel Max	m/s	PORT	0.81	0.59	-	-	-	-	-	-	0.86	SURGING	Surging
	Vel Min	m/s	BLOCKED	0.44	0.48	-	-	-	-	-	-	1.25	SURGING	Surging
	Flow	CFM	WITH		5.055449063	-	-	-	-	-	-	9.97	SURGING	Surging
	Temp	°C	ICE	-13.2	7.2	-	-	-	-	-	-	10.5	SURGING	Surging
	Comments		1/2T -> no change	1/2T	1/2T	1/2T	1/2T	1/2T -> no change	1/2->cracked	cracked	cracked	cracked	cracked->1/2T	1/2T
3-28	Well	"H ₂ O	-2.52	1.30	-0.66	1.88	-0.31	-0.15	-1.84	-0.26	-0.08	-2.45	1.12	-0.24
	Lateral	"H ₂ O	-17.69	-28.87	-26.71	-8.42	-12.47	-7.77	-5.31	-3.34	-5.29	-5.99	-3.83	-1.85
	CH ₄	%	32.9	57.4	49.3	58.5	53.8	57.2	52.6	45.5	56.5	53.8	58.1	54.3
	CO ₂	%	23.2	41.4	35.1	41.3	38.1	40.5	37.7	33.3	40.6	39.7	41.9	40.4
	O ₂	%	9.1	0.6	3.3	0.2	1.2	0.0	1.3	3.4	0.0	1.1	0.0	2.3
	BAL (N ₂)	%	30.7	0.0	12.2	0.0	6.9	2.2	8.3	17.9	2.9	5.4	0.0	3.0
	CO	PPM	5	7	8	9	8	9	9	9	32	21	9	10
	H ₂ S	PPM	-	117	94	110	33	90	89	38	84	81	87	90
	Vel Max	m/s	2.50	5.00	4.71	2.97	-	-	-	2.65	SURGING	1.55	SURGING	Surging
	Vel Min	m/s	2.40	4.20	4.45	2.72	-	-	-	3.56	SURGING	1.81	SURGING	Surging
	Flow	CFM	23.15112188	43.4674125	43.27842375	26.88364969	-	-	-	29.34	SURGING	15.9	SURGING	Surging
	Temp	°C	-4.2	-7.0	9.9	17.4	-	-	-	24.7	-	22.6	SURGING	Surging
	Comments		cracked	cracked	cracked	cracked->1/2T	1/2T	1/2T -> 1T	1->3/4T	3/4->cracked	cracked->1/2T	1/2T	1/2->1T	1T
3-29 DP	Well	"H ₂ O	-6.80	-15.70	-12.54	-6.89	-10.80	-6.56	-3.75	-2.47	-3.64	-3.20	-3.48	1.02
	Lateral	"H ₂ O	-15.74	-30.20	-26.25	-8.59	-12.97	-7.82	-5.77	-3.77	-4.54	-5.63	-4.02	-2.74
	CH ₄	%	47.3	27.2	56.6	58.8	54.7	57.3	57.7	54.3	53.0	55.4	58.9	57.2
	CO ₂	%	35.2	20.9	36.9	38.2	36.1	37.5	38.3	36.4	36.3	36.3	38.5	42.8
	O ₂	%	1.0	8.3	1.0	0.6	1.4	0.5	1.7	0.2	1.4	1.2	0.7	0.0
	BAL (N ₂)	%	16.6	44.1	5.0	2.3	7.8	4.8	2.3	8.2	9.4	7.1	1.9	0.0
	CO	PPM	6	5	4	4	3	5	4	8	17	8	5	6
	H ₂ S	PPM	-	2	62	8	37	77	82	38	55	60	86	54
	Vel Max	m/s	3.44	1.13	3.42	3.21	-	-	-	2.54	SURGING	1.14	3.41	3.01
	Vel Min	m/s	3.31	0.79	3.17	2.95	-	-	-	3.76	SURGING	1.16	2.82	3.62
	Flow	CFM	31.89185156	9.07146	31.13589656	29.1042675	-	-	-	29.77	SURGING	10.87	29.43	31.32
	Temp	°C	0.5	-	6.1	16.5	-	-	-	23.8	-	19.5	12.2	14.9
	Comments		1/4T no change	1/4T	1/4 -> 1T	1T	1T	1T -> no change	1T	1T	1T	1T	1->2T	2T

Table 2: Wellfield Monitoring Data

		Units	23/Jan/19	28/Feb/19	22/Mar/19	22/Apr/19	28/May/19	24/Jun/19	18/Jul/19	24/Aug/19	19/Sep/19	29/Oct/19	25/Nov/19	29/Dec/19
3-30 DP	Well	"H ₂ O	-1.47	-0.70	-0.52	-2.21	-0.48	-1.27	-0.06	-0.47	-0.59	-1.23	-1.77	-0.10
	Lateral	"H ₂ O	-15.43	-30.70	-26.34	-11.58	-13.36	-7.91	-5.81	-3.55	-4.22	-6.03	-4.05	-3.22
	CH ₄	%	34.6	43.3	55.0	59.4	55.2	42.5	58.1	55.5	54.6	53.8	51.7	54.1
	CO ₂	%	28.6	31.4	37.2	39.9	38.8	31.9	39.6	38.9	39.0	37.6	36.6	45.9
	O ₂	%	5.1	3.9	0.7	0.7	0.3	2.7	0.5	0.1	0.1	0.5	1.7	0.0
	BAL (N ₂)	%	31.8	20.8	7.1	0.0	5.6	22.9	1.9	5.5	6.3	8.1	10.0	0.0
	CO	PPM	7	3	3	3	4	5	5	7	14	4	5	5
	H ₂ S	PPM	-	22	35	64	60	20	63	22	25	22	29	26
	Vel Max	m/s	0.89	3.19	2.63	-	-	-	-	3.54	SURGING	1.98	5.23	5.01
	Vel Min	m/s	0.71	3.00	2.51	-	-	-	-	3.84	SURGING	2.31	4.68	5.24
	Flow	CFM	7.55955	29.24600906	24.28505438	-	-	-	-	34.9	SURGING	20.3	46.8	48.4
	Temp	°C	-7.1	-11.6	4.8	-	-	-	-	34.1	-	28.7	26.6	28.9
	Comments		1/4T -> cracked	cracked	cracked -> 1T	1T->cracked	cracked->1/2	1/2T -> cracked	cracked->1/2T	1/2T	1/2->1T	1T	1T	1T
4-31	Well	"H ₂ O	1.30	-1.30	-1.20	-1.11	-2.33	-5.47	-3.89	-1.17	-1.45	0.04	0.80	-2.49
	Lateral	"H ₂ O	-18.92	-26.34	-21.25	-8.72	-12.05	-6.99	-4.83	-1.58	-2.26	-4.86	-3.54	-2.42
	CH ₄	%	57.7	40.6	56.9	56.2	56.4	56.2	56.0	56.7	53.1	58.3	57.8	56.3
	CO ₂	%	41.2	28.0	39.9	40.5	40.2	39.8	40.1	40.2	38.7	41.6	42.3	42.1
	O ₂	%	0.5	7.7	0.8	0.7	0.8	0.5	0.3	0.0	3.1	0.0	0.0	0.4
	BAL (N ₂)	%	0.0	23.2	2.4	2.6	2.6	3.5	3.6	3.0	5.1	0.0	0.0	1.2
	CO	PPM	5	3	4	6	5	6	7	6	5	8	5	8
	H ₂ S	PPM	-	74	47	87	82	58	81	37	47	84	64	90
	Vel Max	m/s	3.48	1.54	3.98	4.86	-	-	-	3.11	4.72	3.95	4.41	3.54
	Vel Min	m/s	3.45	0.72	3.73	4.60	-	-	-	4.96	4.38	3.82	3.79	4.07
	Flow	CFM	32.74230094	10.67786438	36.42758156	44.69583938	-	-	-	38.1	43.0	36.7	38.7	36.0
	Temp	°C	12.7	-22.2	16.6	23.0	-	-	-	23.2	20.0	12.3	16.2	17.0
	Comments		1/4T -> 1/2T	1/2T	1/2 -> 1T	1T	1->2	2T -> no change	2T	2T	2T	2T	2T	2T
4-32	Well	"H ₂ O	61.92	77.42	-11.05	-0.19	-1.95	-5.08	-2.93	-0.56	-0.84	-4.82	-3.65	0.12
	Lateral	"H ₂ O	NO VAC	FROZEN	-21.04	-9.14	-11.69	-7.68	-5.34	-3.19	-2.65	-5.13	-3.67	-2.58
	CH ₄	%	56.9	56.2	45.0	51.1	56.2	56.4	55.0	54.7	55.1	57.4	56.6	58.2
	CO ₂	%	42.7	43.5	34.1	39.3	42.4	42.3	41.8	41.3	42.1	42.4	43.4	40.7
	O ₂	%	0.2	0.3	4.0	1.8	0.1	0.1	0.0	0.3	0.5	0.2	0.0	1.0
	BAL (N ₂)	%	0.0	0.0	16.9	7.8	1.3	1.2	3.2	3.8	2.3	0.0	0.0	0.1
	CO	PPM	4	4	3	5	4	6	6	7	5	6	4	4
	H ₂ S	PPM	-	168	53	137	150	121	159	53	122	106	79	110
	Vel Max	m/s	FROZEN	FROZEN	4.06	2.72	-	-	-	SURGING	4.88	2.54	2.70	2.19
	Vel Min	m/s	-	FROZEN	3.81	2.61	-	-	-	SURGING	4.64	2.48	2.63	2.32
	Flow	CFM	-	-	37.18353656	25.18275094	-	-	-	SURGING	45.0	23.7	25.2	21.3
	Temp	°C	-	FROZEN	18.7	17.7	-	-	-	SURGING	18.8	8.1	12.8	13.4
	Comments		1/4T -> 1/2T	1/2T	1/2T	1/2T	1/2->1	1T -> no change	1T	1T	1->2T	2T	2T	2T
4-33	Well	"H ₂ O	-12.25	-23.50	-4.68	-12.32	-7.43	-5.77	-4.32	-1.51	-3.47	-2.56	-2.18	-1.26
	Lateral	"H ₂ O	-14.87	-25.90	-5.77	-13.27	-10.51	-7.10	-4.81	-2.26	-5.74	-6.12	SURGING	-1.62
	CH ₄	%	45.6	51.8	39.1	58.6	57.3	57.1	57.1	59.0	56.3	57.6	59.5	54.8
	CO ₂	%	31.3	35.0	40.0	40.9	39.2	39.3	39.9	39.6	40.0	38.4	40.4	42.4
	O ₂	%	4.8	3.0	0.4	0.5	0.3	0.0	0.0	0.0	0.0	0.1	20.0	0.0
	BAL (N ₂)	%	14.1	10.7	0.5	0.0	3.1	3.5	3.1	1.4	3.7	3.9	0.0	2.8
	CO	PPM	3	6	6	5	11	8	15	15	19	12	4.0	2
	H ₂ S	PPM	-	77	331	130	154	500	>>>>	311	259	250	>>>>	243
	Vel Max	m/s	3.38	3.51	4.70	-	-	-	-	SURGING	SURGING	1.54	SURGING	SURGING
	Vel Min	m/s	3.12	2.10	2.10	-	-	-	-	SURGING	SURGING	1.59	SURGING	SURGING
	Flow	CFM	30.71067188	26.50567219	32.1280875	-	-	-	-	SURGING	SURGING	14.79	SURGING	SURGING
	Temp	°C	-12.2	-9.5	16.4	-	-	-	-	SURGING	SURGING	14.8	SURGING	SURGING
	Comments		1/4T, needs kanaflex	1/4T, needs kanaflex	1/4T	cracked->1/2T	1/2->3/4	3/4T -> 1T	1T	1T	1T	1T	1T	1T
4-34	Well	"H ₂ O	6.95	-10.30	2.80	-7.07	4.22	-1.11	-0.43	2.06	-1.86	-0.58	-2.76	-0.57
	Lateral	"H ₂ O	-15.15	-25.20	-6.12	-13.29	-12.16	-7.49	-5.06	-3.11	-5.74	-5.45	-3.86	-2.81
	CH ₄	%	58.1	7.3	58.9	43.4	56.6	50.0	53.1	57.9	55.2	54.2	53.2	54.4
	CO ₂	%	41.6	5.4	41.1	32.0	40.6	36.2	38.3	40.2	41.9	40.9	41.3	37.5
	O ₂	%	0.2	17.7	0.1	4.7	0.0	1.6	1.1	0.0	0.6	0.4	2.1	2.3
	BAL (N ₂)	%	0.0	69.1	0.0	19.9	2.7	12.1	7.6	1.9	2.3	4.5	3.4	5.7
	CO	PPM	2	1	5	3	5	5	10	13	15	12	6	4
	H ₂ S	PPM	-	16	145	44	253	255	297	177	184	193	170	97
	Vel Max	m/s	BLOCKED	2.43	4.05	-	-	-	-	SURGING	SURGING	0.48	1.65	SURGING
	Vel Min	m/s	WITH	2.34	2.84	-	-	-	-	SURGING	SURGING	0.96	1.22	SURGING
	Flow	CFM	ICE	-	32.55331219	-	-	-	-	SURGING	SURGING	6.80	13.56	SURGING
	Temp	°C	-	-14.0	8.0	-	-	-	-	SURGING	SURGING	6.8	10.4	SURGING
	Comments		1T -> 1 1/2T	1 1/2T -> cracked	cracked -> 1/2T	1/2->closed	closed->cracked	cracked -> no change	cracked	cracked->1/2T	1/2T	1/2T	1/2T	1/2->1T

Table 2: Wellfield Monitoring Data

Units			23/Jan/19	28/Feb/19	22/Mar/19	22/Apr/19	28/May/19	24/Jun/19	18/Jul/19	24/Aug/19	19/Sep/19	29/Oct/19	25/Nov/19	29/Dec/19
4-35 well bore seal	Well	"H ₂ O	-0.79	0.80	-0.15	-3.29	1.44	0.58	-0.56	-0.33	-2.45	-3.96	-1.85	-1.32
	Lateral	"H ₂ O	-13.70	-1.60	-6.64	-11.36	-12.01	-8.75	-5.14	-3.87	-5.91	-6.47	-3.60	-3.14
	CH ₄	%	49.0	56.0	56.1	39.8	56.8	57.4	53.0	56.3	54.3	55.2	46.9	52.4
	CO ₂	%	34.3	41.1	39.6	30.9	40.4	41.1	38.8	40.1	42.6	39.1	33.3	46.9
	O ₂	%	3.5	0.5	1.1	5.0	0.0	0.0	0.8	0.3	0.6	1.7	4.0	0.4
	BAL (N ₂)	%	13.3	0.0	3.3	24.4	2.7	1.5	7.4	3.3	2.5	4.0	158.0	0.3
	CO	PPM	8	9	6	6	10	11	10	10	14	10	5	8
	H ₂ S	PPM	-	426	67	60	264	373	156	147	124	158	93	162
	Vel Max	m/s	2.30	0.00	2.59	-	-	-	-	SURGING	SURGING	2.55	1.81	0.98
	Vel Min	m/s	2.23	0.00	2.27	-	-	-	-	SURGING	SURGING	2.66	1.52	1.86
	Flow	CFM	21.40297594	0	22.96213313	-	-	-	-	SURGING	SURGING	24.62	15.73	13.42
	Temp	°C	3.0	-18.0	7.8	-	-	-	-	SURGING	SURGING	6.1	9.8	9.6
	Comments		1/2T -> no change	1/2T	1/2 -> 1T	1->closed	closed->cracked	cracked -> 1/2T	1/2T	1/2->1T	1T	1T	1->1/2T	1/2T
	4-36	Well	"H ₂ O	32.24	34.80	too tall	Too Tall	Too Tall	-	-	-	Too Tall	Too Tall	TOO TALL
Lateral		"H ₂ O	FROZEN	FROZEN	22.64	NLV	NLV	-	NLV	NLV	NLV	NLV	NLV	NLV
CH ₄		%	58.6	59.3	-	-	-	-	-	-	-	-	-	-
CO ₂		%	39.6	40.7	-	-	-	-	-	-	-	-	-	-
O ₂		%	0.0	0.0	-	-	-	-	-	-	-	-	-	-
BAL (N ₂)		%	0.0	0.0	-	-	-	-	-	-	-	-	-	-
CO		PPM	8	9	-	-	-	-	-	-	-	-	-	-
H ₂ S		PPM	-	77	-	-	-	-	-	-	-	-	-	-
Vel Max		m/s	FROZEN	FROZEN	-	-	-	-	-	-	-	-	-	-
Vel Min		m/s	-	-	-	-	-	-	-	-	-	-	-	-
Flow		CFM	-	-	-	-	-	-	-	-	-	-	-	-
Temp		°C	-	-	-	-	-	-	-	-	-	-	-	-
Comments			FROZEN	FROZEN	No Lat Vac	NLV	NLV	NLV	NLV	NLV	NLV	NLV	NLV	NLV
4-37		Well	"H ₂ O	0.16	0.20	1.04	-0.37	0.25	-0.49	0.48	-0.08	-0.32	-0.97	-0.74
	Lateral	"H ₂ O	-14.58	-30.10	22.92	-11.24	-13.27	-8.97	-5.43	-1.50	-4.12	-5.81	-3.99	-2.86
	CH ₄	%	58.9	59.0	59.0	40.2	59.1	34.3	57.8	57.9	55.0	56.0	34.7	31.4
	CO ₂	%	40.6	40.9	40.9	29.6	40.4	25.0	40.3	40.4	41.3	42.6	25.2	26.6
	O ₂	%	0.2	0.2	0.1	5.3	0.0	6.0	0.0	0.4	0.7	0.3	7.6	5.9
	BAL (N ₂)	%	0.0	0.0	0.0	24.9	0.5	32.7	1.9	1.2	3.0	1.1	32.4	36.1
	CO	PPM	7	4	8	5	5	7	6	11	4	9	6	9
	H ₂ S	PPM	-	285	128	35	113	72	396	86	94	2	51	102
	Vel Max	m/s	-	0.44	2.40	-	-	-	-	SURGING	SURGING	0.95	-	-
	Vel Min	m/s	-	0.00	2.22	-	-	-	-	SURGING	SURGING	1.24	-	-
	Flow	CFM	-	-	21.82820063	-	-	-	-	SURGING	SURGING	10.35	-	-
	Temp	°C	-	-14.5	4.1	-	-	-	-	SURGING	SURGING	3.6	-	-
	Comments		closed no change	closed-> cracked	cracked	1/2->closed	closed->cracked	cracked -> closed	closed->cracked	cracked->1/2T	1/2T	1/2T	1/2->CLOSED	closed
	5-38	Well	"H ₂ O	0.20	2.70	2.58	-8.54	-10.24	0.19	-4.71	0.13	-2.93	0.06	-3.42
Lateral		"H ₂ O	-18.72	-27.79	-20.60	-10.14	-11.14	-7.31	-5.06	-3.32	-3.11	-5.15	-3.68	-2.47
CH ₄		%	58.5	56.2	58.0	48.9	10.1	54.4	52.5	56.3	8.8	53.9	8.0	30.7
CO ₂		%	41.3	43.3	41.8	37.7	7.6	41.5	39.7	40.7	6.6	38.2	5.0	22.5
O ₂		%	0.2	0.3	0.1	2.8	16.2	15.0	0.8	0.7	12.3	1.9	16.0	10.1
BAL (N ₂)		%	0.0	0.0	0.0	10.6	66.1	3.6	7.0	2.2	66.8	5.9	72.0	36.7
CO		PPM	3	2	2	3	2	5	19	4	2	4	2	2
H ₂ S		PPM	-	181	60	106	10	89	29	89	14	91	6	21
Vel Max		m/s	2.26	2.18	0.87	0.70	-	-	-	0.60	-	-	-	-
Vel Min		m/s	2.12	1.95	0.73	0.58	-	-	-	0.65	-	-	-	-
Flow		CFM	20.69426813	19.51308844	7.55955	6.04764	-	-	-	5.91	-	-	-	-
Temp		°C	-9.2	-23.6	17.5	-	-	-	-	25.9	-	-	-	-
Comments			closed ->cracked	cracked	cracked	1/2->cracked	cracked->closed	closed -> cracked	cracked	cracked->1/2T	1/2->closed	closed	closed	closed
5-39 well bore seal		Well	"H ₂ O	39.90	12.11	-20.76	19.56	-0.77	-5.19	-3.54	-1.69	-2.85	-3.92	-2.80
	Lateral	"H ₂ O	FROZEN	FROZEN	-20.61	-8.56	-10.52	-7.20	-5.11	-3.32	-3.04	-6.71	-3.22	-2.49
	CH ₄	%	58.5	57.6	56.6	58.0	56.9	57.3	56.2	57.0	56.8	58.0	57.1	58.7
	CO ₂	%	41.5	41.9	41.4	41.9	41.2	41.5	41.2	41.3	41.4	41.4	42.4	40.6
	O ₂	%	0.0	0.2	0.6	0.1	0.3	0.1	0.0	0.1	1.1	0.6	0.1	0.2
	BAL (N ₂)	%	0.0	0.0	1.4	0.0	1.7	1.1	2.5	1.6	0.7	0.0	0.0	0.5
	CO	PPM	11	17	19	15	18	18	26.0	21	17	16	15	15
	H ₂ S	PPM	-	69	31	68	58	46	76.0	50	53	45	29	50
	Vel Max	m/s	FROZEN	FROZEN	1.91	1.52	-	-	-	2.06	4.22	2.64	2.03	2.42
	Vel Min	m/s	-	-	1.77	1.39	-	-	-	2.19	4.09	2.06	2.27	3.01
	Flow	CFM	-	-	17.386965	13.74893156	-	-	-	20.1	39.3	22.2	20.3	25.7
	Temp	°C	-	-	16.7	-	-	-	-	21.0	15.2	4.0	8.2	9.3
	Comments		FROZEN	FROZEN	frozen -> cracked	cracked->1/2T	1/2->1	1T -> no change	1T	1->2T	2T	2T	2T	2T

Table 2: Wellfield Monitoring Data

Units			23/Jan/19	28/Feb/19	22/Mar/19	22/Apr/19	28/May/19	24/Jun/19	18/Jul/19	24/Aug/19	19/Sep/19	29/Oct/19	25/Nov/19	29/Dec/19
5-40	Well	"H ₂ O	0.90	1.30	-3.53	-2.96	-2.90	-1.99	-1.29	-0.55	-1.36	-1.45	-0.92	1.29
	Lateral	"H ₂ O	FROZEN	0.10	-6.23	-12.63	-11.72	-7.43	-5.03	-2.68	-4.89	-6.32	-4.16	-2.46
	CH ₄	%	59.0	59.6	46.8	45.0	46.6	47.2	50.4	56.8	54.2	54.1	55.2	58.8
	CO ₂	%	40.3	40.1	35.1	35.4	36.2	36.7	37.7	40.9	39.9	38.6	41.2	41.2
	O ₂	%	0.5	0.1	1.9	3.7	2.2	1.6	1.6	0.0	2.5	1.5	0.0	0.0
	BAL (N ₂)	%	0.0	0.0	16.2	15.9	15.0	14.5	10.4	2.3	3.1	5.8	3.6	0.0
	CO	PPM	2	3	3	3	4	9	8	10	2	4	5	5
	H ₂ S	PPM	-	388	65	63	179	195	263	151	145	171	151	157
	Vel Max	m/s	FROZEN	FROZEN	1.52	-	-	-	-	SURGING	SURGING	2.69	1.63	FROZEN
	Vel Min	m/s	-	-	1.39	-	-	-	-	SURGING	SURGING	2.73	1.05	AT
	Flow	CFM	-	-	13.74893156	-	-	-	-	SURGING	SURGING	25.6	12.7	WELL HEAD
	Temp	°C	-	-	9.8	-	-	-	-	SURGING	SURGING	10.4	8.5	-
	Comments		FROZEN	FROZEN	frozen -> cracked	cracked	cracked	cracked -> no change	cracked	cracked->1T	1T	1T	1T	1->closed
5-41 well bore seal	Well	"H ₂ O	-1.65	-7.45	3.17	-6.77	0.12	-1.00	-0.77	1.51	-4.20	-5.12	0.74	-1.89
	Lateral	"H ₂ O	-16.53	-32.19	-6.40	-12.44	-11.51	-6.62	-4.78	-2.42	-5.31	-6.33	-3.87	-2.25
	CH ₄	%	52.0	33.2	60.3	47.0	43.3	55.5	55.5	58.8	56.2	57.9	59.4	59.9
	CO ₂	%	33.1	21.0	39.6	32.2	29.7	37.0	37.4	38.9	34.8	40.6	40.6	39.9
	O ₂	%	2.9	9.8	0.1	4.2	4.5	0.7	0.7	0.0	0.2	0.5	0.0	0.1
	BAL (N ₂)	%	10.5	32.0	0.0	16.5	22.5	6.8	6.5	2.3	8.8	1.0	0.0	0.0
	CO	PPM	2	2	4	3	3	4	7	4	4	5	3	6
	H ₂ S	PPM	5	146	102	84	178	62	215	138	165	158	164	95
	Vel Max	m/s	4.64	5.69	6.79	-	-	-	-	4.18	4.10	4.36	4.98	3.98
	Vel Min	m/s	4.58	5.39	5.67	-	-	-	-	4.51	4.15	4.55	4.51	3.10
	Flow	CFM	43.56190688	52.34988375	58.86999563	-	-	-	-	41.1	39.0	42.1	44.8	33.5
	Temp	°C	-12.8	-12.3	11.8	-	-	-	-	30.4	31.2	32.1	29.5	17.4
	Comments		cracked no change	CRACKED	cracked -> 1/2T	1/2->cracked	cracked	cracked -> 1/2T	1/2T	1/2->2T	2T	2T	2T	2T
5-42	Well	"H ₂ O	-0.86	-0.10	0.82	-0.62	-0.19	0.48	0.55	-0.53	-1.45	-2.54	0.03	-1.62
	Lateral	"H ₂ O	-13.85	-24.95	-8.24	-11.84	-13.31	-8.84	-4.97	-3.30	-4.11	-5.98	-4.09	-3.93
	CH ₄	%	43.6	23.3	58.2	40.4	46.9	57.1	56.0	57.2	56.9	58.1	58.2	56.7
	CO ₂	%	32.1	15.2	41.7	30.3	34.9	41.2	40.6	41.7	39.5	39.3	41.8	41.4
	O ₂	%	4.6	13.2	0.1	5.3	3.2	0.0	0.0	0.4	0.5	0.6	0.0	1.5
	BAL (N ₂)	%	19.6	47.6	0.0	24.0	14.9	1.7	3.3	0.0	3.1	2.0	0.0	0.4
	CO	PPM	8	2	18	8	12	25	25	14	21	19	9	10
	H ₂ S	PPM	-	18	124	8	134	>>>	253	385	267	357	163	345
	Vel Max	m/s	3.64	-	1.80	-	-	-	-	2.33	2.17	2.14	2.82	2.41
	Vel Min	m/s	3.51	-	1.63	-	-	-	-	2.82	2.55	2.77	2.36	2.96
	Flow	CFM	33.78173906	#VALUE!	16.20578531	-	-	-	-	24.33	22.30	23.20	24.47	25.37
	Temp	°C	11.0	-	-	-	-	-	-	25.6	24.1	23.2	19.3	19.3
	Comments		closed to 25T	25T -> 20T	20% -> 30%	30->20%	20->10%	10% -> 20%	20->30%	30%	30%	30%	30->40%	40%
5-43	Well	"H ₂ O	-17.85	-26.70	-3.84	-8.36	-10.88	-6.81	-4.65	-3.09	-2.53	-4.40	-3.13	1.93
	Lateral	"H ₂ O	-17.89	-27.20	-6.87	-8.88	-11.04	-6.96	-5.25	-3.25	-2.92	-4.88	-3.32	-2.41
	CH ₄	%	58.5	41.5	60.2	59.3	58.7	59.3	58.8	58.6	58.9	60.0	59.8	60.4
	CO ₂	%	36.8	27.7	39.6	39.5	39.2	39.3	39.3	38.8	39.5	40.0	40.2	39.6
	O ₂	%	1.9	9.6	0.2	0.3	0.1	0.0	0.0	0.3	0.0	0.0	0.1	0.0
	BAL (N ₂)	%	2.4	18.8	0.0	0.9	2.1	1.4	1.9	2.2	1.6	0.0	0.0	0.0
	CO	PPM	3T no change	3	6	3	3	4	6	6	4	5	4	5
	H ₂ S	PPM	-	73	28	85	79	80	101	79	70	63	41	70
	Vel Max	m/s	5.95	1.35	1.71	1.77	-	-	-	3.47	2.82	3.99	3.97	3.52
	Vel Min	m/s	5.67	1.20	1.42	1.67	-	-	-	3.57	3.65	3.60	3.04	3.98
	Flow	CFM	54.90123188	12.04803281	14.78836969	16.2530325	-	-	-	33.3	30.6	35.9	33.1	35.4
	Temp	°C	-9.0	-23.9	-	-	-	-	-	22.1	15.5	10.0	10.3	11.1
	Comments		1T	1T -> 2T	2T -> 3T	3T	3T	3T -> no change	3T	3T	3T	3T	3T	3T
5-44	Well	"H ₂ O	-0.40	-1.23	0.75	-0.58	-0.49	-0.19	0.44	0.23	-1.51	-2.50	-1.92	0.62
	Lateral	"H ₂ O	-16.08	-29.25	-6.52	-12.93	-12.00	-6.72	-4.71	-2.50	-2.46	-6.02	-4.20	-2.43
	CH ₄	%	41.1	27.7	58.2	51.5	47.4	50.2	53.4	57.3	45.6	48.3	55.8	57.8
	CO ₂	%	31.2	20.6	41.7	39.1	37.2	38.7	37.1	40.4	37.2	39.6	39.6	41.9
	O ₂	%	5.2	11.2	0.1	1.4	1.0	0.2	1.3	0.0	1.0	1.2	2.2	0.3
	BAL (N ₂)	%	2.4	39.7	0.0	8.1	14.4	11.0	8.2	2.2	16.3	10.9	2.4	0.0
	CO	PPM	3	3	4	3	4	5	5	5	7	4	3	6
	H ₂ S	PPM	-	316	268	215	500	336	336	>>>>	43	130	189	>>>>
	Vel Max	m/s	3.94	-	5.72	-	-	-	-	4.70	3.09	1.84	2.41	1.15
	Vel Min	m/s	3.19	-	5.40	-	-	-	-	4.99	2.93	1.96	2.13	1.11
	Flow	CFM	33.68724469	#VALUE!	52.5388725	-	-	-	-	45.78	28.44	17.95	21.45	10.68
	Temp	°C	-21.6	-	12.8	-	-	-	-	30.9	24.1	22.5	21.9	-0.1
	Comments		1/4T no change	1/4T -> closed	closed -> 1/2T	1/2T	1/2T	1/2T -> cracked	cracked	cracked->2T	2->1T	1T	1T	1T->cracked

Table 2: Wellfield Monitoring Data

Units			23/Jan/19	28/Feb/19	22/Mar/19	22/Apr/19	28/May/19	24/Jun/19	18/Jul/19	24/Aug/19	19/Sep/19	29/Oct/19	25/Nov/19	29/Dec/19	
5-45	Well	"H ₂ O	0.07	0.03	0.03	0.01	-0.03	-0.02	-0.05	-6.00	-1.56	-1.14	-0.99	FROZEN	
	Lateral	"H ₂ O	-14.51	-33.91	-25.77	-12.52	-13.78	-7.32	-4.86	-2.89	-4.11	-5.65	-3.67	-2.44	
	CH ₄	%	54.8	45.5	52.5	37.7	55.5	48.1	52.2	51.9	52.3	51.4	53.4	44.6	
	CO ₂	%	44.1	38.5	42.6	32.5	42.8	38.4	42.0	44.2	42.9	39.0	44.9	33.9	
	O ₂	%	0.6	1.4	0.4	3.7	0.0	1.2	0.4	0.0	0.6	0.3	1.7	3.6	
	BAL (N ₂)	%	0.2	17.1	4.5	26.0	1.8	12.3	5.3	3.9	4.2	9.3	0.0	17.9	
	CO	PPM	4	2	3	1	1	3	6.0	5	1	2	4	5	
	H ₂ S	PPM	-	123	118	5	117	68	120.0	156	135	140	152	68	
	Vel Max	m/s	-	-	2.77	-	-	-	-	0.61	0.48	0.55	0.87	1.20	
	Vel Min	m/s	-	-	2.40	-	-	-	-	0.68	0.85	0.63	0.66	1.05	
	Flow	CFM	-	-	24.42679594	-	-	-	-	6.09	6.28	5.58	7.23	10.63	
	Temp	°C	-	-	6.7	-	-	-	-	21.7	20.1	18.7	15.4	-1.8	
	Comments		closed no change	closed	closed->cracked	cracked->closed	closed->cracked	cracked	cracked	cracked->1/2T	1/2T	1/2T	1/2T	1/2T	1/2->cracked
	5-46	Well	"H ₂ O	0.09	0.00	0.24	-0.22	-0.43	0.12	-0.44	-0.09	-0.02	0.03	0.02	-2.18
Lateral		"H ₂ O	-15.01	-30.76	-25.71	12.70	-13.79	-7.11	-5.06	-3.23	-5.69	-5.91	-4.10	-2.84	
CH ₄		%	57.6	56.0	57.9	39.8	38.6	57.2	48.6	28.3	36.8	25.8	59.3	55.1	
CO ₂		%	42.2	41.0	42.0	32.1	34.3	40.7	39.2	21.1	24.6	36.9	40.7	44.4	
O ₂		%	0.1	1.8	0.1	4.7	1.9	0.0	0.4	9.1	8.4	7.1	0.0	0.2	
BAL (N ₂)		%	0.0	0.0	0.0	23.4	24.9	2.1	11.7	41.5	30.2	30.2	0.0	0.3	
CO		PPM	5	4	4.0	17	16	5	34	4	6	4	5	5	
H ₂ S		PPM	-	123	102.0	10	14	63	60	15	12	19	66	65	
Vel Max		m/s	0.61	-	3.5	-	-	-	-	1.26	-	-	2.05	1.61	
Vel Min		m/s	0.55	-	3.4	-	-	-	-	1.40	-	-	1.71	2.32	
Flow		CFM	5.48067375	-	32.36432344	-	-	-	-	12.57	-	-	17.8	18.6	
Temp		°C	-6.9	-	7.8	-	-	-	-	21.6	-	-	1.8	2.1	
Comments			cracked	-	?->cracked	cracked->closed	cracked->closed	closed->cracked	cracked	cracked->closed	closed	closed	closed->1T	1T	
6-47		Well	"H ₂ O	-3.93	-5.90	-4.22	8.32	-10.15	-7.09	-4.87	-3.16	-2.42	-1.95	-3.35	-2.79
	Lateral	"H ₂ O	-18.87	-6.60	-4.94	-8.63	-11.69	-7.20	-4.98	-3.24	-2.09	-2.19	-3.86	-4.02	
	CH ₄	%	57.5	19.8	0.0	63.6	59.0	60.9	58.5	54.0	60.9	61.3	61.2	56.8	
	CO ₂	%	34.9	12.1	0.1	36.3	37.7	38.2	37.5	34.7	37.9	38.1	38.3	38.3	
	O ₂	%	2.1	17.1	21.0	0.1	0.6	0.0	0.2	1.8	0.3	0.5	0.5	0.1	
	BAL (N ₂)	%	3.1	49.9	8.8	0.0	2.8	0.9	3.7	9.5	0.9	0.0	0.0	3.0	
	CO	PPM	3T no change	0	1	2	4	4	5	4	4	4	4	4	
	H ₂ S	PPM	-	13	1	32	18	22	26	23	20	20	14	10	
	Vel Max	m/s	2.48	0.60	-	0.44	-	-	-	0.44	0.00	0.68	0.75	0.22	
	Vel Min	m/s	2.40	0.44	-	0.00	-	-	-	0.44	0.00	0.00	0.46	0.96	
	Flow	CFM	23.0566275	4.9137075	-	2.07887625	-	-	-	4.2	0	3.21	5.72	5.58	
	Temp	°C	-8.3	-22.0	-	18.0	-	-	-	25.6	15.2	2.6	0.5	0.0	
	Comments		full open, no change	FULL OPEN -> 4T	4T->closed	closed->cracked	cracked->1	1T->no change	1T	1T	1->2T	2T	2T	2T	
	6-48	Well	"H ₂ O	0.65	-0.10	-5.14	-8.17	1.27	-2.34	-4.65	-2.86	-2.01	-1.70	-2.84	1.44
Lateral		"H ₂ O	-18.44	-5.80	-4.83	-8.91	-11.68	-7.23	-4.78	-3.05	-2.11	-2.12	-3.08	-2.94	
CH ₄		%	61.2	62.9	52.6	42.8	63.1	53.9	55.2	55.8	60.9	63.0	62.3	59.6	
CO ₂		%	33.9	35.7	30.7	25.7	35.8	32.2	33.2	33.1	37.1	36.4	37.3	39.2	
O ₂		%	1.25T->no change	1.2	3.5	6.1	0.2	1.5	1.6	1.3	0.1	0.2	0.3	1.1	
BAL (N ₂)		%	1.6	0.0	13.3	25.4	0.9	12.4	10.0	9.8	1.9	0.0	0.0	0.1	
CO		PPM	2	2	3	2	3	4	4	4	3	4	3	9	
H ₂ S		PPM	-	27	7	4	35	9	16	20	22	18	11	9	
Vel Max		m/s	0.44	0.63	1.43	-	-	-	-	0.44	0.47	0.81	1.50	0.75	
Vel Min		m/s	0.00	0.44	0.81	-	-	-	-	0.44	0.00	0.58	0.82	1.60	
Flow		CFM	2.07887625	5.055449063	10.58337	-	-	-	-	4.2	2.2	6.6	11.0	11.1	
Temp		°C	-9.8	-20.9	5.7	-	-	-	-	25.4	16.3	1.9	0.2	2.4	
Comments			3/4T	3/4T	3/4T	3/4->closed	closed->cracked	cracked-> 1/2T	1/2T	1/2->1T	1->2T	2T	2T	2T	
6-49		Well	"H ₂ O	0.85	-7.64	0.27	-0.73	0.05	0.18	0.10	0.22	-0.19	-0.85	0.09	-0.56
	Lateral	"H ₂ O	-10.72	-9.29	-4.80	-12.03	-4.80	-6.67	-4.46	-2.98	-2.47	-2.35	-4.08	-2.62	
	CH ₄	%	57.6	36.8	60.2	48.5	56.5	59.5	58.8	58.7	58.3	58.3	59.8	58.6	
	CO ₂	%	39.7	23.6	39.8	35.4	40.1	38.4	38.3	39.1	40.3	40.8	40.2	41.0	
	O ₂	%	1.3	9.7	0.0	2.9	0.2	0.0	0.0	0.0	0.1	0.4	0.0	0.4	
	BAL (N ₂)	%	0.0	30.4	0.0	13.2	3.2	2.1	2.4	2.2	1.3	0.5	0.0	0.0	
	CO	PPM	0	1	3	7	6	3	4	4	7	6	5	5	
	H ₂ S	PPM	-	228	109	134	321	339	172	371	283	293	247	24	
	Vel Max	m/s	KANAFLEX	0.83	2.68	-	-	-	-	2.71	3.98	5.11	4.12	5.93	
	Vel Min	m/s	IS	0.79	2.50	-	-	-	-	2.83	3.67	3.58	3.58	5.07	
	Flow	CFM	FROZEN	7.654044375	24.47404313	-	-	-	-	26.17	36.14	42.81	36.38	51.97	
	Temp	°C	-	-	6.5	-	-	-	-	27.4	21.2	18.9	17.6	17.9	
	Comments		FROZEN	FROZEN	frozen-> 1/2T	1/2->cracked	cracked->1/2	1/2T->no change	1/2T	1/2->1T	1->2T	2T	2T	2T	

Table 2: Wellfield Monitoring Data

	Units	23/Jan/19	28/Feb/19	22/Mar/19	22/Apr/19	28/May/19	24/Jun/19	18/Jul/19	24/Aug/19	19/Sep/19	29/Oct/19	25/Nov/19	29/Dec/19	
6-50	Well	"H ₂ O	0.13	0.13	-0.10	0.13	-0.23	0.05	0.04	0.07	0.14	0.23	-2.98	0.32
	Lateral	"H ₂ O	-10.97	-9.95	-4.54	-11.92	-10.10	-6.69	-4.15	-2.89	-1.73	-2.29	-3.69	-2.30
	CH ₄	%	55.7	56.4	14.7	57.5	19.4	57.9	45.8	28.7	55.7	47.9	49.9	56.7
	CO ₂	%	43.0	43.0	12.3	42.0	16.3	40.6	38.9	27.9	43.1	43.1	39.1	42.3
	O ₂	%	0.2	0.5	16.0	0.5	11.7	0.1	1.6	6.1	0.3	1.0	6.0	0.0
	BAL (N ₂)	%	0.0	0.0	57.1	0.0	52.6	1.6	13.7	37.3	0.9	8.1	5.0	0.0
	CO	PPM	4	4	5	4	5	6	9	4	5	5	4	5
	H ₂ S	PPM	-	172	6	207	12	255.0	128	3	398	30	156	13
	Vel Max	m/s	KANAFLEX	-	-	-	-	-	-	0.44	0.00	0.83	0.98	1.13
	Vel Min	m/s	IS	-	-	-	-	-	-	0.44	0.00	0.74	0.84	1.00
	Flow	CFM	FROZEN	-	-	-	-	-	-	4.2	0.0	7.4	8.6	10.1
	Temp	°C	-	-	-	-	-	-	-	26.4	17.8	2.7	5.8	-9.5
	Comments				? -> closed	closed->cracked	cracked->closed	closed -> cracked	cracked	cracked->closed	closed->cracked	cracked	cracked	FROZEN
	6-51	Well	"H ₂ O	0.24	0.28	-1.16	-2.71	0.23	0.04	0.10	0.12	-0.10	-0.25	-3.60
Lateral		"H ₂ O	-15.26	0.23	-4.50	-11.23	-14.70	-6.55	-4.42	-2.17	-2.14	-2.64	-4.23	-2.69
CH ₄		%	54.1	53.0	39.8	31.8	55.8	53.4	52.9	53.8	21.1	42.1	52.4	52.8
CO ₂		%	45.8	46.5	36.5	31.1	44.3	45.0	44.6	46.0	43.8	45.2	46.2	47.2
O ₂		%	0.2	0.2	3.2	4.0	0.0	0.0	0.1	0.0	0.4	0.3	1.2	0.0
BAL (N ₂)		%	0.0	0.0	20.6	33.2	0.0	1.6	2.5	0.3	4.8	12.4	0.2	0.0
CO		PPM	4	2	27	11	4	9	10	9	11	5	6	10
H ₂ S		PPM	-	159	65	15	258	81	95	92	15	56	74	37
Vel Max		m/s	KANAFLEX	NO LAT VAC	5.73	-	-	-	-	1.24	1.41	1.45	2.14	0.00
Vel Min		m/s	IS	NO LAT VAC	4.08	-	-	-	-	1.72	1.25	1.59	1.87	0.00
Flow		CFM	FROZEN	46.34949094	-	-	-	-	-	14.0	12.6	14.4	18.9	0.0
Temp		°C	-	NO LAT VAC	-	-	-	-	-	19.0	18.2	15.2	13.4	-1.0
Comments				CRACKED	cracked	cracked->closed	closed->cracked	cracked -> no change	cracked	cracked->1/2T	1/2T	1/2T	1/2T	1/2T
6-52		Well	"H ₂ O	0.04	0.15	0.01	-0.03	0.00	0	-0.11	-0.08	0.02	-1.51	-1.91
	Lateral	"H ₂ O	-12.96	-9.35	NLV	-12.44	-13.95	-6.02	-4.51	-2.44	-1.72	-2.33	-3.72	-2.27
	CH ₄	%	9.2	25.3	18.5	19.7	23.1	11.1	1.5	16.1	15.5	0.6	57.6	18.9
	CO ₂	%	13.9	30.4	24.8	28.9	31.9	23.5	28.3	28.0	0.8	38.2	19.2	
	O ₂	%	15.1	7.1	9.1	3.4	2.2	5.3	18.1	2.4	4.0	20.7	3.2	13.8
	BAL (N ₂)	%	60.3	37.2	47.6	48.0	42.9	60.1	78.0	53.1	52.5	77.9	1.0	48.1
	CO	PPM	-6	2	3	3	3	2	2	4	5	0	1	2
	H ₂ S	PPM	-	5	1	11	40	19	7	5	2	2	2	2
	Vel Max	m/s	-	-	NO LAT VAC	-	-	-	-	-	-	SURGING	-	-
	Vel Min	m/s	-	-	NO LAT VAC	-	-	-	-	-	-	SURGING	-	-
	Flow	CFM	-	-	#VALUE!	-	-	-	-	-	-	SURGING	-	-
	Temp	°C	-	-	NO LAT VAC	-	-	-	-	-	-	SURGING	-	-
	Comments		closed no change	closed	closed	closed	closed	closed -> no change	cracked->closed	closed	closed	2T -> closed	closed	closed
	6-53	Well	"H ₂ O	-4.25	-2.10	-1.63	-0.35	-0.70	-1.2	-0.89	0.21	-0.55	-5.45	0.02
Lateral		"H ₂ O	-9.03	FROZEN	-4.81	-9.55	-15.25	-4.8	-3.53	-4.24	-1.31	-6.12	-3.99	-1.52
CH ₄		%	48.4	61.6	58.1	59.4	61.2	58.0	60.3	57.2	61.1	59.8	59.4	60.1
CO ₂		%	34.7	37.8	38.7	38.6	38.7	37.6	37.5	40.5	38.3	40.2	39.7	37.9
O ₂		%	0.4	0.5	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.4
BAL (N ₂)		%	16.5	0.1	3.2	1.8	0.0	4.4	2.1	2.3	0.7	0.0	0.2	1.5
CO		PPM	4	3	5	3	7	7.0	8	6	5	5	5	6
H ₂ S		PPM	-	53	77	63	293	193.0	398	264	192	212	241	274
Vel Max		m/s	25.91	FROZEN	3.47	6.91	-	-	-	7.33	6.00	6.10	5.29	6.07
Vel Min		m/s	25.41	FROZEN	3.02	6.59	-	-	-	8.25	5.32	6.25	5.10	5.30
Flow		CFM	242.4725663	#VALUE!	30.66342469	63.78370313	-	-	-	73.61	53.48	58.35	49.09	53.72
Temp		°C	35.8	FROZEN	5.1	-	-	-	-	30.7	32.7	33.9	32.3	26.4
Comments			full open, no change	FULL OPEN	full -> 1/2T	1/2->1T	1->2	2T -> no change	2T	2->3T	3T	3T	3T	3T -> 2T
6-54		Well	"H ₂ O	-0.92	0.39	0.52	-1.04	0.35	0.05	-0.11	0.07	0.54	-0.98	-0.72
	Lateral	"H ₂ O	-11.79	0.05	NO LAT VAC	-9.13	-14.08	-5.90	-1.61 Surging	-0.37	-1.42	-6.87	-4.43	SURGING
	CH ₄	%	45.5	60.1	60.2	37.1	60.4	58.5	58.3	59.2	59.4	58.0	53.2	59.7
	CO ₂	%	31.0	37.6	39.7	26.0	39.6	39.2	38.2	39.6	39.1	40.3	46.8	40.2
	O ₂	%	4.5	1.4	0.1	4.7	0.0	0.0	0.9	0.1	0.8	0.3	0.0	0.1
	BAL (N ₂)	%	18.9	1.6	0.0	32.2	0.0	2.3	2.6	1.1	0.6	1.4	0.0	0.0
	CO	PPM	12	1	3	4	3	5	5	5	4	3	5	3
	H ₂ S	PPM	-	37	116	18	64	34	52	96	126	98	102	8
	Vel Max	m/s	2.85	FROZEN	NO LAT VAC	-	-	-	-	SURGING	SURGING	2.31	2.56	SURGING
	Vel Min	m/s	2.75	FROZEN	NO LAT VAC	-	-	-	-	SURGING	SURGING	2.58	2.14	SURGING
	Flow	CFM	26.458425	-	-	-	-	-	-	SURGING	SURGING	23.10	22.21	SURGING
	Temp	°C	14.8	FROZEN	NO LAT VAC	-	-	-	-	SURGING	SURGING	37.1	34.6	SURGING
	Comments		cracked	cracked	cracked	cracked->closed	closed->cracked	cracked -> 1/2T	1/2T	1/2->1T	1T	1T	1T	1T -> 2T

Table 2: Wellfield Monitoring Data

	Units	23/Jan/19	28/Feb/19	22/Mar/19	22/Apr/19	28/May/19	24/Jun/19	18/Jul/19	24/Aug/19	19/Sep/19	29/Oct/19	25/Nov/19	29/Dec/19		
6-55	Well	"H ₂ O	0.18	0.30	0.26	-1.07	0.12	0.12	0.16	0.16	-0.23	-5.87	-0.01	-0.25	
	Lateral	"H ₂ O	-15.35	-7.80	NO LAT VAC	-3.38	-14.74	-6.23	-2.34	Surging	-3.22	-0.81	-6.55	-3.18	-1.96
	CH ₄	%	62.9	62.5	62.7	56.3	0.0	62.1	62.3	62.0	58.8	59.9	58.7	59.3	
	CO ₂	%	36.9	37.1	37.3	39.2	0.2	36.2	36.4	36.8	40.2	35.6	41.3	40.7	
	O ₂	%	0.2	0.3	0.0	0.0	18.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	BAL (N ₂)	%	0.0	0.0	0.0	4.5	81.1	1.7	1.3	1.2	1.1	4.5	0.0	0.0	
	CO	PPM	6	4	2.0	4	3	6	7	7	6	7	6	8	
	H ₂ S	PPM	-	36	236.0	261	140	253	>>>>	410	310	321	385	TOO BIG	
	Vel Max	m/s	KANAFLEX	FROZEN	NO LAT VAC	0.75	-	-	-	8.49	SURGING	6.36	5.68	4.43	
	Vel Min	m/s	IS	FROZEN	NO LAT VAC	0.71	-	-	-	9.60	SURGING	6.97	5.41	2.70	
	Flow	CFM	FROZEN	-	-	6.898089375	-	-	-	85.47	SURGING	63.0	52.4	33.7	
	Temp	°C	-	FROZEN	NO LAT VAC	-	-	-	-	32.0	SURGING	30.5	28.5	15.6	
	Comments		-	FROZEN	FROZEN->?	cracked	cracked->closed	closed->cracked	cracked->1/2T	1/2->3T	3T	3T	3T	3T->2T	
	6-56	Well	"H ₂ O	0.10	0.07	0.60	0.11	0.04	0.03	0.04	-0.06	-0.31	-3.34	-1.61	0.03
Lateral		"H ₂ O	NO VAC	NO VAC	NO LAT VAC	NLV	NLV	NLV	NLV	-1.24	-1.11	-6.98	-3.41	FROZEN	
CH ₄		%	63.9	63.8	44.2	61.7	56.3	61.1	61.40	61.0	17.7	62.4	56.2	50.0	
CO ₂		%	35.9	34.9	31.8	36.4	36.1	36.6	35.80	37.3	17.9	35.8	43.8	36.1	
O ₂		%	0.0	0.8	0.0	0.0	0.2	0.0	0.00	0.0	7.5	0.0	0.0	0.1	
BAL (N ₂)		%	0.2	0.8	24.0	1.9	7.5	2.9	2.90	1.7	57.0	1.8	0.0	13.8	
CO		PPM	6	4	3	5	5	6	7.00	7	16	19	22	5	
H ₂ S		PPM	-	182	20	67	323	138	244	414	11	303	361	102	
Vel Max		m/s	no	no	NO LAT VAC	NLV	-	-	-	SURGING	SURGING	2.45	1.56	FROZEN	
Vel Min		m/s	lateral vacuum	lateral vacuum	NO LAT VAC	NLV	-	-	-	SURGING	SURGING	2.69	1.05	FROZEN	
Flow		CFM	-	-	-	-	-	-	-	SURGING	SURGING	24.3	12.3	FROZEN	
Temp		°C	-	-	NO LAT VAC	NLV	-	-	-	SURGING	SURGING	30.1	28.7	FROZEN	
Comments			closed-> no change	closed-> no change	closed	closed	closed	NLV	NLV	2T	2T	2T	2T	2->closed	
6-57		Well	"H ₂ O	0.10	0.20	0.28	0.19	0.41	0.16	0.05	0.02	0.01	-0.24	-2.96	0.19
	Lateral	"H ₂ O	NO VAC	NO VAC	NO LAT VAC	NLV	NLV	NLV	NLV	-1.19	-1.39	-6.89	-3.11	-3.01	
	CH ₄	%	60.2	59.5	57.1	59.8	60.9	59.1	59.3	59.4	56.0	55.3	54.7	52.4	
	CO ₂	%	36.2	35.4	36.3	36.8	39.1	38.3	37.7	39.9	39.6	37.1	40.0	36.8	
	O ₂	%	0.1	1.1	1.0	0.0	0.0	0.0	0.0	0.0	1.3	1.5	0.3	0.0	
	BAL (N ₂)	%	3.6	4.1	5.3	3.4	0.0	2.6	3.0	0.7	3.0	6.1	5.0	10.8	
	CO	PPM	4	3	6	4	6	6	7	7	6	5	1	6	
	H ₂ S	PPM	-	20	11	29	142	43	82	52	18	45	66	13	
	Vel Max	m/s	no	no	NO LAT VAC	NLV	-	-	-	3.62	7.11	3.01	2.41	6.71	
	Vel Min	m/s	lateral vacuum	lateral vacuum	NO LAT VAC	NLV	-	-	-	4.21	5.36	3.26	2.17	6.39	
	Flow	CFM	-	-	-	-	-	-	-	37.0	58.9	29.6	21.6	61.9	
	Temp	°C	-	-	NO LAT VAC	NLV	-	-	-	31.0	30.2	28.7	25.0	21.7	
	Comments		no lat vac	no lat vac	NO LAT VAC	closed	closed	NLV	NLV	2T	2T	2T	2T	2T	
	6-58	Well	"H ₂ O	0.11	0.12	0.17	0.13	0.10	0.04	0.02	0.07	-0.65	-3.18	-0.02	
Lateral		"H ₂ O	NO VAC	NO VAC	NO LAT VAC	NLV	NLV	NLV	NLV	-0.69	-1.01	-6.02	-4.01	-2.62	
CH ₄		%	62.7	30.2	59.6	61.5	63.5	61.4	62.0	62.5	53.5	52.4	55.9	48.8	
CO ₂		%	37.3	21.9	40.4	36.8	36.3	38.8	34.9	35.8	35.6	33.1	41.9	33.8	
O ₂		%	0.0	9.8	0.0	0.0	0.1	0.0	0.0	0.0	0.4	0.5	2.1	0.6	
BAL (N ₂)		%	0.0	37.4	0.0	1.6	0.2	2.8	3.0	1.7	10.5	14.0	0.1	16.9	
CO		PPM	4	4	27	4	4	4	5	4	6	4	1	5	
H ₂ S		PPM	-	11	27	125	>>>	232	274	>>>>	56	66	78	15	
Vel Max		m/s	no	no	NO LAT VAC	NLV	-	-	-	SURGING	SURGING	2.74	1.86	2.04	
Vel Min		m/s	lateral vacuum	lateral vacuum	NO LAT VAC	NLV	-	-	-	SURGING	SURGING	2.98	1.53	1.87	
Flow		CFM	-	-	-	-	-	-	-	SURGING	SURGING	27.03	16.02	18.47	
Temp		°C	-	-	NO LAT VAC	NLV	-	-	-	SURGING	SURGING	27.3	24.1	16.0	
Comments			no lat vac	no lat vac	NO LAT VAC	closed	closed	NLV	NLV	2T	2T	2T	2T	2->1T	
6-59		Well	"H ₂ O	0.12	0.20	0.14	0.19	0.18	0.16	0.01	-0.03	0.03	0.04	0.02	0.12
	Lateral	"H ₂ O	NO VAC	NO VAC	NO LAT VAC	NLV	NLV	NLV	NLV	-0.78	NLV	NLV	NLV	-3.90	
	CH ₄	%	61.4	59.0	59.3	58.8	59.7	59.5	60.3	58.5	58.4	58.1	57.6	47.3	
	CO ₂	%	37.9	40.3	40.7	40.5	40.1	38.2	38.6	39.6	39.9	38.7	39.5	32.6	
	O ₂	%	0.0	0.5	0.0	0.6	0.2	0.4	0.6	1.7	0.2	0.6	1.2	1.9	
	BAL (N ₂)	%	0.0	0.0	0.0	0.0	0.0	1.0	0.6	0.0	1.5	2.6	1.7	18.2	
	CO	PPM	6	9	31	7	10	12	11	7	8	6	3	21	
	H ₂ S	PPM	-	15	28	227	129	70	121	109	119	120	142	4	
	Vel Max	m/s	no	no	NO LAT VAC	NLV	-	-	-	2.94	-	-	-	0.00	
	Vel Min	m/s	lateral vacuum	lateral vacuum	NO LAT VAC	NLV	-	-	-	3.51	-	-	-	0.00	
	Flow	CFM	-	-	-	-	-	-	-	30.47	-	-	-	0	
	Temp	°C	-	-	NO LAT VAC	NLV	-	-	-	25.1	-	-	-	-9.3	
	Comments		no lat vac	no lat vac	NO LAT VAC	closed	closed	NLV	NLV	2T	NLV	NLV	NLV	2T	

Table 2: Wellfield Monitoring Data

	Units	23/Jan/19	28/Feb/19	22/Mar/19	22/Apr/19	28/May/19	24/Jun/19	18/Jul/19	24/Aug/19	19/Sep/19	29/Oct/19	25/Nov/19	29/Dec/19	
7-60	Well	"H ₂ O	4.41	-2.10	-4.63	-8.11	0.77	-4.49	-4.84	-3.10	-2.10	-1.96	-3.64	-2.19
	Lateral	"H ₂ O	-18.57	-5.90	-5.26	-8.53	NLV	-7.09	-5.02	-3.32	-2.23	-2.63	-3.76	-2.74
	CH ₄	%	64.6	29.9	62.7	52.6	64.4	62.3	62.4	55.8	64.2	58.4	56.8	46.8
	CO ₂	%	34.5	16.4	32.9	30.2	33.8	34.5	34.4	30.8	33.6	29.8	41.2	24.5
	O ₂	%	0.4	12.8	1.2	2.4	0.0	0.0	0.1	1.8	0.2	2.9	2.0	6.1
	BAL (N ₂)	%	0.0	33.5	3.3	14.8	1.7	3.2	3.1	11.6	2.0	9.0	0.0	22.6
	CO	PPM	2	0	3	3	4	4	5	4	4	4	3	3
	H ₂ S	PPM	-	23	19	28	50	38	56	43	44	50	52	4
	Vel Max	m/s	-	0.44	0.63	0.44	-	-	-	0.44	0.00	SURGING	SURGING	0.00
	Vel Min	m/s	-	0.00	0.56	0.00	-	-	-	0.47	0.00	SURGING	SURGING	0.00
	Flow	CFM	-	2.07887625	5.622415313	2.07887625	-	-	-	4.30	0	SURGING	SURGING	0
	Temp	°C	-	-22.0	5.6	17.9	-	-	-	25.6	14.7	SURGING	SURGING	-9.3
	Comments		valve is frozen	valve is frozen	frozen -> 1/2T	1/2T	closed	closed -> 1T	1->2T	2T	2T	2T	2T	2T (FROZEN)
7-61	Well	"H ₂ O	0.56	0.50	0.49	0.38	Goose	0.45	0.85	0.19	-0.61	-3.56	-3.82	1.27
	Lateral	"H ₂ O	NO VAC	NO VAC	NO LAT VAC	GOOSE	NLV	NLV	NLV	-2.34	-2.19	-6.35	-4.34	-3.22
	CH ₄	%	55.7	55.6	55.9	55.8	-	56.1	56.8	55.7	52.5	51.4	58.5	57.7
	CO ₂	%	44.1	44.3	44.9	44.2	-	43.2	42.6	41.9	44.7	42.8	40.6	42.3
	O ₂	%	0.1	0.0	0.2	0.0	-	0.0	0.0	0.1	0.1	0.1	0.7	0.0
	BAL (N ₂)	%	0.0	0.0	0.0	0.0	-	0.7	0.6	2.3	2.6	5.7	0.2	0.0
	CO	PPM	6	5	16	27	6	6	6	6	19	12	15	5
	H ₂ S	PPM	-	171	7	252	-	314	>>>>	>>>>	>>>>	>>>>	>>>>	253
	Vel Max	m/s	no	no	NO LAT VAC	GOOSE	-	-	4.02	4.22	4.75	4.86	4.86	0.72
	Vel Min	m/s	lateral vacuum	lateral vacuum	NO LAT VAC	GOOSE	-	-	-	5.01	4.21	4.60	4.51	0.59
	Flow	CFM	-	-	-	-	-	-	-	42.7	42.3	41.7	44.3	6.2
	Temp	°C	-	-	NO LAT VAC	GOOSE	-	-	-	24.7	13.1	12.0	11.6	-8.8
	Comments		no lat vac	no lat vac	NO LAT VAC	closed	closed	NLV	NLV	2T	2T	2T	2T	2T
7-62	Well	"H ₂ O	0.60	1.00	0.59	0.57	0.69	0.52	0.71	0.44	0.17	0.02	0.09	1.16
	Lateral	"H ₂ O	no vac	no vac	NO LAT VAC	NLV	NLV	NLV	NLV	-3.20	NLV	-4.12	NLV	BURIED
	CH ₄	%	59.7	59.9	59.6	59.34.0	58.6	58.4	59.2	60.0	58.9	61.5	60.4	58.1
	CO ₂	%	40.2	40.1	40.0	39.9	39.0	38.4	39.0	38.3	39.0	37.1	38.5	41.9
	O ₂	%	0.2	0.0	0.4	0.0	0.2	0.0	0.0	0.2	0.5	0.6	1.0	0.0
	BAL (N ₂)	%	0.0	0.0	0.0	0.7	2.2	3.2	2.4	0.8	0.1	0.8	0.1	0.0
	CO	PPM	4	3	4.0	3	6	4	5	5	7	3	4	4
	H ₂ S	PPM	-	352	7.0	289	>>>	474	>>>>	>>>>	>>>>	>>>>	>>>>	155
	Vel Max	m/s	no	no	NO LAT VAC	NLV	-	-	-	0.00	-	3.65	-	BURIED
	Vel Min	m/s	lateral vacuum	lateral vacuum	NO LAT VAC	NLV	-	-	-	0.00	-	4.87	-	BURIED
	Flow	CFM	-	-	-	-	-	-	-	0	-	40.25	-	BURIED
	Temp	°C	-	-	NO LAT VAC	NLV	-	-	-	26.8	-	24.0	-	BURIED
	Comments		no lat vac	no lat vac	NO LAT VAC	closed	closed	NLV	NLV	3T	NLV	3T	NLV	3T -> 1T
7-64	Well	"H ₂ O	0.20	0.30	0.08	0.23	0.10	0.06	0.13	0	0.23	-2.39	0.29	
	Lateral	"H ₂ O	no vac	no vac	NO LAT VAC	NLV	NLV	NLV	NLV	-0.07	NLV	-5.98	-4.19	-3.67
	CH ₄	%	52.4	55.0	55.6	55.7	58.3	59.5	60.2	59.3	58.2	57.6	56.6	53.3
	CO ₂	%	33.1	44.3	44.6	44.3	38.8	38.5	38.4	40.5	40.4	39.1	39.4	35.3
	O ₂	%	0.4	0.4	0.0	0.0	0.3	0.0	0.0	0.0	0.8	0.5	2.0	0.9
	BAL (N ₂)	%	14.2	0.0	0.0	0.0	2.6	2.0	1.4	0.2	0.6	2.8	2.0	10.5
	CO	PPM	4	4	14	22	5	4	5	6	6	4	3	5
	H ₂ S	PPM	-	332	7	>>>	135	86	242	89	263	222	254	99
	Vel Max	m/s	no	no	NO LAT VAC	NLV	-	-	-	0.52	-	4.51	3.50	6.38
	Vel Min	m/s	lateral vacuum	lateral vacuum	NO LAT VAC	NLV	-	-	-	0.67	-	4.88	0.41	5.77
	Flow	CFM	-	-	-	-	-	-	-	5.62	-	44.4	18.5	57.4
	Temp	°C	-	-	NO LAT VAC	NLV	-	-	-	24.1	-	22.6	21.5	3.9
	Comments		no vac	no vac	NO LAT VAC	closed	closed	NLV	NLV	NLV	NLV	2T	2T	2T
7-65	Well	"H ₂ O	0.16	0.20	0.26	0.30	0.12	0.07	0.02	-0.03	0.03	0.06	-1.06	0.10
	Lateral	"H ₂ O	no vac	no vac	NO LAT VAC	NLV	NLV	NLV	NLV	-5.86	NLV	-4.14	-3.59	
	CH ₄	%	59.3	60.6	60.4	60.2	59.1	60.1	61.3	59.5	59.7	59.6	55.3	58.9
	CO ₂	%	37.6	37.8	38.6	39.5	38.5	38.3	37.8	38.3	38.7	36.6	38.6	37.2
	O ₂	%	0.5	0.7	0.0	0.1	0.0	0.0	0.3	0.0	0.0	0.0	0.1	0.1
	BAL (N ₂)	%	2.5	0.9	1.0	0.0	2.5	1.7	0.7	2.2	1.6	3.8	6.0	3.8
	CO	PPM	6	3	3	4	7	5	6	5	4	3	8	8
	H ₂ S	PPM	-	153	263	275	236	139	347	171	78	67	86	193
	Vel Max	m/s	no	no	NO LAT VAC	NLV	-	-	-	-	-	3.05	3.52	SURGING
	Vel Min	m/s	lateral vacuum	lateral vacuum	NO LAT VAC	NLV	-	-	-	-	-	3.41	3.96	SURGING
	Flow	CFM	-	-	-	-	-	-	-	-	-	30.5	35.3	SURGING
	Temp	°C	-	-	NO LAT VAC	NLV	-	-	-	-	-	15.3	12.5	SURGING
	Comments		no lat vac	no lat vac	NO LAT VAC	closed	closed	NLV	NLV	NLV	NLV	2T	2T	2T -> 1T

Table 2: Wellfield Monitoring Data

	Units	23/Jan/19	28/Feb/19	22/Mar/19	22/Apr/19	28/May/19	24/Jun/19	18/Jul/19	24/Aug/19	19/Sep/19	29/Oct/19	25/Nov/19	29/Dec/19	
7-66	Well	"H ₂ O									-	-	0.2	
	Lateral	"H ₂ O									-	-	NLV	
	CH ₄	%									-	-	60.7	
	CO ₂	%									-	-	39.1	
	O ₂	%									-	-	0.2	
	BAL (N ₂)	%									-	-	0	
	CO	PPM									-	-	11	
	H ₂ S	PPM									-	-	242	
	Vel Max	m/s									-	-	-	
	Vel Min	m/s									-	-	-	
	Flow	CFM									-	-	-	
	Temp	°C									-	-	-	
	Comments										CNF	CNF	NLV	
	MH-16	Well	"H ₂ O		0.02	0.02	0.10	-0.09	0.00	-0.06	-0.10	-0.02	0.03	0.02
Lateral		"H ₂ O		NO VAC	-5.43	-9.01	-11.78	-9.09	-4.97	-2.90	-2.54	NLV	NLV	-5.32
CH ₄		%		55.7	26.4	56.3	9.2	56.0	43.8	25.9	48.7	58.5	56.3	56.2
CO ₂		%		43.7	21.2	42.3	6.6	43.0	36.5	19.2	39.3	40.6	41.2	24.8
O ₂		%		0.5	10.7	0.3	15.9	0.4	3.9	10.1	2.5	0.8	2.1	1.6
BAL (N ₂)		%		0.0	41.7	1.2	58.4	0.5	15.7	44.8	9.6	0.0	0.4	17.4
CO		PPM		3	2	2	0	3	3	1	2	3	4	2
H ₂ S		PPM		42	7	39	6	59	32	42	27	26	30	26
Vel Max		m/s		-	NO PORT	NO PORT	No Port	-	-	-	-	-	-	-
Vel Min		m/s		-	NO PORT	NO PORT	No Port	-	-	-	-	-	-	-
Flow		CFM		-	-	-	-	-	-	-	-	-	-	-
Temp		°C		-	NO PORT	NO PORT	-	-	-	-	-	-	-	-
Comments				NO LAT VAC	closed	closed->cracked	cracked->closed	closed -> cracked	cracked	cracked->closed	closed	NLV	NLV	closed
MH-19		Well	"H ₂ O							0.01	-0.07	0.01	0.06	0.07
	Lateral	"H ₂ O							-4.97	-2.81	-1.99	NLV	NLV	-5.47
	CH ₄	%							55.4	49.1	27.5	55.2	51.9	54.3
	CO ₂	%							43.2	38.7	22.4	37.4	48.1	35.7
	O ₂	%							0.0	1.6	9.6	2.1	0.0	1.4
	BAL (N ₂)	%							1.4	10.7	40.5	7.4	0.0	8.6
	CO	PPM							3	2	1	2	3	3
	H ₂ S	PPM							91	19	19	18	24	21
	Vel Max	m/s							-	-	-	-	-	-
	Vel Min	m/s							-	-	-	-	-	-
	Flow	CFM							-	-	-	-	-	-
	Temp	°C							-	-	-	-	-	-
	Comments								cracked	cracked->1/2T	1/2->closed	closed->cracked	cracked->closed	closed
	MH-22	Well	"H ₂ O							-0.04	-0.07	-0.05	-0.01	-0.02
Lateral		"H ₂ O							-5.13	-1.38	-3.11	NLV	NLV	-5.19
CH ₄		%							14.2	46.3	26.0	52.5	54.7	55.5
CO ₂		%							10.8	35.2	14.8	39.9	42.7	37.4
O ₂		%							14.7	2.8	11.4	1.8	2.0	2.2
BAL (N ₂)		%							60.3	15.1	47.8	5.9	0.6	4.9
CO		PPM							2	2	2	2	1	5
H ₂ S		PPM							6	28	12	16	20	40
Vel Max		m/s							-	-	-	-	-	-
Vel Min		m/s							-	-	-	-	-	-
Flow		CFM							-	-	-	-	-	-
Temp		°C							-	-	-	-	-	-
Comments									closed	closed->cracked	1/4->closed	NLV	NLV	closed
MH-25		Well	"H ₂ O							0.01	-0.04	-0.03	-0.03	0.01
	Lateral	"H ₂ O							NLV	NLV	NLV	NLV	NLV	NLV
	CH ₄	%							59.5	58.8	61.4	56.4	58.2	-
	CO ₂	%							38.9	35.8	37.4	39.5	40.6	-
	O ₂	%							0.5	0.3	0.2	2.8	0.1	-
	BAL (N ₂)	%							1.1	5.1	1.0	1.3	1.1	-
	CO	PPM							3	3	4	3	5	-
	H ₂ S	PPM							233	60	67	35	15	-
	Vel Max	m/s							-	-	-	-	-	-
	Vel Min	m/s							-	-	-	-	-	-
	Flow	CFM							-	-	-	-	-	-
	Temp	°C							-	-	-	-	-	-
	Comments								NLV	NLV	NLV	NLV	NLV	NLV

Table 3: Pump Counters

Location	December 2018		January 2019		February 2019			March 2019			April 2019			May 2019			June 2019		
	Counter	Counter	Counts / mo	Litres / mo	Counter	Counts / mo	Litres / mo	Counter	Counts / mo	Litres / mo	Counter	Counts / mo	Litres / mo	Counter	Counts / mo	Litres / mo	Counter	Counts / mo	Litres / mo
PDT 1	4647	4647	0	0	4647	0	0	4647	0	0	4647	0	0	4647	0	0	4647	0	0
PDT 2	57628	57628	0	0	57628	0	0	57628	0	0	9159	-48469	-126019.4	10439	1280	3328	10692	253	657.8
PDT 3	13407	13407	0	0	14080	673	1749.8	14080	0	0	14164	84	218.4	14166	2	5.2	14186	20	52
PDT 4	no counter	no counter	-	-	no counter	-	-	no counter	-	-	no counter	-	-	no counter	-	-	no counter	-	-
PDT 5	32274	32274	0	0	32274	0	0	32274	0	0	58015	25741	66926.6	58330	315	819	58502	172	447.2
PDT 6	94165	96915	2750	7150	96918	3	7.8	96919	1	2.6	100980	4061	10558.6	100989	9	23.4	102780	1791	4656.6
PDT 7	8256	8256	0	0	8256	0	0	8256	0	0	8256	0	0	8256	0	0	no counter	-	-
PDT 8	18063	19174	1111	2888.6	19174	0	0	22996	3822	9937.2	24567	1571	4084.6	26828	2261	5878.6	29540	2712	7051.2
PDT 9	197611	205609	7998	20794.8	205609	0	0	210577	4968	12916.8	212900	2323	6039.8	215240	2340	6084	217546	2306	5995.6
PDT 10																			
PDT 11																			
PDT 12																			
H-4	264395	264395	0	0	284372	19977	51940.2	284372	0	0	293603	9231	24000.6	301440	7837	20376.2	307897	6457	16788.2
1-9	694088	694088	0	0	707567	13479	35045.4	707571	4	10.4	724845	17274	44912.4	732187	7342	19089.2	736949	4762	12381.2
1-10	531092	531092	0	0	538482	7390	19214	538489	7	18.2	552545	14056	36545.6	556860	4315	11219	560909	4049	10527.4
H-11	49336	49336	0	0	99391	50055	130143	99395	4	10.4	194039	94644	246074.4	247600	53561	139258.6	282384	34784	90438.4
2-18	109333	109333	0	0	414299	304966	792911.6	414321	22	57.2	547088	132767	345194.2	663535	116447	302762.2	761127	97592	253739.2
3-27	238279	238279	0	0	238279	0	0	238279	0	0	238279	0	0	238279	0	0	238279	0	0
3-29	no counter	no counter	-	-	no counter	-	-	no counter	-	-	no counter	-	-	829973	-	-	829973	4	10.4
3-30	69255	69255	0	0	69289	34	88.4	69297	8	20.8	69304	7	18.2	69310	6	15.6	69312	2	5.2

Location	July 2019			August 2019			September 2019			October 2019			November 2019			December 2019		
	Counter	Counts / mo	Litres / mo	Counter	Counts / mo	Litres / mo	Counter	Counts / mo	Litres / mo	Counter	Counts / mo	Litres / mo	Counter	Counts / mo	Litres / mo	Counter	Counts / mo	Litres / mo
PDT 1	4665	18	46.8	4676	11	28.6	4884	208	540.8	4931	47	122.2	4931	0	0	4931	0	0
PDT 2	10898	206	535.6	11232	334	868.4	11391	159	413.4	11599	208	540.8	12121	522	1357.2	12192	71	184.6
PDT 3	14228	42	109.2	14351	123	319.8	14487	136	353.6	16229	1742	4529.2	16255	26	67.6	16268	13	33.8
PDT 4	no counter	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PDT 5	58591	89	231.4	58897	306	795.6	Flooded	-	-	-	-	-	-	-	-	-	-	-
PDT 6	103477	697	1812.2	104105	628	1632.8	105304	1199	3117.4	136139	30835	80171	136145	6	15.6	136201	56	145.6
PDT 7	no counter	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PDT 8	31201	1661	4318.6	32394	1193	3101.8	34031	1637	4256.2	42392	8361	21738.6	45923	3531	9180.6	46173	250	650
PDT 9	220701	3155	8203	224763	4062	10561.2	No Reg	-	-	1150	-	-	1769	619	1609.4	1911	142	369.2
PDT 10										19	19	49.4	22	3	7.8	23	1	2.6
PDT 11										17	17	44.2	741	724	1882.4	855	114	296.4
PDT 12										17	17	44.2	22	5	13	22	0	0
H-4	313962	6065	15769	324606	10644	27674.4	330938	6332	16463.2	348298	17360	45136	355441	7143	18571.8	363145	7704	20030.4
1-9	740678	3729	9695.4	746461	5783	15035.8	749337	2876	7477.6	756701	7364	19146.4	761258	4557	11848.2	765504	4246	11039.6
1-10	563092	2183	5675.8	568981	5889	15311.4	572756	3775	9815	581221	8465	22009	583024	1803	4687.8	585541	2517	6544.2
H-11	282384	0	0	331942	49558	128850.8	369418	37476	97437.6	457125	87707	228038.2	478964	21839	56781.4	498024	19060	49556
2-18	840219	79092	205639.2	962977	122758	319170.8	992784	29807	77498.2	999999	7215	18759	25	-999974	-2599932.4	25	0	0
3-27	238279	0	0	238279	0	0	238279	0	0	238279	0	0	-	-	-	-	-	-
3-29	829977	0	0	829995	18	46.8	829999	4	10.4	829999	0	0	830071	72	187.2	830071	0	0
3-30	69321	9	23.4	69329	8	20.8	69333	4	10.4	69340	7	18.2	69405	65	169	69497	92	239.2

Table 4: Water Levels

Units	meters	Mar 14/15, 2019			May 3/14, 2019			Jul 29/15,2019			Sept 29/30,2019			Nov 29/30,2019			
		meters	meters	%	meters	meters	%	meters	meters	%	meters	meters	%	meters	meters	%	
Locations	Screen Length	Installed Well Depth	Depth to Water	Depth to Bottom	Open Screen	Depth to Water	Depth to Bottom	Open Screen	Depth to Water	Depth to Bottom	Open Screen	Depth to Water	Depth to Bottom	Open Screen	Depth to Water	Depth to Bottom	Open Screen
H-1	12	14.63	7.70	14.10	43.14	7.00	14.90	37.40	7.50	14.50	41.50	7.40	14.50	40.68	7.30	14.40	39.86
H-2	14	16.77	8.90	17.50	42.65	8.50	18.50	39.73	9.00	18.10	43.38	8.90	18.10	42.65	8.70	18.10	41.19
H-3	12	15.24	7.10	15.80	33.22	7.00	16.10	32.40	7.10	16.40	33.22	7.10	16.50	33.22	7.00	16.10	32.40
H-4*	11	14.02	NM	blocked	-	8.20	9.80	46.93	7.20	9.80	37.82	8.40	10.00	48.76	5.60	9.90	23.24
1-5	11	13.72	NM	blocked	-	7.70	14.80	43.59	8.20	14.60	48.27	8.00	14.70	46.40	7.80	14.20	44.53
1-6	12	15.55	10.30	15.30	56.96	10.60	16.60	59.42	10.90	16.60	61.88	11.20	16.80	64.34	10.70	16.30	60.24
1-7	18	21.34	12.60	19.50	52.21	13.90	20.20	59.32	14.80	20.00	64.24	14.60	20.00	63.15	12.90	18.30	53.85
1-8	21	24.39	15.60	22.70	58.81	11.20	23.90	38.19	15.70	23.50	59.28	15.20	24.00	56.94	15.10	23.70	56.47
1-9*	12	14.63	9.00	13.40	53.80	12.60	14.70	83.32	10.10	14.70	62.82	12.90	14.90	85.78	12.80	15.00	84.96
1-10*	9	12.20	7.70	11.10	50.85	10.20	11.80	78.19	10.60	11.50	82.56	10.00	11.90	76.00	9.30	11.60	68.35
H-11*	9	12.80	4.20	6.60	5.92	FOAM	12.50	-	6.40	11.20	29.97	FOAM	12.30	-	FOAM	12.40	-
H-12	13	16.16	NM	no port	-	NM	no port	-	NM	no port	-	NM	no port	-	NM	no port	-
2-13	21	25.00	9.40	19.50	26.90	7.60	19.00	18.47	7.60	9.70	18.47	6.80	9.80	14.72	7.10	10.10	16.13
2-14	20	22.56	10.40	21.80	38.63	9.20	22.20	32.58	8.90	22.10	31.06	6.70	22.20	19.96	8.30	22.00	28.04
2-15	18	21.65	12.70	21.10	51.09	15.60	21.70	66.95	13.20	22.30	53.83	12.50	22.20	50.00	11.90	21.80	46.72
2-16	26	28.35	21.80	29.00	74.71	22.70	29.30	78.18	22.30	30.00	76.64	21.70	29.70	74.32	21.80	29.70	74.71
2-17	15	18.29	12.70	18.00	63.31	13.30	18.60	67.25	13.90	18.30	71.18	13.10	18.30	65.94	13.30	18.10	67.25
2-18*	15	18.29	14.50	19.30	75.12	16.00	18.50	84.96	16.40	18.90	87.58	16.00	18.70	84.96	15.80	18.50	83.65
3-19	12	14.94	8.70	14.20	48.84	6.20	14.20	28.34	8.80	14.50	49.66	8.60	14.40	48.02	8.80	14.50	49.66
3-20	11	13.26	9.20	9.20	61.93	8.90	9.50	59.12	9.10	9.90	60.99	9.00	9.80	60.06	8.90	9.90	59.12
3-21	5	7.62	NM	blocked	-	4.20	7.40	25.17	4.20	8.00	25.17	4.10	7.60	22.99	4.10	7.80	22.99
3-22	24	26.68	0.00	17.90	0.00	5.40	22.50	11.66	5.70	16.90	12.91	5.60	17.20	12.49	16.30	23.00	56.92
3-23	23	25.91	7.80	18.20	20.78	8.10	26.10	22.09	7.90	24.50	21.22	8.00	23.40	21.65	7.50	14.50	19.47
3-24	21	23.48	9.10	20.60	32.64	8.90	21.50	31.70	9.30	21.10	33.58	9.00	20.90	32.17	9.10	21.00	32.64
3-25	18	21.34	0.70	23.60	0.00	7.90	24.20	26.52	5.30	17.80	12.31	4.20	20.40	6.29	8.70	24.10	30.89
3-26	9	12.20	1.50	12.90	0.00	1.40	12.40	0.00	3.40	14.80	3.84	0.00	16.20	0.00	0.00	15.80	0.00
3-27*	21	24.09	8.00	14.60	24.63	8.40	26.60	26.50	9.00	17.80	29.31	8.70	18.80	27.91	7.90	26.30	24.16
3-28	12	15.24	2.50	14.20	0.00	1.20	14.70	0.00	3.10	14.80	0.42	3.40	15.20	2.88	2.50	15.00	0.00
3-29*	12	14.63	5.80	12.10	27.56	4.70	13.60	18.54	6.00	14.00	29.20	4.60	12.50	17.72	5.80	13.50	27.56
3-30*	7	9.76	5.50	8.40	41.83	5.00	8.70	35.00	5.30	7.10	39.10	4.40	9.00	26.80	5.10	8.80	36.37
4-31	16	18.75	9.50	18.00	42.75	6.80	19.10	26.05	8.60	18.20	37.18	7.60	18.60	31.00	7.10	18.50	27.90
4-32	10	12.50	7.60	10.40	49.78	5.80	12.80	31.33	6.10	10.90	34.40	7.10	11.40	44.65	7.20	11.70	45.68
4-33	24	26.68	6.30	29.40	16.46	6.90	29.80	18.92	6.60	29.60	17.69	6.80	28.90	18.51	6.50	21.20	17.28
4-34	20	22.56	4.70	17.40	9.87	5.00	20.50	11.38	5.20	20.90	12.39	6.70	29.50	19.96	6.80	20.60	20.47
4-35	15	17.38	4.00	17.10	12.24	7.20	17.40	33.23	5.10	16.70	19.46	5.10	17.60	19.46	5.80	16.70	24.05
4-36	15	18.29	NM	Too Tall	-	NM	Too Tall	-	NM	Too Tall	-	NM	Too Tall	-	NM	Too Tall	-
4-37	12	14.94	8.30	14.20	45.56	6.20	14.30	28.34	7.20	13.90	36.54	7.40	13.80	38.18	7.40	14.00	38.18
5-38	8	10.67	NM	blocked	-	4.10	11.70	13.79	4.20	11.80	15.10	4.10	11.70	13.79	4.30	11.80	16.42
5-39	8	10.67	4.00	12.70	12.48	4.70	12.40	21.66	4.50	12.50	19.04	4.30	12.60	16.42	4.80	12.50	22.98
5-40	18	21.95	NM	blocked	-	6.40	12.20	14.99	6.20	22.20	13.89	6.30	16.70	14.44	6.70	17.80	16.63
5-41	17	18.90	12.70	16.70	63.01	12.10	17.10	59.43	11.40	17.20	55.26	12.10	16.90	59.43	12.20	16.70	60.03
5-42	12	16.16	NM	no port	-	NM	no port	-	9.80	15.20	47.86	9.60	15.40	46.22	9.40	15.40	44.58
5-43	14	16.16	6	12	25.96	5.4	12.3	21.58	5.8	12.3	24.50	5.9	12.1	25.23	5.5	12.2	22.31
5-44	19	21.95	15.8	21.6	67.46	14.5	16.2	60.58	14.7	22.5	61.64	14.9	19.4	62.70	14.9	19.6	62.70
5-45	15	16.77	6	15.7	29.36	6.5	15.3	32.64	6.3	13.8	31.33	6.2	14.8	30.67	6.2	14.1	30.67
5-46	16	18.90	NM	blocked	-	7.4	16.7	27.45	7.5	13.8	28.08	7.3	14.4	26.82	7.6	17.1	28.71
6-47	14	15.85	NM	blocked	-	4.8	13.6	19.43	5.3	14	23.08	5	13.9	20.89	5.2	13.9	22.35
6-48	15	17.68	5.3	15	15.38	5.1	15.3	14.02	5.3	15.5	15.38	5.3	15.3	15.38	5.3	15.3	15.38
6-49	20	23.48	NM	blocked	-	12	23.2	43.82	12.7	23.2	47.25	12.5	23.1	46.27	12.2	23.1	44.80
6-50	14	17.38	13.6	16.6	73.63	13.6	16.9	73.63	13.3	16.8	71.54	13.5	16.9	72.94	13.9	16.9	75.73
6-51	12	14.94	4.9	6.2	17.68	4.9	5.9	17.68	4.8	5.2	16.86	4.6	5.5	15.22	4.8	5.5	16.86
6-52	6	9.15	4	7.4	15.60	3.5	7.1	7.40	3.2	7.5	2.48	3.8	7.3	12.32	3.9	7.4	13.96
6-53	22	23.63	14.3	21.3	57.80	14.3	21.6	57.80	14.6	22.6	59.16	14.4	22.4	58.25	15	22.5	60.97
6-54	13	15.85	6.7	14.6	30.18	7.1	14.8	33.23	6.8	15.1	30.94	6	14.8	24.84	6.5	14.9	28.65
6-55	18	21.34	NM	blocked	-	3.3	22.3	1.37	16	22	70.80	10.5	22	40.73	12.5	22.1	51.67
6-56	10	12.80	5	12	22.42	5.1	12	23.42	4.8	12.2	20.44	4.9	12.1	21.43	4.5	12.2	17.45
6-57	21	24.39	11.8	14.5	40.05	NM	Goose	-	11.5	14.5	38.62	11.6	14.6	39.10	11.8	14.6	40.05
6-58	17	22.50	9.5	21.1	23.53	9.4	21.3	22.94	9.9	21	25.88	9.6	21.1	24.12	8.5	21.2	17.65
6-59	17	20.12	16.3	20.9	77.61	15.8	21.4	74.69	16.3	22.2	77.61	16.5	21.3	78.79	16.5	22	78.79
7-60	13	15.55	NM	blocked	-	5.3	14	18.01	5.3	14.1	18.01	5.2	14.4	17.21	5.3	14.3	18.01
7-61	13	15.24	NM	blocked	-	9.8	13.9	57.49	10.6	13.8	63.73	10.1	13.2	59.83	10.3	13.5	61.39
7-62	17	18.29	NM	blocked	-	12.6	16.8	66.05	12.6	16.8	66.05	12.4	16.5	64.86	12.5	16.6	65.45
7-64	22	24.09	NM	blocked	-	17.2	25.9	68.63	17.7	26.5	70.91	17.5	26.1	70.00	17.5	26.2	70.00
7-65	24	26.22	17	27.3	61.23	17.1	28.5	61.65	17.1	28.1	61.65	17.2	28.6	62.07	17.2	28.4	62.07

* Dual Purpose Wells
 NM = Not Monitored

2.2 Surface Emission Monitoring

As required by the City, surface emission monitoring is requested to be carried out semi-annually, weather conditions permitting, by Comcor. This monitoring is performed using a portable flame ionization detector (FID) and a GPS, marking locations where concentrations of hydrocarbons were greater than 500 ppm. The surface emission monitoring was completed in April and July for the 2019 reporting year. Several areas were noted where there were significant volumes of gas detected, including areas where cap was weak, pipe emanated from the landfill surface, uncovered manholes and/or manholes lacking proper sealing.

2.3 Mechanical System Monitoring

The main operational control of the mechanical system is carried out by the Programmable Logic Controller (PLC). The PLC also provides information on the operating status of the system, and records all data electronically which can be downloaded when required. Specific details on these items are included in the Flare Operation and Maintenance Manual. At a minimum the PLC records:

- Landfill gas composition and temperature
- Flare operating times
- Blower operating times
- Landfill gas flow rate
- Volume of landfill gas collected and flared
- Greenhouse Gas Emission Reduction in CO₂ equivalents.

These items were also monitored remotely and were reviewed at minimum on a weekly basis to ensure that all parameters outlined above are being recorded and that all system data indicates that the overall system is operating properly. The system review was carried out by a technician experienced in the operation of such systems.

Comcor staff also carried out the maintenance of the system as outlined by the Operations and Maintenance Manual. No other major repairs had to be made to the mechanical system during 2019.

Data for 2019 has been compiled, and is found in Appendix A.

2.3.1 System Pressure Measurements

Monitoring ports at the inlet and outlet to the blower were measured and recorded on a monthly frequency, using a suitably scaled pressure gauge. Gauge fluctuations were noted, as it can be an indication of water within the system.

Data for 2019 has been compiled, and is found in Table 2.

2.3.2 System Gas Measurements

The purpose of the main blower skid gas analyzer system is to monitor the oxygen and methane concentrations of the landfill gas being transferred by the LGFCS to the flare. As a safety precaution, if either the oxygen concentration gets too high, or the methane concentration gets too low, an alarm is sent to the main computer control panel PLC to shut the system down. Having records of the gas concentrations also allows for better analysis of the system and aids in troubleshooting when problems arise.

A pump, located within the gas analyzer system cabinet in the control room, is used to draw a continuous sample of process gas from the header pipe on the blower discharge side. After entering the analyzer, the sample is drawn through a de-mister and a series of filters to remove any particulate or moisture that may affect the monitoring equipment. The methane and oxygen concentrations of the sample are then measured by an infra-red methane analyzer and oxygen analyzer. The methane and oxygen concentrations are displayed on separate LED display screens mounted on the front face of the gas analyzer panel. The gas analyzer system will send signals to the PLC that will trigger a number of system alarms/warnings including low methane and high oxygen.

All system failures and/or alarms are displayed on the main control circuit panel. Any alarms that shut down the system are relayed by the auto messaging to the system operator.

During 2019, the system operated as intended with the analyzer data recorded at an interval of five minutes or better and any system alarms were sent to the operator. This data was recorded and summarized into a daily value and can be found in Appendix A.

In addition to the main system analyser, concentrations of methane (CH₄), carbon dioxide (CO₂) and oxygen (O₂) were measured manually, recorded monthly at the blower inlet and blower outlet, and compared to the insitu monitoring devices to ensure accuracy. These measurements were taken using a proper gas meter/analyzer such as a Landtec GEM-5000+, or equivalent.

2.3.3 System Flow Rate Measurements

Landfill gas velocities and temperatures at each landfill gas extraction well in the wellfield were measured and recorded on a monthly basis using an anemometer. These velocities were used to calculate landfill gas flow rates by multiplying by the pipe's cross sectional area.

A thermal mass flow meter continuously calculates flows to the flare and this data was recorded on an interval of 5 minutes or less.



The monitoring completed in 2019 is found in Table 2 and a summary of daily plant data can be found in Appendix A.

3.0 FLARE AND GREENHOUSE GAS EMISSIONS

3.1 Flare Emissions

The flare stack is equipped with four thermocouples that measure the temperature in the flare stack. These thermocouples are monitored by the system control panel PLC at intervals of 5 minutes or better. The control system is continuously monitoring the flame conditions and will shut down the LGCFS system immediately if flame is lost.

If the system shuts down for any reason, the fail safe valve will close and prevent any non-combusted landfill gas from being released to the atmosphere, thereby controlling the emissions from the flare.

3.2 Greenhouse Gas Emissions

The landfill gas comprises primarily methane and carbon dioxide in approximately equal amounts. In addition there are other trace amounts of a large number of compounds. Methane and carbon dioxide are greenhouse gases but methane has a global warming potential 25 times that of carbon dioxide. By combusting the methane in the flare the resultant products are carbon dioxide and water vapour which reduces its global warming potential by approximately 95 percent.

The control panel records both flow and methane gas concentration being collected from the system and sent to be combusted in the flare. These quantities are measured and recorded at intervals of 5 minutes or less. The data collected can be readily processed to calculate the greenhouse gas emission reduction expressed as carbon dioxide equivalents.

For the Brady Road Landfill, greenhouse gas emissions have been calculated based on operational data and can be found in Appendix A.

4.0 CONDENSATE COLLECTION SYSTEM

The purpose of the Condensate Collection System component of the LGCFS is to remove moisture from the landfill gas and to collect condensate from the collection laterals/header pipes. Collection and removal of the condensate increases the efficiency of the landfill gas collection in the wellfield and minimizes the moisture being passed through the mechanical system.

Condensate and moisture are removed from the system at three main locations. First, relative low points have been provided in the gas collection header to allow any free moisture to drain by gravity out of the underground gas collection system. In the wellfield, this moisture drains into condensate gravity style and pump style drain traps which have pneumatic pumps installed inside the sump. Next, prior to the gas entering the blowers, a condensate moisture separator removes most of the residual water droplets remaining in the gas. At this stage the residual water drains by gravity into the condensate chamber.

The condensate chamber stores the water until the pump at the bottom of the chamber is activated either manually or automatically through a series of floats. The water is then pumped through a 75 mm diameter HDPE forcemain and is discharged into the leachate collection system.

In July 2019, the Southern Header and Leachate Collection System was expanded. Forcemain and compressed air was brought to MH3, MH4, MH5, MH8, MH17, MH19, MH31, MH32, MH42, MH43, the stormwater management pond, and tied in to the leachate storage facility. Lateral 6 and 7 were extended to tie in to the Southern header and stubs for future lateral 8 were installed. Various buried valve assemblies and pump drain traps were also included as part of the design.

The Condensate Collection System operated as intended during 2019.

5.0 CONCLUSIONS AND RECOMMENDATIONS

1. During operation in 2019, the Brady Road Resource Management Facility Gas Collection and Flaring System operated as was intended.
2. During surface emission monitoring, some areas were noted where gas was escaping. These areas included open manholes and areas of weak surface cap. In order to get maximum efficiency from the LGCFS, these issues should be looked at in the future.
3. The system should continue to operate on a full-time basis and be monitored according to the Operation and Maintenance Manual for the site.

All of which is Respectfully Submitted,

INTEGRATED GAS RECOVERY SERVICES



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Engineering Project Coordination



Shannan McGarr, B.Sc.
Wellfield Operations Manager

APPENDIX A
PLANT AND FLARE DATA

Date	CO2 Equivalents			Landfill Gas Flow							Methane	Oxygen	Flare	Flare	Temperature			Blower 1		Blower 2	
	Yearly	Monthly	Daily	scf	scf	scf	meter3	scfm	MMBTU	Avg	Avg	Run	Starts	Min.	Avg.	Max.	Daily	Cumu.	Daily	Cumu.	
	Tonnes CO2	Tonnes CO2	Tonnes CO2							(%)	(%)	Hours	Hours	°C	°C	°C	Hours	Hours	Hours	Hours	
Jan 1 2019	0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	
Jan 2 2019	0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	
Jan 3 2019	0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	
Jan 4 2019	0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	
Jan 5 2019	0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	
Jan 6 2019	0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	
Jan 7 2019	0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	23832.8	23832.8	21000.7	21000.7	
Jan 8 2019	0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	23832.8	0	21000.7	
Jan 9 2019	185	185	185	821206	821206	821206	23263	850	408	49.1	2.2	16.1	3	-8	893	973	15.6	23848.4	0	21000.7	
Jan 10 2019	454	454	269	2045258	2045258	1224052	34675	850	592	47.8	2.4	24	0	883	900	916	24.3	23872.8	0	21000.7	
Jan 11 2019	714	714	260	3269437	3269437	1224179	34679	850	572	46.2	2.8	24	0	891	900	915	23.3	23896.1	0	21000.7	
Jan 12 2019	975	975	261	4494355	4494355	1224918	34699	851	573	46.3	2.6	24	0	886	900	917	24.4	23920.5	0	21000.7	
Jan 13 2019	1238	1238	263	5718863	5718863	1224508	34688	850	579	46.7	2.6	24	0	877	900	918	23.4	23943.9	0	21000.7	
Jan 14 2019	1500	1500	262	6943352	6943352	1224489	34687	850	575	46.4	2.6	24	0	867	900	926	24.3	23968.2	0	21000.7	
Jan 15 2019	1757	1757	257	8167510	8167510	1224158	34678	850	566	45.7	2.8	24	0	875	900	933	23.4	23991.6	0	21000.7	
Jan 16 2019	2012	2012	255	9391418	9391418	1223908	34671	850	560	45.2	2.8	24	0	866	900	924	24.5	24016.1	0	21000.7	
Jan 17 2019	2266	2266	254	10615300	10615300	1223882	34670	850	558	45	3	24	0	856	900	934	23.4	24039.5	0	21000.7	
Jan 18 2019	2516	2516	250	11839796	11839796	1224496	34688	850	551	44.4	3	24	0	866	900	934	24.5	24064	0	21000.7	
Jan 19 2019	2613	2613	97	13064999	13064999	1225203	34708	851	214	17.3	14	24	0	873	900	932	23.4	24087.4	0	21000.7	
Jan 20 2019	2620	2620	7	13341493	13341493	276494	7833	815	14	5.1	18.6	5.6	0	675	891	929	6.4	24093.8	0	21000.7	
Jan 21 2019	2736	2736	116	13853923	13853923	512430	14516	849	256	49.3	2	10.1	1	-15	890	963	9.5	24103.2	0	21000.7	
Jan 22 2019	3004	3004	268	15078207	15078207	1224284	34682	850	588	47.5	1.9	24	0	871	900	924	23.5	24126.8	0	21000.7	
Jan 23 2019	3277	3277	273	16302584	16302584	1224377	34684	850	600	48.5	1.4	24	0	864	900	933	24.5	24151.3	0	21000.7	
Jan 24 2019	3542	3542	265	17527240	17527240	1224656	34692	850	582	47	1.5	24	0	874	900	930	23.4	24174.7	0	21000.7	
Jan 25 2019	3799	3799	257	18703668	18703668	1176428	33326	817	565	47.4	1.2	24	0	870	900	938	24.5	24199.2	0	21000.7	
Jan 26 2019	4026	4026	227	19855564	19855564	1151896	32631	800	499	42.8	3.8	24	0	858	900	927	23.5	24222.7	0	21000.7	
Jan 27 2019	4065	4065	39	20503360	20503360	647796	18351	799	85	13	20.1	13.5	0	853	900	928	14.2	24236.9	0	21000.7	
Jan 28 2019	4188	4188	123	21024691	21024691	521331	14768	798	270	51.2	1.1	10.9	1	-19	893	952	10.3	24247.2	0	21000.7	
Jan 29 2019	4438	4438	250	22176848	22176848	1152157	32638	800	549	47.1	1.6	24	0	865	900	934	23.5	24270.7	0	21000.7	
Jan 30 2019	4678	4678	240	23329381	23329381	1152533	32649	800	529	45.3	1.6	24	0	861	900	944	24.5	24295.2	0	21000.7	
Jan 31 2019	4918	4918	240	24480939	24480939	1151558	32621	800	527	45.2	1.7	24	0	883	900	925	23.5	24318.7	0	21000.7	
Feb 1 2019	5156	238	238	25632138	1151199	1151199	32611	799	523	44.9	1.8	24	0	870	900	931	24.5	24343.2	0	21000.7	
Feb 2 2019	5391	473	235	26782604	2301665	1150466	32590	799	517	44.4	1.9	24	0	879	900	921	23.5	24366.7	0	21000.7	
Feb 3 2019	5620	702	229	27934482	3453543	1151878	32630	800	503	43.2	2.3	24	0	870	900	920	23.4	24390.1	0	21000.7	
Feb 4 2019	5833	915	213	29026709	4545770	1092227	30941	799	469	42.5	2.4	22.8	2	4	890	980	23.3	24413.4	0	21000.7	
Feb 5 2019	6051	1133	218	30160722	5679783	1134013	32124	799	480	41.8	2.6	23.6	1	140	898	983	23.2	24436.6	0	21000.7	
Feb 6 2019	6270	1352	219	31312148	6831209	1151426	32618	800	482	41.4	2.8	24	0	886	900	914	24.5	24461.1	0	21000.7	
Feb 7 2019	6488	1570	218	32464590	7983651	1152442	32646	800	479	41.1	2.9	24	0	886	900	914	23.5	24484.7	0	21000.7	
Feb 8 2019	6523	1605	35	33616547	9135608	1151957	32633	800	76	6.5	17.3	24	0	882	900	915	23.5	24508.2	0	21000.7	
Feb 9 2019	6550	1632	27	34768747	10287808	1152200	32640	800	59	5	17.8	24	0	883	900	920	24.6	24532.8	0	21000.7	
Feb 10 2019	6558	1640	8	35119476	10638537	350729	9935	755	18	5	17.8	7.7	0	708	894	920	8.2	24549.0	0	21000.7	
Feb 11 2019	6558	1640	0	35119476	10638537	0	0	0	0	0	0	0.0	0	0	0	0	0	24540.9	0	21000.7	
Feb 12 2019	6733	1815	175	35910725	11429786	791249	22414	800	385	48.1	2.1	16.5	1	3	897	936	15.7	24556.7	0	21000.7	
Feb 13 2019	6973	2055	240	37060135	12579196	1149410	32560	800	529	45.4	2.6	23.9	1	0	899	916	24.4	24581.1	0	21000.7	
Feb 14 2019	7201	2283	228	38211489	13730550	1151354	32616	800	502	43.1	3	24	0	884	900	918	24.1	24605.2	0	21000.7	
Feb 15 2019	7422	2504	221	39363572	14882633	1152083	32636	800	486	41.7	3.2	24	0	877	900	924	23.2	24628.4	0	21000.7	
Feb 16 2019	7540	2622	118	39988808	15507869	625236	17712	797	259	40.9	3.6	13	0	870	900	919	13.8	24642.1	0	21000.7	
Feb 17 2019	7662	2744	122	40555556	16074617	566748	16055	798	268	46.7	2.3	11.9	1	-16	895	918	11.6	24653.7	0	21000.7	
Feb 18 2019	7888	2970	226	41705702	17224763	1150146	32581	799	497	42.7	3	24	0	881	900	920	23.2	24676.9	0	21000.7	
Feb 19 2019	8070	3152	182	42618321	18137382	912619	25853	798	401	43.4	2.8	19	1	15	896	922	19.3	24696.2	0	21000.7	
Feb 20 2019	8296	3378	226	43769560	19288621	1151239	32612	800	496	42.6	3.1	24	0	889	900	914	24.2	24720.4	0	21000.7	
Feb 21 2019	8511	3593	215	44919574	20438635	1150014	32578	799	474	40.7	3.6	24	0	882	900	915	23.2	24743.6	0	21000.7	
Feb 22 2019	8724	3806	213	46069938	21588999	1150364	32588	799	469	40.3	3.6	24	0	883	900	918	24.3	24767.9	0	21000.7	
Feb 23 2019	8944	4026	220	47221751	22740812	1151813	32629	800	484	41.5	3.3	24	0	874	900	919	24.3	24792.2	0	21000.7	
Feb 24 2019	9158	4240	214	48373387	23892448	1151636	32624	800	470	40.3	3.6	24	0	885	900	917	23.2	24815.5	0	21000.7	
Feb 25 2019	9369	4451	211	49523997	25043058	1150610	32594	799	465	39.9	3.6	24	0	884	900	930	24.3	24839.8	0	21000.7	
Feb 26 2019	9576	4658	207	50593313	26112374	1069316	30292	800	455	42.1	2.8	21	1	41	896	926	23.1	24862.9	0	21000.7	
Feb 27 2019	9809	4891	233	51744526	27263587	1151213	32612	799	513	44	2	24	0	883	900	924	24.2	24887.1	0	21000.7	
Feb 28 2019	10038	5120	229	52895500	28414561	1150974	32605	799	503	43.2	2.4	24	0	827	900	987	24.2	24911.3	0	21000.7	

Date	CO2 Equivalents			Landfill Gas Flow							Methane	Oxygen	Flare	Flare	Temperature			Blower 1		Blower 2	
	Yearly	Monthly	Daily	scf	scf	scf	meter3	scfm	MMBTU	Avg	Avg	Run Hours	Starts	Min.	Avg.	Max.	Daily	Cumu.	Daily	Cumu.	
	Tonnes CO2	Tonnes CO2	Tonnes CO2							(%)	(%)			°C	°C	°C	Hours	Hours	Hours	Hours	
Mar 1 2019	10259	221	221	54048376	1152876	1152876	32659	801	487	41.7	2.8	24	0	849	900	934	24.1	24935.4	0	21000.7	
Mar 2 2019	10480	442	221	55200308	2304808	1151932	32632	800	485	41.6	2.7	24	0	876	900	916	23.1	24958.5	0	21000.7	
Mar 3 2019	10703	665	223	56352051	3456551	1151743	32627	800	490	42.1	2.6	24	0	871	900	919	24	24982.5	0	21000.7	
Mar 4 2019	10928	890	225	57500680	4605180	1148629	32538	799	495	42.6	2.4	23.9	1	0	899	914	24.6	25007.1	0	21000.7	
Mar 5 2019	11135	1097	207	58570898	5675398	1070218	32617	799	454	42	2.6	22.3	1	14	897	938	21.6	25028.7	0	21000.7	
Mar 6 2019	11350	1312	215	59722624	6827124	1151726	32626	800	474	40.6	3	24	0	878	900	920	24.2	25052.9	0	21000.7	
Mar 7 2019	11566	1528	216	60873309	7977809	1150685	32597	799	476	40.9	2.9	24	0	883	900	922	23.3	25076.2	0	21000.7	
Mar 8 2019	11782	1744	216	62025349	9129849	1152040	32635	800	476	40.8	3.1	24	0	884	900	918	24.3	25100.5	0	21000.7	
Mar 9 2019	11806	1768	24	62152657	9257157	127308	3606	798	52	40.6	3.2	2.6	0	895	899	907	3.3	25103.8	0	21000.7	
Mar 10 2019	11806	1768	0	62152657	9257157	0	0	0	0	0	0	0.0	0	0	0	0	0	25103.8	0	21000.7	
Mar 11 2019	11806	1768	0	62152657	9257157	0	0	0	0	0	0	0.0	0	0	0	0	0	25103.8	0	21000.7	
Mar 12 2019	11900	1862	94	62561731	9666231	409074	11588	797	206	49.9	1.9	8.6	1	-4	891	919	8.2	25112	0.1	21000.8	
Mar 13 2019	12143	2105	243	63713811	10818311	1152080	32636	800	535	45.9	2.8	24	0	862	900	935	24.4	25136.4	0	21000.8	
Mar 14 2019	12376	2338	233	64867226	11971726	1153415	32674	801	513	43.9	3	24	0	886	900	914	23.3	25159.7	0	21000.8	
Mar 15 2019	12600	2562	224	66018365	13122865	1151139	32609	799	492	42.2	3.3	24	0	853	900	935	24.3	25184	0	21000.8	
Mar 16 2019	12822	2784	222	67167617	14272117	1149252	32556	798	489	42.1	3.2	24	0	880	900	927	23.4	25207.4	0	21000.8	
Mar 17 2019	13042	3004	220	68318920	15423420	1151303	32614	800	483	41.5	3.4	24	0	880	900	923	24.4	25231.8	0	21000.8	
Mar 18 2019	13266	3228	224	69471833	16576333	1152913	32660	801	492	42.2	3.2	24	0	886	900	916	23.4	25255.2	0	21000.8	
Mar 19 2019	13490	3452	224	70621427	17725927	1149594	32566	798	493	42.4	3.2	24	0	885	900	914	24.5	25279.7	0	21000.8	
Mar 20 2019	13712	3674	222	71774180	18878680	1152753	32655	801	489	41.9	3.3	24	0	884	900	920	23.4	25303.1	0	21000.8	
Mar 21 2019	13949	3911	237	72927673	20032173	1153493	32676	801	521	44.6	2.5	24	0	876	900	920	23.5	25326.7	0	21000.8	
Mar 22 2019	14192	4154	243	74081082	21185582	1153409	32674	801	534	45.8	2.2	24	0	879	900	917	24.4	25351.1	0	21000.8	
Mar 23 2019	14437	4399	245	75233391	22337891	1152309	32643	800	540	46.3	2.3	24	0	871	900	918	23.4	25374.5	0	21000.8	
Mar 24 2019	14694	4656	257	76384537	23489037	1151146	32610	799	564	48.4	2	24	0	885	900	913	24.4	25398.9	0	21000.8	
Mar 25 2019	14955	4917	261	77535994	24640494	1151457	32618	800	574	49.3	1.8	24	0	886	900	913	23.4	25423.3	0	21000.8	
Mar 26 2019	15210	5172	255	78632397	25736897	1096403	31059	800	561	50.6	1.4	22.8	0	888	900	916	23.7	25446	0	21000.8	
Mar 27 2019	15343	5305	133	79197221	26301721	564824	16000	798	294	51.4	1.4	11.8	1	3	895	935	10.9	25456.8	0	21000.8	
Mar 28 2019	15603	5565	260	80349050	27453550	1151829	32629	800	571	49	1.9	24	0	854	900	949	24.5	25481.3	0	21000.8	
Mar 29 2019	15864	5826	261	81500883	28605383	1151833	32629	800	574	49.2	1.8	24	0	852	900	941	23.5	25504.9	0	21000.8	
Mar 30 2019	16121	6083	257	82652212	29756712	1151329	32615	799	565	48.5	2	24	0	873	900	932	24.5	25529.4	0	21000.8	
Mar 31 2019	16381	6343	260	83803865	30908365	1151653	32624	800	572	49.1	1.9	24	0	879	900	925	23.5	25552.9	0	21000.8	
Apr 1 2019	16643	262	262	84955479	1151614	1151614	32623	800	576	49.4	1.8	24	0	883	900	925	23.4	25576.3	0	21000.8	
Apr 2 2019	16899	518	256	86107935	2304070	1152456	32647	800	563	48.3	2.1	24	0	826	900	949	24.5	25600.8	0	21000.8	
Apr 3 2019	17148	767	249	87260079	3456214	1152144	32638	800	548	47	2.4	24	0	870	900	932	23.5	25624.3	0	21000.8	
Apr 4 2019	17403	1022	255	88411985	4608120	1151906	32631	800	561	48.2	2.1	24	0	867	900	921	24.5	25648.8	0	21000.8	
Apr 5 2019	17656	1275	253	89563439	5759574	1151454	32618	800	556	47.7	2.3	24	0	861	900	923	23.4	25672.2	0	21000.8	
Apr 6 2019	17912	1531	256	90715398	6911533	1151959	32633	800	562	48.2	2.1	24	0	885	900	915	24.5	25696.7	0	21000.8	
Apr 7 2019	18173	1792	261	91868048	8064183	1152650	32652	800	573	49.1	1.8	24	0	870	900	930	23.5	25720.2	0	21000.8	
Apr 8 2019	18427	2046	254	93020728	9216863	1152680	32653	800	560	48	2.2	24	0	777	900	975	23.5	25743.7	0	21000.8	
Apr 9 2019	18683	2302	256	94188245	10384380	1167517	33073	864	563	47.7	2.3	22.5	1	27	898	969	8.9	25752.6	14.2	21015.1	
Apr 10 2019	18935	2554	252	95333485	11529620	1145240	32442	899	554	47.8	2.3	21.2	4	12	889	930	0	25752.6	20.8	21035.9	
Apr 11 2019	19218	2837	283	96629922	12826057	1296437	36725	900	622	47.4	2.4	24	0	846	900	990	0	25752.6	23.6	21059.5	
Apr 12 2019	19457	3076	239	97722159	13918294	1092237	30941	899	527	47.7	2.4	20.2	0	880	900	921	0	25752.6	21	21080.5	
Apr 13 2019	19457	3076	0	97722159	13918294	0	0	0	0	0	0	0.0	0	0	0	0	0	25752.6	0	21080.5	
Apr 14 2019	19596	3215	139	98317779	14513914	595620	16873	898	305	50.7	1.9	11.1	1	5	892	926	0	25752.6	11	21091.5	
Apr 15 2019	19884	3503	288	99613934	15810069	1296155	36717	900	633	48.3	2.4	24	0	861	900	932	0	25752.6	23.6	21115.1	
Apr 16 2019	20166	3785	282	100909670	17105805	1295736	36706	900	619	47.2	2.6	24	0	872	900	937	0	25752.6	23.6	21138.7	
Apr 17 2019	20448	4067	282	102205718	18401853	1296048	36714	900	619	47.2	2.5	24	0	858	900	938	0	25752.6	23.7	21162.4	
Apr 18 2019	20728	4347	280	103501796	19697931	1296078	36715	900	615	46.9	2.6	24	0	852	900	951	0	25752.6	24.7	21187.1	
Apr 19 2019	21012	4631	284	104797748	20993883	1295952	36712	900	624	47.6	2.4	24	0	878	900	917	0	25752.6	23.7	21210.8	
Apr 20 2019	21263	4882	251	105964126	22160261	1166378	33041	900	552	46.7	2.7	21.6	0	849	900	938	0	25752.6	21.8	21232.6	
Apr 21 2019	21263	4882	0	105964126	22160261	0	0	0	0	0	0	0.0	0	0	0	0	0	25752.6	0	21232.6	
Apr 22 2019	21447	5066	184	106750911	22947046	786785	22288	899	406	51	1.8	14.6	1	9	897	961	0	25752.6	13.7	21246.3	
Apr 23 2019	21744	5363	297	108046267	24242402	1295356	36695	900	653	49.8	1.8	24	0	876	900	923	0	25752.6	24.7	21271	
Apr 24 2019	22034	5653	290	109342104	25538239	1295837	36708	900	637	48.6	2.3	24	0	830	900	963	0	25752.6	23.7	21294.7	
Apr 25 2019	22294	5913	260	110553788	26749923	1211684	34325	841	573	46.8	2.8	24	0	857	900	938	0	25752.6	23.7	21318.4	
Apr 26 2019	22543	6162	249	111705122	27901257	1151334	32615	800	547	47	2.7	24	0	847	900	935	0	25752.6	23.7	21342.1	
Apr 27 2019	22791	6410	248	112857188	29053323	1152066	32636	800	546	46.8	2.7	24	0	829	900	941	0	25752.6	23.8	21365.9	
Apr 28 2019	23038	6657	247	114007670	30203805	1150482	32591	799	543	46.6	2.7	24	0	864	900	930	0	25752.6	23.7	21389.6	

Date	CO2 Equivalents			Landfill Gas Flow							Methane	Oxygen	Flare	Flare	Temperature			Blower 1		Blower 2	
	Yearly	Monthly	Daily	scf	scf	scf	meter3	scfm	MMBTU	Avg	Avg	Run	Flare	Min.	Avg.	Max.	Daily	Cumu.	Daily	Cumu.	
	Tonnes CO2	Tonnes CO2	Tonnes CO2							(%)	(%)	Hours	Starts	°C	°C	°C	Hours	Hours	Hours	Hours	
Apr 29 2019	23286	6905	248	115159670	31355805	1152000	32634	800	545	46.8	2.6	24	0	879	900	928	0	25752.6	24.8	21414.4	
Apr 30 2019	23538	7157	252	116310998	32507133	1151328	32615	800	555	47.6	2.2	24	0	867	900	922	0	25752.6	23.7	21438.1	
May 1 2019	23793	255	255	117463102	1152104	1152104	32637	800	561	48.1	2	24	0	882	900	920	0	25752.6	23.8	21461.9	
May 2 2019	24046	508	253	118614981	2303983	1151879	32630	800	557	47.7	2.1	24	0	870	900	939	0	25752.6	23.6	21485.5	
May 3 2019	24298	760	252	119767644	34566646	1152663	32653	800	554	47.5	2.2	24	0	884	900	919	0	25752.6	23.8	21509.3	
May 4 2019	24546	1008	248	120918965	4607967	1151321	32615	800	546	46.9	2.3	24	0	844	900	965	0	25752.6	23.7	21533	
May 5 2019	24789	1251	243	122070670	5759672	1151705	32625	800	535	45.9	2.6	24	0	839	900	933	0	25752.6	24.8	21557.8	
May 6 2019	25030	1492	241	123222775	6911777	1152105	32637	800	531	45.5	2.7	24	0	864	900	934	0	25752.6	23.8	21581.6	
May 7 2019	25274	1736	244	124375013	8064015	1152238	32641	800	537	46.1	2.5	24	0	861	900	932	0	25752.6	23.7	21605.3	
May 8 2019	25460	1922	186	125221192	8910194	8461179	23971	799	409	47.7	2.1	17.6	1	8	897	948	0	25752.6	17.4	21622.8	
May 9 2019	25705	2167	245	126373464	10062466	1152272	32642	800	540	46.3	2.5	24	0	870	900	934	0	25752.6	23.8	21646.6	
May 10 2019	25951	2413	246	127524385	11213387	1150921	32603	799	542	46.5	2.4	24	0	860	900	939	0	25752.6	23.7	21670.3	
May 11 2019	26197	2659	246	128675576	12364578	1151191	32611	799	542	46.5	2.5	24	0	870	900	940	0	25752.6	23.9	21694.2	
May 12 2019	26442	2904	245	129828132	13517134	1152556	32650	800	538	46.1	2.5	24	0	871	900	923	0	25752.6	23.8	21718	
May 13 2019	26688	3150	246	130977268	14666270	1149136	32553	800	540	46.5	2.4	23.9	1	0	899	934	0	25752.6	24	21742	
May 14 2019 *	26928	3390	240	132128743	15817745	1151475	32619	800	527	45.2	2.8	24	0	851	900	945	0	25752.6	24.3	21766.3	
May 15 2019	27175	3637	247	133279610	16968612	1150867	32602	799	542	46.6	2.4	24	0	854	900	946	0	25752.6	24.2	21790.5	
May 16 2019	27414	3876	239	134430813	18119815	1151203	32611	799	527	45.2	2.8	24	0	854	900	935	0	25752.6	23.2	21813.7	
May 17 2019	27656	4118	242	135582502	19271504	1151689	32625	800	532	45.7	2.6	24	0	865	900	937	0	25752.6	24.3	21838	
May 18 2019	27897	4359	241	136733152	20422154	1150650	32596	799	530	45.6	2.6	24	0	872	900	918	0	25752.6	24.3	21862.3	
May 19 2019	28139	4601	242	137883901	21572903	1150749	32598	799	532	45.7	2.5	24	0	835	900	946	0	25752.6	23.3	21885.6	
May 20 2019	28298	4760	159	138641403	22330405	757502	21459	799	350	45.6	2.6	15.8	0	835	900	935	0	25752.6	16.3	21902	
May 21 2019	28409	4871	111	139127070	22816072	485667	13758	797	244	49.6	1.8	10.2	2	77	892	935	0	25752.6	9.2	21911.1	
May 22 2019	28660	5122	251	140278739	23967741	1151669	32624	800	552	47.3	2.3	24	0	881	900	923	0	25752.6	24.3	21935.5	
May 23 2019	28778	5240	118	140841443	24530445	562704	15940	800	260	45.6	2.8	11.7	0	866	900	924	0	25752.6	12.3	21947.7	
May 24 2019	28932	5394	154	141557931	25246933	716488	20297	800	338	46.6	3.2	14.9	1	91	898	933	0	25752.6	14.1	21961.8	
May 25 2019	29164	5626	232	142709645	26398647	1151714	32626	800	511	43.8	3.9	24	0	860	900	933	0	25752.6	24.5	21986.4	
May 26 2019	29393	5855	229	143860627	27549629	1150982	32605	799	504	43.2	4	24	0	886	900	920	0	25752.6	23.3	22009.7	
May 27 2019	29637	6099	244	145012463	28701465	1151836	32629	800	538	46.1	3	24	0	840	900	937	0	25752.6	24.4	22034.1	
May 28 2019	29888	6350	251	146163177	29852179	1150714	32597	799	552	47.4	2.4	24	0	825	900	961	0	25752.6	23.4	22057.5	
May 29 2019	30138	6600	250	147315478	31004480	1152301	32642	800	549	47.1	2.5	24	0	866	900	936	0	25752.6	24.4	22081.9	
May 30 2019	30394	6856	256	148466482	32155484	1151004	32606	799	564	48.4	2.2	24	0	829	900	946	0	25752.6	23.4	22105.3	
May 31 2019	30656	7118	262	149617634	33306636	1151152	32610	799	577	49.5	1.8	24	0	837	900	950	0	25752.6	24.4	22129.7	
Jun 1 2019	30924	268	268	150769348	1151714	1151714	32626	800	590	50.6	1.4	24	0	831	900	954	0	25752.6	23.3	22153	
Jun 2 2019	31189	533	265	151921160	2303526	1151812	32629	800	584	50.1	1.5	24	0	874	900	937	0	25752.6	24.4	22177.4	
Jun 3 2019	31459	803	270	153072180	3454546	1151020	32606	799	593	51	1.3	24	0	815	900	957	0	25752.6	23.4	22200.8	
Jun 4 2019	31728	1072	269	154223476	4605842	1151296	32614	800	592	50.8	1.3	24	0	849	900	960	0	25752.6	24.4	22225.2	
Jun 5 2019	31996	1340	268	155375183	5757549	1151707	32626	800	590	50.7	1.3	24	0	852	900	940	0	25752.6	23.4	22248.6	
Jun 6 2019	32265	1609	269	156526301	6908667	1151118	32609	799	592	50.8	1.3	24	0	877	900	927	0	25752.6	24.4	22273	
Jun 7 2019	32495	1839	230	157487529	7869895	961228	27230	800	506	52	0.9	20	0	836	900	945	0	25752.6	20.2	22293.2	
Jun 8 2019	32495	1839	0	157487529	7869895	0	0	0	0	0	0	0	0	0	0	0	0	25752.6	0	22293.2	
Jun 9 2019	32495	1839	0	157487529	7869895	0	0	0	0	0	0	0	0	0	0	0	0	25752.6	0	22293.2	
Jun 10 2019	32656	2000	161	158135419	8517785	647890	18353	799	355	54.2	0.7	13.6	2	0	895	963	0	25752.6	13.3	22306.5	
Jun 11 2019	32808	2152	152	158764415	9146781	628996	17818	801	335	52.6	1	13.1	0	807	900	984	0	25752.6	13.4	22319.8	
Jun 12 2019	32808	2152	0	158764415	9146781	0	0	0	0	0	0	0	0	0	0	0	0	25752.6	0	22319.8	
Jun 13 2019	32912	2256	104	159175546	9557912	411131	11647	798	228	54.7	0.6	8.6	1	34	895	925	0	25752.6	8.1	22327.9	
Jun 14 2019	33194	2538	282	160327365	10709731	1151819	32629	800	620	53.2	0.9	24	0	853	900	930	0	25752.6	24.2	22352.1	
Jun 15 2019	33382	2726	188	161116882	11499248	789517	22365	800	414	51.8	1.3	16.4	0	874	900	933	0	25752.6	16.6	22368.8	
Jun 16 2019	33382	2726	0	161116882	11499248	0	0	0	0	0	0	0	0	0	0	0	0	25752.6	0	22368.8	
Jun 17 2019	33550	2894	168	161797019	12179385	680137	19267	799	369	53.6	0.9	14.2	1	14	897	939	0	25752.6	13	22381.8	
Jun 18 2019	33830	3174	280	162948988	13331354	1151969	32633	800	615	52.8	1	24	0	868	900	932	0	25752.6	24.4	22406.2	
Jun 19 2019	34110	3454	280	164100875	14483241	1151887	32631	800	616	52.8	1	24	0	874	900	937	0	25752.6	24.3	22430.5	
Jun 20 2019	34388	3732	278	165253230	15635596	1152355	32644	800	611	52.4	1.1	24	0	861	900	940	0	25752.6	23.4	22453.9	
Jun 21 2019	34654	3998	266	166359495	16741861	1106265	31338	799	585	52.3	1.1	23.1	1	52	897	929	0	25752.6	23.4	22477.3	
Jun 22 2019	34930	4274	276	167510822	17893188	1151327	32615	800	608	52.2	1.1	24	0	881	900	926	0	25752.6	23.4	22500.7	
Jun 23 2019	35208	4552	278	168662485	19044851	1151663	32624	800	611	52.4	1	24	0	858	900	932	0	25752.6	24.3	22525	
Jun 24 2019	35485	4829	277	169813505	20195871	1151020	32606	799	610	52.4	1	24	0	876	900	934	0	25752.6	23.4	22548.4	
Jun 25 2019	35759	5103	274	170965895	21348261	1152390	32645	800	603	51.7	1.2	24	0	827	900	942	0	25752.6	24.3	22572.8	
Jun 26 2019	36031	5375	272	172117291	22499657	1151396	32617	800	599	51.4	1.3	24	0	848	900	944	0	25752.6	23.3	22596.1	

Date	CO2 Equivalents			Landfill Gas Flow							Methane	Oxygen	Flare	Flare	Temperature			Blower 1		Blower 2	
	Yearly	Monthly	Daily	scf	scf	scf	meter3	scfm	MMBTU	Avg	Avg	Run	Flare	Min.	Avg.	Max.	Daily	Cumu.	Daily	Cumu.	
	Tonnes CO2	Tonnes CO2	Tonnes CO2							(%)	(%)	Hours	Starts	°C	°C	°C	Hours	Hours	Hours	Hours	
Jun 27 2019	36306	5650	275	17326990	23652266	1152609	32651	800	604	51.8	1.2	24	0	861	900	938	0	25752.6	24.4	22620.5	
Jun 28 2019	36582	5926	276	174421490	24803856	1151590	32622	800	608	52.2	1.1	24	0	863	900	938	0	25752.6	24.4	22644.9	
Jun 29 2019	36861	6205	279	175573889	25956255	1152399	32645	800	613	52.6	1	24	0	867	900	927	0	25752.6	23.3	22668.2	
Jun 30 2019	37139	6483	278	176726135	27108501	1152246	32641	800	612	52.5	1	24	0	866	900	940	0	25752.6	24.5	22692.7	
Jul 1 2019	37417	278	278	177878241	1152106	1152106	32637	800	611	52.4	1	24	0	861	900	932	0	25752.6	23.2	22715.9	
Jul 2 2019	37682	543	265	178976645	2250510	1098404	31116	800	583	52.4	1.1	21.9	2	874	900	929	0	25752.6	23.4	22739.3	
Jul 3 2019	37899	760	217	179872152	3146017	895507	25368	798	477	52.7	1	18.6	4	23	896	933	0	25752.6	18.4	22757.7	
Jul 4 2019	38162	1023	263	180963690	4237555	1091538	30921	800	578	52.3	1.1	22.7	1	193	899	932	0	25752.6	23	22780.7	
Jul 5 2019	38435	1296	273	182115592	5389457	1151902	32631	800	600	51.4	1.3	24	0	860	900	928	0	25752.6	24.3	22805	
Jul 6 2019	38709	1570	274	183266823	6540688	1151231	32612	799	602	51.6	1.2	24	0	863	900	926	0	25752.6	23.3	22828.3	
Jul 7 2019	38984	1845	275	184418930	7692795	1152107	32637	800	606	52	1.2	24	0	872	900	926	0	25752.6	24.3	22852.7	
Jul 8 2019	39259	2120	275	185571001	8844866	1152071	32636	800	604	51.8	1.2	24	0	865	900	935	0	25752.6	24.3	22877	
Jul 9 2019	39532	2393	273	186722645	9996510	1151644	32624	800	600	51.5	1.3	24	0	864	900	932	0	25752.6	23.3	22900.3	
Jul 10 2019	39809	2670	277	187864173	11138038	1141528	32337	800	610	52.8	0.8	23.8	1	183	898	932	0	25752.6	24.1	22924.4	
Jul 11 2019	40026	2887	217	188737770	12011635	873597	24747	799	477	54	0.6	18.2	1	30	897	968	0	25752.6	17.5	22941.9	
Jul 12 2019	40308	3169	282	189889006	13162871	1151236	32612	799	621	53.3	0.8	24	0	867	900	943	0	25752.6	24.4	22966.3	
Jul 13 2019	40591	3452	283	191041305	14315170	1152299	32642	800	622	53.3	0.8	24	0	871	900	921	0	25752.6	23.4	22989.7	
Jul 14 2019	40714	3575	123	192193651	15467516	1152346	32644	800	270	23.2	11.9	24	0	840	900	938	0	25752.6	24.5	23014.2	
Jul 15 2019	40873	3734	159	193345183	16619048	1151532	32621	800	351	30.1	9.1	24	0	844	900	950	0	25752.6	23.4	23037.6	
Jul 16 2019	41157	4018	284	194497140	17771005	1151957	32633	800	624	53.5	0.7	24	0	856	900	940	0	25752.6	24.4	23062	
Jul 17 2019	41443	4304	286	195649402	18923267	1152262	32641	800	629	54	0.5	24	0	860	900	937	0	25752.6	23.5	23085.5	
Jul 18 2019	41730	4591	287	196801356	20075221	1151954	32633	800	630	54.1	0.5	24	0	878	900	925	0	25752.6	24.4	23109.9	
Jul 19 2019	42013	4874	283	197952278	21228143	1150922	32603	799	623	53.5	0.5	24	0	854	900	950	0	25752.6	23.4	23133.4	
Jul 20 2019	42292	5153	279	199103393	22377258	1151115	32609	799	615	52.8	0.6	24	0	840	900	936	0	25752.6	24.5	23157.9	
Jul 21 2019	42570	5431	278	200254995	23528860	1151602	32623	800	612	52.5	0.6	24	0	862	900	944	0	25752.6	23.4	23181.3	
Jul 22 2019	42850	5711	280	201405947	24679812	1150952	32604	799	616	52.9	0.5	24	0	861	900	939	0	25752.6	23.4	23204.7	
Jul 23 2019	43132	5993	282	202558025	25831890	1152078	32636	800	619	53.1	0.4	24	0	868	900	928	0	25752.6	24.5	23229.2	
Jul 24 2019	43416	6277	284	203710555	26984420	1152530	32649	800	624	53.5	0.4	24	0	883	900	932	0	25752.6	23.5	23252.7	
Jul 25 2019	43699	6560	283	204862674	28136539	1152119	32637	800	622	53.3	0.5	24	0	862	900	945	0	25752.6	24.5	23277.2	
Jul 26 2019	43977	6838	278	206014680	29288545	1152006	32634	800	612	52.5	0.7	24	0	840	900	959	0	25752.6	23.4	23300.6	
Jul 27 2019	44255	7116	278	207166857	30440722	1152177	32639	800	610	52.4	0.7	24	0	846	900	941	0	25752.6	24.5	23325.1	
Jul 28 2019	44534	7395	279	208317743	31591608	1150886	32602	799	613	52.7	0.7	24	0	864	900	935	0	25752.6	23.5	23348.6	
Jul 29 2019	44803	7664	269	209469250	32743115	1151507	32620	800	592	50.8	1.2	24	0	858	900	943	0	25752.6	23.5	23372.1	
Jul 30 2019	45073	7934	270	210621177	33895042	1151927	32632	800	595	51	1.1	24	0	861	900	941	0	25752.6	24.5	23396.6	
Jul 31 2019	45345	8206	272	211772651	35046516	1151474	32619	800	598	51.3	1.1	24	0	874	900	928	0	25752.6	23.5	23420.1	
Aug 1 2019	45614	269	269	212924563	1151912	1151912	32631	800	593	50.8	1.2	24	0	856	900	943	0	25752.6	24.5	23444.6	
Aug 2 2019	45884	539	270	214076779	2304128	1152216	32640	800	593	50.9	1.3	24	0	871	900	934	0	25752.6	23.5	23468.1	
Aug 3 2019	46154	809	270	215228802	3456151	1152023	32635	800	594	51	1.3	24	0	877	900	924	0	25752.6	23.6	23491.7	
Aug 4 2019	46422	1077	268	216381716	4609065	1152914	32660	801	591	50.6	1.4	24	0	849	900	939	0	25752.6	24.6	23516.4	
Aug 5 2019	46687	1342	265	217534321	5761670	1152605	32651	800	584	50	1.6	24	0	856	900	937	0	25752.6	23.6	23540	
Aug 6 2019	46951	1606	264	218687001	6914350	1152680	32653	800	581	49.8	1.8	24	0	853	900	934	0	25752.6	23.5	23563.5	
Aug 7 2019	47209	1864	258	219838448	8065797	1151447	32618	800	567	48.7	2.1	24	0	852	900	954	0	25752.6	24.6	23588.1	
Aug 8 2019	47464	2119	255	220990128	9217477	1151680	32625	800	561	48.2	2.3	24	0	856	900	945	0	25752.6	23.6	23611.7	
Aug 9 2019	47711	2366	247	222101077	10328426	1110949	31471	799	542	48.2	2.3	23.2	3	127	896	936	1	25753.6	21.8	23633.5	
Aug 10 2019	47962	2617	251	223253029	11480378	1151952	32633	800	552	47.4	2.7	24	0	869	900	925	0	25753.6	24.5	23658	
Aug 11 2019	48211	2866	249	224404791	12632140	1151762	32627	800	548	47	2.8	24	0	866	900	928	0	25753.6	23.5	23681.5	
Aug 12 2019	48460	3115	249	225556467	13783816	1151676	32625	800	548	47	2.9	24	0	868	900	930	0	25753.6	23.4	23704.9	
Aug 13 2019	48545	3200	85	225952218	14179567	395751	11211	800	186	46.5	3.1	8.2	0	880	900	919	0	25753.6	9.2	23714.1	
Aug 14 2019	48593	3248	48	226195559	14422908	243341	6893	797	105	42.5	5.1	5.1	1	12	882	932	0	25753.6	5.1	23719.2	
Aug 15 2019	48748	3403	155	226917230	15144579	721671	20443	799	342	46.8	3.3	15.1	1	15	896	934	0	25753.6	14.5	23733.7	
Aug 16 2019	48987	3642	239	228068986	16296335	1151756	32627	800	526	45.1	3.7	24	0	872	900	930	0	25753.6	23.5	23757.2	
Aug 17 2019	49219	3874	232	229220958	17448307	1151972	32633	800	510	43.7	4	24	0	863	900	924	0	25753.6	24.5	23781.7	
Aug 18 2019	49446	4101	227	230373107	18600456	1152149	32638	800	500	42.9	4.2	24	0	852	900	930	0	25753.6	23.5	23805.2	
Aug 19 2019	49671	4326	225	231525126	19752475	1152019	32634	800	495	42.5	4.3	24	0	866	899	924	0	25753.6	23.6	23828.8	
Aug 20 2019	49901	4556	230	232677148	20904497	1152022	32634	800	507	43.5	4	24	0	832	900	928	0	25753.6	24.6	23853.4	
Aug 21 2019	50135	4790	234	233829147	22056496	1151999	32634	800	514	44.1	3.8	24	0	870	900	924	0	25753.6	23.6	23877	
Aug 22 2019	50381	5036	246	234980751	23208100	1151604	32623	800	541	46.4	3.1	24	0	875	900	929	0	25753.6	23.6	23900.6	
Aug 23 2019	50640	5295	259	236133111	24360460	1152360	32644	800	570	48.9	2.2	24	0	880	900	918	0	25753.6	24.7	23925.3	
Aug 24 2019	50732	5387	92	236538246	24765595	405135	11477	800	201	49.1	2.1	8.4	0	884	900	916	0	25753.6	8.5		

Date	CO2 Equivalents			Landfill Gas Flow							Methane	Oxygen	Flare	Flare	Temperature			Blower 1		Blower 2	
	Yearly	Monthly	Daily	scf	scf	scf	meter3	scfm	MMBTU	Avg	Avg	Run	Starts	Min.	Avg.	Max.	Daily	Cumu.	Daily	Cumu.	
	Tonnes CO2	Tonnes CO2	Tonnes CO2							(%)	(%)	Hours	Hours	°C	°C	°C	Hours	Hours	Hours	Hours	
Aug 25 2019	50732	5387	0	236538246	24765595	0	0	0	0	0	0	0	0	0	0	0	0	25753.6	0	23933.8	
Aug 26 2019	50914	5569	182	237275063	25502412	736817	20873	798	401	53.8	0.8	15.4	1	96	896	931	0	25753.6	15	23948.9	
Aug 27 2019	51168	5823	254	238325554	26552903	1050491	29758	799	559	52.5	1	21.9	1	12	896	937	0	25753.6	21.5	23970.4	
Aug 28 2019	51447	6102	279	239477295	27704644	1151741	32627	800	614	52.7	1	24	0	865	900	940	0	25753.6	23.6	23994.0	
Aug 29 2019	51722	6377	275	240627366	28854715	1150071	32579	799	606	52	1	24	0	843	900	957	0	25753.6	24.6	24018.6	
Aug 30 2019	51999	6654	277	241799012	30026361	1171646	33190	814	610	51.5	1	24	0	840	900	976	0	25753.6	23.6	24042.2	
Aug 31 2019	52276	6931	277	242951056	31178405	1152044	32635	800	609	52.2	0.7	24	0	870	900	931	0	25753.6	23.6	24065.8	
Sep 1 2019	52379	103	103	243377877	426821	426821	12091	800	227	52.6	0.6	8.9	0	860	900	924	0	25753.6	9.7	24075.5	
Sep 2 2019	52379	103	0	243377877	426821	0	0	0	0	0	0	0.0	0	0	0	0	0	25753.6	0	24075.5	
Sep 3 2019	52574	298	195	244174952	1223896	797075	22580	800	430	53.3	0.6	16.6	1	19	897	930	0	25753.6	16.3	24091.8	
Sep 4 2019	52752	476	178	244895423	1944367	720471	20410	799	392	53.8	0.4	15	1	43	897	932	0	25753.6	14.5	24106.3	
Sep 5 2019	53043	767	291	246097134	3146078	1201711	34042	835	639	52.6	0.7	24	0	867	900	942	0	25753.6	23.6	24129.9	
Sep 6 2019	53347	1071	304	247392684	4441628	1295550	36700	900	669	51	1	24	0	858	900	937	0	25753.6	24.6	24154.5	
Sep 7 2019	53392	1116	45	247586545	4635489	193861	5492	899	98	50	1.2	3.6	0	885	901	921	0	25753.6	3.8	24158.3	
Sep 8 2019	53542	1266	150	248191476	5240420	604931	17136	899	329	53.7	0.6	11.2	1	16	894	936	0	25753.6	11.1	24169.4	
Sep 9 2019	53853	1577	311	249487031	6535975	1295555	36700	900	685	52.3	0.8	24	0	840	900	956	0	25753.6	23.6	24193	
Sep 10 2019	54157	1881	304	250783022	7831966	1295991	36713	900	670	51.1	0.9	24	0	879	900	922	0	25753.6	23.6	24216.6	
Sep 11 2019	54457	2181	300	252078436	9127380	1295414	36696	900	661	50.4	1	24	0	873	900	924	0	25753.6	24.6	24241.2	
Sep 12 2019	54763	2487	306	253374054	10422998	1295618	36702	900	672	51.3	0.7	24	0	866	900	933	0	25753.6	23.6	24264.8	
Sep 13 2019	55012	2736	249	254414994	11463938	1040940	29488	899	549	52.1	0.6	19.3	1	16	896	941	0	25753.6	18.9	24283.7	
Sep 14 2019	55318	3042	306	255712162	12761106	1297168	36746	901	674	51.3	0.7	24	0	865	900	933	0	25753.6	23.6	24307.3	
Sep 15 2019	55621	3345	303	257007646	14056590	1295484	36698	900	667	50.8	0.8	24	0	864	900	939	0	25753.6	24.6	24332	
Sep 16 2019	55925	3649	304	258304242	15353186	1296596	36730	900	669	51	0.8	24	0	877	900	926	0	25753.6	23.7	24355.7	
Sep 17 2019	56229	3953	304	259599817	16648761	1295575	36701	900	669	51	0.8	24	0	873	900	925	0	25753.6	23.6	24379.3	
Sep 18 2019	56532	4256	303	260895509	17944453	1295692	36704	900	666	50.8	0.9	24	0	861	900	939	0	25753.6	23.6	24402.9	
Sep 19 2019	56833	4557	301	262191439	19240383	1295930	36711	900	662	50.5	1.1	24	0	867	900	941	0	25753.6	24.7	24427.6	
Sep 20 2019	57116	4840	283	263360738	20409682	1169299	33124	900	622	52.6	0.6	21.7	1	34	897	968	0	25753.6	21.3	24448.9	
Sep 21 2019	57432	5156	316	264656995	21705939	1296257	36720	900	696	53	0.7	24	0	850	900	941	0	25753.6	23.6	24472.5	
Sep 22 2019	57743	5467	311	265952945	23001889	1295950	36712	900	684	52.2	0.9	24	0	858	900	946	0	25753.6	23.7	24496.2	
Sep 23 2019	58056	5780	313	267249769	24298713	1296824	36736	901	688	52.4	0.9	24	0	874	900	925	0	25753.6	24.7	24520.9	
Sep 24 2019	58367	6091	311	268544411	25593355	1294642	36675	899	684	51.2	0.9	24	0	855	900	951	0	25753.6	23.6	24544.5	
Sep 25 2019	58674	6398	307	269840336	26889280	1295925	36711	900	674	51.4	1.1	24	0	855	900	947	0	25753.6	23.6	24568.1	
Sep 26 2019	58984	6708	310	271136285	28185229	1295949	36712	900	681	51.9	1	24	0	868	900	942	0	25753.6	23.7	24591.8	
Sep 27 2019	59291	7015	307	272432374	29481318	1296089	36716	900	675	51.4	1.1	24	0	858	900	939	0	25753.6	24.6	24616.4	
Sep 28 2019	59594	7318	303	273729113	30778057	1296739	36734	901	667	50.8	1.3	24	0	852	900	950	0	25753.6	23.7	24640.1	
Sep 29 2019	59906	7630	312	275024762	32073706	1295649	36703	900	686	52.3	0.9	24	0	865	900	942	0	25753.6	23.7	24663.9	
Sep 30 2019	60205	7929	299	276277287	33326231	1252525	35482	870	659	51.9	0.9	24	0	855	899	932	0	25753.6	23.6	24687.5	
Oct 1 2019	60283	78	78	276635500	358213	358213	10147	802	172	47.5	1.7	7.4	0	809	888	913	0	25753.6	8.4	24695.8	
Oct 2 2019	60283	78	0	276635500	358213	0	0	0	0	0	0	0.0	0	0	0	0	0	25753.6	0	24695.8	
Oct 3 2019	60283	78	0	276635500	358213	0	0	0	0	0	0	0.0	0	0	0	0	0	25753.6	0	24695.8	
Oct 4 2019	60283	78	0	276635500	358213	0	0	0	0	0	0	0.0	0	0	0	0	0	25753.6	0	24695.8	
Oct 5 2019	60283	78	0	276635500	358213	0	0	0	0	0	0	0.0	0	0	0	0	0	25753.6	0	24695.8	
Oct 6 2019	60283	78	0	276635500	358213	0	0	0	0	0	0	0.0	0	0	0	0	0	25753.6	0	24695.8	
Oct 7 2019	60409	204	126	277185736	908449	550236	15587	695	278	49.9	2.5	13.2	2	1	890	967	0	25753.6	13.1	24708.9	
Oct 8 2019	60683	478	274	278301602	2024315	1115866	31610	775	602	53.5	0.8	24	0	858	900	982	0	25753.6	23.7	24732.6	
Oct 9 2019	60953	748	270	279461373	3184086	1159771	32854	945	593	50.6	1.6	20.4	1	2	897	939	0	25753.6	20	24752.6	
Oct 10 2019	61189	984	236	280462372	4185085	1000999	28356	900	519	51.3	1.4	18.5	0	865	900	935	0	25753.6	19.2	24771.8	
Oct 11 2019	61216	1011	27	280569845	4292558	107473	3044	898	60	55.4	0.4	2.0	1	-3	874	934	0	25753.6	2.1	24773.9	
Oct 12 2019	61216	1011	0	280569845	4292558	0	0	0	0	0	0	0.0	0	0	0	0	0	25753.6	0	24773.9	
Oct 13 2019	61216	1011	0	280569845	4292558	0	0	0	0	0	0	0.0	0	0	0	0	0	25753.6	0	24773.9	
Oct 14 2019	61216	1011	0	280569845	4292558	0	0	0	0	0	0	0.0	0	0	0	0	0	25753.6	0	24773.9	
Oct 15 2019	61216	1011	0	280569845	4292558	0	0	0	0	0	0	0.0	0	0	0	0	0	25753.6	0	24773.9	
Oct 16 2019	61395	1190	179	281313511	5036224	743666	21067	899	393	52.2	1.4	13.8	1	12	897	945	0	25753.6	13.5	24787.4	
Oct 17 2019	61694	1489	299	282609065	6331778	1295554	36700	900	657	50.1	1.7	24	0	878	900	925	0	25753.6	23.3	24810.7	
Oct 18 2019	61988	1783	294	283905511	7628224	1296446	36726	900	646	49.3	1.7	24	0	878	900	919	0	25753.6	24.2	24834.9	
Oct 19 2019	62264	2059	276	285200953	8923666	1295442	36697	900	606	46.3	2.3	24	0	877	900	938	0	25753.6	24.3	24859.2	
Oct 20 2019	62528	2323	264	286496031	10218744	1295078	36687	899	580	44.2	2.5	24	0	868	900	938	0	25753.6	23.3	24882.5	
Oct 21 2019	62710	2505	182	287401207	11123920	905176	25642	898	400	43.6	2.4	16.8	0	815	892	926	0	25753.6	17.4	24899.9	
Oct 22 2019	62812	2607	102	287857456	11580169	456249	12925	896	224	48.6	1.7	8.5	1	6	895	943	0	25753.6	7.6	24907.5	

Date	CO2 Equivalents			Landfill Gas Flow							Methane	Oxygen	Flare	Flare	Temperature			Blower 1		Blower 2	
	Yearly	Monthly	Daily	scf	scf	scf	meter3	scfm	MMBTU	Avg	Avg	Run	Starts	Min.	Avg.	Max.	Daily	Cumu.	Daily	Cumu.	
	Tonnes CO2	Tonnes CO2	Tonnes CO2							(%)	(%)	Hours	Hours	°C	°C	°C	Hours	Hours	Hours	Hours	
Oct 23 2019	63072	2867	260	289152683	12875396	1295227	36691	899	573	43.7	2.5	24	0	858	900	931	0	25753.6	24.4	24931.9	
Oct 24 2019	63323	3118	251	290448835	14171548	1296152	36717	900	553	42.2	2.4	24	0	872	900	923	0	25753.6	23.4	24955.3	
Oct 25 2019	63584	3379	261	291745145	15467858	1296310	36722	900	573	43.7	1.8	24	0	884	900	917	0	25753.6	24.4	24979.7	
Oct 26 2019	63845	3640	261	293041185	16763898	1296040	36714	900	573	43.7	2	24	0	868	900	941	0	25753.6	23.4	25003.1	
Oct 27 2019	64122	3917	277	294336809	18059522	1295624	36702	900	610	46.5	1.6	24	0	864	900	944	0	25753.6	24.4	25027.5	
Oct 28 2019	64403	4198	281	295632876	19355589	1296067	36715	900	619	47.2	1.6	24	0	879	900	919	0	25753.6	23.5	25051	
Oct 29 2019	64684	4479	281	296928983	20651696	1296107	36716	900	617	47.1	1.7	24	0	843	900	948	0	25753.6	24.4	25075.4	
Oct 30 2019	64968	4763	284	298225194	21947907	1296211	36719	900	625	47.7	1.6	24	0	860	900	934	0	25753.6	23.4	25098.8	
Oct 31 2019	65262	5057	294	299521907	23244620	1296713	36733	901	646	49.2	1.2	24	0	862	900	928	0	25753.6	24.4	25123.2	
Nov 1 2019	65549	287	287	300817615	1295708	1295708	36705	900	632	48.2	1.5	24	0	845	900	941	0	25753.6	23.4	25146.7	
Nov 2 2019	65840	578	291	302112121	2590214	1294506	36671	899	641	48.9	1.3	24	0	862	900	933	0	25753.6	24.5	25171.2	
Nov 3 2019	66135	873	295	303408836	3886929	1296715	36733	900	649	49.4	1.2	24	0	860	900	926	0	25753.6	24.4	25195.6	
Nov 4 2019	66218	956	83	303777974	4256067	369138	10457	900	182	48.8	1.4	6.8	0	856	900	937	0	25753.6	7.6	25203.1	
Nov 5 2019	66218	956	0	303777974	4256067	0	0	0	0	0	0	0.0	0	0	0	0	0	0	25753.6	0	25203.1
Nov 6 2019	66218	956	0	303777974	4256067	0	0	0	0	0	0	0.0	0	0	0	0	0	0	25753.6	0	25203.1
Nov 7 2019	66218	956	0	303777974	4256067	0	0	0	0	0	0	0.0	0	0	0	0	0	0	25753.6	0	25203.1
Nov 8 2019	66218	956	0	303777974	4256067	0	0	0	0	0	0	0.0	0	0	0	0	0	0	25753.6	0	25203.1
Nov 9 2019	66218	956	0	303777974	4256067	0	0	0	0	0	0	0.0	0	0	0	0	0	0	25753.6	0	25203.1
Nov 10 2019	66218	956	0	303777974	4256067	0	0	0	0	0	0	0.0	0	0	0	0	0	0	25753.6	0	25203.1
Nov 11 2019	66218	956	0	303777974	4256067	0	0	0	0	0	0	0.0	0	0	0	0	0	0	25753.6	0	25203.1
Nov 12 2019	66248	986	30	303894119	4372212	116145	3290	884	65	55.4	0.4	2.2	3	-11	827	935	0	25753.6	2.2	25205.3	
Nov 13 2019	66335	1073	87	304256739	4734832	362620	10272	893	192	52.4	1.3	6.8	5	-12	847	947	0	25753.6	5.8	25211.1	
Nov 14 2019	66635	1373	300	305552016	6030109	1295277	36693	899	660	50.3	1.7	24	0	863	900	934	0	25753.6	24.7	25235.8	
Nov 15 2019	66939	1677	304	306848702	7326795	1296686	36733	900	669	51	1.7	24	0	875	900	929	0	25753.6	23.6	25259.4	
Nov 16 2019	67250	1988	311	308143504	8621597	1294802	36679	899	683	52.1	1	24	0	874	900	925	0	25753.6	23.5	25282.9	
Nov 17 2019	67555	2293	305	309439154	9917247	1295650	36703	900	670	51.1	1.2	24	0	859	900	930	0	25753.6	24.7	25307.6	
Nov 18 2019	67855	2593	300	310703913	11182006	1264759	35828	900	660	51.6	1.1	23.4	0	871	900	930	0	25753.6	23.3	25330.9	
Nov 19 2019 *	68031	2769	176	311431256	11909349	727343	20604	900	386	52.5	1	13.5	1	-1	893	946	0	25753.6	12.7	25343.6	
Nov 20 2019	68334	3072	303	312725339	13203432	1294083	36659	899	667	51	1.3	24	0	874	900	921	0	25753.6	24.6	25368.2	
Nov 21 2019	68642	3380	308	314022191	14500284	1296852	36737	901	678	51.6	1.2	24	0	874	900	930	0	25753.6	23.6	25391.8	
Nov 22 2019	68918	3656	276	315151393	15629486	1129202	31988	899	607	53.1	0.7	20.9	1	-3	896	929	0	25753.6	20.6	25412.4	
Nov 23 2019	69228	3966	310	316448277	16926370	1296884	36738	901	682	52	0.9	24	0	880	900	925	0	25753.6	23.6	25436	
Nov 24 2019	69536	4274	308	317743833	18221926	1295556	36701	900	676	51.6	0.9	24	0	871	900	926	0	25753.6	24.7	25460.7	
Nov 25 2019	69838	4576	302	319040038	19518131	1296205	36719	900	664	50.6	1.1	24	0	865	900	938	0	25753.6	23.6	25484.3	
Nov 26 2019	70138	4876	300	320336877	20814970	1296839	36737	901	661	50.3	1.1	24	0	864	900	933	0	25753.6	23.6	25507.9	
Nov 27 2019	70436	5174	298	321634756	22112849	1297879	36766	901	656	50	1.2	24	0	874	900	928	0	25753.6	24.7	25532.6	
Nov 28 2019	70735	5473	299	322929714	23407807	1294958	36684	899	659	50.3	1	24	0	880	900	932	0	25753.6	23.6	25556.3	
Nov 29 2019	71041	5779	306	324226163	24704256	1296449	36726	900	674	51.4	0.7	24	0	873	900	920	0	25753.6	23.6	25579.9	
Nov 30 2019	71349	6087	308	325521597	25999690	1295434	36697	900	677	51.7	0.7	24	0	877	900	919	0	25753.6	23.6	25603.5	
Dec 1 2019	71652	303	303	326817188	1295591	1295591	36701	900	666	50.8	0.9	24	0	857	900	950	0	25753.6	24.7	25628.2	
Dec 2 2019	71961	612	309	328112272	2590675	1295084	36687	900	680	51.9	0.7	24	0	874	900	929	0	25753.6	23.7	25651.9	
Dec 3 2019	72264	915	303	329395922	3874325	1283650	36363	900	667	51.3	0.8	23.7	1	876	900	924	0	25753.6	23.8	25675.7	
Dec 4 2019	72564	1215	300	330692715	51171118	1296793	36736	901	660	50.3	1.2	24	0	868	900	935	0	25753.6	24.2	25699.9	
Dec 5 2019	72857	1508	293	331987524	6465927	1294809	36679	899	644	49.2	1.4	24	0	874	900	937	0	25753.6	23.3	25723.2	
Dec 6 2019	73039	1690	182	332781532	7259935	794008	22493	899	399	49.7	1.2	14.7	0	858	900	935	0	25753.6	15.3	25738.5	
Dec 7 2019	73039	1690	0	332781532	7259935	0	0	0	0	0	0	0.0	0	0	0	0	0	0	25753.6	0	25738.5
Dec 8 2019	73226	1877	187	333551559	8029962	770027	21813	899	410	52.6	1	14.3	1	-15	894	936	0	25753.6	13.4	25751.9	
Dec 9 2019	73531	2182	305	334847057	9325460	1295498	36699	900	670	51.1	1.3	24	0	870	900	937	0	25753.6	24.3	25776.2	
Dec 10 2019	73828	2479	297	336141887	10620290	1294830	36680	899	652	49.8	1.5	24	0	865	900	940	0	25753.6	24.3	25800.5	
Dec 11 2019	74119	2770	291	337437777	11916180	1295890	36710	900	641	48.9	1.7	24	0	873	900	923	0	25753.6	23.4	25823.9	
Dec 12 2019	74413	3064	294	338733872	13212275	1296095	36716	900	647	49.3	1.4	24	0	869	900	921	0	25753.6	24.3	25848.2	
Dec 13 2019	74707	3358	294	340030337	14508740	1296465	36726	900	646	49.2	1.4	24	0	869	900	927	0	25753.6	23.4	25871.6	
Dec 14 2019	74994	3645	287	341325772	15804175	1295435	36697	900	632	48.2	1.5	24	0	853	900	934	0	25753.6	24.3	25895.9	
Dec 15 2019	75287	3938	293	342622070	17100473	1296298	36722	900	643	49	1.1	24	0	869	900	926	0	25753.6	23.2	25919.1	
Dec 16 2019	75572	4223	285	343918031	18396434	1295961	36712	900	627	47.8	1.4	24	0	866	900	941	0	25753.6	24.2	25943.3	
Dec 17 2019	75847	4498	275	345213278	19691681	1295247	36692	899	605	46.2	1.7	24	0	867	900	930	0	25753.6	24.1	25967.4	
Dec 18 2019	76126	4777	279	346509471	20987874	1296193	36719	900	614	46.8	1.6	24	0	867	900	924	0	25753.6	24.2	25991.6	
Dec 19 2019	76388	5039	262	347804398	22282801	1294927	36683	899	577	44	2.4	24	0	870	900	918	0	25753.6	24.1	26015.7	
Dec 20 2019	76656	5307	268	349101032	23579435	1296634	36731	900	590	45	2.1	24	0	880	900	918	0	25753.6	23.1	26038.9	

Date	CO2 Equivalents			Landfill Gas Flow						Methane	Oxygen	Flare	Flare	Temperature			Blower 1		Blower 2	
	Yearly	Monthly	Daily							Avg	Avg	Run	Starts	Min.	Avg.	Max.	Daily	Cumu.	Daily	Cumu.
	Tonnes CO2	Tonnes CO2	Tonnes CO2	scf	scf	scf	meter3	scfm	MMBTU	(%)	(%)	Hours	Hours	°C	°C	°C	Hours	Hours	Hours	Hours
Dec 21 2019	76926	5577	270	350397551	24875954	1296519	36728	900	594	45.3	2.1	24	0	868	900	946	0	25753.6	24.2	26063.1
Dec 22 2019	77199	5850	273	351693010	26171413	1295459	36698	900	601	45.8	2.1	24	0	857	900	940	0	25753.6	24.2	26087.3
Dec 23 2019	77474	6125	275	352988417	27466820	1295407	36696	900	604	46.1	2.2	24	0	860	900	929	0	25753.6	23.1	26110.4
Dec 24 2019	77753	6404	279	354283594	28761997	1295177	36690	899	615	46.9	2.1	24	0	856	900	946	0	25753.6	24.2	26134.6
Dec 25 2019	78032	6683	279	355579836	30058239	1296242	36720	900	614	46.8	2.2	24	0	874	900	923	0	25753.6	24.2	26158.8
Dec 26 2019	78312	6963	280	356876793	31355196	1296957	36740	901	615	46.9	2.2	24	0	853	900	937	0	25753.6	24.1	26182.9
Dec 27 2019	78588	7239	276	358172102	32650505	1295309	36694	900	608	46.4	2.5	24	0	879	900	920	0	25753.6	23.2	26206.1
Dec 28 2019	78860	7511	272	359468989	33947392	1296887	36738	901	598	45.6	2.8	24	0	861	900	929	0	25753.6	24.2	26230.3
Dec 29 2019	79136	7787	276	360763902	35242305	1294913	36682	899	608	46.4	2.6	24	0	880	900	920	0	25753.6	24.2	26254.5
Dec 30 2019	79408	8059	272	362059890	36538293	1295988	36713	900	598	45.6	3	24	0	870	900	925	0	25753.6	24.2	26278.7
Dec 31 2019	79692	8343	284	363355798	37834201	1295908	36710	900	624	47.6	2.2	24	0	860	900	936	0	25753.6	23.1	26301.8