

Brunner Island, LLC
REGULATORY DELIVERABLE
SUBMITTAL COVER SHEET

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BRIEF DESCRIPTION OF OUTLINED REQUIREMENT:			
RECIPIENT(S):			
NAME:		ORGANIZATION:	
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January 2, 2020

Mr. Kurt Fritz
Pennsylvania Department of Environmental Protection
Waste Management Program
909 Elmerton Ave.
Harrisburg, Pennsylvania 17110

**RE: Quarterly Groundwater Report: 4th Quarter 2019
Basin 5, Disposal Area 8, and Pyrite Tomb Area
Brunner Island, LLC**

Dear Mr. Fritz:

Please accept this letter and attachments as the quarterly report for Basin 5 at the Brunner Island Steam Electric Station.

Note that a data table (water depth and pH) and associated trend plots for pyrite tomb standpipe monitoring have been added to this Basin 5 report, beginning with the second quarter 2017 groundwater report.

The analytical results are provided on Form 14Rs (enclosed) in accordance with the Basin 5 closure plan approved by the PADEP in December 2000. A summary table of results, an Excel spreadsheet file (on CD), and maps showing well locations are also enclosed.

Please call or email me with any questions. Thank you.

Sincerely,

A handwritten signature in black ink that reads "M. E. Mengel". The signature is written in a cursive, flowing style.

Martin E. Mengel, PG/CHMM

Attachments: Report, Data Table, Pyrite Tomb Standpipe Monitoring Results, Maps, CD containing LandLinks EDD (PADEP only), trend plots, 14Rs, and a PDF of this report

Cc: Marcia Thiess (w/atts.) – Brunner Island, LLC
Tom Weissinger (w/atts.) – Talen Energy Supply, LLC
Citizens (w/atts.)

Groundwater Monitoring Report – Fourth Quarter 2019

Brunner Island, LLC - Basin 5

Brunner Island Steam Electric Station

BACKGROUND

The Brunner Island Steam Electric Station (Brunner Island SES) is located in York Haven, York County, Pennsylvania. An overall Brunner Island SES map and a basin specific map are attached (Attachments 3 and 4).

The PADEP issued Residual Waste Permit # 301337 on December 28, 2000, approving the Basin 5 closure plan. The residual waste permit expired on December 27, 2007 and was not renewed by the PADEP. Talen believes that Mandatory Abatement Trigger Levels (MATLs) no longer apply to Basin 5, as a result of the permit expiration, and therefore, Talen no longer uses MATLs as the primary data screening tool for Basin 5 groundwater results.

Disposal Area 8 (a Class 2 residual waste landfill) was constructed on top of Basin 5. Construction was completed and disposal into the landfill began in late 2008. The permitted area for the landfill encompasses approximately 20 acres, however, currently only 9 acres have been constructed and only 4 acres are actively utilized. The existing groundwater monitoring network for Basin 5 was chosen and approved by the PADEP to serve as the monitoring network for Area 8 as well.

In accordance with Talen's PADEP-approved *Workplan – Groundwater Risk Evaluation – Ash Basin 4 and Pyrite Tomb* dated September 29, 2016, a downgradient monitoring well MW-PT-1 was installed in January 2017 to help assess potential impacts from the pyrite tomb. Additionally, pH and liquid depth monitoring data and associated trend plots for water within the pyrite tomb standpipe have been added to this Basin 5 report, beginning with the second quarter of 2017.

In accordance with the closure/ post closure use plan, construction of the rail extension on Basin 5 was completed in 2013. As a result, moderate subsurface disturbance has occurred in the area.

Groundwater monitoring in the vicinity of Basin 5 is currently conducted quarterly as required in accordance with the approved Basin 5 closure plan. This groundwater monitoring generally includes sampling wells upgradient and downgradient of Basin 5 for indicator parameters of fly ash such as arsenic, boron, lithium, selenium, strontium, and total dissolved solids. Other parameters are routinely monitored in the vicinity of Basin 5 in accordance with permit requirements and are listed on the attached summary table of quarterly groundwater monitoring results (Attachment 1). Talen reviews current and historical data (approximately the past 10 years) to identify trends and to compare data with Pennsylvania Act 2 residential Statewide Health Standards for used aquifers and/or EPA National Drinking Water Standards.

GROUNDWATER MONITORING PROGRAM

Monitoring Locations – Basin 5

Downgradient and upgradient monitoring wells for Basin 5 are listed below and shown on the attached Site Plan of Basin 5 (Attachment 4).

- Background monitoring well – MW-19
- Upgradient monitoring well – MW-4-7A
- Downgradient monitoring wells – MW-4-10, MW-8-1N, MW-8-2, MW-8-3A, MW-8-3B, MW-8-4, MW-8-5A, MW-8-5B, MW-8-10A, MW-8-10B, MW-8-10C, MW-8-12C, and MW-PT-1
- Pyrite tomb standpipe (lab analytical concluded in 2017; field pH and water elevation monitoring to continue)

Monitoring Schedule

For all the monitoring wells listed above, except MW-8-10C and MW-8-12C, quarterly sampling of field parameters, non-metals, and metals are performed. For MW-8-10C and MW-8-12C, these parameters are only required to be sampled annually during the second calendar quarter. All the monitoring parameters are listed on the attached Summary Table of Basin 5 Groundwater Monitoring Results (Attachment 1). Additionally, for quality assurance/quality control (QA/QC), field blanks and duplicates are routinely collected during each sampling event.

QA/QC Results

For the site-wide monitoring event conducted at Brunner Island SES for the fourth quarter of 2019, Talen samplers collected seven field blanks (all groundwater field blanks) and seven duplicate samples. The duplicate samples were collected from six groundwater wells (including MW-4-7A, MW-8-5B, PZ-6-1A, MW-7-4, EQ-1, and GC-3) and one surface water monitoring point (MP-B4). These field blanks and duplicates were analyzed by the laboratory along with the routinely collected groundwater samples. For the seven field blanks, two water quality parameters were detected above respective limits of quantification (iron and total dissolved solids) for a total of three analyses. In Talen's opinion, analysis of the field blanks indicated no significant evidence of sample contamination related to field sampling procedures or sample containers. For the seven duplicates, a total of 387 paired analyses were performed with 15 paired analyses exceeding Talen's acceptable level of less than 20% relative percent difference (RPD) between duplicates. Based on these QA/QC results, Talen believes that the laboratory precision is reasonable, and the monitoring results are acceptable for reporting to the PADEP.

GROUNDWATER MONITORING RESULTS

The groundwater sampling results for this quarter are summarized on Attachment 1, Summary Table of Basin 5 Groundwater Monitoring Results. Upgradient and downgradient wells are indicated in the headings at the top of this table. Any groundwater concentrations that exceeded the listed regulatory standards are indicated in red text color. Groundwater monitoring results are also reported on the 14R forms for each well (Attachment 5).

Below are the findings for each Basin 5 monitoring well:

Upgradient Monitoring Well (MW-4-7A)

Upgradient monitoring well MW-4-7A is located near the northwest corner of Basin 5 and serves as an upgradient well to the basin. Key results for this quarter and trends for MW-4-7A are as follows:

- pH is consistently near neutral.
- Total dissolved solids concentration of 1,210 mg/L exceeded the Secondary Drinking Water Standard of 500 mg/L, but exhibits a slightly increasing trend.
- Sulfate concentration of 612 mg/L exceeded the Secondary Drinking Water Standard of 250 mg/L, but exhibits a slightly increasing trend.
- Boron concentrations exhibit a gradual long-term increasing trend since 2004. After being stable from 2012 to 2018 at about 1,500 µg/L (which meets the Act 2 residential Statewide Health Standard of 6,000 µg/L), boron concentrations have fluctuated upward in 2019.
- Calcium concentrations historically exhibit a stable long-term trend, but concentrations have exhibited increased variability since the fourth quarter of 2018.
- Lithium (dissolved) concentration of 167 µg/L exceeded the Act 2 residential Statewide Health Standard of 83 µg/L. Lithium concentrations at MW-4-7A have exhibited an increasing trend since 2011, after historically averaging approximately 30 µg/L.
- Manganese (dissolved) concentration of 210 µg/L exceeded the Secondary Drinking Water Standard of 50 µg/L, but did not exceed the Act 2 residential Statewide Health Standard of 300 µg/L. Manganese concentrations are seasonally variable at MW-4-7A with peak concentrations typically exceeding the Secondary Drinking Water Standard and occasionally exceeding the Act 2 standard.
- Sodium concentrations demonstrate a gradual long-term increasing trend, but appear to be stabilizing at about 60 mg/L. There are no EPA drinking water or PA Act 2 standards for sodium.

Downgradient Monitoring Wells

1. MW-4-10 - Monitoring well MW-4-10 is located on the dike between Basin 4 and Basin 5 and would be expected to be more representative of basin leachate than the groundwater surrounding the basin. Relatively significant ash-related impact would be expected and is observed, as compared to monitoring wells which are not bounded by ash on both sides. The general area around MW-4-10 has periodically experienced earth disturbance related to wastewater treatment plant construction. This disturbance has apparently impacted groundwater/leachate quality in MW-4-10. Key results for this quarter and trends for MW-4-10 are as follows:

- Recent (since mid-2018) substantial upward fluctuations for numerous parameters (including total dissolved solids, sulfate, boron, calcium, selenium, specific conductance, and

strontium) appear to be related to recent increased groundwater elevations. Selenium, strontium, calcium, and specific conductance have fluctuated well above respective historical ranges.

- Field pH (5.92 S.U.) is below the Secondary Drinking Water Standard range of 6.5 to 8.5 S.U. The historical pH range for this well is approximately 4 to 6.5.
- Total dissolved solids concentration of 1,460 mg/L exceeded the Secondary Drinking Water Standard of 500 mg/L. Total dissolved solids concentrations typically vary from about 700 to 1,300 mg/L, but generally exhibit a long-term stable trend. However, since the first quarter of 2019, total dissolved solids have been higher than the historical range (due to the upward fluctuations noted above).
- Sulfate concentration of 892 mg/L exceeded the Secondary Drinking Water Standard of 250 mg/L. Sulfate concentrations typically vary from about 400 to 1,050 mg/L, but generally exhibit a long-term stable trend.
- Concentrations of aluminum, arsenic, beryllium, cadmium, fluoride, nickel, and zinc have exhibited similar elevated and variable concentration trends for the past few years, with noticeable peaks in 2011, 2014, 2016, and 2018, resulting in some exceedances of respective regulatory standards. Elevated concentrations of these metals are likely related to low pH occurrences when groundwater elevations are high.
- Boron concentrations are elevated and variable (ranging from about 1,000 to 4,500 µg/L) relative to the other Basin 5 wells, but meet the Act 2 residential Statewide Health Standard of 6,000 µg/L. Boron exhibits a general decreasing trend since 2012 (except for upward fluctuations since mid-2018 as noted above).
- Iron is present at low concentrations, and typically is below the Secondary Drinking Water Standard.
- Lithium (dissolved) concentration of 1,140 µg/L exceeded the Act 2 residential Statewide Health Standard of 83 µg/L. Lithium concentrations at MW-4-10 are the most elevated of all Basin 5 wells and exhibit a general long-term increasing trend, which appears to be stabilizing/decreasing since 2012.
- Manganese (dissolved) concentration of 2,080 µg/L exceeded the Secondary Drinking Water Standard of 50 µg/L and the Act 2 residential Statewide Health Standard of 300 µg/L. Manganese concentrations are elevated and variable, but exhibit a relatively stable long-term trend.
- Molybdenum concentrations at MW-4-10 are the most elevated and variable of the Basin 5 wells, with peak concentrations in 2011/2012 of about 2,000 µg/L, but the long-term trend is decreasing.
- Potassium and sodium concentrations are elevated relative to the other Basin 5 wells. Potassium demonstrates an increasing trend, while sodium demonstrates a decreasing trend. There are no EPA drinking water or PA Act 2 standards for potassium and sodium.

- Selenium is seasonally variable and demonstrates a long-term increasing trend, similar to the increasing trend at background well MW-19, but more variable since 2014. Concentrations have been below the Act 2 residential Statewide Health Standard of 50 µg/L, except for the fourth quarter of 2018.
2. **MW-8-1N** - MW-8-1 was decommissioned on March 27, 2013, shortly after first quarter 2013 sampling was conducted, to accommodate the footprint of the railroad extension project. MW-8-1 was replaced by MW-8-1N (as installed on September 17, 2013) and quarterly sampling was initiated in the third quarter of 2013. Key results for this quarter and trends for MW-8-1N are as follows:
- pH is near neutral, but slightly acidic, sometimes below the Secondary Drinking Water Standard range of 6.5 to 8.5 S.U.
 - Total dissolved solids concentration of 759 mg/L exceeded the Secondary Drinking Water Standard of 500 mg/L. Total dissolved solids concentrations increased after the well was installed (in 2013) until the second quarter of 2015. Since then, concentrations have generally decreased. Specific conductance exhibits a similar trend. These trends for TDS and specific conductance are likely related to similar trends for calcium, magnesium, sodium, strontium, and sulfate at MW-8-1N.
 - Sulfate concentration of 312 mg/L exceeded the Secondary Drinking Water Standard of 250 mg/L. Like total dissolved solids, sulfate concentrations had increased until the second quarter of 2015, but concentrations have since decreased and are now below 400 mg/L.
 - Boron concentrations are well below the Act 2 residential Statewide Health Standard of 6,000 mg/L, and are the lowest of all Basin 5 wells.
 - Calcium and magnesium concentrations were elevated (compared to most other Basin 5 wells) from 2015 to 2018, but recent concentrations have decreased similar to the trend for total dissolved solids (discussed above). There are no EPA drinking water or PA Act 2 standards for these parameters.
 - Chloride and sodium concentrations have historically been elevated and variable compared to the other Basin 5 wells, but chloride has always been below the Secondary Drinking Water Standard of 250 mg/L. Since 2014 and 2015 respectively, chloride and sodium concentrations have decreased significantly, and are now comparable to concentrations at several other Basin 5 wells.
 - Iron (total) concentration of 0.84 mg/L exceeded the Secondary Drinking Water Standard of 0.3 mg/L. Iron concentrations are elevated and variable relative to most Basin 5 wells.
 - Manganese (dissolved) concentration of 1,270 µg/L exceeded the Secondary Drinking Water Standard of 50 µg/L and the Act 2 residential Statewide Health Standard of 300 µg/L. Manganese concentrations are elevated, but exhibit a long-term stable trend with some variability.

- Strontium is usually the most elevated of all the Basin 5 wells (except for recent upward fluctuations at MW-4-10) and exhibits a decreasing trend similar to total dissolved solids (discussed above). Strontium concentrations are below the Act 2 residential Statewide Health Standard of 4,000 µg/L.

3. MW-8-2 - Key results for this quarter and trends for MW-8-2 are as follows:

- pH is stable and near neutral, but is occasionally below the Secondary Drinking Water range of 6.5 to 8.5 S.U.
- Sulfate and total dissolved solids exhibit relatively stable trends, and concentrations are below respective Secondary Drinking Water Standards of 250 mg/L and 500 mg/L.
- Manganese (dissolved) concentration of 223 µg/L exceeded the Secondary Drinking Water Standard of 50 µg/L, but did not exceed the Act 2 residential Statewide Health Standard of 300 µg/L. Concentrations exhibit a long-term stable trend with some variability.
- Molybdenum (dissolved) concentration of 288 µg/L exceeded the Act 2 residential Statewide Health Standard of 40 µg/L. However, concentrations exhibit a fairly stable trend.
- Strontium concentrations had evidenced a slight long-term increasing trend, but have stabilized around 400 to 500 µg/L since 2011. Strontium concentrations are below the Act 2 residential Statewide Health Standard of 4,000 µg/L.

4. MW-8-3A and MW-8-3B - Key results for this quarter and trends for MW-8-3A and MW-8-3B are as follows:

- pH is stable and near neutral at both wells, but slightly lower at MW-8-3A. pH at MW-8-3A is sometimes slightly below the Secondary Drinking Water Standard range of 6.5 to 8.5 S.U.
- Total dissolved solids concentrations at both wells exhibit long-term stable trends with some variability. Concentrations are comparable in both wells, but tend to be slightly higher and more variable at MW-8-3A. The total dissolved solids concentration at MW-8-3A typically exceeds the Secondary Drinking Water Standard of 500 mg/L, while concentrations at MW-8-3B typically fluctuate around the standard.
- Sulfate concentrations in both wells exhibit long-term stable trends with some variability. Sulfate concentrations at MW-8-3A typically fluctuate around the Secondary Drinking Water Standard of 250 mg/L, while concentrations at MW-8-3B are typically below the standard.
- Arsenic concentrations at both wells exhibit stable/decreasing long-term trends with seasonal variability. Peak concentrations exceed the Primary Drinking Water Standard of 10 µg/L (not since 2011 at MW-8-3B). Dissolved arsenic concentrations at MW-8-3A range from 3 to 20 µg/L over the past 10 years. At MW-8-3B, arsenic concentrations exhibit a similar stable/decreasing trend at slightly lower concentrations. Talen believes that relatively permeable material is associated with relic stream channels existing beneath Basin 5, potentially accounting for arsenic detections at wells MW-8-3A and MW-8-3B.

- Iron concentrations at MW-8-3A are variable and exceed the Secondary Drinking Water Standard of 0.3 mg/L (possibly due to impacts from historical pyritic material handling). Iron is present in MW-8-3B, but at a much lower concentrations than at MW-8-3A, suggesting possibly more impact in the upper part of the water-bearing zone (and/or possibly a higher iron concentration related to the high turbidity within MW-8-3A groundwater). Peak iron concentrations in MW-8-3B exceed the standard.
- Manganese concentrations in both wells exceed the Secondary Drinking Water Standard of 50 µg/L and the Act 2 residential Statewide Health Standard of 300 µg/L, but exhibit long-term stable trends with some variability.
- Molybdenum concentrations in both wells normally exceed the Act 2 residential Statewide Health Standard of 40 µg/L, but exhibit slight long-term decreasing trends.

5. MW-8-4 - Key results for this quarter and trends for MW-8-4 are as follows:

- Field pH (5.56 S.U.) remains below the Secondary Drinking Water Standard range of 6.5 to 8.5 S.U. The historical pH range for this well is approximately 4.5 to 6.0. Buffering capacity is typically minimal.
- Sulfate and total dissolved solids concentrations are elevated and variable at MW-8-4, and exceed Secondary Drinking Water Standards, but exhibit fairly stable/slightly decreasing long-term trends.
- Aluminum concentrations are elevated and variable relative to most other Basin 5 wells, sometimes exceeding the Secondary Drinking Water Standard of 200 µg/L. Aluminum concentrations have decreased and become less variable since 2017. Dissolved concentrations have been below the standard since the second quarter of 2018.
- Beryllium, cadmium, nickel, and zinc concentrations are variable and elevated relative to other Basin 5 wells. However, since 2012, concentrations have generally decreased and have been less variable. Nickel concentrations fluctuate around the Act 2 standard, but the other parameters meet respective regulatory standards.
- Boron concentrations exhibit a gradual long-term increasing trend with variability, but concentrations remain low, well below the Act 2 residential Statewide Health Standard of 6,000 µg/L. Peak boron concentrations have not increased since 2012.
- Chloride concentrations are seasonally variable, but remain well below the Secondary Drinking Water Standard of 250 mg/L. Peak chloride concentrations have decreased since 2015.
- Manganese concentrations remain elevated at 9,330 µg/L compared to the Secondary Drinking Water Standard of 50 µg/L and the Act 2 residential Statewide Health Standard of 300 µg/L. Manganese concentrations at MW-8-4 are the most elevated and variable of all the Basin 5 wells, but concentrations exhibit a gradual long-term downward trend with seasonal variability.

6. MW-8-5A and MW-8-5B - These wells are located at the northwestern corner of Basin 5. Key results for this quarter and trends for MW-8-5A and MW-8-5B are as follows:

- pH is stable and near neutral at both wells, but exhibit slight decreasing trends.
- Total dissolved solids concentrations are elevated in excess of the Secondary Drinking Water Standard in both wells, with increasing trends (current concentrations of 698 and 585 µg/L for MW-8-5A and MW-8-5B respectively). These increasing TDS trends are likely related to similar increasing trends for calcium, magnesium, and specific conductivity in both wells.
- Sulfate concentrations demonstrate slight increasing trends in both MW-8-5A and MW-8-5B with current concentrations of 271 mg/L and 267 mg/L, respectively, compared to the Secondary Drinking Water Standard of 250 mg/L. Sulfate concentrations in these two wells appear to be stabilizing/decreasing since 2015.
- Arsenic (dissolved) concentrations in MW-8-5A and MW-8-5B are elevated (presently at 96.9 µg/L and 211 µg/L, respectively) in excess of the Primary Drinking Water Standard of 10 µg/L. Arsenic concentrations at MW-8-5B exhibit a fairly stable trend, while concentrations at MW-8-5A exhibit a slight decreasing trend.

Note: PPL's groundwater consultant, Ish Inc., confirmed that Basin 5 is the source of arsenic identified in MW-8-5A and MW-8-5B. As part of the assessment conducted to investigate the elevated arsenic in MW 8-5 area, Ish Inc. established that arsenic attenuates quickly and is not elevated in the new point of compliance wells MW-8-10A and MW 8-10B.

- Lithium concentrations exceed the Act 2 residential Statewide Health Standard of 83 µg/L, but demonstrate fairly stable trends at both wells. The current dissolved lithium concentration in MW-8-5A is 171 µg/L and is 147 µg/L in deeper MW-8-5B.
 - Manganese concentrations exceed the Secondary Drinking Water Standard of 50 µg/L and the Act 2 residential Statewide Health Standard of 300 µg/L in both wells (current concentrations of 352 and 372 µg/L for MW-8-5A and MW-8-5B respectively). Manganese exhibits fairly stable trends in both wells.
 - Molybdenum concentrations exceed the Act 2 residential Statewide Health Standard of 40 µg/L in both wells (current concentrations of 401 and 377 µg/L for MW-8-5A and MW-8-5B respectively), but exhibit slightly decreasing long-term concentration trends with some variability.
 - Strontium concentrations exhibit increasing trends in both wells. Strontium concentrations are below the Act 2 residential Statewide Health Standard of 4,000 µg/L.
- 7. MW-8-10A, MW-8-10B, and MW-8-10C** - Monitoring wells MW-8-10A, MW-8-10B, and MW-8-10C were added to the monitoring program as part of Area 8 monitoring system located within Basin 5. These wells also serve as the point of compliance wells, downgradient of MW-8-5A and MW-8-5B. MW-8-10A and MW-8-10B are sampled quarterly while MW-8-10C is sampled annually during the second calendar quarter. Most importantly, arsenic

concentrations in MW-8-10A, MW-8-10B, and MW-8-10C continue to meet the Primary Drinking Water Standard of 10 µg/L and exhibit stable/decreasing trends. Other key results and trends for these wells for this quarter are as follows:

- MW-8-10B demonstrates typically slightly alkaline pH (exhibiting a slight decreasing trend) and overall better and more stable water quality than MW-8-10A and MW-8-10C. pH at MW-8-10C is also slightly alkaline (and decreasing slightly).
- pH at MW-8-10A is near neutral, but lower than pH at MW-8-10B and MW-8-10C. pH at MW-8-10A is sometimes slightly below the Secondary Drinking Water Standard range of 6.5 to 8.5 S.U.
- Sulfate and total dissolved solids concentrations at MW-8-10A are elevated above Secondary Drinking Water Standards. Sulfate and total dissolved solids concentrations have been stable/decreasing since 2015, especially decreasing since early 2018 and are now only slightly above the respective standards. These trends appear to be related to trends for calcium, magnesium, specific conductivity, and strontium (which have also decreased since early 2018 following long-term increasing trends, although calcium fluctuated upward this quarter). At MW-8-10B, total dissolved solids concentrations are fairly stable and fluctuate around the 500 mg/L standard. Sulfate concentrations at MW-8-10B are below the 250 mg/L standard, and exhibit a slight decreasing trend.
- Iron concentrations at MW-8-10C are variable and occasionally exceed the Secondary Drinking Water Standard of 0.3 mg/L.
- Manganese concentrations at MW-8-10A are elevated and seasonally variable, exceeding the Secondary Drinking Water Standard of 50 µg/L and often exceeding the Act 2 residential Statewide Health Standard of 300 µg/L. However, peak manganese concentrations at MW-8-10A have decreased significantly since 2018. Manganese concentrations at MW-8-10C also normally exceed the both standards, but are less variable than at MW-8-10A.
- Molybdenum concentrations at MW-8-10C exceed the Act 2 residential Statewide Health Standard of 40 µg/L, while concentrations at MW-8-10A and MW-8-10B sometimes exceed the standard. Molybdenum concentrations are fairly stable at all three wells, ranging from approximately 15 to 80 µg/L. Similar to manganese, peak molybdenum concentrations at MW-8-10A have decreased significantly since 2018.
- Vanadium concentrations at MW-8-10B fluctuate around the Act 2 residential Statewide Health Standard of 2.9 µg/L, which was lowered in 2016 along with the analytical limit of quantification.

8. MW-8-12C - Sampling is required at MW-8-12C annually in the second calendar quarter. Key results and trends for the second quarter of 2019 were as follows:

- Iron concentrations have decreased since 2016 and are now below the Secondary Drinking Water Standard of 0.3 mg/L.

- Manganese (dissolved) concentration of 137 µg/L exceeded the Secondary Drinking Water Standard of 50 µg/L, but did not exceed the Act 2 residential Statewide Health Standard of 300 µg/L. Manganese concentrations fluctuated downward significantly during the second quarter of 2019, but it is unclear yet whether this represents a new decreasing trend.
- Molybdenum (dissolved) concentration of 141 µg/L exceeded the Act 2 residential Statewide Health Standard of 40 µg/L. Molybdenum concentrations exhibit a decreasing trend since 2016, after exhibiting a long-term gradual increasing trend.
- Several parameters fluctuated downward during the second quarter of 2019 at MW-8-12C including boron, calcium, iron, magnesium, manganese, molybdenum, potassium, specific conductivity, sulfate, total dissolved solids, and total organic carbon. Barium and strontium fluctuated upward.

Pyrite Tomb Monitoring

1. **Pyrite Tomb Standpipe** – The pyrite tomb is monitored at least monthly for water depth and field pH, and quarterly reporting (via this quarterly groundwater report) began in the 2nd quarter of 2017. Talen planned to collect two additional (last) samples from the pyrite tomb standpipe during the 3rd and 4th quarters of 2017 for laboratory analysis (as previously). However, on both quarterly sampling occasions, the standpipe contained too little water to sample (lack of water is a favorable condition). A summary table of the field monitoring results for 2017 thru current is provided in Attachment 2. Trend plots for the field parameters (pH, water depths, water elevations) are provided on the enclosed CD.
2. **MW-PT-1** – Downgradient monitoring well MW-PT-1 was installed in January 2017 to help assess the Pyrite Tomb area. This well is located outside of the Basin 5 berm material in native alluvial sediments. Since monitoring of MW-PT-1 commenced, many parameters have exhibited significant variability with no defined trends yet. Analytical results for the pyrite tomb monitoring well MW-PT-1 are included on Attachment 1, *Summary Table of Basin 5 Groundwater Monitoring Results*, and trend plots for these parameters (as applicable) are provided on the enclosed CD. Key results for this quarter are as follows:
 - pH (5.98 S.U.) was below the Secondary Drinking Water Standard range of 6.5 to 8.5 S.U. Lower pH and alkalinity values at MW-PT-1 appear to correlate with higher groundwater elevations.
 - Total dissolved solids concentration of 833 mg/L exceeded the Secondary Drinking Water Standard of 500 mg/L.
 - Sulfate concentration of 501 exceeded the Secondary Drinking Water Standard of 250 mg/L.
 - Aluminum (total) concentration of 237 µg/L exceeded the Secondary Drinking Water Standard of 200 µg/L.
 - Manganese (total) concentration of 6,350 µg/L exceeded the Secondary Drinking Water Standard of 50 µg/L and Act 2 residential Statewide Health Standard of 300 µg/L.

- Molybdenum (total) concentration of 288 µg/L exceeded the Act 2 residential Statewide Health Standard of 40 µg/L.

ATTACHMENTS

1. Summary Table of Groundwater Monitoring Results
2. Pyrite Tomb Standpipe Monitoring Results
3. Site Plan – Overall Map – Brunner Island SES
4. Site Plan – Brunner Island Basin 5
5. PADEP Form 14Rs (on enclosed CD)

Brunner Island, LLC
Basin No. 5 Groundwater Monitoring Results

PARAMETER	UNITS	REGULATORY CRITERIA LIMIT	GROUNDWATER MONITORING WELLS														
			Downgradient												Pyrite Tomb Monitoring	Upgradient	
Location ID			MW-4-10	MW-8-1N	MW-8-2	MW-8-3A	MW-8-3B	MW-8-4	MW-8-5A	MW-8-5B	MW-8-10A	MW-8-10B	MW-8-10C	MW-8-12C	MW-PT-1	MW-4-7A	MW-19
Sampling Date			11/15/2019	11/3/2019	11/4/2019	11/4/2019	11/4/2019	11/15/2019	11/6/2019	11/6/2019	11/11/2019	11/11/2019			11/15/2019	11/11/2019	11/7/2019
Field Parameters (monitored quarterly)																	
Well Depth	FT		38.62	26.30	22.36	26.52	48.10	21.75	39.10	59.10	37.30	57.00			21.22	39.90	46.50
Sampling Depth	FT		34.00	23.00	15.00	20.00	40.00	18.00	33.00	52.00	32.00	52.00			19.00	35.00	33.00
Well Purge Volume	L		4.40	2.25	4.00	3.20	2.00	4.00	2.50	2.25	3.00	3.00			4.00	6.50	2.50
Depth to Water	FT		21.81	11.47	3.05	8.19	9.39	12.72	22.90	15.69	16.70	16.62			12.09	25.80	17.78
Water Surface Elevation	FT		270.90	269.17	268.45	259.19	258.32	257.47	262.14	269.19	259.77	259.65			259.68	262.21	288.02
Temperature, field	°C		12.89	16.91	15.08	13.61	14.59	14.22	12.68	13.45	12.41	14.57			13.13	15.52	12.66
pH, field	S.U.	6.5 - 8.5 S	5.92	6.44	6.82	6.34	6.75	5.56	7.22	7.18	6.65	7.48			5.98	6.87	6.58
pH, lab	S.U.	6.5 - 8.5 S	6.22	6.86	6.91	6.74	7.24	6.00	7.30	7.49	6.97	7.74			6.27	7.11	6.90
Specific Conductance, field	umhos/cm		1,824.00	1,060.00	556.00	917.00	777.00	1,004.00	1,056.00	962.00	853.00	808.00			1,157.00	1,522.00	221.00
Specific Conductance, lab	umhos/cm		1,820.00	1,056.00	554.00	907.00	761.00	978.00	1,056.00	963.00	842.00	798.00			1,132.00	1,503.00	223.00
Turbidity, field	NTU		1.65	1.16	0.32	4.48	0.33	1.28	0.36	0.26	0.90	0.44			1.88	0.26	0.44
Dissolved Oxygen, field	mg/L		2.87	0.80	0.36	0.11	0.39	1.37	0.48	0.49	1.47	1.21			1.24	1.10	2.65
Redox, field	mV		108.90	-43.00	41.50	-113.90	-101.60	144.80	22.00	65.00	102.00	50.90			134.10	42.30	163.60
Non-Metals (monitored quarterly)																	
Alkalinity, total as CaCO3	mg/L		55.50	215.00	105.00	221.00	256.00	47.80	249.00	235.00	135.00	108.00			70.30	238.00	49.80
Total Organic Carbon	mg/L		1.12	1.94	1.01	2.06	1.33	1.19	1.29	1.14	1.38	0.72			1.31	1.93	< 0.5
Total Dissolved Solids	mg/L	500 S	1,460.00	759.00	339.00	617.00	487.00	725.00	698.00	585.00	591.00	486.00			833.00	1,210.00	137.00
Chemical Oxygen Demand	mg/L		< 20	5.3 ND	5.3 ND	5.3 ND	5.3 ND	< 20	5.3 ND	5.3 ND	5.3 ND	5.3 ND			< 20	5.3 ND	5.3 ND
Bicarbonate	mg/L		55.50	215.00	105.00	221.00	256.00	47.80	249.00	235.00	135.00	108.00			70.30	238.00	49.80
Chloride, total as Cl	mg/L	250 S	8.61	28.70	31.90	39.50	13.70	25.00	31.90	19.00	31.30	63.30			4.88	16.80	8.70
Fluoride, total as F	mg/L	2 S, 4 M	< 0.2	0.27	1.03	0.34	0.50	0.29	0.92	0.67	< 0.2	< 0.2			0.38	< 0.2	< 0.2
Ammonia, as N	mg/L		0.63	0.109 ND	< 0.2	0.30	0.109 ND	0.109 ND	0.59	0.38	0.109 ND	0.109 ND			0.109 ND	0.21	< 0.2
Nitrate, as N	mg/L	10 M	< 0.5	< 0.5	< 0.5	0.024 ND	0.024 ND	0.024 ND	0.024 ND	0.024 ND	< 0.5	0.024 ND			0.51	0.024 ND	4.07
Sulfate, as SO4	mg/L	250 S	892.00	312.00	125.00	235.00	151.00	441.00	271.00	267.00	259.00	191.00			501.00	612.00	26.00
Metals (monitored quarterly)																	
Aluminum, total	ug/L	200 S	185.00	< 100	26.8 ND	< 100	< 100	261.00	< 100	26.8 ND	< 100	26.8 ND			237.00	26.8 ND	26.8 ND
Aluminum, dissolved	ug/L	200 S	< 100	26.8 ND	< 100	< 100	26.8 ND	129.00	< 100	< 100	26.8 ND	< 100				26.8 ND	26.8 ND
Antimony, total	ug/L	6 M	< 1	0.179 ND	0.179 ND	0.179 ND	0.179 ND	0.179 ND	0.179 ND	0.179 ND	0.179 ND	0.179 ND			0.179 ND	0.179 ND	0.179 ND
Antimony, dissolved	ug/L	6 M	< 1	0.179 ND	0.179 ND	0.179 ND	0.179 ND	0.179 ND	0.179 ND	0.179 ND	0.179 ND	< 1				0.179 ND	0.179 ND
Arsenic, total	µg/L	10 M	1.63	0.548 ND	0.548 ND	14.40	8.58	0.548 ND	106.00	173.00	1.59	2.67			0.548 ND	0.548 ND	< 1
Arsenic, dissolved	µg/L	10 M	1.19	0.548 ND	0.548 ND	12.80	6.91	0.548 ND	96.90	211.00	0.548 ND	< 1				0.548 ND	< 1
Barium, total	µg/L	2,000 M	12.40	20.30	25.40	49.50	62.30	13.20	40.10	64.60	22.40	43.40			21.00	21.20	212.00
Barium, dissolved	µg/L	2,000 M	12.90	18.70	24.70	49.30	54.70	16.20	39.20	61.70	21.80	48.20				22.30	233.00
Beryllium, total	ug/L	4 M	0.0706 ND	0.0706 ND	0.0706 ND	0.0706 ND	0.0706 ND	0.0706 ND	0.0706 ND	0.0706 ND	0.0706 ND	0.0706 ND			0.0706 ND	0.0706 ND	0.0706 ND
Beryllium, dissolved	ug/L	4 M	0.0706 ND	0.0706 ND	0.0706 ND	0.0706 ND	0.0706 ND	0.0706 ND	0.0706 ND	0.0706 ND	0.0706 ND	0.0706 ND				0.0706 ND	0.0706 ND
Boron, total	µg/L	6,000 A	2,590.00	< 100	443.00	374.00	334.00	306.00	762.00	734.00	323.00	271.00			1,330.00	1,740.00	< 100
Boron, dissolved	µg/L	6,000 A	2,530.00	< 100	452.00	407.00	326.00	313.00	771.00	766.00	304.00	260.00				1,710.00	< 100
Cadmium, total	µg/L	5 M	1.27	0.152 ND	< 1	0.152 ND	< 1	1.10	< 1	< 1	0.152 ND	0.152 ND			1.15	0.152 ND	0.152 ND
Cadmium, dissolved	µg/L	5 M	1.65	0.152 ND	< 1	0.152 ND	< 1	1.33	< 1	< 1	0.152 ND	0.152 ND				0.152 ND	0.152 ND
Calcium, total	mg/L		243.00	161.00	73.40	138.00	121.00	125.00	161.00	153.00	128.00	120.00			125.00	242.00	23.30
Calcium, dissolved	mg/L		235.00	161.00	73.50	136.00	116.00	117.00	159.00	154.00	121.00	114.00				233.00	25.30
Chromium, total	µg/L	100 M	0.411 ND	< 1	< 1	0.411 ND	< 1	0.411 ND	< 1	< 1	0.411 ND	0.411 ND			0.411 ND	0.411 ND	< 1
Chromium, dissolved	µg/L	100 M	0.411 ND	0.411 ND	< 1	0.411 ND	< 1	0.411 ND	< 1	< 1	0.411 ND	0.411 ND				0.411 ND	< 1
Copper, total	µg/L	1,000 S, 1,300 M	3.26	3.32	2.98	2.83	7.56	1.09	4.72	2.86	1.07	< 1			1.26	2.15	< 1
Copper, dissolved	µg/L	1,000 S, 1,300 M	4.25	2.78	1.42	2.07	1.81	4.39	3.33	2.54	1.68	2.18				2.51	1.88
Iron, total	mg/L	0.3 S	0.10	0.84	< 0.02	6.42	0.48	< 0.02	0.001 ND	0.001 ND	0.06	< 0.02			0.10	0.001 ND	< 0.02
Iron, dissolved	mg/L	0.3 S	0.001 ND	0.18	< 0.02	6.19	0.41	< 0.02	< 0.02	< 0.02	0.04	< 0.02				< 0.02	< 0.02

Brunner Island, LLC
Basin No. 5 Groundwater Monitoring Results

PARAMETER	UNITS	REGULATORY CRITERIA LIMIT	GROUNDWATER MONITORING WELLS														Pyrite Tomb Monitoring	Upgradient	
			Downgradient																
Location ID			MW-4-10	MW-8-1N	MW-8-2	MW-8-3A	MW-8-3B	MW-8-4	MW-8-5A	MW-8-5B	MW-8-10A	MW-8-10B	MW-8-10C	MW-8-12C	MW-PT-1	MW-4-7A	MW-19		
Sampling Date			11/15/2019	11/3/2019	11/4/2019	11/4/2019	11/4/2019	11/15/2019	11/6/2019	11/6/2019	11/11/2019	11/11/2019			11/15/2019	11/11/2019	11/7/2019		
Lead, total	µg/L	5 A, 15 M	0.229 ND	0.229 ND	0.229 ND	0.229 ND	0.229 ND	0.229 ND	0.229 ND	0.229 ND	0.229 ND	0.229 ND			0.229 ND	0.229 ND	0.229 ND		
Lead, dissolved	µg/L	5 A, 15 M	0.229 ND	0.229 ND	0.229 ND	0.229 ND	< 1	0.229 ND	0.229 ND	0.229 ND	0.229 ND	0.229 ND				0.229 ND	0.229 ND		
Lithium, total	µg/L	83 A	1,240.00	< 1	21.30	13.80	25.60	< 1	364.00	301.00	< 1	< 1			69.60	160.00	2.34		
Lithium, dissolved	µg/L	83 A	1,140.00	1.10	20.30	10.80	18.40	< 1	171.00	147.00	< 1	1.03				167.00	2.09		
Magnesium, total	mg/L		18.20	29.50	12.50	27.70	23.80	41.60	35.40	30.60	29.60	22.90			28.40	40.40	4.26		
Magnesium, dissolved	mg/L		17.80	29.20	12.50	28.10	22.50	40.60	34.70	30.90	28.80	22.40				40.00	4.61		
Manganese, total	µg/L	50 S, 300 A	2,150.00	1,310.00	237.00	5,850.00	1,070.00	9,980.00	360.00	348.00	315.00	< 20			6,350.00	222.00	6.39 ND		
Manganese, dissolved	µg/L	50 S, 300 A	2,080.00	1,270.00	223.00	6,060.00	1,040.00	9,330.00	352.00	372.00	75.00	6.39 ND				210.00	6.39 ND		
Mercury, total	µg/L	2 M	0.717 ND	0.717 ND	0.717 ND	0.717 ND	0.717 ND	0.717 ND	0.717 ND	0.717 ND	0.717 ND	0.717 ND			0.717 ND	0.717 ND	0.717 ND		
Mercury, dissolved	µg/L	2 M	0.717 ND	0.717 ND	0.717 ND	0.717 ND	0.717 ND	0.717 ND	0.717 ND	0.717 ND	0.717 ND	0.717 ND				0.717 ND	0.717 ND		
Molybdenum, total	µg/L	40 A	806.00	1.58	305.00	92.90	187.00	0.3 ND	402.00	353.00	28.20	37.60			288.00	25.30	7.01		
Molybdenum, dissolved	µg/L	40 A	773.00	< 1	288.00	94.60	170.00	0.3 ND	401.00	377.00	23.40	38.90				22.50	0.3 ND		
Nickel, total	ug/L	100 A	35.50	13.90	7.22	11.00	10.40	72.20	13.20	12.50	8.84	7.94			35.80	15.00	1.43		
Nickel, dissolved	ug/L	100 A	36.90	15.80	7.37	11.70	9.76	88.30	14.20	13.20	9.21	8.22				17.20	2.08		
Potassium, total	mg/L		110.00	7.51	4.99	2.69	1.63	1.80	4.24	3.90	2.32	2.43			39.80	4.00	< 1		
Potassium, dissolved	mg/L		105.00	7.13	5.01	2.67	1.57	1.78	3.97	3.81	2.21	2.41				3.85	< 1		
Selenium, total	µg/L	50 M	19.70	0.632 ND	< 5	0.632 ND	0.632 ND	< 5	0.632 ND	0.632 ND	0.632 ND	0.632 ND			< 5	< 5	15.20		
Selenium, dissolved	µg/L	50 M	17.90	0.632 ND	< 5	0.632 ND	0.632 ND	0.632 ND	0.632 ND	0.632 ND	0.632 ND	0.632 ND				< 5	15.10		
Silver, total	µg/L	100 A	0.132 ND	0.132 ND	0.132 ND	0.132 ND	0.132 ND	0.132 ND	0.132 ND	0.132 ND	0.132 ND	0.132 ND			0.132 ND	0.132 ND	0.132 ND		
Silver, dissolved	µg/L	100 A	0.132 ND	0.132 ND	0.132 ND	0.132 ND	0.132 ND	0.132 ND	0.132 ND	0.132 ND	0.132 ND	0.132 ND				0.132 ND	0.132 ND		
Sodium, total	mg/L		74.20	26.40	13.30	9.49	6.56	16.30	10.20	8.82	11.50	6.95			55.40	56.30	8.35		
Sodium, dissolved	mg/L		73.10	24.50	13.00	9.31	6.03	15.80	9.44	8.49	11.60	7.14				59.40	8.79		
Strontium, total	µg/L	4,000 A	2,010.00	1,020.00	455.00	704.00	374.00	309.00	740.00	859.00	233.00	287.00			876.00	364.00	50.00		
Strontium, dissolved	µg/L	4,000 A	2,020.00	923.00	436.00	682.00	338.00	295.00	670.00	811.00	229.00	277.00				353.00	53.00		
Titanium, total	µg/L		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 5	< 5	< 5		
Titanium, dissolved	µg/L		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5				< 5	< 5		
Vanadium, total	µg/L	2.9 A	2.35 ND	2.35 ND	2.35 ND	2.35 ND	2.35 ND	2.35 ND	2.35 ND	2.35 ND	2.35 ND	2.35 ND			2.35 ND	2.35 ND	2.35 ND		
Vanadium, dissolved	µg/L	2.9 A	2.35 ND	2.35 ND	2.35 ND	2.35 ND	2.35 ND	2.35 ND	2.35 ND	2.35 ND	2.35 ND	< 5				2.35 ND	2.35 ND		
Zinc, total	µg/L	2,000 A, 5,000 S	32.70	6.27	< 5	< 5	< 5	66.10	< 5	< 5	< 5	2.24 ND			37.00	< 5	2.24 ND		
Zinc, dissolved	µg/L	2,000 A, 5,000 S	65.80	2.24 ND	< 5	5.93	5.37	83.90	< 5	< 5	29.10	31.00				7.09	< 5		

Notes:

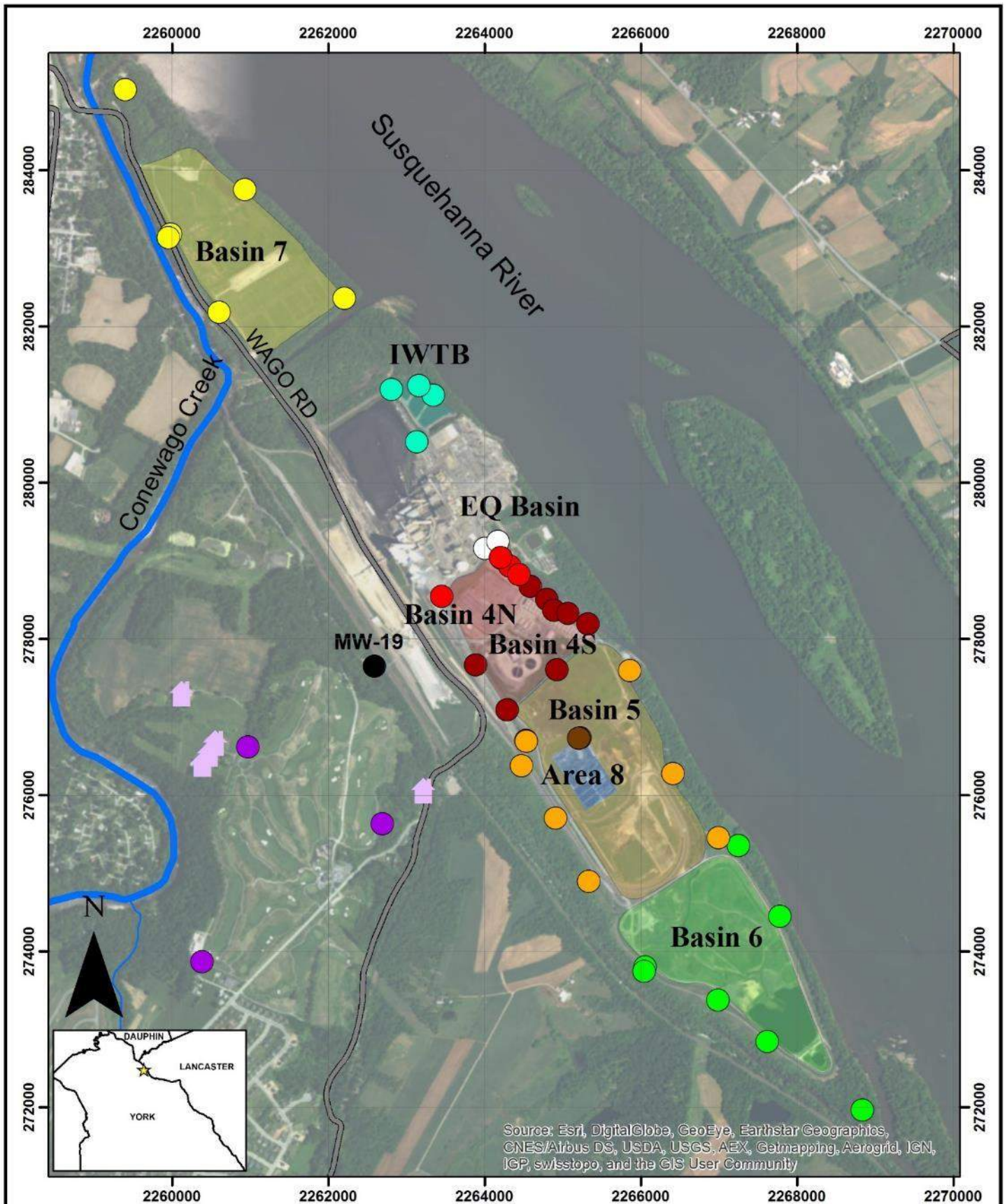
1. Regulatory qualifier codes: M = EPA Primary Drinking Water MCL/TT, S = EPA Secondary Drinking Water MCL, and A = Pennsylvania Act 2 residential Statewide Health Standard for used aquifers.
2. MW-19 was sampled for additional parameters (Ga, Ge, Rb, Y) pursuant to Basin No. 7 sampling requirements.
3. MW-4-7A, MW-4-10, and MW-19 are additionally sampled for organic parameters during the second and third calendar quarters pursuant to Basin No. 4 South sampling requirements.
4. MW-8-10C and MW-8-12C are sampled annually during the second calendar quarter.
5. The estimated value for vanadium (dissolved) at MW-8-10B was greater than the regulatory standard.

Pyrite Tomb Standpipe Monitoring Results

	Pyrite Tomb Standpipe			
Date	Water Depth (ft)	Water Surface Elevation (ft)	pH (S.U.)	Comments
1/3/2017	25.85	269.60	7.61	
1/12/2017	26.00	269.45	7.54	
1/18/2017	29.03	266.42	8.88	Standpipe cleanout 1/17/2017
1/25/2017	28.79	266.66	7.84	Sampled the tomb (with bailer)
1/31/2017	28.79	266.66	8.25	
2/7/2017	28.78	266.67	7.97	
2/13/2017	28.85	266.60	7.41	
3/6/2017	28.70	266.75	7.11	
4/4/2017	28.62	266.83	7.49	
4/15/2017	28.57	266.88	7.11	
4/20/2017	30.71	264.74	7.70	
5/9/2017	29.08	266.37	7.77	
6/22/2017	27.72	267.73	7.43	Purged 24.5 gal.
6/23/2017	30.92	264.53	7.97	Sampled the tomb after recharging (17.5 hours)
8/3/2017	28.41	267.04	7.53	
9/1/2017	28.18	267.27	7.15	
9/21/2017	30.80	264.65	N/A	Sample attempted, but not enough water in standpipe.
9/28/2017	30.70	264.75	N/A	Sample attempted again, but not enough water in standpipe.
10/2/2017	30.65	264.80	7.18	
12/5/2017	30.21	265.24	7.48	
12/14/2017	N/A	N/A	N/A	Sample attempted again, but not enough water in standpipe.
<i>Lab analytical attempts discontinued in 2018; Attempts to purge water continuing quarterly.</i>				
1/25/2018	N/A	N/A	N/A	Water elevation not high enough to record depth to water.
2/19/2018	30.57	264.88	6.94	
3/4/2018	30.33	265.12	6.48	Purged 5.25 Liters
4/12/2018	31.20	264.25	7.24	
5/14/2018	31.16	264.29	6.96	Purged 1.7 liters. Wouldn't purge further.
5/29/2018	31.24	264.21	N/A	Not enough water in tomb to get a pH reading
6/7/2018	31.32	264.13	N/A	Not enough water in tomb to get a pH reading
7/7/2018	29.40	266.05	7.38	
8/2/2018	28.64	266.81	7.42	
8/13/2018	27.93	267.52	N/A	
9/13/2018	23.56	271.89	7.76	Pumped tomb down to 31.43'. Purged 35.25 L.
10/5/2018	22.22	273.23	7.69	
11/5/2018	22.15	273.30	8.2	Purged 52.5 L.
12/10/2018	19.55	275.90	7.95	

Pyrite Tomb Standpipe Monitoring Results

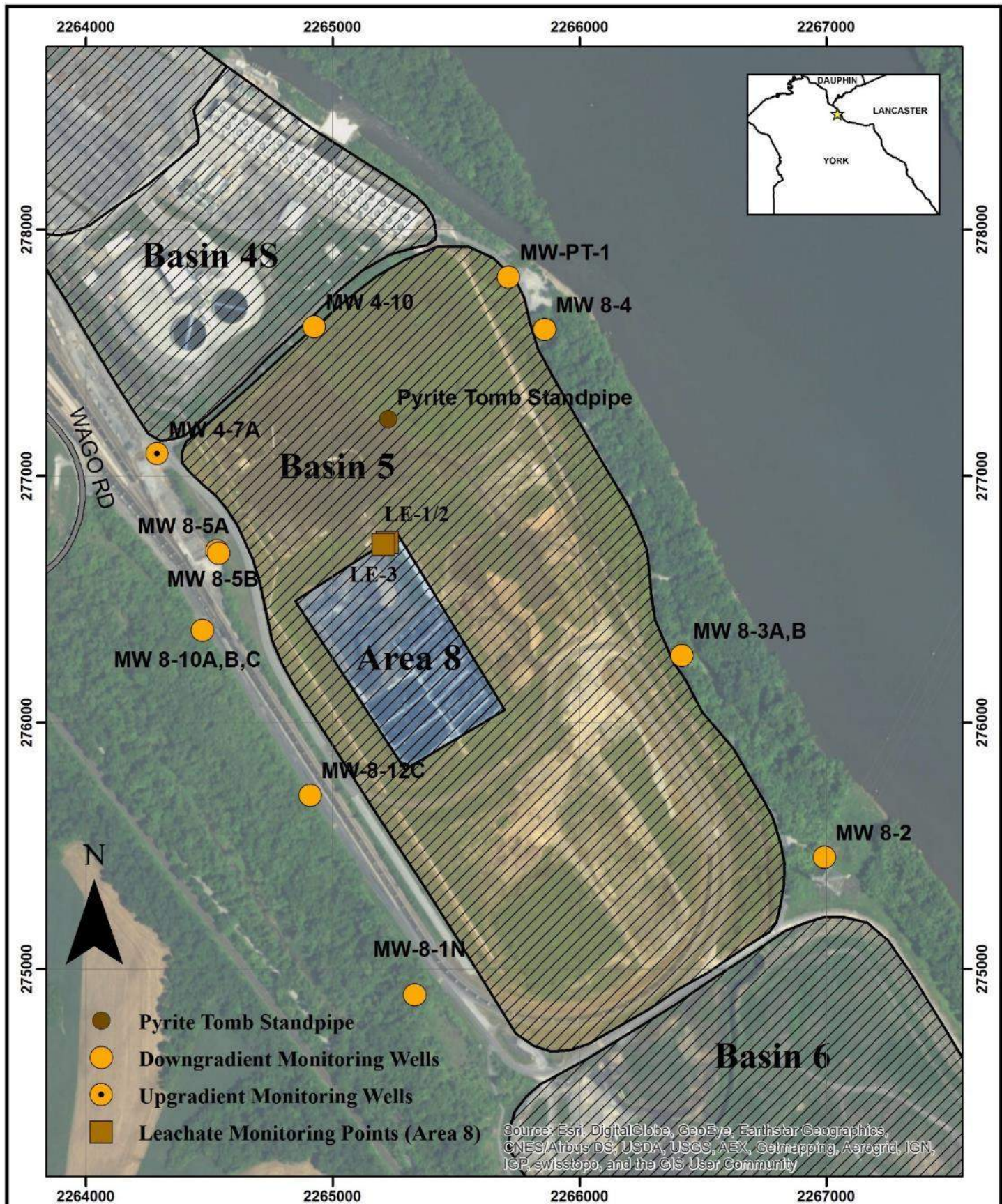
Pyrite Tomb Standpipe				
Date	Water Depth (ft)	Water Surface Elevation (ft)	pH (S.U.)	Comments
1/10/19	19.75	275.70	7.62	
2/22/19	19.22	276.23	7.46	Purged 20 L. Water level was not dropping.
3/13/19	18.80	276.65	7.43	
4/2/2019	18.18	277.27	7.4	
5/16/2019	18.20	277.25	8.22	
6/18/2019	18.55	276.90	7.28	Purged 45 L. Water level was not dropping.
7/23/2019	18.58	276.87	7.35	
8/13/2019	19.00	276.45	7.39	Water level did not drop after 7 hours of pumping. Purged 91 L.
9/5/2019	19.71	275.74	7.24	
10/1/2019	20.32	275.13	7.43	
11/19/2019	21.14	274.31	7.88	Purged 42.5 L. Temp = 13.45°C, SpC = 2465 µmhos/cm, Redox = -85.5 mV, DO = 2.01 mg/L, Turb = 1.00 NTU.
12/19/2019	21.65	273.80	7.39	



Talen Energy
Brunner Island SES

**OVERALL
MAP**

North American Datum of 1983 (NAD83)
State Plane Pennsylvania South
0 0.125 0.25 0.5
Miles



Talen Energy
Brunner Island SES
Basin No. 5

SITE MAP

North American Datum of 1983 (NAD83)
 State Plane Pennsylvania South
 0 250 500 1,000
 Feet


 Date Prepared/Revised
 12/19/2019

DEP USE ONLY

Date Received

FORM 14R RESIDUAL WASTE LANDFILLS AND DISPOSAL IMPOUNDMENTS QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 14R, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General References: Section 288.254, 289.264

SECTION A. SITE IDENTIFIER

Applicant/permittee: Brunner Island, LLC - Basin No. 5

Site Name: Basin No. 5

Facility ID (as issued by DEP): 301309

SECTION B. FACILITY INFORMATION

Monitoring wells must be designed and constructed in accordance with Department standards. **INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (DD° MM' SS.S").**

Monitoring Point Number: MW-19

☒ Well
 ☐ Spring
 ☐ Stream
 ☐ Other

☒ Upgradient/Upstream
 ☐ Downgradient/Downstream

Location: County York

Municipality: East Manchester Township

Sampling Point: Latitude: 40° 5' 26.55"

Longitude: 76° 41' 55.87"

Depth to Water Level: 17.78 ft.

Measured from: ☐ Land Surface ☒ TOC

Casing Stick Up: 1.60 ft.

Elevation of Water Level: 288.02 ft./MSL

Sampling Depth: 33.00 ft.

Volume of Water Column: gal.

Total Well Depth: 45.40 ft.

Sampling Method: ☒ Pumped ☐ Bailed ☐ GrabWell Purged: ☒ Yes ☐ No

Well Volumes Purged: 2.5 L

Sample Field Filtered (must be 0.45 micron)? ☒ Yes ☐ No

Spring Flow Rate: GPM

Sample Date (mm/dd/yy): 11/07/2019

Sample Collection Time: 10:26AM

Sample Collector's Name: AF

Sample Collector's Affiliation: Talen Generation, LLC

Laboratory(ies) Performing Analysis: Hawk Mtn Labs, Inc.

Were any holding times exceeded? ☐ Yes ☒ No. If yes, please explain in comments field.

Lab Certification Number(s): 40-417

Lab Sample Number(s): 191001296-001

Final Lab Analysis Completion Date: 12/13/2019

Name/Affiliation of Person who Filled out Form Martin Mengel / Talen Energy Supply, LLC

Comments:

I.D. No.	301309
Monitoring Point No.	MW-19
Sample Date	11/07/2019

FORM 14 R
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES
ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Ammonia, as N (mg/l)	0.2 <	SM 4500-NH3-F
Bicarbonate (mg/l)	49.8	SM 2320B
Calcium, total (mg/l)	23.3	EPA 200.2/200.7/6010A
Calcium, dissolved (mg/l)	25.3	EPA 200.2/200.7/6010A
Chemical Oxygen Demand (mg/l)	5.3 ND	SM 5220D
Chloride, total as Cl (mg/l)	8.7	EPA 300.0
Fluoride, total as F (mg/l)	0.2 <	EPA 300.0
Iron, total (µg/l)	20 <	EPA 200.2/200.7/6010A
Iron, dissolved (µg/l)	20 <	EPA 200.2/200.7/6010A
Magnesium, total (mg/l)	4.26	EPA 200.2/200.7/6010A
Magnesium, dissolved (mg/l)	4.61	EPA 200.2/200.7/6010A
Manganese, total (µg/l)	6.39 ND	EPA 200.2/200.7/6010A
Manganese, dissolved (µg/l)	6.39 ND	EPA 200.2/200.7/6010A
Nitrate, as N (mg/l)	4.07	EPA 300.0
pH, field (su)	6.58	Field Meter
pH, lab (su)	6.9 H	SM 4500-H+B
Potassium, total (mg/l)	1 <	EPA 200.2/200.7/6010A
Potassium, dissolved (mg/l)	1 <	EPA 200.2/200.7/6010A
Sodium, total (mg/l)	8.35	EPA 200.2/200.7/6010A
Sodium, dissolved (mg/l)	8.79	EPA 200.2/200.7/6010A
Specific Conductance, field (umhos/cm)	221	Field Meter
Specific Conductance, lab (umhos/cm)	223	SM 2510 B
Sulfate, as SO4 (mg/l)	26	EPA 300.0
Alkalinity, total as CaCO3 (mg/l)	49.8	SM 2320B
Total Dissolved Solids (mg/l)	137	SM 2540B
Total Organic Carbon (mg/l)	0.5 <	SM 5310C
Turbidity, field (n.t.u.)	0.44	Field Meter
Dissolved O2, field (mg/l)	2.65	Field Meter
Redox, field (mv)	163.6	Field Meter
Temperature, field (°c)	12.66	Field Meter
Acidity, total as CaCO3 (mg/l)	1 ND	SM 2310C

T Please indicate detection limit if analyte is not detected.

I.D. No.	301309
Monitoring Point No.	MW-19
Sample Date	11/07/2019

FORM 14 R
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

1-A. Organics (Enter all data in ug/l)

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Benzene (µg/l)		
1,2-Dibromoethane (µg/l)		
1,1-Dichloroethane (µg/l)		
1,1-Dichloroethene (µg/l)		
1,2-Dichloroethane (µg/l)		
cis-1,2-Dichloroethene (µg/l)		
trans-1,2-Dichloroethene (µg/l)		
Ethylbenzene (µg/l)		
Methylene Chloride (µg/l)		
Tetrachloroethene (µg/l)		
Toluene (µg/l)		
1,1,1-Trichloroethane (µg/l)		
Trichloroethene (µg/l)		
Vinyl chloride (µg/l)		
Xylenes (µg/l)		

T Please indicate detection limit if analyte is not detected.

I.D. No.	301309
Monitoring Point No.	MW-19
Sample Date	11/07/2019

FORM 14 R

ANNUAL WATER QUALITY ANALYSES

2-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Arsenic, total (µg/l)	1 <	EPA 200.2/200.8/6020A
Arsenic, dissolved (µg/l)	1 <	EPA 200.2/200.8/6020A
Barium, total (µg/l)	212	EPA 200.2/200.8/6020A
Barium, dissolved (µg/l)	233	EPA 200.2/200.8/6020A
Cadmium, total (µg/l)	0.152 ND	EPA 200.2/200.8/6020A
Cadmium, dissolved (µg/l)	0.152 ND	EPA 200.2/200.8/6020A
Chromium, total (µg/l)	1 <	EPA 200.2/200.8/6020A
Chromium, dissolved (µg/l)	1 <	EPA 200.2/200.8/6020A
Copper, total (µg/l)	1 <	EPA 200.2/200.8/6020A
Copper, dissolved (µg/l)	1.88	EPA 200.2/200.8/6020A
Lead, total (µg/l)	0.229 ND	EPA 200.2/200.8/6020A
Lead, dissolved (µg/l)	0.229 ND	EPA 200.2/200.8/6020A
Mercury, total (µg/l)	0.717 ND	EPA 200.8
Mercury, dissolved (µg/l)	0.717 ND	EPA 245.7
Selenium, total (µg/l)	15.2	EPA 200.2/200.8/6020A
Selenium, dissolved (µg/l)	15.1	EPA 200.2/200.8/6020A
Silver, total (µg/l)	0.132 ND	EPA 200.2/200.8/6020A
Silver, dissolved (µg/l)	0.132 ND	EPA 200.2/200.8/6020A
Zinc, total (µg/l)	2.24 ND	EPA 200.0/200.8/6020
Zinc, dissolved (µg/l)	5 <	EPA 200.0/200.8/6020
Boron, total (µg/l)	100 <	EPA 200.2/200.7/6010A
Boron, dissolved (µg/l)	100 <	EPA 200.2/200.7/6010A
Lithium, total (µg/l)	2.34	EPA 200.2/200.8/6020A
Lithium, dissolved (µg/l)	2.09	EPA 200.2/200.8/6020A
Molybdenum, total (µg/l)	7.01	EPA 200.2/200.8/6020A
Molybdenum, dissolved (µg/l)	0.3 ND	EPA 200.2/200.8/6020A
Strontium, total (µg/l)	50	EPA 200.0/200.7/6010
Strontium, dissolved (µg/l)	53	EPA 200.0/200.7/6010

T Please indicate detection limit if analyte is not detected.

I.D. No.	301309
Monitoring Point No.	MW-19
Sample Date	11/07/2019

FORM 14 R

ANNUAL WATER QUALITY ANALYSES

2-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Aluminum, total (µg/l)	26.8 ND	EPA 200.0/200.7/6010
Aluminum, dissolved (µg/l)	26.8 ND	EPA 200.0/200.7/6010
Antimony, total (µg/l)	0.179 ND	EPA 200.2/200.8/6020A
Antimony, dissolved (µg/l)	0.179 ND	EPA 200.2/200.8/6020A
Beryllium, total (µg/l)	0.071 ND	EPA 200.2/200.8/6020A
Beryllium, dissolved (µg/l)	0.071 ND	EPA 200.2/200.8/6020A
Cobalt, total (µg/l)		
Cobalt, dissolved (µg/l)		
Gallium, total (µg/l)	5.64	EPA 200.2/200.8
Gallium, dissolved (µg/l)	5.64	EPA 200.2/200.8
Germanium, total (µg/l)	1 ND	EPA 200.2/200.8
Germanium, dissolved (µg/l)	1 ND	EPA 200.2/200.8
Nickel, total (µg/l)	1.43	EPA 200.8
Nickel, dissolved (µg/l)	2.08	EPA 200.8
Rubidium, total (µg/l)	1 ND	EPA 200.2/200.8
Rubidium, dissolved (µg/l)	1 ND	EPA 200.2/200.8
Titanium, total (µg/l)	5 <	EPA 200.2/200.8
Titanium, dissolved (µg/l)	5 <	EPA 200.2/200.8
Vanadium, total (µg/l)	2.35 ND	EPA 200.8
Vanadium, dissolved (µg/l)	2.35 ND	EPA 200.8
Yttrium, total (µg/l)	1 ND	EPA 200.2/200.8
Yttrium, dissolved (µg/l)	1 ND	EPA 200.2/200.8

T Please indicate detection limit if analyte is not detected.

Date Prepared/Revised
12/19/2019

DEP USE ONLY

Date Received

FORM 14R

RESIDUAL WASTE LANDFILLS AND DISPOSAL IMPOUNDMENTS

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 14R, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General References: Section 288.254, 289.264

SECTION A. SITE IDENTIFIER

Applicant/permittee: Brunner Island, LLC - Basin No. 5

Site Name: Basin No. 5

Facility ID (as issued by DEP): 301309

SECTION B. FACILITY INFORMATION

Monitoring wells must be designed and constructed in accordance with Department standards. **INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (DD° MM' SS.S").**

Monitoring Point Number: MW-4-10

☒ Well ☐ Spring ☐ Stream ☐ Other☐ Upgradient/Upstream ☒ Downgradient/Downstream

Location: County York

Municipality: East Manchester Township

Sampling Point: Latitude: 40° 5' 25.84"

Longitude: 76° 41' 25.83"

Depth to Water Level: 21.81 ft.

Measured from: ☐ Land Surface ☒ TOC

Casing Stick Up: 2.26 ft.

Elevation of Water Level: 270.9 ft./MSL

Sampling Depth: 34.00 ft.

Volume of Water Column: gal.

Total Well Depth: 38.60 ft.

Sampling Method: ☒ Pumped ☐ Bailed ☐ GrabWell Purged: ☒ Yes ☐ No

Well Volumes Purged: 4.4 L

Sample Field Filtered (must be 0.45 micron)? ☒ Yes ☐ No

Spring Flow Rate: GPM

Sample Date (mm/dd/yy): 11/15/2019

Sample Collection Time: 11:29AM

Sample Collector's Name: AF

Sample Collector's Affiliation: Talen Generation, LLC

Laboratory(ies) Performing Analysis: Hawk Mtn Labs, Inc.

Were any holding times exceeded? ☐ Yes ☒ No. If yes, please explain in comments field.

Lab Certification Number(s): 40-417

Lab Sample Number(s): 191001290-006

Final Lab Analysis Completion Date: 12/12/2019

Name/Affiliation of Person who Filled out Form Martin Mengel / Talen Energy Supply, LLC

Comments:

I.D. No.	301309
Monitoring Point No.	MW-4-10
Sample Date	11/15/2019

FORM 14 R
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES
ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Ammonia, as N (mg/l)	0.625	SM 4500-NH3-F
Bicarbonate (mg/l)	55.5	SM 2320B
Calcium, total (mg/l)	243	EPA 200.2/200.7/6010A
Calcium, dissolved (mg/l)	235	EPA 200.2/200.7/6010A
Chemical Oxygen Demand (mg/l)	20 <	SM 5220D
Chloride, total as Cl (mg/l)	8.61	EPA 300.0
Fluoride, total as F (mg/l)	0.2 <	EPA 300.0
Iron, total (µg/l)	103	EPA 200.2/200.7/6010A
Iron, dissolved (µg/l)	1.02 ND	EPA 200.2/200.7/6010A
Magnesium, total (mg/l)	18.2	EPA 200.2/200.7/6010A
Magnesium, dissolved (mg/l)	17.8	EPA 200.2/200.7/6010A
Manganese, total (µg/l)	2,150	EPA 200.2/200.7/6010A
Manganese, dissolved (µg/l)	2,080	EPA 200.2/200.7/6010A
Nitrate, as N (mg/l)	0.5 <	EPA 300.0
pH, field (su)	5.92	Field Meter
pH, lab (su)	6.22 H	SM 4500-H+B
Potassium, total (mg/l)	110	EPA 200.2/200.7/6010A
Potassium, dissolved (mg/l)	105	EPA 200.2/200.7/6010A
Sodium, total (mg/l)	74.2	EPA 200.2/200.7/6010A
Sodium, dissolved (mg/l)	73.1	EPA 200.2/200.7/6010A
Specific Conductance, field (umhos/cm)	1,824	Field Meter
Specific Conductance, lab (umhos/cm)	1,820	SM 2510 B
Sulfate, as SO4 (mg/l)	892	EPA 300.0
Alkalinity, total as CaCO3 (mg/l)	55.5	SM 2320B
Total Dissolved Solids (mg/l)	1,460	SM 2540B
Total Organic Carbon (mg/l)	1.12	SM 5310C
Turbidity, field (n.t.u.)	1.65	Field Meter
Dissolved O2, field (mg/l)	2.87	Field Meter
Redox, field (mv)	108.9	Field Meter
Temperature, field (°c)	12.89	Field Meter
Acidity, total as CaCO3 (mg/l)		

T Please indicate detection limit if analyte is not detected.

I.D. No.	301309
Monitoring Point No.	MW-4-10
Sample Date	11/15/2019

FORM 14 R
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

1-A. Organics (Enter all data in ug/l)

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Benzene (µg/l)		
1,2-Dibromoethane (µg/l)		
1,1-Dichloroethane (µg/l)		
1,1-Dichloroethene (µg/l)		
1,2-Dichloroethane (µg/l)		
cis-1,2-Dichloroethene (µg/l)		
trans-1,2-Dichloroethene (µg/l)		
Ethylbenzene (µg/l)		
Methylene Chloride (µg/l)		
Tetrachloroethene (µg/l)		
Toluene (µg/l)		
1,1,1-Trichloroethane (µg/l)		
Trichloroethene (µg/l)		
Vinyl chloride (µg/l)		
Xylenes (µg/l)		

T Please indicate detection limit if analyte is not detected.

I.D. No.	301309
Monitoring Point No.	MW-4-10
Sample Date	11/15/2019

FORM 14 R

ANNUAL WATER QUALITY ANALYSES

2-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Arsenic, total (µg/l)	1.63	EPA 200.2/200.8/6020A
Arsenic, dissolved (µg/l)	1.19	EPA 200.2/200.8/6020A
Barium, total (µg/l)	12.4	EPA 200.2/200.8/6020A
Barium, dissolved (µg/l)	12.9	EPA 200.2/200.8/6020A
Cadmium, total (µg/l)	1.27	EPA 200.2/200.8/6020A
Cadmium, dissolved (µg/l)	1.65	EPA 200.2/200.8/6020A
Chromium, total (µg/l)	0.411 ND	EPA 200.2/200.8/6020A
Chromium, dissolved (µg/l)	0.411 ND	EPA 200.2/200.8/6020A
Copper, total (µg/l)	3.26	EPA 200.2/200.8/6020A
Copper, dissolved (µg/l)	4.25	EPA 200.2/200.8/6020A
Lead, total (µg/l)	0.229 ND	EPA 200.2/200.8/6020A
Lead, dissolved (µg/l)	0.229 ND	EPA 200.2/200.8/6020A
Mercury, total (µg/l)	0.717 ND	EPA 200.8
Mercury, dissolved (µg/l)	0.717 ND	EPA 245.7
Selenium, total (µg/l)	19.7	EPA 200.2/200.8/6020A
Selenium, dissolved (µg/l)	17.9	EPA 200.2/200.8/6020A
Silver, total (µg/l)	0.132 ND	EPA 200.2/200.8/6020A
Silver, dissolved (µg/l)	0.132 ND	EPA 200.2/200.8/6020A
Zinc, total (µg/l)	32.7	EPA 200.0/200.8/6020
Zinc, dissolved (µg/l)	65.8	EPA 200.0/200.8/6020
Boron, total (µg/l)	2,590	EPA 200.2/200.7/6010A
Boron, dissolved (µg/l)	2,530	EPA 200.2/200.7/6010A
Lithium, total (µg/l)	1,240	EPA 200.2/200.8/6020A
Lithium, dissolved (µg/l)	1,140	EPA 200.2/200.8/6020A
Molybdenum, total (µg/l)	806	EPA 200.2/200.8/6020A
Molybdenum, dissolved (µg/l)	773	EPA 200.2/200.8/6020A
Strontium, total (µg/l)	2,010	EPA 200.0/200.7/6010
Strontium, dissolved (µg/l)	2,020	EPA 200.0/200.7/6010

T Please indicate detection limit if analyte is not detected.

I.D. No.	301309
Monitoring Point No.	MW-4-10
Sample Date	11/15/2019

FORM 14 R

ANNUAL WATER QUALITY ANALYSES

2-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Aluminum, total (µg/l)	185	EPA 200.0/200.7/6010
Aluminum, dissolved (µg/l)	100 <	EPA 200.0/200.7/6010
Antimony, total (µg/l)	1 <	EPA 200.2/200.8/6020A
Antimony, dissolved (µg/l)	1 <	EPA 200.2/200.8/6020A
Beryllium, total (µg/l)	0.071 ND	EPA 200.2/200.8/6020A
Beryllium, dissolved (µg/l)	0.071 ND	EPA 200.2/200.8/6020A
Cobalt, total (µg/l)		
Cobalt, dissolved (µg/l)		
Gallium, total (µg/l)		
Gallium, dissolved (µg/l)		
Germanium, total (µg/l)		
Germanium, dissolved (µg/l)		
Nickel, total (µg/l)	35.5	EPA 200.8
Nickel, dissolved (µg/l)	36.9	EPA 200.8
Rubidium, total (µg/l)		
Rubidium, dissolved (µg/l)		
Titanium, total (µg/l)	5 <	EPA 200.2/200.8
Titanium, dissolved (µg/l)	5 <	EPA 200.2/200.8
Vanadium, total (µg/l)	2.35 ND	EPA 200.8
Vanadium, dissolved (µg/l)	2.35 ND	EPA 200.8
Yttrium, total (µg/l)		
Yttrium, dissolved (µg/l)		

T Please indicate detection limit if analyte is not detected.


 Date Prepared/Revised
 12/19/2019

DEP USE ONLY

Date Received

FORM 14R

RESIDUAL WASTE LANDFILLS AND DISPOSAL IMPOUNDMENTS

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 14R, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General References: Section 288.254, 289.264

SECTION A. SITE IDENTIFIER

Applicant/permittee: Brunner Island, LLC - Basin No. 5

Site Name: Basin No. 5

Facility ID (as issued by DEP): 301309

SECTION B. FACILITY INFORMATION

Monitoring wells must be designed and constructed in accordance with Department standards. **INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (DD° MM' SS.S").**

Monitoring Point Number: MW-4-7A

☒ Well ☐ Spring ☐ Stream ☐ Other

☒ Upgradient/Upstream ☐ Downgradient/Downstream

Location: County York

Municipality: East Manchester Township

Sampling Point: Latitude: 40° 5' 20.84"

Longitude: 76° 41' 34.11"

Depth to Water Level: 25.8 ft.

 Measured from: ☐ Land Surface ☒ TOC

Casing Stick Up: 2.23 ft.

Elevation of Water Level: 262.21 ft./MSL

Sampling Depth: 35.00 ft.

Volume of Water Column: gal.

Total Well Depth: 39.90 ft.

 Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

 Well Purged: ☒ Yes ☐ No

Well Volumes Purged: 6.5 L

 Sample Field Filtered (must be 0.45 micron)? ☒ Yes ☐ No

Spring Flow Rate: GPM

Sample Date (mm/dd/yy): 11/11/2019

Sample Collection Time: 1:33PM

Sample Collector's Name: ST

Sample Collector's Affiliation: Talen Generation, LLC

Laboratory(ies) Performing Analysis: Hawk Mtn Labs, Inc.

 Were any holding times exceeded? ☐ Yes ☒ No. If yes, please explain in comments field.

Lab Certification Number(s): 40-417

Lab Sample Number(s): 191001290-002

Final Lab Analysis Completion Date: 12/12/2019

Name/Affiliation of Person who Filled out Form Martin Mengel / Talen Energy Supply, LLC

Comments:

I.D. No.	301309
Monitoring Point No.	MW-4-7A
Sample Date	11/11/2019

FORM 14 R
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES
ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Ammonia, as N (mg/l)	0.213	SM 4500-NH3-F
Bicarbonate (mg/l)	238	SM 2320B
Calcium, total (mg/l)	242	EPA 200.2/200.7/6010A
Calcium, dissolved (mg/l)	233	EPA 200.2/200.7/6010A
Chemical Oxygen Demand (mg/l)	5.3 ND	SM 5220D
Chloride, total as Cl (mg/l)	16.8	EPA 300.0
Fluoride, total as F (mg/l)	0.2 <	EPA 300.0
Iron, total (µg/l)	1.02 ND	EPA 200.2/200.7/6010A
Iron, dissolved (µg/l)	20 <	EPA 200.2/200.7/6010A
Magnesium, total (mg/l)	40.4	EPA 200.2/200.7/6010A
Magnesium, dissolved (mg/l)	40	EPA 200.2/200.7/6010A
Manganese, total (µg/l)	222	EPA 200.2/200.7/6010A
Manganese, dissolved (µg/l)	210	EPA 200.2/200.7/6010A
Nitrate, as N (mg/l)	0.024 ND	EPA 300.0
pH, field (su)	6.87	Field Meter
pH, lab (su)	7.11 H	SM 4500-H+B
Potassium, total (mg/l)	4	EPA 200.2/200.7/6010A
Potassium, dissolved (mg/l)	3.85	EPA 200.2/200.7/6010A
Sodium, total (mg/l)	56.3	EPA 200.2/200.7/6010A
Sodium, dissolved (mg/l)	59.4	EPA 200.2/200.7/6010A
Specific Conductance, field (umhos/cm)	1,522	Field Meter
Specific Conductance, lab (umhos/cm)	1,503	SM 2510 B
Sulfate, as SO4 (mg/l)	612	EPA 300.0
Alkalinity, total as CaCO3 (mg/l)	238	SM 2320B
Total Dissolved Solids (mg/l)	1,210	SM 2540B
Total Organic Carbon (mg/l)	1.93	SM 5310C
Turbidity, field (n.t.u.)	0.26	Field Meter
Dissolved O2, field (mg/l)	1.1	Field Meter
Redox, field (mv)	42.3	Field Meter
Temperature, field (°c)	15.52	Field Meter
Acidity, total as CaCO3 (mg/l)		

T Please indicate detection limit if analyte is not detected.

I.D. No.	301309
Monitoring Point No.	MW-4-7A
Sample Date	11/11/2019

FORM 14 R
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

1-A. Organics (Enter all data in ug/l)

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Benzene (µg/l)		
1,2-Dibromoethane (µg/l)		
1,1-Dichloroethane (µg/l)		
1,1-Dichloroethene (µg/l)		
1,2-Dichloroethane (µg/l)		
cis-1,2-Dichloroethene (µg/l)		
trans-1,2-Dichloroethene (µg/l)		
Ethylbenzene (µg/l)		
Methylene Chloride (µg/l)		
Tetrachloroethene (µg/l)		
Toluene (µg/l)		
1,1,1-Trichloroethane (µg/l)		
Trichloroethene (µg/l)		
Vinyl chloride (µg/l)		
Xylenes (µg/l)		

T Please indicate detection limit if analyte is not detected.

I.D. No.	301309
Monitoring Point No.	MW-4-7A
Sample Date	11/11/2019

FORM 14 R

ANNUAL WATER QUALITY ANALYSES

2-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Arsenic, total (µg/l)	0.548 ND	EPA 200.2/200.8/6020A
Arsenic, dissolved (µg/l)	0.548 ND	EPA 200.2/200.8/6020A
Barium, total (µg/l)	21.2	EPA 200.2/200.8/6020A
Barium, dissolved (µg/l)	22.3	EPA 200.2/200.8/6020A
Cadmium, total (µg/l)	0.152 ND	EPA 200.2/200.8/6020A
Cadmium, dissolved (µg/l)	0.152 ND	EPA 200.2/200.8/6020A
Chromium, total (µg/l)	0.411 ND	EPA 200.2/200.8/6020A
Chromium, dissolved (µg/l)	0.411 ND	EPA 200.2/200.8/6020A
Copper, total (µg/l)	2.15	EPA 200.2/200.8/6020A
Copper, dissolved (µg/l)	2.51	EPA 200.2/200.8/6020A
Lead, total (µg/l)	0.229 ND	EPA 200.2/200.8/6020A
Lead, dissolved (µg/l)	0.229 ND	EPA 200.2/200.8/6020A
Mercury, total (µg/l)	0.717 ND	EPA 200.8
Mercury, dissolved (µg/l)	0.717 ND	EPA 245.7
Selenium, total (µg/l)	5 <	EPA 200.2/200.8/6020A
Selenium, dissolved (µg/l)	5 <	EPA 200.2/200.8/6020A
Silver, total (µg/l)	0.132 ND	EPA 200.2/200.8/6020A
Silver, dissolved (µg/l)	0.132 ND	EPA 200.2/200.8/6020A
Zinc, total (µg/l)	5 <	EPA 200.0/200.8/6020
Zinc, dissolved (µg/l)	7.09	EPA 200.0/200.8/6020
Boron, total (µg/l)	1,740	EPA 200.2/200.7/6010A
Boron, dissolved (µg/l)	1,710	EPA 200.2/200.7/6010A
Lithium, total (µg/l)	160	EPA 200.2/200.8/6020A
Lithium, dissolved (µg/l)	167	EPA 200.2/200.8/6020A
Molybdenum, total (µg/l)	25.3	EPA 200.2/200.8/6020A
Molybdenum, dissolved (µg/l)	22.5	EPA 200.2/200.8/6020A
Strontium, total (µg/l)	364	EPA 200.0/200.7/6010
Strontium, dissolved (µg/l)	353	EPA 200.0/200.7/6010

T Please indicate detection limit if analyte is not detected.

I.D. No.	301309
Monitoring Point No.	MW-4-7A
Sample Date	11/11/2019

FORM 14 R

ANNUAL WATER QUALITY ANALYSES

2-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Aluminum, total (µg/l)	26.8 ND	EPA 200.0/200.7/6010
Aluminum, dissolved (µg/l)	26.8 ND	EPA 200.0/200.7/6010
Antimony, total (µg/l)	0.179 ND	EPA 200.2/200.8/6020A
Antimony, dissolved (µg/l)	0.179 ND	EPA 200.2/200.8/6020A
Beryllium, total (µg/l)	0.071 ND	EPA 200.2/200.8/6020A
Beryllium, dissolved (µg/l)	0.071 ND	EPA 200.2/200.8/6020A
Cobalt, total (µg/l)		
Cobalt, dissolved (µg/l)		
Gallium, total (µg/l)		
Gallium, dissolved (µg/l)		
Germanium, total (µg/l)		
Germanium, dissolved (µg/l)		
Nickel, total (µg/l)	15	EPA 200.8
Nickel, dissolved (µg/l)	17.2	EPA 200.8
Rubidium, total (µg/l)		
Rubidium, dissolved (µg/l)		
Titanium, total (µg/l)	5 <	EPA 200.2/200.8
Titanium, dissolved (µg/l)	5 <	EPA 200.2/200.8
Vanadium, total (µg/l)	2.35 ND	EPA 200.8
Vanadium, dissolved (µg/l)	2.35 ND	EPA 200.8
Yttrium, total (µg/l)		
Yttrium, dissolved (µg/l)		

T Please indicate detection limit if analyte is not detected.


 Date Prepared/Revised
 12/19/2019

DEP USE ONLY

Date Received

FORM 14R

RESIDUAL WASTE LANDFILLS AND DISPOSAL IMPOUNDMENTS

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 14R, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General References: Section 288.254, 289.264

SECTION A. SITE IDENTIFIER

Applicant/permittee: Brunner Island, LLC - Basin No. 5

Site Name: Basin No. 5

Facility ID (as issued by DEP): 301309

SECTION B. FACILITY INFORMATION

Monitoring wells must be designed and constructed in accordance with Department standards. **INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (DD° MM' SS.S").**

Monitoring Point Number: MW-8-10A

☒ Well ☐ Spring ☐ Stream ☐ Other

☐ Upgradient/Upstream ☒ Downgradient/Downstream

Location: County York

Municipality: East Manchester Township

Sampling Point: Latitude: 40° 5' 13.72"

Longitude: 76° 41' 31.84"

Depth to Water Level: 16.7 ft.

Measured from: ☐ Land Surface ☒ TOC

Casing Stick Up: 1.62 ft.

Elevation of Water Level: 259.77 ft./MSL

Sampling Depth: 32.00 ft.

Volume of Water Column: _____ gal.

Total Well Depth: 37.30 ft.

Sampling Method: ☒ Pumped ☐ Bailed ☐ GrabWell Purged: ☒ Yes ☐ No

Well Volumes Purged: 3 L

Sample Field Filtered (must be 0.45 micron)? ☒ Yes ☐ No

Spring Flow Rate: _____ GPM

Sample Date (mm/dd/yy): 11/11/2019

Sample Collection Time: 9:16AM

Sample Collector's Name: ST

Sample Collector's Affiliation: Talen Generation, LLC

Laboratory(ies) Performing Analysis: Hawk Mtn Labs, Inc.

Were any holding times exceeded? ☐ Yes ☒ No. If yes, please explain in comments field.

Lab Certification Number(s): 40-417

Lab Sample Number(s): 191001293-009

Final Lab Analysis Completion Date: 12/12/2019

Name/Affiliation of Person who Filled out Form Martin Mengel / Talen Energy Supply, LLC

Comments:

I.D. No.	301309
Monitoring Point No.	MW-8-10A
Sample Date	11/11/2019

FORM 14 R
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES
ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Ammonia, as N (mg/l)	0.109 ND	SM 4500-NH3-F
Bicarbonate (mg/l)	135	SM 2320B
Calcium, total (mg/l)	128	EPA 200.2/200.7/6010A
Calcium, dissolved (mg/l)	121	EPA 200.2/200.7/6010A
Chemical Oxygen Demand (mg/l)	5.3 ND	SM 5220D
Chloride, total as Cl (mg/l)	31.3	EPA 300.0
Fluoride, total as F (mg/l)	0.2 <	EPA 300.0
Iron, total (µg/l)	58	EPA 200.2/200.7/6010A
Iron, dissolved (µg/l)	35	EPA 200.2/200.7/6010A
Magnesium, total (mg/l)	29.6	EPA 200.2/200.7/6010A
Magnesium, dissolved (mg/l)	28.8	EPA 200.2/200.7/6010A
Manganese, total (µg/l)	315	EPA 200.2/200.7/6010A
Manganese, dissolved (µg/l)	75	EPA 200.2/200.7/6010A
Nitrate, as N (mg/l)	0.5 <	EPA 300.0
pH, field (su)	6.65	Field Meter
pH, lab (su)	6.97 H	SM 4500-H+B
Potassium, total (mg/l)	2.32	EPA 200.2/200.7/6010A
Potassium, dissolved (mg/l)	2.21	EPA 200.2/200.7/6010A
Sodium, total (mg/l)	11.5	EPA 200.2/200.7/6010A
Sodium, dissolved (mg/l)	11.6	EPA 200.2/200.7/6010A
Specific Conductance, field (umhos/cm)	853	Field Meter
Specific Conductance, lab (umhos/cm)	842	SM 2510 B
Sulfate, as SO4 (mg/l)	259	EPA 300.0
Alkalinity, total as CaCO3 (mg/l)	135	SM 2320B
Total Dissolved Solids (mg/l)	591	SM 2540B
Total Organic Carbon (mg/l)	1.38	SM 5310C
Turbidity, field (n.t.u.)	0.9	Field Meter
Dissolved O2, field (mg/l)	1.47	Field Meter
Redox, field (mv)	102	Field Meter
Temperature, field (°c)	12.41	Field Meter
Acidity, total as CaCO3 (mg/l)		

T Please indicate detection limit if analyte is not detected.

I.D. No.	301309
Monitoring Point No.	MW-8-10A
Sample Date	11/11/2019

FORM 14 R
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

1-A. Organics (Enter all data in ug/l)

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Benzene (µg/l)		
1,2-Dibromoethane (µg/l)		
1,1-Dichloroethane (µg/l)		
1,1-Dichloroethene (µg/l)		
1,2-Dichloroethane (µg/l)		
cis-1,2-Dichloroethene (µg/l)		
trans-1,2-Dichloroethene (µg/l)		
Ethylbenzene (µg/l)		
Methylene Chloride (µg/l)		
Tetrachloroethene (µg/l)		
Toluene (µg/l)		
1,1,1-Trichloroethane (µg/l)		
Trichloroethene (µg/l)		
Vinyl chloride (µg/l)		
Xylenes (µg/l)		

T Please indicate detection limit if analyte is not detected.

I.D. No.	301309
Monitoring Point No.	MW-8-10A
Sample Date	11/11/2019

FORM 14 R

ANNUAL WATER QUALITY ANALYSES

2-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Arsenic, total (µg/l)	1.59	EPA 200.2/200.8/6020A
Arsenic, dissolved (µg/l)	0.548 ND	EPA 200.2/200.8/6020A
Barium, total (µg/l)	22.4	EPA 200.2/200.8/6020A
Barium, dissolved (µg/l)	21.8	EPA 200.2/200.8/6020A
Cadmium, total (µg/l)	0.152 ND	EPA 200.2/200.8/6020A
Cadmium, dissolved (µg/l)	0.152 ND	EPA 200.2/200.8/6020A
Chromium, total (µg/l)	0.411 ND	EPA 200.2/200.8/6020A
Chromium, dissolved (µg/l)	0.411 ND	EPA 200.2/200.8/6020A
Copper, total (µg/l)	1.07	EPA 200.2/200.8/6020A
Copper, dissolved (µg/l)	1.68	EPA 200.2/200.8/6020A
Lead, total (µg/l)	0.229 ND	EPA 200.2/200.8/6020A
Lead, dissolved (µg/l)	0.229 ND	EPA 200.2/200.8/6020A
Mercury, total (µg/l)	0.717 ND	EPA 200.8
Mercury, dissolved (µg/l)	0.717 ND	EPA 245.7
Selenium, total (µg/l)	0.632 ND	EPA 200.2/200.8/6020A
Selenium, dissolved (µg/l)	0.632 ND	EPA 200.2/200.8/6020A
Silver, total (µg/l)	0.132 ND	EPA 200.2/200.8/6020A
Silver, dissolved (µg/l)	0.132 ND	EPA 200.2/200.8/6020A
Zinc, total (µg/l)	5 <	EPA 200.0/200.8/6020
Zinc, dissolved (µg/l)	29.1	EPA 200.0/200.8/6020
Boron, total (µg/l)	323	EPA 200.2/200.7/6010A
Boron, dissolved (µg/l)	304	EPA 200.2/200.7/6010A
Lithium, total (µg/l)	1 <	EPA 200.2/200.8/6020A
Lithium, dissolved (µg/l)	1 <	EPA 200.2/200.8/6020A
Molybdenum, total (µg/l)	28.2	EPA 200.2/200.8/6020A
Molybdenum, dissolved (µg/l)	23.4	EPA 200.2/200.8/6020A
Strontium, total (µg/l)	233	EPA 200.0/200.7/6010
Strontium, dissolved (µg/l)	229	EPA 200.0/200.7/6010

T Please indicate detection limit if analyte is not detected.

I.D. No.	301309
Monitoring Point No.	MW-8-10A
Sample Date	11/11/2019

FORM 14 R

ANNUAL WATER QUALITY ANALYSES

2-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Aluminum, total (µg/l)	100 <	EPA 200.0/200.7/6010
Aluminum, dissolved (µg/l)	26.8 ND	EPA 200.0/200.7/6010
Antimony, total (µg/l)	0.179 ND	EPA 200.2/200.8/6020A
Antimony, dissolved (µg/l)	0.179 ND	EPA 200.2/200.8/6020A
Beryllium, total (µg/l)	0.071 ND	EPA 200.2/200.8/6020A
Beryllium, dissolved (µg/l)	0.071 ND	EPA 200.2/200.8/6020A
Cobalt, total (µg/l)		
Cobalt, dissolved (µg/l)		
Gallium, total (µg/l)		
Gallium, dissolved (µg/l)		
Germanium, total (µg/l)		
Germanium, dissolved (µg/l)		
Nickel, total (µg/l)	8.84	EPA 200.8
Nickel, dissolved (µg/l)	9.21	EPA 200.8
Rubidium, total (µg/l)		
Rubidium, dissolved (µg/l)		
Titanium, total (µg/l)	5 <	EPA 200.2/200.8
Titanium, dissolved (µg/l)	5 <	EPA 200.2/200.8
Vanadium, total (µg/l)	2.35 ND	EPA 200.8
Vanadium, dissolved (µg/l)	2.35 ND	EPA 200.8
Yttrium, total (µg/l)		
Yttrium, dissolved (µg/l)		

T Please indicate detection limit if analyte is not detected.


 Date Prepared/Revised
 12/19/2019

DEP USE ONLY

Date Received

FORM 14R RESIDUAL WASTE LANDFILLS AND DISPOSAL IMPOUNDMENTS QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 14R, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General References: Section 288.254, 289.264

SECTION A. SITE IDENTIFIER

Applicant/permittee: Brunner Island, LLC - Basin No. 5

Site Name: Basin No. 5

Facility ID (as issued by DEP): 301309

SECTION B. FACILITY INFORMATION

Monitoring wells must be designed and constructed in accordance with Department standards. **INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (DD° MM' SS.S").**

Monitoring Point Number: MW-8-10B

☒ Well
 ☐ Spring
 ☐ Stream
 ☐ Other

☐ Upgradient/Upstream
 ☒ Downgradient/Downstream

Location: County York

Municipality: East Manchester Township

Sampling Point: Latitude: 40° 5' 13.72"

Longitude: 76° 41' 31.84"

Depth to Water Level: 16.62 ft.

Measured from: ☐ Land Surface ☒ TOC

Casing Stick Up: 1.44 ft.

Elevation of Water Level: 259.65 ft./MSL

Sampling Depth: 52.00 ft.

Volume of Water Column: gal.

Total Well Depth: 57.00 ft.

Sampling Method: ☒ Pumped ☐ Bailed ☐ GrabWell Purged: ☒ Yes ☐ No

Well Volumes Purged: 3 L

Sample Field Filtered (must be 0.45 micron)? ☒ Yes ☐ No

Spring Flow Rate: GPM

Sample Date (mm/dd/yy): 11/11/2019

Sample Collection Time: 11:25AM

Sample Collector's Name: ST

Sample Collector's Affiliation: Talen Generation, LLC

Laboratory(ies) Performing Analysis: Hawk Mtn Labs, Inc.

Were any holding times exceeded? ☐ Yes ☒ No. If yes, please explain in comments field.

Lab Certification Number(s): 40-417

Lab Sample Number(s): 191001293-010

Final Lab Analysis Completion Date: 12/12/2019

Name/Affiliation of Person who Filled out Form Martin Mengel / Talen Energy Supply, LLC

Comments:

I.D. No.	301309
Monitoring Point No.	MW-8-10B
Sample Date	11/11/2019

FORM 14 R
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES
ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Ammonia, as N (mg/l)	0.109 ND	SM 4500-NH3-F
Bicarbonate (mg/l)	108	SM 2320B
Calcium, total (mg/l)	120	EPA 200.2/200.7/6010A
Calcium, dissolved (mg/l)	114	EPA 200.2/200.7/6010A
Chemical Oxygen Demand (mg/l)	5.3 ND	SM 5220D
Chloride, total as Cl (mg/l)	63.3	EPA 300.0
Fluoride, total as F (mg/l)	0.2 <	EPA 300.0
Iron, total (µg/l)	20 <	EPA 200.2/200.7/6010A
Iron, dissolved (µg/l)	20 <	EPA 200.2/200.7/6010A
Magnesium, total (mg/l)	22.9	EPA 200.2/200.7/6010A
Magnesium, dissolved (mg/l)	22.4	EPA 200.2/200.7/6010A
Manganese, total (µg/l)	20 <	EPA 200.2/200.7/6010A
Manganese, dissolved (µg/l)	6.39 ND	EPA 200.2/200.7/6010A
Nitrate, as N (mg/l)	0.024 ND	EPA 300.0
pH, field (su)	7.48	Field Meter
pH, lab (su)	7.74 H	SM 4500-H+B
Potassium, total (mg/l)	2.43	EPA 200.2/200.7/6010A
Potassium, dissolved (mg/l)	2.41	EPA 200.2/200.7/6010A
Sodium, total (mg/l)	6.95	EPA 200.2/200.7/6010A
Sodium, dissolved (mg/l)	7.14	EPA 200.2/200.7/6010A
Specific Conductance, field (umhos/cm)	808	Field Meter
Specific Conductance, lab (umhos/cm)	798	SM 2510 B
Sulfate, as SO4 (mg/l)	191	EPA 300.0
Alkalinity, total as CaCO3 (mg/l)	108	SM 2320B
Total Dissolved Solids (mg/l)	486	SM 2540B
Total Organic Carbon (mg/l)	0.721	SM 5310C
Turbidity, field (n.t.u.)	0.44	Field Meter
Dissolved O2, field (mg/l)	1.21	Field Meter
Redox, field (mv)	50.9	Field Meter
Temperature, field (°c)	14.57	Field Meter
Acidity, total as CaCO3 (mg/l)		

T Please indicate detection limit if analyte is not detected.

I.D. No.	301309
Monitoring Point No.	MW-8-10B
Sample Date	11/11/2019

FORM 14 R
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

1-A. Organics (Enter all data in ug/l)

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Benzene (µg/l)		
1,2-Dibromoethane (µg/l)		
1,1-Dichloroethane (µg/l)		
1,1-Dichloroethene (µg/l)		
1,2-Dichloroethane (µg/l)		
cis-1,2-Dichloroethene (µg/l)		
trans-1,2-Dichloroethene (µg/l)		
Ethylbenzene (µg/l)		
Methylene Chloride (µg/l)		
Tetrachloroethene (µg/l)		
Toluene (µg/l)		
1,1,1-Trichloroethane (µg/l)		
Trichloroethene (µg/l)		
Vinyl chloride (µg/l)		
Xylenes (µg/l)		

T Please indicate detection limit if analyte is not detected.

I.D. No.	301309
Monitoring Point No.	MW-8-10B
Sample Date	11/11/2019

FORM 14 R

ANNUAL WATER QUALITY ANALYSES

2-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Arsenic, total (µg/l)	2.67	EPA 200.2/200.8/6020A
Arsenic, dissolved (µg/l)	1 <	EPA 200.2/200.8/6020A
Barium, total (µg/l)	43.4	EPA 200.2/200.8/6020A
Barium, dissolved (µg/l)	48.2	EPA 200.2/200.8/6020A
Cadmium, total (µg/l)	0.152 ND	EPA 200.2/200.8/6020A
Cadmium, dissolved (µg/l)	0.152 ND	EPA 200.2/200.8/6020A
Chromium, total (µg/l)	0.411 ND	EPA 200.2/200.8/6020A
Chromium, dissolved (µg/l)	0.411 ND	EPA 200.2/200.8/6020A
Copper, total (µg/l)	1 <	EPA 200.2/200.8/6020A
Copper, dissolved (µg/l)	2.18	EPA 200.2/200.8/6020A
Lead, total (µg/l)	0.229 ND	EPA 200.2/200.8/6020A
Lead, dissolved (µg/l)	0.229 ND	EPA 200.2/200.8/6020A
Mercury, total (µg/l)	0.717 ND	EPA 200.8
Mercury, dissolved (µg/l)	0.717 ND	EPA 245.7
Selenium, total (µg/l)	0.632 ND	EPA 200.2/200.8/6020A
Selenium, dissolved (µg/l)	0.632 ND	EPA 200.2/200.8/6020A
Silver, total (µg/l)	0.132 ND	EPA 200.2/200.8/6020A
Silver, dissolved (µg/l)	0.132 ND	EPA 200.2/200.8/6020A
Zinc, total (µg/l)	2.24 ND	EPA 200.0/200.8/6020
Zinc, dissolved (µg/l)	31	EPA 200.0/200.8/6020
Boron, total (µg/l)	271	EPA 200.2/200.7/6010A
Boron, dissolved (µg/l)	260	EPA 200.2/200.7/6010A
Lithium, total (µg/l)	1 <	EPA 200.2/200.8/6020A
Lithium, dissolved (µg/l)	1.03	EPA 200.2/200.8/6020A
Molybdenum, total (µg/l)	37.6	EPA 200.2/200.8/6020A
Molybdenum, dissolved (µg/l)	38.9	EPA 200.2/200.8/6020A
Strontium, total (µg/l)	287	EPA 200.0/200.7/6010
Strontium, dissolved (µg/l)	277	EPA 200.0/200.7/6010

T Please indicate detection limit if analyte is not detected.

I.D. No.	301309
Monitoring Point No.	MW-8-10B
Sample Date	11/11/2019

FORM 14 R

ANNUAL WATER QUALITY ANALYSES

2-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Aluminum, total (µg/l)	26.8 ND	EPA 200.0/200.7/6010
Aluminum, dissolved (µg/l)	100 <	EPA 200.0/200.7/6010
Antimony, total (µg/l)	0.179 ND	EPA 200.2/200.8/6020A
Antimony, dissolved (µg/l)	1 <	EPA 200.2/200.8/6020A
Beryllium, total (µg/l)	0.071 ND	EPA 200.2/200.8/6020A
Beryllium, dissolved (µg/l)	0.071 ND	EPA 200.2/200.8/6020A
Cobalt, total (µg/l)		
Cobalt, dissolved (µg/l)		
Gallium, total (µg/l)		
Gallium, dissolved (µg/l)		
Germanium, total (µg/l)		
Germanium, dissolved (µg/l)		
Nickel, total (µg/l)	7.94	EPA 200.8
Nickel, dissolved (µg/l)	8.22	EPA 200.8
Rubidium, total (µg/l)		
Rubidium, dissolved (µg/l)		
Titanium, total (µg/l)	5 <	EPA 200.2/200.8
Titanium, dissolved (µg/l)	5 <	EPA 200.2/200.8
Vanadium, total (µg/l)	2.35 ND	EPA 200.8
Vanadium, dissolved (µg/l)	5 <	EPA 200.8
Yttrium, total (µg/l)		
Yttrium, dissolved (µg/l)		

T Please indicate detection limit if analyte is not detected.


 Date Prepared/Revised
 12/19/2019

DEP USE ONLY

Date Received

FORM 14R RESIDUAL WASTE LANDFILLS AND DISPOSAL IMPOUNDMENTS QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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General References: Section 288.254, 289.264

SECTION A. SITE IDENTIFIER

Applicant/permittee: Brunner Island, LLC - Basin No. 5

Site Name: Basin No. 5

Facility ID (as issued by DEP): 301309

SECTION B. FACILITY INFORMATION

Monitoring wells must be designed and constructed in accordance with Department standards. **INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (DD° MM' SS.S").**

Monitoring Point Number: MW-8-1N

☒ Well ☐ Spring ☐ Stream ☐ Other

☐ Upgradient/Upstream ☒ Downgradient/Downstream

Location: County York

Municipality: East Manchester Township

Sampling Point: Latitude: 40° 4' 59.01"

Longitude: 76° 41' 21.00"

Depth to Water Level: 11.47 ft.

 Measured from: ☐ Land Surface ☒ TOC

Casing Stick Up: 1.95 ft.

Elevation of Water Level: 269.17 ft./MSL

Sampling Depth: 23.00 ft.

Volume of Water Column: gal.

Total Well Depth: 26.30 ft.

 Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

 Well Purged: ☒ Yes ☐ No

Well Volumes Purged: 2.25 L

 Sample Field Filtered (must be 0.45 micron)? ☒ Yes ☐ No

Spring Flow Rate: GPM

Sample Date (mm/dd/yy): 11/03/2019

Sample Collection Time: 12:47PM

Sample Collector's Name: JO

Sample Collector's Affiliation: Talen Generation, LLC

Laboratory(ies) Performing Analysis: Hawk Mtn Labs, Inc.

 Were any holding times exceeded? ☐ Yes ☒ No. If yes, please explain in comments field.

Lab Certification Number(s): 40-417

Lab Sample Number(s): 191001293-001

Final Lab Analysis Completion Date: 11/26/2019

Name/Affiliation of Person who Filled out Form Martin Mengel / Talen Energy Supply, LLC

Comments:

I.D. No.	301309
Monitoring Point No.	MW-8-1N
Sample Date	11/03/2019

FORM 14 R
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES
ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Ammonia, as N (mg/l)	0.109 ND	SM 4500-NH3-F
Bicarbonate (mg/l)	215	SM 2320B
Calcium, total (mg/l)	161	EPA 200.2/200.7/6010A
Calcium, dissolved (mg/l)	161	EPA 200.2/200.7/6010A
Chemical Oxygen Demand (mg/l)	5.3 ND	SM 5220D
Chloride, total as Cl (mg/l)	28.7	EPA 300.0
Fluoride, total as F (mg/l)	0.27	EPA 300.0
Iron, total (µg/l)	835	EPA 200.2/200.7/6010A
Iron, dissolved (µg/l)	179	EPA 200.2/200.7/6010A
Magnesium, total (mg/l)	29.5	EPA 200.2/200.7/6010A
Magnesium, dissolved (mg/l)	29.2	EPA 200.2/200.7/6010A
Manganese, total (µg/l)	1,310	EPA 200.2/200.7/6010A
Manganese, dissolved (µg/l)	1,270	EPA 200.2/200.7/6010A
Nitrate, as N (mg/l)	0.5 <	EPA 300.0
pH, field (su)	6.44	Field Meter
pH, lab (su)	6.86 H	SM 4500-H+B
Potassium, total (mg/l)	7.51	EPA 200.2/200.7/6010A
Potassium, dissolved (mg/l)	7.13	EPA 200.2/200.7/6010A
Sodium, total (mg/l)	26.4	EPA 200.2/200.7/6010A
Sodium, dissolved (mg/l)	24.5	EPA 200.2/200.7/6010A
Specific Conductance, field (umhos/cm)	1,060	Field Meter
Specific Conductance, lab (umhos/cm)	1,056	SM 2510 B
Sulfate, as SO4 (mg/l)	312	EPA 300.0
Alkalinity, total as CaCO3 (mg/l)	215	SM 2320B
Total Dissolved Solids (mg/l)	759	SM 2540B
Total Organic Carbon (mg/l)	1.94	SM 5310C
Turbidity, field (n.t.u.)	1.16	Field Meter
Dissolved O2, field (mg/l)	0.8	Field Meter
Redox, field (mv)	-43	Field Meter
Temperature, field (°c)	16.91	Field Meter
Acidity, total as CaCO3 (mg/l)		

T Please indicate detection limit if analyte is not detected.

I.D. No.	301309
Monitoring Point No.	MW-8-1N
Sample Date	11/03/2019

FORM 14 R
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

1-A. Organics (Enter all data in ug/l)

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Benzene (µg/l)		
1,2-Dibromoethane (µg/l)		
1,1-Dichloroethane (µg/l)		
1,1-Dichloroethene (µg/l)		
1,2-Dichloroethane (µg/l)		
cis-1,2-Dichloroethene (µg/l)		
trans-1,2-Dichloroethene (µg/l)		
Ethylbenzene (µg/l)		
Methylene Chloride (µg/l)		
Tetrachloroethene (µg/l)		
Toluene (µg/l)		
1,1,1-Trichloroethane (µg/l)		
Trichloroethene (µg/l)		
Vinyl chloride (µg/l)		
Xylenes (µg/l)		

T Please indicate detection limit if analyte is not detected.

I.D. No.	301309
Monitoring Point No.	MW-8-1N
Sample Date	11/03/2019

FORM 14 R

ANNUAL WATER QUALITY ANALYSES

2-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Arsenic, total (µg/l)	0.548 ND	EPA 200.2/200.8/6020A
Arsenic, dissolved (µg/l)	0.548 ND	EPA 200.2/200.8/6020A
Barium, total (µg/l)	20.3	EPA 200.2/200.8/6020A
Barium, dissolved (µg/l)	18.7	EPA 200.2/200.8/6020A
Cadmium, total (µg/l)	0.152 ND	EPA 200.2/200.8/6020A
Cadmium, dissolved (µg/l)	0.152 ND	EPA 200.2/200.8/6020A
Chromium, total (µg/l)	1 <	EPA 200.2/200.8/6020A
Chromium, dissolved (µg/l)	0.411 ND	EPA 200.2/200.8/6020A
Copper, total (µg/l)	3.32	EPA 200.2/200.8/6020A
Copper, dissolved (µg/l)	2.78	EPA 200.2/200.8/6020A
Lead, total (µg/l)	0.229 ND	EPA 200.2/200.8/6020A
Lead, dissolved (µg/l)	0.229 ND	EPA 200.2/200.8/6020A
Mercury, total (µg/l)	0.717 ND	EPA 200.8
Mercury, dissolved (µg/l)	0.717 ND	EPA 245.7
Selenium, total (µg/l)	0.632 ND	EPA 200.2/200.8/6020A
Selenium, dissolved (µg/l)	0.632 ND	EPA 200.2/200.8/6020A
Silver, total (µg/l)	0.132 ND	EPA 200.2/200.8/6020A
Silver, dissolved (µg/l)	0.132 ND	EPA 200.2/200.8/6020A
Zinc, total (µg/l)	6.27	EPA 200.0/200.8/6020
Zinc, dissolved (µg/l)	2.24 ND	EPA 200.0/200.8/6020
Boron, total (µg/l)	100 <	EPA 200.2/200.7/6010A
Boron, dissolved (µg/l)	100 <	EPA 200.2/200.7/6010A
Lithium, total (µg/l)	1 <	EPA 200.2/200.8/6020A
Lithium, dissolved (µg/l)	1.1	EPA 200.2/200.8/6020A
Molybdenum, total (µg/l)	1.58	EPA 200.2/200.8/6020A
Molybdenum, dissolved (µg/l)	1 <	EPA 200.2/200.8/6020A
Strontium, total (µg/l)	1,020	EPA 200.0/200.7/6010
Strontium, dissolved (µg/l)	923	EPA 200.0/200.7/6010

T Please indicate detection limit if analyte is not detected.

I.D. No.	301309
Monitoring Point No.	MW-8-1N
Sample Date	11/03/2019

FORM 14 R

ANNUAL WATER QUALITY ANALYSES

2-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Aluminum, total (µg/l)	100 <	EPA 200.0/200.7/6010
Aluminum, dissolved (µg/l)	26.8 ND	EPA 200.0/200.7/6010
Antimony, total (µg/l)	0.179 ND	EPA 200.2/200.8/6020A
Antimony, dissolved (µg/l)	0.179 ND	EPA 200.2/200.8/6020A
Beryllium, total (µg/l)	0.071 ND	EPA 200.2/200.8/6020A
Beryllium, dissolved (µg/l)	0.071 ND	EPA 200.2/200.8/6020A
Cobalt, total (µg/l)		
Cobalt, dissolved (µg/l)		
Gallium, total (µg/l)		
Gallium, dissolved (µg/l)		
Germanium, total (µg/l)		
Germanium, dissolved (µg/l)		
Nickel, total (µg/l)	13.9	EPA 200.8
Nickel, dissolved (µg/l)	15.8	EPA 200.8
Rubidium, total (µg/l)		
Rubidium, dissolved (µg/l)		
Titanium, total (µg/l)	5 <	EPA 200.2/200.8
Titanium, dissolved (µg/l)	5 <	EPA 200.2/200.8
Vanadium, total (µg/l)	2.35 ND	EPA 200.8
Vanadium, dissolved (µg/l)	2.35 ND	EPA 200.8
Yttrium, total (µg/l)		
Yttrium, dissolved (µg/l)		

T Please indicate detection limit if analyte is not detected.


 Date Prepared/Revised
 12/19/2019

DEP USE ONLY

Date Received

FORM 14R

RESIDUAL WASTE LANDFILLS AND DISPOSAL IMPOUNDMENTS

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 14R, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General References: Section 288.254, 289.264

SECTION A. SITE IDENTIFIER

Applicant/permittee: Brunner Island, LLC - Basin No. 5

Site Name: Basin No. 5

Facility ID (as issued by DEP): 301309

SECTION B. FACILITY INFORMATION

Monitoring wells must be designed and constructed in accordance with Department standards. **INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (DD° MM' SS.S").**

Monitoring Point Number: MW-8-2

☒ Well ☐ Spring ☐ Stream ☐ Other

☐ Upgradient/Upstream ☒ Downgradient/Downstream

Location: County York

Municipality: East Manchester Township

Sampling Point: Latitude: 40° 5' 4.33"

Longitude: 76° 40' 59.57"

Depth to Water Level: 3.05 ft.

Measured from: ☐ Land Surface ☒ TOC

Casing Stick Up: 2.00 ft.

Elevation of Water Level: 268.45 ft./MSL

Sampling Depth: 15.00 ft.

Volume of Water Column: gal.

Total Well Depth: 22.30 ft.

Sampling Method: ☒ Pumped ☐ Bailed ☐ GrabWell Purged: ☒ Yes ☐ No

Well Volumes Purged: 4 L

Sample Field Filtered (must be 0.45 micron)? ☒ Yes ☐ No

Spring Flow Rate: GPM

Sample Date (mm/dd/yy): 11/04/2019

Sample Collection Time: 7:40AM

Sample Collector's Name: AF

Sample Collector's Affiliation: Talen Generation, LLC

Laboratory(ies) Performing Analysis: Hawk Mtn Labs, Inc.

Were any holding times exceeded? ☐ Yes ☒ No. If yes, please explain in comments field.

Lab Certification Number(s): 40-417

Lab Sample Number(s): 191001293-002

Final Lab Analysis Completion Date: 11/26/2019

Name/Affiliation of Person who Filled out Form Martin Mengel / Talen Energy Supply, LLC

Comments:

I.D. No.	301309
Monitoring Point No.	MW-8-2
Sample Date	11/04/2019

FORM 14 R
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES
ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Ammonia, as N (mg/l)	0.2 <	SM 4500-NH3-F
Bicarbonate (mg/l)	105	SM 2320B
Calcium, total (mg/l)	73.4	EPA 200.2/200.7/6010A
Calcium, dissolved (mg/l)	73.5	EPA 200.2/200.7/6010A
Chemical Oxygen Demand (mg/l)	5.3 ND	SM 5220D
Chloride, total as Cl (mg/l)	31.9	EPA 300.0
Fluoride, total as F (mg/l)	1.03	EPA 300.0
Iron, total (µg/l)	20 <	EPA 200.2/200.7/6010A
Iron, dissolved (µg/l)	20 <	EPA 200.2/200.7/6010A
Magnesium, total (mg/l)	12.5	EPA 200.2/200.7/6010A
Magnesium, dissolved (mg/l)	12.5	EPA 200.2/200.7/6010A
Manganese, total (µg/l)	237	EPA 200.2/200.7/6010A
Manganese, dissolved (µg/l)	223	EPA 200.2/200.7/6010A
Nitrate, as N (mg/l)	0.5 <	EPA 300.0
pH, field (su)	6.82	Field Meter
pH, lab (su)	6.91 H	SM 4500-H+B
Potassium, total (mg/l)	4.99	EPA 200.2/200.7/6010A
Potassium, dissolved (mg/l)	5.01	EPA 200.2/200.7/6010A
Sodium, total (mg/l)	13.3	EPA 200.2/200.7/6010A
Sodium, dissolved (mg/l)	13	EPA 200.2/200.7/6010A
Specific Conductance, field (umhos/cm)	556	Field Meter
Specific Conductance, lab (umhos/cm)	554	SM 2510 B
Sulfate, as SO4 (mg/l)	125	EPA 300.0
Alkalinity, total as CaCO3 (mg/l)	105	SM 2320B
Total Dissolved Solids (mg/l)	339	SM 2540B
Total Organic Carbon (mg/l)	1.01	SM 5310C
Turbidity, field (n.t.u.)	0.32	Field Meter
Dissolved O2, field (mg/l)	0.36	Field Meter
Redox, field (mv)	41.5	Field Meter
Temperature, field (°c)	15.08	Field Meter
Acidity, total as CaCO3 (mg/l)		

T Please indicate detection limit if analyte is not detected.

I.D. No.	301309
Monitoring Point No.	MW-8-2
Sample Date	11/04/2019

FORM 14 R
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

1-A. Organics (Enter all data in ug/l)

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Benzene (µg/l)		
1,2-Dibromoethane (µg/l)		
1,1-Dichloroethane (µg/l)		
1,1-Dichloroethene (µg/l)		
1,2-Dichloroethane (µg/l)		
cis-1,2-Dichloroethene (µg/l)		
trans-1,2-Dichloroethene (µg/l)		
Ethylbenzene (µg/l)		
Methylene Chloride (µg/l)		
Tetrachloroethene (µg/l)		
Toluene (µg/l)		
1,1,1-Trichloroethane (µg/l)		
Trichloroethene (µg/l)		
Vinyl chloride (µg/l)		
Xylenes (µg/l)		

T Please indicate detection limit if analyte is not detected.

I.D. No.	301309
Monitoring Point No.	MW-8-2
Sample Date	11/04/2019

FORM 14 R

ANNUAL WATER QUALITY ANALYSES

2-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Arsenic, total (µg/l)	0.548 ND	EPA 200.2/200.8/6020A
Arsenic, dissolved (µg/l)	0.548 ND	EPA 200.2/200.8/6020A
Barium, total (µg/l)	25.4	EPA 200.2/200.8/6020A
Barium, dissolved (µg/l)	24.7	EPA 200.2/200.8/6020A
Cadmium, total (µg/l)	1 <	EPA 200.2/200.8/6020A
Cadmium, dissolved (µg/l)	1 <	EPA 200.2/200.8/6020A
Chromium, total (µg/l)	1 <	EPA 200.2/200.8/6020A
Chromium, dissolved (µg/l)	1 <	EPA 200.2/200.8/6020A
Copper, total (µg/l)	2.98	EPA 200.2/200.8/6020A
Copper, dissolved (µg/l)	1.42	EPA 200.2/200.8/6020A
Lead, total (µg/l)	0.229 ND	EPA 200.2/200.8/6020A
Lead, dissolved (µg/l)	0.229 ND	EPA 200.2/200.8/6020A
Mercury, total (µg/l)	0.717 ND	EPA 200.8
Mercury, dissolved (µg/l)	0.717 ND	EPA 245.7
Selenium, total (µg/l)	5 <	EPA 200.2/200.8/6020A
Selenium, dissolved (µg/l)	5 <	EPA 200.2/200.8/6020A
Silver, total (µg/l)	0.132 ND	EPA 200.2/200.8/6020A
Silver, dissolved (µg/l)	0.132 ND	EPA 200.2/200.8/6020A
Zinc, total (µg/l)	5 <	EPA 200.0/200.8/6020
Zinc, dissolved (µg/l)	5 <	EPA 200.0/200.8/6020
Boron, total (µg/l)	443	EPA 200.2/200.7/6010A
Boron, dissolved (µg/l)	452	EPA 200.2/200.7/6010A
Lithium, total (µg/l)	21.3	EPA 200.2/200.8/6020A
Lithium, dissolved (µg/l)	20.3	EPA 200.2/200.8/6020A
Molybdenum, total (µg/l)	305	EPA 200.2/200.8/6020A
Molybdenum, dissolved (µg/l)	288	EPA 200.2/200.8/6020A
Strontium, total (µg/l)	455	EPA 200.0/200.7/6010
Strontium, dissolved (µg/l)	436	EPA 200.0/200.7/6010

T Please indicate detection limit if analyte is not detected.

I.D. No.	301309
Monitoring Point No.	MW-8-2
Sample Date	11/04/2019

FORM 14 R

ANNUAL WATER QUALITY ANALYSES

2-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Aluminum, total (µg/l)	26.8 ND	EPA 200.0/200.7/6010
Aluminum, dissolved (µg/l)	100 <	EPA 200.0/200.7/6010
Antimony, total (µg/l)	0.179 ND	EPA 200.2/200.8/6020A
Antimony, dissolved (µg/l)	0.179 ND	EPA 200.2/200.8/6020A
Beryllium, total (µg/l)	0.071 ND	EPA 200.2/200.8/6020A
Beryllium, dissolved (µg/l)	0.071 ND	EPA 200.2/200.8/6020A
Cobalt, total (µg/l)		
Cobalt, dissolved (µg/l)		
Gallium, total (µg/l)		
Gallium, dissolved (µg/l)		
Germanium, total (µg/l)		
Germanium, dissolved (µg/l)		
Nickel, total (µg/l)	7.22	EPA 200.8
Nickel, dissolved (µg/l)	7.37	EPA 200.8
Rubidium, total (µg/l)		
Rubidium, dissolved (µg/l)		
Titanium, total (µg/l)	5 <	EPA 200.2/200.8
Titanium, dissolved (µg/l)	5 <	EPA 200.2/200.8
Vanadium, total (µg/l)	2.35 ND	EPA 200.8
Vanadium, dissolved (µg/l)	2.35 ND	EPA 200.8
Yttrium, total (µg/l)		
Yttrium, dissolved (µg/l)		

T Please indicate detection limit if analyte is not detected.

Date Prepared/Revised
12/19/2019

DEP USE ONLY

Date Received

FORM 14R

RESIDUAL WASTE LANDFILLS AND DISPOSAL IMPOUNDMENTS

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 14R, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General References: Section 288.254, 289.264

SECTION A. SITE IDENTIFIER

Applicant/permittee: Brunner Island, LLC - Basin No. 5

Site Name: Basin No. 5

Facility ID (as issued by DEP): 301309

SECTION B. FACILITY INFORMATION

Monitoring wells must be designed and constructed in accordance with Department standards. **INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (DD° MM' SS.S").**

Monitoring Point Number: MW-8-3A

☒ Well ☐ Spring ☐ Stream ☐ Other☐ Upgradient/Upstream ☒ Downgradient/Downstream

Location: County York

Municipality: East Manchester Township

Sampling Point: Latitude: 40° 5' 12.49"

Longitude: 76° 41' 6.87"

Depth to Water Level: 8.19 ft.

Measured from: ☐ Land Surface ☒ TOC

Casing Stick Up: 1.72 ft.

Elevation of Water Level: 259.19 ft./MSL

Sampling Depth: 20.00 ft.

Volume of Water Column: gal.

Total Well Depth: 26.90 ft.

Sampling Method: ☒ Pumped ☐ Bailed ☐ GrabWell Purged: ☒ Yes ☐ No

Well Volumes Purged: 3.2 L

Sample Field Filtered (must be 0.45 micron)? ☒ Yes ☐ No

Spring Flow Rate: GPM

Sample Date (mm/dd/yy): 11/04/2019

Sample Collection Time: 10:20AM

Sample Collector's Name: AF

Sample Collector's Affiliation: Talen Generation, LLC

Laboratory(ies) Performing Analysis: Hawk Mtn Labs, Inc.

Were any holding times exceeded? ☐ Yes ☒ No. If yes, please explain in comments field.

Lab Certification Number(s): 40-417

Lab Sample Number(s): 191001293-003

Final Lab Analysis Completion Date: 11/26/2019

Name/Affiliation of Person who Filled out Form Martin Mengel / Talen Energy Supply, LLC

Comments:

I.D. No.	301309
Monitoring Point No.	MW-8-3A
Sample Date	11/04/2019

FORM 14 R
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES
ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Ammonia, as N (mg/l)	0.304	SM 4500-NH3-F
Bicarbonate (mg/l)	221	SM 2320B
Calcium, total (mg/l)	138	EPA 200.2/200.7/6010A
Calcium, dissolved (mg/l)	136	EPA 200.2/200.7/6010A
Chemical Oxygen Demand (mg/l)	5.3 ND	SM 5220D
Chloride, total as Cl (mg/l)	39.5	EPA 300.0
Fluoride, total as F (mg/l)	0.339	EPA 300.0
Iron, total (µg/l)	6,420	EPA 200.2/200.7/6010A
Iron, dissolved (µg/l)	6,190	EPA 200.2/200.7/6010A
Magnesium, total (mg/l)	27.7	EPA 200.2/200.7/6010A
Magnesium, dissolved (mg/l)	28.1	EPA 200.2/200.7/6010A
Manganese, total (µg/l)	5,850	EPA 200.2/200.7/6010A
Manganese, dissolved (µg/l)	6,060	EPA 200.2/200.7/6010A
Nitrate, as N (mg/l)	0.024 ND	EPA 300.0
pH, field (su)	6.34	Field Meter
pH, lab (su)	6.74 H	SM 4500-H+B
Potassium, total (mg/l)	2.69	EPA 200.2/200.7/6010A
Potassium, dissolved (mg/l)	2.67	EPA 200.2/200.7/6010A
Sodium, total (mg/l)	9.49	EPA 200.2/200.7/6010A
Sodium, dissolved (mg/l)	9.31	EPA 200.2/200.7/6010A
Specific Conductance, field (umhos/cm)	917	Field Meter
Specific Conductance, lab (umhos/cm)	907	SM 2510 B
Sulfate, as SO4 (mg/l)	235	EPA 300.0
Alkalinity, total as CaCO3 (mg/l)	221	SM 2320B
Total Dissolved Solids (mg/l)	617	SM 2540B
Total Organic Carbon (mg/l)	2.06	SM 5310C
Turbidity, field (n.t.u.)	4.48	Field Meter
Dissolved O2, field (mg/l)	0.11	Field Meter
Redox, field (mv)	-113.9	Field Meter
Temperature, field (°c)	13.61	Field Meter
Acidity, total as CaCO3 (mg/l)		

T Please indicate detection limit if analyte is not detected.

I.D. No.	301309
Monitoring Point No.	MW-8-3A
Sample Date	11/04/2019

FORM 14 R
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

1-A. Organics (Enter all data in ug/l)

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Benzene (µg/l)		
1,2-Dibromoethane (µg/l)		
1,1-Dichloroethane (µg/l)		
1,1-Dichloroethene (µg/l)		
1,2-Dichloroethane (µg/l)		
cis-1,2-Dichloroethene (µg/l)		
trans-1,2-Dichloroethene (µg/l)		
Ethylbenzene (µg/l)		
Methylene Chloride (µg/l)		
Tetrachloroethene (µg/l)		
Toluene (µg/l)		
1,1,1-Trichloroethane (µg/l)		
Trichloroethene (µg/l)		
Vinyl chloride (µg/l)		
Xylenes (µg/l)		

T Please indicate detection limit if analyte is not detected.

I.D. No.	301309
Monitoring Point No.	MW-8-3A
Sample Date	11/04/2019

FORM 14 R

ANNUAL WATER QUALITY ANALYSES

2-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Arsenic, total (µg/l)	14.4	EPA 200.2/200.8/6020A
Arsenic, dissolved (µg/l)	12.8	EPA 200.2/200.8/6020A
Barium, total (µg/l)	49.5	EPA 200.2/200.8/6020A
Barium, dissolved (µg/l)	49.3	EPA 200.2/200.8/6020A
Cadmium, total (µg/l)	0.152 ND	EPA 200.2/200.8/6020A
Cadmium, dissolved (µg/l)	0.152 ND	EPA 200.2/200.8/6020A
Chromium, total (µg/l)	0.411 ND	EPA 200.2/200.8/6020A
Chromium, dissolved (µg/l)	0.411 ND	EPA 200.2/200.8/6020A
Copper, total (µg/l)	2.83	EPA 200.2/200.8/6020A
Copper, dissolved (µg/l)	2.07	EPA 200.2/200.8/6020A
Lead, total (µg/l)	0.229 ND	EPA 200.2/200.8/6020A
Lead, dissolved (µg/l)	0.229 ND	EPA 200.2/200.8/6020A
Mercury, total (µg/l)	0.717 ND	EPA 200.8
Mercury, dissolved (µg/l)	0.717 ND	EPA 245.7
Selenium, total (µg/l)	0.632 ND	EPA 200.2/200.8/6020A
Selenium, dissolved (µg/l)	0.632 ND	EPA 200.2/200.8/6020A
Silver, total (µg/l)	0.132 ND	EPA 200.2/200.8/6020A
Silver, dissolved (µg/l)	0.132 ND	EPA 200.2/200.8/6020A
Zinc, total (µg/l)	5 <	EPA 200.0/200.8/6020
Zinc, dissolved (µg/l)	5.93	EPA 200.0/200.8/6020
Boron, total (µg/l)	374	EPA 200.2/200.7/6010A
Boron, dissolved (µg/l)	407	EPA 200.2/200.7/6010A
Lithium, total (µg/l)	13.8	EPA 200.2/200.8/6020A
Lithium, dissolved (µg/l)	10.8	EPA 200.2/200.8/6020A
Molybdenum, total (µg/l)	92.9	EPA 200.2/200.8/6020A
Molybdenum, dissolved (µg/l)	94.6	EPA 200.2/200.8/6020A
Strontium, total (µg/l)	704	EPA 200.0/200.7/6010
Strontium, dissolved (µg/l)	682	EPA 200.0/200.7/6010

T Please indicate detection limit if analyte is not detected.

I.D. No.	301309
Monitoring Point No.	MW-8-3A
Sample Date	11/04/2019

FORM 14 R

ANNUAL WATER QUALITY ANALYSES

2-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Aluminum, total (µg/l)	100 <	EPA 200.0/200.7/6010
Aluminum, dissolved (µg/l)	100 <	EPA 200.0/200.7/6010
Antimony, total (µg/l)	0.179 ND	EPA 200.2/200.8/6020A
Antimony, dissolved (µg/l)	0.179 ND	EPA 200.2/200.8/6020A
Beryllium, total (µg/l)	0.071 ND	EPA 200.2/200.8/6020A
Beryllium, dissolved (µg/l)	0.071 ND	EPA 200.2/200.8/6020A
Cobalt, total (µg/l)		
Cobalt, dissolved (µg/l)		
Gallium, total (µg/l)		
Gallium, dissolved (µg/l)		
Germanium, total (µg/l)		
Germanium, dissolved (µg/l)		
Nickel, total (µg/l)	11	EPA 200.8
Nickel, dissolved (µg/l)	11.7	EPA 200.8
Rubidium, total (µg/l)		
Rubidium, dissolved (µg/l)		
Titanium, total (µg/l)	5 <	EPA 200.2/200.8
Titanium, dissolved (µg/l)	5 <	EPA 200.2/200.8
Vanadium, total (µg/l)	2.35 ND	EPA 200.8
Vanadium, dissolved (µg/l)	2.35 ND	EPA 200.8
Yttrium, total (µg/l)		
Yttrium, dissolved (µg/l)		

T Please indicate detection limit if analyte is not detected.


 Date Prepared/Revised
 12/19/2019

DEP USE ONLY

Date Received

FORM 14R

RESIDUAL WASTE LANDFILLS AND DISPOSAL IMPOUNDMENTS

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 14R, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General References: Section 288.254, 289.264

SECTION A. SITE IDENTIFIER

Applicant/permittee: Brunner Island, LLC - Basin No. 5

Site Name: Basin No. 5

Facility ID (as issued by DEP): 301309

SECTION B. FACILITY INFORMATION

Monitoring wells must be designed and constructed in accordance with Department standards. **INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (DD° MM' SS.S").**

Monitoring Point Number: MW-8-3B

☒ Well ☐ Spring ☐ Stream ☐ Other

☐ Upgradient/Upstream ☒ Downgradient/Downstream

Location: County York

Municipality: East Manchester Township

Sampling Point: Latitude: 40° 5' 12.49"

Longitude: 76° 41' 6.87"

Depth to Water Level: 9.39 ft.

 Measured from: ☐ Land Surface ☒ TOC

Casing Stick Up: 1.90 ft.

Elevation of Water Level: 258.32 ft./MSL

Sampling Depth: 40.00 ft.

Volume of Water Column: gal.

Total Well Depth: 47.00 ft.

 Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

 Well Purged: ☒ Yes ☐ No

Well Volumes Purged: 2 L

 Sample Field Filtered (must be 0.45 micron)? ☒ Yes ☐ No

Spring Flow Rate: GPM

Sample Date (mm/dd/yy): 11/04/2019

Sample Collection Time: 11:45AM

Sample Collector's Name: AF

Sample Collector's Affiliation: Talen Generation, LLC

Laboratory(ies) Performing Analysis: Hawk Mtn Labs, Inc.

 Were any holding times exceeded? ☐ Yes ☒ No. If yes, please explain in comments field.

Lab Certification Number(s): 40-417

Lab Sample Number(s): 191001293-004

Final Lab Analysis Completion Date: 11/26/2019

Name/Affiliation of Person who Filled out Form Martin Mengel / Talen Energy Supply, LLC

Comments:

I.D. No.	301309
Monitoring Point No.	MW-8-3B
Sample Date	11/04/2019

FORM 14 R
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES
ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Ammonia, as N (mg/l)	0.109 ND	SM 4500-NH3-F
Bicarbonate (mg/l)	256	SM 2320B
Calcium, total (mg/l)	121	EPA 200.2/200.7/6010A
Calcium, dissolved (mg/l)	116	EPA 200.2/200.7/6010A
Chemical Oxygen Demand (mg/l)	5.3 ND	SM 5220D
Chloride, total as Cl (mg/l)	13.7	EPA 300.0
Fluoride, total as F (mg/l)	0.502	EPA 300.0
Iron, total (µg/l)	482	EPA 200.2/200.7/6010A
Iron, dissolved (µg/l)	406	EPA 200.2/200.7/6010A
Magnesium, total (mg/l)	23.8	EPA 200.2/200.7/6010A
Magnesium, dissolved (mg/l)	22.5	EPA 200.2/200.7/6010A
Manganese, total (µg/l)	1,070	EPA 200.2/200.7/6010A
Manganese, dissolved (µg/l)	1,040	EPA 200.2/200.7/6010A
Nitrate, as N (mg/l)	0.024 ND	EPA 300.0
pH, field (su)	6.75	Field Meter
pH, lab (su)	7.24 H	SM 4500-H+B
Potassium, total (mg/l)	1.63	EPA 200.2/200.7/6010A
Potassium, dissolved (mg/l)	1.57	EPA 200.2/200.7/6010A
Sodium, total (mg/l)	6.56	EPA 200.2/200.7/6010A
Sodium, dissolved (mg/l)	6.03	EPA 200.2/200.7/6010A
Specific Conductance, field (umhos/cm)	777	Field Meter
Specific Conductance, lab (umhos/cm)	761	SM 2510 B
Sulfate, as SO4 (mg/l)	151	EPA 300.0
Alkalinity, total as CaCO3 (mg/l)	256	SM 2320B
Total Dissolved Solids (mg/l)	487	SM 2540B
Total Organic Carbon (mg/l)	1.33	SM 5310C
Turbidity, field (n.t.u.)	0.33	Field Meter
Dissolved O2, field (mg/l)	0.39	Field Meter
Redox, field (mv)	-101.6	Field Meter
Temperature, field (°c)	14.59	Field Meter
Acidity, total as CaCO3 (mg/l)		

T Please indicate detection limit if analyte is not detected.

I.D. No.	301309
Monitoring Point No.	MW-8-3B
Sample Date	11/04/2019

FORM 14 R
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

1-A. Organics (Enter all data in ug/l)

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Benzene (µg/l)		
1,2-Dibromoethane (µg/l)		
1,1-Dichloroethane (µg/l)		
1,1-Dichloroethene (µg/l)		
1,2-Dichloroethane (µg/l)		
cis-1,2-Dichloroethene (µg/l)		
trans-1,2-Dichloroethene (µg/l)		
Ethylbenzene (µg/l)		
Methylene Chloride (µg/l)		
Tetrachloroethene (µg/l)		
Toluene (µg/l)		
1,1,1-Trichloroethane (µg/l)		
Trichloroethene (µg/l)		
Vinyl chloride (µg/l)		
Xylenes (µg/l)		

T Please indicate detection limit if analyte is not detected.

I.D. No.	301309
Monitoring Point No.	MW-8-3B
Sample Date	11/04/2019

FORM 14 R

ANNUAL WATER QUALITY ANALYSES

2-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Arsenic, total (µg/l)	8.58	EPA 200.2/200.8/6020A
Arsenic, dissolved (µg/l)	6.91	EPA 200.2/200.8/6020A
Barium, total (µg/l)	62.3	EPA 200.2/200.8/6020A
Barium, dissolved (µg/l)	54.7	EPA 200.2/200.8/6020A
Cadmium, total (µg/l)	1 <	EPA 200.2/200.8/6020A
Cadmium, dissolved (µg/l)	1 <	EPA 200.2/200.8/6020A
Chromium, total (µg/l)	1 <	EPA 200.2/200.8/6020A
Chromium, dissolved (µg/l)	1 <	EPA 200.2/200.8/6020A
Copper, total (µg/l)	7.56	EPA 200.2/200.8/6020A
Copper, dissolved (µg/l)	1.81	EPA 200.2/200.8/6020A
Lead, total (µg/l)	0.229 ND	EPA 200.2/200.8/6020A
Lead, dissolved (µg/l)	1 <	EPA 200.2/200.8/6020A
Mercury, total (µg/l)	0.717 ND	EPA 200.8
Mercury, dissolved (µg/l)	0.717 ND	EPA 245.7
Selenium, total (µg/l)	0.632 ND	EPA 200.2/200.8/6020A
Selenium, dissolved (µg/l)	0.632 ND	EPA 200.2/200.8/6020A
Silver, total (µg/l)	0.132 ND	EPA 200.2/200.8/6020A
Silver, dissolved (µg/l)	0.132 ND	EPA 200.2/200.8/6020A
Zinc, total (µg/l)	5 <	EPA 200.0/200.8/6020
Zinc, dissolved (µg/l)	5.37	EPA 200.0/200.8/6020
Boron, total (µg/l)	334	EPA 200.2/200.7/6010A
Boron, dissolved (µg/l)	326	EPA 200.2/200.7/6010A
Lithium, total (µg/l)	25.6	EPA 200.2/200.8/6020A
Lithium, dissolved (µg/l)	18.4	EPA 200.2/200.8/6020A
Molybdenum, total (µg/l)	187	EPA 200.2/200.8/6020A
Molybdenum, dissolved (µg/l)	170	EPA 200.2/200.8/6020A
Strontium, total (µg/l)	374	EPA 200.0/200.7/6010
Strontium, dissolved (µg/l)	338	EPA 200.0/200.7/6010

T Please indicate detection limit if analyte is not detected.

I.D. No.	301309
Monitoring Point No.	MW-8-3B
Sample Date	11/04/2019

FORM 14 R

ANNUAL WATER QUALITY ANALYSES

2-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Aluminum, total (µg/l)	100 <	EPA 200.0/200.7/6010
Aluminum, dissolved (µg/l)	26.8 ND	EPA 200.0/200.7/6010
Antimony, total (µg/l)	0.179 ND	EPA 200.2/200.8/6020A
Antimony, dissolved (µg/l)	0.179 ND	EPA 200.2/200.8/6020A
Beryllium, total (µg/l)	0.071 ND	EPA 200.2/200.8/6020A
Beryllium, dissolved (µg/l)	0.071 ND	EPA 200.2/200.8/6020A
Cobalt, total (µg/l)		
Cobalt, dissolved (µg/l)		
Gallium, total (µg/l)		
Gallium, dissolved (µg/l)		
Germanium, total (µg/l)		
Germanium, dissolved (µg/l)		
Nickel, total (µg/l)	10.4	EPA 200.8
Nickel, dissolved (µg/l)	9.76	EPA 200.8
Rubidium, total (µg/l)		
Rubidium, dissolved (µg/l)		
Titanium, total (µg/l)	5 <	EPA 200.2/200.8
Titanium, dissolved (µg/l)	5 <	EPA 200.2/200.8
Vanadium, total (µg/l)	2.35 ND	EPA 200.8
Vanadium, dissolved (µg/l)	2.35 ND	EPA 200.8
Yttrium, total (µg/l)		
Yttrium, dissolved (µg/l)		

T Please indicate detection limit if analyte is not detected.


 Date Prepared/Revised
 12/19/2019

DEP USE ONLY

Date Received

FORM 14R

RESIDUAL WASTE LANDFILLS AND DISPOSAL IMPOUNDMENTS

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 14R, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General References: Section 288.254, 289.264

SECTION A. SITE IDENTIFIER

Applicant/permittee: Brunner Island, LLC - Basin No. 5

Site Name: Basin No. 5

Facility ID (as issued by DEP): 301309

SECTION B. FACILITY INFORMATION

Monitoring wells must be designed and constructed in accordance with Department standards. **INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (DD° MM' SS.S").**

Monitoring Point Number: MW-8-4

☒ Well ☐ Spring ☐ Stream ☐ Other

☐ Upgradient/Upstream ☒ Downgradient/Downstream

Location: County York

Municipality: East Manchester Township

Sampling Point: Latitude: 40° 5' 25.61"

Longitude: 76° 41' 13.82"

Depth to Water Level: 12.72 ft.

Measured from: ☐ Land Surface ☒ TOC

Casing Stick Up: 1.81 ft.

Elevation of Water Level: 257.47 ft./MSL

Sampling Depth: 18.00 ft.

Volume of Water Column: gal.

Total Well Depth: 21.70 ft.

Sampling Method: ☒ Pumped ☐ Bailed ☐ GrabWell Purged: ☒ Yes ☐ No

Well Volumes Purged: 4 L

Sample Field Filtered (must be 0.45 micron)? ☒ Yes ☐ No

Spring Flow Rate: GPM

Sample Date (mm/dd/yy): 11/15/2019

Sample Collection Time: 8:04AM

Sample Collector's Name: AF

Sample Collector's Affiliation: Talen Generation, LLC

Laboratory(ies) Performing Analysis: Hawk Mtn Labs, Inc.

Were any holding times exceeded? ☐ Yes ☒ No. If yes, please explain in comments field.

Lab Certification Number(s): 40-417

Lab Sample Number(s): 191001293-005

Final Lab Analysis Completion Date: 12/12/2019

Name/Affiliation of Person who Filled out Form Martin Mengel / Talen Energy Supply, LLC

Comments:

I.D. No.	301309
Monitoring Point No.	MW-8-4
Sample Date	11/15/2019

FORM 14 R
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES
ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Ammonia, as N (mg/l)	0.109 ND	SM 4500-NH3-F
Bicarbonate (mg/l)	47.8	SM 2320B
Calcium, total (mg/l)	125	EPA 200.2/200.7/6010A
Calcium, dissolved (mg/l)	117	EPA 200.2/200.7/6010A
Chemical Oxygen Demand (mg/l)	20 <	SM 5220D
Chloride, total as Cl (mg/l)	25	EPA 300.0
Fluoride, total as F (mg/l)	0.29	EPA 300.0
Iron, total (µg/l)	20 <	EPA 200.2/200.7/6010A
Iron, dissolved (µg/l)	20 <	EPA 200.2/200.7/6010A
Magnesium, total (mg/l)	41.6	EPA 200.2/200.7/6010A
Magnesium, dissolved (mg/l)	40.6	EPA 200.2/200.7/6010A
Manganese, total (µg/l)	9,980	EPA 200.2/200.7/6010A
Manganese, dissolved (µg/l)	9,330	EPA 200.2/200.7/6010A
Nitrate, as N (mg/l)	0.024 ND	EPA 300.0
pH, field (su)	5.56	Field Meter
pH, lab (su)	6 H	SM 4500-H+B
Potassium, total (mg/l)	1.8	EPA 200.2/200.7/6010A
Potassium, dissolved (mg/l)	1.78	EPA 200.2/200.7/6010A
Sodium, total (mg/l)	16.3	EPA 200.2/200.7/6010A
Sodium, dissolved (mg/l)	15.8	EPA 200.2/200.7/6010A
Specific Conductance, field (umhos/cm)	1,004	Field Meter
Specific Conductance, lab (umhos/cm)	978	SM 2510 B
Sulfate, as SO4 (mg/l)	441	EPA 300.0
Alkalinity, total as CaCO3 (mg/l)	47.8	SM 2320B
Total Dissolved Solids (mg/l)	725	SM 2540B
Total Organic Carbon (mg/l)	1.19	SM 5310C
Turbidity, field (n.t.u.)	1.28	Field Meter
Dissolved O2, field (mg/l)	1.37	Field Meter
Redox, field (mv)	144.8	Field Meter
Temperature, field (°c)	14.22	Field Meter
Acidity, total as CaCO3 (mg/l)		

T Please indicate detection limit if analyte is not detected.

I.D. No.	301309
Monitoring Point No.	MW-8-4
Sample Date	11/15/2019

FORM 14 R
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

1-A. Organics (Enter all data in ug/l)

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Benzene (µg/l)		
1,2-Dibromoethane (µg/l)		
1,1-Dichloroethane (µg/l)		
1,1-Dichloroethene (µg/l)		
1,2-Dichloroethane (µg/l)		
cis-1,2-Dichloroethene (µg/l)		
trans-1,2-Dichloroethene (µg/l)		
Ethylbenzene (µg/l)		
Methylene Chloride (µg/l)		
Tetrachloroethene (µg/l)		
Toluene (µg/l)		
1,1,1-Trichloroethane (µg/l)		
Trichloroethene (µg/l)		
Vinyl chloride (µg/l)		
Xylenes (µg/l)		

T Please indicate detection limit if analyte is not detected.

I.D. No.	301309
Monitoring Point No.	MW-8-4
Sample Date	11/15/2019

FORM 14 R

ANNUAL WATER QUALITY ANALYSES

2-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Arsenic, total (µg/l)	0.548 ND	EPA 200.2/200.8/6020A
Arsenic, dissolved (µg/l)	0.548 ND	EPA 200.2/200.8/6020A
Barium, total (µg/l)	13.2	EPA 200.2/200.8/6020A
Barium, dissolved (µg/l)	16.2	EPA 200.2/200.8/6020A
Cadmium, total (µg/l)	1.1	EPA 200.2/200.8/6020A
Cadmium, dissolved (µg/l)	1.33	EPA 200.2/200.8/6020A
Chromium, total (µg/l)	0.411 ND	EPA 200.2/200.8/6020A
Chromium, dissolved (µg/l)	0.411 ND	EPA 200.2/200.8/6020A
Copper, total (µg/l)	1.09	EPA 200.2/200.8/6020A
Copper, dissolved (µg/l)	4.39	EPA 200.2/200.8/6020A
Lead, total (µg/l)	0.229 ND	EPA 200.2/200.8/6020A
Lead, dissolved (µg/l)	0.229 ND	EPA 200.2/200.8/6020A
Mercury, total (µg/l)	0.717 ND	EPA 200.8
Mercury, dissolved (µg/l)	0.717 ND	EPA 245.7
Selenium, total (µg/l)	5 <	EPA 200.2/200.8/6020A
Selenium, dissolved (µg/l)	0.632 ND	EPA 200.2/200.8/6020A
Silver, total (µg/l)	0.132 ND	EPA 200.2/200.8/6020A
Silver, dissolved (µg/l)	0.132 ND	EPA 200.2/200.8/6020A
Zinc, total (µg/l)	66.1	EPA 200.0/200.8/6020
Zinc, dissolved (µg/l)	83.9	EPA 200.0/200.8/6020
Boron, total (µg/l)	306	EPA 200.2/200.7/6010A
Boron, dissolved (µg/l)	313	EPA 200.2/200.7/6010A
Lithium, total (µg/l)	1 <	EPA 200.2/200.8/6020A
Lithium, dissolved (µg/l)	1 <	EPA 200.2/200.8/6020A
Molybdenum, total (µg/l)	0.3 ND	EPA 200.2/200.8/6020A
Molybdenum, dissolved (µg/l)	0.3 ND	EPA 200.2/200.8/6020A
Strontium, total (µg/l)	309	EPA 200.0/200.7/6010
Strontium, dissolved (µg/l)	295	EPA 200.0/200.7/6010

T Please indicate detection limit if analyte is not detected.

I.D. No.	301309
Monitoring Point No.	MW-8-4
Sample Date	11/15/2019

FORM 14 R

ANNUAL WATER QUALITY ANALYSES

2-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Aluminum, total (µg/l)	261	EPA 200.0/200.7/6010
Aluminum, dissolved (µg/l)	129	EPA 200.0/200.7/6010
Antimony, total (µg/l)	0.179 ND	EPA 200.2/200.8/6020A
Antimony, dissolved (µg/l)	0.179 ND	EPA 200.2/200.8/6020A
Beryllium, total (µg/l)	0.071 ND	EPA 200.2/200.8/6020A
Beryllium, dissolved (µg/l)	0.071 ND	EPA 200.2/200.8/6020A
Cobalt, total (µg/l)		
Cobalt, dissolved (µg/l)		
Gallium, total (µg/l)		
Gallium, dissolved (µg/l)		
Germanium, total (µg/l)		
Germanium, dissolved (µg/l)		
Nickel, total (µg/l)	72.2	EPA 200.8
Nickel, dissolved (µg/l)	88.3	EPA 200.8
Rubidium, total (µg/l)		
Rubidium, dissolved (µg/l)		
Titanium, total (µg/l)	5 <	EPA 200.2/200.8
Titanium, dissolved (µg/l)	5 <	EPA 200.2/200.8
Vanadium, total (µg/l)	2.35 ND	EPA 200.8
Vanadium, dissolved (µg/l)	2.35 ND	EPA 200.8
Yttrium, total (µg/l)		
Yttrium, dissolved (µg/l)		

T Please indicate detection limit if analyte is not detected.


 Date Prepared/Revised
 12/19/2019

DEP USE ONLY

Date Received

FORM 14R

RESIDUAL WASTE LANDFILLS AND DISPOSAL IMPOUNDMENTS

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 14R, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General References: Section 288.254, 289.264

SECTION A. SITE IDENTIFIER

Applicant/permittee: Brunner Island, LLC - Basin No. 5

Site Name: Basin No. 5

Facility ID (as issued by DEP): 301309

SECTION B. FACILITY INFORMATION

Monitoring wells must be designed and constructed in accordance with Department standards. **INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (DD° MM' SS.S").**

Monitoring Point Number: MW-8-5A

☒ Well ☐ Spring ☐ Stream ☐ Other

☐ Upgradient/Upstream ☒ Downgradient/Downstream

Location: County York

Municipality: East Manchester Township

Sampling Point: Latitude: 40° 5' 16.91"

Longitude: 76° 41' 31.04"

Depth to Water Level: 22.9 ft.

Measured from: ☐ Land Surface ☒ TOC

Casing Stick Up: 1.97 ft.

Elevation of Water Level: 262.14 ft./MSL

Sampling Depth: 33.00 ft.

Volume of Water Column: gal.

Total Well Depth: 39.20 ft.

Sampling Method: ☒ Pumped ☐ Bailed ☐ GrabWell Purged: ☒ Yes ☐ No

Well Volumes Purged: 2.5 L

Sample Field Filtered (must be 0.45 micron)? ☒ Yes ☐ No

Spring Flow Rate: GPM

Sample Date (mm/dd/yy): 11/06/2019

Sample Collection Time: 7:45AM

Sample Collector's Name: JO

Sample Collector's Affiliation: Talen Generation, LLC

Laboratory(ies) Performing Analysis: Hawk Mtn Labs, Inc.

Were any holding times exceeded? ☐ Yes ☒ No. If yes, please explain in comments field.

Lab Certification Number(s): 40-417

Lab Sample Number(s): 191001293-006

Final Lab Analysis Completion Date: 11/26/2019

Name/Affiliation of Person who Filled out Form Martin Mengel / Talen Energy Supply, LLC

Comments:

I.D. No.	301309
Monitoring Point No.	MW-8-5A
Sample Date	11/06/2019

FORM 14 R
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES
ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Ammonia, as N (mg/l)	0.591	SM 4500-NH3-F
Bicarbonate (mg/l)	249	SM 2320B
Calcium, total (mg/l)	161	EPA 200.2/200.7/6010A
Calcium, dissolved (mg/l)	159	EPA 200.2/200.7/6010A
Chemical Oxygen Demand (mg/l)	5.3 ND	SM 5220D
Chloride, total as Cl (mg/l)	31.9	EPA 300.0
Fluoride, total as F (mg/l)	0.922	EPA 300.0
Iron, total (µg/l)	1.02 ND	EPA 200.2/200.7/6010A
Iron, dissolved (µg/l)	20 <	EPA 200.2/200.7/6010A
Magnesium, total (mg/l)	35.4	EPA 200.2/200.7/6010A
Magnesium, dissolved (mg/l)	34.7	EPA 200.2/200.7/6010A
Manganese, total (µg/l)	360	EPA 200.2/200.7/6010A
Manganese, dissolved (µg/l)	352	EPA 200.2/200.7/6010A
Nitrate, as N (mg/l)	0.024 ND	EPA 300.0
pH, field (su)	7.22	Field Meter
pH, lab (su)	7.3 H	SM 4500-H+B
Potassium, total (mg/l)	4.24	EPA 200.2/200.7/6010A
Potassium, dissolved (mg/l)	3.97	EPA 200.2/200.7/6010A
Sodium, total (mg/l)	10.2	EPA 200.2/200.7/6010A
Sodium, dissolved (mg/l)	9.44	EPA 200.2/200.7/6010A
Specific Conductance, field (umhos/cm)	1,056	Field Meter
Specific Conductance, lab (umhos/cm)	1,056	SM 2510 B
Sulfate, as SO4 (mg/l)	271	EPA 300.0
Alkalinity, total as CaCO3 (mg/l)	249	SM 2320B
Total Dissolved Solids (mg/l)	698	SM 2540B
Total Organic Carbon (mg/l)	1.29	SM 5310C
Turbidity, field (n.t.u.)	0.36	Field Meter
Dissolved O2, field (mg/l)	0.48	Field Meter
Redox, field (mv)	22	Field Meter
Temperature, field (°c)	12.68	Field Meter
Acidity, total as CaCO3 (mg/l)		

T Please indicate detection limit if analyte is not detected.

I.D. No.	301309
Monitoring Point No.	MW-8-5A
Sample Date	11/06/2019

FORM 14 R
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

1-A. Organics (Enter all data in ug/l)

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Benzene (µg/l)		
1,2-Dibromoethane (µg/l)		
1,1-Dichloroethane (µg/l)		
1,1-Dichloroethene (µg/l)		
1,2-Dichloroethane (µg/l)		
cis-1,2-Dichloroethene (µg/l)		
trans-1,2-Dichloroethene (µg/l)		
Ethylbenzene (µg/l)		
Methylene Chloride (µg/l)		
Tetrachloroethene (µg/l)		
Toluene (µg/l)		
1,1,1-Trichloroethane (µg/l)		
Trichloroethene (µg/l)		
Vinyl chloride (µg/l)		
Xylenes (µg/l)		

T Please indicate detection limit if analyte is not detected.

I.D. No.	301309
Monitoring Point No.	MW-8-5A
Sample Date	11/06/2019

FORM 14 R

ANNUAL WATER QUALITY ANALYSES

2-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Arsenic, total (µg/l)	106	EPA 200.2/200.8/6020A
Arsenic, dissolved (µg/l)	96.9	EPA 200.2/200.8/6020A
Barium, total (µg/l)	40.1	EPA 200.2/200.8/6020A
Barium, dissolved (µg/l)	39.2	EPA 200.2/200.8/6020A
Cadmium, total (µg/l)	1 <	EPA 200.2/200.8/6020A
Cadmium, dissolved (µg/l)	1 <	EPA 200.2/200.8/6020A
Chromium, total (µg/l)	1 <	EPA 200.2/200.8/6020A
Chromium, dissolved (µg/l)	1 <	EPA 200.2/200.8/6020A
Copper, total (µg/l)	4.72	EPA 200.2/200.8/6020A
Copper, dissolved (µg/l)	3.33	EPA 200.2/200.8/6020A
Lead, total (µg/l)	0.229 ND	EPA 200.2/200.8/6020A
Lead, dissolved (µg/l)	0.229 ND	EPA 200.2/200.8/6020A
Mercury, total (µg/l)	0.717 ND	EPA 200.8
Mercury, dissolved (µg/l)	0.717 ND	EPA 245.7
Selenium, total (µg/l)	0.632 ND	EPA 200.2/200.8/6020A
Selenium, dissolved (µg/l)	0.632 ND	EPA 200.2/200.8/6020A
Silver, total (µg/l)	0.132 ND	EPA 200.2/200.8/6020A
Silver, dissolved (µg/l)	0.132 ND	EPA 200.2/200.8/6020A
Zinc, total (µg/l)	5 <	EPA 200.0/200.8/6020
Zinc, dissolved (µg/l)	5 <	EPA 200.0/200.8/6020
Boron, total (µg/l)	762	EPA 200.2/200.7/6010A
Boron, dissolved (µg/l)	771	EPA 200.2/200.7/6010A
Lithium, total (µg/l)	364	EPA 200.2/200.8/6020A
Lithium, dissolved (µg/l)	171	EPA 200.2/200.8/6020A
Molybdenum, total (µg/l)	402	EPA 200.2/200.8/6020A
Molybdenum, dissolved (µg/l)	401	EPA 200.2/200.8/6020A
Strontium, total (µg/l)	740	EPA 200.0/200.7/6010
Strontium, dissolved (µg/l)	670	EPA 200.0/200.7/6010

T Please indicate detection limit if analyte is not detected.

I.D. No.	301309
Monitoring Point No.	MW-8-5A
Sample Date	11/06/2019

FORM 14 R

ANNUAL WATER QUALITY ANALYSES

2-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Aluminum, total (µg/l)	100 <	EPA 200.0/200.7/6010
Aluminum, dissolved (µg/l)	100 <	EPA 200.0/200.7/6010
Antimony, total (µg/l)	0.179 ND	EPA 200.2/200.8/6020A
Antimony, dissolved (µg/l)	0.179 ND	EPA 200.2/200.8/6020A
Beryllium, total (µg/l)	0.071 ND	EPA 200.2/200.8/6020A
Beryllium, dissolved (µg/l)	0.071 ND	EPA 200.2/200.8/6020A
Cobalt, total (µg/l)		
Cobalt, dissolved (µg/l)		
Gallium, total (µg/l)		
Gallium, dissolved (µg/l)		
Germanium, total (µg/l)		
Germanium, dissolved (µg/l)		
Nickel, total (µg/l)	13.2	EPA 200.8
Nickel, dissolved (µg/l)	14.2	EPA 200.8
Rubidium, total (µg/l)		
Rubidium, dissolved (µg/l)		
Titanium, total (µg/l)	5 <	EPA 200.2/200.8
Titanium, dissolved (µg/l)	5 <	EPA 200.2/200.8
Vanadium, total (µg/l)	2.35 ND	EPA 200.8
Vanadium, dissolved (µg/l)	2.35 ND	EPA 200.8
Yttrium, total (µg/l)		
Yttrium, dissolved (µg/l)		

T Please indicate detection limit if analyte is not detected.


 Date Prepared/Revised
 12/19/2019

DEP USE ONLY

Date Received

FORM 14R RESIDUAL WASTE LANDFILLS AND DISPOSAL IMPOUNDMENTS QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 14R, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General References: Section 288.254, 289.264

SECTION A. SITE IDENTIFIER

Applicant/permittee: Brunner Island, LLC - Basin No. 5

Site Name: Basin No. 5

Facility ID (as issued by DEP): 301309

SECTION B. FACILITY INFORMATION

Monitoring wells must be designed and constructed in accordance with Department standards. **INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (DD° MM' SS.S").**

Monitoring Point Number: MW-8-5B

☒ Well ☐ Spring ☐ Stream ☐ Other

☐ Upgradient/Upstream ☒ Downgradient/Downstream

Location: County York

Municipality: East Manchester Township

Sampling Point: Latitude: 40° 5' 16.81"

Longitude: 76° 41' 30.96"

Depth to Water Level: 15.69 ft.

 Measured from: ☐ Land Surface ☒ TOC

Casing Stick Up: 2.54 ft.

Elevation of Water Level: 269.19 ft./MSL

Sampling Depth: 52.00 ft.

Volume of Water Column: gal.

Total Well Depth: 59.60 ft.

 Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

 Well Purged: ☒ Yes ☐ No

Well Volumes Purged: 2.25 L

 Sample Field Filtered (must be 0.45 micron)? ☒ Yes ☐ No

Spring Flow Rate: GPM

Sample Date (mm/dd/yy): 11/06/2019

Sample Collection Time: 9:53AM

Sample Collector's Name: JO

Sample Collector's Affiliation: Talen Generation, LLC

Laboratory(ies) Performing Analysis: Hawk Mtn Labs, Inc.

 Were any holding times exceeded? ☐ Yes ☒ No. If yes, please explain in comments field.

Lab Certification Number(s): 40-417

Lab Sample Number(s): 191001293-007

Final Lab Analysis Completion Date: 11/26/2019

Name/Affiliation of Person who Filled out Form Martin Mengel / Talen Energy Supply, LLC

Comments:

I.D. No.	301309
Monitoring Point No.	MW-8-5B
Sample Date	11/06/2019

FORM 14 R
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES
ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Ammonia, as N (mg/l)	0.376	SM 4500-NH3-F
Bicarbonate (mg/l)	235	SM 2320B
Calcium, total (mg/l)	153	EPA 200.2/200.7/6010A
Calcium, dissolved (mg/l)	154	EPA 200.2/200.7/6010A
Chemical Oxygen Demand (mg/l)	5.3 ND	SM 5220D
Chloride, total as Cl (mg/l)	19	EPA 300.0
Fluoride, total as F (mg/l)	0.666	EPA 300.0
Iron, total (µg/l)	1.02 ND	EPA 200.2/200.7/6010A
Iron, dissolved (µg/l)	20 <	EPA 200.2/200.7/6010A
Magnesium, total (mg/l)	30.6	EPA 200.2/200.7/6010A
Magnesium, dissolved (mg/l)	30.9	EPA 200.2/200.7/6010A
Manganese, total (µg/l)	348	EPA 200.2/200.7/6010A
Manganese, dissolved (µg/l)	372	EPA 200.2/200.7/6010A
Nitrate, as N (mg/l)	0.024 ND	EPA 300.0
pH, field (su)	7.18	Field Meter
pH, lab (su)	7.49 H	SM 4500-H+B
Potassium, total (mg/l)	3.9	EPA 200.2/200.7/6010A
Potassium, dissolved (mg/l)	3.81	EPA 200.2/200.7/6010A
Sodium, total (mg/l)	8.82	EPA 200.2/200.7/6010A
Sodium, dissolved (mg/l)	8.49	EPA 200.2/200.7/6010A
Specific Conductance, field (umhos/cm)	962	Field Meter
Specific Conductance, lab (umhos/cm)	963	SM 2510 B
Sulfate, as SO4 (mg/l)	267	EPA 300.0
Alkalinity, total as CaCO3 (mg/l)	235	SM 2320B
Total Dissolved Solids (mg/l)	585	SM 2540B
Total Organic Carbon (mg/l)	1.14	SM 5310C
Turbidity, field (n.t.u.)	0.26	Field Meter
Dissolved O2, field (mg/l)	0.49	Field Meter
Redox, field (mv)	65	Field Meter
Temperature, field (°c)	13.45	Field Meter
Acidity, total as CaCO3 (mg/l)		

T Please indicate detection limit if analyte is not detected.

I.D. No.	301309
Monitoring Point No.	MW-8-5B
Sample Date	11/06/2019

FORM 14 R
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

1-A. Organics (Enter all data in ug/l)

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Benzene (µg/l)		
1,2-Dibromoethane (µg/l)		
1,1-Dichloroethane (µg/l)		
1,1-Dichloroethene (µg/l)		
1,2-Dichloroethane (µg/l)		
cis-1,2-Dichloroethene (µg/l)		
trans-1,2-Dichloroethene (µg/l)		
Ethylbenzene (µg/l)		
Methylene Chloride (µg/l)		
Tetrachloroethene (µg/l)		
Toluene (µg/l)		
1,1,1-Trichloroethane (µg/l)		
Trichloroethene (µg/l)		
Vinyl chloride (µg/l)		
Xylenes (µg/l)		

T Please indicate detection limit if analyte is not detected.

I.D. No.	301309
Monitoring Point No.	MW-8-5B
Sample Date	11/06/2019

FORM 14 R

ANNUAL WATER QUALITY ANALYSES

2-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Arsenic, total (µg/l)	173	EPA 200.2/200.8/6020A
Arsenic, dissolved (µg/l)	211	EPA 200.2/200.8/6020A
Barium, total (µg/l)	64.6	EPA 200.2/200.8/6020A
Barium, dissolved (µg/l)	61.7	EPA 200.2/200.8/6020A
Cadmium, total (µg/l)	1 <	EPA 200.2/200.8/6020A
Cadmium, dissolved (µg/l)	1 <	EPA 200.2/200.8/6020A
Chromium, total (µg/l)	1 <	EPA 200.2/200.8/6020A
Chromium, dissolved (µg/l)	1 <	EPA 200.2/200.8/6020A
Copper, total (µg/l)	2.86	EPA 200.2/200.8/6020A
Copper, dissolved (µg/l)	2.54	EPA 200.2/200.8/6020A
Lead, total (µg/l)	0.229 ND	EPA 200.2/200.8/6020A
Lead, dissolved (µg/l)	0.229 ND	EPA 200.2/200.8/6020A
Mercury, total (µg/l)	0.717 ND	EPA 200.8
Mercury, dissolved (µg/l)	0.717 ND	EPA 245.7
Selenium, total (µg/l)	0.632 ND	EPA 200.2/200.8/6020A
Selenium, dissolved (µg/l)	0.632 ND	EPA 200.2/200.8/6020A
Silver, total (µg/l)	0.132 ND	EPA 200.2/200.8/6020A
Silver, dissolved (µg/l)	0.132 ND	EPA 200.2/200.8/6020A
Zinc, total (µg/l)	5 <	EPA 200.0/200.8/6020
Zinc, dissolved (µg/l)	5 <	EPA 200.0/200.8/6020
Boron, total (µg/l)	734	EPA 200.2/200.7/6010A
Boron, dissolved (µg/l)	766	EPA 200.2/200.7/6010A
Lithium, total (µg/l)	301	EPA 200.2/200.8/6020A
Lithium, dissolved (µg/l)	147	EPA 200.2/200.8/6020A
Molybdenum, total (µg/l)	353	EPA 200.2/200.8/6020A
Molybdenum, dissolved (µg/l)	377	EPA 200.2/200.8/6020A
Strontium, total (µg/l)	859	EPA 200.0/200.7/6010
Strontium, dissolved (µg/l)	811	EPA 200.0/200.7/6010

T Please indicate detection limit if analyte is not detected.

I.D. No.	301309
Monitoring Point No.	MW-8-5B
Sample Date	11/06/2019

FORM 14 R

ANNUAL WATER QUALITY ANALYSES

2-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Aluminum, total (µg/l)	26.8 ND	EPA 200.0/200.7/6010
Aluminum, dissolved (µg/l)	100 <	EPA 200.0/200.7/6010
Antimony, total (µg/l)	0.179 ND	EPA 200.2/200.8/6020A
Antimony, dissolved (µg/l)	0.179 ND	EPA 200.2/200.8/6020A
Beryllium, total (µg/l)	0.071 ND	EPA 200.2/200.8/6020A
Beryllium, dissolved (µg/l)	0.071 ND	EPA 200.2/200.8/6020A
Cobalt, total (µg/l)		
Cobalt, dissolved (µg/l)		
Gallium, total (µg/l)		
Gallium, dissolved (µg/l)		
Germanium, total (µg/l)		
Germanium, dissolved (µg/l)		
Nickel, total (µg/l)	12.5	EPA 200.8
Nickel, dissolved (µg/l)	13.2	EPA 200.8
Rubidium, total (µg/l)		
Rubidium, dissolved (µg/l)		
Titanium, total (µg/l)	5 <	EPA 200.2/200.8
Titanium, dissolved (µg/l)	5 <	EPA 200.2/200.8
Vanadium, total (µg/l)	2.35 ND	EPA 200.8
Vanadium, dissolved (µg/l)	2.35 ND	EPA 200.8
Yttrium, total (µg/l)		
Yttrium, dissolved (µg/l)		

T Please indicate detection limit if analyte is not detected.


 Date Prepared/Revised
 12/19/2019

DEP USE ONLY

Date Received

FORM 14R

RESIDUAL WASTE LANDFILLS AND DISPOSAL IMPOUNDMENTS

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 14R, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General References: Section 288.254, 289.264

SECTION A. SITE IDENTIFIER

Applicant/permittee: Brunner Island, LLC - Basin No. 5

Site Name: Basin No. 5

Facility ID (as issued by DEP): 301309

SECTION B. FACILITY INFORMATION

Monitoring wells must be designed and constructed in accordance with Department standards. **INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (DD° MM' SS.S").**

Monitoring Point Number: MW-PT-1

☒ Well ☐ Spring ☐ Stream ☐ Other

☐ Upgradient/Upstream ☒ Downgradient/Downstream

Location: County York

Municipality: East Manchester Township

Sampling Point: Latitude: 40° 55' 26.53"

Longitude: 76° 40' 28.05"

Depth to Water Level: 12.09 ft.

 Measured from: ☐ Land Surface ☒ TOC

Casing Stick Up: 2.04 ft.

Elevation of Water Level: 259.676 ft./MSL

Sampling Depth: 19.00 ft.

Volume of Water Column: gal.

Total Well Depth: ft.

 Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

 Well Purged: ☒ Yes ☐ No

Well Volumes Purged: 4 L

 Sample Field Filtered (must be 0.45 micron)? ☒ Yes ☐ No

Spring Flow Rate: GPM

Sample Date (mm/dd/yy): 11/15/2019

Sample Collection Time: 9:35AM

Sample Collector's Name: AF

Sample Collector's Affiliation: Talen Generation, LLC

Laboratory(ies) Performing Analysis: Hawk Mtn Labs, Inc.

 Were any holding times exceeded? ☐ Yes ☒ No. If yes, please explain in comments field.

Lab Certification Number(s): 40-417

Lab Sample Number(s): 191001294-001

Final Lab Analysis Completion Date: 12/03/2019

Name/Affiliation of Person who Filled out Form Martin Mengel / Talen Energy Supply, LLC

Comments:

I.D. No.	301309
Monitoring Point No.	MW-PT-1
Sample Date	11/15/2019

FORM 14 R
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES
ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Ammonia, as N (mg/l)	0.109 ND	SM 4500-NH3-F
Bicarbonate (mg/l)	70.3	SM 2320B
Calcium, total (mg/l)	125	EPA 200.2/200.7/6010A
Calcium, dissolved (mg/l)		
Chemical Oxygen Demand (mg/l)	20 <	SM 5220D
Chloride, total as Cl (mg/l)	4.88	EPA 300.0
Fluoride, total as F (mg/l)	0.38	EPA 300.0
Iron, total (µg/l)	99	EPA 200.2/200.7/6010A
Iron, dissolved (µg/l)		
Magnesium, total (mg/l)	28.4	EPA 200.2/200.7/6010A
Magnesium, dissolved (mg/l)		
Manganese, total (µg/l)	6,350	EPA 200.2/200.7/6010A
Manganese, dissolved (µg/l)		
Nitrate, as N (mg/l)	0.51	EPA 300.0
pH, field (su)	5.98	Field Meter
pH, lab (su)	6.27 H	SM 4500-H+B
Potassium, total (mg/l)	39.8	EPA 200.2/200.7/6010A
Potassium, dissolved (mg/l)		
Sodium, total (mg/l)	55.4	EPA 200.2/200.7/6010A
Sodium, dissolved (mg/l)		
Specific Conductance, field (umhos/cm)	1,157	Field Meter
Specific Conductance, lab (umhos/cm)	1,132	SM 2510 B
Sulfate, as SO4 (mg/l)	501	EPA 300.0
Alkalinity, total as CaCO3 (mg/l)	70.3	SM 2320B
Total Dissolved Solids (mg/l)	833	SM 2540B
Total Organic Carbon (mg/l)	1.31	SM 5310C
Turbidity, field (n.t.u.)	1.88	Field Meter
Dissolved O2, field (mg/l)	1.24	Field Meter
Redox, field (mv)	134.1	Field Meter
Temperature, field (°c)	13.13	Field Meter
Acidity, total as CaCO3 (mg/l)		

T Please indicate detection limit if analyte is not detected.

I.D. No.	301309
Monitoring Point No.	MW-PT-1
Sample Date	11/15/2019

FORM 14 R
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

1-A. Organics (Enter all data in ug/l)

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Benzene (µg/l)		
1,2-Dibromoethane (µg/l)		
1,1-Dichloroethane (µg/l)		
1,1-Dichloroethene (µg/l)		
1,2-Dichloroethane (µg/l)		
cis-1,2-Dichloroethene (µg/l)		
trans-1,2-Dichloroethene (µg/l)		
Ethylbenzene (µg/l)		
Methylene Chloride (µg/l)		
Tetrachloroethene (µg/l)		
Toluene (µg/l)		
1,1,1-Trichloroethane (µg/l)		
Trichloroethene (µg/l)		
Vinyl chloride (µg/l)		
Xylenes (µg/l)		

T Please indicate detection limit if analyte is not detected.

I.D. No.	301309
Monitoring Point No.	MW-PT-1
Sample Date	11/15/2019

FORM 14 R

ANNUAL WATER QUALITY ANALYSES

2-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Arsenic, total (µg/l)	0.548 ND	EPA 200.2/200.8/6020A
Arsenic, dissolved (µg/l)		
Barium, total (µg/l)	21	EPA 200.2/200.8/6020A
Barium, dissolved (µg/l)		
Cadmium, total (µg/l)	1.15	EPA 200.2/200.8/6020A
Cadmium, dissolved (µg/l)		
Chromium, total (µg/l)	0.411 ND	EPA 200.2/200.8/6020A
Chromium, dissolved (µg/l)		
Copper, total (µg/l)	1.26	EPA 200.2/200.8/6020A
Copper, dissolved (µg/l)		
Lead, total (µg/l)	0.229 ND	EPA 200.2/200.8/6020A
Lead, dissolved (µg/l)		
Mercury, total (µg/l)	0.717 ND	EPA 200.8
Mercury, dissolved (µg/l)		
Selenium, total (µg/l)	5 <	EPA 200.2/200.8/6020A
Selenium, dissolved (µg/l)		
Silver, total (µg/l)	0.132 ND	EPA 200.2/200.8/6020A
Silver, dissolved (µg/l)		
Zinc, total (µg/l)	37	EPA 200.0/200.8/6020
Zinc, dissolved (µg/l)		
Boron, total (µg/l)	1,330	EPA 200.2/200.7/6010A
Boron, dissolved (µg/l)		
Lithium, total (µg/l)	69.6	EPA 200.2/200.8/6020A
Lithium, dissolved (µg/l)		
Molybdenum, total (µg/l)	288	EPA 200.2/200.8/6020A
Molybdenum, dissolved (µg/l)		
Strontium, total (µg/l)	876	EPA 200.0/200.7/6010
Strontium, dissolved (µg/l)		

T Please indicate detection limit if analyte is not detected.

I.D. No.	301309
Monitoring Point No.	MW-PT-1
Sample Date	11/15/2019

FORM 14 R

ANNUAL WATER QUALITY ANALYSES

2-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

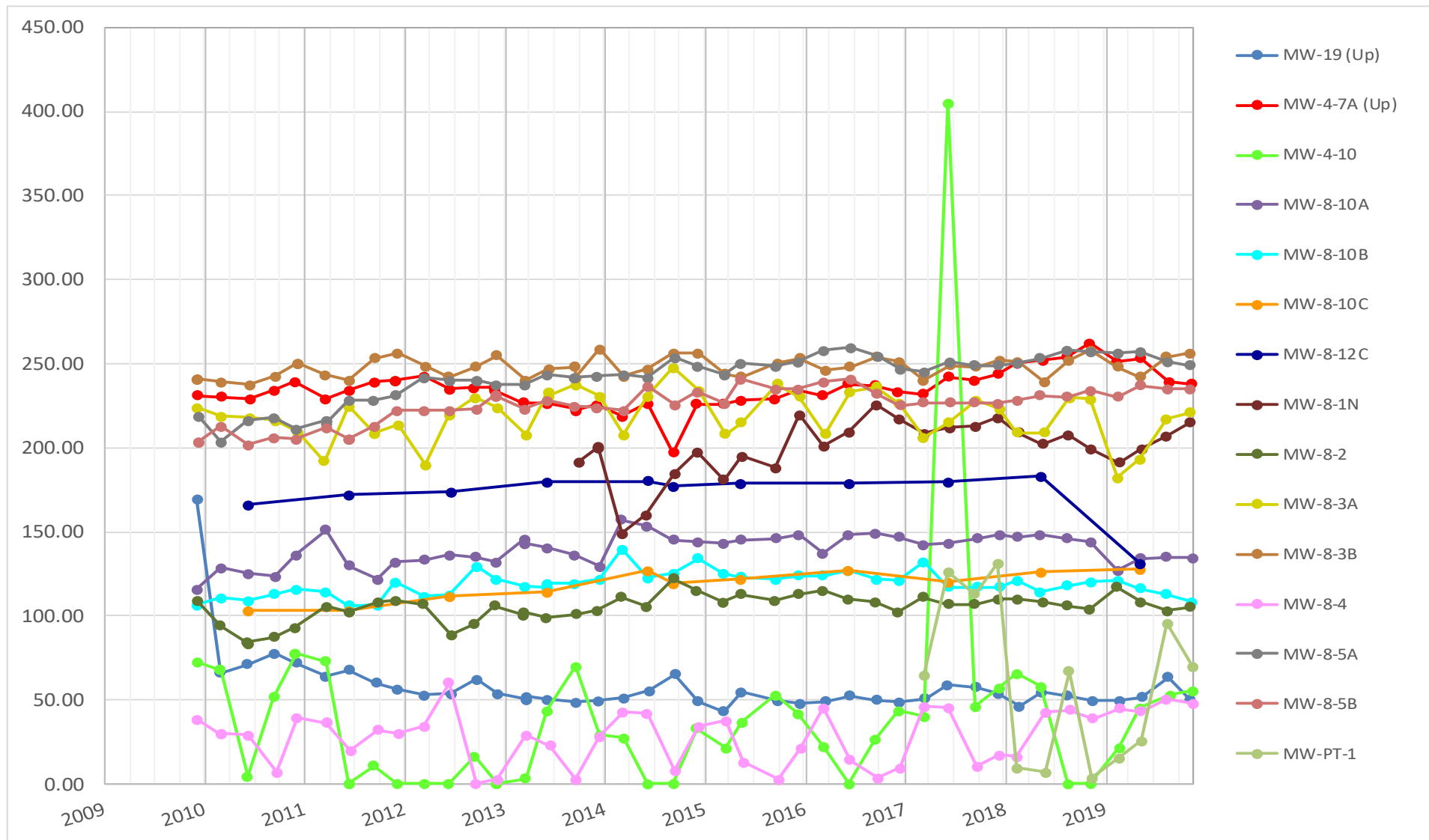
ANALYTE	VALUE (T)	ANALYSIS METHOD NUMBER
Aluminum, total (µg/l)	237	EPA 200.0/200.7/6010
Aluminum, dissolved (µg/l)		
Antimony, total (µg/l)	0.179 ND	EPA 200.2/200.8/6020A
Antimony, dissolved (µg/l)		
Beryllium, total (µg/l)	0.071 ND	EPA 200.2/200.8/6020A
Beryllium, dissolved (µg/l)		
Cobalt, total (µg/l)		
Cobalt, dissolved (µg/l)		
Gallium, total (µg/l)		
Gallium, dissolved (µg/l)		
Germanium, total (µg/l)		
Germanium, dissolved (µg/l)		
Nickel, total (µg/l)	35.8	EPA 200.8
Nickel, dissolved (µg/l)		
Rubidium, total (µg/l)		
Rubidium, dissolved (µg/l)		
Titanium, total (µg/l)	5 <	EPA 200.2/200.8
Titanium, dissolved (µg/l)		
Vanadium, total (µg/l)	2.35 ND	EPA 200.8
Vanadium, dissolved (µg/l)		
Yttrium, total (µg/l)		
Yttrium, dissolved (µg/l)		

T Please indicate detection limit if analyte is not detected.

Result Qualifier Codes

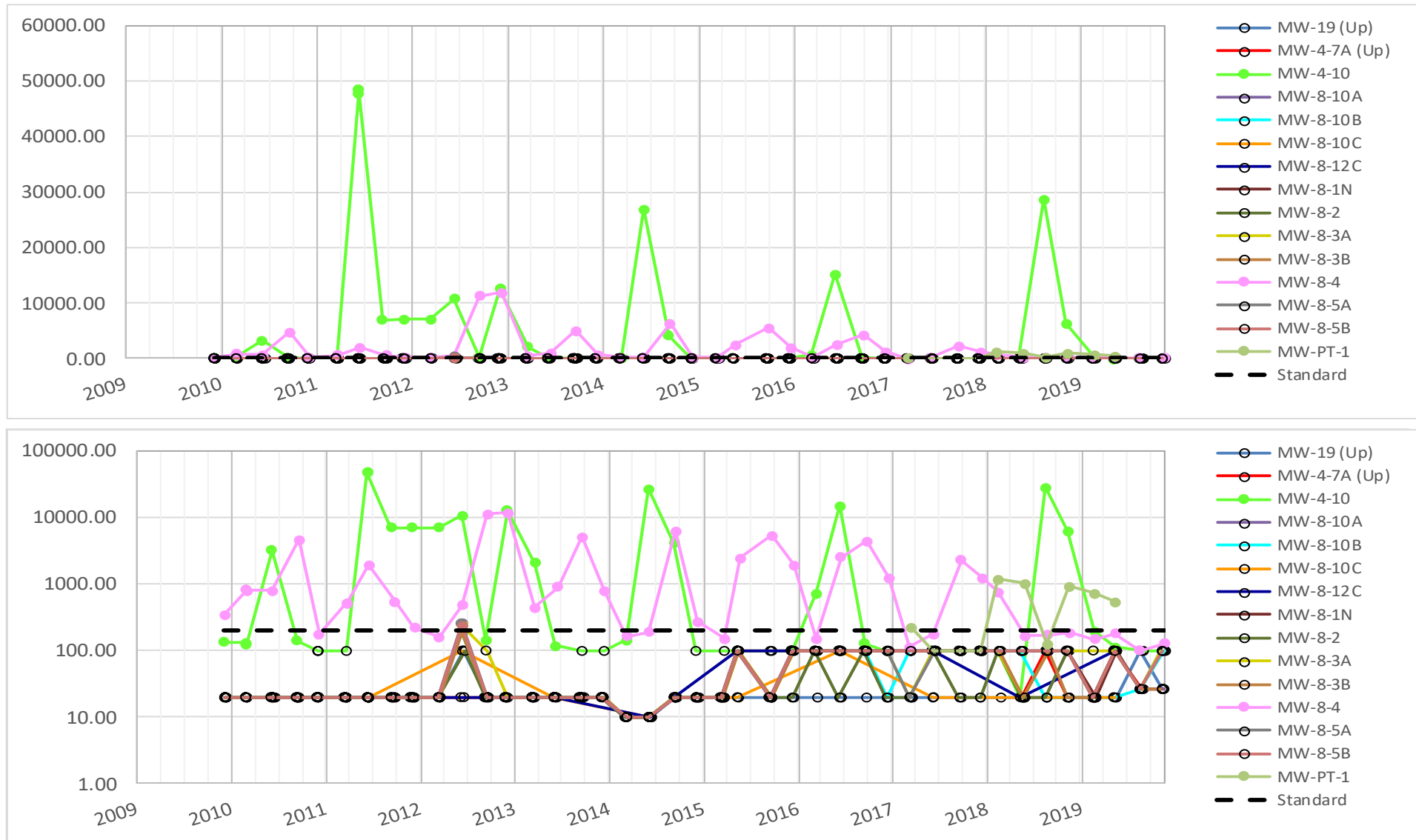
<u>CODE</u>	<u>DESCRIPTION</u>
*	Value exceeds Maximum Contaminant Level
B	Analyte detected in Method, Reagent, or Cal Blank
C	Calculated Value
E	Value above quantitation range
F	Required sample not collected
H	Holding times for preparation or analysis exceeded
I	Instrument failure, not recoverable
J	Analyte detected below quantitation limits
L	Analyzed by contract laboratory
LOD	Limit of Detection (LOD) = Laboratory Detection Limit
LOQ	Limit of Quantitation (LOQ) = Laboratory Reporting Limit
M	Value exceeds Monthly Avg. or MCL
NC	Analyte not certified in NELAC Scope of Accreditation
ND	Not Detected at the Detection Limit
NM	Analyte not measured
O	Result exceeds practical range of determination
P	Sample not preserved properly
Q	QC control standard failure
R	Replicate Recovery outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
T	Reporting error
V	Sample contamination suspected
X	Other (note required)

Alkalinity, total as CaCO3 [mg/l]

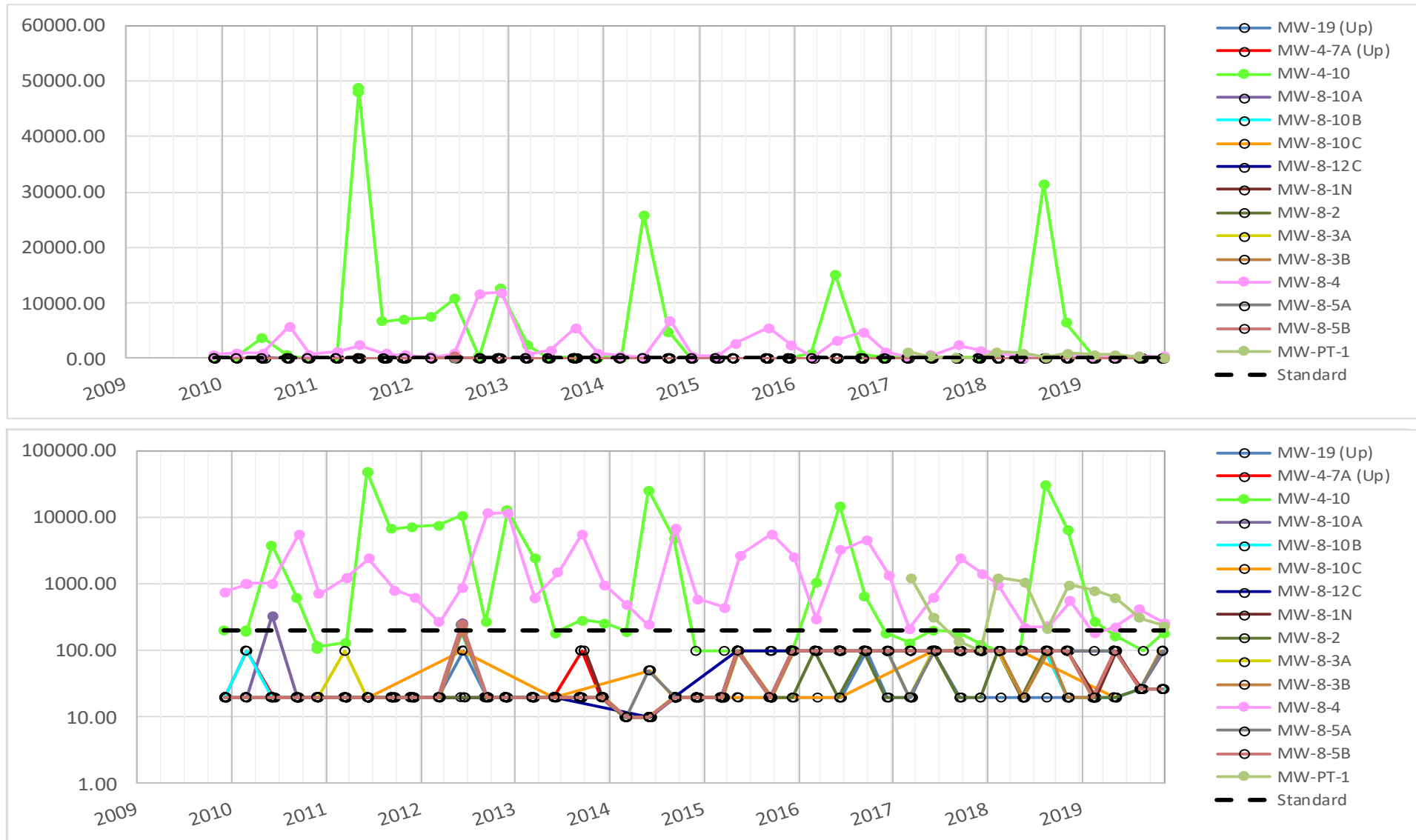


NOTE: There are no applicable standards for this parameter

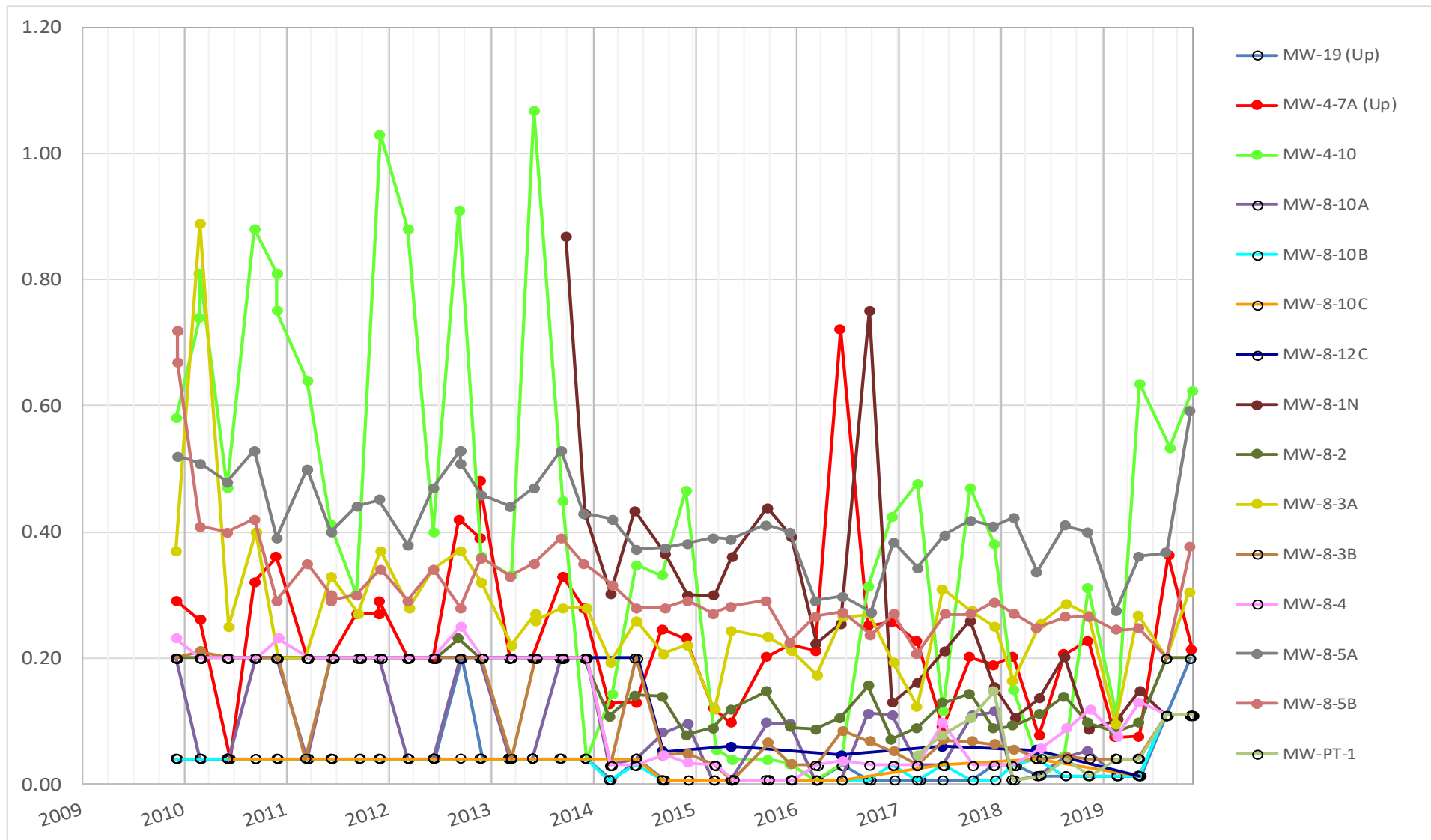
Aluminum, dissolved [$\mu\text{g/l}$]



Aluminum, total [$\mu\text{g/l}$]

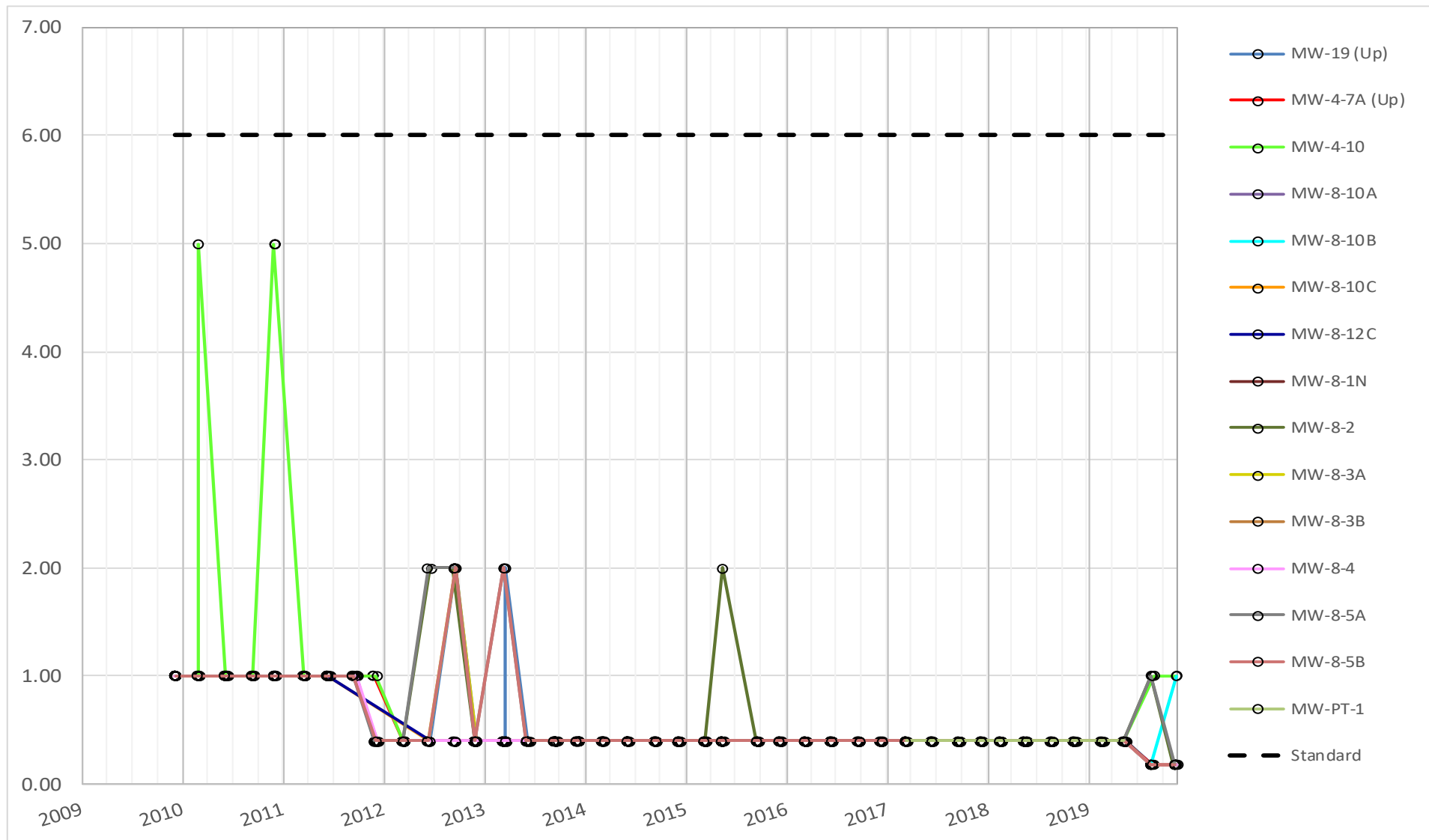


Ammonia, as N [mg/l]



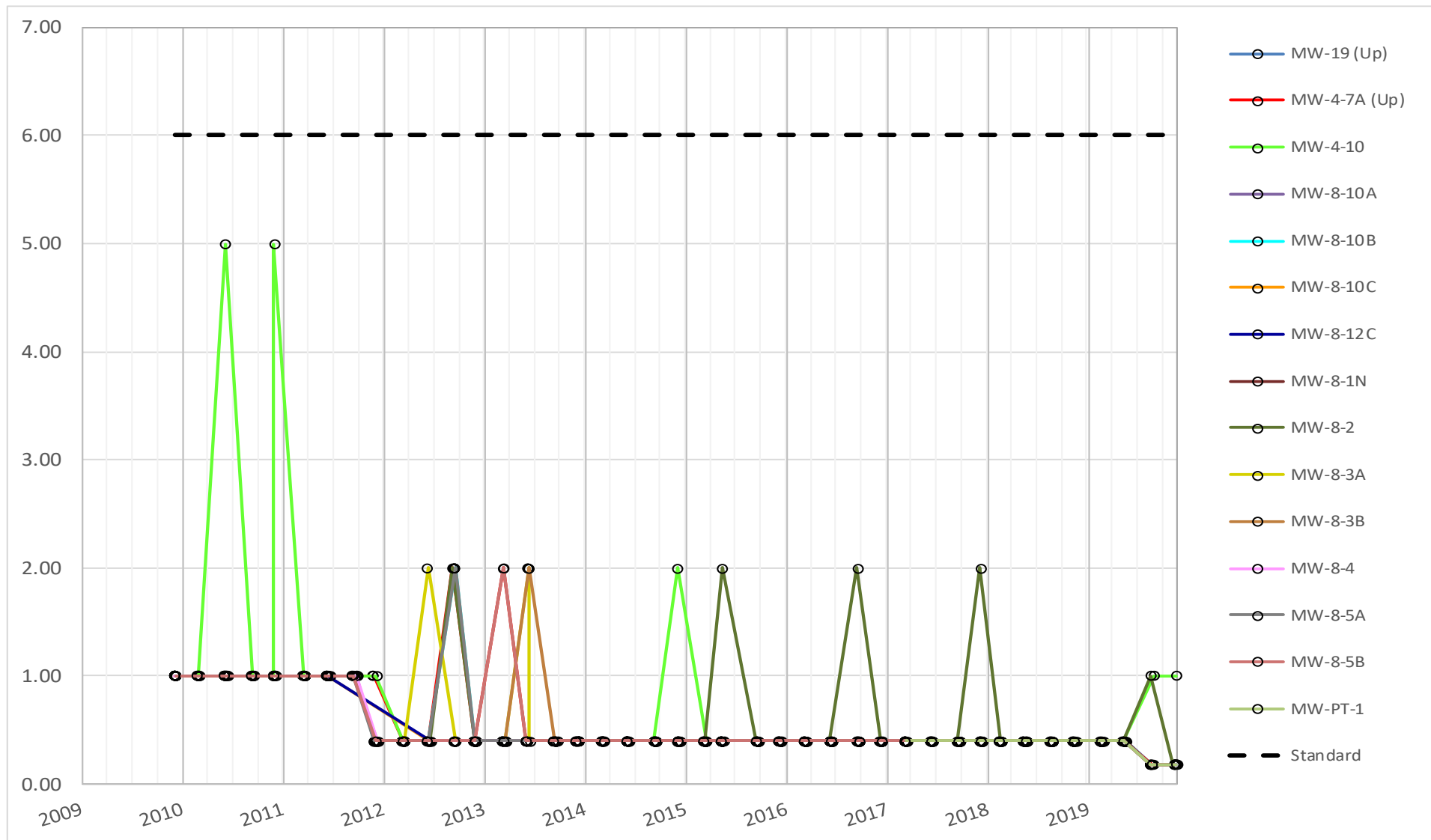
NOTE: There are no applicable standards for this parameter

Antimony, dissolved [$\mu\text{g/l}$]



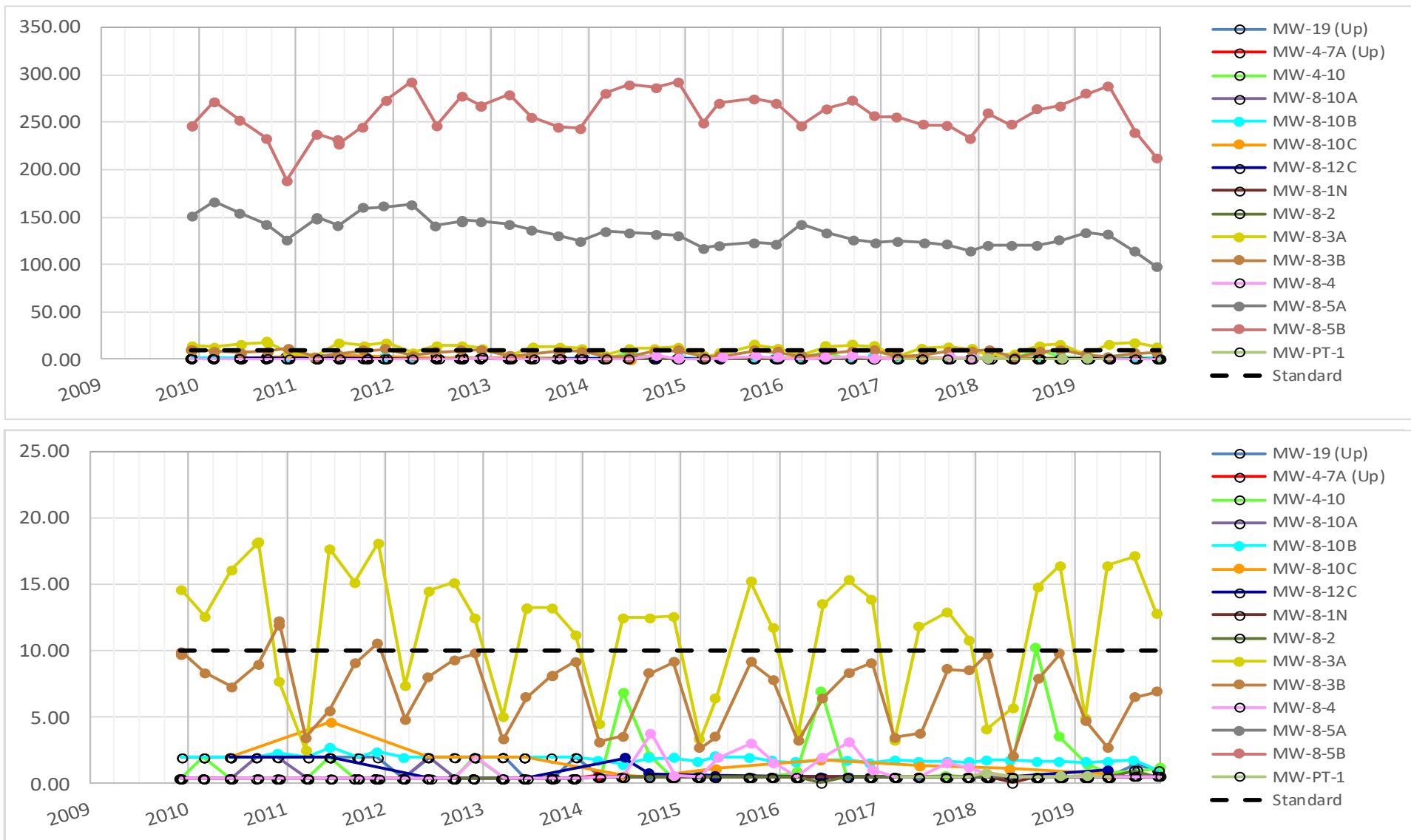
NOTE: Data does not exceed standard of 6 $\mu\text{g/l}$ during this time frame

Antimony, total [$\mu\text{g}/\text{l}$]

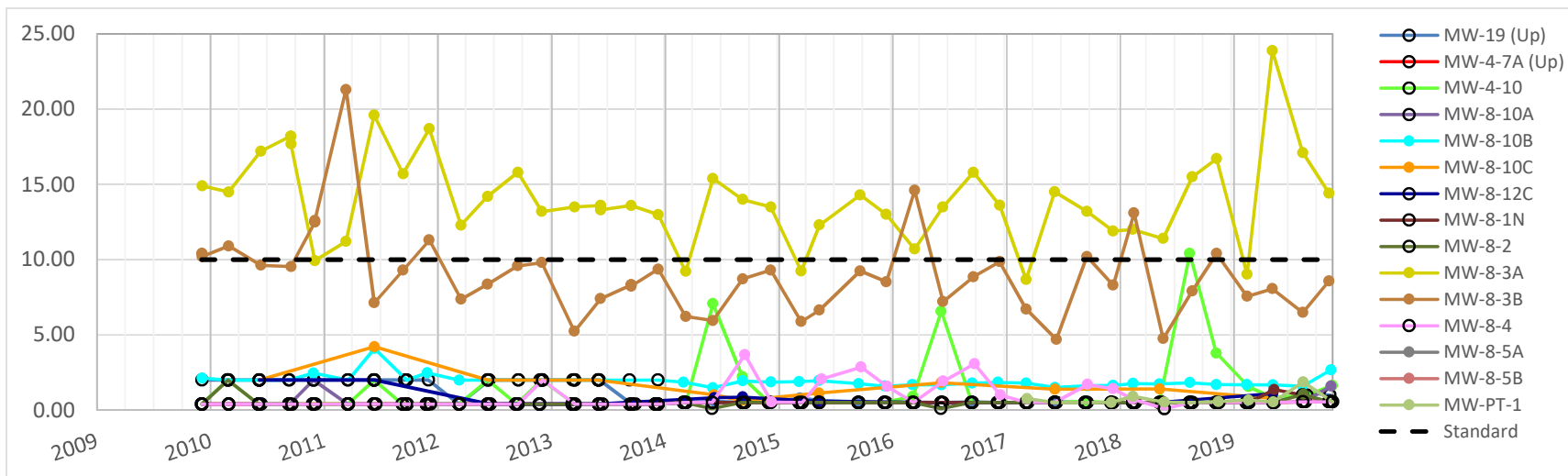
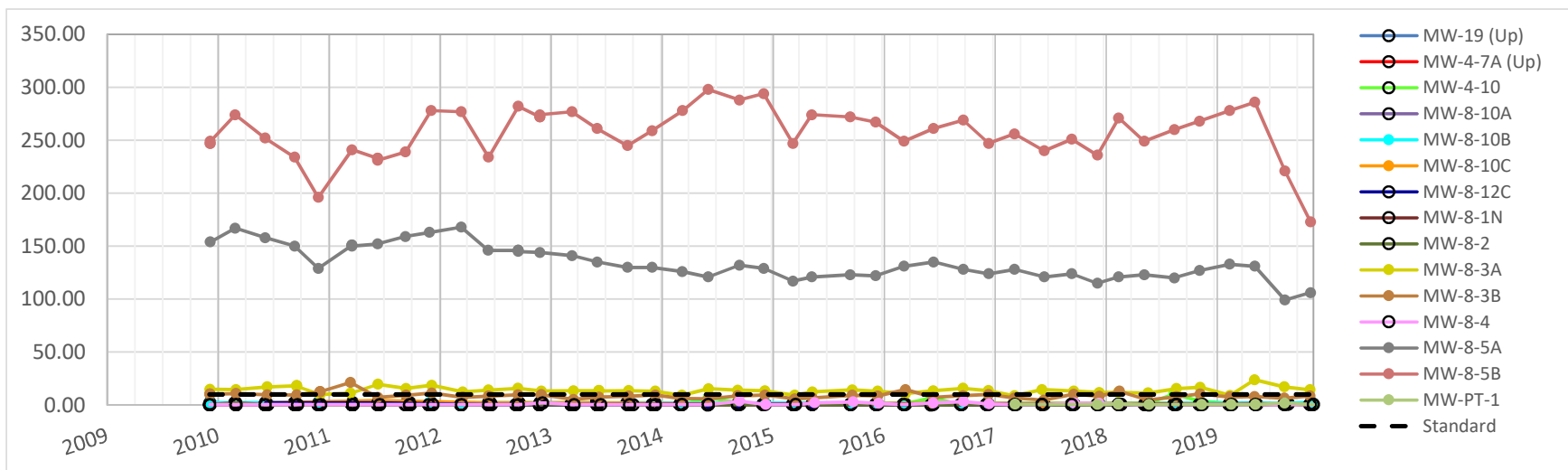


NOTE: Data does not exceed standard of 6 $\mu\text{g}/\text{l}$ during this time frame

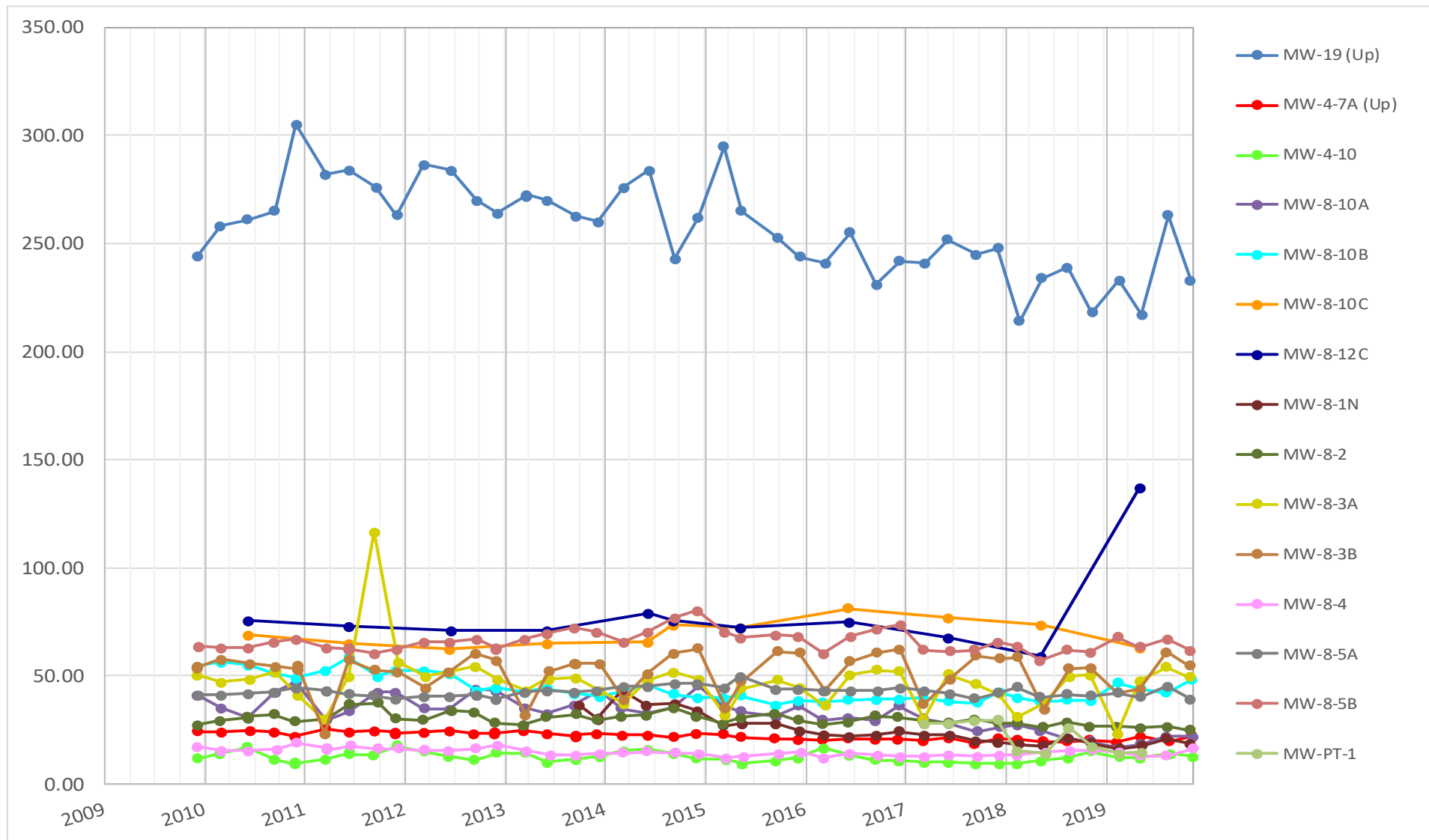
Arsenic, dissolved [$\mu\text{g/l}$]



Arsenic, total [$\mu\text{g/l}$]

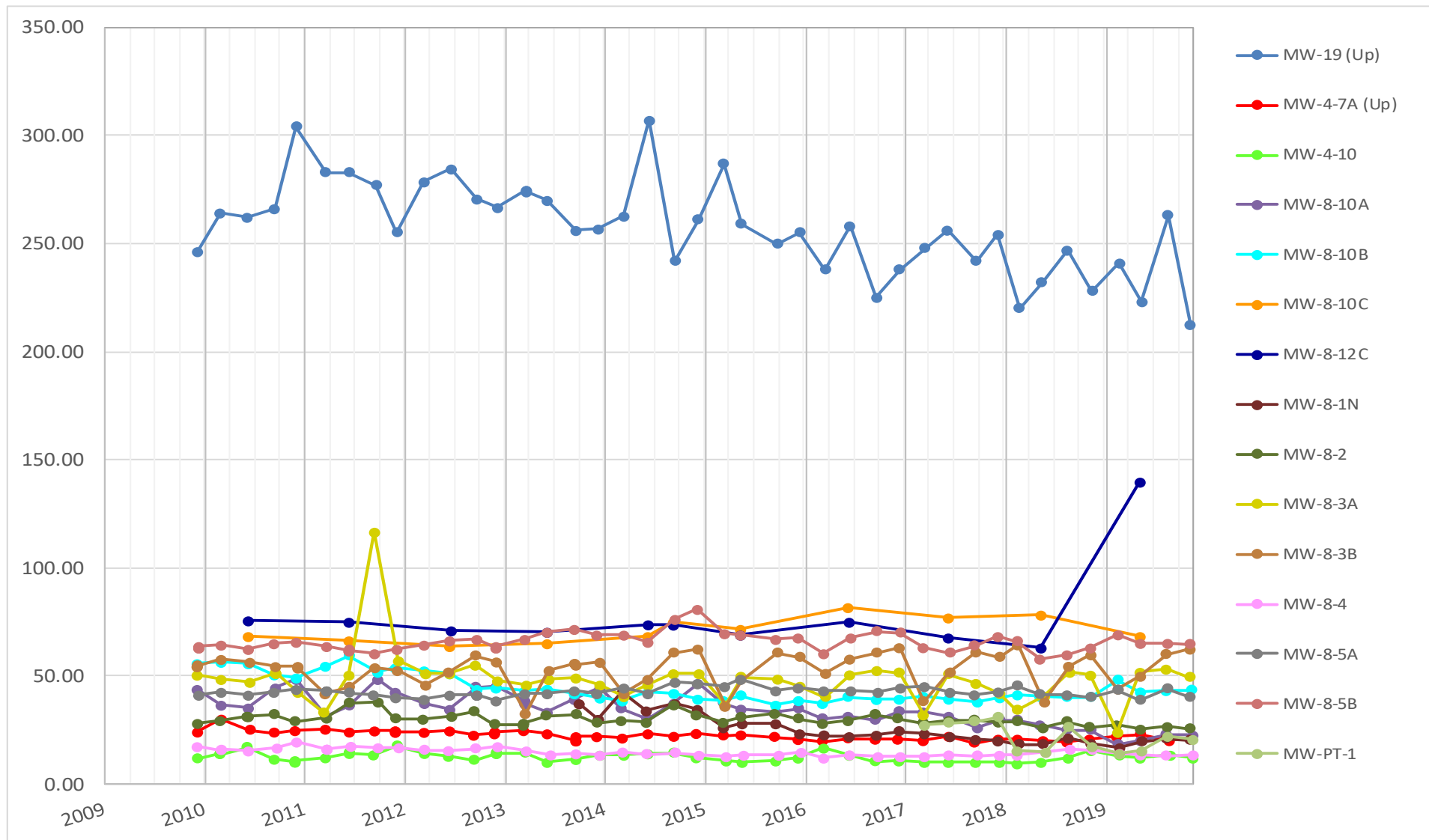


Barium, dissolved [$\mu\text{g/l}$]



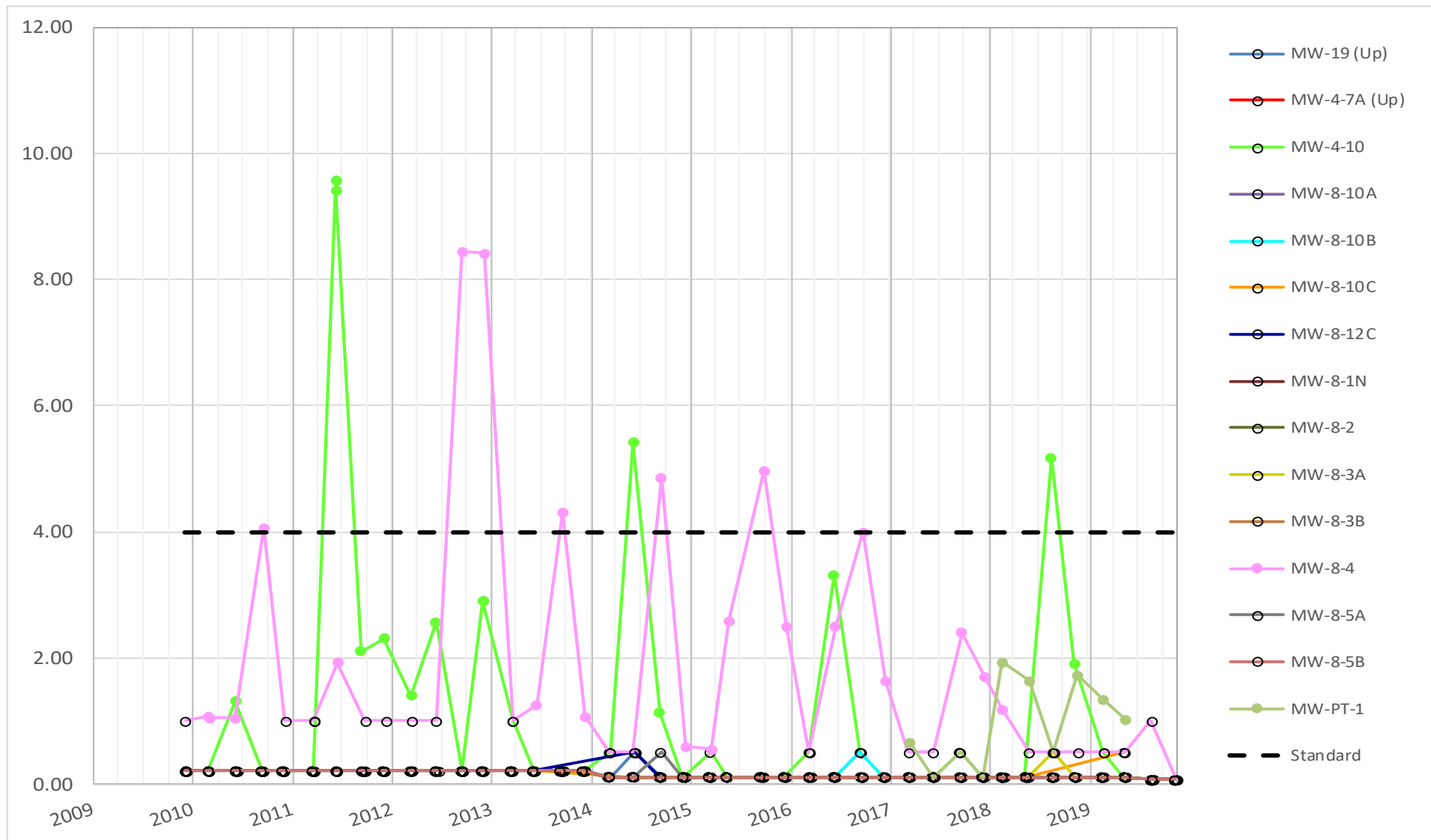
NOTE: Data does not exceed standard of 2000 $\mu\text{g/l}$ during this time frame

Barium, total [$\mu\text{g/l}$]



NOTE: Data does not exceed standard of 2000 $\mu\text{g/l}$ during this time frame

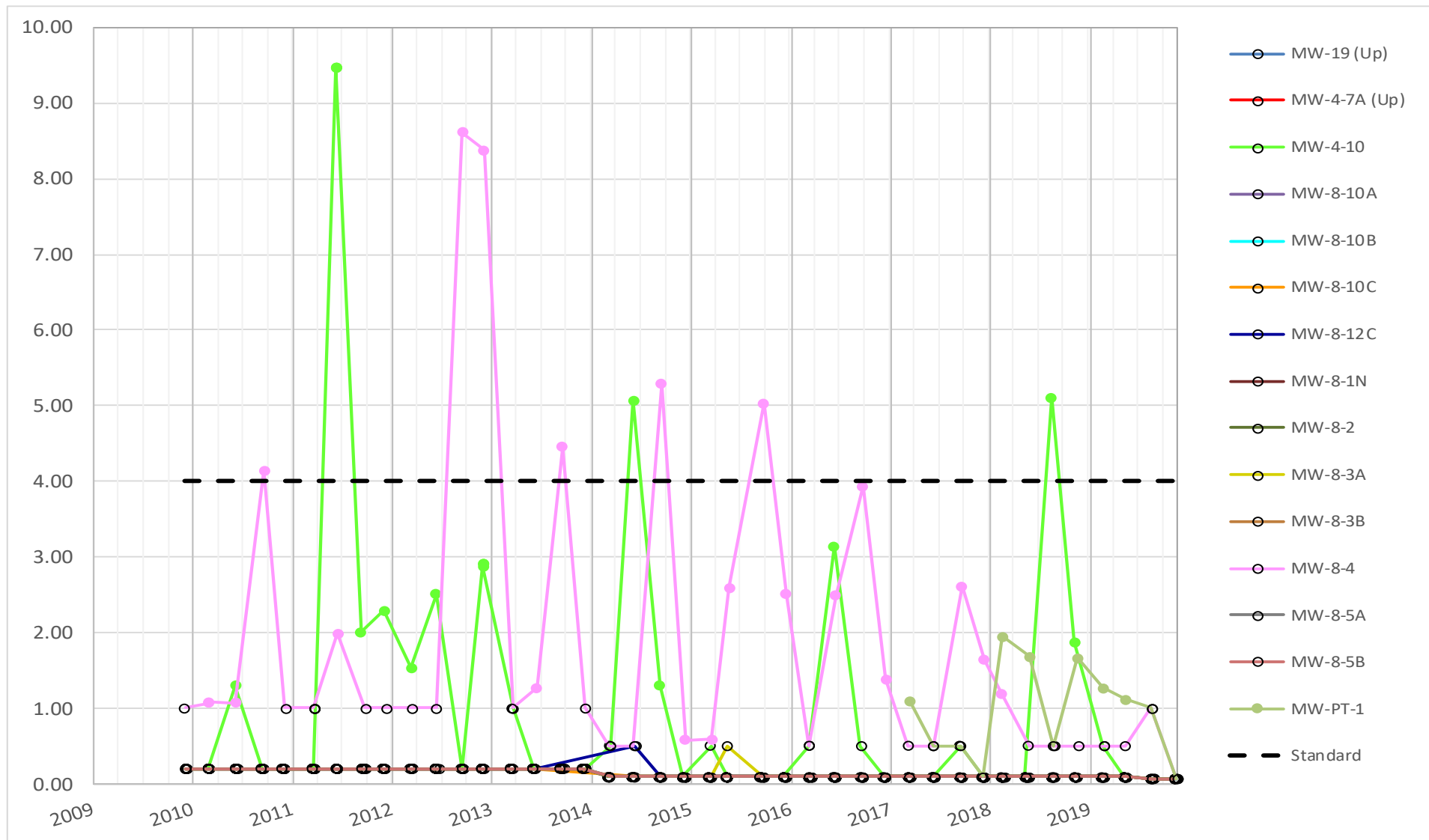
Beryllium, dissolved [$\mu\text{g/l}$]



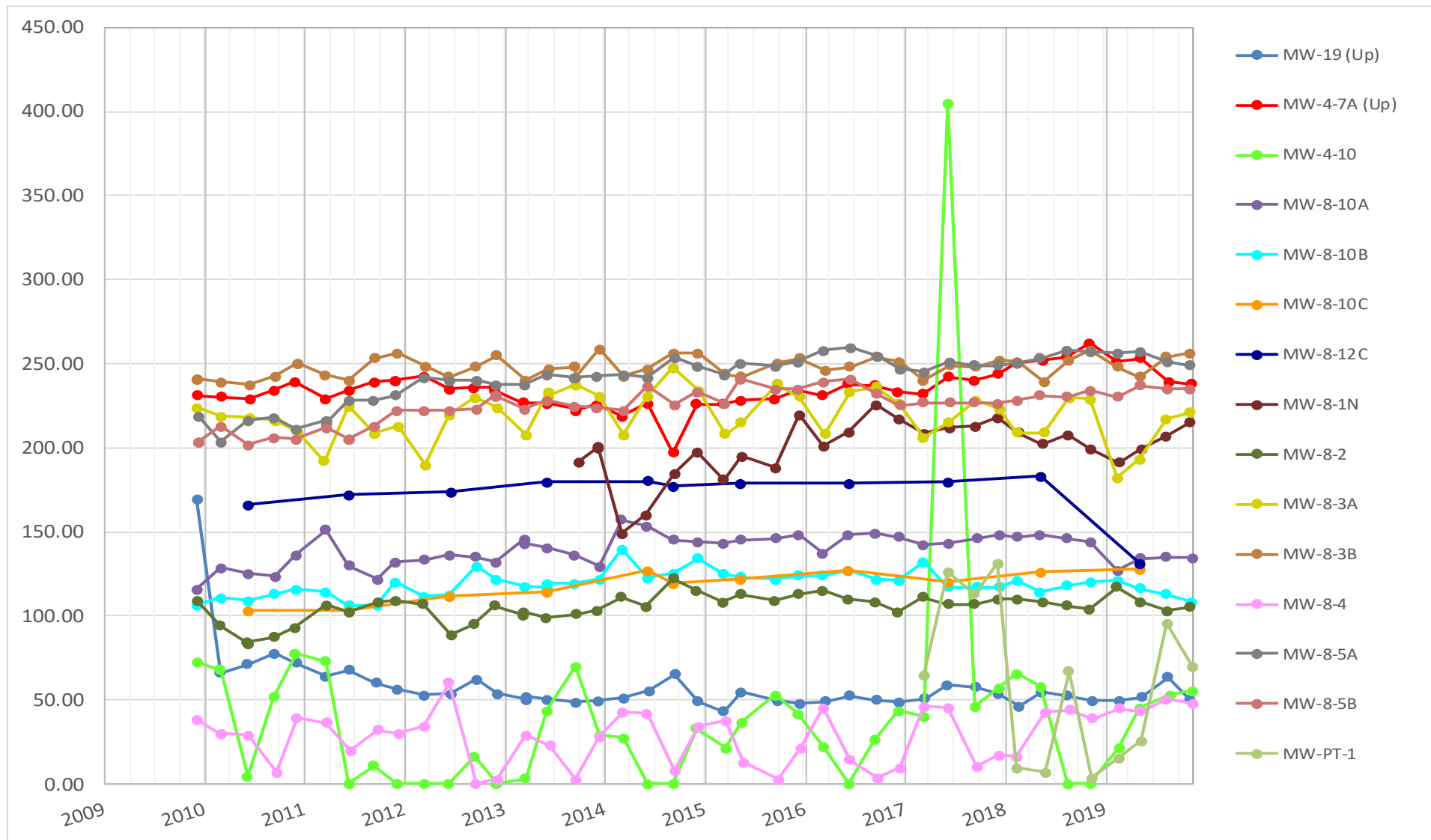
Brunner Island - Basin 5

4th Quarter 2019

Beryllium, total [μg/l]

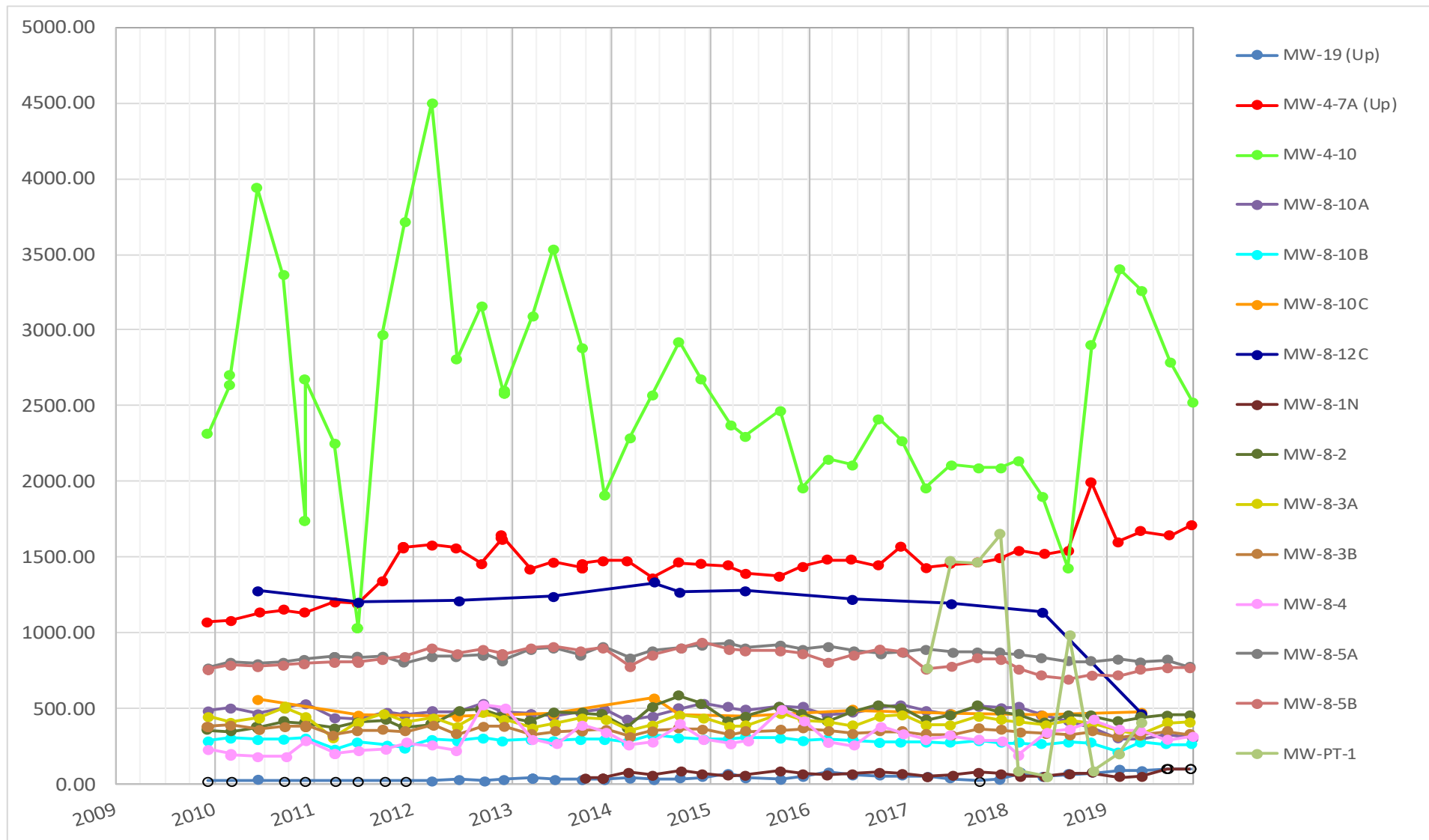


Bicarbonate [mg/l]



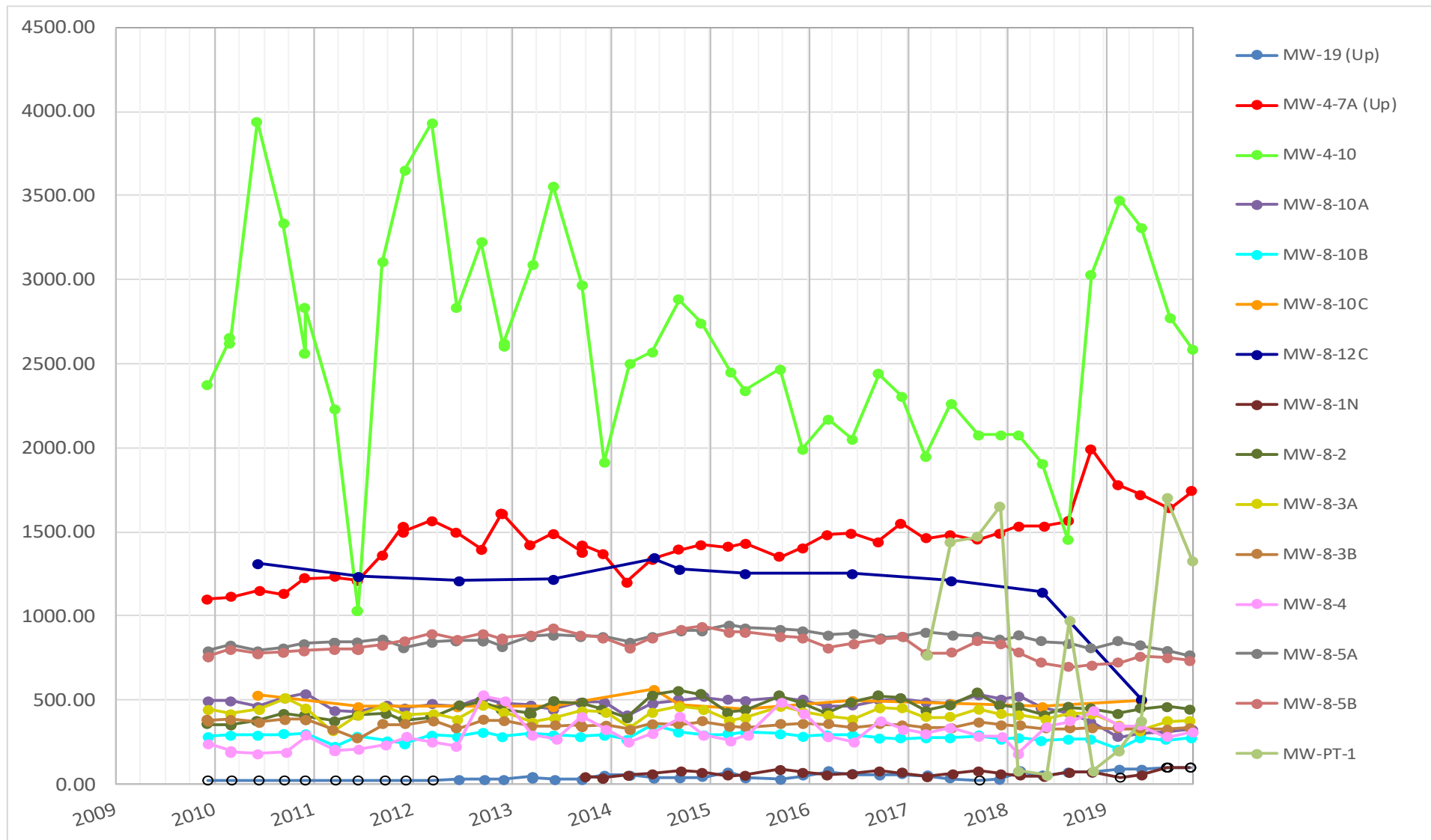
NOTE: There are no applicable standards for this parameter

Boron, dissolved [$\mu\text{g/l}$]



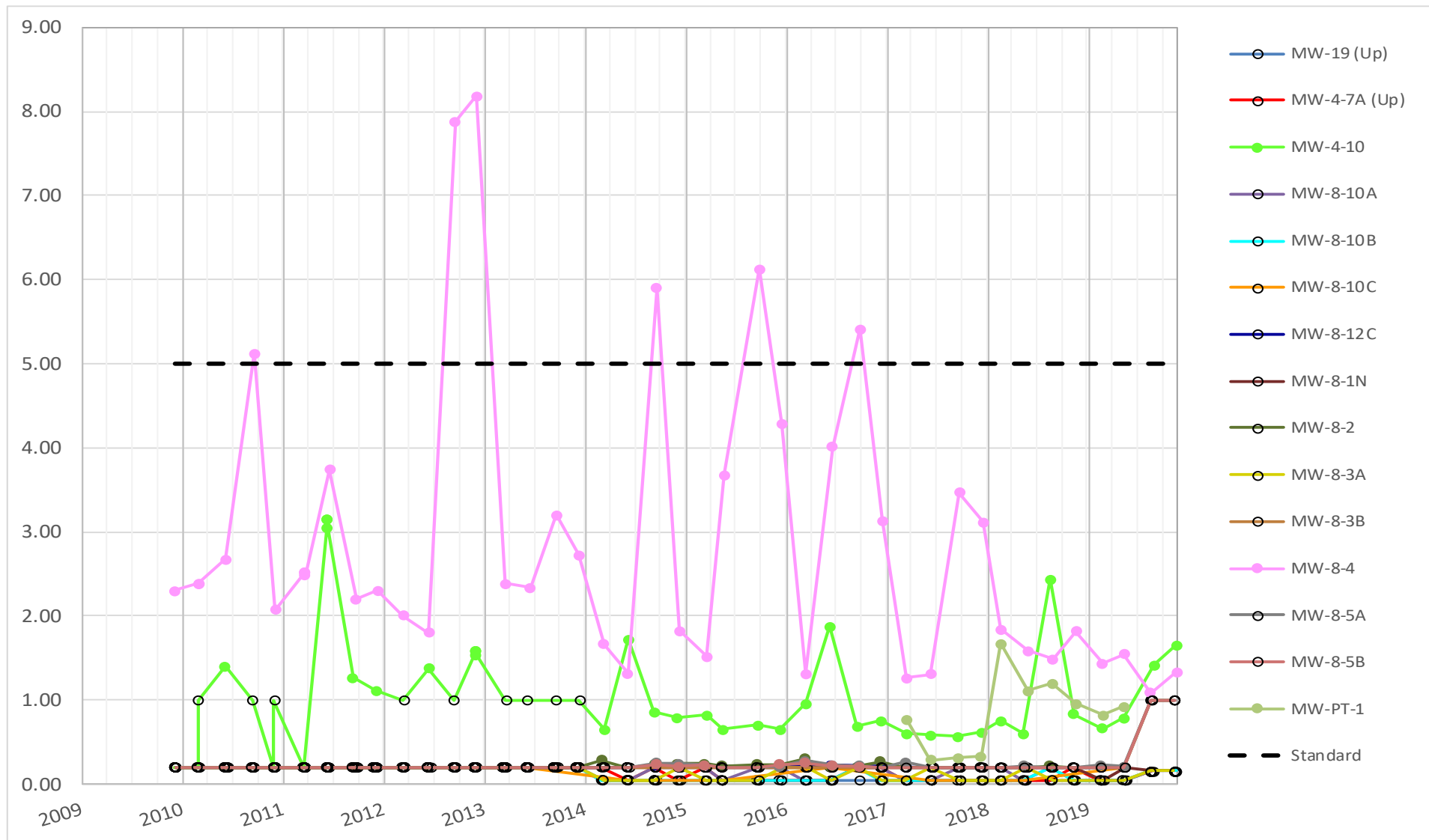
NOTE: Data does not exceed standard of 6000 $\mu\text{g/l}$ during this time frame

Boron, total [$\mu\text{g/l}$]

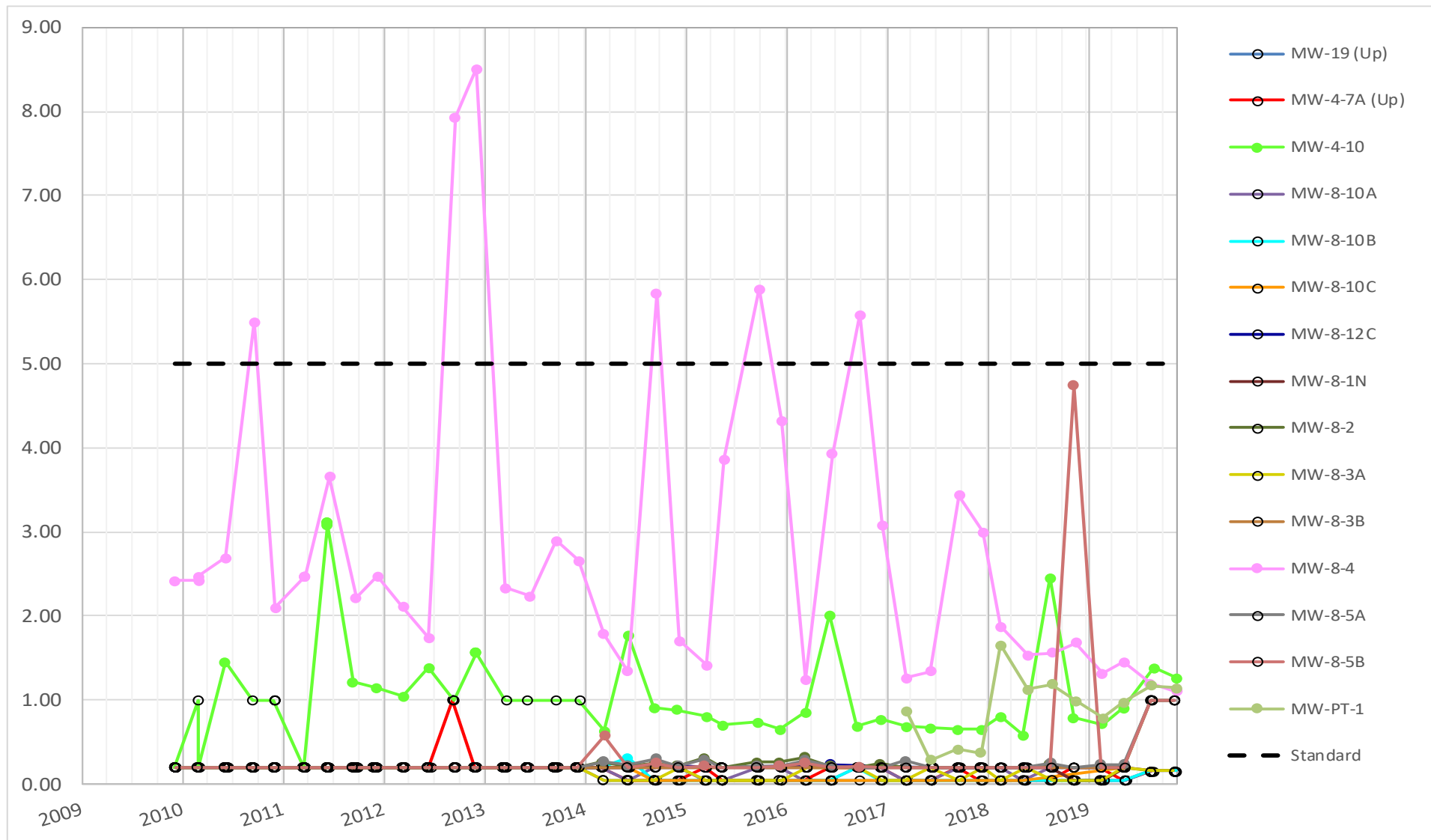


NOTE: Data does not exceed standard of 6000 $\mu\text{g/l}$ during this time frame

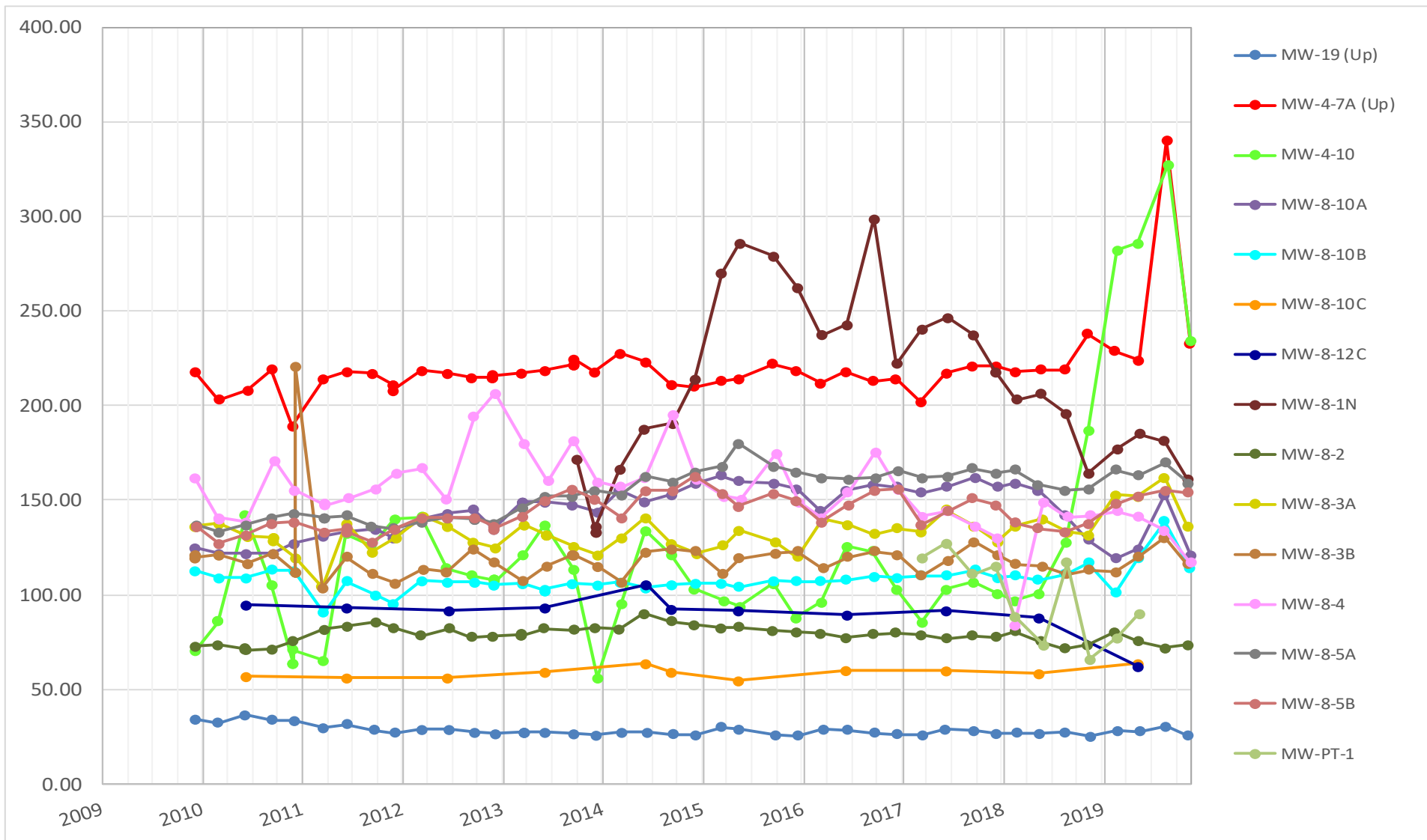
Cadmium, dissolved [$\mu\text{g/l}$]



Cadmium, total [$\mu\text{g/l}$]

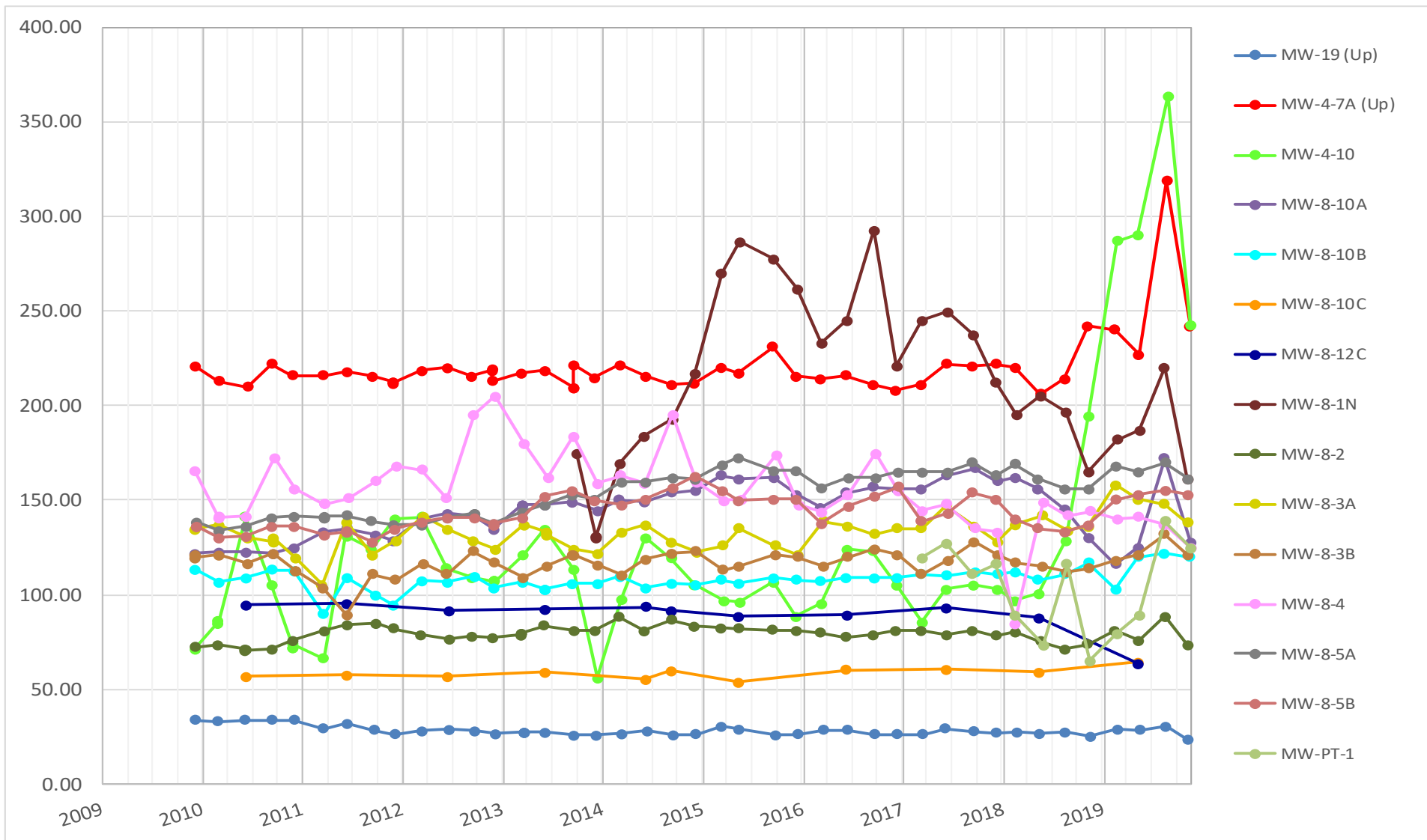


Calcium, dissolved [mg/l]



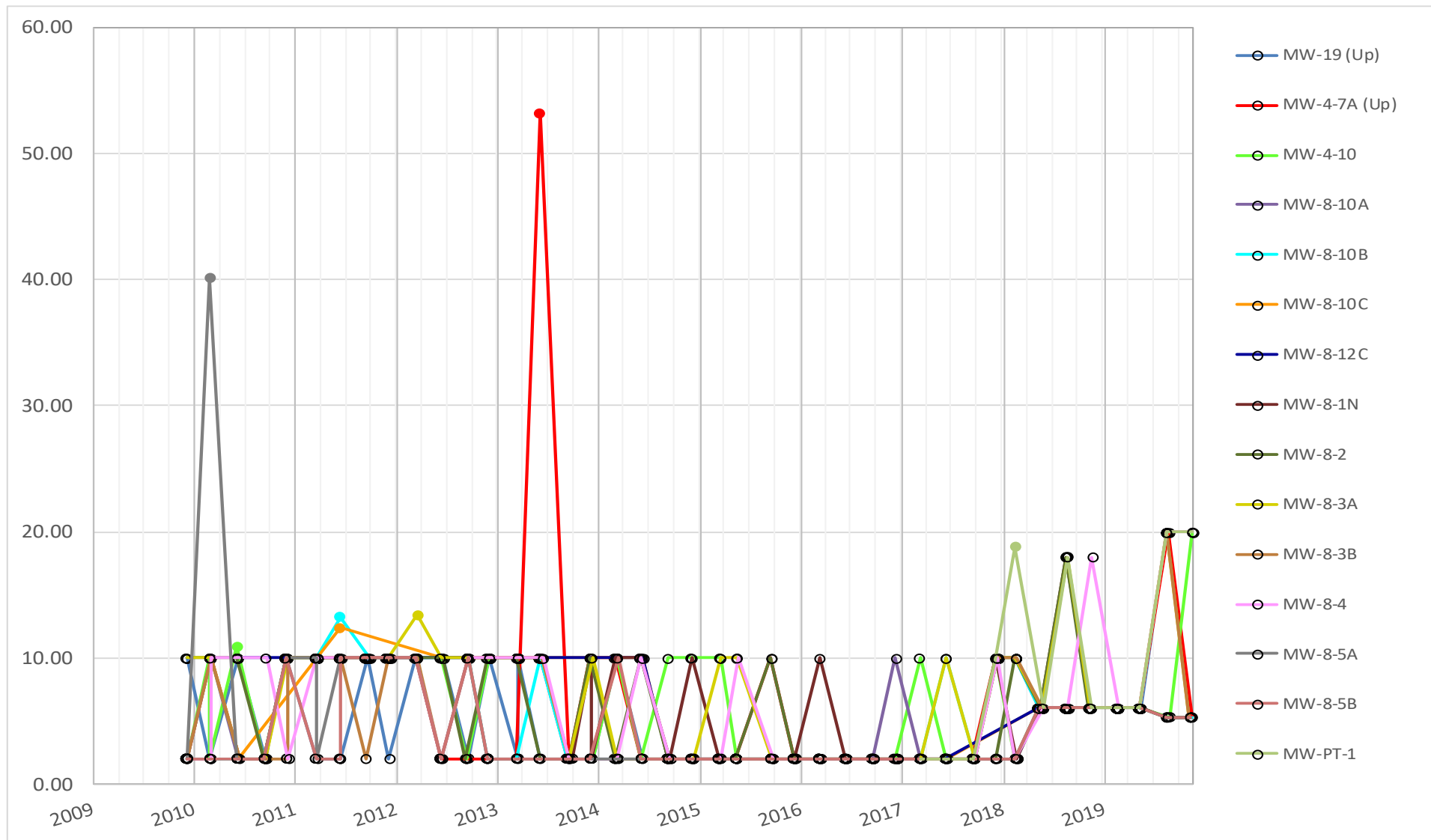
NOTE: There are no applicable standards for this parameter

Calcium, total [mg/l]



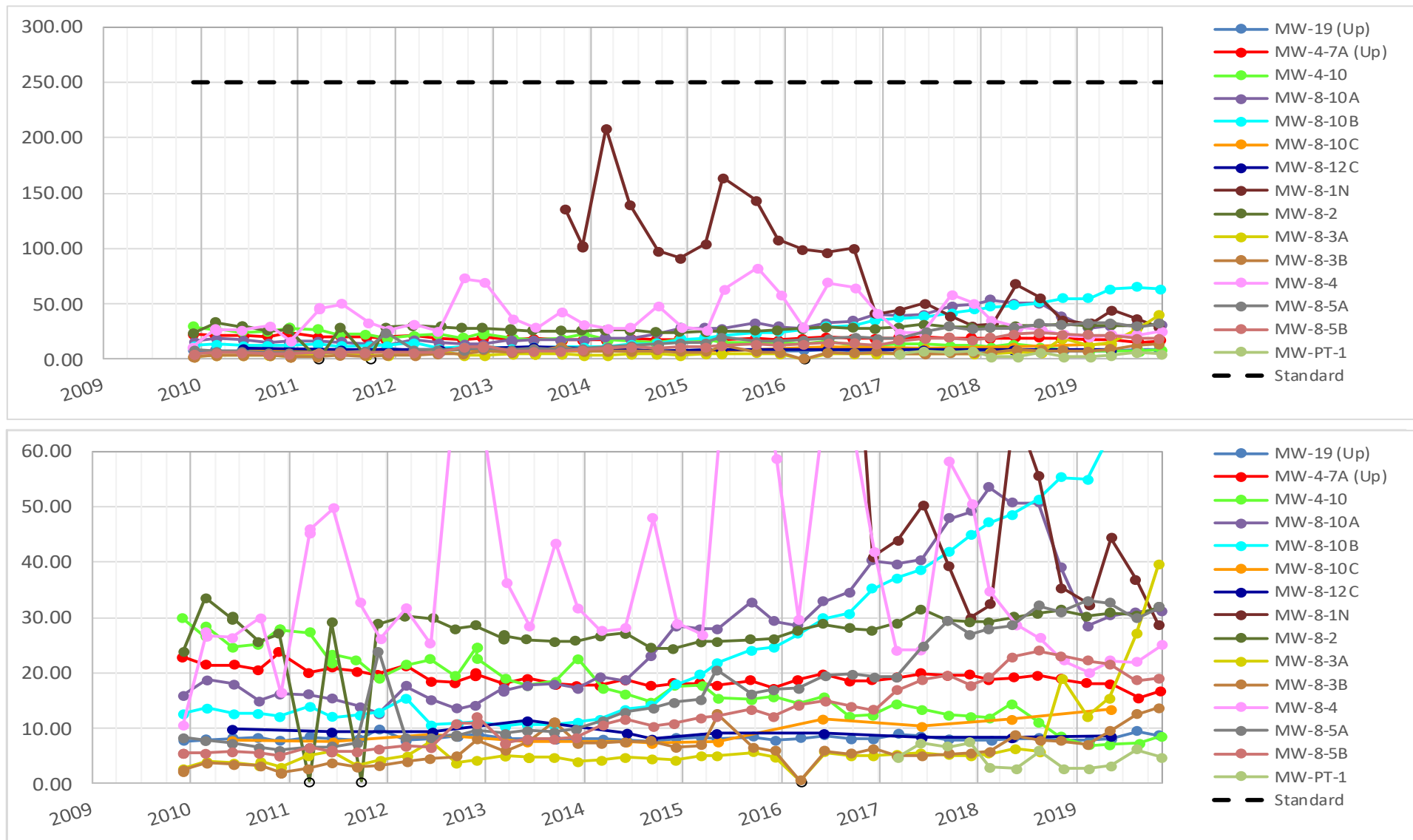
NOTE: There are no applicable standards for this parameter

Chemical Oxygen Demand [mg/l]



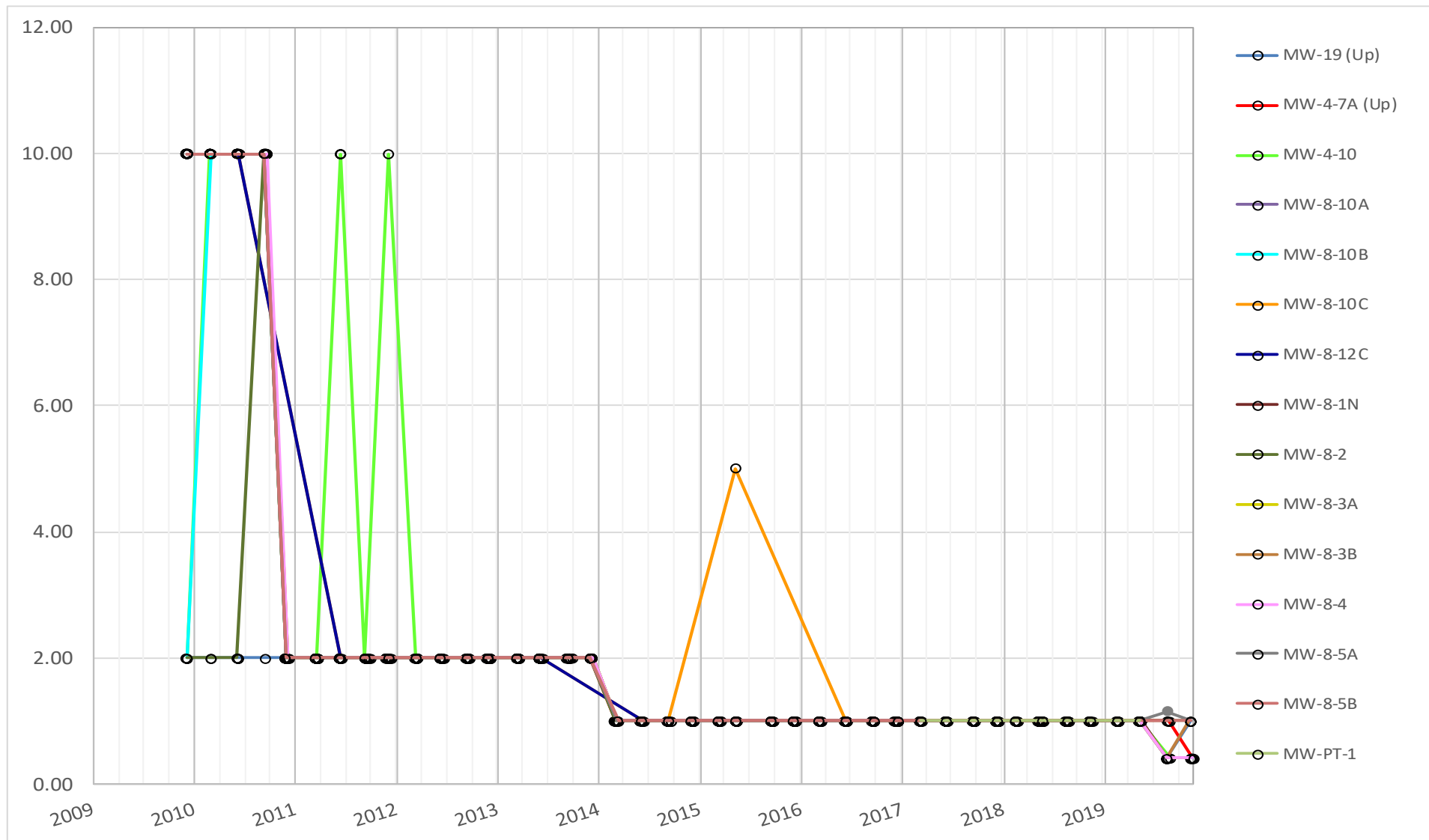
NOTE: There are no applicable standards for this parameter

Chloride, total as Cl [mg/l]



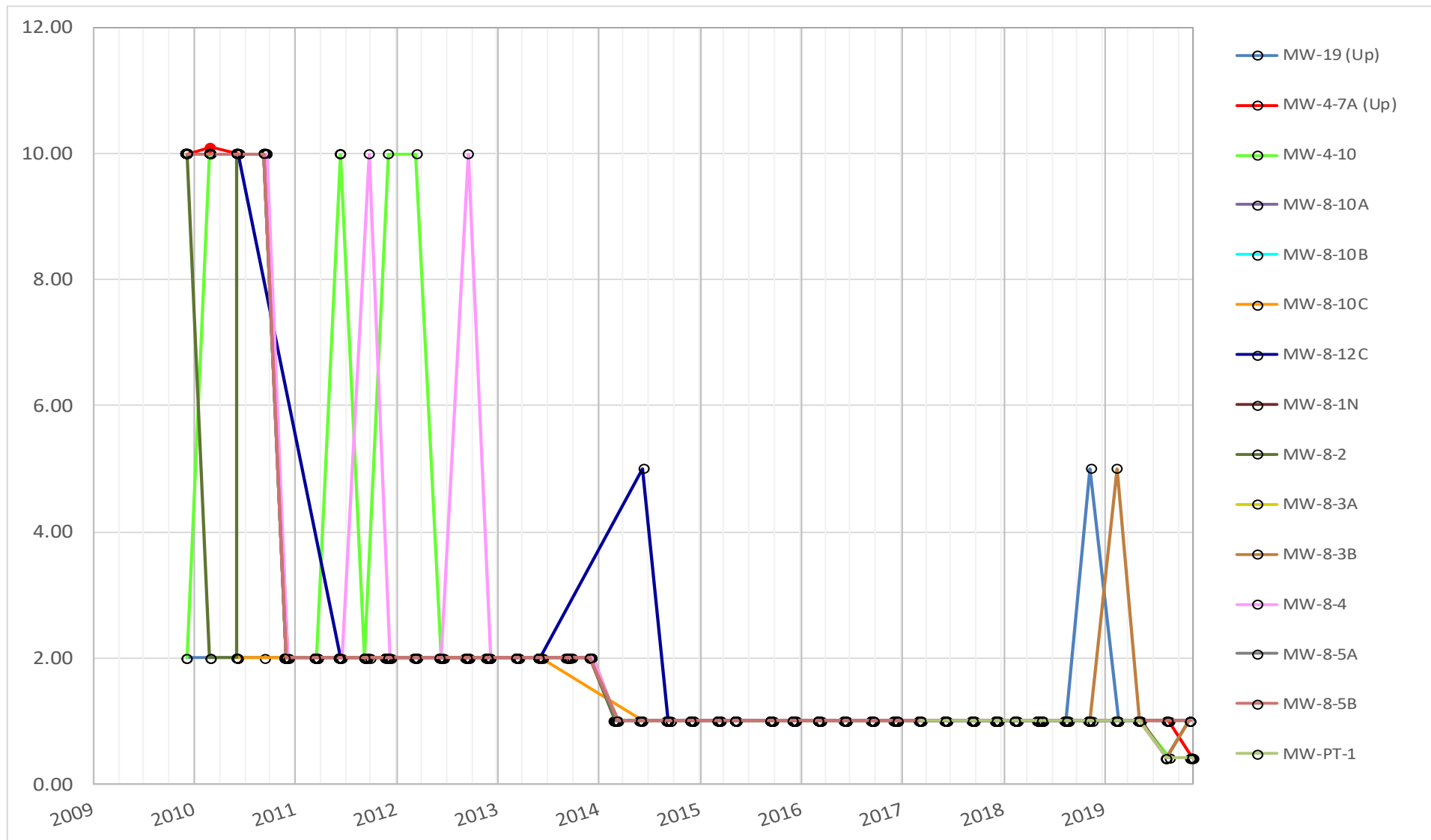
NOTE: Data does not exceed standard of 250 mg/l during this time frame

Chromium, dissolved [$\mu\text{g}/\text{l}$]



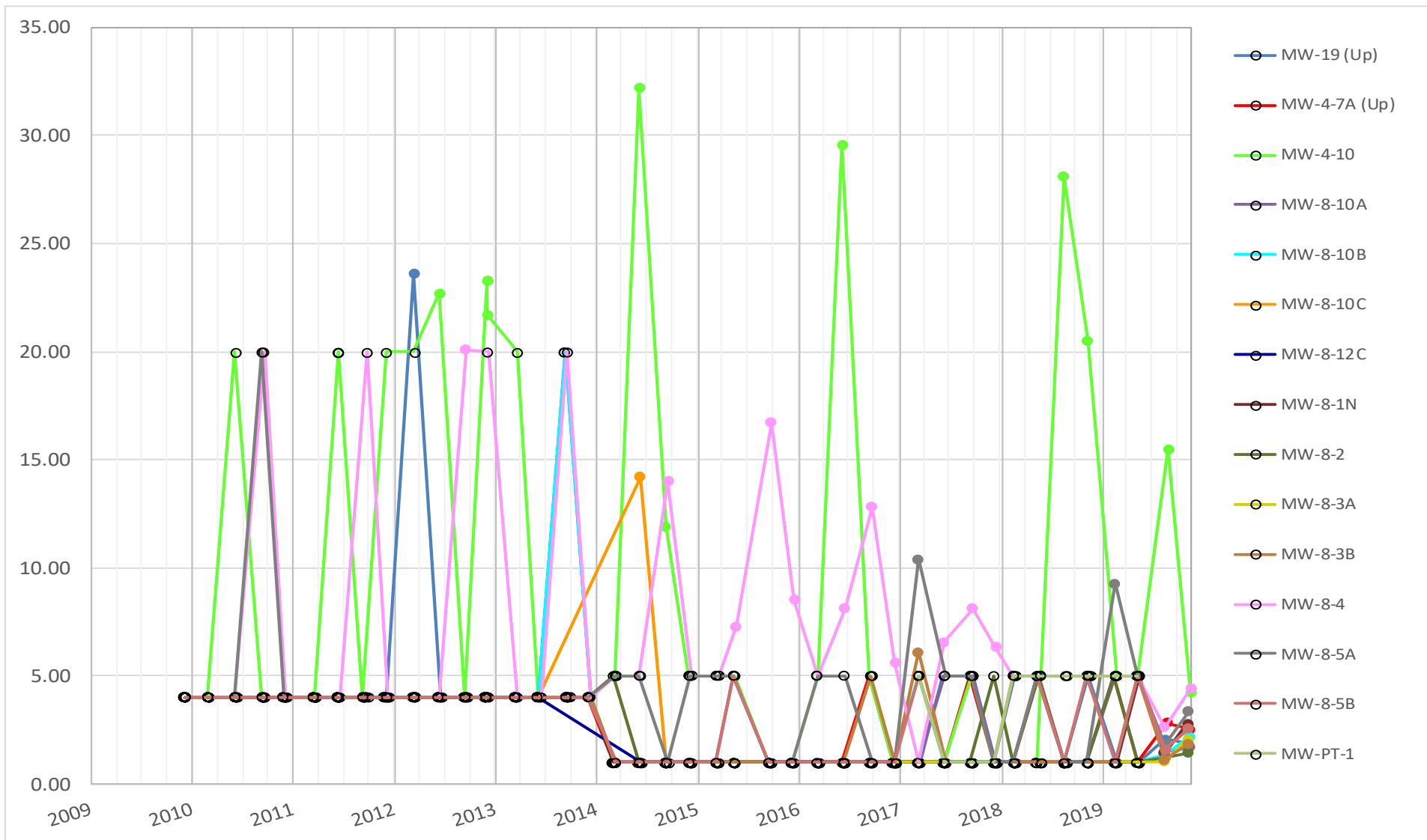
NOTE: Data does not exceed standard of 100 $\mu\text{g}/\text{l}$ during this time frame

Chromium, total [$\mu\text{g/l}$]



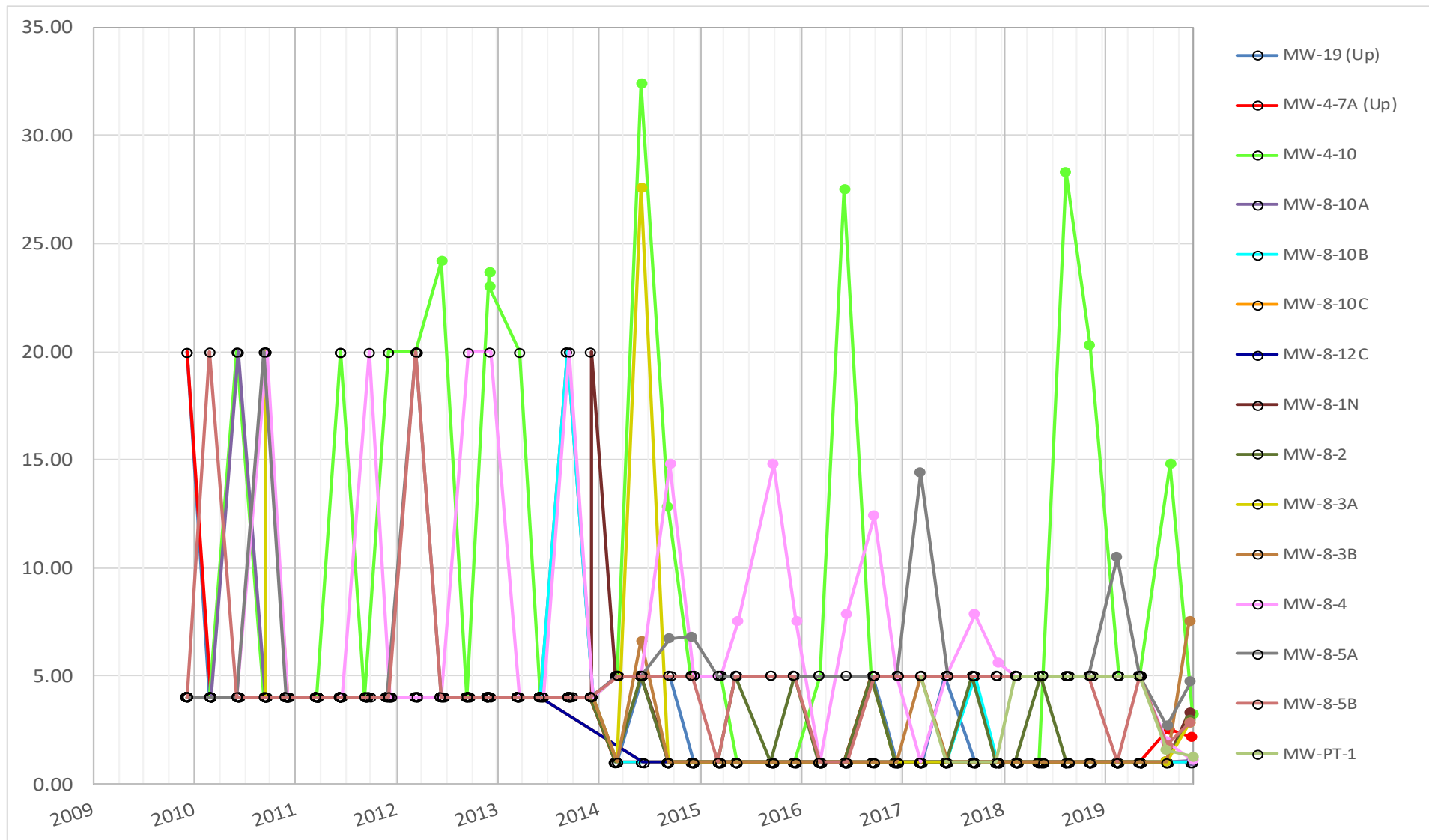
NOTE: Data does not exceed standard of 100 $\mu\text{g/l}$ during this time frame

Copper, dissolved [$\mu\text{g/l}$]



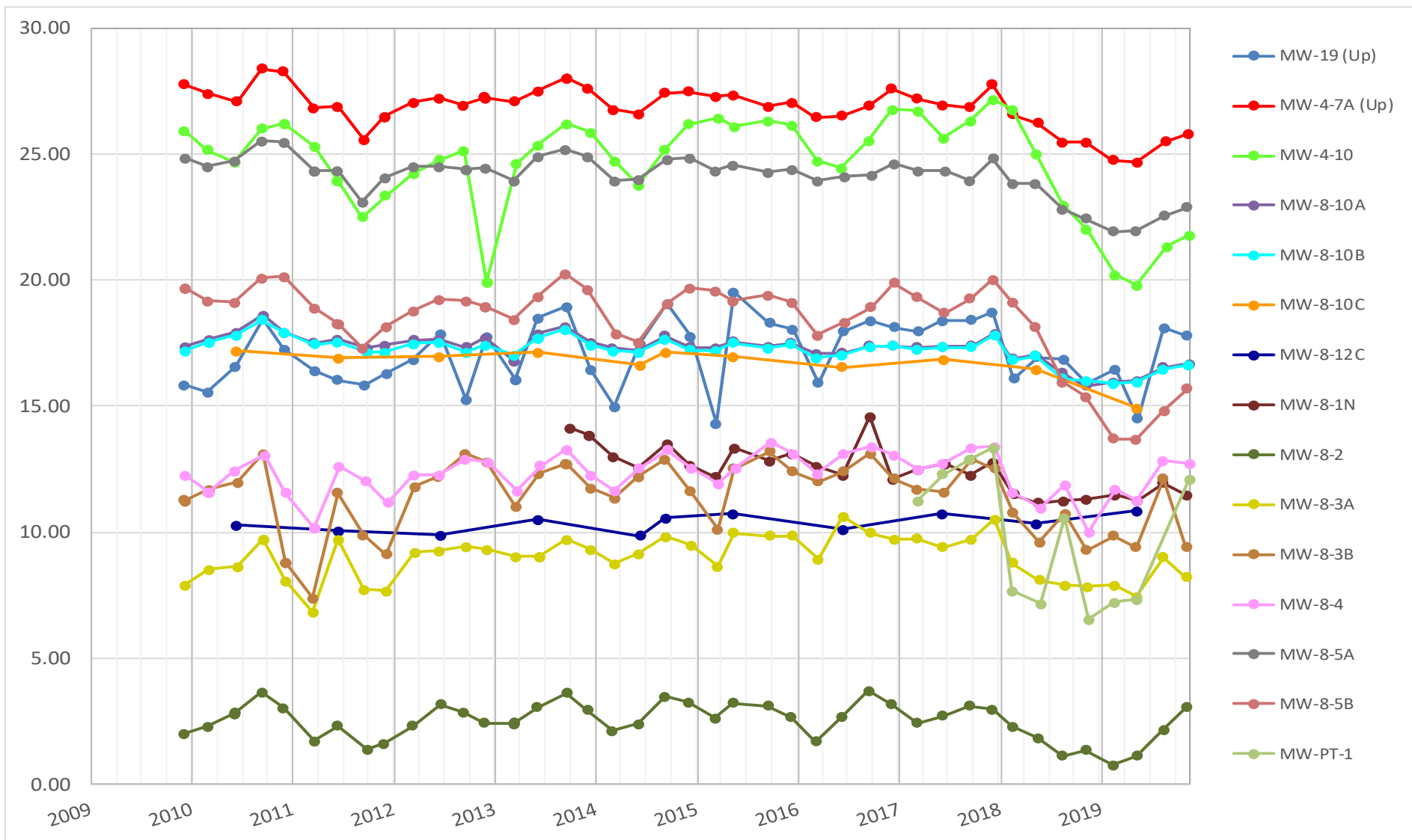
NOTE: Data does not exceed standard of 1000 $\mu\text{g/l}$ during this time frame

Copper, total [$\mu\text{g/l}$]



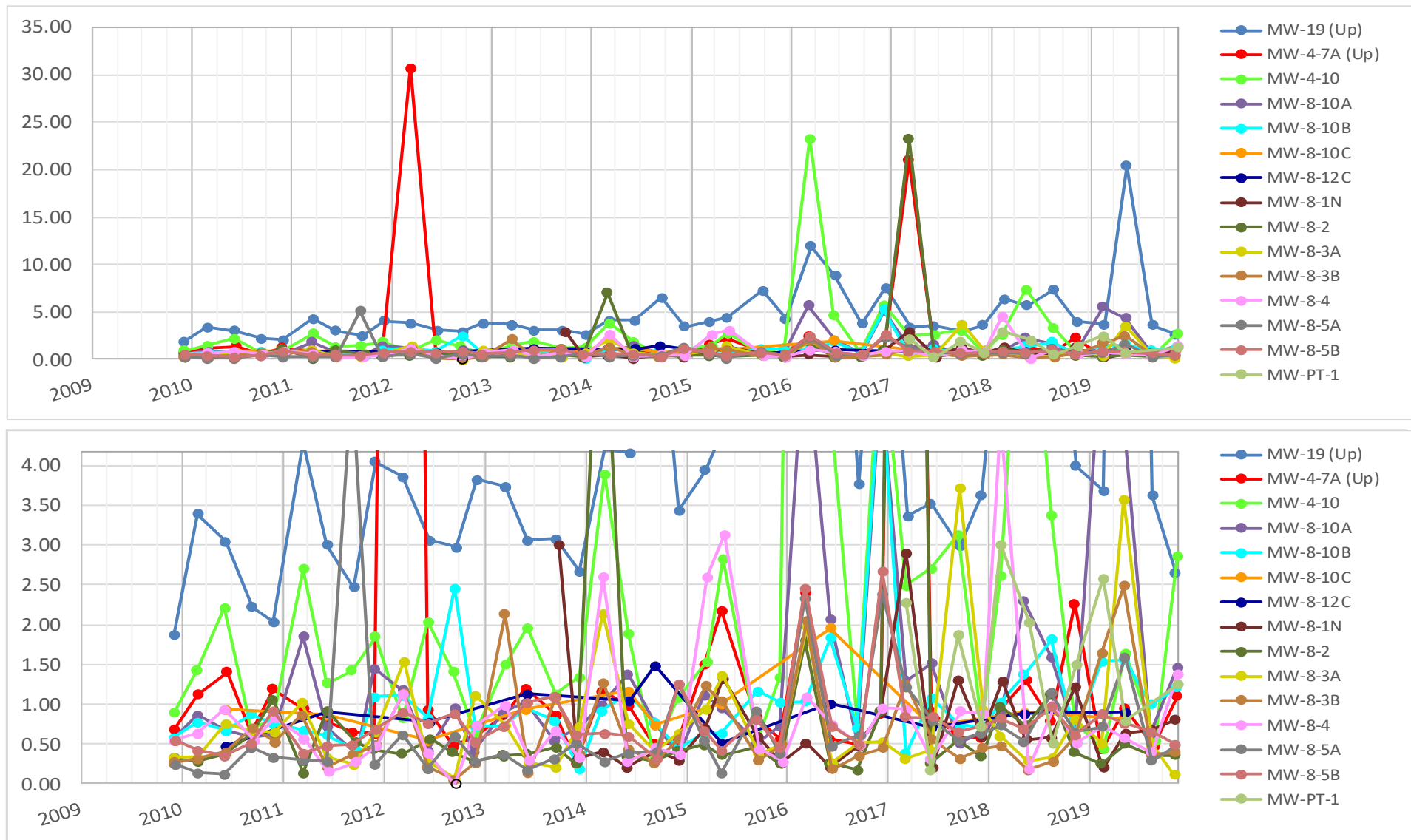
NOTE: Data does not exceed standard of 1000 $\mu\text{g/l}$ during this time frame

Depth to Water [ft]



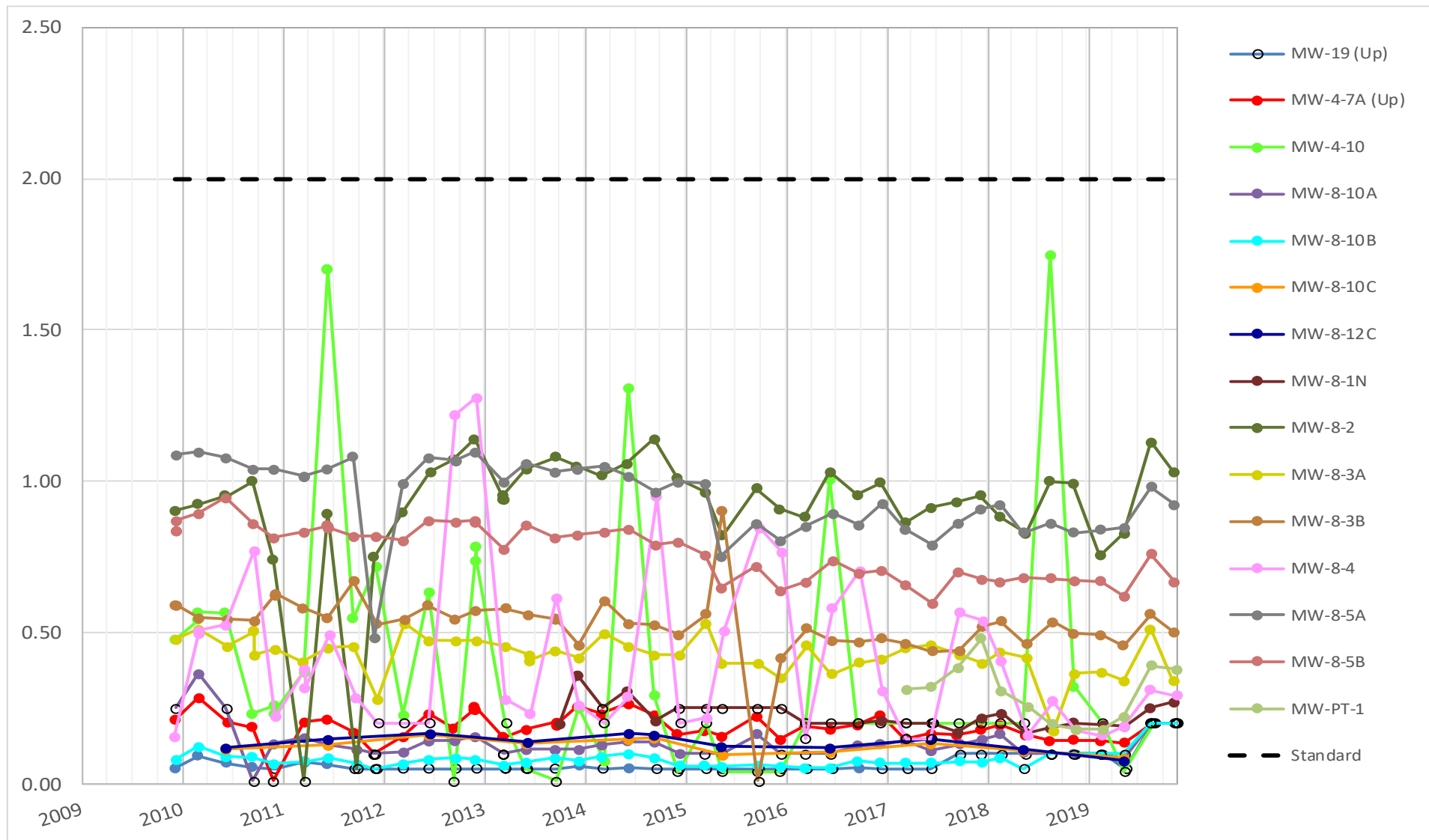
NOTE: There are no applicable standards for this parameter

Dissolved Oxygen, field [mg/l]



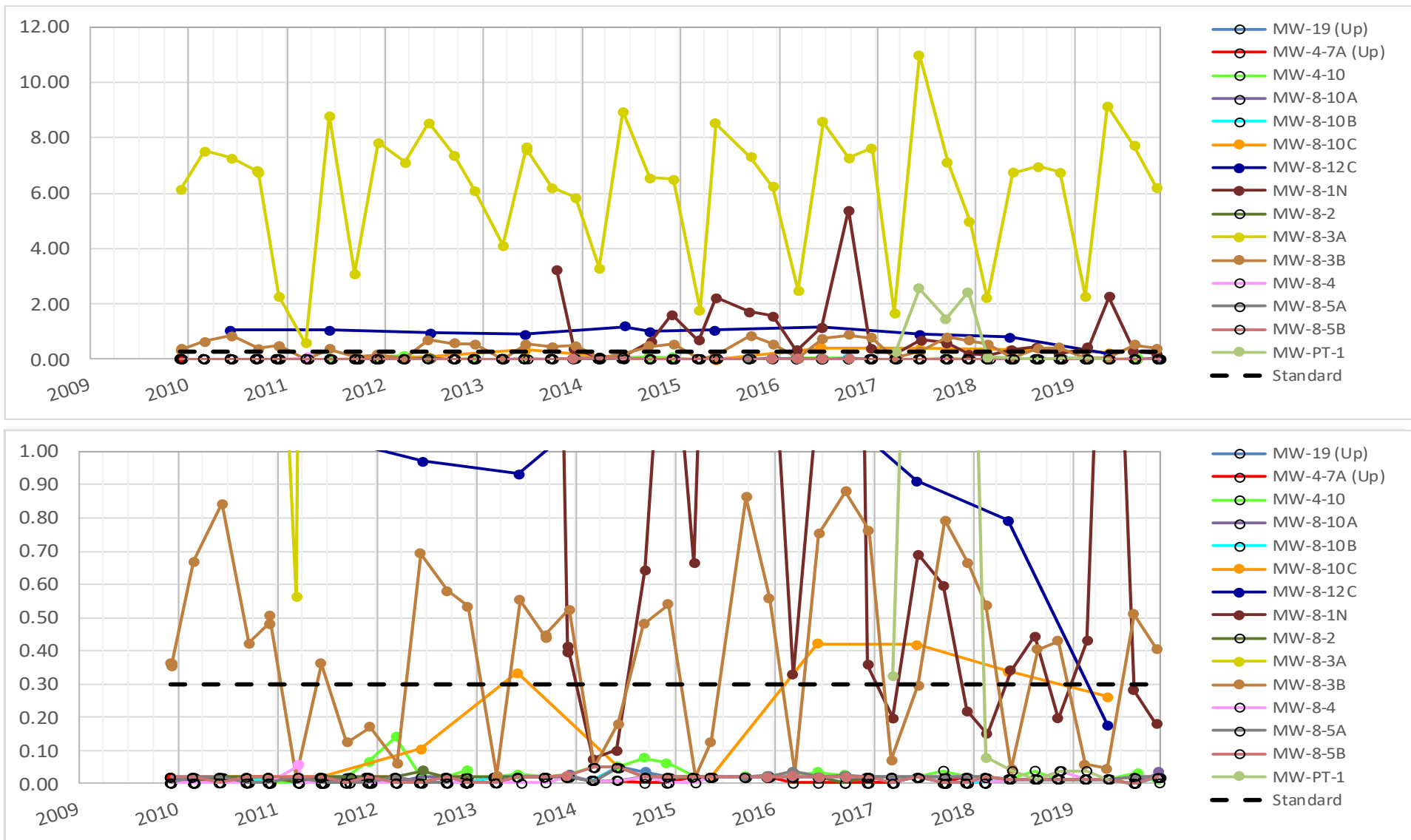
NOTE: There are no applicable standards for this parameter

Fluoride, total as F [mg/l]

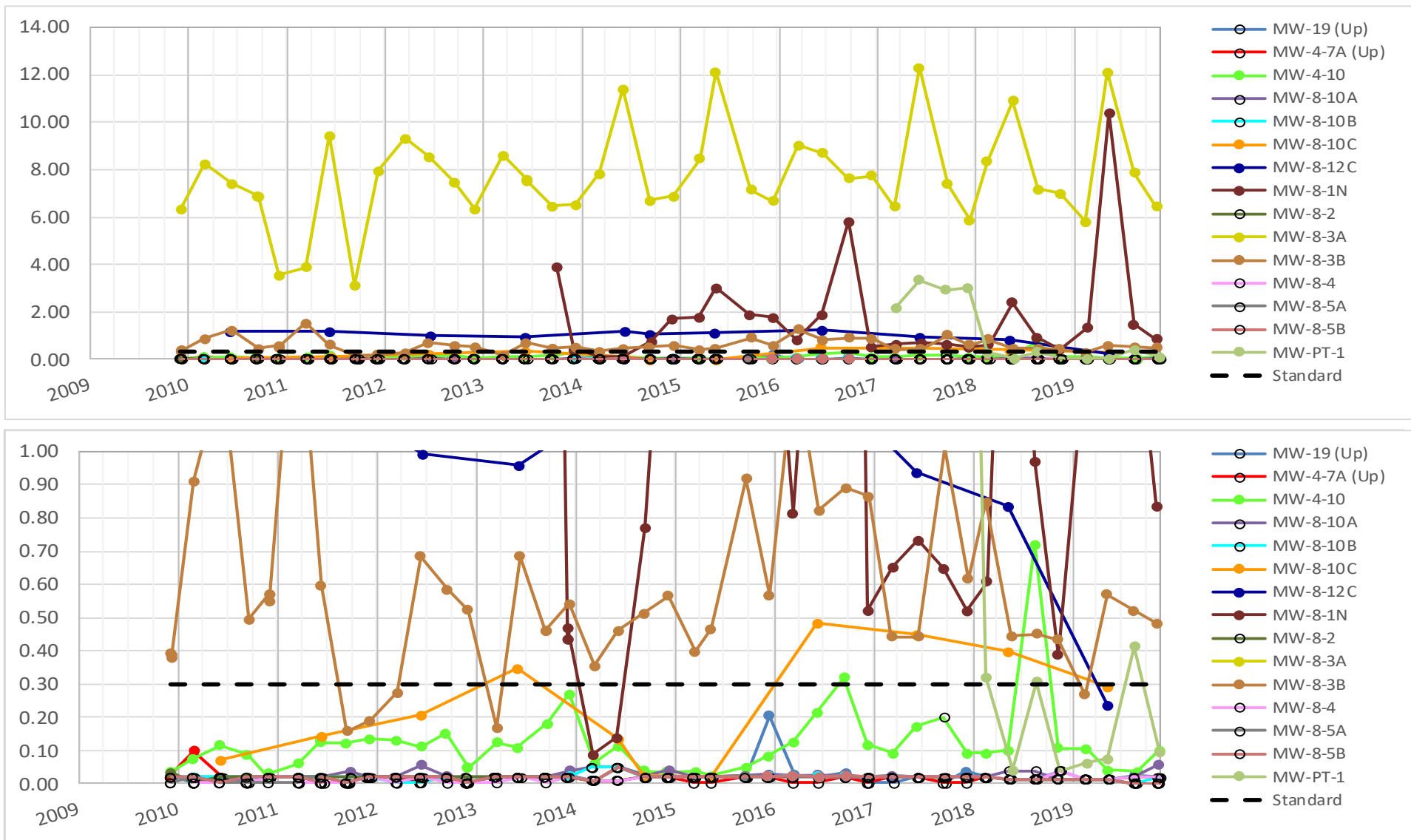


NOTE: Data does not exceed standard of 2 mg/l during this time frame

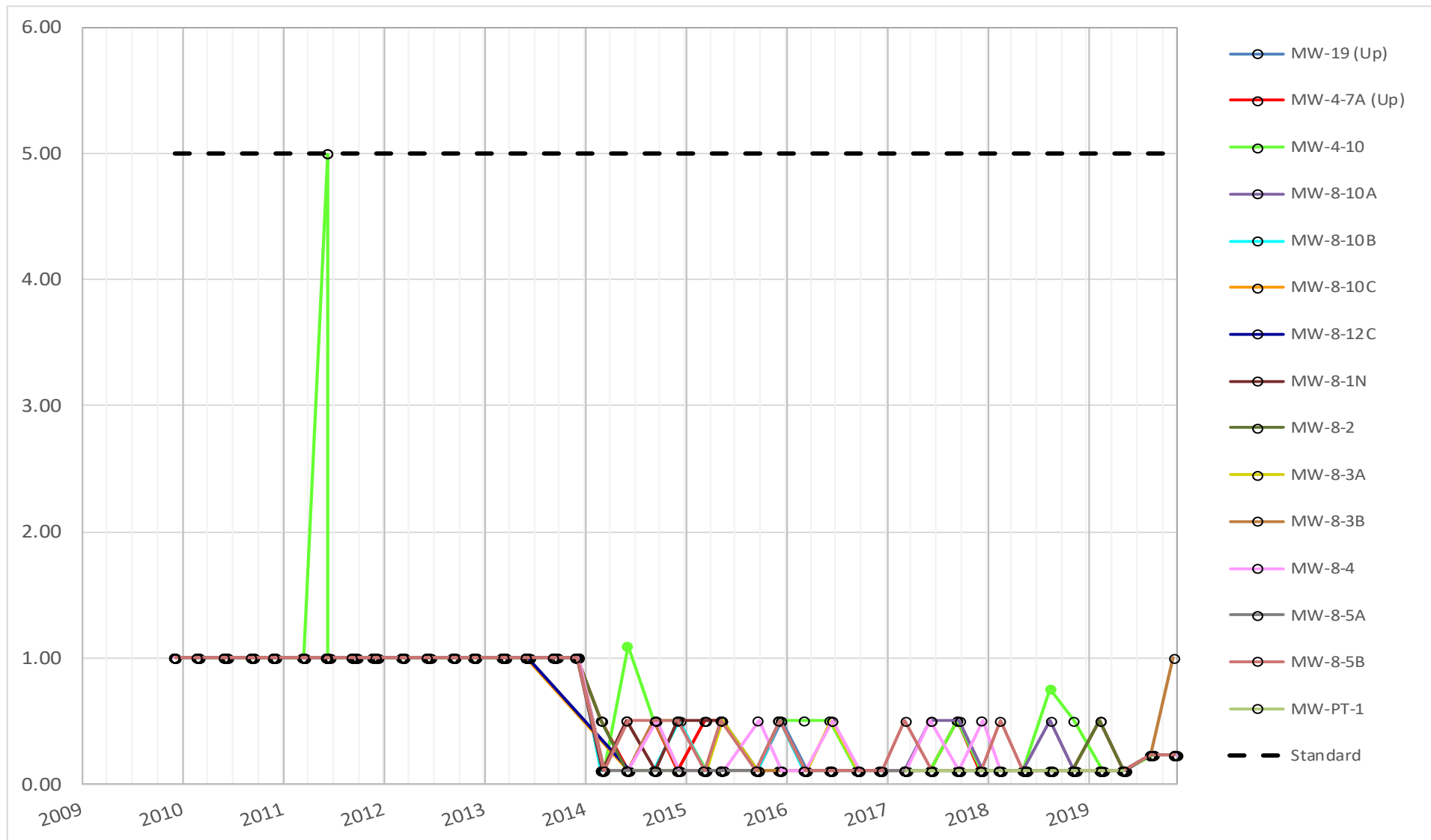
Iron, dissolved [mg/l]



Iron, total [mg/l]



Lead, dissolved [$\mu\text{g/l}$]



4th Quarter 2019

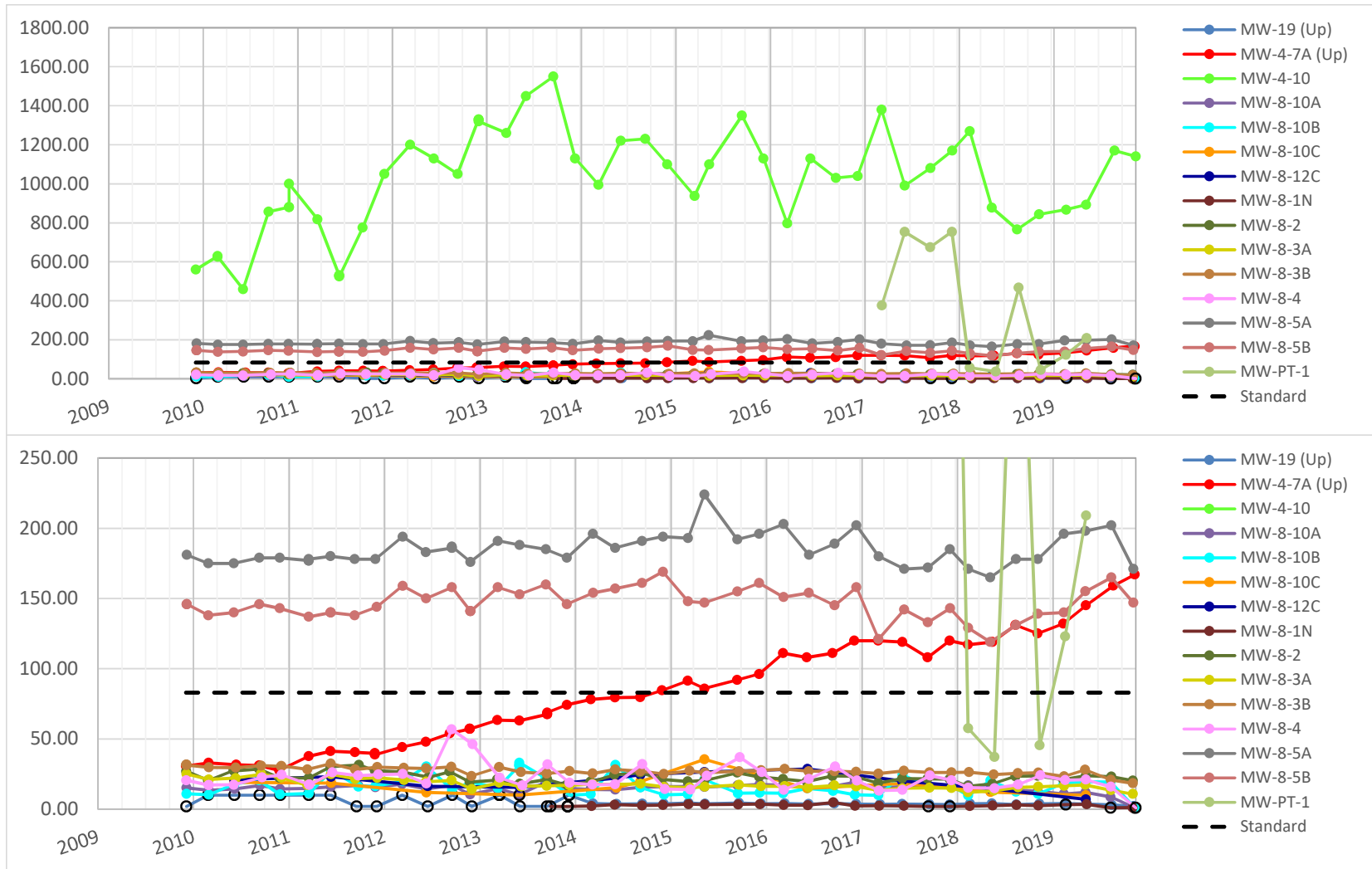
The graph displays the maximum value of the normalized residual functional stress (RFRS) for various measurement points (MW-19, MW-4-7A, MW-4-10, MW-8-10A, MW-8-10B, MW-8-10C, MW-8-12C, MW-8-1N, MW-8-2, MW-8-3A, MW-8-3B, MW-8-4, MW-8-5A, MW-8-5B, MW-PT-1) from 2009 to 2019. The y-axis represents the RFRS value, ranging from 0.00 to 6.00. A dashed line at 5.00 represents the 'Standard'. Most points remain at 1.00 until 2014, after which they fluctuate between 0.00 and 1.00. MW-4-10 shows a significant peak at 5.00 in 2010 and another at 1.00 in 2019. MW-8-5A shows a sharp peak at 5.00 in 2014.

Talen Energy

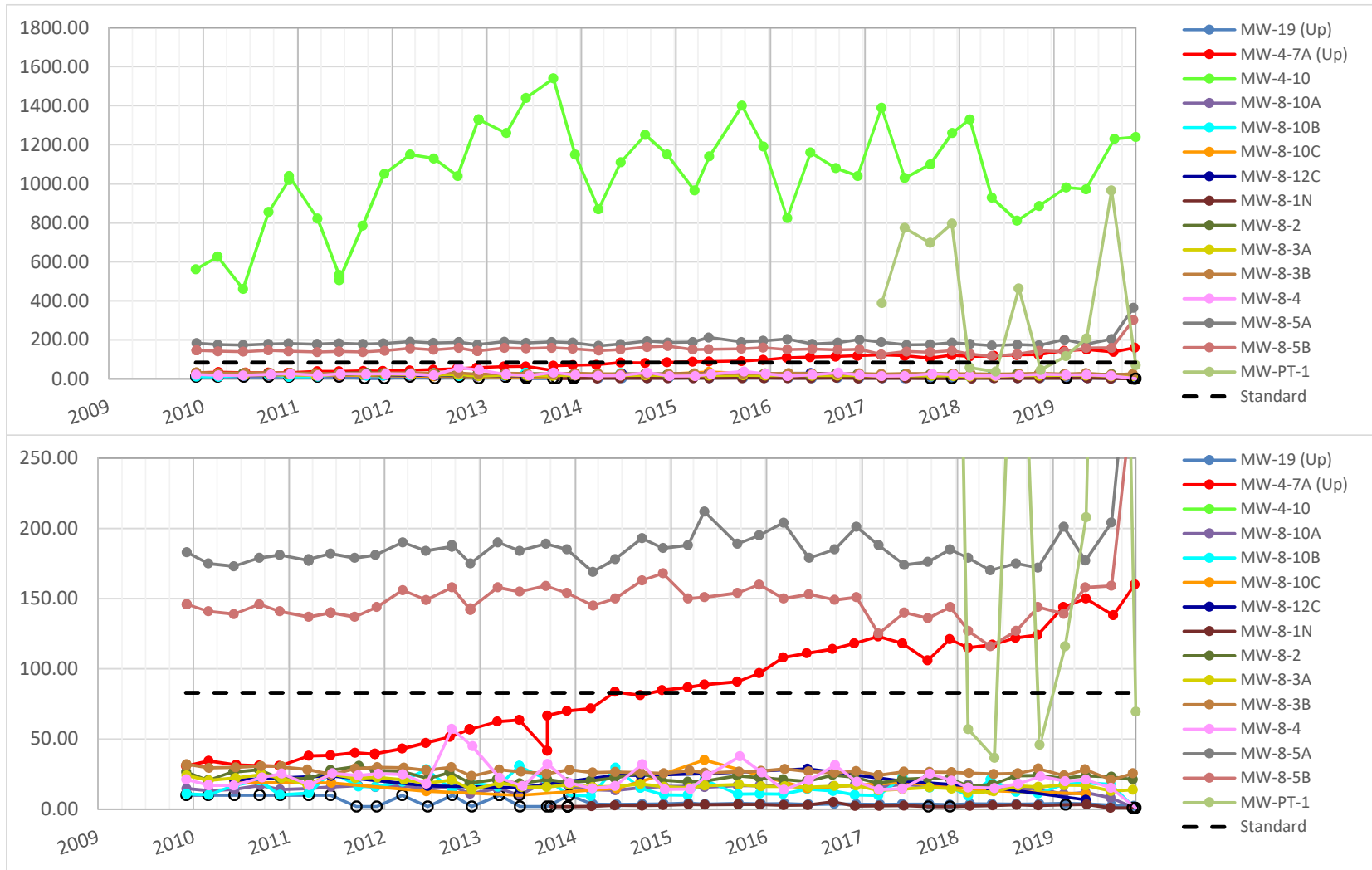
Brunner Island - Basin 5

4th Quarter 2019

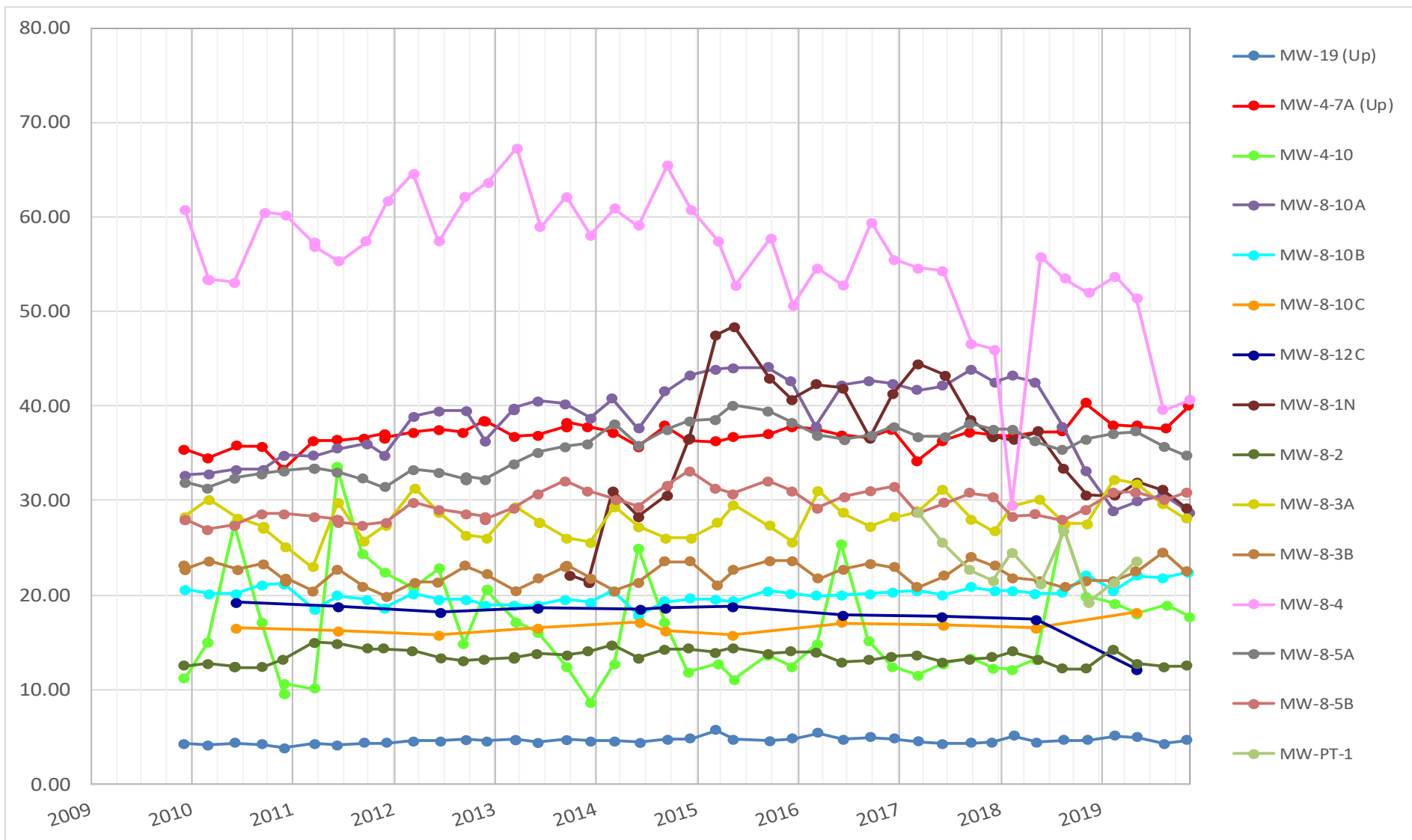
Lithium, dissolved [$\mu\text{g/l}$]



Lithium, total [$\mu\text{g/l}$]

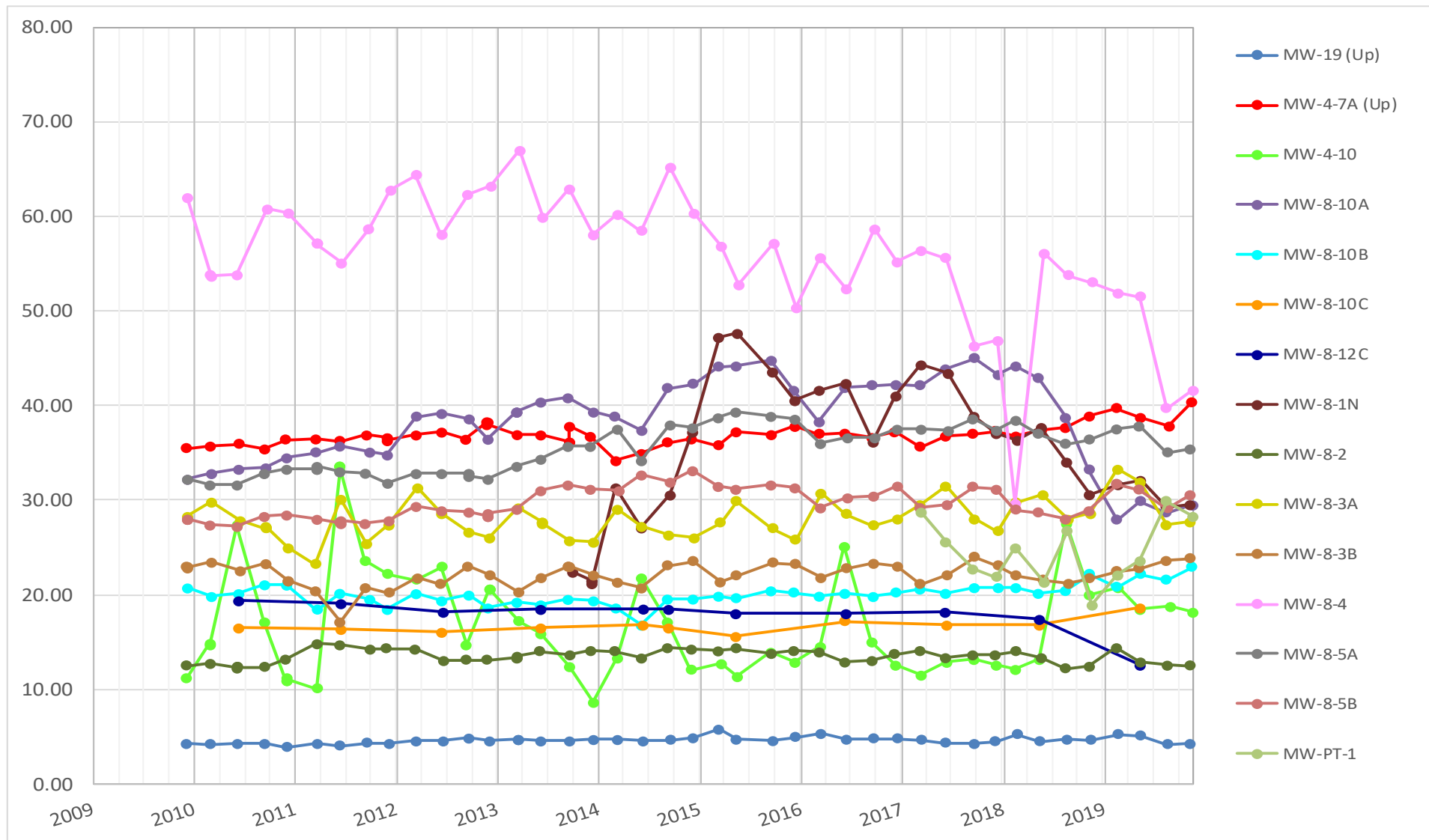


Magnesium, dissolved [mg/l]



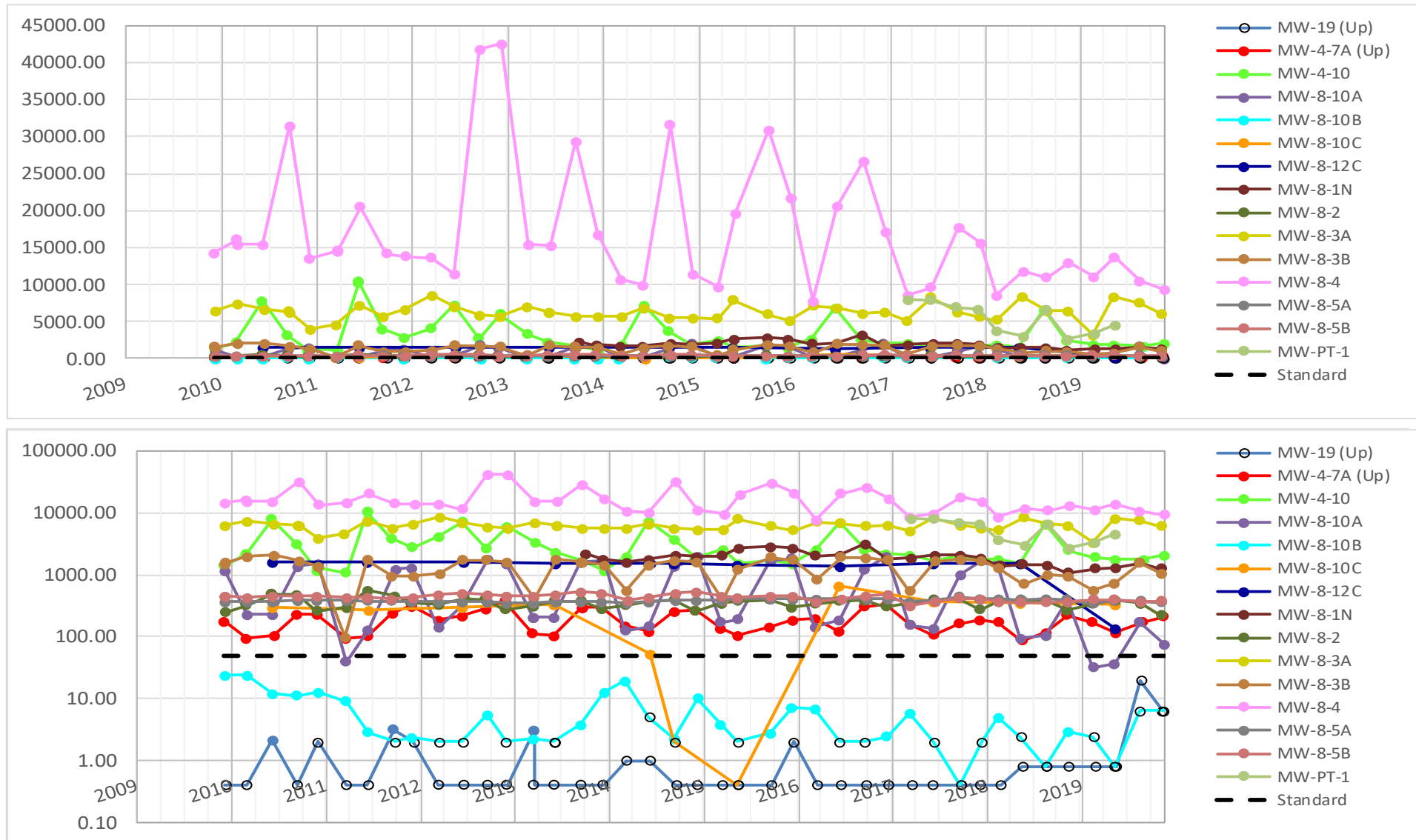
NOTE: There are no applicable standards for this parameter

Magnesium, total [mg/l]

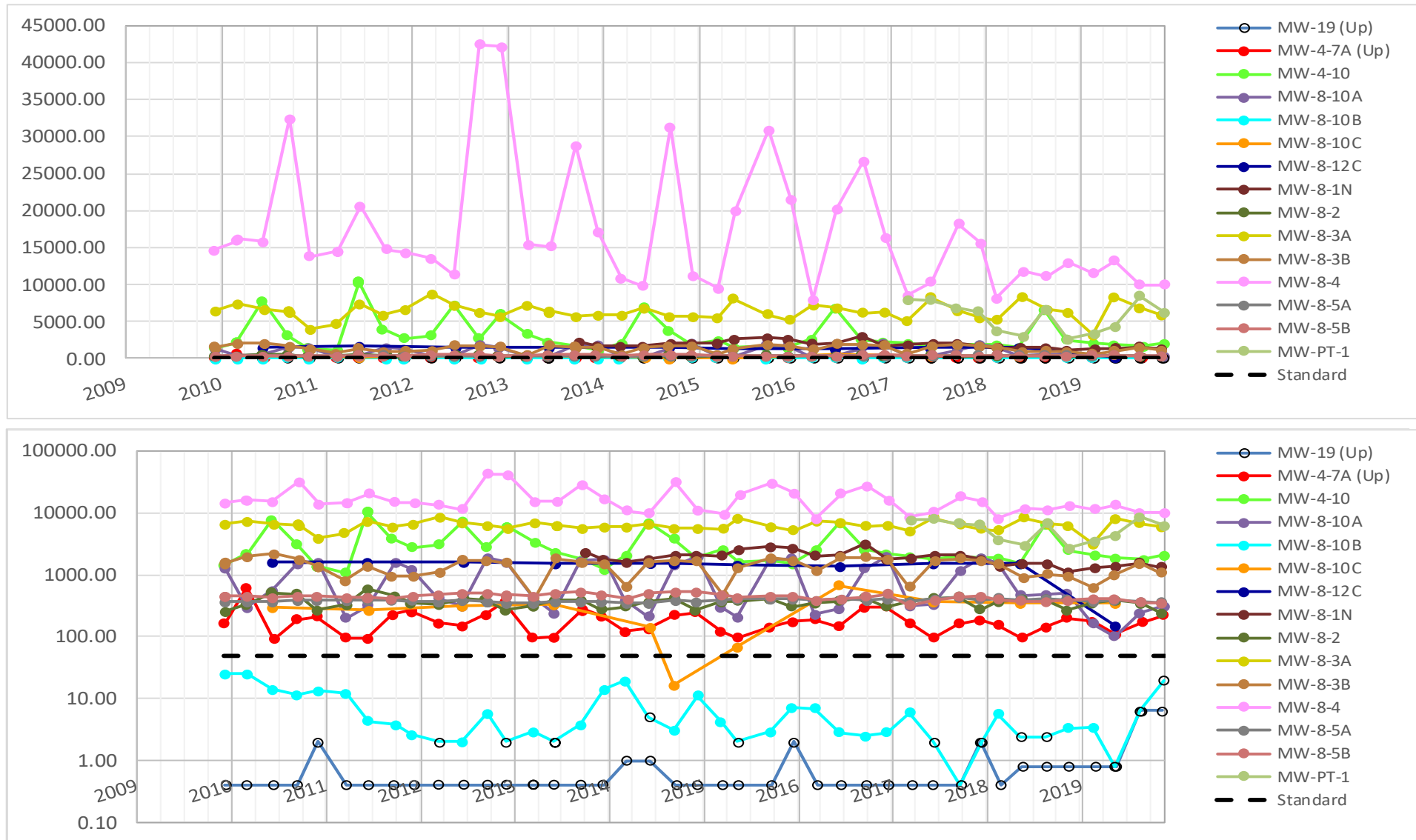


NOTE: There are no applicable standards for this parameter

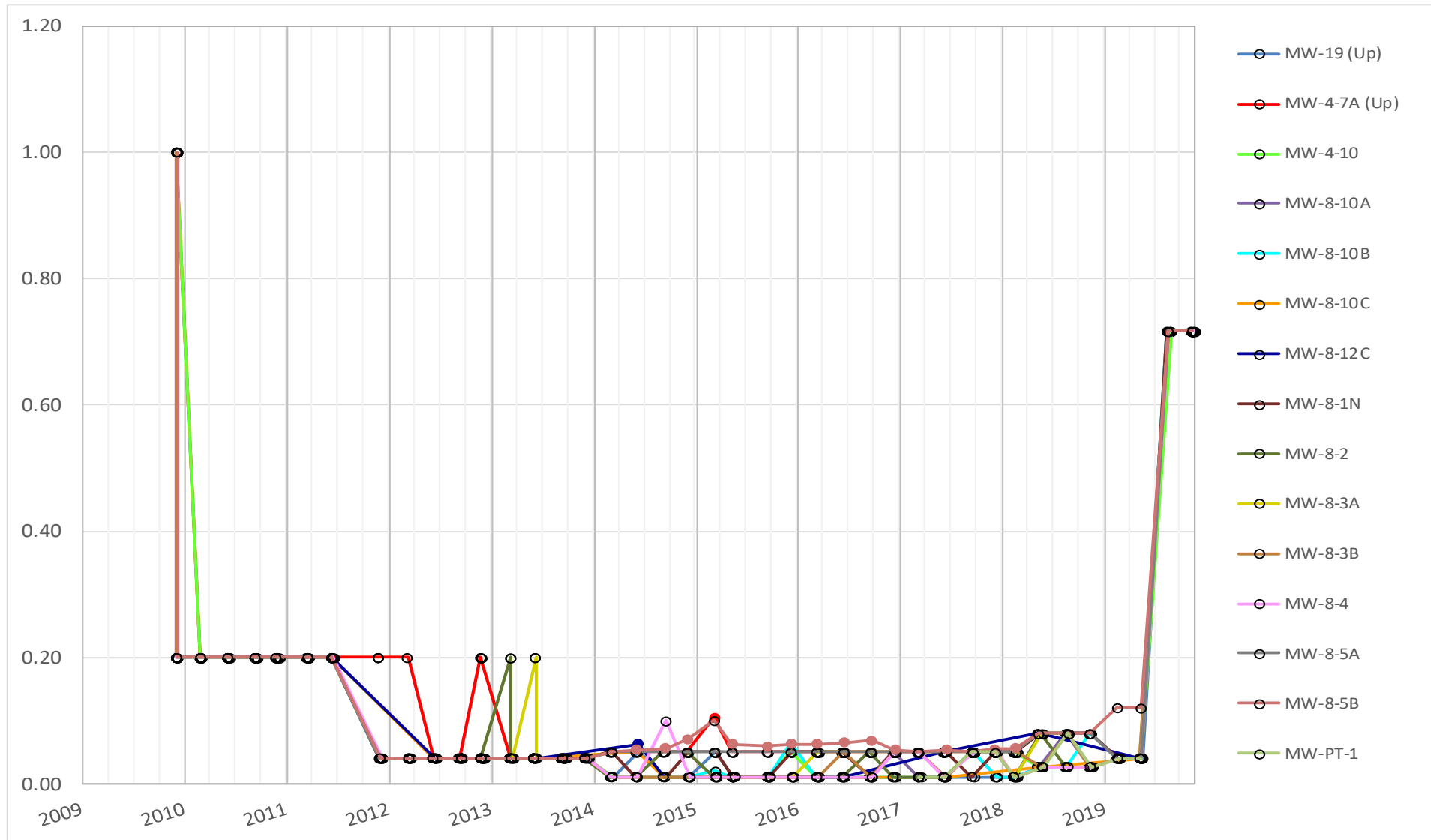
Manganese, dissolved [$\mu\text{g/l}$]



Manganese, total [$\mu\text{g/l}$]

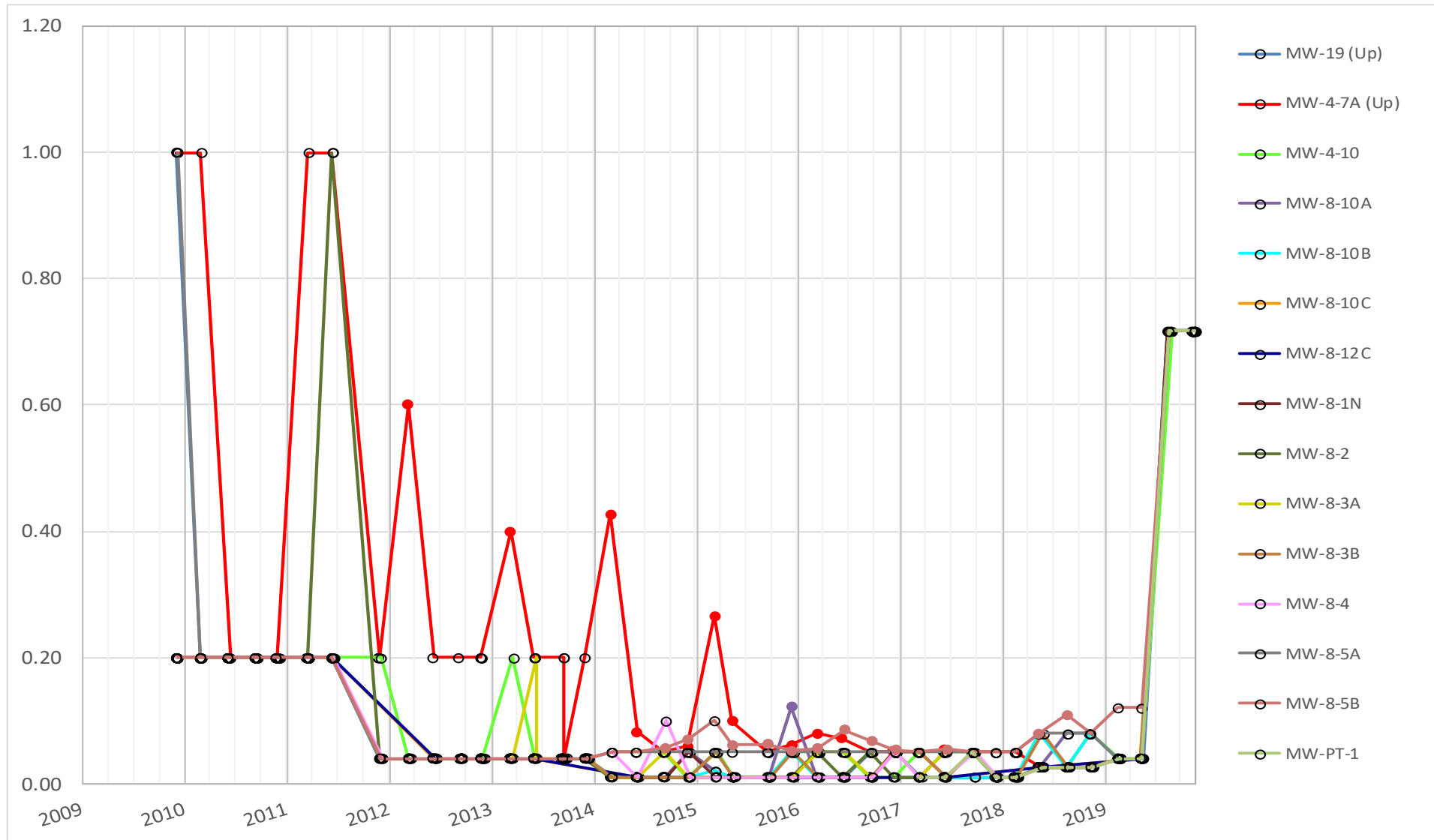


Mercury, dissolved [$\mu\text{g}/\text{l}$]



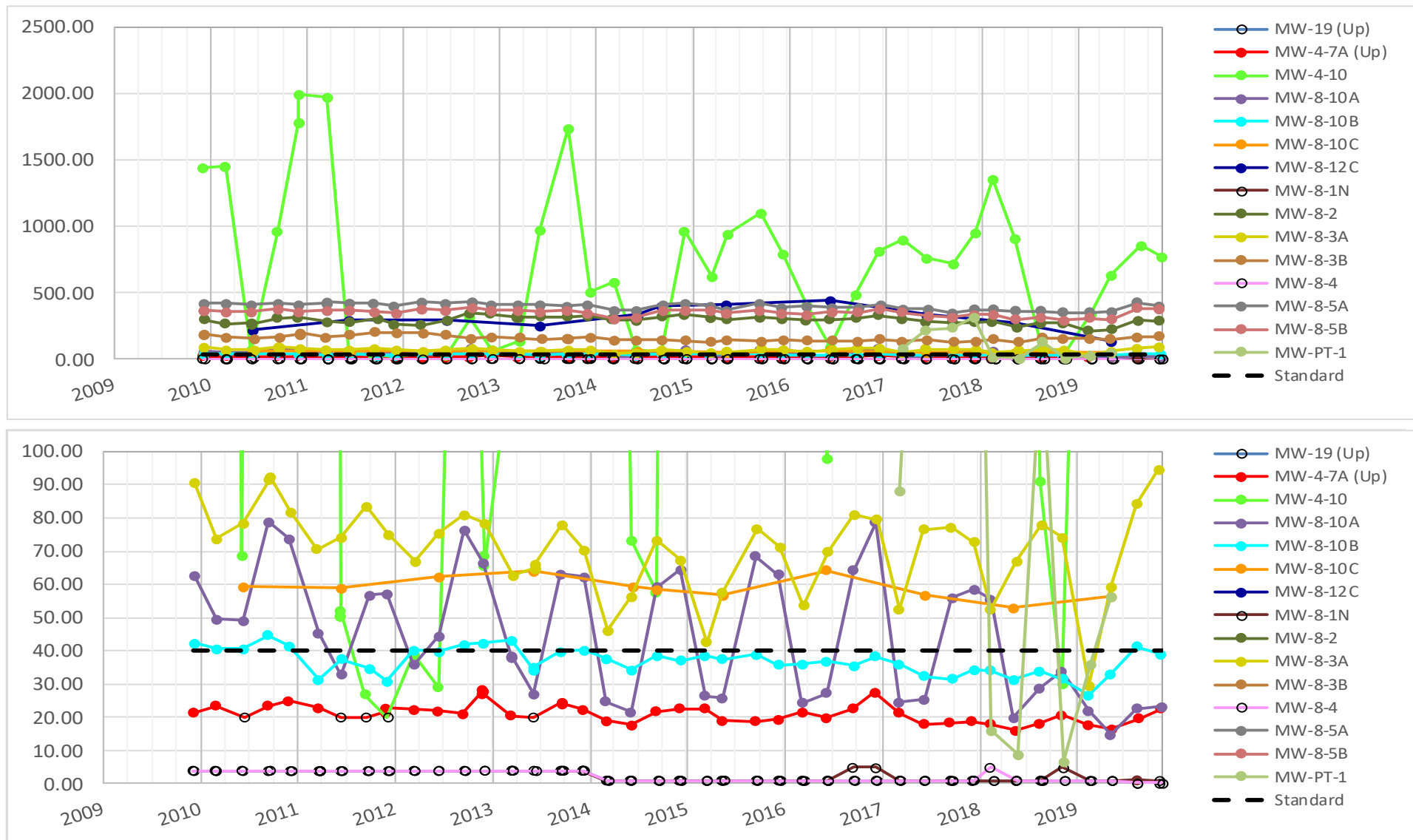
NOTE: Data does not exceed standard of 2 $\mu\text{g}/\text{l}$ during this time frame

Mercury, total [$\mu\text{g/l}$]

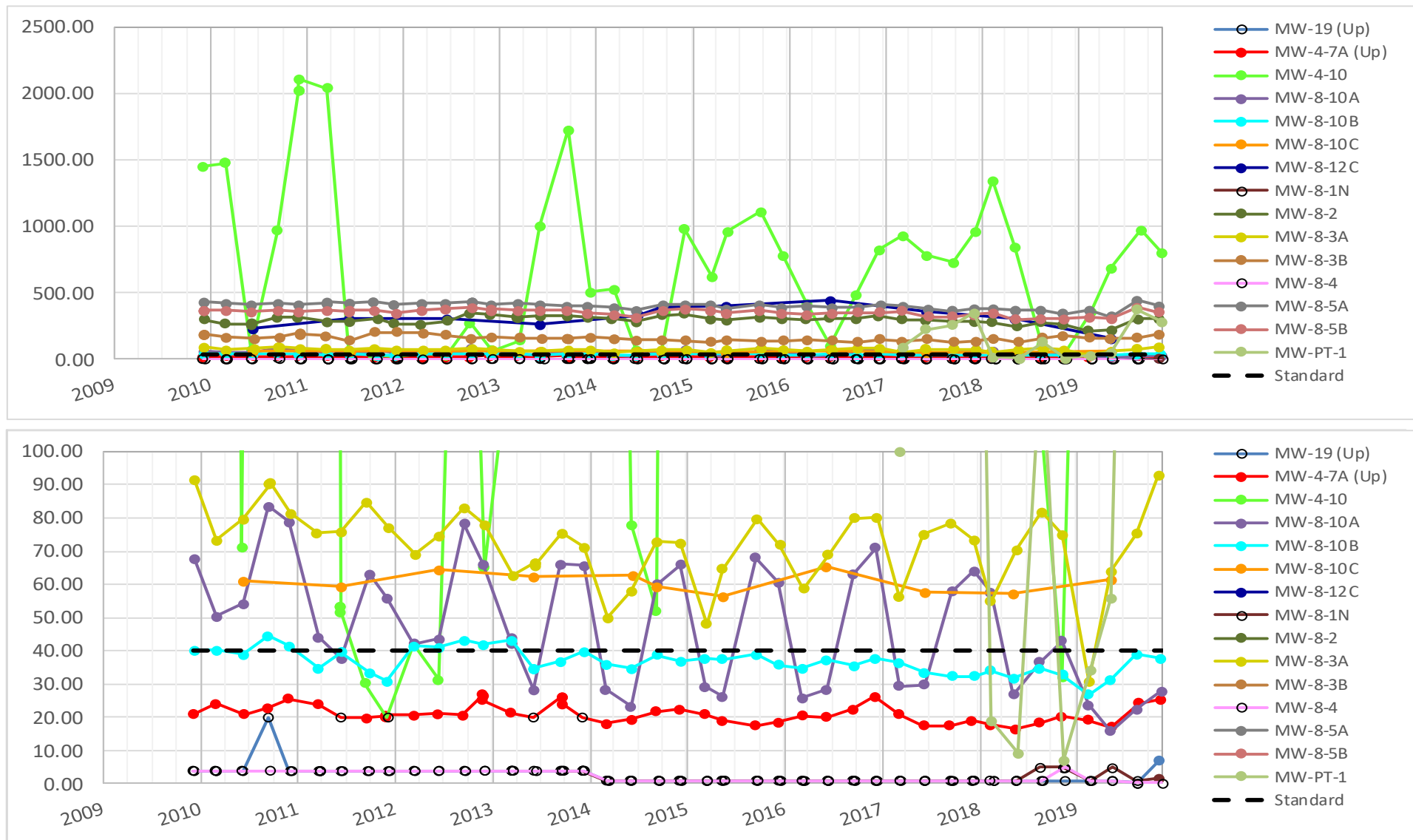


NOTE: Data does not exceed standard of 2 $\mu\text{g/l}$ during this time frame

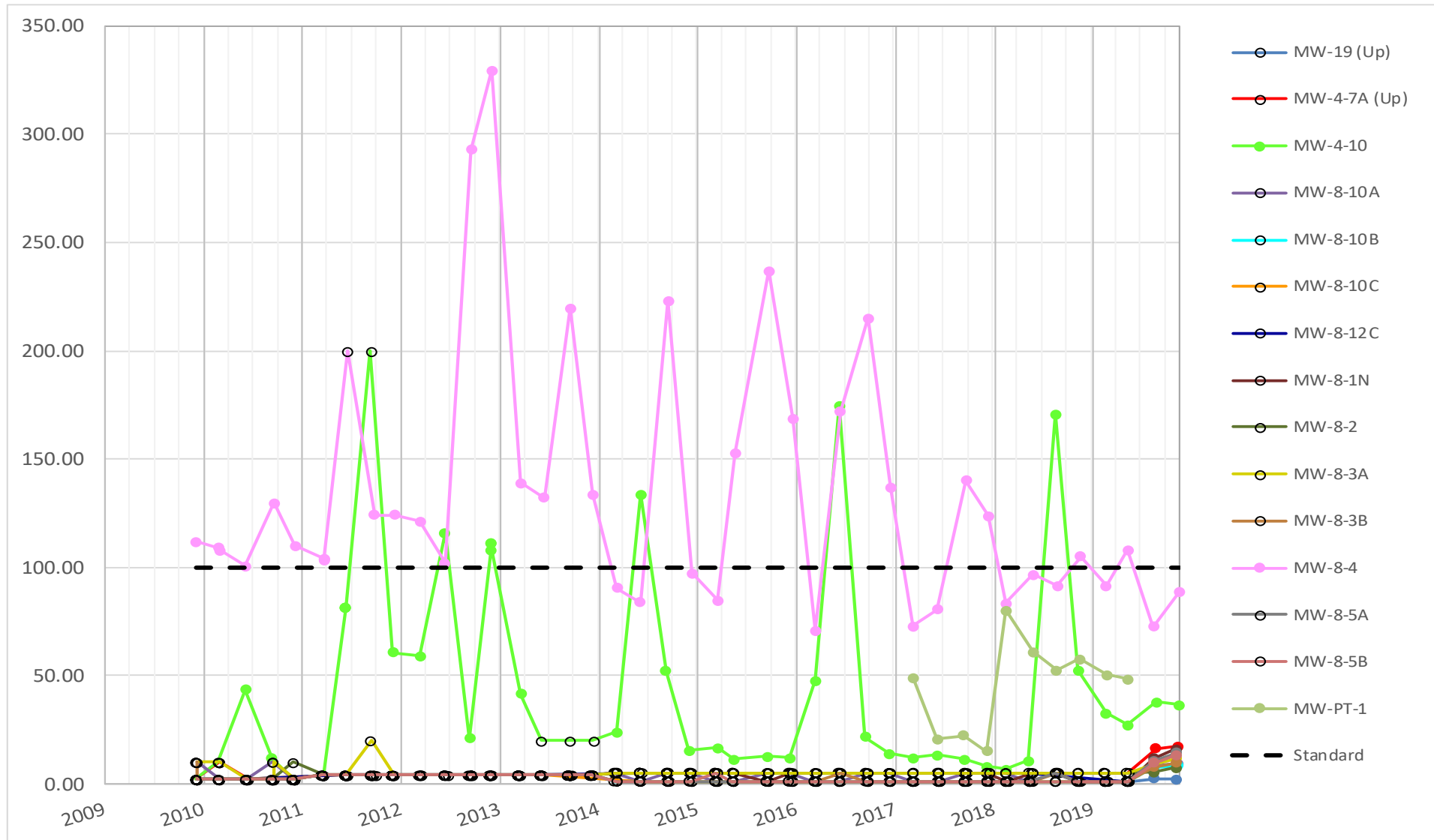
Molybdenum, dissolved [$\mu\text{g/l}$]



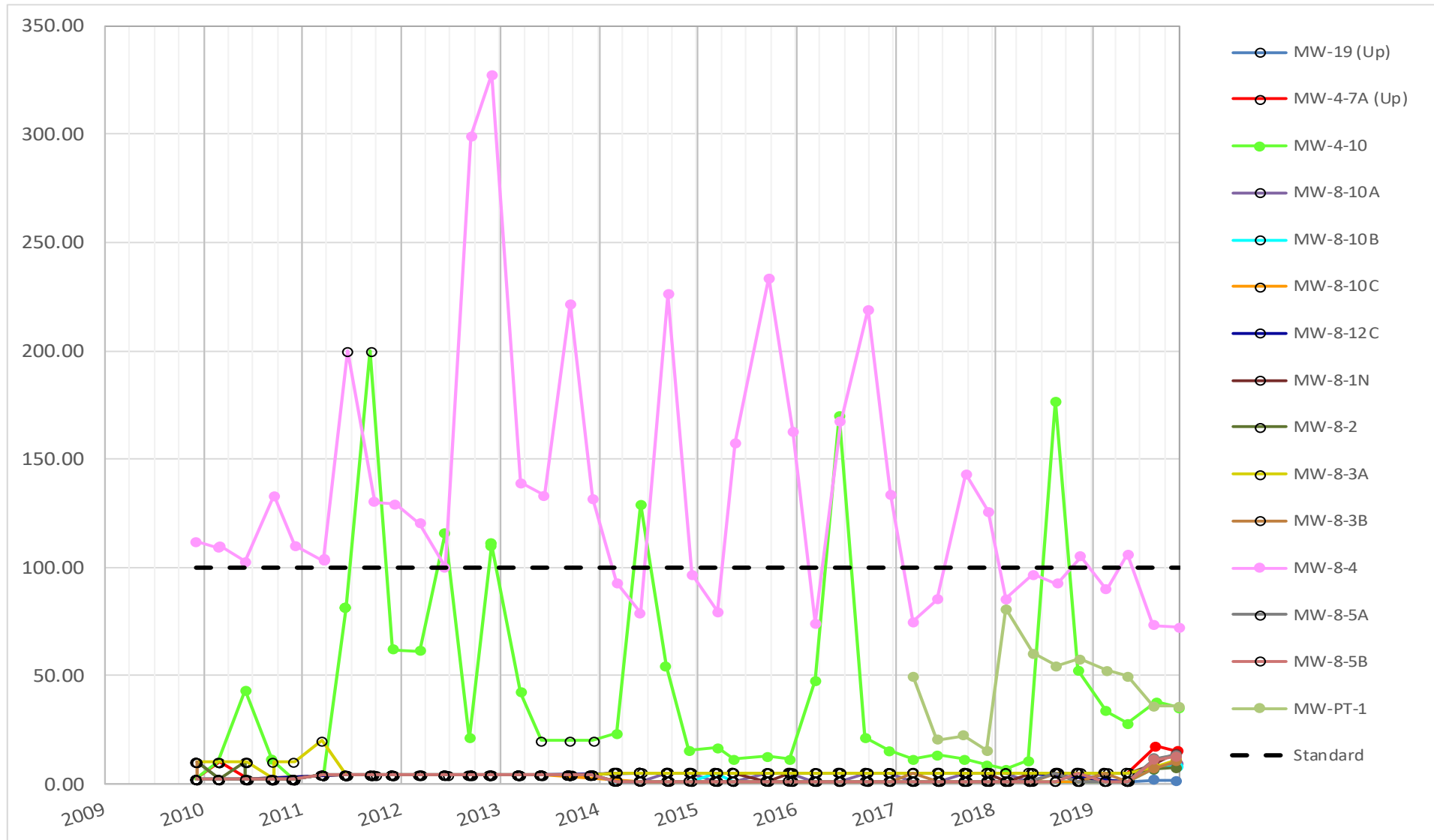
Molybdenum, total [$\mu\text{g/l}$]



Nickel, dissolved [$\mu\text{g/l}$]



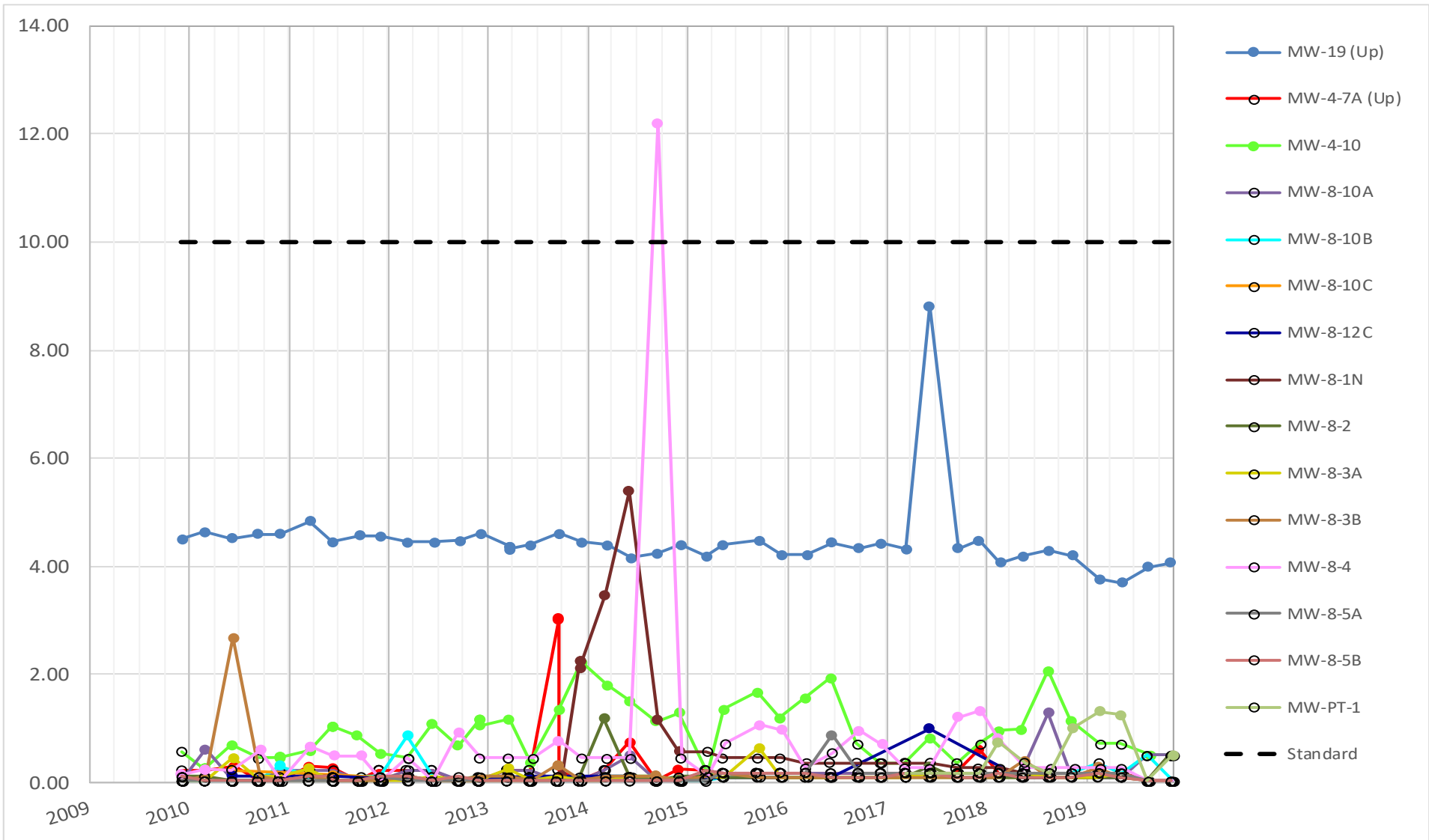
Nickel, total [$\mu\text{g/l}$]



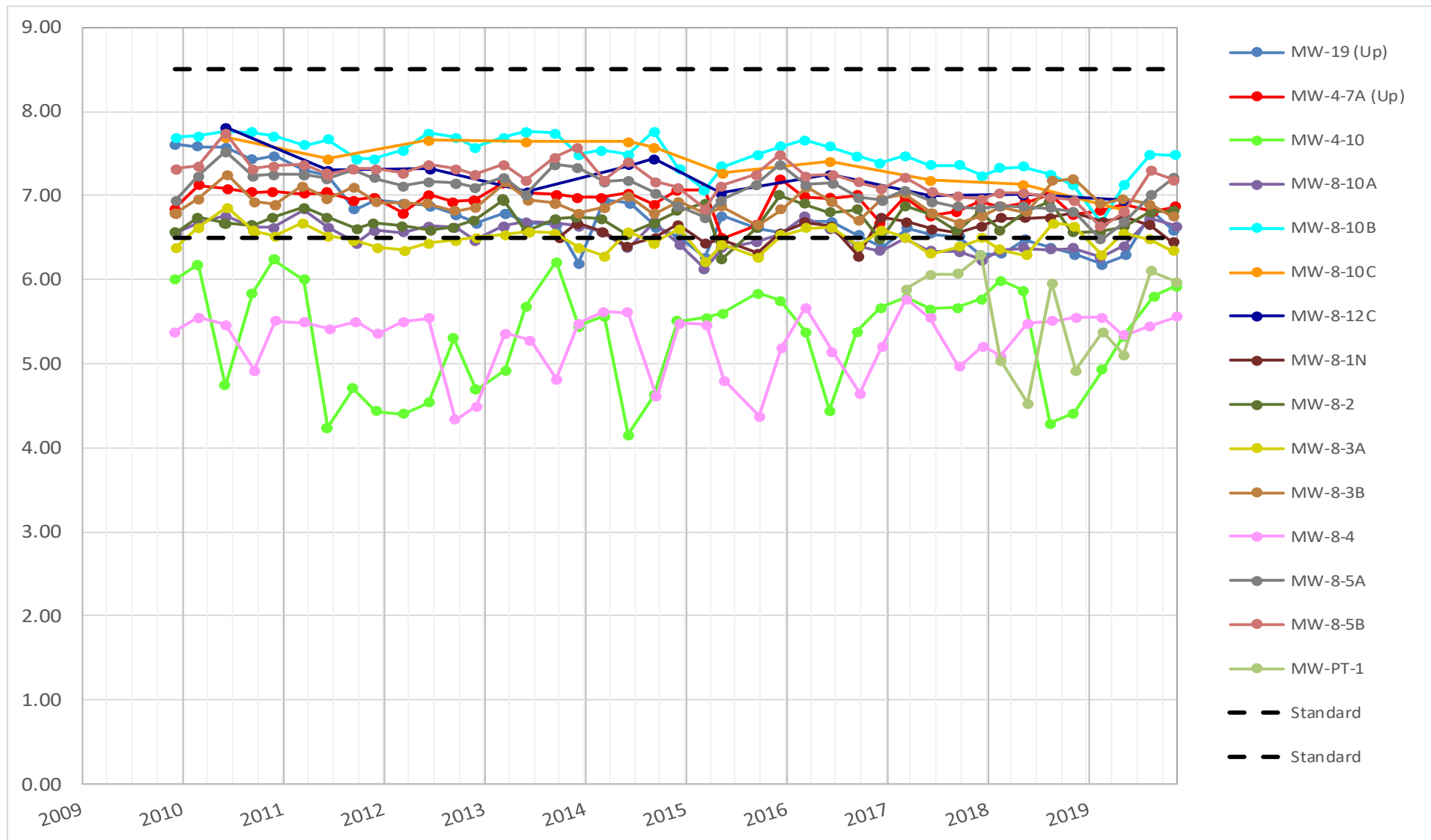
Brunner Island - Basin 5

4th Quarter 2019

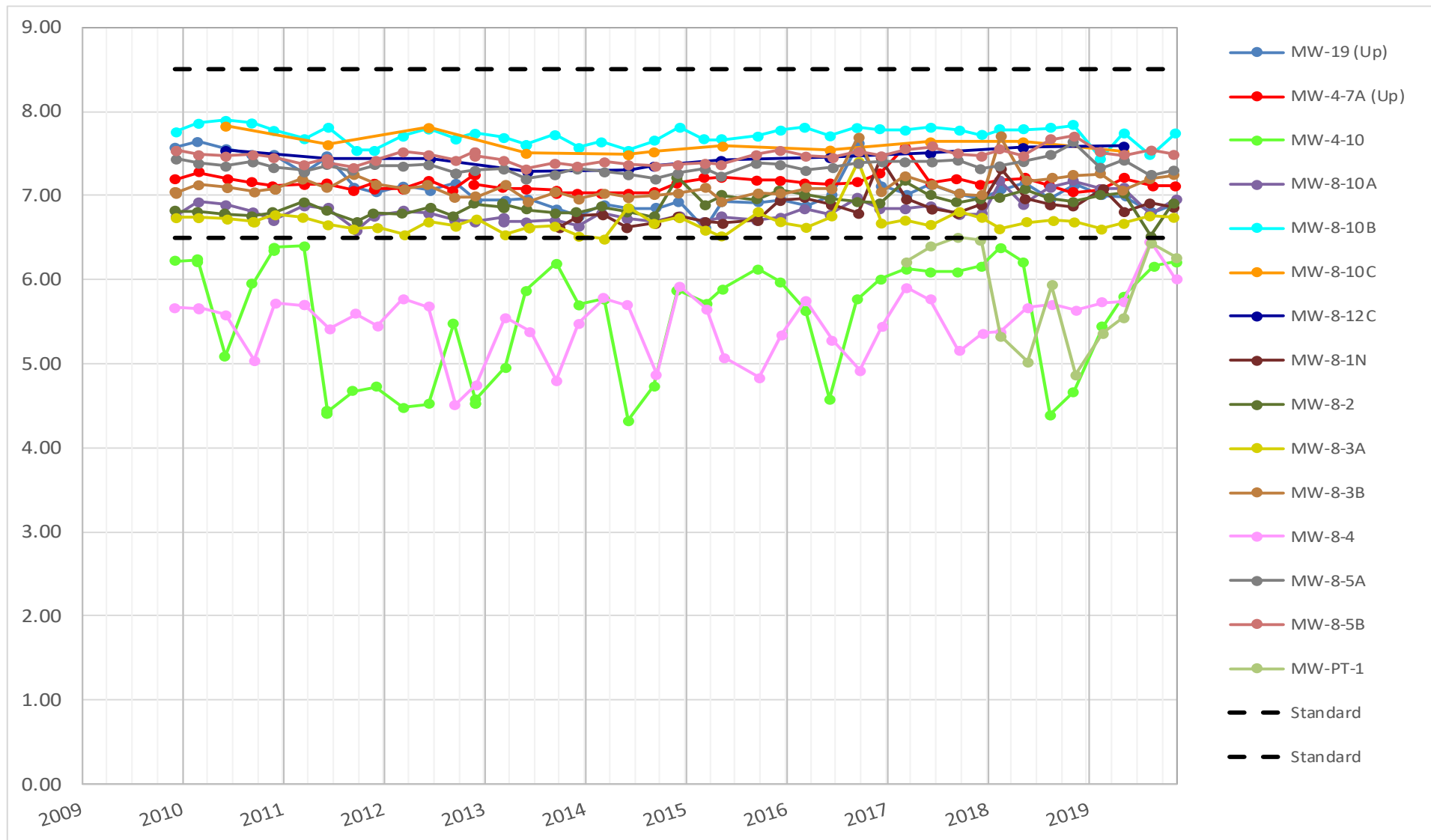
Nitrate, as N [mg/l]



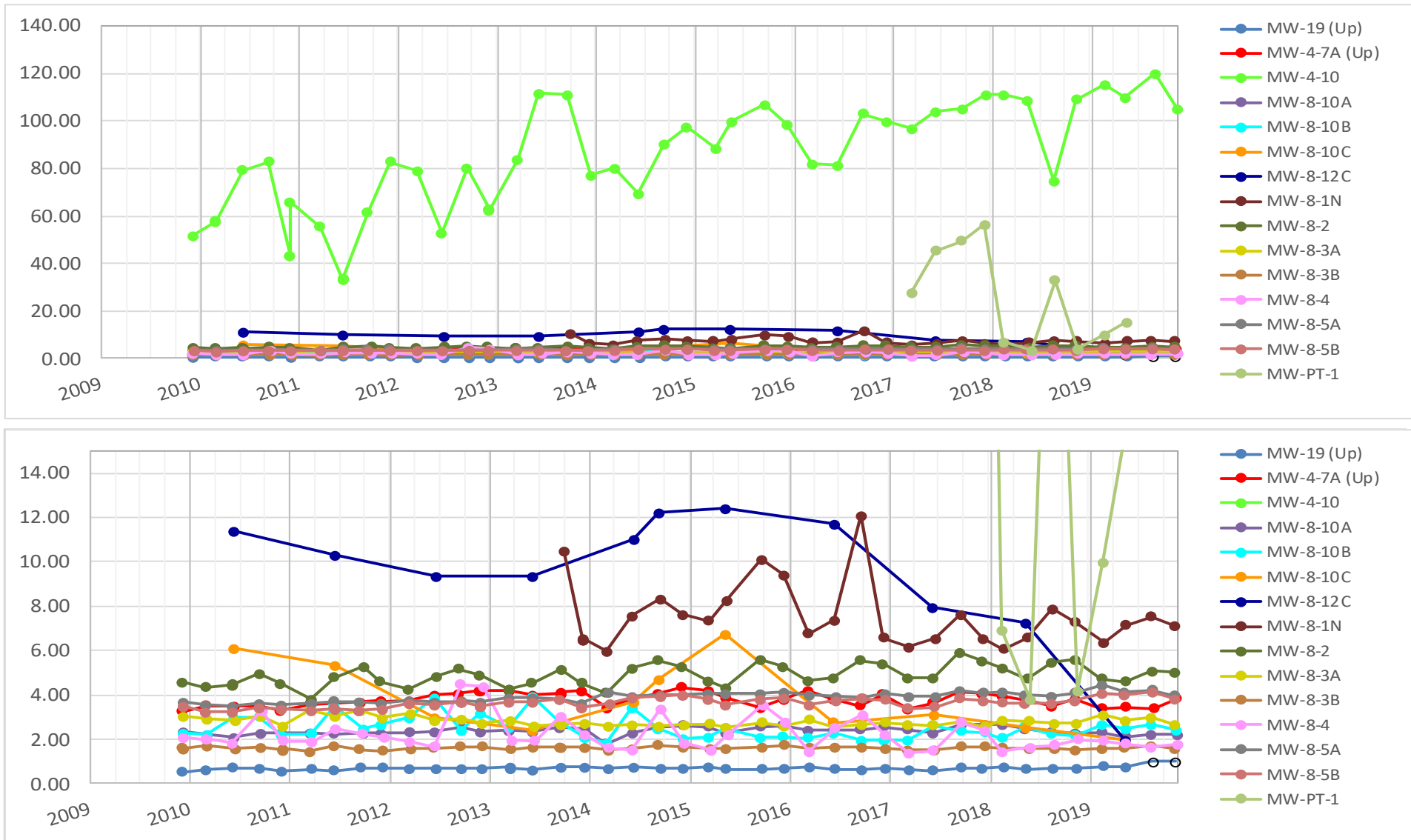
pH, field [s.u.]



pH, lab [s.u.]

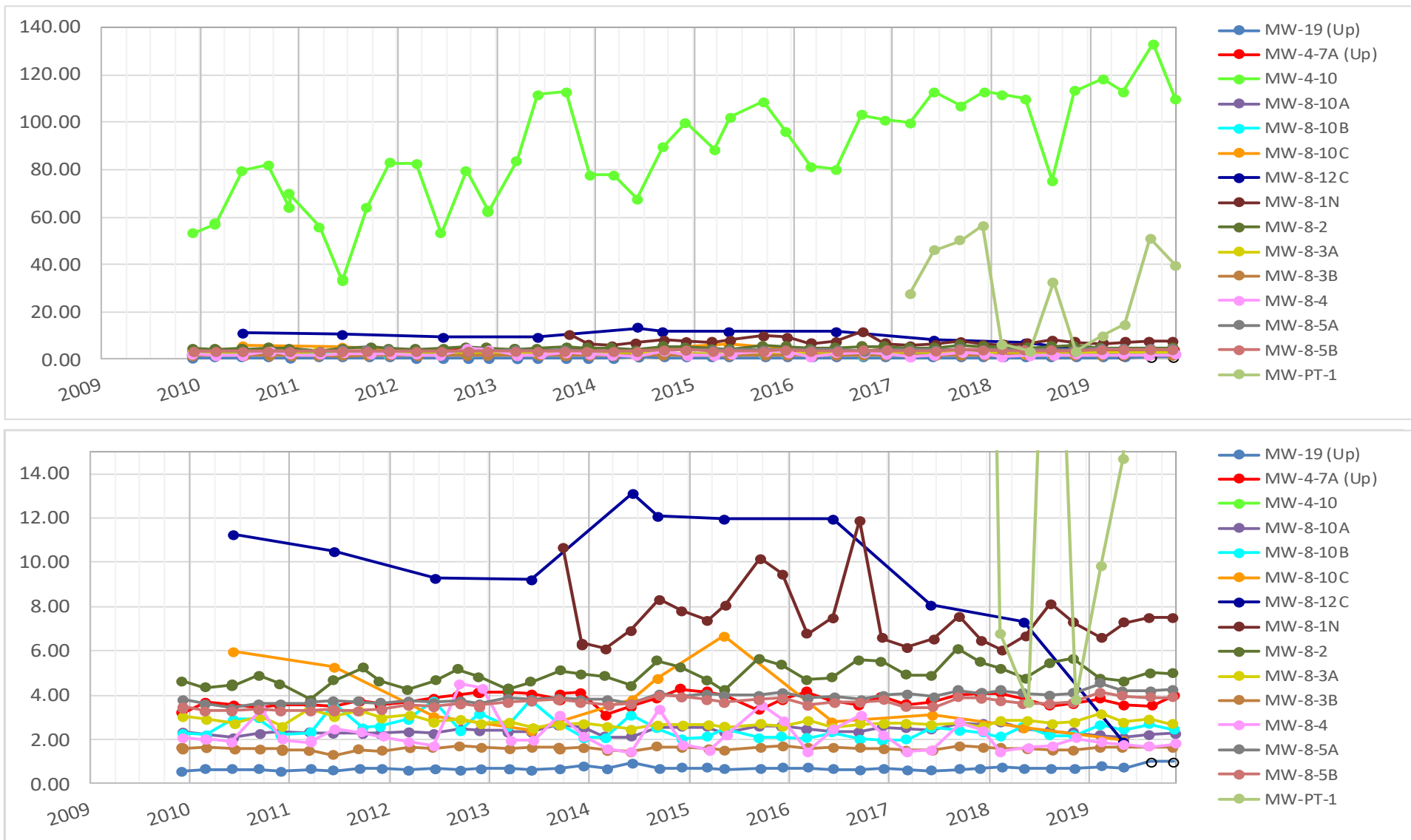


Potassium, dissolved [mg/l]



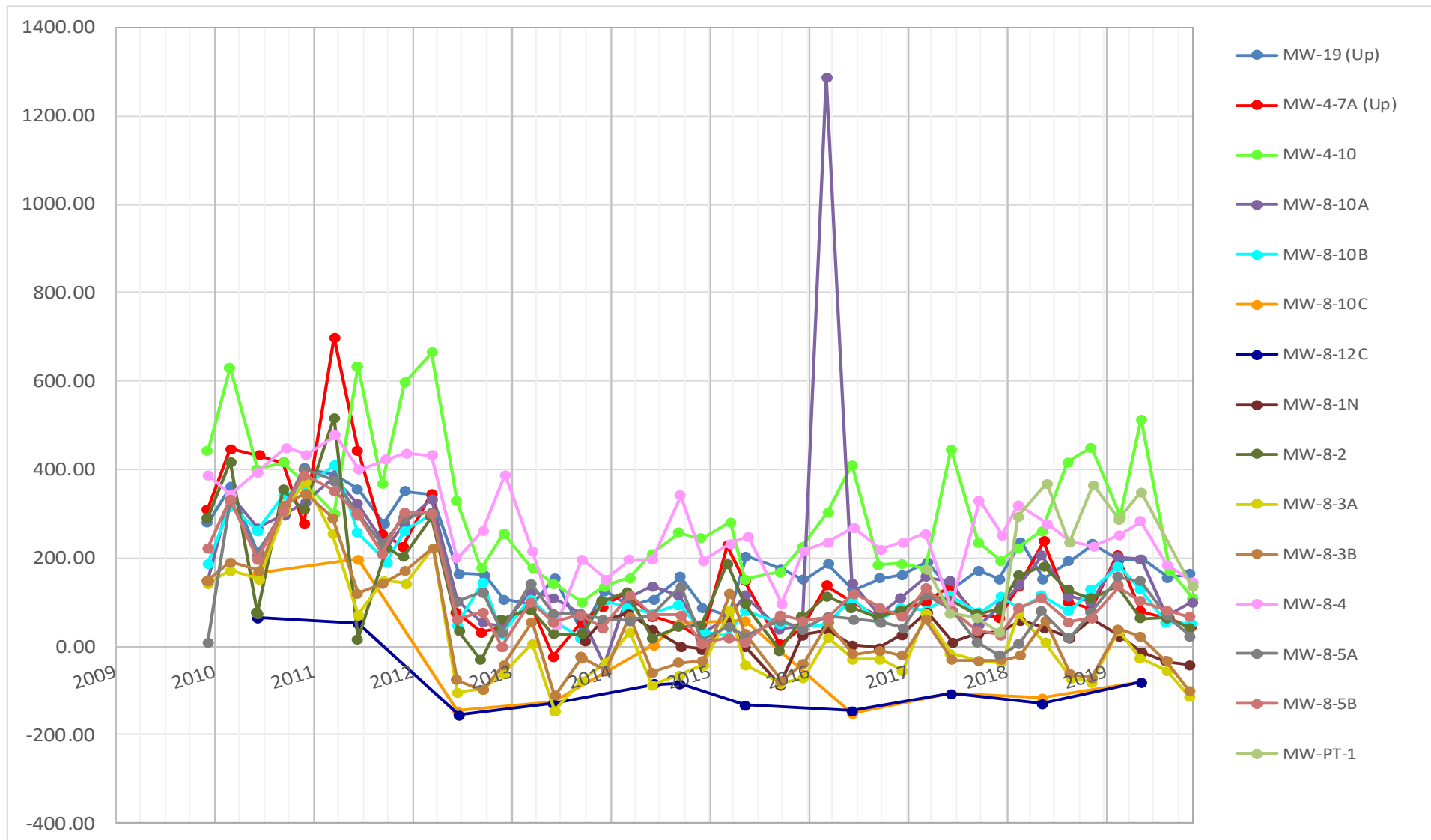
NOTE: There are no applicable standards for this parameter

Potassium, total [mg/l]



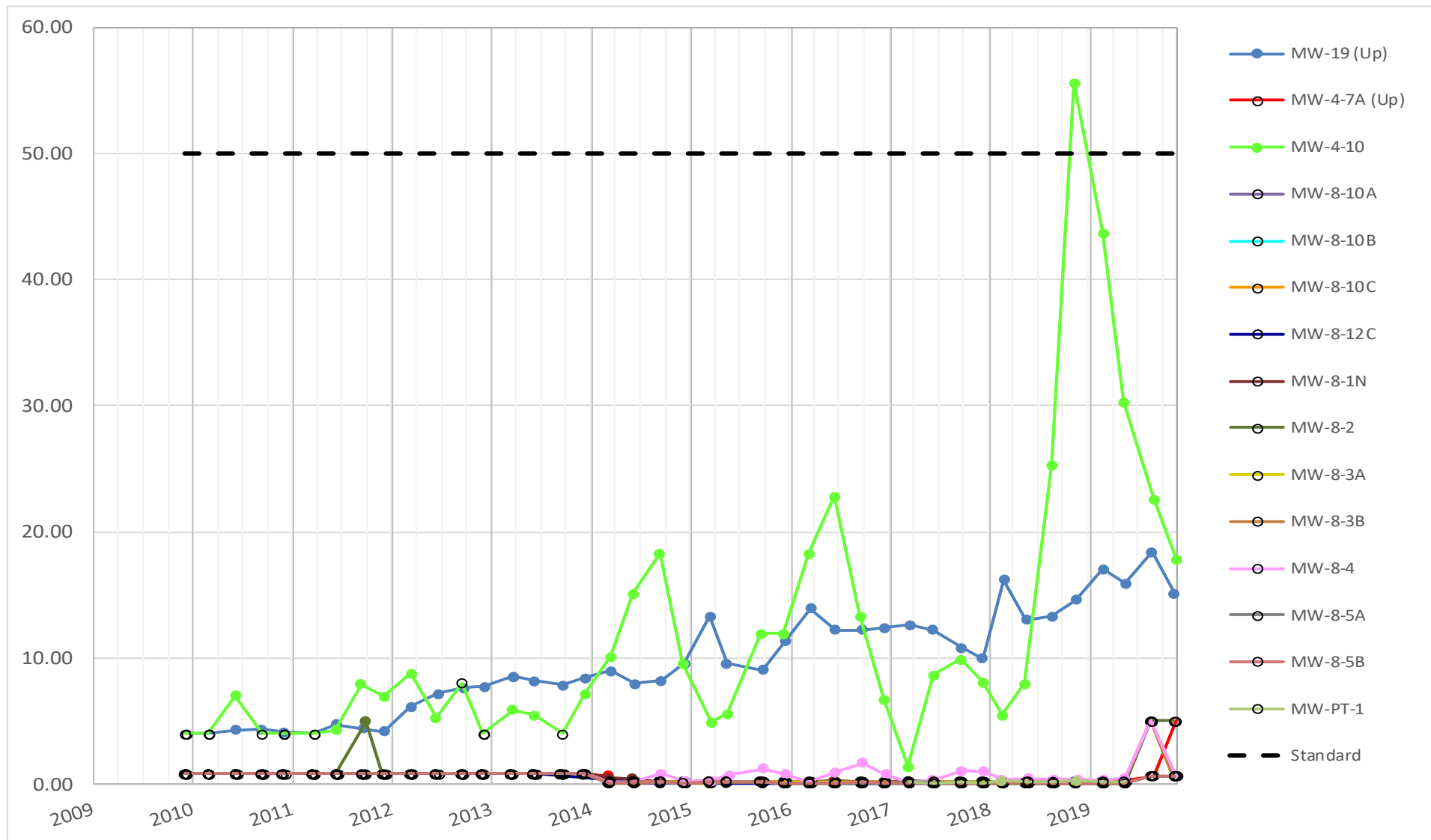
NOTE: There are no applicable standards for this parameter

Redox, field [mv]

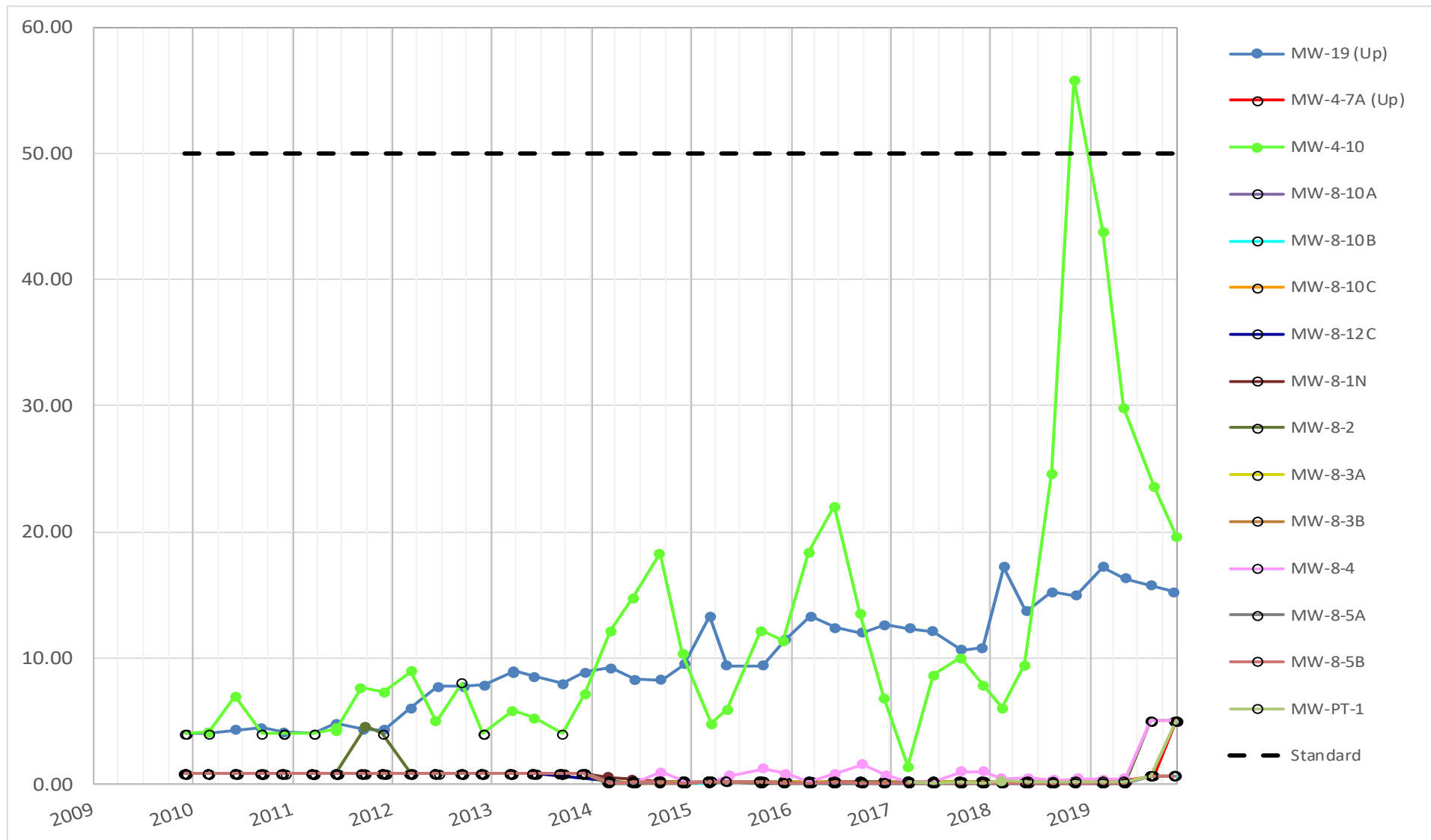


NOTE: There are no applicable standards for this parameter

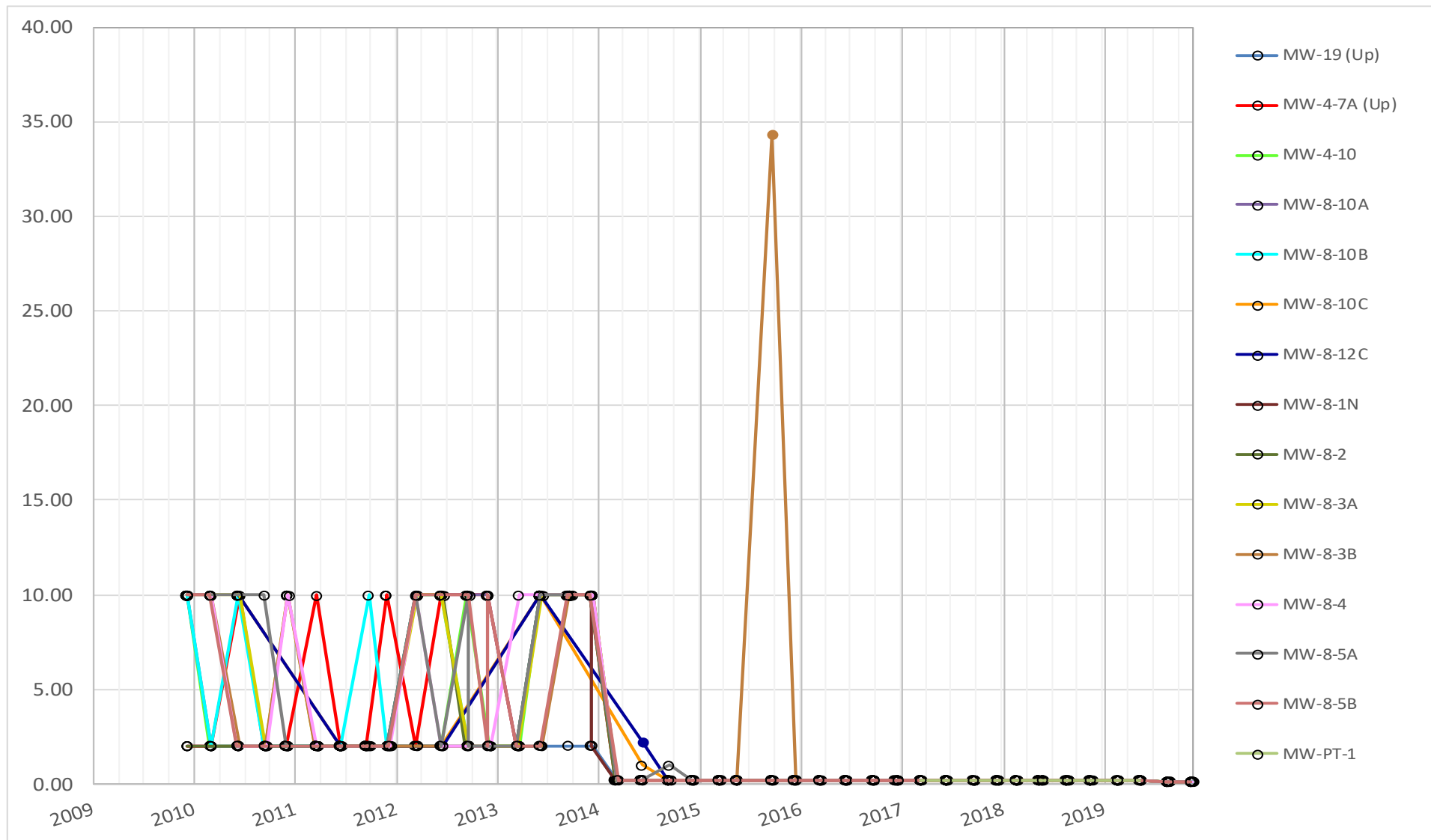
Selenium, dissolved [$\mu\text{g/l}$]



Selenium, total [$\mu\text{g/l}$]

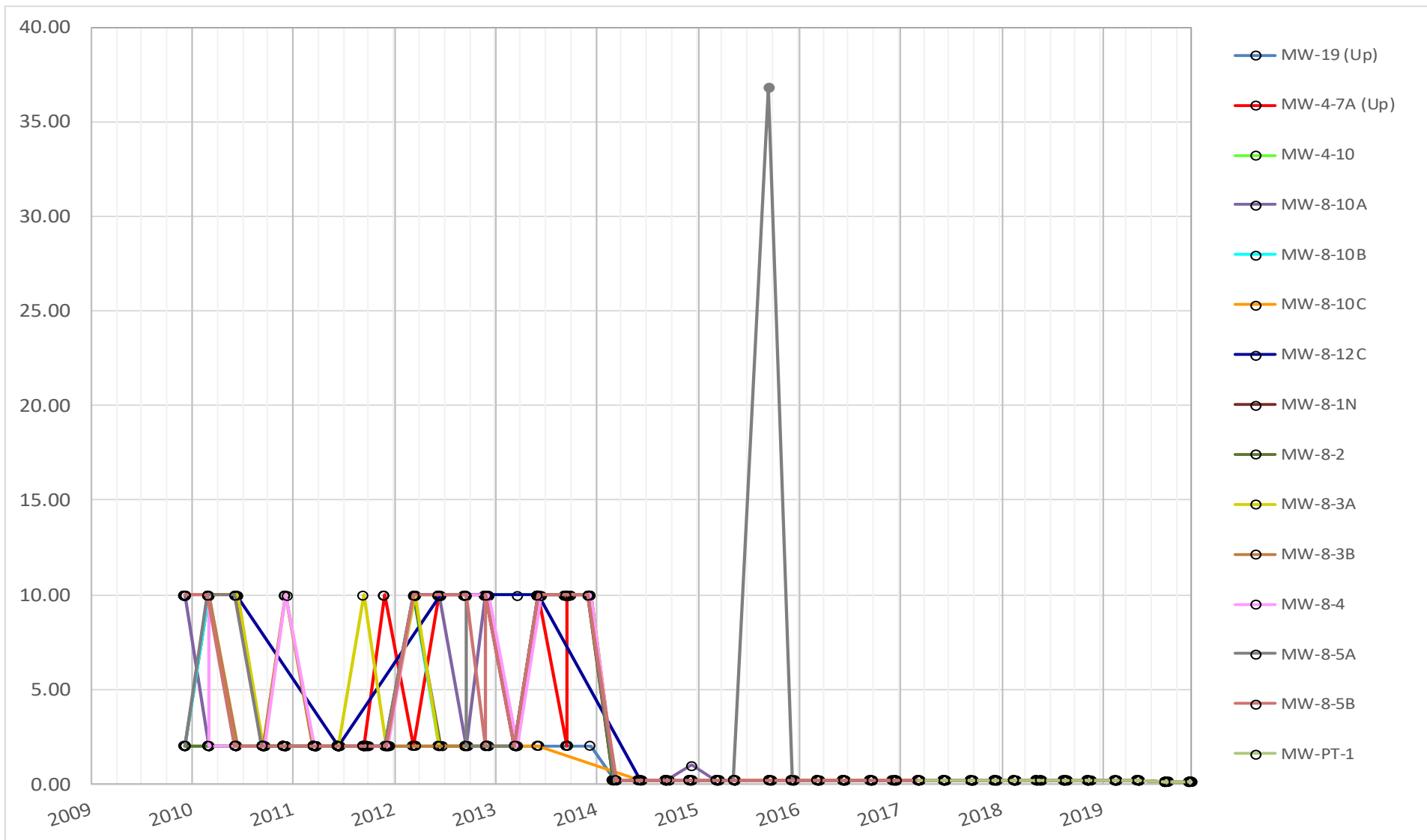


Silver, dissolved [$\mu\text{g/l}$]



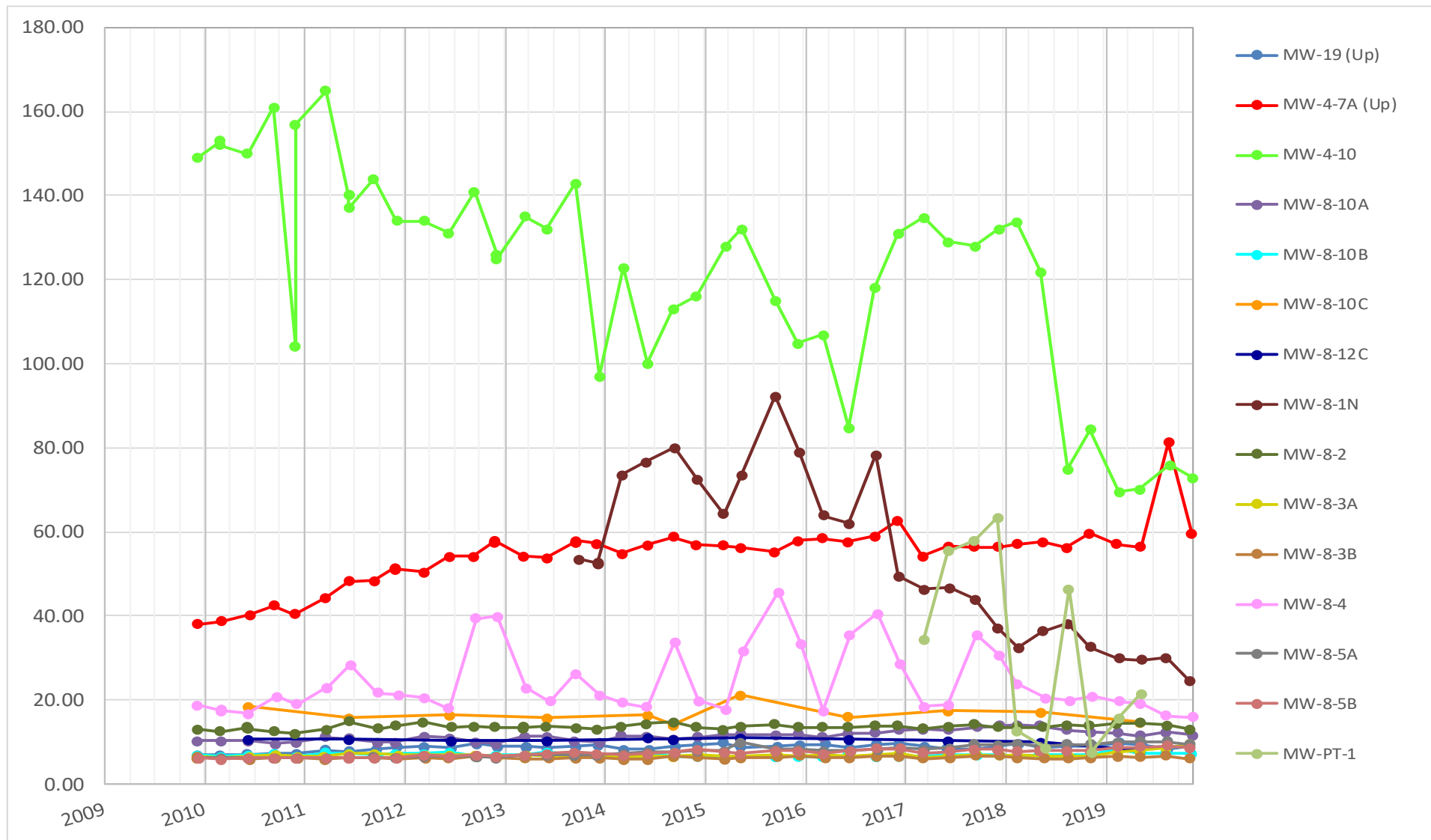
NOTE: Data does not exceed standard of 100 $\mu\text{g/l}$ during this time frame

Silver, total [$\mu\text{g/l}$]



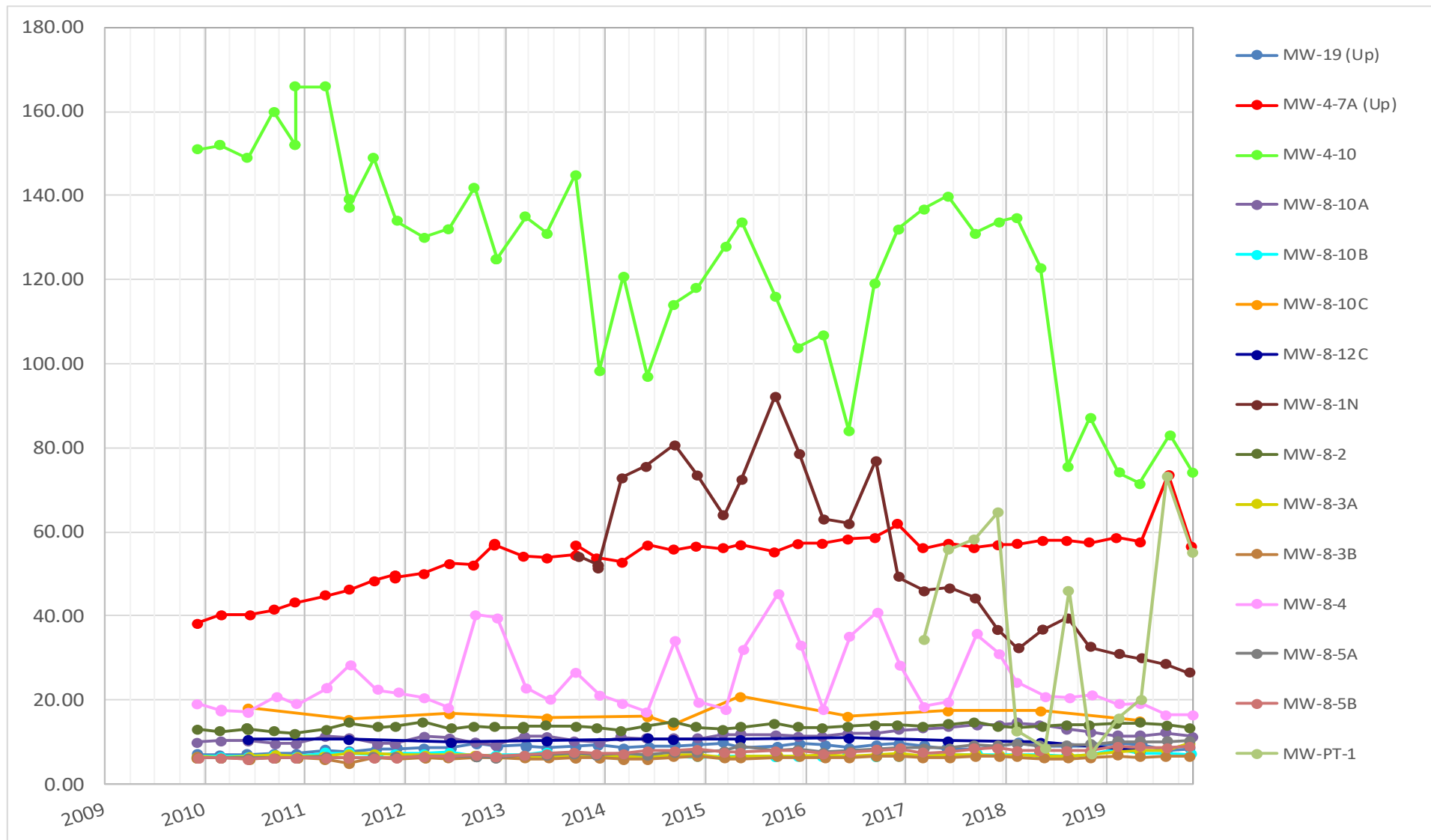
NOTE: Data does not exceed standard of 100 $\mu\text{g/l}$ during this time frame

Sodium, dissolved [mg/l]



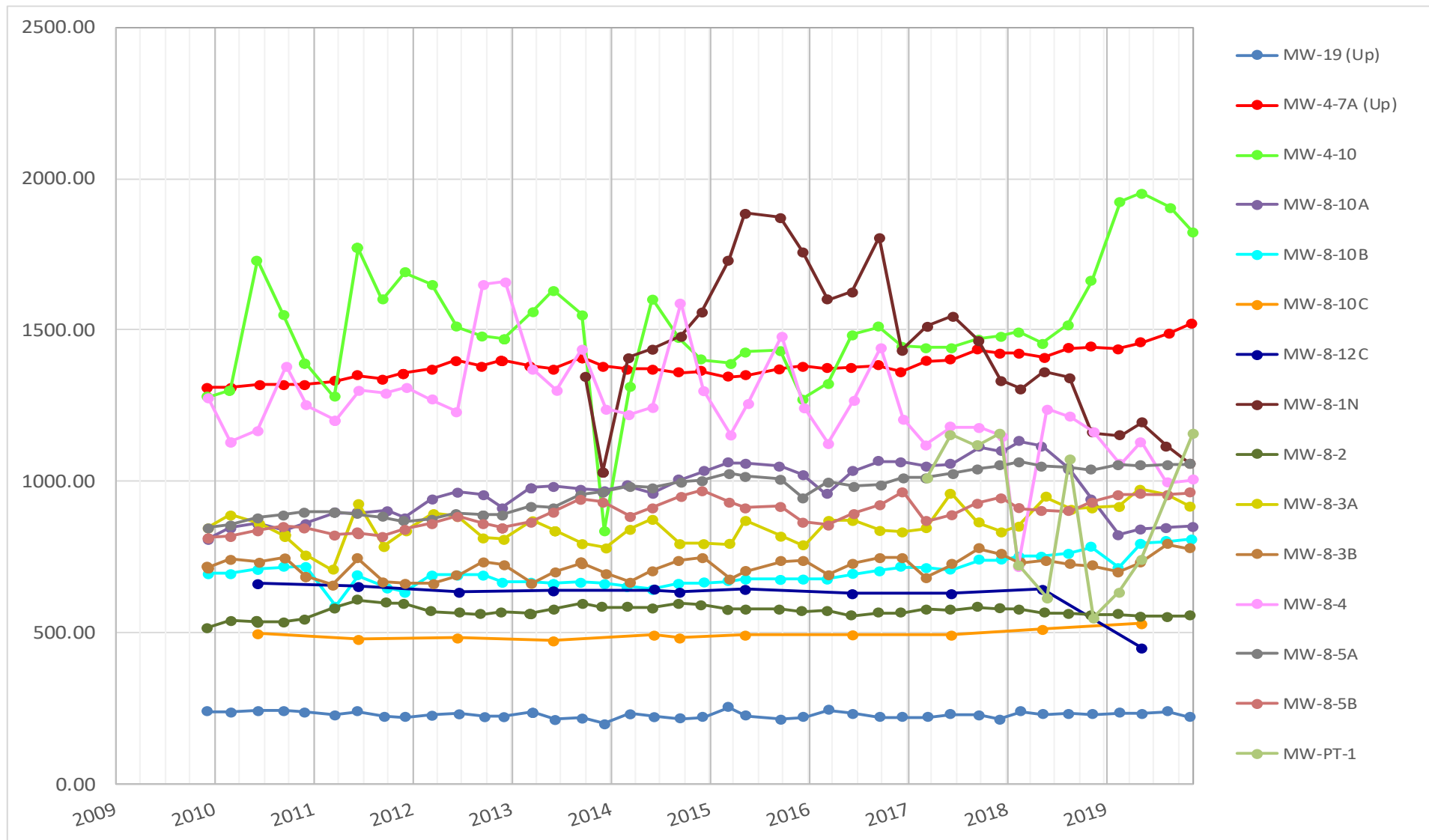
NOTE: There are no applicable standards for this parameter

Sodium, total [mg/l]



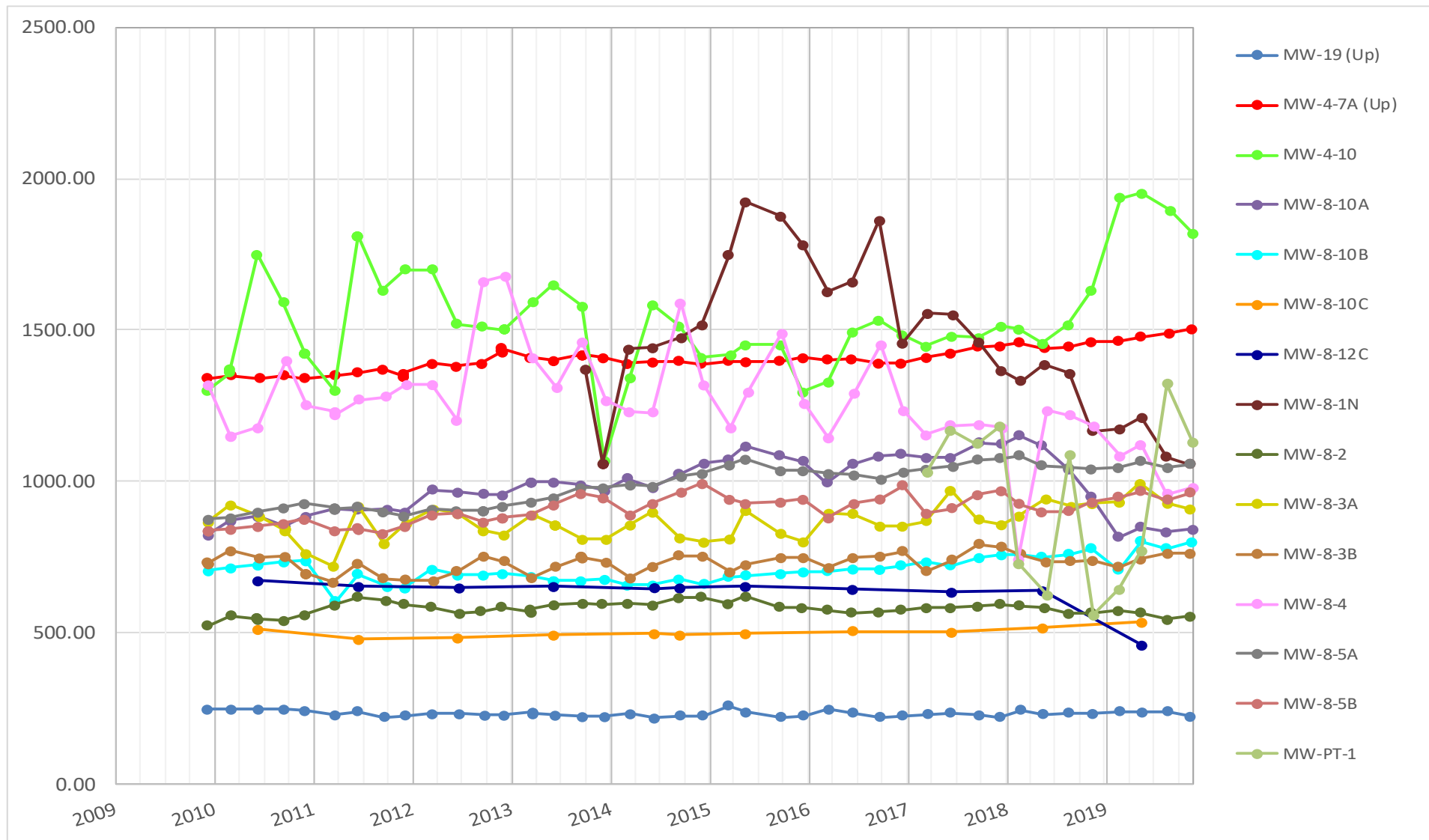
NOTE: There are no applicable standards for this parameter

Specific Conductance, field [umhos/cm]



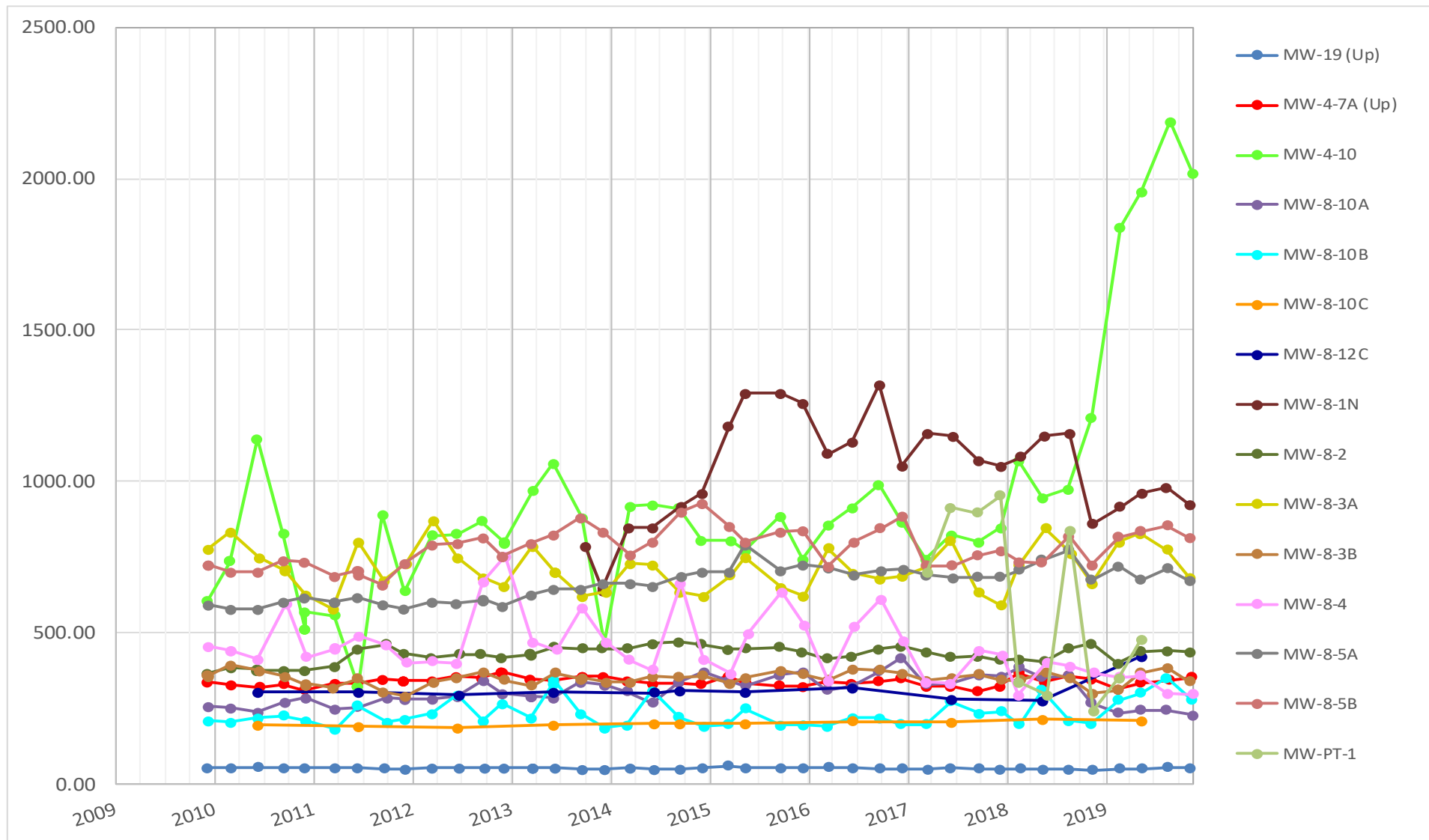
NOTE: There are no applicable standards for this parameter

Specific Conductance, lab [umhos/cm]



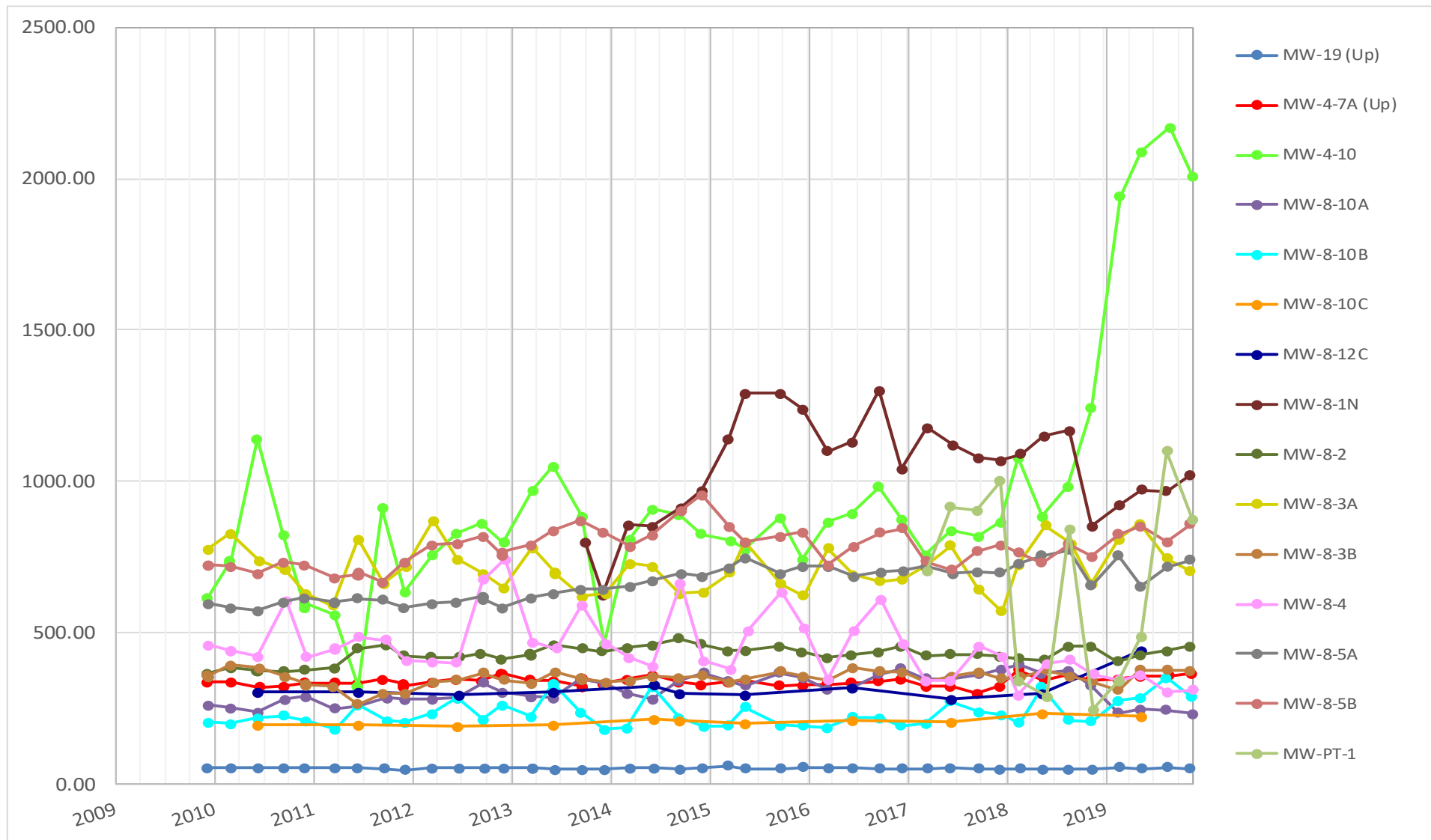
NOTE: There are no applicable standards for this parameter

Strontium, dissolved [$\mu\text{g/l}$]



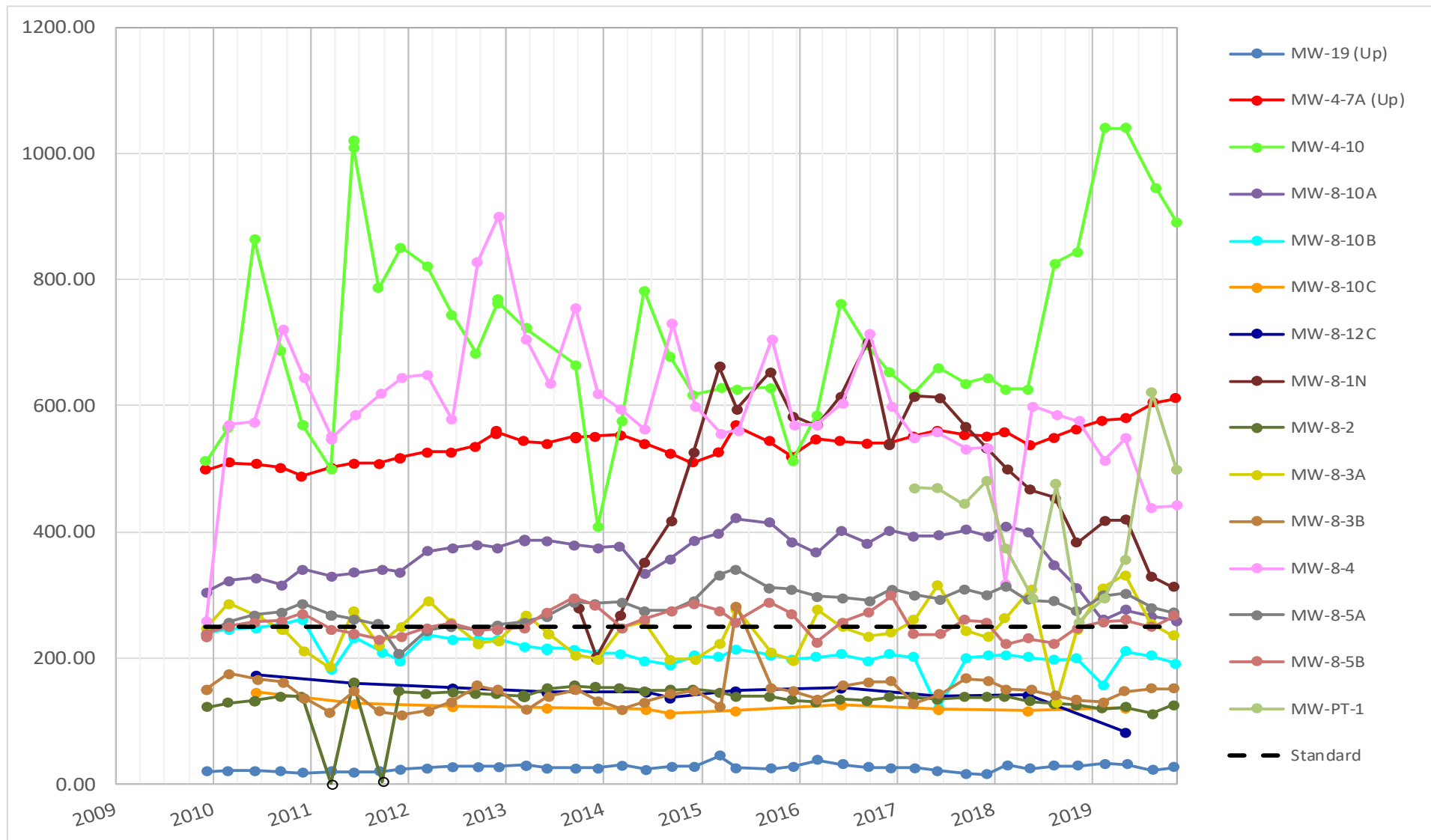
NOTE: Data does not exceed standard of 4000 $\mu\text{g/l}$ during this time frame

Strontium, total [$\mu\text{g/l}$]

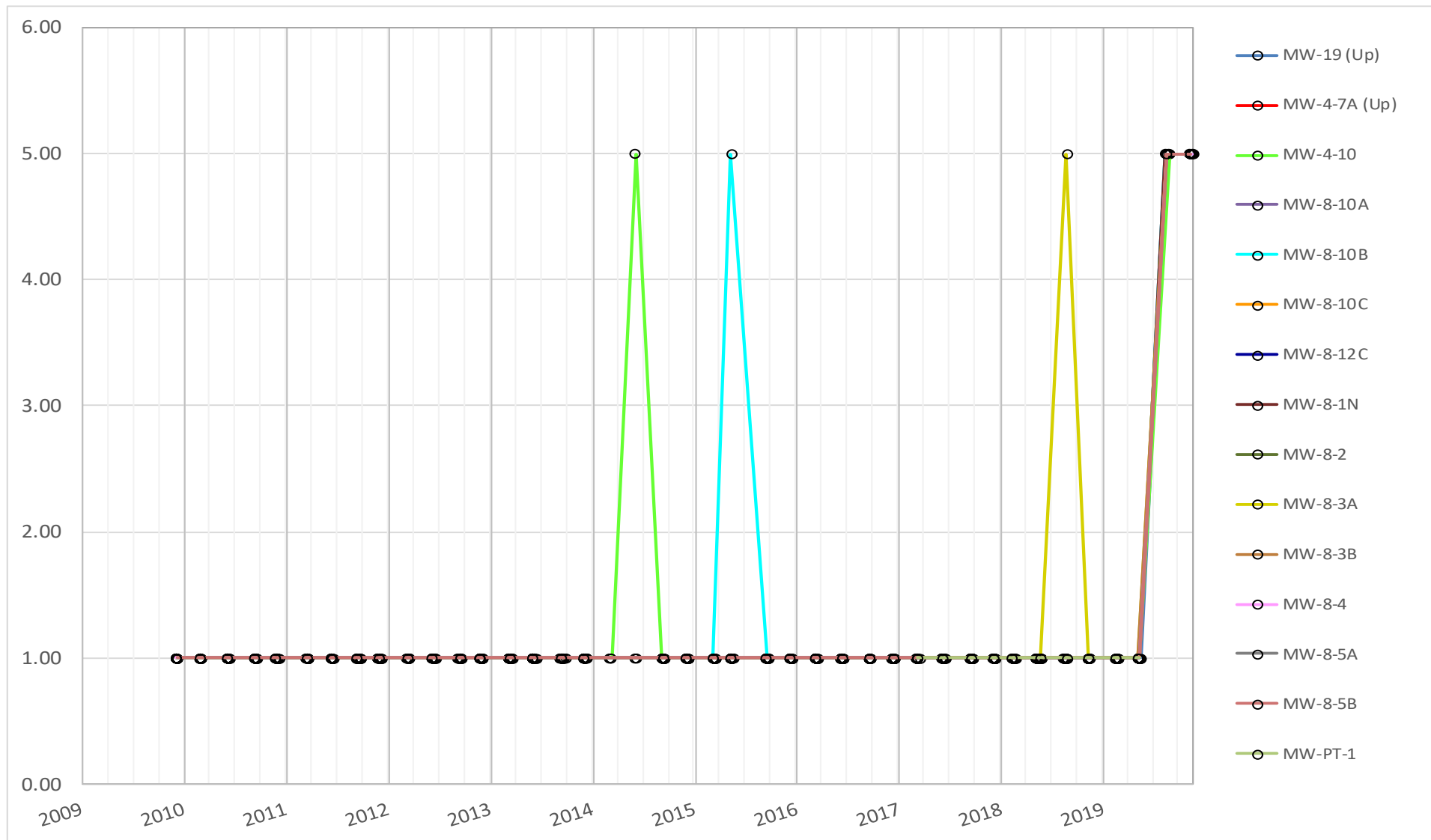


NOTE: Data does not exceed standard of 4000 $\mu\text{g/l}$ during this time frame

Sulfate, as SO₄ [mg/l]

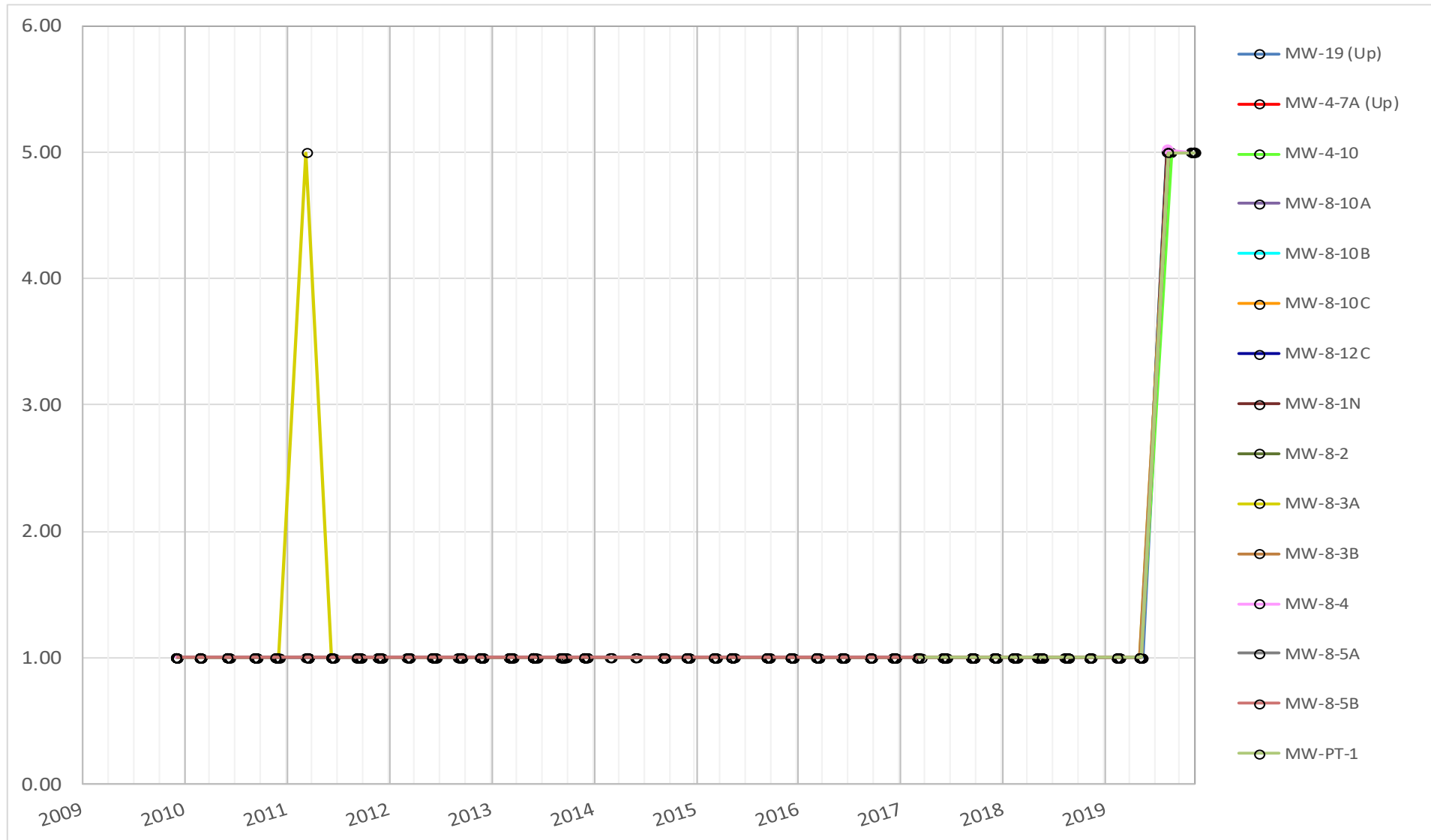


Titanium, dissolved [$\mu\text{g/l}$]



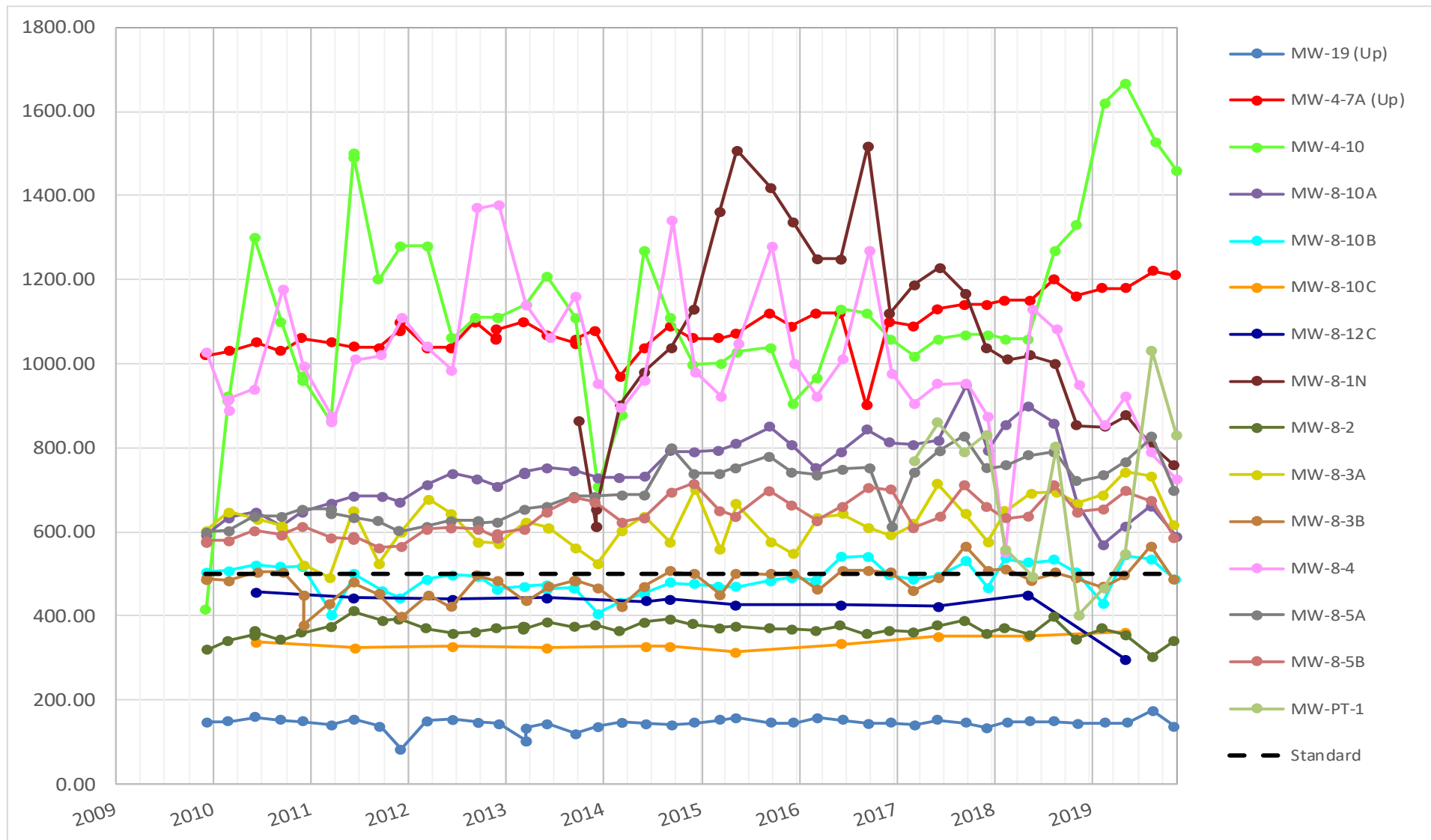
NOTE: There are no applicable standards for this parameter

Titanium, total [µg/l]

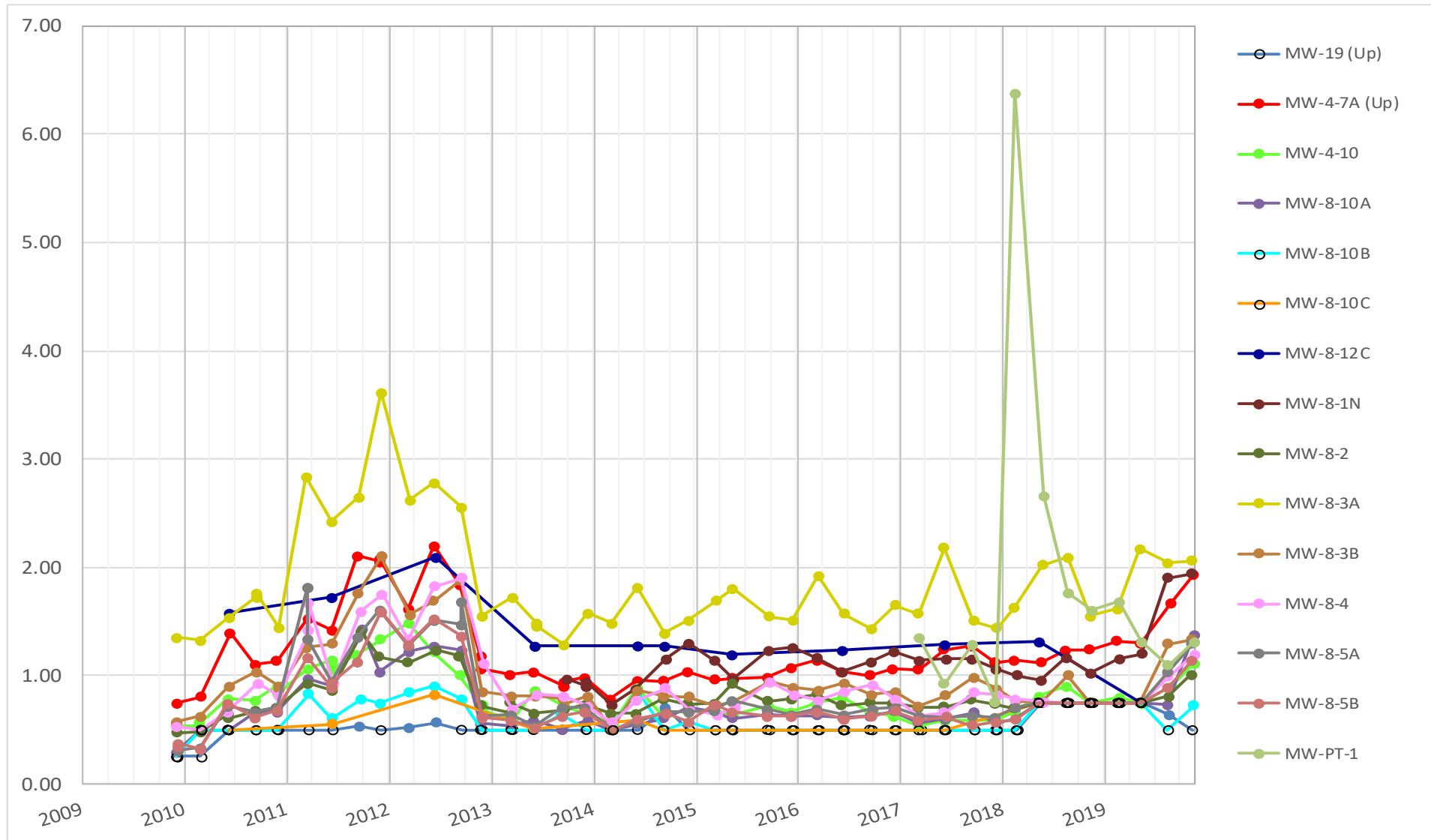


NOTE: There are no applicable standards for this parameter

Total Dissolved Solids [mg/l]

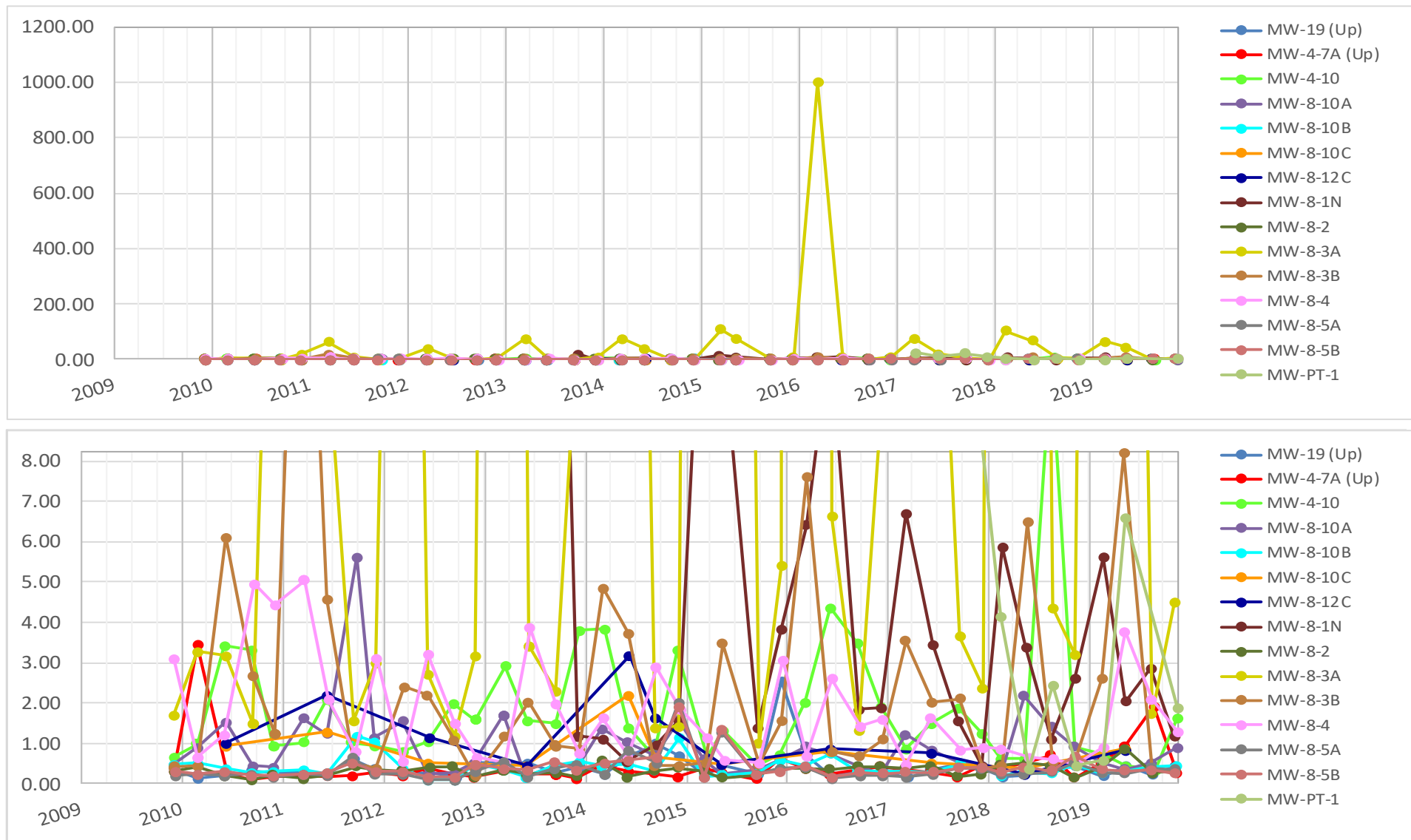


Total Organic Carbon [mg/l]



NOTE: There are no applicable standards for this parameter

Turbidity, field [ntu]

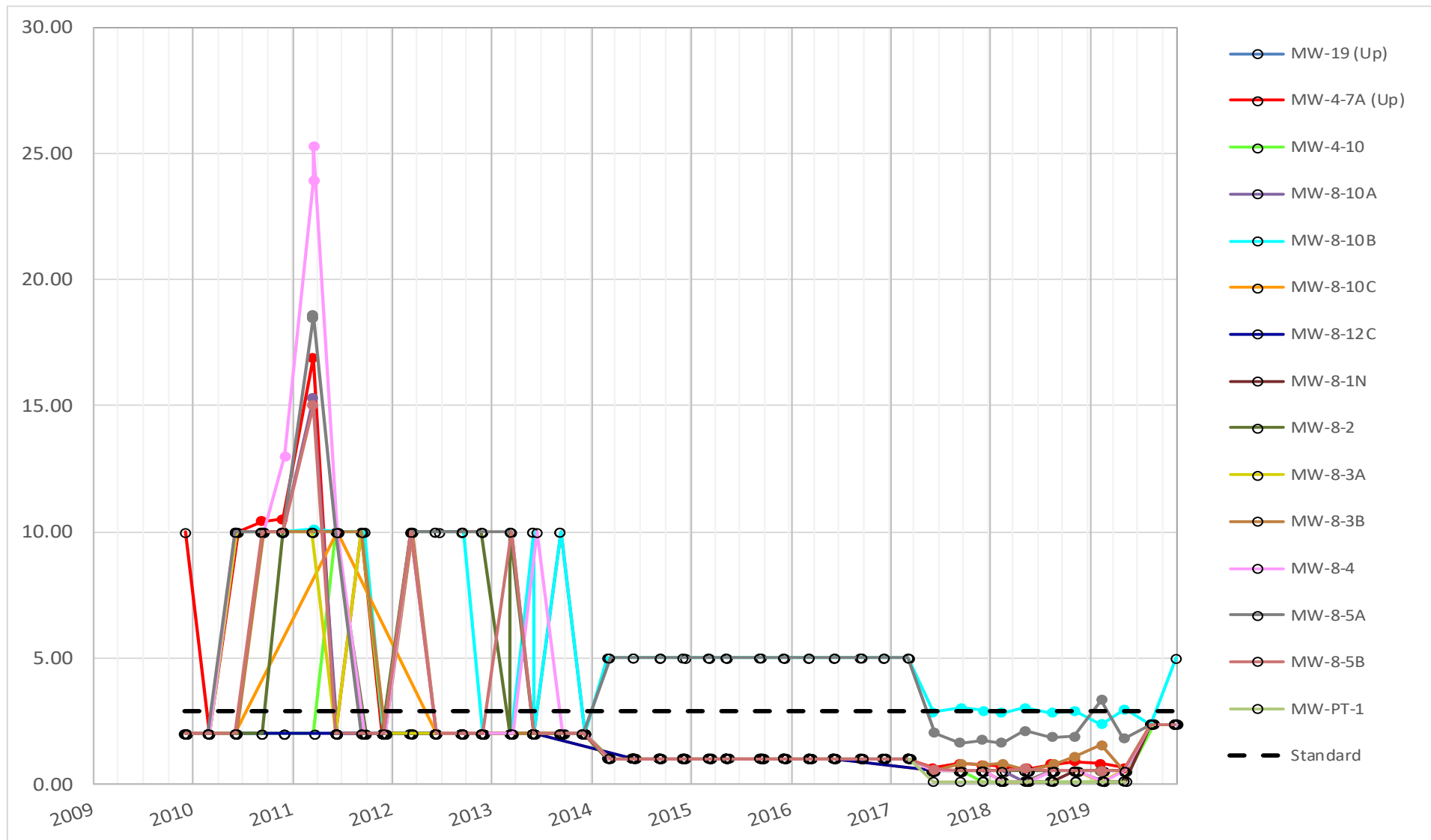


NOTE: There are no applicable standards for this parameter

Brunner Island - Basin 5

4th Quarter 2019

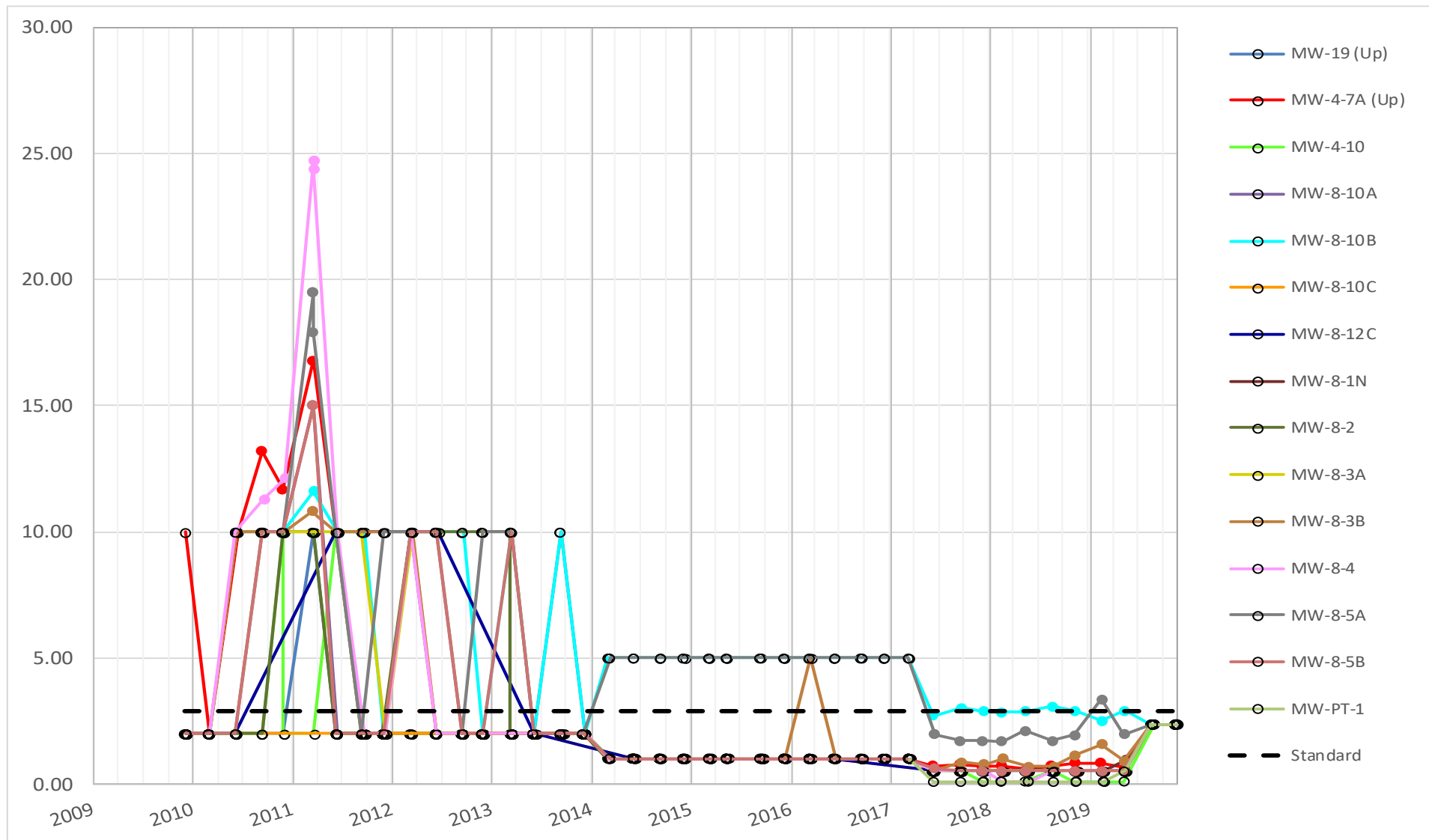
Vanadium, dissolved [μg/l]



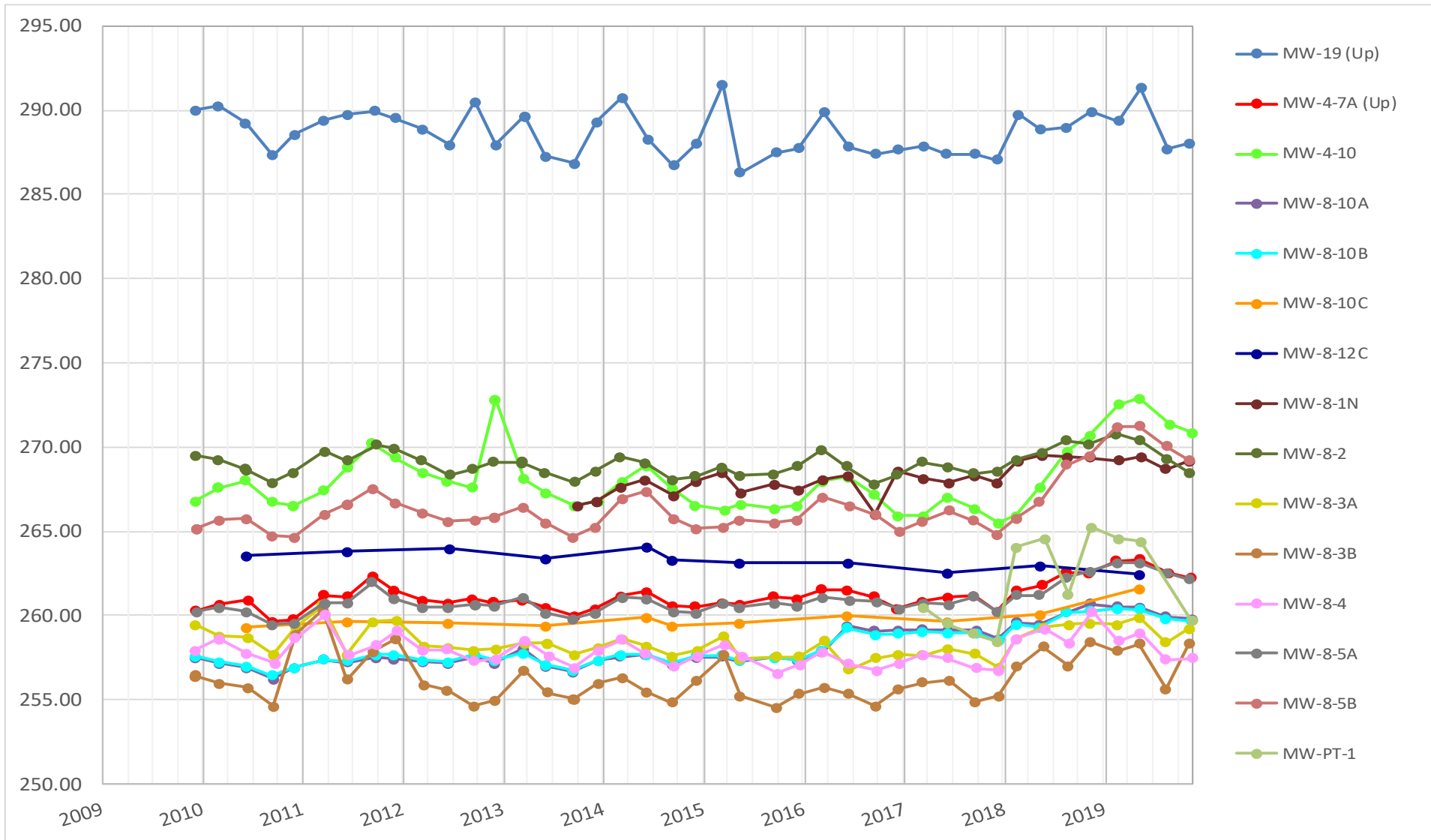
Brunner Island - Basin 5

4th Quarter 2019

Vanadium, total [μg/l]

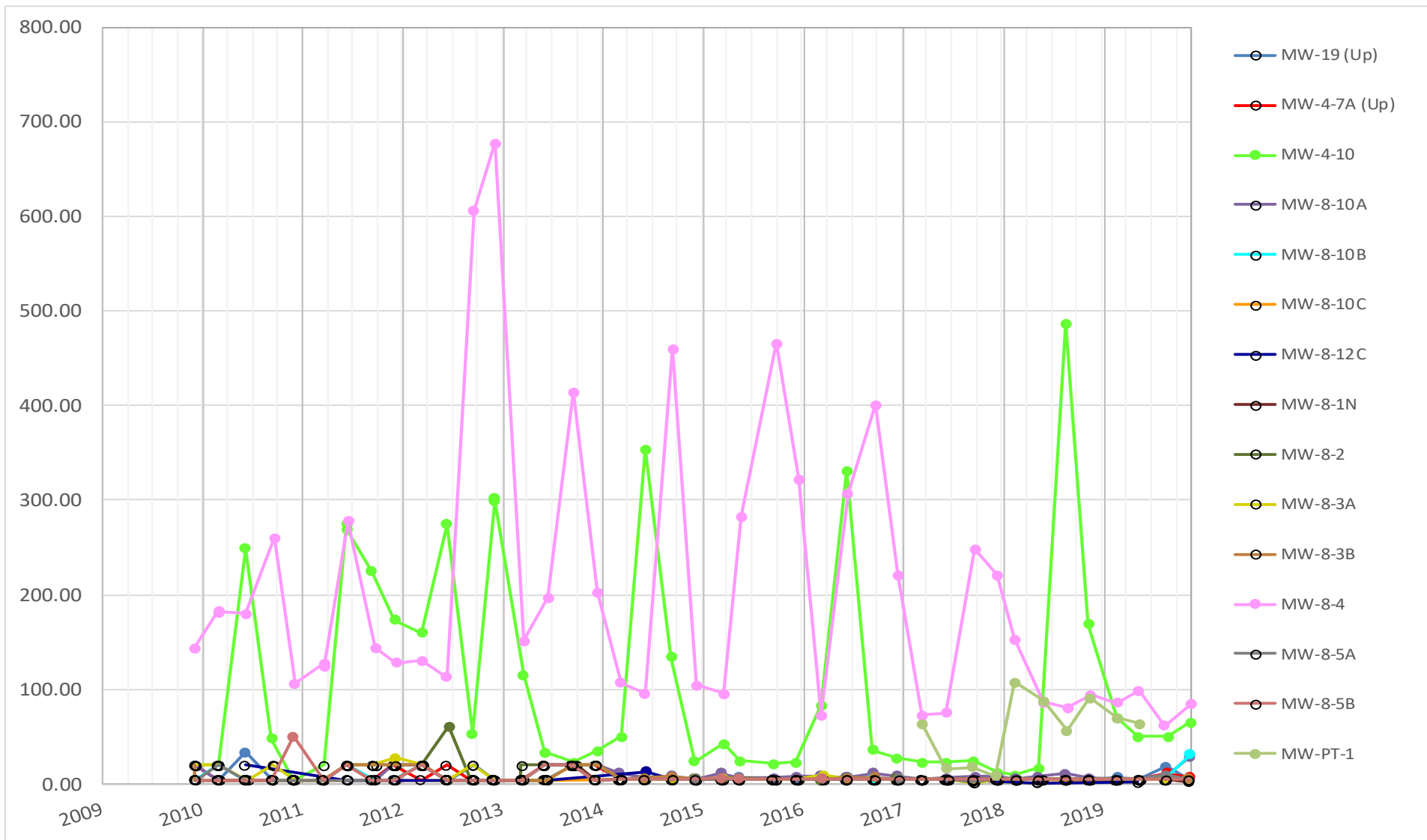


Water Surface Elevation [ft]



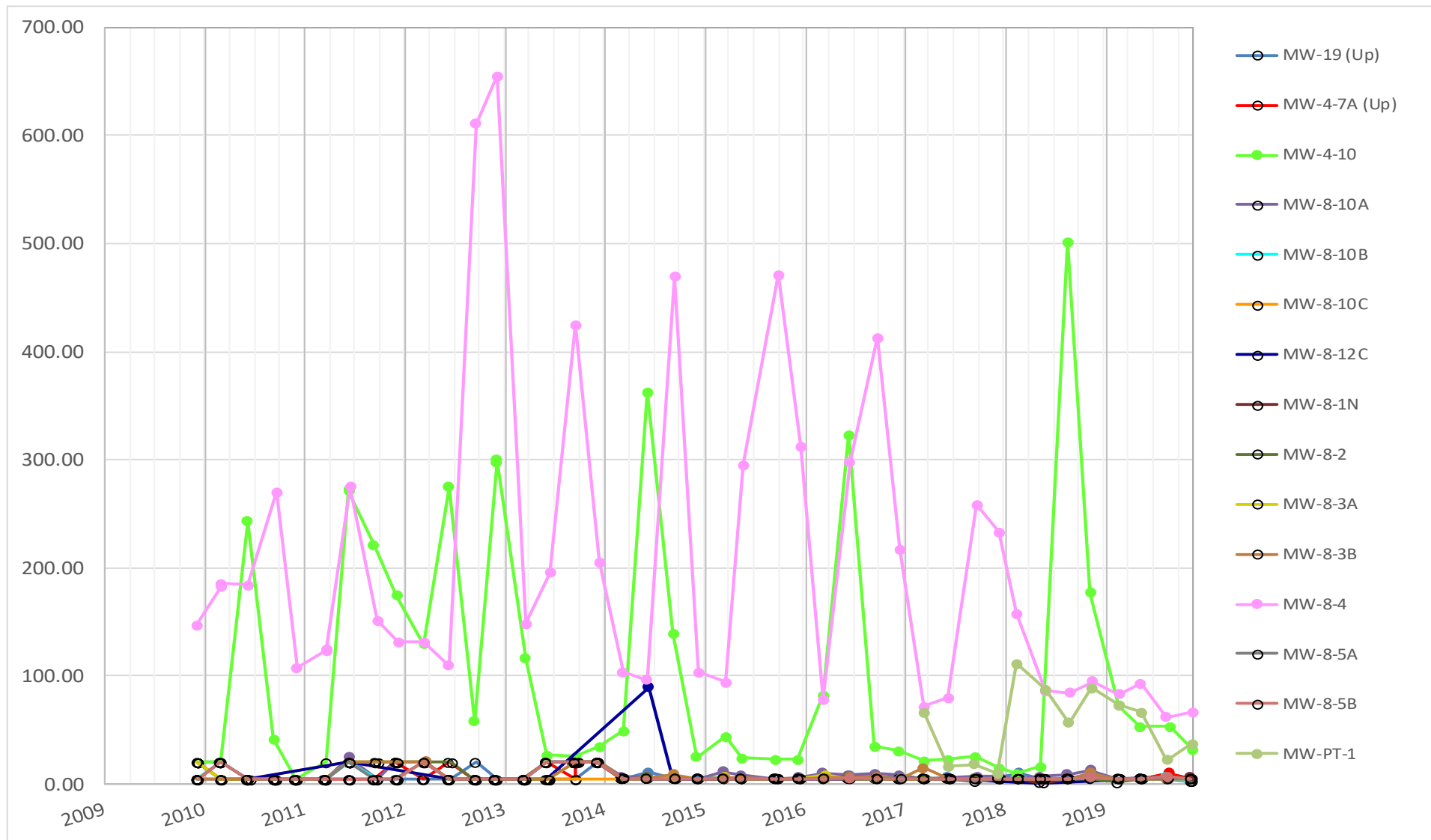
NOTE: There are no applicable standards for this parameter

Zinc, dissolved [$\mu\text{g/l}$]



NOTE: Data does not exceed standard of 2000 $\mu\text{g/l}$ during this time frame

Zinc, total [$\mu\text{g}/\text{l}$]



NOTE: Data does not exceed standard of 2000 $\mu\text{g}/\text{l}$ during this time frame