Appendix 26

Meadowbank and Whale Tail 2025 CREMP Report

2025 Core Receiving Environment Monitoring Program

Meadowbank Complex

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EXECUTIVE SUMMARY

This report presents findings from the 2025 Core Receiving Environment Monitoring Program (CREMP). The purpose of the CREMP is to determine if activities at Meadowbank, Whale Tail, and Baker Lake are causing changes in water quality, sediment chemistry, phytoplankton, and benthic invertebrates. Changes within the study area lakes are identified using early warning triggers and statistical analyses. The assessment uses early warning *triggers* and action *thresholds* to support management decisions within the Aquatic Effects Management Program (AEMP). The AEMP is the overarching 'umbrella' program that integrates results of individual, but related, monitoring programs to implement management actions before unacceptable adverse impacts occur to aquatic life.

Meadowbank

Results for the Meadowbank study area lakes are presented below and summarized in **Table ES-1**.

Water Quality (Limnology & Water Chemistry)

Water quality monitoring for limnology and chemistry was completed in March, May, July, August, and September 2025 according to the CREMP study design. Limnology profiles were taken at the Near-Field (NF) areas—Third Portage Lake (TPN, TPE), Second Portage Lake (SP), and Wally Lake (WAL)—in the winter months when ice conditions were safe (January, February, April, November, and December).

Spatial-temporal trends in water quality indicate that the NF areas close to the mine have higher concentrations of dissolved solids and constituent major ions such as calcium and magnesium compared to baseline/reference conditions. This observation is consistent with previous findings. While these changes to water quality are mine-related, the observed concentrations are still relatively low and there is no evidence to suggest concentrations are increasing year-over-year or that the observed concentrations would result in adverse ecological effects.

In 2025, mean fluoride concentrations exceeded the trigger at TPE and SP for the first time; however, the increase was not statistically significant relative to baseline/reference conditions. No trigger exceedances were identified in 2025 for any other water quality parameters with Canadian Council of Ministers of the Environment (CCME) water quality guidelines (WQG), including metals.

In the context of the assessment framework outlined in the Final Environmental Impact Statement (FEIS), the magnitude of potential effects on water quality in each of the near-field lakes in 2025 was considered *low* (i.e., less than the CCME WQGs) and consistent with the original predictions.

Routine water quality monitoring is recommended for 2026.

Phytoplankton Community

Water samples for phytoplankton taxonomy were collected during each sampling event. Based on the 2025 before/after control/impact (BACI) analysis, phytoplankton total biomass showed apparent reductions at SP and WAL and slight increases at TPN and TPE relative to baseline/reference conditions. The reduction at WAL was the only result that exceeded the 20% trigger; however, this change was not statistically significant. Overall, phytoplankton biomass at the NF areas in 2025 remained consistent with historical results, indicating that the decreases are likely due to environmental variability.

Phytoplankton taxa richness at the NF areas in 2025 was generally similar to previous years and to reference areas. Small reductions in taxa richness were observed at all NF areas (all below 20%), with a statistically significant decrease at WAL.

Ultimately, the long-term phytoplankton monitoring data demonstrate that mining operations have not contributed to pervasive changes in primary productivity among the NF areas. **The trends in phytoplankton biomass and richness will be reviewed again in 2026. Phytoplankton community monitoring is scheduled for 2026 according to the CREMP Plan.**

Sediment Chemistry

The 2025 sediment program focused on NF and reference areas only and consisted of routine grab sampling to support the benthic invertebrate community monitoring component of the CREMP. Sediment was analyzed for grain size, total organic carbon (TOC), and organics analysis on the top 3–5 cm of sediment. Grain size results were similar to previous years, with generally finer-grained sediment often dominated by the silt fraction. Results were comparable at all sampling areas, with the exception of TPN, which has historically exhibited higher concentrations of sand relative to the other areas. Concentrations of TOC varied across the Meadowbank areas, with WAL consistently exhibiting the highest values and TPN consistently exhibiting the lowest values. There were no obvious temporal trends at any area.

The next sediment coring program to review trends in chemistry will be conducted in August 2026. Grab samples will also be collected in 2026 to support the benthic invertebrate community sampling program.

Benthos Community

The 2025 results varied among Meadowbank area lakes. Total abundance increased in some lakes (e.g., WAL) and decreased in others (e.g., TPE). Taxa richness generally increased across lakes, with the exception of WAL. Although several of these changes exceeded the 20% trigger, the 2025 BACI analysis identified no statistically significant changes in the benthic invertebrate community at Meadowbank

lakes relative to baseline and reference conditions. **The trends in benthic invertebrate abundance and richness will be reviewed again in 2026.**

Whale Tail

The 2025 CREMP results for the Whale Tail study area are presented below and summarized in **Table ES-2**.

Overview of the Whale Tail CREMP

Data analysis for Whale Tail study areas followed the same methods and framework as Meadowbank. 2025 was the seventh full year where most Whale Tail study area lakes were classified as *impact*. Whale Tail South (WTS) and Kangislulik Lake[1] (KAN) switched from *control* to *impact* in 2018 coinciding with construction of the Whale Tail Dike. The status of Lake A20, Lake A76, and Lake DS1 switched to *impact* in January 2019. Nemo Lake (NEM) transitioned to *impact* after July 2019.

Water Quality (Limnology & Water Chemistry)

Surface water monitoring for limnology and water chemistry was completed in March, May, July, August, and September[2] according to the CREMP study design for the Whale Tail study area. Supplemental limnology profiles were taken at Whale Tail South (WTS), Kangislulik Lake (KAN), Nemo Lake (NEM), and Lake A20 in select winter months to verify that water quality is broadly within the range of expected values, particularly for conductivity and dissolved oxygen.

Changes in water quality in lakes downstream from the mine were predicted to occur during construction and operations. Water quality in the Whale Tail study area lakes remained relatively stable during the baseline period, with minimal variability in key parameters (e.g., nutrients and major ions). This low level of background variability (*noise*) provides a strong reference condition that facilitates the detection of development-related changes.

The key water quality findings for the Whale Tail study area lakes are as follows:

- Several parameters with annual mean concentrations exceeding trigger values showed statistically significant increases at NF and/or MF Whale Tail study area lakes relative to baseline/reference conditions, including major ions, hardness, conductivity, nutrients, and lithium (lithium only at WTS and KAN). At the FF area DS1, conductivity, hardness, select major ions, and silicon also increased significantly relative to baseline/reference conditions.

[1] Previously referred to as Mammoth Lake (MAM).

[2] Due to accessibility challenges, samples were not collected at Lake A76 and DS1 in September.

- None of the parameters with annual mean concentrations exceeding trigger values at the Whale Tail area lakes in 2025 have corresponding effects-based thresholds (e.g., aquatic life guidelines).

Of the parameters with trigger exceedances, FEIS predictions were exceeded for total alkalinity, total dissolved solids (TDS), total lithium, and several ionic compounds at WTS and KAN in all five sampling events. Importantly, the absolute concentrations of these parameters remain *low*. Total phosphorus and arsenic at WTS and KAN were within the normal operating ranges and Level 0 water management strategy is in effect in 2026 as per the *Adaptive Management Plan*. **Routine water quality monitoring will continue in 2026 to track emerging spatial and temporal trends.**

Phytoplankton Community

Phytoplankton community sampling was completed at the same time as the water chemistry sampling program in 2025. Phytoplankton communities vary naturally throughout the year in total biomass (and density) and community composition (taxa richness).

In 2025, while there were large apparent increases in total biomass at WTS, KAN, A20, and NEM relative to baseline/reference conditions, these results were not statistically significant. Nutrient concentrations and phytoplankton responses appear to be generally aligned across both temporal and spatial scales. However, phytoplankton communities are influenced by a number of factors, including light availability and water temperature, which makes it difficult to distinguish the effects of natural seasonal variability, regional climate changes, or from potential nutrient-related effects associated with mining activities. The increases in biomass observed at the NF areas in the first few years after mining were consistent with predictions made in the FEIS regarding increasing nutrient concentrations in these lakes (Golder, 2018) and appear to have stabilized in recent years.

Taxa richness has been fairly stable at the NF lakes over the past few years and generally within the historical range for each area. No statistically significant apparent changes in phytoplankton richness were identified in the BACI analyses.

Phytoplankton productivity, biomass and richness, as well as associated patterns in key nutrients will continue to be tracked in 2026. **Phytoplankton community monitoring is scheduled for 2026 according to the CREMP Plan.**

Sediment Chemistry

In the Whale Tail study area, sediment is naturally elevated in several metals and their concentrations can be quite variable due to spatial heterogeneity. Sediment grab sampling was conducted at the NF and reference areas to support the benthic invertebrate community monitoring component of the CREMP. Sediment was analyzed for grain size, TOC, and select organic compounds on the top 3–5 cm of

sediment. Total organic carbon proportions varied across the Whale Tail study area lakes, with KAN consistently exhibiting the highest proportions and DS1 the lowest. Importantly, these differences persist from the baseline period, reflecting natural differences in productivity among the lakes; no obvious temporal trends have been identified. Grain size results were similar to previous years, with generally finer-grained sediment often dominated by the silt fraction.

In 2026, sediment coring will be conducted to review trends in chemistry and grab samples will be collected to support the benthic invertebrate community sampling program.

Benthos Community

Benthic invertebrate (benthos) community structure (taxa richness) and function (abundance) in the Whale Tail study area lakes is typical of northern headwater lakes in the region (i.e., relatively low abundance and few taxa).

The benthic community at the Whale Tail study area lakes typically have higher abundance and richness compared to the two reference areas, particularly Inuggugayualik lake (INUG). Moreover, temporal patterns at the reference lakes show a decreasing trend over the past six years or so relative to the baseline period (2015 through 2018/2019), so the BACI analysis could identify apparent changes even when trends are stable at the impact areas. This needs to be kept in mind when interpreting the BACI results.

For benthic invertebrate abundance, statistically significant increases were observed at NF areas KAN and NEM across all time periods compared to baseline/reference. In past time periods, there were also statistically significant increases at WTS and A20. While statistically significant changes were identified in the BACI results across all time periods, the cause of these apparent changes is uncertain. KAN and NEM have consistently shown higher abundance relative to their respective baseline periods, despite different exposure patterns to mining-related discharges. Similar patterns were observed in WTS and A76, where abundance has been variable without a strong trend despite different exposure to mine discharges. This suggests that the observed response patterns are not solely attributable to mining-related discharges.

Total taxa richness showed a similar pattern to abundance. For taxa richness, significant increases were observed at KAN and NEM in all time periods compared to baseline/reference. In past time periods, there were significant increases at WTS and A20. Although episodic nutrient enrichment and increased phytoplankton production have been observed in the water column, no corresponding increases in sediment TOC have occurred to suggest that these changes in benthic parameters are driven solely by an enrichment effect. As discussed for total abundance, response patterns relative to their respective baseline periods were similar at KAN/NEM (more taxa now than baseline) and WTS/A76 (variable but

largely similar to baseline), despite different levels of exposure to mining-related discharges for each pair.

Mining activity can lead to two types of effects: adverse changes (e.g., due to direct toxicity) or stimulatory effects (e.g., due to nutrient enrichment). The apparent changes described above reflect stimulatory responses to abundance and richness. Comparing responses between the study area lakes highlights the challenge of attributing observed benthic community changes to a single definitive cause. Rather, these results suggest that a combination of mining-related activities, regional climate patterns (i.e., climate change), and other factors (e.g., lake morphology and natural variability) are likely responsible for the observed changes in benthic invertebrate community abundance in lakes near the Mine.

Continued monitoring will support further evaluation of the potential drivers of apparent changes in the benthic community. **Benthos community monitoring will be conducted in 2026 according to the CREMP Plan.**

Baker Lake

CREMP monitoring at Baker Lake started in 2008. Important mine-related activities in Baker Lake include barge/shipping traffic and general land-based activities associated with the tank farm area. In 2025, water quality sampling was conducted at two NF areas (BBD, BPJ) and one reference area (BAP) in Baker Lake in July, August, and September. No sediment or benthic invertebrate samples were collected at Baker Lake in 2025, as per the CREMP Plan.

The number of barge shipments increased in 2025 relative to 2024, and were comparable to 2021 through 2023, during which the highest shipments were reported since monitoring began in 2008.

Water Quality

The mean concentrations for dissolved organic carbon (DOC), TOC, total silicon and dissolved silicon exceeded their respective triggers in 2025 at all three areas (BBD, BPJ, and BAP). The BACI showed no statistically significant increase above baseline/reference for BBD or BPJ. There was no evidence of any barge-related impacts to water quality at impact areas in Baker Lake. **Monitoring in 2026 will follow the scope and schedule of the CREMP Plan.**

Phytoplankton Community

There were no statistically significant changes in total biomass or taxa richness at any areas in 2025. **Monitoring in 2026 will follow the scope and schedule of the CREMP Plan.**

Table ES-1. Summary of key findings from the 2025 Meadowbank CREMP.

Notes:
1. Temporal and spatial trends are outlined for monitoring components and variables that exceeded trigger or effects-based thresholds (i.e., apparent change from baseline).
2. Spatial scale ratings are: localized = small area within the lake/area; widespread = basin to whole lake.
3. Causality ratings are: low = no evidence of a mine-related source; moderate = some likelihood of a mine-related source; high = the source of the change is likely mine-related.

Monitoring Component (and report section)	**Variable**	**Temporal and Spatial Trend Assessment**[1, 2, 3]	**Annual CREMP Results Compared to FEIS Predictions** (Cumberland, 2005)
Water Chemistry Section 4.3	Conventional Parameters and Major Ions	**Spatial scale – widespread**; concentrations have increased lake-wide in Third Portage from TPE to TPN and between lakes (SP and WAL). Total calcium exceeded triggers at PDL, TPN, TPE, SP, and WAL, while total magnesium exceeded triggers at all areas. Alkalinity exceeded triggers at SP, WAL, and PDL. Fluoride exceeded triggers at TPE and SP. **Temporal trend – stable**; concentrations are elevated relative to the baseline period according to the BACI analysis, no evidence of-year-over-year increases (i.e., concentrations in 2025 are similar to 2024, 2023, 2022, 2021, etc.) **Causality – high**; the spatial pattern and temporal trend of increasing concentrations in the *after* period is plausibly attributed to activities at the mine, though concentrations are consistently below effects-based thresholds for the few parameters with thresholds (**Figure 4-7**, **Figure 4-8**). In 2025, fluoride was the only effects-based threshold parameter for which the annual mean concentration exceeded the triggers at TPE and SP; however, these results were not statistically significant.	Water quality constituents without effects-based CCME thresholds were not incorporated in the magnitude ratings for assigning effects in the FEIS; however, following the intent of the FEIS magnitude ratings, constituents exceeding baseline but below concentrations associated with adverse effects were considered consistent with a *low* magnitude rating.
	Nutrients	**Spatial scale – localized**; in 2025, annual mean concentrations of nutrients were all below the triggers in most Meadowbank area lakes. The annual mean concentration of reactive silica exceeded the trigger at WAL, and the result was statistically significant in the BACI. **Temporal trend – stable**; the first trigger exceedance for reactive silica occurred in 2020 at WAL, and annual mean concentrations of reactive silica have exceeded the trigger in subsequent years. **Causality – low**; in 2025, the highest concentrations of reactive silica were observed in March and May, prior to the resumption of effluent discharge from the Vault attenuation pond between September and November 2025. Based on the timing and magnitude of the exceedance, the elevated reactive silica concentrations are considered unlikely to be mine related and will continue to be monitored in 2026.	*Low* (i.e., < CCME water quality guidelines).
	Metals	**Spatial scale – localized, silicon and potassium**; in 2025, silicon was elevated at SP, WAL, INUG, and PDL, and potassium exceeded the trigger at TPE and SP. **Temporal trend – none.** **Causality – low**; the elevated silicon and potassium at the reference area(s) as well as at exposure areas suggest conditions are not mine related.	Recent temporal water quality analysis for areas in Third Portage Lake (TPE and TPN), Second Portage Lake, and Wally Lake indicates the results conform with the *low* effect rating predicted in the FEIS. This conclusion is corroborated by the phytoplankton and benthos community results, which show relatively diverse, abundant, and stable communities at the NF areas relative to baseline/reference conditions.
Phytoplankton Section 4.4	Chlorophyll-a	Concentrations in the reference area samples typically range between 0.3 and 1.7 µg/L in summer months, reflecting the oligotrophic, nutrient poor condition of these lakes; a trend that has not changed over time.	No predictions in the FEIS.
	Total Biomass	**Spatial scale – localized**; in 2025, phytoplankton biomass decreased in the BACI analysis at SP and WAL, and marginally increased at TPN and TPE relative to baseline/reference conditions, though no changes were significant. **Temporal trend – stable**; historical biomass levels for the NF areas do not show obvious visual signs of temporal trends for individual NF study areas (**Figure 4-14**). **Causality – low**; SP and WAL were the only NF areas that received effluent discharge in 2025. The magnitude of change in biomass at the NF areas SP and WAL suggests the observed pattern of decrease in phytoplankton biomass is likely annual variability in the community rather than mining-related activities.	The absolute biomass values at the NF areas are comparable to their historical values. Taking into consideration all the lines of evidence (BACI and absolute values plotted over time), there is no evidence to suggest mining operations are increasing primary productivity in the NF areas.

Monitoring Component (and report section)	**Variable**	**Temporal and Spatial Trend Assessment**[1, 2, 3]	**Annual CREMP Results Compared to FEIS Predictions** (Cumberland, 2005)
Phytoplankton Section 4.4	Taxa Richness	**Spatial scale – localized**; in 2025, phytoplankton richness decreased marginally in the BACI analysis at all NF areas, however the only significant change relative to baseline/reference conditions was at WAL. **Temporal trend – stable**; historical richness levels for the NF areas do not show obvious visual signs of temporal trends for individual NF study areas (**Figure 4-17**). **Causality – low**; there is no indication that mine activities are influencing taxa richness.	With the exception o f a slight decrease at WAL, taxa richness for the phytoplankton communities has been stable throughout the 'after' period (i.e., no apparent loss of community diversity). The patterns observed in 2025 are most consistent with inter-annual variability in the community rather than mine-related influences.
Sediment Chemistry Section 4.5	Metals	Grab sample results were analyzed for grain size, moisture, and TOC. Grab sample results are used to support benthic invertebrate interpretation. Grab samples were not analyzed for chemistry in 2025. Trends will be reviewed in 2026 with the sediment coring program.	The FEIS noted that release of effluent (i.e., settling of TSS and altered sediment chemistry) *may impact benthos.*
	Hydrocarbons	Hydrocarbons are not contaminants of potential concern for the CREMP based on recent and historical results. There have been no instances of measured concentrations attributable to site-related activities during the monitoring period.	No predictions in the FEIS.
Benthos Section 4.6	Total Abundance	**Spatial scale – localized**; patterns were variable in 2025 with an apparent reduction in abundance observed at TPE and apparent increase at TPN, SP, and WAL. Changes exceeded 20% effect size at TPE and WAL, but were not significant. **Temporal trend – stable**; total abundance was consistent with the range observed during baseline (**Figure 4-20**). **Causality – low**; the 'apparent' change in abundance in the BACI analysis was not significant and variable across NF areas.	The identification of potential mine-related impacts generally involves visually examining the data for spatial/temporal patterns that matched mine-related events. Changes were observed in total abundance in the BACI analyses in 2025, but the results were not significant in the BACI analysis (**Figure 4-20**).
	Total Richness	Richness continues to track higher for most areas. At all Meadowbank areas, the benthic communities are dominated by chironomids and the relative proportion of major taxa remains stable.	No predictions in the FEIS.

Table ES-2. Summary of key findings from the 2025 Whale Tail CREMP.

Notes:
1. Temporal and spatial trends are outlined for monitoring components and variables that exceeded trigger or effects-based thresholds (i.e., apparent change from baseline).
2. Spatial scale ratings are: localized = small area within the lake/area; widespread = basin to whole lake.
3. Causality ratings are: low = no evidence of a mine-related source; moderate = some likelihood of a mine-related source; high = the source of the change is likely mine-related.

Monitoring Component (and report Section)	**Variable**	**Temporal and Spatial Trend Assessment**[1, 2, 3]	**Monitoring Results Compared to FEIS Predictions (Golder, 2019) and AMP Thresholds**
Water Chemistry Section 5.3	Conventional Parameters and Major Ions	**Spatial scale – widespread**; the 2025 results indicated changes to all Whale Tail area lakes, with most pronounced increases at NF area WTS and MF area A20. **Temporal trend – increasing**; conditions at WTS and A20 have been increasing most markedly. Increases occurred to a lesser extent at NF areas KAN and NEM, and MF area A76. Increases at DS1 were more subtle. **Causality – high**; these parameters have increased in the Meadowbank study area lakes and it seems likely that the apparent increase observed in the Whale Tail study area lakes in 2025 follows a similar trend. With more samples in the *after* period, it is easier to assign causality.	Water quality constituents without effects-based CCME thresholds were not incorporated in the magnitude ratings for assigning effects in the FEIS; however, following the intent of the FEIS magnitude ratings, constituents exceeding baseline but below concentrations associated with adverse effects were considered consistent with a *low* magnitude rating. FEIS predictions are for Kangislulik Lake and Whale Tail South. Monthly mean concentrations for several parameters exceeded FEIS predictions but all conform with the *low* effect rating predicted in the FEIS.
	Nutrients	**Spatial scale – widespread**; TKN exceeded the trigger at all areas except NEM. No other nutrients exceeded the trigger in Whale Tail area lakes in 2025. **Temporal trend – variable**; TKN was fairly stable at WTS and KAN, and increased slightly at A20 and A76. **Causality – moderate**; the apparent changes in TKN concentrations were seen at the FF and MF areas which suggests the apparent changes may be in part due to natural variability.	The yearly mean for total phosphorus at WTS and KAN remained less than the FEIS predictions. The AMP Level 0 is in effect for both WTS and KAN. The full suite of CREMP water sampling is scheduled for 2026.
	TOC and DOC	**Spatial scale – widespread**; TOC and DOC exceeded the trigger at all areas except NEM. **Temporal trend – slight increase**; TOC and DOC at appeared to slightly increase in 2025 compared to 2024 at most areas. **Causality – moderate**; the changes in concentrations for TOC and/or DOC were seen at all areas except NEM which suggests the apparent changes may be in part due to natural variability. Natural regional factors may be at play in addition to the spatially isolated effects of mining at WTS, KAN, and A20.	No predictions in the FEIS. The observed trends may be in part due to natural variability. These parameters will be monitored in 2026.
	Metals	**Spatial scale – localized**; mean lithium concentrations exceeded the trigger value at KAN and WTS, but elevated concentrations did not extend to Lakes A20 or A76. The mean annual silicon concentration exceeded the trigger value at DS1, but was not statistically significant. **Temporal trend:** **Lithium – increasing (WTS), decreasing (KAN)**; lithium concentrations appear to have increased slightly at WTS and decreased at KAN in 2025 relative to 2024. **Silicon – increasing (DS1)**; silicon concentrations appear to have increased slightly at DS1 in 2025 relative to 2024. **Causality:** **Lithium – high**; Concentrations in most areas were less than the detection limit prior to development, but sharply increased at WTS and KAN once mining started. Concentrations at lakes A20 and A76 show weaker responses but have a higher frequency of detection after the onset of mining. The trend at NEM shows a sharp increase in 2019/2020 after contact water was briefly discharged into this watershed during heavy precipitation, followed by a gradual decline. **Silicon – low**; Given temporal increases observed at both reference areas, the higher concentrations at DS1 relative to A76, and the downward trend at WTS and KAN since 2020, the changes at DS1 do not appear related to mining activity	FEIS predictions are for Kangislulik Lake and Whale Tail South. Monthly mean concentrations for several parameters exceeded FEIS predictions but all conform with the *low* effect rating predicted in the FEIS. *Low* (i.e., < CCME water quality guidelines). For total arsenic, the AMP Level 0 is in effect for WTS and KAN.

Monitoring Component (and report Section)	**Variable**	**Temporal and Spatial Trend Assessment**[1, 2, 3]	**Monitoring Results Compared to FEIS Predictions (Golder, 2019) and AMP Thresholds**
Phytoplankton Section 5.4	Chlorophyll-a	**Spatial scale – localized**; chlorophyll-a in 2025 remained consistent with baseline oligotrophic conditions (<1 µg/L) across most Whale Tail area lakes. **Temporal trend – Variable**; In 2025, mean annual chlorophyll-a concentrations at all Whale Tail study lakes were approximately 1 µg/L or lower which is considered characteristic of oligotrophic systems. **Causality – low**; Aside from a few samples, chlorophyll-a concentrations were largely within the range of oligotrophic systems.	No predictions in the FEIS. Chlorophyll-a remained around 1 µg/L in 2025. Nutrients and primary productivity in the water column will be monitored in 2025.
	Total Biomass	**Spatial scale – Widespread**; Observed trends were variable across the areas with large apparent increases at most NF and MF lakes and large apparent decreases at FF lake DS1. The changes at NF lakes may be driven in part by the decreasing trend in biomass at reference area INUG. **Temporal trend – increase/variable**; statistical analysis indicated no significant changes in biomass over baseline/control. **Causality – moderate**; Nutrient concentrations and phytoplankton responses appear to be generally aligned across both temporal and spatial scales. However, phytoplankton communities are influenced by a number of seasonal factors, which makes it difficult to distinguish effects of natural seasonal variability and regional changes from potential nutrient-related effects associated with mining activities.	No predictions in the FEIS. The changes in total biomass at the Whale Tail area lakes were variable and suggest while increases in nutrient concentrations in water from mining activities may affect phytoplankton biomass, the changes may also be attributed to natural variability. Biomass and nutrient patterns will be re-examined in 2026.
	Taxa Richness	**Spatial scale – widespread**; Taxa richness has been fairly stable at the NF lakes over the past few years and generally within the historical range for each area. No statistically significant apparent changes in phytoplankton richness were identified in the BACI analyses. **Temporal trend – variable**; richness has been variable during the *after* period. The BACI analyses identified decreases in taxa richness at WTS, KAN, A76, and NEM, an increase at A20, and no change at DS1. **Causality – moderate**; phytoplankton communities are influenced by a number of factors, including light availability and water temperature, which makes it difficult to distinguish the effects of natural seasonal variability and regional climate changes from potential nutrient-related effects associated with mining activities.	No predictions in the FEIS. Taxa richness for the phytoplankton communities has been variable throughout the *after* period, however it appears there may be a slight loss in community diversity compared to the baseline period.
Sediment Chemistry Section 5.5	Metals	Grab sample results were analyzed for grain size, moisture, and TOC. Grab sample results are used to support benthic invertebrate interpretation. Grab samples were not analyzed for chemistry in 2025. Trends will be reviewed in 2026 with the sediment coring program.	No predictions in the FEIS for sediment chemistry.
	Hydrocarbons	Hydrocarbons are not contaminants of potential concern for the CREMP based on recent and historical results. There have been no instances of measured concentrations attributable to site-related activities during the monitoring period.	No predictions in the FEIS for sediment chemistry.
Benthos Section 5.6	Total Abundance	**Spatial scale – widespread**; total abundance trends at the NF areas have been variable. Statistically significant changes were identified in the BACI results across all time periods. **Temporal trend – variable**; KAN and NEM have consistently shown higher abundance relative to their respective baseline periods, despite quite different exposure patterns to mining-related discharges. Similar patterns were observed in WTS and A76, where abundance has been variable without a strong trend despite different exposure to mine discharges. **Causality – moderate**; the apparent changes described above reflect stimulatory responses to abundance. Given the observed response patterns relative to mining-related discharges, the underlying factors responsible for the apparent changes are likely a combination of mining activity, regional climatic patterns, and other factors such as lake morphology and natural variability.	No predictions in the FEIS.
	Total Richness	**Spatial scale – localized**; total taxa richness showed a similar pattern to abundance. Statistically significant changes were identified in the BACI across all time periods at KAN and NEM. Response patterns relative to their	No predictions in the FEIS.

Monitoring Component (and report Section)	**Variable**	**Temporal and Spatial Trend Assessment**[1, 2, 3]	**Monitoring Results Compared to FEIS Predictions (Golder, 2019) and AMP Thresholds**
Benthos Section 5.6		respective baseline periods were similar at KAN/NEM (more taxa now than baseline) and WTS/A76 (variable but largely similar to baseline). **Temporal trend – variable;** taxa richness has been highly variable since the baseline period, though KAN and NEM have consistently shown higher abundance relative to their respective baseline periods, despite quite different exposure patterns to mining-related discharges. **Causality – low;** Benthic invertebrate richness is generally higher at NF areas KAN, WTS, and NEM, but it is unclear as to the relative importance of regional climatic trends versus mining activity in driving these trends. Benthic invertebrate community composition in the Whale Tail study area lakes in 2025 appeared generally consistent with baseline/reference conditions. Relatively lower richness at INUG over the last three to four years, therefore the BACI analysis could identify apparent changes even when trends are stable at the impact areas.	

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ACRONYMS

AEMP	Aquatic effects monitoring program
AMP	Adaptive management plan
AWAR	All weather access road
BACI	Before/after control/impact
BACIP	Before/after control/impact paired
BAP	Baker Lake – Akilahaarjuk Point
BBD	Baker Lake – barge dock
BES	Baker Lake – east shore
BPJ	Baker Lake – proposed jetty
CCME	Canadian Council of Ministers of the Environment
COC	Chain of custody
COPC	Contaminant of potential concern
CREMP	Core receiving environment monitoring program
DFO	Fisheries and Oceans Canada
DI	Deionized blank
DOC	Dissolved organic carbon
DQO	Data quality objective
EAS	Environmental Assessment Summary
EB	Equipment blank
EEM	Environmental effects monitoring
FEIS	Final environmental impact statement
FF	Far-field
FWAL	Freshwater aquatic life guidelines (e.g., CCME)
GPS	Global positioning system
INUG	Inuggugayualik Lake
ISQG	Interim sediment quality guidelines
KAN	Kangislulik Lake ([KAN]; formerly Mammoth Lake [MAM]; referred to as KAN)
LCS	Laboratory Control Sample
LOEC	Lowest Observable Effect Concentration
MDL	Method detection limit
MDMER	Metal and Diamond Mining Effluent Regulations
MF	Mid-field area
NEM	Nemo Lake

NF	Near-field
NIRB	Nunavut Impact Review Board
NWB	Nunavut Water Board
PAHs	Polycyclic aromatic hydrocarbons
PDL	Pipedream Lake
PEL	Probable effect level
QA/QC	Quality assurance / quality control
REF	Reference
RPD	Relative percent difference
SOP	Standard operating procedure
SP	Second Portage Lake
SQG	Sediment quality guidelines
SSWQO	Site specific water quality objective
TDS	Total dissolved solids
TE, TEFF	Tehek Lake sampling areas
TKN	Total Kjeldahl nitrogen
TOC	Total organic carbon
TSF	Tailings Storage Facility (North and South Cells)
TSS	Total suspended solids
UTM	Universal Transverse Mercator
WAL	Wally Lake
WQG	Water quality guideline
WTHR	Whale Tail Haul Road

REPORT ORGANIZATION

The 2025 Core Receiving Environment Monitoring Program (CREMP) report is organized into a main document and six appendices (A through F). An overview of the various sections of the report is provided to help guide the reader as they navigate the document.

Executive Summary provides a high-level summary of the monitoring results by study area (Meadowbank, Whale Tail, and Baker Lake).

Section 1 provides an overview of the program, including the project's environmental setting. It also outlines the pace and scope of mining development, highlighting how the program has been implemented to monitor changes in the aquatic receiving environment.

Section 2 outlines elements of the CREMP study design including sampling areas, a description of the routine monitoring components, details regarding any targeted studies conducted for a given cycle, and the statistical framework used to assess spatial and temporal changes in chemistry (water and sediment) and biological communities (phytoplankton and benthic invertebrates).

Section 3 summarizes results of the detailed quality assurance and quality control assessment (QA/QC) presented in **Appendix B**.

Section 4 (Meadowbank), **Section 5** (Whale Tail), and **Section 6** (Baker Lake) are stand-alone chapters detailing the results of the spatial and temporal trends in water quality, sediment chemistry, and biological community health (phytoplankton and benthos) specific to each study area. Figures and Tables are included at the end of each section.

Section 7 provides recommendations for the scope of the 2026 CREMP for Meadowbank, Whale Tail, and Baker Lake study areas.

1 INTRODUCTION

Agnico Eagle Mines Ltd.'s (Agnico Eagle) Meadowbank Complex is situated approximately 75 km north of the hamlet of Baker Lake, Nunavut. This Core Receiving Environment Monitoring Program (CREMP) report documents the methods and results of aquatic receiving environment monitoring activities completed at the Meadowbank Complex and Baker Lake study areas in 2025. As in previous years, this report integrates historical data to identify changes in limnology or water chemistry parameters, sediment chemistry, phytoplankton biomass, and benthic community structure associated with mine-related activities at Meadowbank (since 2006), Whale Tail (since 2018), or in Baker Lake (since 2008).

1.1 Overview of the Aquatic Monitoring Program

The aquatic monitoring program for the Meadowbank Complex has evolved since its inception in 2005. Agnico Eagle has several monitoring programs (e.g., effluent monitoring, ground water monitoring, air quality monitoring) relevant to tracking potential changes to the aquatic receiving environment surrounding the Meadowbank and Whale Tail mines. The CREMP for the Meadowbank Complex, which is the focus of this document, is described below. Details pertaining to the aquatic effects monitoring program (AEMP) are provided in Azimuth, 2022c.

Core Receiving Environment Monitoring Program

The Core Receiving Environment Monitoring Program (CREMP), introduced in the 2009 annual report as the *core monitoring program*, includes data from the CREMP dating back to 2006. The CREMP study design was reviewed and formalized in 2012 (*Core Receiving Environment Monitoring Program (CREMP): Design Document 2012*; Azimuth, 2012d), but has its origins in the AEMP (Azimuth, 2005a). The 2012 design document reviewed historical CREMP data, outlined the trigger and threshold derivation process (see **Section 2.1**), determined parameter-specific trigger and threshold values, and optimized the program's experimental design. These triggers, thresholds, and design updates have been implemented in the CREMP since 2012.

The *CREMP Plan*, a "how-to" manual for aquatic receiving environment monitoring at the Meadowbank Complex, is periodically updated to align the program with site development. The 2022 update (*CREMP 2022 Plan Update*; Azimuth, 2022b) integrated the 2015 version of the *CREMP Plan* (Azimuth, 2015b) with an addendum addressing the Whale Tail Expansion Project. The notable technical change in the 2022 version of the *CREMP Plan* is the shift in monitoring frequency for benthic invertebrates and sediment chemistry in Baker Lake, moving from annual to a three-year cycle. This change coincided with the sediment coring program starting in August 2023 and is supported by the long-term data showing stable benthic invertebrate communities relative to baseline and reference conditions.

1.2 Environmental Setting

1.2.1 Meadowbank and Whale Tail Study Areas

The Meadowbank and Whale Tail mines, collectively known as the Meadowbank Complex, are situated in the Nunavut's barren-ground central Arctic region, within the Wager Bay Plateau, an area of continuous permafrost (Campbell et al., 2012). The region contains headwater, ultra-oligotrophic/oligotrophic (nutrient poor and unproductive) lakes, positioned along the watershed boundary that separates two major drainages: the Arctic Ocean and Hudson Bay.

North of Second and Third Portage lakes, a watershed divide directs water either north to the Arctic Ocean via the Meadowbank and Back River system or south to Hudson Bay via the Quoich River system. Lakes near the Meadowbank mine (i.e., Third Portage, Second Portage, and Tehek) flow into the Quoich River system, while CREMP reference lakes (Tasirjuaraajuk Lake; aka Pipedream Lake [PDL] and INUG and lakes in near Whale Tail flow north via the Meadowbank and Back River system (**Figure 2-1**).

The Meadowbank Complex landscape features rolling hills, low-growing vegetative cover, and poor soil development. Numerous lakes are interspersed among boulder fields, eskers, and bedrock outcrops, with indistinct and complex drainages. As is common of headwater lakes, the project area lakes have small drainage basins relative to their surface area. Local inflow from surrounding terrain is the predominant influence on water movement within the system. Small channels connect the lakes, although there is minimal flow between lakes except during freshet and possibly none during winter months. Movement by fish between lakes is rare, as populations remain largely isolated.

1.2.2 Baker Lake

Baker Lake receives drainage from three major river systems that drain much of the central Arctic: the Thelon River, Kazan River, and Dubawnt River (Hutchinson et al., 2018). Covering approximately 1,900 km^2, Baker Lake is situated 90 km from the mouth of the Thelon River to the narrows at the eastern end of the lake (Nunami, 2007).

Water quality in Baker Lake reflects a nutrient poor, low alkalinity, soft water Arctic Lake (Hutchinson et al., 2018). Metals concentrations in surface water are dilute throughout Baker Lake, with no reported exceedances of human health or freshwater quality guidelines. Water quality in Baker Lake is strongly influenced by freshwater inputs during freshet, with weak spatial and seasonal variability except for conductivity (Hutchinson et al., 2018).

Occasionally, deep marine-water influence in Baker Lake is detected in specific conductivity measurements. Johnson (1965) suggested three explanations for saline conditions in Baker Lake:

1. Trapped ancient seawater from isostatic rebound following glacial retreat;

2. Seawater seeping into Baker Lake near the outlet; and
3. Seawater entering Baker Lake driven by tides and storm events.

A 2015–2017 limnological study supports scenario 3 as the most likely explanation for saline water in Baker Lake. The shallow channel or sill separating Baker Lake from marine influence, combined with strong tidal currents and relatively high tidal amplitude at Chesterfield Inlet, could contribute saltwater to Baker Lake (Hutchinson et al., 2018). Conductivity readings over 1,000 µS/cm were recorded at depths between 10 and 20 m in areas further from the Thelon River's freshwater influence (Hutchinson et al., 2018). Spring freshet is postulated as a key factor that prevents saline water from accumulating in Baker Lake year-over-year.

1.3 Mine Development and Operation

An overview of the mine development for the Meadowbank Complex is provided below. A list of within-year site activities and a summary of previous CREMP results dating back to 2008 are provided in **Appendix A**.

1.3.1 Meadowbank

The construction phase of the Meadowbank mine officially started in June 2008, upon receipt of the Nunavut Water Board (NWB) A Water Licence (2AM-MEA0815; renewed to 2AM-MEA1525 in 2015, amended to 2AM-MEA1526 in 2018 and to 2AM-MEA1530 in 2020) for the project. The Fisheries and Oceans Canada (DFO) Fisheries Act Authorization (NU-03-0191) for the project was issued on July 30, 2008, thus allowing the start of in-water construction activities. Dike construction at Second Portage (East Dike) and Third Portage Lake (Bay-Goose Dike) between 2008 and 2010 allowed development of the open pit deposits. The mine officially opened on February 27, 2010, marking the start of the operations period. Five deposits were mined in the 10 years of operations: North Portage, South Portage, Bay-Goose, Vault, Phaser, and BB Phaser. Mining operation ceased in 2019 at Meadowbank Site but the mill is still in operation and processes the ore from Whale Tail mine. In addition to mill operations, key ongoing activities involve:

- In-pit tailings deposition and reclaim from Portage Pits for the entire 2025;
- East dike seepage discharge to Second Portage Lake;
- Progressive closure work on the Tailings Storage Facility (TSF);
- Construction of a water management infrastructure in the former Quarry 23;
- Bay Goose Pit *in-situ* treatment/aeration; and
- Vault Attenuation Pond discharge to Wally Lake.

1.3.2 Whale Tail

The Whale Tail mine is situated within the Amaruq property, a 408 km^2 exploration area on Inuit and federal crown land. The Whale Tail mine is located approximately 50 km northwest of the Meadowbank mine and is connected by a 64 km all-weather access road that was completed in 2018. The Whale Tail mine is permitted under a separate NWB license, 2AM-WTP1830, with ore being trucked to Meadowbank to take advantage of the existing infrastructure (e.g., mill, tailings storage, air strip). The Whale Tail mine is made up of three locations of active ore extraction. These include the Whale Tail Pit, IVR Pit, and the underground mine. Major in-water construction activities at Whale Tail have been completed, however key activities in 2025 included:

- Discharge from IVR attenuation pond to Kangislulik and Whale Tail South Lakes; and
- Whale Tail Haul Road (WTHR) bridge repairs and maintenance.

1.3.3 Baker Lake

The hamlet of Qamani'tuaq (aka Baker Lake), located on the northwest shore of Baker Lake, serves as the entry point for fuel, equipment, and goods arriving by barge. Open-water access from Chesterfield Inlet on Hudson Bay is limited to approximately 2.5 months, typically from late July through mid-October, depending on ice conditions. Goods and fuel are typically transported from Quebec, around Labrador, and through Hudson Straight. Cargo and fuel tanker vessels moor in Chesterfield Inlet, with shallow draft vessels or barges pulled by tugs navigating the channel that connects Baker Lake with Chesterfield Inlet (Agnico Eagle, 2018). Dry goods are unloaded at a floating dock facility east of the hamlet, near CREMP sampling area BPJ. Fuel is transferred from the barges to an 80-million-liter tank farm located upgradient from the dock. Equipment, goods, and fuel are transported year-round from the hamlet to Meadowbank via the 110 km all weather access road (AWAR) completed by Agnico Eagle in 2008.

Monitoring at Baker Lake began in 2008, coinciding with the first barge season. The number of barge trips for fuel and goods dating back to 2008 are shown in **Figure 6-2**. The other key activities in 2025 were the maintenance and operation of water management infrastructure, and the construction of vessel moorings.

1.4 CREMP Objectives

The CREMP focuses on identifying changes in limnological parameters, water and sediment chemistry, and in primary (phytoplankton) and secondary (benthic invertebrate community) aquatic producers potentially associated with mine-related activities. The CREMP uses temporal and spatial trend assessments with quantitative decision criteria (i.e., early warning *triggers* and action *thresholds*) to facilitate timely and objective decision-making regarding appropriate management actions. This

information is integrated annually into the Aquatic Ecosystem Monitoring Program (AEMP) for holistic environmental management and decision making.

The 2005 AEMP framework (Azimuth, 2005a) presented a receiving environment monitoring strategy consisting of two components:

1. **Core Receiving Environment Monitoring Program**

   The CREMP was designed based on our understanding of mine construction, operations, and infrastructure (e.g., dikes, effluents, stream crossings, roads, etc.) to detect mine-related effects at ecologically relevant temporal and spatial scales. The scope expanded to include Baker Lake in 2008 and Whale Tail in 2018. Updates to the program followed recommendations of the *CREMP: Design Document 2012* (Azimuth, 2012d) and more recently, the *CREMP Plan* (Azimuth, 2015b), *Whale Tail Pit Addendum* (Azimuth, 2018b), and the *CREMP Plan Update* (Azimuth, 2022b). The study design employs a before-after-control-impact (BACI) approach, incorporating exposure gradients (e.g., near-field, mid-field, far-field, and reference areas).

2. **Targeted Studies**

   Targeted studies are designed to address specific questions related to mine development during construction or operation and typically focus on narrower temporal or spatial scales. Results are integrated into the routine CREMP to provide complementary insights. Examples include monitoring during dike construction (e.g., Azimuth, 2009a), total suspended solids (TSS) effects assessments (e.g., Azimuth, 2009b), and more recent studies on the toxicity and bioavailability of metals in sediments at TPE (Azimuth, 2016; Azimuth, 2020a).

2 CREMP STUDY DESIGN

2.1 Overview

To streamline the annual report and reduce redundancy, aspects of the CREMP study design presented in the *CREMP Plan* are not repeated herein. Readers looking for details on the aspects of the study design such as sampling methods, QA/QC protocols and procedures, and data evaluation criteria are referred to Azimuth (2022b). A summary of the CREMP study design is included in this report to guide the reader.

The 2012 AEMP (Azimuth, 2012c) with updates in 2022 (Azimuth, 2022b) described a two-tiered approach (**Figure 2-3**) for evaluating changes in the monitoring components (e.g., water quality, benthos community) based on 'trigger' and 'threshold' level changes:

- **Triggers** are typically lower or more conservative than threshold values. They are early warning criteria that might lead to action. Exceedance of a trigger value does not necessarily imply that an adverse effect may be expected. The triggers may be based on absolute numbers (e.g., an increase half-way from baseline or an identified effects-based threshold) or statistical criteria (e.g., statistically significant trend that predicts threshold exceedances within 3 years).
- **Effects-based thresholds** are legal requirements, regulatory guidelines (e.g., CCME), or other discrete benchmarks, below which unacceptable adverse effects are not expected and above which adverse effects may occur. If effects-based thresholds do not exist or are not warranted for a variable, then early warning triggers will be developed without thresholds. In such cases, if triggers are exceeded then their implications can only be understood by integrating results from other AEMP monitoring programs, or, if information gaps still exist, through focused studies (e.g., risk assessment).

The initial analysis compares data to trigger values; if trigger values are exceeded, data are then compared to the applicable effects-based thresholds (if available[3]). Details regarding the derivation of trigger and threshold values for the CREMP are presented in the *CREMP: Design Document 2012* (Azimuth, 2012d).

In addition to triggers and effects-based thresholds, the results are also compared to water quality predictions developed as part of the Final Environmental Impact Statement (FEIS) process (see

[3] For water and sediment quality, effects-based thresholds were generally set to existing environmental quality guidelines. Thresholds were not derived in cases where guidelines were unavailable or when baseline concentrations naturally exceeded existing guidelines (e.g., some metals in sediment).

Section 2.5.1 for more details). The FEIS predictions provide context for whether any observed changes in water quality are consistent with expectations for the approved projects at two levels:

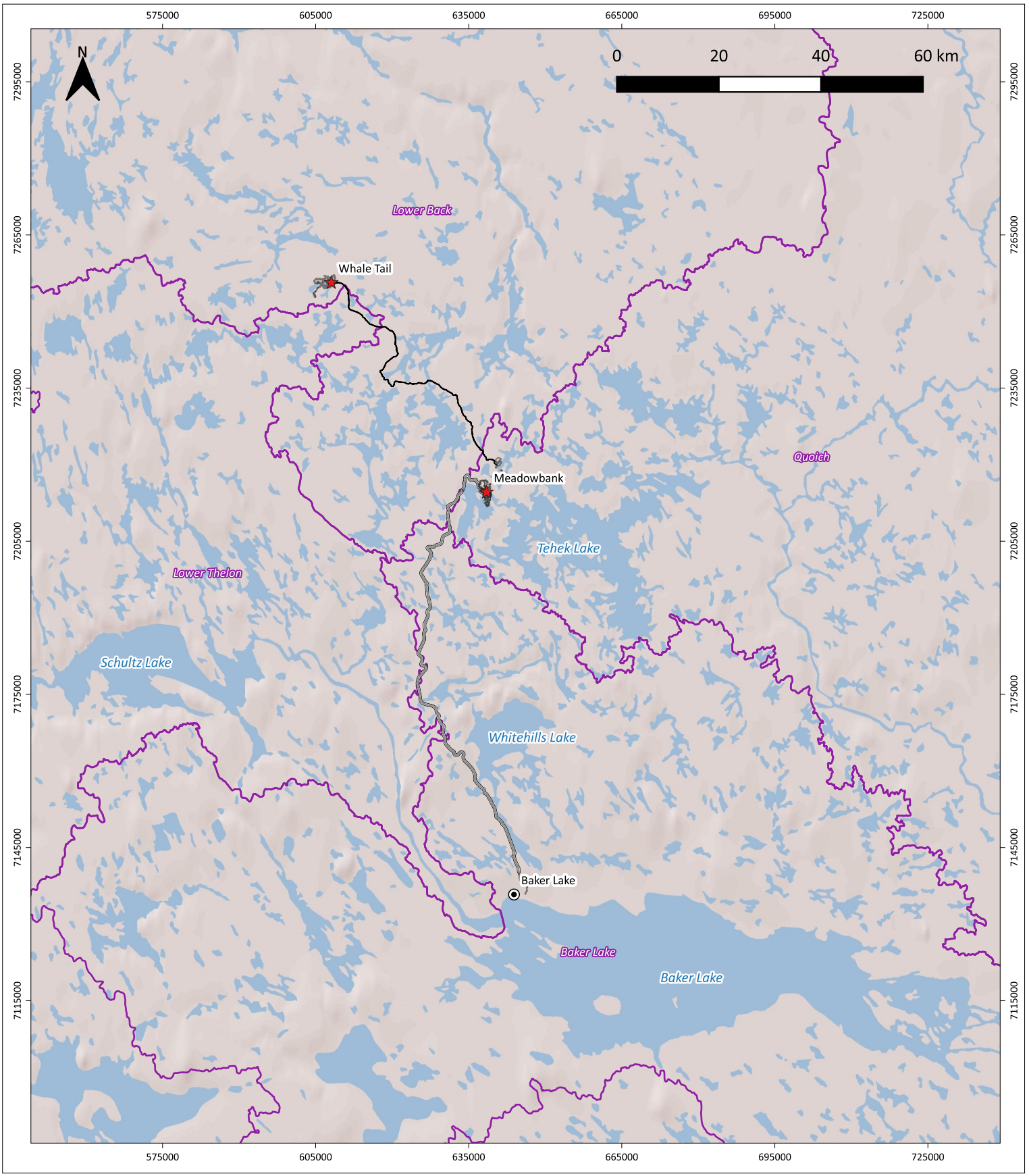
1. **Numerical predictions**. The actual concentrations predicted to occur for a suite of parameters. Given the uncertainties associated with water quality model development, these predictions are provided as a guide only; and
2. **Narrative predictions**. These were categorical predictions used to classify the expected magnitude of change, typically relative to baseline conditions and water quality guidelines (see **Section 2.5.1**).

The application of trigger and effects-based threshold values complements the spatial-temporal trends assessment initiated in the 2011 CREMP (Azimuth, 2012a), which used trend plots (each showing monitoring results since 2006) to identify patterns of change consistent with one or more of the mining activities described in **Appendix A**.

The general rationale for conducting the trend assessment followed these principles:

- **Establish Expected Conditions.** Control data, including baseline (pre-mining) data from impact areas and data from remote reference or control areas, were examined to establish expected parameter concentrations (e.g., water or sediment metals concentrations) in the absence of mining activity. Baseline data were used to infer relative spatial differences (e.g., between a NF and reference area) and reference data were used to infer regional temporal changes (e.g., the regional decrease in benthic community abundance between 2009 and 2010).
- **Compare Patterns of Change.** With expected conditions in mind, impact data (i.e., data collected at NF and MF areas after the mining-related activity began; see **Appendix A**) were visually assessed for spatial and temporal patterns, such as short-term spikes (rapid increases that return to baseline in any year) or long-term trends (gradual or rapid increases that persist) matching mining activity (e.g., the rise in TSS concentrations at SP in August 2008). Where changes were observed, their spatial and temporal extent and magnitude were characterized, determining whether they extended to MF or FF areas, and if so, at what magnitude and duration.
- **Provide Context for Magnitude of Change.** Site-specific triggers, effects-based thresholds, and FEIS predictions provided context for observed changes in CREMP monitoring parameters. When applicable, results of target studies (e.g., TSS EAS studies) were also used to help interpret changes in biological parameters and endpoints.
- **Identify Parameters for Management.** Identify parameters requiring management action on one of two levels: 1) continued trend monitoring (i.e., to follow low magnitude or weak trends), or 2) active follow-up with more detailed quantitative assessment (i.e., a targeted study to

address a potential concern). This process will emphasize issues or concerns present in this year's CREMP results.



Legend

All Weather Access Road

Mine Plan

Infrastructure

Haul Road

Regional Watersheds

AZIMUTH

Client	Agnico Eagle Mines Limited Meadowbank Division
Figure 2-1	Meadowbank Complex - Study Area Overview
Project	CREMP 2025 Meadowbank Complex

Date: February 3, 2026
Datum: NAD 83 UTM Zone 14N
Scale: 1:1,000,000
Software: QGIS Version 3.22.11-Białowieża
By: M. DiMauro, E. Franz

REFERENCES:
1. Basemap imagery from ESRI and Google.
2. Mine plan layers from Agnico Eagle.
3. Watershed boundaries and watercourse from NRCan.

2.2 Sampling Areas

The CREMP is designed to detect spatial and temporal changes in water quality, sediment chemistry, or biological communities (phytoplankton and benthos) at the scale of the lake or basin, in the case of large lakes such as Third Portage Lake. A common element for the Meadowbank and Whale Tail study designs is the use of near-field (NF), mid-field (MF) and far-field (FF) areas to provide spatial context when interpreting potential changes year-over-year. Near-field areas provide the first line of early-warning for introductions of stressors into the receiving environment. These areas are situated closest to the development, near dikes, dewatering discharge points, and proposed effluent sources. Mid-field and FF areas are located farther downstream from the NF monitoring areas and provide insights into the spatial extent of any observed changes in chemistry or biological communities closer to the source. Brief descriptions of the Meadowbank, Whale Tail, and Baker Lake study areas are provided below.

Meadowbank

There are nine sampling areas included in the Meadowbank CREMP. Third Portage Lake East Basin and North Basin (TPE and TPN), Second Portage Lake (SP), and Wally Lake (WAL) are the NF areas monitored annually for changes related to operations at the Meadowbank mine and mill. Starting in 2023, MF areas Tehek Lake (TE), the South Basin of Third Portage Lake (TPS), and FF area Tehek Lake far-field (TEFF) are monitored only if *moderate changes*[4] are detected upstream at the NF areas consistent with the strategy outline in **Section 2.4** (Azimuth, 2022b). Two reference areas are shared for the Meadowbank and Whale Tail programs: Inuggugayualik Lake (INUG) and Tasirjuaraajuk Lake (aka Pipedream Lake [PDL]). INUG has been the core reference area since formal monitoring began in 2006. PDL was added to the Meadowbank CREMP in 2009; while the absence of data at this area from 2006 to 2008 make its utility limited in the BACI statistical analyses, it provides insights into the strength of regional patterns (i.e., how well it matches INUG).

The 2025 sampling areas for the Meadowbank CREMP are shown in **Figure 4-1** (water and phytoplankton) and **Figure 4-2** (sediment and benthos).

Whale Tail

There are six lakes currently included in the Whale Tail CREMP study design. Whale Tail Lake South Basin (WTS) and Kangislulik Lake[5] (KAN) are NF areas designed to detect changes related to dike construction in Whale Tail Lake and Kangislulik Lake and discharge of treated water during operations. Nemo Lake

[4] *Moderate changes* in water quality are defined as statistically significant increases exceeding the early warning trigger for parameters with effects-based thresholds (i.e., CCME freshwater aquatic life guidelines [FWAL]).

[5] Kangislulik Lake (KAN) was previously referred to as Mammoth Lake (MAM).

(NEM) is also considered a NF area because of its proximity to the site, even though it is situated in a different watershed. MF areas are Lake A20 and Lake A76. Lake A20 is located upstream from WTS, but joined to WTS after flooding. Lake A76 is located downstream from KAN and is situated at the junction of the two flow paths leading to Lake DS1. Given its morphology and location, Lake A76 represents an ideal MF exposure area for both flow paths. Lake DS1 is the FF location to provide additional context for characterizing spatial extent of effects.

The 2025 sampling areas for the Whale Tail CREMP are shown in **Figure 5-1** (water and phytoplankton) and **Figure 5-2** (sediment and benthos).

Baker Lake

There are two NF areas for the Baker Lake CREMP, one targeting the hamlet's barge landing area (Baker Barge Dock [BBD]) and the other Agnico Eagle's fuel storage facility (Baker Proposed Jetty[6] [BPJ]). The primary reference area for Baker Lake is located approximately 10 kilometers east of the hamlet along the north shore of the lake (Baker Akilahaarjuk Point [BAP]). A second reference area on the East Shore of Baker Lake (BES) between BAP and BPJ was added in 2011 to provide additional context for interpreting sediment chemistry and benthic invertebrate data. No samples for the CREMP were collected at BES in 2025 because it was not a coring year.

The 2025 sampling areas for the Baker Lake CREMP are shown in **Figure 6-1.**

2.3 Monitoring Components

Water quality, sediment quality, phytoplankton, and benthic invertebrate communities were monitored as part of the core 2025 program, following standard operating procedures (SOPs) provided in the *CREMP Plan Update* (Azimuth, 2022b). Water, limnology, and phytoplankton sampling locations were randomly selected for the Meadowbank and Baker Lake areas from within their respective lake basins. The Whale Tail study area lakes are smaller and more variable in depth compared to the Meadowbank project lakes. Fixed water quality monitoring locations are used for the Whale Tail study area lakes to avoid locations with depths less than 5m. For each full sampling event, two fixed locations were randomly selected for water quality and phytoplankton monitoring. Water sampling occurred in March, May, July, August, and September, as per the study design[7]. During winter months when ice travel is safe, a single limnology profile is taken at NF areas to verify water quality is within the range of expected conditions. In 2025, limnology-only monitoring was conducted in January, February, November, and December.

[6] Note that while a jetty was initially considered, the idea was abandoned in favour of continued use of the existing barge landing.

[7] For the May sampling event, samples were collected at the end of April and the beginning of May due to early ice melt.

Benthic invertebrate community analyses and sediment for TOC, grain size, and chemistry archival were collected from the established areas (i.e., depositional zones between 6.5 m and 9 m) in each basin/lake.

The monitoring components sampled at the various study areas in 2025 are provided in **Table 2-1**. Global Positioning System (GPS) Universal Transverse Mercator (UTM) coordinates (in NAD 83) are provided in **Appendix C** and **Appendix D** for all CREMP study areas.

Samples from the 2025 CREMP were sent to the following laboratories for analysis:

- **Water and bulk sediment chemistry**. ALS Laboratories (Burnaby, BC);
- **Phytoplankton taxonomy**. Plankton R Us Inc. (Winnipeg, MB); and
- **Benthic invertebrate taxonomy**. ZEAS Inc. (Nobleton, ON).

2.4 Sampling Effort

A results-driven sampling strategy for the Meadowbank study lakes was developed as part of the *CREMP Plan* (Azimuth, 2015b) and updated in 2022 (Azimuth, 2022b), with minor revisions in 2023 (Azimuth, 2022b). The strategy improves the CREMP efficiency by focusing monitoring on the areas most likely to be affected by mining-related activities. The annual decision framework in the *CREMP Plan Update* outlines when monitoring frequency at MF and FF areas at Meadowbank can safely be reduced (Azimuth, 2022b; **Figure 2-2**). More specifically, the framework applies to MF area TE (which is paired with upstream NF areas TPE, SP, and WAL), MF area TPS (which is paired with NF area TPN), and to FF area TEFF (which is paired with upstream MF area TE). A similar approach may be implemented at Whale Tail as more years of 'after' data become available. Until then, monitoring at Whale Tail MF and FF areas will continue at the same frequency as NF areas (i.e., five planned water chemistry/phytoplankton sampling events).

As part of the standard Meadowbank CREMP data analysis process, NF results are evaluated annually, with CREMP reporting due at the end of March following each monitoring year. NF results for a given year determine MF area monitoring requirements in the subsequent year (i.e., *Year +1*) and the Year +1 NF and MF results inform MF and FF monitoring requirements for Year +2, and so on. While the full CREMP program is conducted at each NF area annually, monitoring requirements for MF and FF areas vary based on NF and MF results, respectively. Below are the various outcomes of the CREMP data analysis and their corresponding monitoring requirements for MF and FF areas in the following year (see Azimuth, 2022b for details):

- **No changes identified**. No statistical changes above any trigger values. No further sampling required.
- **Minor changes identified**. Statistically significant changes exceeding the early warning trigger values for parameters without effects-based threshold values (i.e., trigger values are based on

the 95th percentile of the baseline distribution). No further sampling required at MF and FF areas unless moderate changes (see below) are identified in NF areas.

- **Moderate changes identified**. Statistically significant changes exceeding the early warning trigger values for parameters with effects-based thresholds (e.g., CCME water quality guidelines for water chemistry parameters). Full CREMP water sampling (all events) is required to determine if changes extend to MF area (or to FF if such changes are seen at a MF area).
- **Major changes identified**. Statistically significant changes exceeding the effects-based threshold values. Full CREMP program including sediment and biological components is required to determine if changes extend to MF area (or to FF if such changes are seen at a MF area).

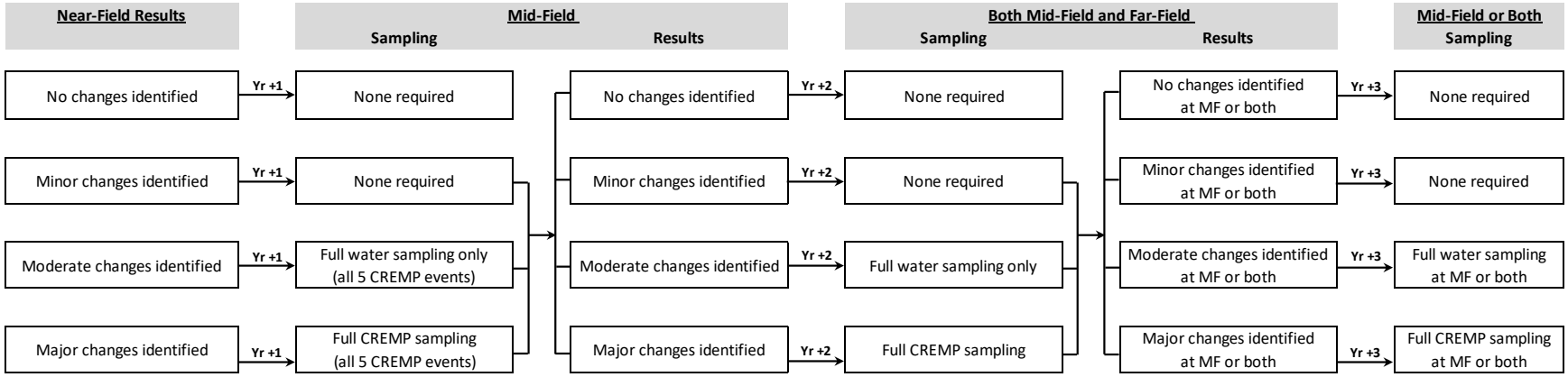
Table 2-1. CREMP sampling summary, 2025.

Sampling Month[1]	Conditions	Components[2]	Meadowbank									Whale Tail[3]						Baker Lake			
			INUG	PDL	TPN	SP	TPE	WAL	TPS	TE	TEFF	WTS	KAN	NEM	A20	A76	DS1	BAP	BES	BBD	BPJ
January	Ice	L			✓	✓	✓	✓				✓	✓	✓	✓						
February	Ice	L			✓	✓	✓	✓				✓	✓	✓	✓						
March	Ice	L,W,P	✓	✓	✓	✓	✓	✓				✓	✓	✓	✓	✓	✓				
April	Ice	L			✓	✓	✓	✓				✓	✓	✓	✓						
May	Ice	L,W,P	✓	✓	✓	✓	✓	✓				✓	✓	✓	✓	✓	✓				
June	***Ice not safe***																				
July	Open-water	L,W,P	✓	✓	✓	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓		✓	✓
August	Open-water	L,W,P	✓	✓	✓	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓		✓	✓
		B,S	✓	✓	✓	✓	✓	✓				✓	✓	✓	✓	✓	✓				
September	Open-water	L,W,P	✓	✓	✓	✓	✓	✓				✓	✓	✓	✓			✓		✓	✓
October	***Ice not safe***																				
November	Ice	L			✓	✓	✓	✓				✓	✓	✓	✓						
December	Ice	L			✓	✓	✓	✓				✓	✓	✓	✓						

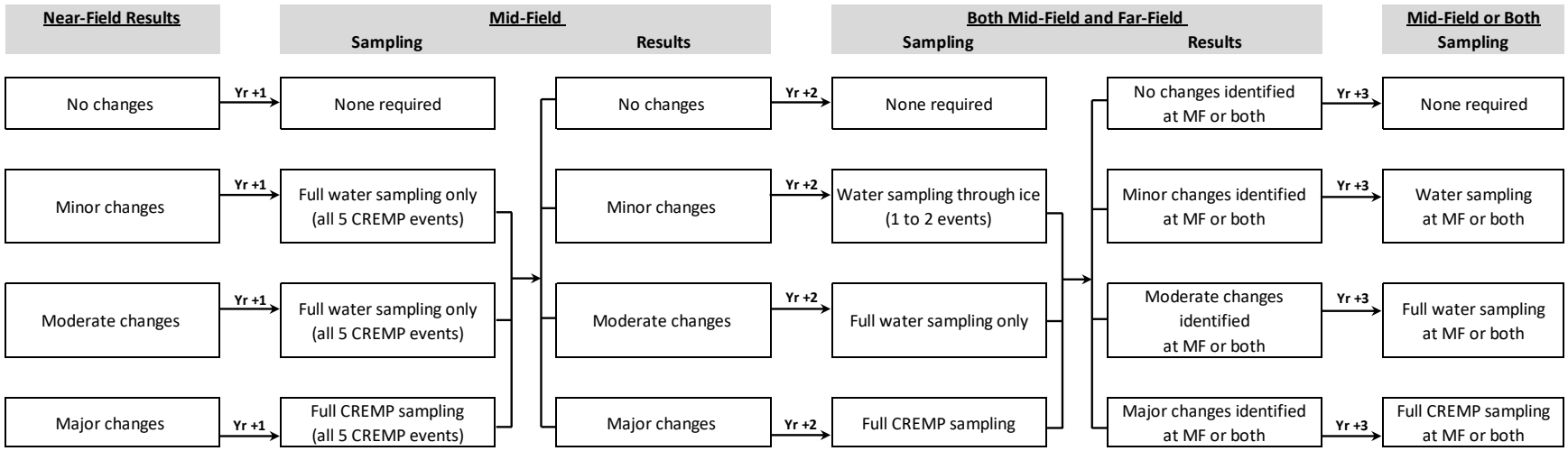
Notes:
Components: L=Limnology; W=Water chemistry; P=Phytoplankton; B=Benthic invertebrates; S=Sediment grab chemistry.
✓ = monitoring components were collected.
Area designations: C=Control; I=Impact; REF=reference (grey shading); NF=near-field (blue shading); MF=mid-field (pink shading); FF=far-field (teal shading)
Area IDs: Meadowbank and Whale Tail Reference areas: INUG = Inuggugayualik Lake; PDL = Pipedream Lake.
Meadowbank areas: TPN, TPE, TPS = Third Portage Lake – North, East, South basins; SP = Second Portage Lake; WAL = Wally Lake; TE, TEFF = Tehek Lake (Mid-field and Far-field).
Baker Lake areas: BAP, BES, BBD, BPJ = Baker Lake – Akilahaarjuk Point, East Shore, Barge Dock, Proposed Jetty.
Whale Tail areas: WTS = Whale Tail Lake South Basin; KAN = Kangislulik Lake; NEM = Nemo Lake; A20 = Lake A20; A76 = Lake A76; DS1 = Lake DS1.
1. Azimuth collects samples in August, while Agnico Eagle handles sampling in remaining months. No sampling in June and October due to unsafe ice conditions. In 2025, due to early ice melt, the May water sampling program was completed from the end of April to early May.
2. Phytoplankton samples collected at Meadowbank and Whale Tail lakes in winter months (March and May) are archived as per the *CREMP Plan Update* (Azimuth, 2022b).
3. Samples were not collected from A76 and DS1 in September due to accessibility challenges.

Figure 2-2. Annual results-based sampling strategy rules for mid-field and far-field sampling areas.

Meadowbank Study Area Lakes



Whale Tail Study Area Lakes



2.5 Data Evaluation Criteria

The specific methods used to apply triggers/thresholds in the evaluation of CREMP monitoring parameters varied by study component; details are presented in the following sections. The evaluation process focused on comparisons to early warning triggers; only when triggers were exceeded were monitoring results compared to effects-based thresholds. Consequently, methods for applying numerical decision criteria focus on triggers only, but apply equally to threshold values.

2.5.1 Water Chemistry

An iterative process was used to identify water chemistry parameters of primary concern at the Meadowbank, Whale Tail, and Baker Lake project areas. For each water chemistry parameter analyzed, the yearly mean concentration for each lake or basin was compared to its respective trigger value. Parameters where the yearly mean was equal to or exceeded the trigger value were formally tested using the Before-After-Control-Impact (BACI) statistical model. In addition to BACI analysis, a trigger screening assessment was conducted to evaluate the extent of changes in water quality as a guide for decision making (see **Section 2.4**). Finally, a conservative three-step assessment process was used to identify parameters to include in the formal trend assessment to streamline the interpretation process as described in the **Initial Screening** section below. In this screening assessment, water chemistry trends were examined broadly for all parameters meeting detection limits (> 10% of samples > method detection limit [MDL]), control-impact, and mine-related criteria outlined below.

Initial Screening

Given the number of parameters routinely below laboratory MDLs (i.e., thus providing little insight for assessing mine-related changes to water quality), a conservative three-step assessment process was used to identify parameters to include in the formal trend assessment to streamline the interpretation process (the results are summarized in **Table 4-2**):

- **Overall Detection Frequency.** Only those water quality parameters that exceeded MDLs in at least 10% of the samples are included for this discussion. Because the project lakes are ultra-oligotrophic, it is normal for many parameters to be below MDLs. The temporal (and spatial) trend assessment includes data from all study years. In 2025, over half the parameters exceeded MDLs at least 10% of the time in Meadowbank lakes (57%), Whale Tail (74%), and Baker Lake (64%) study areas. These parameters are included in this discussion. Overall, the detection frequency decreased slightly at Meadowbank, increased slightly at Whale Tail and stayed the same at Baker Lake compared to 2024.
- **Control-Impact Detection Frequency Comparison.** To avoid screening out infrequently detected parameters that were detected more often in association with mining activities, the proportion

of samples exceeding MDLs between *control* and *impact* samples was compared. The intent was to identify parameters with <10% detection frequency (i.e., those screened out above) for which the proportion of detected values increased by 0.1 or more. Based on this second screening, no parameters were added back into the trend assessment.

- **Apparent Detection Pattern Matching Mining Activity.** As a further step to avoid screening out potentially important parameters at Meadowbank and Whale Tail study area lakes, trend plots for infrequently detected parameters were used to visually identify parameters with measured values associated with periods/locations of known mining activities (see **Appendix A**). Where such patterns were observed or where parameters were measured at greater than five times the MDL at near-field sampling areas in at least one event, these parameters were added back into the trend assessment process.

Trigger Evaluation

Water quality data collected in 2025 were evaluated using a two-tiered approach (**Section 2.1**), comparing results against triggers and effects-based thresholds. For decision-making purposes, yearly mean[8] parameter concentrations were compared to the trigger values developed specifically for the Meadowbank area lakes, Wally Lake[9], Baker Lake areas, and the Whale Tail area lakes[10]. The derivation methods and a full list of triggers and effects-based thresholds for each study area are provided in the *CREMP Plan Update*[11] (Azimuth, 2022b).

Parameters with yearly means equal to, or exceeding trigger values were formally tested using a one-tailed test of the null hypothesis[12] (significance level of p=0.05) using the Before-After-Control-Impact (BACI) statistical model. The BACI model is *paired* (i.e., BACIP) when multiple *before* and *after* events are available. Across each of the study areas, the following BACI components were included in the analysis:

- **Meadowbank Study Area Lakes and Wally Lake**: In the BACI model, INUG was used as the reference (*control*) area[13], with the other areas tested as exposure (*impact*) areas. True *pre-impact* data, when both INUG and the test area had *control* ("C") status, were used for the

[8] Yearly means were calculated by first calculating the monthly mean for each parameter per area, then calculating the yearly mean on an area-specific basis. Values that were less than the MDL were conservatively set to the MDL.

[9] Separate water quality triggers were developed for Wally Lake from the other Meadowbank areas when mining activities transitioned from the North and South Portage Pits (discharge to TPN) to the Vault Lake area (discharge to WAL) in 2013.

[10] Water quality triggers specific to the Whale Tail study area lakes were developed in 2019 (Azimuth, 2020a).

[11] The CREMP plan was revised in April 2022 and was formally implemented in August 2022.

[12] The null hypothesis is that "test" area concentrations either did not change or decreased. The alternative hypothesis is that they increased.

[13] PDL and TEFF are excluded as control areas in the BACI analysis because neither area was sampled in the before period between 2006 and 2008 (i.e., limiting their utility as reference areas in the BACI model, but both providing valuable context for interpreting the strength and consistency of regional trends seen at INUG).

before data (see **Table 2-2**). Only events when both INUG and the test area were sampled in 2025 were used as the *after* data.

- **Whale Tail**: BACI analysis followed the approaches outlined for Meadowbank including INUG as the reference (*control*) area.
- **Baker Lake:** Baker Lake areas were designated as control (BAP) or impact (BPJ and BBD) when sampling started in 2008 (i.e., there was no detailed baseline sampling conducted for Baker Lake; see **Table 2-2**), so there are no true pre-impact or before data. While a spatial CI design could be used to test for differences between reference control and exposure impact areas, the design does not allow for distinguishing natural differences between areas from development-related changes. Given that no development-related changes had been identified to date, all years of data up to and including 2019 were considered in the before period, while the results since 2020 were considered after period data (i.e., allowing the more robust BACI analysis). The BACI analyses specifically looked at changes in 2025 at the two impact areas relative to previous years.

In addition to the BACI analysis, a trigger screening assessment was conducted to evaluate the extent of changes in water quality as a guide for decision making. This approach falls into the framework outlined in **Section 2.4** and involved evaluating the extent and magnitude of trigger exceedances to direct the level of sampling intensity in proceeding years.

Final Environmental Impact Statement Model Comparisons

In addition to the trigger/threshold BACI evaluation, the 2025 CREMP water quality data at Meadowbank and Whale Tail study area lakes were compared to water quality predictions developed as part of the FEIS process introduced in **Section 2.1**.

- **Meadowbank Study Area Lakes and Wally Lake.** Annual Meadowbank CREMP water quality data were compared to the maximum whole-lake average water quality modelling predictions for Third Portage, Second Portage, and Wally Lakes made during the environmental assessment process (Cumberland, 2005).
- **Whale Tail.** Monthly Whale Tail CREMP water quality data for Whale Tail Lake (South Basin) and Kangislulik Lake were compared to their respective monthly modeled water quality predictions presented in the revised FEIS for the Expansion Project (see Golder, 2019).

Although direct comparisons were made, differences in spatial focus – the CREMP at the basin scale and the water quality model at the whole-lake scale – warrants careful interpretation of any differences. To provide context, the assessment criteria from the FEIS (Cumberland, 2005) for defining the predicted magnitude of impacts to water quality will be used to interpret the screening results as follows:

- **Negligible**: water quality concentrations are similar to baseline;
- **Low**: concentrations are < 1x the CCME water quality guideline (WQG);
- **Medium**: concentrations are between 1 and 10-times the CCME WQG;
- **High**: concentrations are less than the Metal and Diamond Mining Effluent Regulations (MDMER) but greater than 10-times the CCME WQG; and
- **Very High**: concentrations exceed MDMER standards.

Adaptive Management Strategy

In 2021, Agnico Eagle developed an adaptive management strategy to guide water management decisions at KAN and WTS[14] for two key contaminants of potential concern (COPCs): arsenic and phosphorus. The strategy defines management actions based on 'Levels' ranging from 0 (normal operating conditions) to 4 (emergency situation), that are linked to criteria for total phosphorus and arsenic concentrations. The levels for each lake are determined by comparing concentrations of total phosphorus and arsenic to FEIS predictions (Golder, 2019) and benchmarks. The benchmarks include the CCME water quality guideline of 0.01 mg/L for total phosphorus and the site-specific water quality objective (SSWQO) of 0.025 mg/L for arsenic. The adaptive management thresholds and adaptive management strategies are summarized in **Table 2-3**. Further details of the adaptive management thresholds and management strategies is provided in Table 3 of the *Adaptive Management Plan* (AMP; Agnico Eagle, 2021).

Water quality data collected as part of the annual CREMP are used in the AMP assessment. Results of the water quality comparison to AMP thresholds are provided in **Section 5.3.4**.

2.5.2 Sediment Chemistry

Sediment grab samples at Meadowbank and Whale Tail lakes are collected annually with the benthic invertebrate samples[15]. In addition to characterizing physical conditions (e.g., grain size and organic carbon content), samples provide information on temporal changes in concentrations of metals and organics in sediment. Sediment chemistry core sampling for the CREMP is completed every three years at the same time as Environmental Effects Monitoring (EEM) sampling. The intent of the coring program is to monitor long-term trends in metals concentrations in the top layer of sediment (1.5 cm

[14] Mitigation measures include but are not limited to targeted studies, implementing activities to prevent, stabilize or reverse a change in environmental conditions or to protect the receiving environment.

[15] The frequency of benthic invertebrate and sediment chemistry monitoring was reduced from annually to once every three years in the 2022 *CREMP Plan Update* (Azimuth, 2022b).

[approximately]). In sediment coring years, metals are analyzed in the core samples. The next full sediment coring program is scheduled for 2026 (coinciding with the EEM program).

Trends in sediment chemistry are evaluated by comparing the yearly mean parameter concentrations in the core samples to the trigger[16] values applicable to the Meadowbank study area lakes, Wally Lake, and the Whale Tail study area lakes (see discussion below). Those parameters where the yearly mean is equal to or exceeds triggers are formally tested using a before-after (BA) statistical model[17]. Sediment chemistry can be quite variable over a small spatial scale within a given basin, but natural seasonal variability in sediment chemistry is assumed to be low given the low rates of natural sediment deposition in Arctic lakes (Azimuth, 2012d). The BA statistical model assumes that, in absence of mining-related inputs, annual variability in sediment chemistry is negligible.

The naturally high sediment concentrations in the Whale Tail lakes necessitated triggers that were lake specific, similar to the approach that was used to develop triggers for Wally Lake. The triggers, derived in 2019, were developed based on baseline sediment core chemistry data from 2017 and the statistical approach described in the *CREMP Design Document* (Azimuth, 2012d). CCME sediment quality guidelines (SQGs) were used as thresholds where applicable. Triggers were set to the maximum of one of three methods for the Whale Tail lakes:

- **Method A**. The value halfway between the baseline median and the effects-based threshold (CCME Interim sediment quality guidelines [ISQG]),
- **Method B**. The 90th percentile of the baseline data, or
- **Method C**. The value corresponding to a 20% increase above the median value.

2.5.3 Phytoplankton and Benthos Community Variables

Trigger and threshold value development for phytoplankton and benthos communities was presented in detail in the original *CREMP Design Document* (Azimuth, 2012d). Unlike water or sediment, where environmental quality guidelines can be used to develop triggers or thresholds, there are no universal benchmarks for biological variables such as abundance, biomass or diversity. Rather, the magnitude of change or difference relative to expected conditions must be used to establish *critical effect sizes* (CES) for biological variables. Effect sizes of 20% and 50% were established as the *trigger* and *threshold* for assessing changes in biological variables. Importantly, the terms *threshold* and *trigger* for biological variables are not used as strictly as for water and sediment chemistry parameters for two reasons:

[16] The trigger values for the Meadowbank project lakes were updated in the 2017 CREMP report (Azimuth, 2018c).

[17] One-tailed test of the null hypothesis that concentrations are not different (or lower) in the after period relative to the before period (significance level of p=0.05); the alternate hypothesis is that concentrations have increased in relation to mining.

3. **Statistical Power**. For most biological variables, natural variability can make it difficult to statistically detect effect sizes as low as 20%. It is more realistic to detect larger effect sizes such as 50%.
4. **Causality**. Regardless of effect size, even if statistically significant changes are documented, the cause of the change needs to be understood in order to effectively manage the situation. For the Meadowbank biological data, effect sizes exceeding 50% have been observed due to natural variability in the baseline data.

Phytoplankton Taxonomy

Total phytoplankton biomass and taxa richness are the metrics used in the BACI framework to assess changes in the phytoplankton community. The BACI analysis compares paired monthly sampling events at control area (INUG or BAP) and impact areas (i.e., NF or MF areas) over two periods (before and after), with months as the unit for temporal replication. Phytoplankton triggers and thresholds were defined as relative changes of 20% and 50%, respectively. The evaluation followed the same approach as water chemistry, however, because the triggers and thresholds represent relative changes over time rather than fixed values, yearly area means were not directly comparable to triggers. The process started with BACI testing, using two-tailed tests of the null hypothesis (i.e., test areas showed no relative change) at a significance level of $p = 0.1$.

Benthos Taxonomy

For benthos, trigger and threshold values represent relative changes of 20% and 50% (increase or decrease) in total biomass and species richness at test areas that are evaluated using the BACI framework. The CREMP uses percent change rather than standard deviations which are used in EEM, to maintain a transparent (fixed) effect size that is more likely to be ecologically relevant. Statistical power increases with more *after* period years; consequently, BACI analyses for the Meadowbank and Whale Tail lakes were conducted on four *after* data period lengths: one year (2025 only), two years (2024–2025), three years (2023–2025), and four years (2022–2025). Two-tailed tests of the null hypothesis were conducted at a significance level of $p = 0.1$. Failure to reject the null hypothesis no change in the endpoint (total abundance or species richness), while the alternative hypothesis suggests an increase or decrease in the endpoint. A p-value ≤ 0.1 was considered significant to help improve statistical power for detecting changes in benthic invertebrate endpoints.

Benthic invertebrate community monitoring was not completed at Baker Lake in 2025 as outlined in the *CREMP Plan Update* (Azimuth, 2022b). The next benthic invertebrate sampling event is planned to coincide with sediment coring in 2026.

Figure 2-3. Management response plan for the Meadowbank Mine Aquatic Environment Monitoring Program (AEMP).

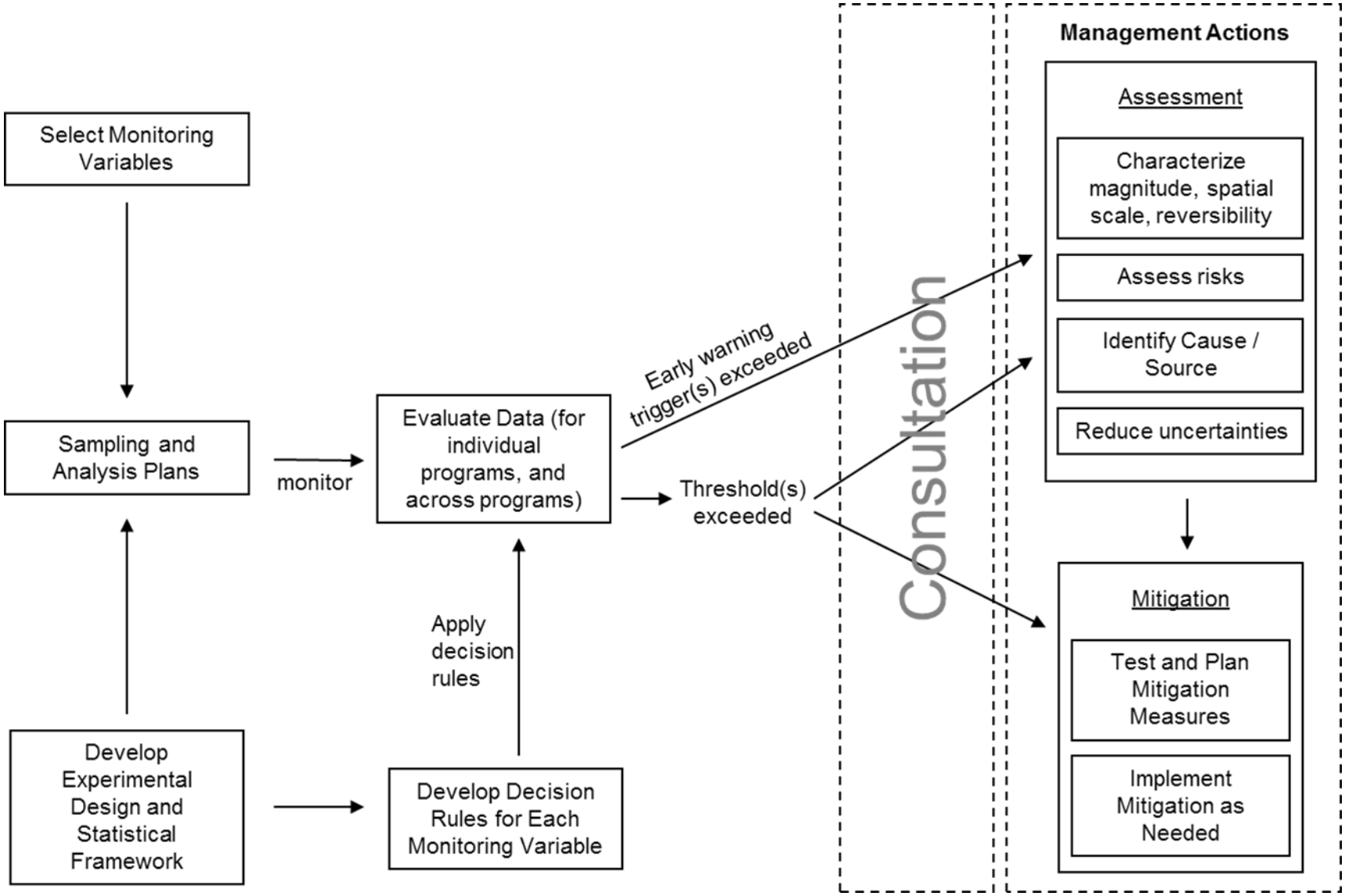


Table 2-2. Status of all CREMP sampling areas since 2006.

	Meadowbank Areas									Baker Lake Areas				Whale Tail Areas					
Designation	**REF**	**REF**	**NF**	**NF**	**NF**	**NF**	**MF**	**MF**	**FF**	**REF**	**REF**	**NF**	**NF**	**NF**	**NF**	**NF**	**MF**	**MF**	**FF**
Area	**INUG**	**PDL**	**TPN**	**SP**	**TPE**	**WAL**	**TPS**	**TE**	**TEFF**	**BAP**	**BES**	**BBD**	**BPJ**	**WTS**	**KAN**	**NEM**	**A20**	**A76**	**DS1**
2006-2007	C		C	C	C	C	C	C											
2008	C		C	I (Aug)	C	C	C	I (Aug)		C		I	I						
2009	C	C	I (Mar)	I	I (Aug)	C	C	I	C	C		I	I						
2010	C	C	I	I	I	C	C	I	C	C		I	I						
2011-2012	C	C	I	I	I	C	C	I	C	C	C	I	I						
2013	C	C	I	I	I	I (Jul)	C	I	C	C	C	I	I						
2014-2015	C	C	I	I	I	I	C	I	C	C	C	I	I	C	C	C			
2016-2017	C	C	I	I	I	I	C	I	C	C	C	I	I	C	C	C	C	C	C
2018	C	C	I	I	I	I	C	I	C	C	C	I	I	I (Aug)	I (Nov)	C	C	C	C
2019	C	C	I	I	I	I	C	I	C	C	C	I	I	I	I	I (Aug)	I	I	I
2020-2025	C	C	I	I	I	I	C	I	C	C	C	I	I	I	I	I	I	I	I

Notes:

Area designations:

C=Control; I=Impact; REF=reference (in grey shading); NF=near-field (in blue shading); MF=mid-field (in pink shading); FF=far-field (in teal shading).

Blank cells indicate the area was not part of the monitoring program that year.

Area IDs:

Meadowbank and Whale Tail Reference areas: INUG = Inuggugayualik Lake; PDL = Pipedream Lake.

Meadowbank: TPN, TPE, TPS = Third Portage Lake – North, East, South basins; SP = Second Portage Lake; WAL = Wally Lake; TE, TEFF = Tehek Lake (Mid-and Far-field).

Baker Lake: BAP = Akilahaarjuk Point; BES = Baker East Shore; BBD = Baker Barge Dock; BPJ = Baker Proposed Jetty.

Whale Tail: WTS = Whale Tail Lake South Basin; KAN = Kangislulik Lake (previously Mammoth Lake); NEM = Nemo Lake; A20 = Lake A20; A76 = Lake A76; DS1 = Lake DS1.

Table 2-3. Adaptive Management Strategy for COPCs in water from Whale Tail Lake (South Basin) and Kangislulik Lake.

Adaptive Management Level*	Threshold (Total Phosphorus and Arsenic)	Management Strategy[1]
Level 0 (Normal operating condition)	Within 20% of FEIS predicted concentrations.	No changes – continue with CREMP monitoring plan.
Level 1 (Area of concern)	Concentrations equal to or greater than 20% FEIS predicted concentrations AND less than 80% of the WQG or SSWQO.	Continue Level 0 management strategy. Analyze site wide water quantity and quality data to identify and assess cause(s) of the difference(s) and report to the NWB. Report results of data review in annual reporting to the NWB including implications on the Water Management Plan and evaluation of potential mitigation strategies (e.g., enhance water treatment plant efficiency and reduce maximum effluent discharge concentration by 10%).
Level 2 (Area of concern)	Concentrations equal to or greater than 20% FEIS predicted concentrations AND between 80% and 100% of the WQG or SSWQO.	Continue Level 1 management strategy. Report results of data review to the NWB in the Annual Report, including implications on the Water Management Plan and the evaluation of potential mitigation strategies (e.g., enhance water treatment plant efficiency and reduce maximum effluent discharge concentration by 20%). Move discharge location to KAN or WTS. Assess potential discharge in lakes D1 or D5 in case level 3 is reached, with approval from the NWB as per NIRB Project Certificate Conditions.
Level 3 (High risk situation)	Concentrations equal to or greater than 20% FEIS predicted concentrations AND between 100% and 120% of the WQG or SSWQO.	Continue Level 2 management strategy. Report results of data review in the Annual Report to the NWB including implications on the Water management plan and the evaluation of potential mitigation strategies (e.g., review overall water management strategy to stay within assimilative capacity of the receivers). Continue monitoring in the original receiving area to evaluate if they recover and define threshold to restart using them.
Level 4 (Emergency situation)	Concentrations equal to or greater than 20% FEIS predicted concentrations AND greater than 120% of the WQG or SSWQO.	Continue Level 3 management strategy. Report results of detailed data review in the Annual Report to the NWB, including implications on the Water management plan and the evaluation of potential mitigation strategies (e.g., move discharge location to an approved location). Continue monitoring in the original receiving area to evaluate if they recover and define thresholds to restart using them. Evaluate potential new discharge location to resume operation.

Notes:

* Agnico Eagle will consult with the NWB on the required approval process, execution, and implementation prior to initiating the adaptive management strategy items for Adaptive Management Levels 3 and 4.

[1] See Table 3 in the Adaptive Management Plan for more details on management strategies for each Adaptive Management Level (Agnico Eagle, 2021).

Acronyms

FEIS = Final environmental impact statement.

NIRB = Nunavut Impact Review Board

NWB = Nunavut Water Board

SSWQO = Site-specific water quality objective.

WQG = Water quality guideline.

3 QUALITY ASSURANCE / QUALITY CONTROL

3.1 Overview of CREMP QA/QC

The objective of quality assurance and quality control (QA/QC) is to ensure that the chemical and biological data are representative of the material or populations being sampled, are of known quality, have sufficient laboratory precision to be highly repeatable, are properly documented, and are scientifically defensible. Data quality was maintained throughout sample collection and analysis by following standardized procedures, using laboratories that are certified for all applicable methods, and employing experienced technicians.

The QA/QC program framework is outlined in the *CREMP Plan Update* (Azimuth, 2022b), which includes a description of the established SOPs. This plan serves as the basis for assessing data quality for each routine component of the CREMP (e.g., water, sediment) and was adopted for the Whale Tail mine baseline sampling program (Azimuth, 2018b). Detailed analysis of the data quality for each component is provided in **Appendix B**. Key findings from the 2025 QA/QC program are summarized in the following subsections.

3.2 Sample Shipping and Handling

Sample shipping and handling concerns documented in previous CREMP reports have largely been rectified in recent years. The sample shipping and handling QA/QC for 2025 was comparable to 2024. In 2025, a few chain of custody (CoC) discrepancies occurred, but they were quickly rectified. The remote location of the mine in Nunavut, combined with logistical challenges and long distances for sample collection and shipping, led to exceeded hold times for certain parameters. However, the impact on the results is considered negligible.

3.3 Water Chemistry

Briefly, the standard field QA procedures for the water chemistry program required flushing the flexible tubing and pump to prevent cross-contamination between areas. Field QC procedures included collecting and analyzing field duplicates, and three types of *blank* samples: travel blanks, de-ionized water (DI) blanks, and equipment blanks (EB). The laboratory QC program included duplicate analysis, blanks, and analysis of spike samples and laboratory control samples (LCS) to verify the accuracy and precision of the analytical method.

Part of the QA data assessment involved conducting two ‘data reliability checks’ to identify potentially anomalous data. The first data reliability check involved comparing dissolved and total concentrations for a given parameter for each location/event combination. Samples where the dissolved concentrations

were greater than the total with a relative percent difference (RPD) of more than 30% were reviewed further. The second data reliability check involved comparing paired samples located within each water body. Parameters for which the difference between the paired intra-lake samples was greater than a factor of 5 (or factor of 10 in cases where at least one of the samples was within a factor of 10 of the detection limit) were flagged for further review. Flagged data are identified in **Appendix C** tables C1-1, C2-1, and C3-1.

The objectives and methods for surface water QA/QC are detailed in **Appendix B**. In 2025, field and laboratory QA/QC results for water chemistry showed more failed QC objectives for blanks and duplicates relative to 2024; however, overall data quality were still considered acceptable:

- **Sample integrity and hold times**. Sample integrity was acceptable in 2025. For water, sample temperatures received at the laboratory varied seasonally, reflecting the logistical challenges of shipping from a remote mine site. Hold time exceedances, particularly for parameters with short hold times, were unavoidable. Hold times were routinely exceeded for turbidity, laboratory pH, ammonia, total Kjeldahl nitrogen (TKN), nitrate, nitrite, TDS, total suspended solids (TSS), total and dissolved organic carbon, dissolved orthophosphate (as P), and cyanides (free and total). Occasional exceedances also occurred for total mercury and chlorophyll-a. Overall, these hold time exceedances are not considered likely to impact data analysis and interpretation.
- **Blanks results**. Travel blanks, which are included in every bottle shipment, showed no detectable concentrations of any parameters in 2025. Several parameters were detected in equipment (EB) blanks in 2025, as described in detail in **Appendix B**. Total ammonia (as N) was detected in deionized (DI) water blanks in March, August, and September.
- **Field duplicates**. The 2025 field duplicate results were acceptable, with <1% of the calculated RPDs not meeting data quality objective (DQOs). This suggests that sample collection and handling in 2025 have maintained a high standard.
- **Laboratory QC**. Laboratory QC results for water chemistry were also acceptable in 2025, with very few laboratory data quality qualifiers and none that were deemed likely to impact data interpretation. ALS's QC summary results from each laboratory report are integrated into **Appendix B**.
- **Detection limits**. Detection limits (DLs) in 2025 were consistent with previous years. In recent years, the laboratory adjusted detection limits for beryllium and chromium. The adjusted DLs are discussed in **Appendix C**.
- **QA/QC data review and reliability assessment**. The two data reliability review checks resulted in some results being flagged as *unreliable*. Overall, 99% of the results were considered reliable for use in the report. The few results that were flagged as *unreliable* were removed from formal

analysis (e.g., figures and statistical analyses). Unreliable results were retained in the water chemistry tables in **Appendix C** but their *unreliable* status is clearly shown, and they were not included in the statistical analyses or figures in the main report. The unreliable results are discussed further in **Appendix B**.

- Potential cross-contamination was flagged in March 2025 after total copper concentrations were elevated in NF Meadowbank area lakes and reference area INUG relative to historical levels. No QAQC flags were assigned by ALS, indicating that this was unlikely due to an analytical error. A new pump introduced to the CREMP in early 2025 is suspected to have contributed to cross-contamination resulting in the elevated results. As a result, March results for several metals from TPE, TPN, SP, and INUG were deemed unreliable and excluded from further analysis. Results for several additional parameters were flagged as unreliable, as described in **Appendix B**, though these were not considered to be related to cross-contamination. All water chemistry results, including those data assigned *cautionary* or *unreliable* data flags, are provided in **Appendix C1** (Meadowbank), **Appendix C2** (Whale Tail), and **Appendix C3** (Baker Lake).
- Isolated instances of trigger exceedances for individual parameters do not necessarily indicate a trend or represent actual environmental conditions. The QA/QC program provides an added layer of context by identifying results potentially influenced by laboratory anomalies or cross-contamination rather than mining activities. Overall, potential cross-contamination is considered unlikely to bias interpretation of the 2025 water quality analysis.

Unless discussed as unreliable above, the 2025 QA/QC assessment confirms that the water quality data are reliable for analysis and interpretation of spatial and temporal trends.

3.4 Sediment Chemistry

The sediment chemistry QA/QC assessment is comprised of field and laboratory duplicates and the QC report from ALS for sediment grab samples submitted in 2025. Key results of the sediment chemistry QA/QC, presented in **Appendix B** are as follows:

- For the sediment QA/QC samples, there were no sample integrity concerns.
- Hold times were exceeded for polycyclic aromatic hydrocarbons (PAHs) and petroleum hydrocarbons (PHCs).
- Eight grab sample and two composite grab sample field duplicates were collected in 2025. Out of the RPDs calculated, all parameters met the DQOs for sediment grabs and composite grab samples. Overall, field duplicate results indicate good field collection methods and a high degree of replicability in sampling.

- Laboratory QC results indicate a high degree of analytical precision, with consistent processing and analytical methods between sub-samples. In the few instances where a DQO was exceeded, the laboratory concluded the results were reliable and suitable for use in the sediment quality assessment.

3.5 Phytoplankton Taxonomy

Field duplicate phytoplankton samples were collected during each sampling event alongside water sample duplicates to assess sampling variability and homogeneity. An RPD of 50% for total density and total biomass is considered acceptable. As a measure of laboratory QA/QC on the enumeration method, replicate counts are performed on 10% of the samples. Replicate samples are chosen at random and processed at different times from the original analysis to reduce biases.

Detailed analysis of the phytoplankton data quality assessment is included in **Appendix B**. In 2025, phytoplankton QA/QC for both field and laboratory components was considered acceptable, indicating reproducible results across both sampling and taxonomic analysis process. All phytoplankton taxonomy results met project DQOs and are considered reliable for data analysis and interpretation of spatial and temporal trends.

3.6 Benthos Taxonomy

Quality assurance measures in the field involved adherence to the standardized method for collecting, sieving, and preserving samples for taxonomic identification (see **Appendix B** in Azimuth, 2015b). While field duplicates are not collected, inferences regarding within-area variability are gained by directly looking at results across replicate samples (see **Section 4.6** and **Section 5.6**). Laboratory QA/QC procedures included re-sorting and re-counting 10% of samples, with a DQO of greater than 90% recovery. Percent recovery exceeded 95% in all re-sorted samples, with an average percent recovery of 97.5%. Details of the benthos taxonomy data quality assessment is included in **Appendix B**.

The 2025 benthos taxonomy metrics met DQOs and are considered reliable for data analysis and interpretation of spatial and temporal trends.

4 MEADOWBANK

4.1 Overview of the Meadowbank CREMP

This section summarizes the 2025 CREMP results for monitoring water quality, sediment chemistry, phytoplankton community, and benthic invertebrate communities at the Meadowbank study area lakes. Relevant figures and tables are included at the end of the section.

The CREMP monitoring plan for routine CREMP sampling years is outlined in **Section 2.3**. The 2025 CREMP focused on monitoring changes in the NF study areas in Third Portage Lake (East Basin [TPE] and North Basin [TPN]), Second Portage Lake (SP), and Wally Lake (WAL). Sampling at reference areas INUG and PDL was completed concurrently with sampling at the NF areas. Routine water sampling at TE, TEFF, and TPS has been suspended and will remain so unless moderate changes are observed in NF areas (Azimuth, 2022b). Based on the results of the 2024 CREMP[18], no routine water sampling, sediment chemistry[19], or benthic invertebrate community sampling was required at the MF (TE, TPS) and FF (TEFF) areas in 2025 (Azimuth, 2024). CREMP sampling locations for water and sediment/benthos are shown in **Figure 4-1** and **Figure 4-2**, respectively.

4.2 Limnology

Limnology data, when compared to previous monitoring data, provide an initial assessment of whether conditions are changing within a sampling area and the potential need for further investigation. At NF areas, at least one depth profile was conducted monthly for temperature, dissolved oxygen, and conductivity except when ice conditions were unsafe[20] (June and October). Two profiles were completed along with water sampling for chemistry and phytoplankton taxonomy in March, April/May, July, August, and September. Some samples were collected in late April, while the remaining samples were collected in early May to avoid access complications related to ice melt. Limnology profiles, without paired water chemistry or phytoplankton sampling, were also collected in January, February, April, November, and December. Limnology data were qualitatively assessed using plots of the deepest sample from each lake for a given sampling event. Samples used for plotting and interpreting the 2025 limnology data are specified in **Table 4-1**.

[18] There were no trigger exceedances for parameters with effects-based thresholds at the NF areas in 2024 (Azimuth, 2025). Consistent with the adaptive monitoring strategy implemented in 2015 (summarized in Azimuth, 2022b), sediment chemistry or benthic invertebrate community sampling was not required at MF and FF areas in 2025.

[19] At the near field areas, sediment grabs were collected and analyzed for total organic carbon (TOC) and grain size. The remaining sediment was archived for chemistry as per the *CREMP Plan Update* (Azimuth, 2022b).

Table 4-1. Samples included in the limnology profiles for the Meadowbank study area lakes in 2025.

Area[1]	Jan	Feb	Mar	Apr	May[2]	Jun	Jul	Aug	Sep	Oct	Nov	Dec
INUG			INUG-166		INUG-169	Ice not safe for travel	INUG-171	INUG-172	INUG-174	Ice not safe for travel		
PDL			PDL-132		PDL-133		PDL-135	PDL-138	PDL-139			
TPN	☑	☑	TPN-179	☑	TPN-181		TPN-183	TPN-185	TPN-186		☑	☑
TPE	☑	☑	TPE-178	☑	TPE-180		TPE-182	TPE-185	TPE-186		☑	☑
SP	☑	☑	SP-178	☑	SP-180		SP-183	SP-184	SP-186		☑	☑
WAL	☑	☑	WAL-148	☑	WAL-150		WAL-152	WAL-153	WAL-155		☑	☑

Notes:

Empty cells indicate no limnology profiles were collected, consistent with the study design.

☑ = One profile is collected from the NF areas (and occasionally one MF area) in months where water sampling is not completed.

The sample IDs shown represent the deeper of the two locations sampled each month.

1. Routine water sampling at Meadowbank areas TPS, TE, and TEFF was not completed in 2025 as per the CREMP Plan Update (Azimuth, 2022b).

2. Ice melt occurred earlier than typical in 2025, resulting in some May samples being collected at the end of April.

4.2.1 General Observations

The ice-free season on the Meadowbank study area lakes is typically very short. Ice break-up usually occurs in mid- to late-June, while ice formation resumes in late September or early October, achieving full ice cover by late October. Maximum ice thickness in 2025 was approximately 1.85 m and occurred at TPN in May. Ice formation leads to an increased concentration of certain ions, such as chloride, in the water near the ice-water interface. This phenomenon, known as cryo-concentration, occurs when ice formation excludes specific ions, causing them to accumulate and increase concentrations in the surrounding water column (Wetzel, 1983). Because the lakes are ice-covered for most of the year, gas exchange with the atmosphere is limited, although oxygen concentrations usually remain high under the ice because of the low rates of biological activity and organic decomposition (processes that consume oxygen from the water). Historically, in the winter there is a slight negative thermal stratification with water temperatures at 0°C near the ice-water interface and increasing to 3-5 °C at depth.

4.2.2 Temporal and Spatial Trends

Temperature and Dissolved Oxygen

In 2025, water temperatures and oxygen concentrations in the Meadowbank study area lakes followed similar patterns of seasonal change compared to previous monitoring cycles. Similar to previous years, surface water (3 m) temperatures in 2025 showed substantial differences between winter and summer events (**Figure 4-3**).

The maximum temperature measured during the open-water sampling events in 2025 was 14.8 °C at WAL in mid-July. This was comparable to temperatures recorded at INUG in mid-July 2022, and slightly

lower than the highest temperatures in 2023 and 2024, which reached 17.3°C and 16.7 °C, respectively, at TPE in mid-August. The temperatures in 2023 and 2024 were the highest observed since sampling began in 2006. During open-water events, maximum water temperatures may typically reach 15°C in the summer with little evidence of thermal stratification, except for brief periods (days) when there is typically only a 4°C to 5°C temperature difference. High winds maintain uniform temperature and high oxygen profiles in the water column due to vertical mixing.

Winter temperature profiles for the through-ice sampling events show a slight negative thermal stratification with water temperatures near 0°C at the ice-water interface, typically increasing to between 2°C and 4°C at depth (**Figure 4-4**). Oxygen concentrations in winter generally decrease slightly with increasing depth, with occasional values measured above theoretical limits of air saturation[21] (14.6 mg/L at 0°C; **Figure 4-5**). Oxygen concentrations in all basins are greater than 10 mg/L, and often greater at even the lowest depths, despite nearly nine months of ice cover.

The study area lakes typically turn over by mid-July, resulting in a well-mixed water column with uniform temperature and high oxygen concentrations. Water temperatures generally warm rapidly, reaching maximum temperatures of approximately 15°C by late July and August. In 2025, most lakes exhibited some degree of stratification in July, including TPN, TPE, SP, and WAL, but all were well mixed by August. Temperatures in the 2025 depth profiles were comparable to those observed in 2024 and consistent with historical patterns (**Figure 4-4**). No vertical stratification was evident from July through September in the remaining lakes and basins. In November, the study lakes froze and TPE, SP and WAL became slightly stratified, with surface waters near 0°C and bottom waters ranging up to 1.5°C at WAL. Despite the stratification, oxygen concentrations remained high, and the water column was fully saturated in November and December (**Figure 4-5**).

Temperature and oxygen concentrations in 2025 were mostly consistent with previous years, and the seasonal patterns were typical of this Arctic area. There were no differences in these patterns between the control lakes (INUG and PDL), and the NF and MF monitoring areas.

Conductivity

Field conductivity[22] is an indicator of stratification in the water column and is an effective way to assess changes in water quality that may be related to mining activities such as the discharge of treated water and seeps. From a monitoring perspective, uniform conductivity provides confidence that the water column is well-mixed and that a water sample collected at a discrete depth represents conditions from the surface to near the bottom of the lake. In contrast, variable conductivity in areas close to mining

[21] Photosynthesis occurring under ice can lead to DO results exceeding theoretical air saturation limits. This is due to photosynthesis producing pure oxygen, as opposed to the approximate oxygen content of 21% in air.

[22] Throughout this report, any discussion of *conductivity* refers to specific conductance, which is conductivity normalized to 25°C.

activity may indicate the presence of water with different chemical properties. Surface water sampling is done at 3 m below the surface, but conductivity profiles can help identify if additional samples should be collected at other depth intervals. Conductivity in oligotrophic systems with low concentrations of dissolved solids is typically less than 50 µS/cm and uniform from top to bottom in any given month, with minor seasonal fluctuations. While the overall range in conductivity is similar between ice-covered (10–50 µS/cm) and ice-free (10–40 µS/cm) months, the conductivities in ice-free months are generally lower, which is consistent with cryo-concentration during progressive ice formation in winter.

Field-measured conductivity was unstratified for most of the 2025 limnology profiles. Minor fluctuations in conductivity were evident during some of the winter sampling events due to cryo-concentration (**Figure 4-6**).

Conductivity at SP in 2025 was generally within the range of historical values dating back to 2009. Field collected conductivity at SP was typically between 20 µS/cm and 30 µS/cm prior to 2014. More recent results from 2014 through 2024 have trended between 30 µS/cm and 50 µS/cm. The increase in laboratory reported conductivity at SP relative to baseline/reference conditions was identified in the water chemistry BACI analysis but has not been linked to any adverse effects to the biological community (see **Section 4.3** and **Figure 4-7** for more details).

Conductivity at WAL in 2025 was slightly higher than in 2024, but within the range observed in previous years. WAL had higher conductivity observed in the winter months, ranging from 52 to 115 µS/cm, compared to the open-water, which ranged from 52 to 61 µS/cm. During the baseline period, open-water conductivity at WAL ranged from 40 to 52 µS/cm. The highest conductivity values were observed in April, which did not coincide with discharge periods at WAL. As observed at SP, elevated conductivity at WAL has been identified in the BACI analysis but has not been linked to any adverse effects to the biological community (see **Section 4.3** and **Figure 4-7** for more details).

4.3 Water Chemistry

Tabulated water quality data for 2025 are presented in **Appendix C1**. Water chemistry samples were collected simultaneously with limnology samples in March, April/May[23], July, August, and September (see **Section 4.2** for limnology results).

4.3.1 Key Findings from the 2025 Water Chemistry Monitoring Program

- In 2025, no major mining activities occurred at Meadowbank. Effluent discharge was limited to SP from January 1st to April 30th and to Wally Lake from the Vault attenuation pond on September 1st and 2nd and then September 21st through November 10th.

[23] The May sampling event occurred in late April and early May in 2025 to avoid access complications due to early ice melt.

- The mean fluoride concentration slightly exceeded the trigger for the first time at TPE and SP. There were no QAQC flags for fluoride and concentrations were within the range of historical data. The increases in fluoride concentrations relative to baseline/reference were not statistically significant, and overall water quality in the Meadowbank study area lakes is safe for aquatic life.
- Mining activities have contributed to higher concentrations of dissolved solids and some major ions in the Meadowbank area lakes.

4.3.2 General Observations

In 2025, two spill events occurred at the Meadowbank Complex:

- Turbid Discharge (March 24th, 2025) – Elevated turbidity was detected in a sample collected at the ST-8 discharge point and was confirmed through additional sampling. The increase in turbidity occurred when water transfer from seepage collection point A to B resumed after approximately 14 days of inactivity due to a frozen line. As a precaution, discharge to the environment was suspended and water was redirected to site water management infrastructure. Prior to resuming discharge on March 23rd, an inline turbidity sensor was installed and commissioned. The sensor is integrated with Agnico Eagle's alarm system to notify the Environmental Department of turbidity increases. A water movement checklist is also being developed to help anticipate large water transfers that may result in elevated turbidity.
- Localized Fuel Spill (September 2nd, 2025) – Fuel overflowed from a pump set up near the Vault attenuation pond and contacted water beneath the pump. There were no off-site impacts or discharges. Due to the proximity of the attenuation pond, maritime barriers were deployed along the shore as a precaution, and no sheen was observed outside of the barriers within the pond. Contaminated material and water were collected and disposed of at the Meadowbank Complex.

No off-site impacts were identified for either event. Additional details regarding causes, water quality results, and remediation actions are provided in the Spill Follow up Reports submitted in the 2025 Meadowbank Complex Annual Report.

4.3.3 Temporal and Spatial Trends

Annual mean concentrations for each parameter were compared to triggers and effects-based thresholds according to the approach outlined in **Section 2.5.1**. BACI analyses were conducted for parameter/area combinations if the mean concentration for a given parameter in 2025 exceeded the trigger value.

Given the number of parameters routinely below laboratory MDLs, a conservative three-step assessment process was used to identify parameters to include in the formal trend assessment to

streamline the interpretation of the results. Details of the three-step assessment process are provided in **Section 2.5.1** and the results are summarized in **Table 4-2**. The results of the water chemistry parameter assessment process are presented in **Table 4-2**; shaded parameters were retained for further analysis. Monitoring results for retained parameters show spatial trends across NF, MF, FF, and reference (REF) areas and temporal trends across all monitoring years for surface water samples collected from a depth of 3 meters, as shown in **Figure 4-7** to **Figure 4-11**. Parameters with no clear spatial or temporal trends related to mining activities or natural variability were excluded from further consideration (see **Table 4-2**). For completeness and transparency, water chemistry plots for all parameters are included in **Appendix C1**.

Parameters for which the 2025 yearly mean exceeded the trigger values in NF areas are shown in **Table 4-3**. Parameter/area trigger exceedances were similar to previous years and included measures and indicators of conductivity, hardness, alkalinity, major ions, and total and dissolved silicon. Fluoride was added in 2025, which narrowly exceeded the trigger values at SP and TPE. Fluoride was included in the BACI analysis.

The results of BACI analyses for exceeding parameter/area combinations are provided in **Table 4-4**. BACI analysis results in 2025 were largely the same as last year, showing statistically significant increases ($p < 0.05$) relative to baseline/reference conditions for conductivity, hardness, major ions, and reactive silica (only at WAL). The increase observed in the mean fluoride concentration at SP and TPE was not statistically significant ($p > 0.05$).

Water chemistry results for parameters that exceeded their respective trigger values are discussed in the sections that follow.

Conventional Parameters (Conductivity, Hardness, and Alkalinity)

Conductivity and Hardness. Conductivity is a composite variable that increases in response to higher concentrations of ionic compounds such as chlorides, sulphates, carbonates, sodium, magnesium, calcium, potassium, and metallic ions. In 2025, conductivity and hardness were elevated at TPN, TPE, SP, and WAL relative to baseline/reference conditions (**Figure 4-7**).

Alkalinity. The concentrations of bicarbonate and total alkalinity were elevated in SP and WAL in 2025 relative to baseline/reference conditions (**Table 4-3**). Bicarbonate (HCO_3-) typically constitutes the majority of the total alkalinity fraction in surface water with pH in the range of 6.5 to 9, which is the case at the Meadowbank area lakes. The trigger value for both bicarbonate and total alkalinity is 8.7 mg/L. Bicarbonate alkalinity at SP has consistently exceeded the trigger since 2011 and in 2025 the mean concentration at SP was 12.2 mg/L (as $CaCO_3$), which within the range of 11 to 13.1 mg/L observed in 2016–2024. The mean annual concentration of bicarbonate at WAL slightly exceeded the trigger (18.5 mg/L, trigger = 17.8 mg/L).

From a potential-effects perspective, alkalinity measures the buffering capacity of water (i.e., how much acid can be added without changing pH) and low values are typically of concern for aquatic life. For example, the working water quality guidelines for British Columbia (BC MOE, 2017) have three categories of sensitivity to acid inputs based on alkalinity: highly sensitive (<10 mg/L), moderately sensitive (10 to 20 mg/L), and low sensitivity (>20 mg/L). Consequently, the temporal trend of slightly increasing alkalinity relative to baseline/reference conditions is unlikely to adversely affect biota at SP or WAL and would decrease their potential sensitivity to acidic inputs (e.g., low pH snow melt and rain).

Total Dissolved Solids and Major Ions

Total Dissolved Solids. In 2025, TDS exceeded the trigger at all Meadowbank study area lakes, with the highest concentrations reported at WAL. While concentrations are elevated relative to baseline/reference conditions, they have been stable for the past several years (**Figure 4-8**). In a review of TDS toxicity to aquatic life, Weber-Scannell and Duffy (2007) recommended deriving ion-specific limits for aquatic life (i.e., rather than for TDS). However, none of the literature studies they compiled showed effects to aquatic life at TDS concentrations less than 250 mg/L and they reported the average TDS in the world's rivers was approximately 120 mg/L. Currently, there are no federal water quality guidelines for TDS in Canada. The TDS concentrations at WAL in 2025 (30–66.5 mg/L) are considered low and unlikely to pose risks to aquatic receptors.

Major Ions. Similar to 2024, concentrations of the major ions calcium, potassium, and magnesium were elevated relative to baseline/reference conditions at Meadowbank study area lakes in 2025 (**Table 4-3**, **Table 4-4**, and **Figure 4-8**). At the NF areas TPN, TPE, and SP, mean 2025 concentrations were similar to 2024. At WAL, mean concentrations of calcium, magnesium, and sodium increased slightly compared to 2024. Mean calcium concentrations ranged from 2.7 mg/L at TPN (trigger = 2.39 mg/L) to 7.4 mg/L at WAL (trigger = 4.9 mg/L). Mean magnesium concentrations ranged from 1.1 mg/L at TPN (trigger = 0.93 mg/L) to 2.4 mg/L at WAL (trigger = 1.36 mg/L). Mean potassium concentrations were slightly above the trigger of 0.58 mg/L at TPE (0.61 mg/L) and at SP (0.64 mg/L). Mean fluoride concentrations at TPE and SP were 0.089 mg/L and 0.092 mg/L, respectively, only marginally exceeding the trigger (0.088 mg/L) and less than the threshold (0.12 mg/L); mean fluoride at INUG was marginally lower (0.087 mg/L). While fluoride concentrations were slightly elevated in 2025, the concentrations are still within the historic ranges observed at these areas and the BACI results were not statistically significant. Increasing trends for calcium, fluoride, magnesium, and sodium were observed in both impact and control areas, suggesting regional climatic conditions are also influencing these parameters.

Slight increases of these cations above triggers in the Meadowbank study lakes for the *after* period are unlikely to adversely affect biota. These major cations are essential elements, and all species of aquatic life, from algae to fish, have evolved to actively regulate their osmotic, ionic, and acid-base balance by taking up ions from their surrounding environment (Martemyanov and Mavrin, 2012). Furthermore,

adverse effects on primary producers and secondary consumers (e.g., zooplankton) are more commonly associated with deficiency rather than enrichment of major cations in oligotrophic freshwater lake environments (Alstad et al., 1999). Calcium deficient waters are defined for some species of algae at concentrations <10 mg Ca/L (Wetzel, 1983) and effects on zooplankton communities are more common in freshwater lakes that are calcium-depleted because of acidification and logging (Arnott et al., 2017).

Metals

Silicon. In the absence of *control* data and an established threshold, an early warning trigger for silicon was developed for the Meadowbank study area lakes in 2019 using data from all lakes except WAL. Silicon concentrations show consistent temporal trends across the Meadowbank study area lakes, with peak concentrations in 2012 followed by a decline through 2017 and relatively stable thereafter, including reference areas, suggesting a regional influence. Variability in silicon concentrations among individual lakes has also been observed. This is clear at SP where concentrations have always been relatively high compared to reference area INUG yet the temporal patterns are very similar between the two areas (**Figure 4-11**). Given the similar trends observed in reference area INUG and distinct difference in concentrations among lakes, it is unlikely that elevated silicon concentrations are related to mining activities. In 2025, the BACI results showed no statistically significant increase in total silicon at WAL (p-value = 0.79) with the yearly mean concentration of 0.73 mg/L exceeding the trigger value of 0.65 mg/L.

Other Metals. Concentrations of other metals (total and dissolved) were consistently low or below their respective MDLs at the NF areas in 2025 (**Appendix C1**).

None of these metals have exceeded trigger or effects-based threshold values in the formal BACI analysis. In 2025, the same metals were measured above laboratory MDLs as in previous years. There was no effluent discharge to SP in 2025 after April.

Reactive Silica

The first trigger exceedance for reactive silica occurred in 2020 at WAL, and annual mean concentrations of reactive silica have exceeded the trigger in subsequent years (**Figure 4-9**). In 2025, the mean reactive silica concentration at WAL was 1.5 mg/L, only marginally above the trigger value of 1.08 mg/L. The largest exceedances occurred in March and May, prior to the resumption of effluent discharge from the Vault attenuation pond between September and November 2025. Based on the timing and magnitude of the exceedance, the elevated reactive silica concentrations are considered unlikely to be mine related and will continue to be monitored in 2026.

4.3.4 Comparison to FEIS Model Predictions

The CREMP continues to detect changes in some general water quality parameters related to mining activities. These changes are also reflected in higher concentrations of some parameters when compared to the model predictions in the FEIS (Cumberland, 2005). The FEIS water quality predictions are estimates of water quality changes in Third Portage Lake, Second Portage Lake, and Wally Lake, assuming different mixing scenarios and loading estimates from water releases and dike leaching:

- **Third Portage Lake.** The model for Third Portage Lake includes treated water released from the project in years 1 to 4 and long-term loading of metals from the Bay-Goose dike material. Two mixing scenarios (upper range [169 Mm^3] and mid-range [92 Mm^3] mixing) are evaluated for Third Portage Lake with and without dike leaching.
- **Second Portage Lake.** The Second Portage Lake water quality model includes loading of parameters from the Third Portage and East dikes and inflow from Third Portage and Wally lakes. Changes in water quality in Second Portage Lake were modelled for the two different mixing scenarios for water released into Third Portage Lake listed above.
- **Wally Lake.** The water quality model for Wally Lake incorporates long-term loadings from the Vault dike and effluent releases from the Vault Attenuation Pond.

The assessment of Meadowbank water chemistry results against FEIS predictions only includes a comparison to mean concentrations (Azimuth, 2020a). The full screening results for Third Portage Lake, Second Portage Lake, and Wally Lake are summarized in **Appendix C1**. For perspective, the screening results against mean concentrations are provided in **Table 4-6**.

In 2025, the following parameters exceeded the water quality predictions in the FEIS[24] (Cumberland, 2005): hardness, total and bicarbonate alkalinity, mean fluoride, and ionic compounds (calcium and magnesium; **Appendix C1**). Although fluoride concentrations in individual samples have exceeded the FEIS screening prediction in the past, 2025 was the first year that mean concentrations exceeded the FEIS (0.07 mg/L), which occurred at TPE (0.089 mg/L) and SP (0.092 mg/L). Results suggest that fluoride concentrations are increasing regionally, as indicated by higher levels observed from 2024 to 2025 at INUG (16%) and PDL (8%), relative to the increases at SP (13%) and TPE (4%). Concentrations for most metals were below the predictions for Third Portage Lake, Second Portage Lake, and Wally Lake, except for total silicon at SP and WAL.

[24] Not all parameters currently included in the CREMP water quality analysis were available during the early stages of the program, hence the absence of baseline concentration data for silicon. As a result, the predicted silicon concentrations underestimate the actual baseline concentrations. Silicon is therefore not suitable for assessing the accuracy of the FEIS predictions (see Azimuth, 2020a).

At the time the FEIS was issued in 2005, the freshwater aquatic life guideline for cadmium was lower than the MDL for the baseline data. A thorough review of the ecological significance of the predicted cadmium concentrations was presented in the FEIS, and the probability of cadmium causing toxicity was considered *extremely low* (Cumberland, 2005). Arsenic was also predicted to exceed the freshwater aquatic life guideline in Wally Lake (0.006 mg/L in the FEIS). Similar to cadmium, the MDL for arsenic was equal to the guideline (i.e., 0.005 mg/L) in 2005. The models were considered conservative because the MDLs were used as the baseline concentrations. The 2025 MDLs for arsenic and cadmium were 0.0001 mg/L and 0.000005 mg/L, respectively. All the samples collected from Meadowbank study area lakes in 2025 were below the MDL for cadmium, except one sample collected at TPE in July which was reported at nearly twice the MDL (**Appendix C1**). In the case of arsenic, concentrations in the Meadowbank study area lakes were below the trigger values with most results at least an order of magnitude lower than the CCME water quality guideline (WQG) of 0.005 mg/L across all samples.

In 2025, the FEIS predicted the magnitude of potential effect on water quality in each of the lakes as *low* (see **Section 2.5.1** for more details on the decision criteria for effect magnitude). It is important to note that of the parameters that exceeded trigger values or FEIS model predictions in 2025, only fluoride had trigger values set in the context of effects-based threshold values (e.g., CCME WQG). The changes identified were not significant and only slightly exceeded the trigger, and the mean concentrations of fluoride were less than 1x the CCME WQG. Thus, CREMP water quality results are consistent with the *low* significance (i.e., <1x CCME WQG) rating applied to model predictions in the FEIS (Cumberland, 2005).

4.3.5 Summary and Recommendations

Water quality results were evaluated according to the decision criteria outlined in **Section 2.4** to determine the effort level and sampling frequency required at the MF and FF areas in 2026. The assessment strategy interprets the water quality assessment results from the NF areas in the current year (in this case 2025) to inform sampling at MF and FF areas the following year (i.e., 2025) (**Figure 4-12**).

Trigger screening results for the Meadowbank study areas are presented in **Table 4-5** according to the degree of change interpretation framework:

- no trigger exceedance,
- minor changes = trigger exceeded for parameters without effects-based thresholds,
- moderate changes = trigger exceeded for parameters with effects-based thresholds, or
- major changes = exceedance of the effects-based threshold.

The 2025 water quality results from Meadowbank area lakes do not require additional management actions as per the *CREMP Plan Update* (Azimuth, 2022b). The outcome of the assessment for sampling at NF, MF, and FF areas[25] in 2025 is summarized below.

Reference Areas

- INUG and PDL are reference areas located beyond the influence of activities at the Mine.
- At INUG, the annual mean concentrations exceeded the trigger for TOC, DOC, magnesium, and total and dissolved silicon; fluoride was marginally below the trigger. At PDL, mean concentrations exceeded the trigger for conductivity, hardness, alkalinity (total and bicarbonate), calcium, magnesium, and total and dissolved silicon.
- The full CREMP program will be completed at reference areas in 2026.

Near-field (TPE, TPN, SP, and WAL)

- Trigger exceedances were documented for parameters without effects-based thresholds (i.e., conductivity, hardness, alkalinity, TDS and cations).
- The mean total and dissolved silicon concentrations exceeded the trigger in SP.
- The mean fluoride concentrations exceeded the trigger or the first time at TPE and SP, but only by a narrow margin, and the change was not statistically significant relative to baseline/reference conditions.
- Potassium exceeded the trigger at TPE and SP, but only narrowly, and data is within range of historic observations.
- The full CREMP program will be completed at the NF areas in 2026.

Mid-field and Far-field

- No sampling was conducted at MF and FF areas TPS, TE, and TEFF in 2025 based on the results of the 2024 CREMP and as per the *CREMP Plan Update* (Azimuth, 2023 and 2022b).
- The mean fluoride concentration was the only trigger exceedance among parameters with effects-based thresholds at the NF areas in 2025; however, the BACI did not find the marginal increase in fluoride concentrations to be significant relative to baseline/reference conditions. As a result, no sampling is required at the MF and FF areas in 2026 (e.g., water chemistry, sediment chemistry or benthic invertebrate community).

[25] No samples were collected at MF and FF areas TPS, TE, and TEFF as per the *CREMP Plan Update* (Azimuth, 2022b).

4.4 Phytoplankton Community

In 2025, phytoplankton samples collected during winter sampling events[26] were archived as per the *CREMP Plan Update* (Azimuth, 2022b). Results of the open-water season are discussed below and did not warrant analysis of the winter phytoplankton samples.

4.4.1 Key Findings from the 2025 Phytoplankton Monitoring Program

- Chlorophyll-a concentrations at the NF areas were consistent with baseline and reference areas, with all values generally less than 1 µg/L.
- There were apparent decreases in phytoplankton biomass observed at NF areas SP and WAL relative to reference area INUG; however, biomass at the NF areas in 2025 remained consistent with historical results, indicating that the decreases are likely due to environmental variability.
- Phytoplankton taxa richness at the NF areas in 2025 was generally similar to previous years and to reference areas. Small reductions in taxa richness were observed at all NF areas (all below 20%), with a statistically significant decrease at WAL.
- Reductions in phytoplankton biomass and taxa richness at WAL are likely attributable to environmental variability associated with the warm, dry summer rather than mining activities. Effluent from the Vault attenuation pond was discharged to WAL after the sampling period (September–November), and total biomass and taxa richness remained consistent across summer months indicating that the observed reductions occurred prior to any potential influence from effluent discharge.

4.4.2 General Observations

The diversity in types and sizes of phytoplankton in the study lakes is large and their abundance is great. In summer, abundance typically exceeds 1 million individuals per liter with a total biomass of approximately 200 mg/m^3. Six major taxonomic groups of phytoplankton are present in the study lakes, namely blue-green algae (Cyanophyta), green algae (Chlorophyta), golden-brown algae (Chrysophyta), Diatoms, Cryptophytes, and Dinoflagellates.

Chrysophytes are small, usually unicellular phytoplankton that are consistently the most abundant taxonomic group in the Meadowbank study area lakes. Chrysophytes also dominate phytoplankton biomass in all study area lakes, typically representing 65% or more of the total phytoplankton biomass in summer samples, with smaller proportions (usually < 10% each) from the other five major groups. The dominant chrysophyte genera for the Meadowbank study area lakes are *Chrysococcus, Kephyrion,*

[26] Phytoplankton samples were not collected in May due to unsafe ice conditions.

Chrysochromulina, Dinobryon, and *Chrysolkos*. Dominant genera for the other groups are *Oocystis* for chlorophytes, *Planktolyngbya* for cyanophytes, *Cyclotella* for diatoms, *Rhodomonas* and *Cryptomonas* for cryptophytes, and *Gymnodinium* and *Peridinium* for dinoflagellates (Azimuth, 2012a, 2011b, 2010a, 2009c, 2008a, and 2008b).

Mean phytoplankton biomass in the Meadowbank study area lakes typically ranges from 100 to 250 mg/m^3 during summer with diminishing biomass in fall through winter. This range in biomass is typical for oligotrophic, central Arctic Canadian lakes. Biomass estimates from lakes sampled in the 1980s in the Kivalliq Region generally ranged between 100 and 300 mg/m^3 (McKee et al., 1989). Other studies on arctic lake phytoplankton communities have reported similar ranges of phytoplankton biomass at Char Lake (166 mg/m^3, Kalff et al., 1975) and Spring Lake (120 mg/m^3, Welch et al., 1989).

4.4.3 Temporal and Spatial Trends

The approach for identifying potential mine-related impacts involved visually searching for temporal-spatial patterns that might be associated with mine-related activities (**Appendix A**), augmented by statistical analyses of annual data to test for changes relative to baseline/reference conditions using the BACI model (see **Section 2.5.3** for details). Both methods look for evidence of temporal-spatial patterns that might be associated with mine-related activities.

The primary metrics used in the assessment were the following:

- chlorophyll-a concentration (a surrogate for overall primary productivity),
- total biomass (mg/m^3),
- relative biomass of major taxonomic groups, and
- species richness (total # species).

Biomass, not abundance, was examined because biomass and abundance tend to be reasonably well correlated and, ultimately, biomass more accurately approximates lake productivity or food availability for zooplankton. The BACI statistical testing focused on total biomass and species richness because these reflect ecologically relevant information about the phytoplankton community (i.e., total mass of community and community composition, respectively). The trigger and threshold effect sizes for total biomass and species richness are 20% and 50%.

Expected response patterns in phytoplankton biomass and species richness are dictated by the nature of the physical and/or chemical changes caused by mine-related activities. For example, dike construction or dewatering may introduce turbidity, leading to a reduction in phytoplankton biomass/diversity. In contrast, introducing other substances, such as nitrogen associated with blasting by-products, could increase primary production. Therefore, we look for both reductions and increases (i.e., two-tailed

statistical tests) in phytoplankton-related metrics coinciding with mining activities (i.e., focusing primarily on data for NF areas SP, TPE, TPN, and WAL).

An important consideration when working with phytoplankton data is the naturally high variability of control data. This potentially confounding background variability or *noise* effect can make it difficult to identify mining-related influences or *signals* at impact areas, unless the signals are quite large.

Density and biomass results for phytoplankton samples collected from the Meadowbank study lakes are provided in **Appendix E1**. The 2012 CREMP (Azimuth, 2013) provided a detailed description of historical trends in phytoplankton-related metrics. The current report emphasizes 2025 results, but retains the historical context by showing the results of all monitoring years. Trend data for chlorophyll-a, total biomass, major taxa composition, and species richness are presented from **Figure 4-13** to **Figure 4-17**. Plots for all other phytoplankton metrics are presented in **Appendix E1**. The BACI statistical test results of changes in the phytoplankton community in 2025 compared to baseline/reference conditions are provided in **Table 4-7**; key results are described below.

Chlorophyll-a

Chlorophyll-a concentrations in the reference area samples typically range between 0.11 and 0.72 µg/L in summer months, reflecting the oligotrophic, nutrient poor condition of these lakes (**Figure 4-13**). In 2025, PDL was within this range for all events. At INUG, higher chlorophyll-a concentrations were observed in May and July, with a maximum of 1.7 µg/L in May representing the highest value recorded at this location followed by 0.83 µg/L in July. These elevated concentrations at INUG are likely attributable to natural inter-annual variability rather than a sustained change in trophic conditions.

Chlorophyll-a concentrations at the NF exposure areas TPN, TPE, SP, and WAL showed no evidence of abnormal seasonal or longer-term temporal trends (**Figure 4-13**) and remained less than 1 µg/L in 2025, which is consistent with oligotrophic conditions (Kasprzak et al. 2008).

Total Biomass

The total phytoplankton biomass results for 2025 were similar to 2017–2024. Biomass results for the summer months were comparable to historic data:

- For reference lakes, summer biomass estimates at INUG in 2025 ranged from 84 to 375 mg/m^3, which was a wider range than observed in 2024, but generally consistent with historical values. The peak biomass at INUG of 375 mg/m^3 was the highest value observed among all Meadowbank lakes in 2025, and the highest value observed over the last 5 years. The summer biomass estimates at PDL ranged from 125 to 186 mg/m^3, showing less seasonality than was observed in 2024, while remaining consistent with historical observations. Overall, total biomass results in the reference areas in 2025 were within the range observed in previous years (**Figure 4-14**).

- Peak total biomass in 2025 for NF areas TPE, TPN, and WAL was within their respective historical ranges. In contrast, peak total biomass at NF area SP was lower in 2025 at 135 mg/m^3 compared to 264 mg/m^3 in 2024. Total biomass at SP was within then range of historical observations and exhibited a small decreasing trend relative to previous years. Differences in depth, surface area, and catchment characteristics among lakes can amplify the effects of environmental changes in some lakes compared to others.
- BACI analysis demonstrated apparent increases in total biomass ranging from 2% to 4% at TPN and TPE, and a decrease of 17% at SP in 2025 relative to reference area INUG. The decrease in total biomass at WAL (31%) exceeded the trigger (>20% effect size), however it was not statistically significant (**Table 4-7**).

Major Taxa Composition

Chrysophytes tend to dominate in the study lakes in all open-water months, a pattern that has remained consistent since monitoring began in 2006 (**Figure 4-15**). The continued dominance of chrysophytes provides an additional line of evidence suggesting any *potential* incremental increase in nutrients or changes in water quality has not resulted in major structural changes to the community. In 2025, the proportion of diatoms increased relative to the previous five years, ranging from 10% at INUG to 25% at WAL; however, this increase occurred alongside continued chrysophyte dominance and does not indicate a shift in overall community structure.

Among the major taxa, chlorophytes are typically the first group to respond to nutrient enrichment in freshwater systems (Holmgren, 1984). Nutrient enrichment has been shown to have a direct positive effect on chlorophytes and an indirect negative effect on chrysophytes, which compete with chlorophytes for nutrients (Klug and Cottingham, 2001). In the same study by Klug and Cottingham, chrysophytes were among the dominant taxa prior to artificial fertilization of the study lakes. Collectively, these observations from the primary literature substantiate findings from the CREMP that the structure of the phytoplankton community is consistent with pre-development oligotrophic conditions (**Figure 4-16**).

Taxa Richness

Taxa richness during the open-water season in 2025[27] was generally similar to previous years (**Appendix E1**). Taxa richness at the exposure areas were comparable to the reference areas and remained fairly consistent with historical observations (**Figure 4-17**). An exception was observed at WAL, where taxa richness in 2024 and 2025 was lower than historical levels at this location.

[27] Samples collected during the winter months were archived as per the *CREMP Plan Update* (Azimuth, 2022b).

BACI analysis demonstrated small apparent decreases in taxa richness at all NF areas, with effect sizes ranging from 1% to 14%. The only statistically significant change occurred at WAL (p-values <0.1; **Table 4-7**). Taxa richness appeared to be within range of historical results at most NF areas, while WAL taxa richness appears to be gradually decreasing.

4.4.4 Summary and Recommendations

The phytoplankton community taxa biomass and taxa richness data from 2025 are generally similar to previous years and largely appear within the range of historical baseline/reference conditions.

Total biomass results indicated an apparent decrease at WAL and SP, while total richness showed very slight decreases at all NF areas relative to historical baseline/reference conditions. The results at WAL are likely attributable to environmental variability rather than mining activities, particularly given that effluent from the Vault attenuation pond was only discharged to WAL after the sampling period (September –November), and total biomass and taxa richness decreases were based on results from summer months prior to any potential influence of effluent discharge. Monitoring will continue in 2026 to determine whether future patterns are consistent with those observed in 2025 or indicate stronger evidence of mine-related causality. **Phytoplankton sampling at Meadowbank study area lakes will follow the same schedule as the routine water quality monitoring component of the program in 2026.**

4.5 Sediment Chemistry

4.5.1 Key Findings from the 2025 Sediment Chemistry Monitoring Program

- Total organic carbon levels varied across the Meadowbank areas, with WAL consistently the highest (but with no obvious temporal trends) and TPN consistently the lowest.

4.5.2 General Observations

Natural sedimentation rates in the Meadowbank study lakes are considered low due to the headwater nature of the watersheds and the lack of any substantial riverine or tributary inflow. Thus, very little sediment is carried into the lakes other than what erodes off the nearby tundra during spring run-off or heavy rain events, or from dust deposition. The only site discharge in 2025 was from East Dike seepage into Second Portage Lake and from the Vault attenuation pond to Wally Lake (**Appendix A**). Sediment results from this year's CREMP are provided in **Appendix D1**.

Based on historical bulk sampling of sediment using grab samples, we have observed reasonably large, within-basin or within-lake differences in surface sediment (i.e., top 3–5 cm) concentrations for various metals, indicating natural spatial heterogeneity driven by localized mineralization. Several processes can affect the pattern of metals distribution to sediments, including differential deposition of different grain size materials according to wind direction and speed, water depth, water currents, basin morphometry, bioturbation (i.e., vertical mixing of sediment by burrowing insect larvae), and patchy, heterogeneous distribution of metals in mineralized areas. Metals concentrations are highly dependent on grain size, with coarse grain size (i.e., sandier) typically correlating with lower metals concentrations. Therefore, our sediment programs target low energy, depositional areas that are dominated by silt/clay sediment in areas of similar water depth (6–10 m), where grain size tends to be finer and more consistent.

Sediment chemistry samples are collected using grab samplers (targeting top 3–5 cm) or coring devices (targeting top 1.5 cm). Grab samples are used to characterize the chemical and physical conditions of sediments paired with the benthic invertebrate community samples. While grab samples can provide insights into temporal changes in sediment chemistry, core samples are more sensitive and are used in the CREMP to formally test for changes in sediment chemistry related to mining. Core samples are collected every three years to match the timing of EEM studies required under the MDMER. The next coring program is planned for 2026.

In 2025, sediment grabs for sediment chemistry and habitat characteristics were completed at the NF and reference areas (**Figure 4-2**). Sediment grab samples were analyzed for moisture, TOC, grain size, and organic compounds as per the *CREMP Plan Update* (Azimuth, 2022b). Grain size and TOC are important sediment parameters relevant for benthic invertebrate community habitat characteristics. Grain size results were similar to previous years, with generally finer-grained sediment often dominated

by the silt fraction (**Figure 4-19**). There is an apparent difference in TOC across Meadowbank study lakes (**Figure 4-18**). WAL consistently has the highest proportions of TOC (approximately 5 to 10%), while PDL consistently has concentrations comparable to the NF areas. The TOC results typically reflect differences in productivity levels across the lakes, with shallow, lower-volume lakes tending to be more productive relative to deeper, high-volume lakes. In 2025, TOC concentrations across Meadowbank study area lakes were similar to previous results (i.e., no obvious temporal trends), with most areas having <5% TOC except WAL (7.4 to 9.6% in 2025).

The results for organic compounds analyzed in grab composite samples are provided in **Appendix D1**. As in previous years, most results were not detectable. The only detectable concentrations were mineral oil and grease in the INUG and PDL composite samples, which are both reference areas. The detected concentrations of mineral oil and grease at the two reference areas are therefore considered to be more likely attributable to natural causes rather than mining activity.

An overview of the various sediment sampling programs at Meadowbank dating back to baseline sampling in 2008 is provided in **Appendix D1**.

4.5.3 Temporal and Spatial Trend Interpretation

The 2025 sediment grab particle size, TOC, and moisture content results for Meadowbank are presented in **Appendix D1**.

4.5.4 Summary and Recommendations

In 2025, sediment characteristics in the Meadowbank study area lakes were analyzed to assess changes in grain size and TOC; metals concentrations are only analyzed every 3 years. In the Meadowbank study area, sediment grain size in 2025 was within the range observed historically. TOC concentrations were similar to previous years, with the highest proportions consistently observed at WAL (but no obvious temporal trends).

The 2025 sediment results from Meadowbank area lakes do not require additional management actions as per the *CREMP Plan Update* (Azimuth, 2022b). **Routine sediment grab samples and sediment cores will be collected in 2026 to support the benthic invertebrate community sampling program and to verify sediment chemistry trends observed in previous years.**

4.6 Benthos Community

4.6.1 Key Findings from the 2025 Benthos Community Monitoring Program

- Total abundance at all NF areas were within their respective historical ranges and generally consistent with baseline/reference conditions. Recent temporal trends have been variable across NF areas, with declines observed at TPE in the past three years. These changes were not

statistically significant and are likely attributable to natural variability rather than mining activity.

- Taxa richness results for all NF areas were also within their historical ranges and generally consistent with baseline/reference conditions. Recent temporal trends indicate slightly higher diversity across the NF areas TPN, TPE, and SP, and a slight decrease at WAL. The 2025 taxa richness results compared to previous years indicated a general increase at all NF areas, however there were no statistically significant changes in any time period. These results are likely attributed to natural variability rather than mining activity.

4.6.2 General Observations

The abundance and species composition of benthic invertebrates are influenced by water depth, substrate grain size, and organic carbon. Other physical factors, such as water temperature, can influence larval development rates and, ultimately, timing of hatching for insect larvae. Consequently, even if sampling can be conducted simultaneously in all lakes (which is not practical), this would still not overcome differential timing of hatching of particular species between lakes. This is partly overcome in the CREMP by sampling during August, after most groups have emerged, but it is still a source of variability.

Benthic invertebrate communities in the Meadowbank study lakes are characterized by relatively few taxa and low abundance. Abundance is generally less than 2,000 organisms/m^2 and is often less than 1,000 organisms/m^2 at reference and exposure areas (**Table 4-8** and **Figure 4-20**). Despite abundance generally being low at the study area lakes, values above 5,000 organisms/m^2 are not uncommon, and on occasion abundance has exceeded 10,000 organisms/m^2. Relatively large total benthic invertebrate abundance values were periodically observed in samples collected prior to mine development (e.g., one replicate had 26,000 organism/m^2 at WAL in 2006) and in more recent sampling events (e.g., one replicate had 31,000 organism/m^2 at WAL in 2016). The high variability in total abundance within an area has also recently been observed at lakes sampled for the Whale Tail mine during the baseline period (i.e., the *before* period). Total abundance at Lake A76 in 2017 was between 3,000 and 24,000 organisms/m^2 (Azimuth, 2018a). Whale Tail Lake - South Basin also showed comparatively large variance in abundance in 2017, ranging from 1,800 to over 10,000 organisms/m^2. Abundance data for the Meadowbank study lakes between 2006 and 2022, as well as more recent baseline data from the Whale Tail program, demonstrates that benthos abundance is naturally variable, both spatially (i.e., among areas) and temporally (i.e., between years).

Taxa richness at the Meadowbank area lakes has generally ranged from 8 to 15 for most area-year combinations (**Figure 4-23**). Typical of most Arctic lakes, the benthic invertebrate community has been dominated by the aquatic larval stages of insects, especially chironomids (Family Chironomidae), both in terms of abundance and taxa richness (**Figure 4-21** and **Figure 4-24**). The next most abundant group has

been Mollusca (clams), particularly *Cyclocalyx* / *Neopisidium* genera of the family Sphaeriidae (fingernail clams). Oligochaete worms have also been relatively common in lake sediments, with at least one oligochaete taxon present in most area-year combinations.

4.6.3 Temporal and Spatial Trends

Benthic invertebrate abundance and richness results from the reference (INUG and PDL) and NF (TPE, TPN, SP, and WAL) Meadowbank study lakes in 2025 are provided in **Appendix F1** by major taxonomic group (i.e., Insecta, Mollusca, Oligochaeta, and other taxa). Geometric means of total abundance and total richness for the entire data set dating back to 2006 are provided in **Table 4-8**.

Time-series plots showing abundance and richness endpoints are presented in **Figure 4-20** to **Figure 4-25**. Below are descriptions of the endpoints, based on Environment Canada EEM guidance (2012):

- **Total abundance**. The number of individual organisms per m^2. This metric is a measure of community density.
- **Total richness**. The number of different taxa (identified to the lowest practical taxonomic level, usually species) per grab.
- **Major taxa abundance**. The absolute and relative abundance of each major taxon.
- **Major taxa richness**. The absolute and proportional richness of each major taxon.

Other benthic invertebrate community results presented in **Appendix F1** but not discussed in detail, include time-series plots of abundance and richness within each major taxon, Simpson's Diversity, and Bray-Curtis Index values.

In 2025, identifying potential mine-related impacts involved visually examining the data for spatial/temporal patterns that matched mine-related events. This was followed by formal statistical analyses of the data to test for changes relative to baseline/reference conditions using the BACI model (see **Section 2.5.3** for details). The BACI comparisons involved testing for single-year (i.e., 2025) and multi-year (i.e., up to four years) trends and focused on benthic invertebrate total abundance and taxa richness. This report focuses on the 2025 results and discusses temporal and spatial trends over the last four years (i.e., dating back to 2022). As discussed in **Section 2.4**, MF (TPS and TE) and FF (TEFF) areas were not sampled in 2025. BACI model results for benthic invertebrate abundance and richness are presented in **Table 4-9** and **Table 4-10**. Key results are described below.

Total Abundance

Total abundance at INUG was higher in 2025 than in 2024, although values in both years were slightly lower than earlier observations while remaining within the historical range (**Table 4-8**). However,

maximum total abundance since monitoring began has generally been lower at INUG relative to the NF areas, with a peak of 2,100 organisms/m^2 (2016) compared to SP (2,796 in 2014), TPN (3,025 in 2015), TPE (5,556 in 2008), and WAL (14,253 in 2016).

Yearly total abundance is plotted in **Figure 4-20**. Visually, the plots suggest similar abundance at WAL, TPE, and SP, and slightly increased abundance at TPN compared to 2024. Overall, the BACI results in **Table 4-9** show negative effect sizes (i.e., reduction) in abundances for TPE, and increased abundance at TPN, SP and WAL compared to reference area INUG in 2025, although none of the changes are statistically significant ($p > 0.1$). The observed effect sizes exceeded the 20% trigger at TPE (38% reduction), and WAL (33% increase), but not at SP (15% increase). These results appear to be influenced by natural inter-annual variability rather than mining activities.

Interpreting the BACI analysis results can be challenging for two reasons: 1) because natural variability exists between years and areas and 2) because there is heterogeneity within areas. For example, total abundance at TPE has been slightly lower over the past three years relative to the historical range but remains stable, with minor interannual variability (**Figure 4-20**). However, the 2025 BACI results for total abundance at TPE in each time period assessed over the past four years showed a relative reduction ranging from 36% to 48% compared to INUG, though none of these changes were statistically significant (**Table 4-9**). These results at TPE are likely driven by a combination of interannual variability, as well as a number of years with higher abundance at INUG, rather than a sustained decline at TPE.

A further challenge is accounting for heterogeneity within sites and the influence that differing abundance in replicates can have on the yearly mean for an area. For example, in 2024, abundance at replicate TPE-4 had a low total abundance of 478 organisms/m^2 compared to replicate TPE-3 which had a high abundance of 1,522 organisms/m^2. An even larger difference between replicates was observed in 2020, where the lowest total abundance was 2,065 organisms/m^2 at replicate WAL-4 compared to the highest total abundance of 24,261 organisms/m^2 at replicate WAL-5.

In recent years, estimated BACI effect sizes for total abundance at Meadowbank study area lakes have fluctuated but generally remained small. In 2025, effect sizes often exceeded the 20% trigger threshold, although none of these changes were statistically significant for *after* periods of up to four years (**Table 4-9**). As discussed previously, although BACI results indicated a relative reduction at TPE, temporal trends show that total abundance at this lake has remained fairly stable, with only minor interannual variability and values within the historical range (**Figure 4-20**). The apparent reductions at TPE are likely influenced by comparatively higher abundance observed at INUG in recent years, rather than a sustained decline. While BACI analyses are important for identifying potential temporal changes in benthos metrics, interpretation must consider natural interannual variability between years and areas, as well as heterogeneity within areas. Overall, the abundance data suggest that the apparent changes in benthic invertebrate abundance at the NF areas are likely attributed to natural variability

rather than mining-related activities. The potential influence of regional climate change on benthic communities is discussed in **Section 5.6.3** (Causality).

Major Taxa Abundance

Insects were the dominant taxon with general abundance ranging from 48% to 86% across areas, followed by molluscs which comprised roughly 13% to 46% relative abundance (**Figure 4-21** and **Figure 4-22**). While there were no apparent trends in composition changes related to mining at most areas, it is notable that most peaks or valleys in total abundance over the years appear to be driven by changes in insect abundance, predominantly chironomids. Notable examples are WAL in 2016 and 2018, or TPE in 2008. Given the large interannual changes in total abundance, it is not unexpected to see a change in the relative dominance of major taxa groups.

Taxa Richness

Taxa richness in 2025 was generally within the range of other sampling years (**Figure 4-23**). Mean taxa values at the reference areas were 13 at INUG (6th highest) and 8 at PDL (13th highest), which were around the mid-range of reported number of taxa since monitoring began in 2006 (INUG) and 2009 (PDL) (**Table 4-8**). Results of 2025 BACI suggested there was an apparent increase in taxa richness at all areas and time periods, except at WAL in 2025, where there was a slight apparent decrease. These changes were not statistically significant (p-value >0.1; **Table 4-10**). Overall, taxa richness remained within the range observed across all sampling years.

Major Taxa Richness

Insects were dominant in terms of absolute and proportional richness (generally from 6 to 8 taxa), followed by molluscs (~ 2 taxa; **Figure 4-24** and **Figure 4-25**). The 2025 results were similar to previous years and showed that there were no apparent trends in community composition related to mining activities.

4.6.4 Summary and Recommendations

The benthic invertebrate metrics (total abundance and taxa richness) for the NF and reference areas were generally within the range reported for previous years. Furthermore, the BACI analysis did not detect any statistically significant changes in abundance or taxa richness in 2025, nor in the three longer-term time periods assessed (i.e., 2024-25, 2023-25, 2022-25). There were apparent increases in abundance at TPN, SP, and WAL, and reduced abundance at TPE relative to INUG, however, the reductions were not statistically significant. In summary, the apparent slight changes in benthic community observed in 2025 are likely primarily due to natural variability rather than mining-related activities**. The benthic community will continue to be monitored in 2026.**

4.7 Meadowbank Tables and Figures

This section includes tables and figures for the Meadowbank CREMP, except for large tabulated data and figures for parameters not covered in the detailed analysis (refer to in-text references for relevant appendices). Subsections are organized by CREMP components including limnology, water chemistry, phytoplankton, sediment chemistry, and benthos.

Note: Meadowbank areas TPS, TE, and TEFF have not been sampled since 2015. For results from these areas from 2006 to 2015 see Azimuth 2021.

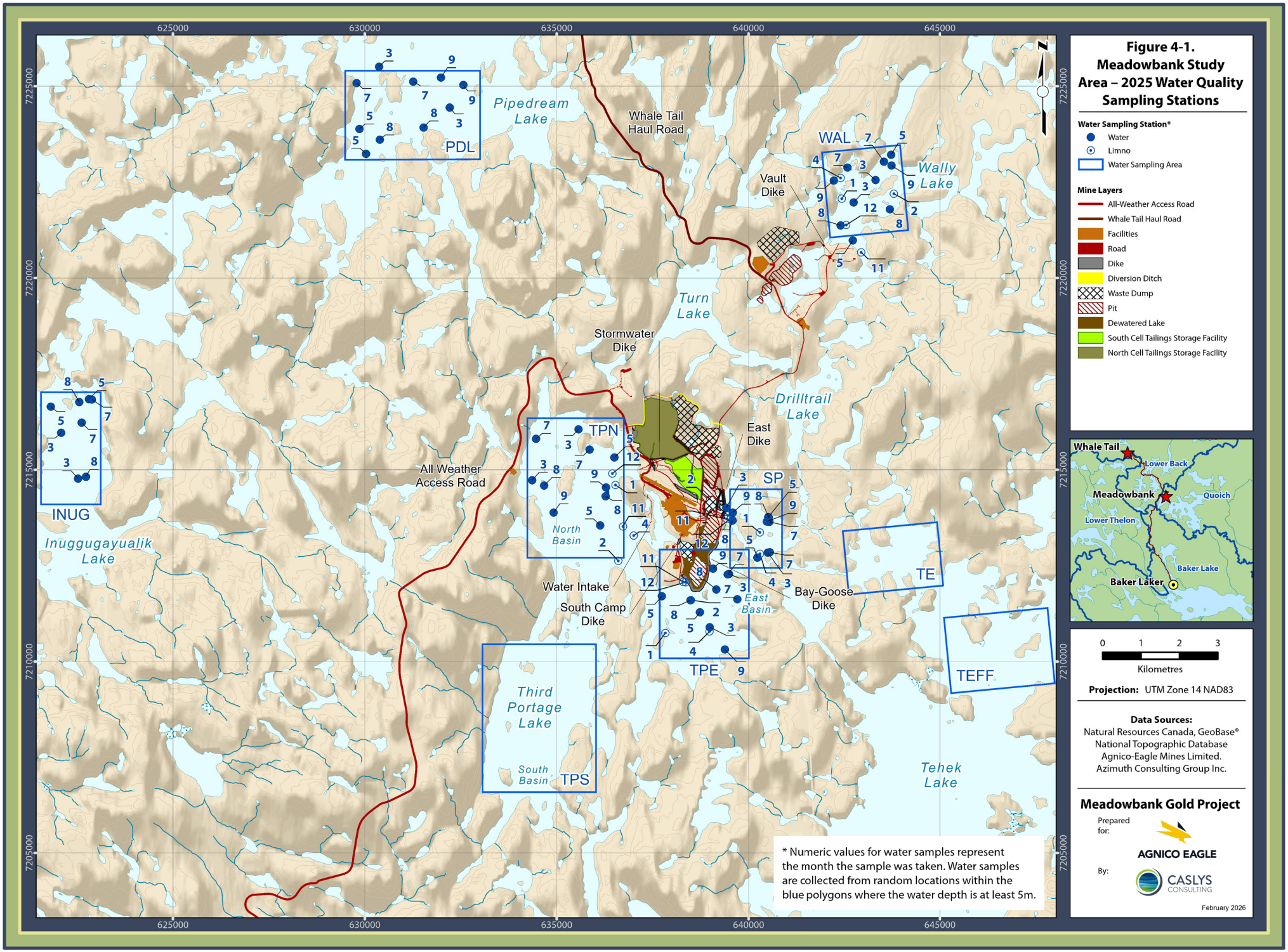


Figure 4-1. Meadowbank Study Area – 2025 Water Quality Sampling Stations

Water Sampling Station*
- Water
- Limno
- Water Sampling Area

Mine Layers
- All-Weather Access Road
- Whale Tail Haul Road
- Facilities
- Road
- Dike
- Diversion Ditch
- Waste Dump
- Pit
- Dewatered Lake
- South Cell Tailings Storage Facility
- North Cell Tailings Storage Facility

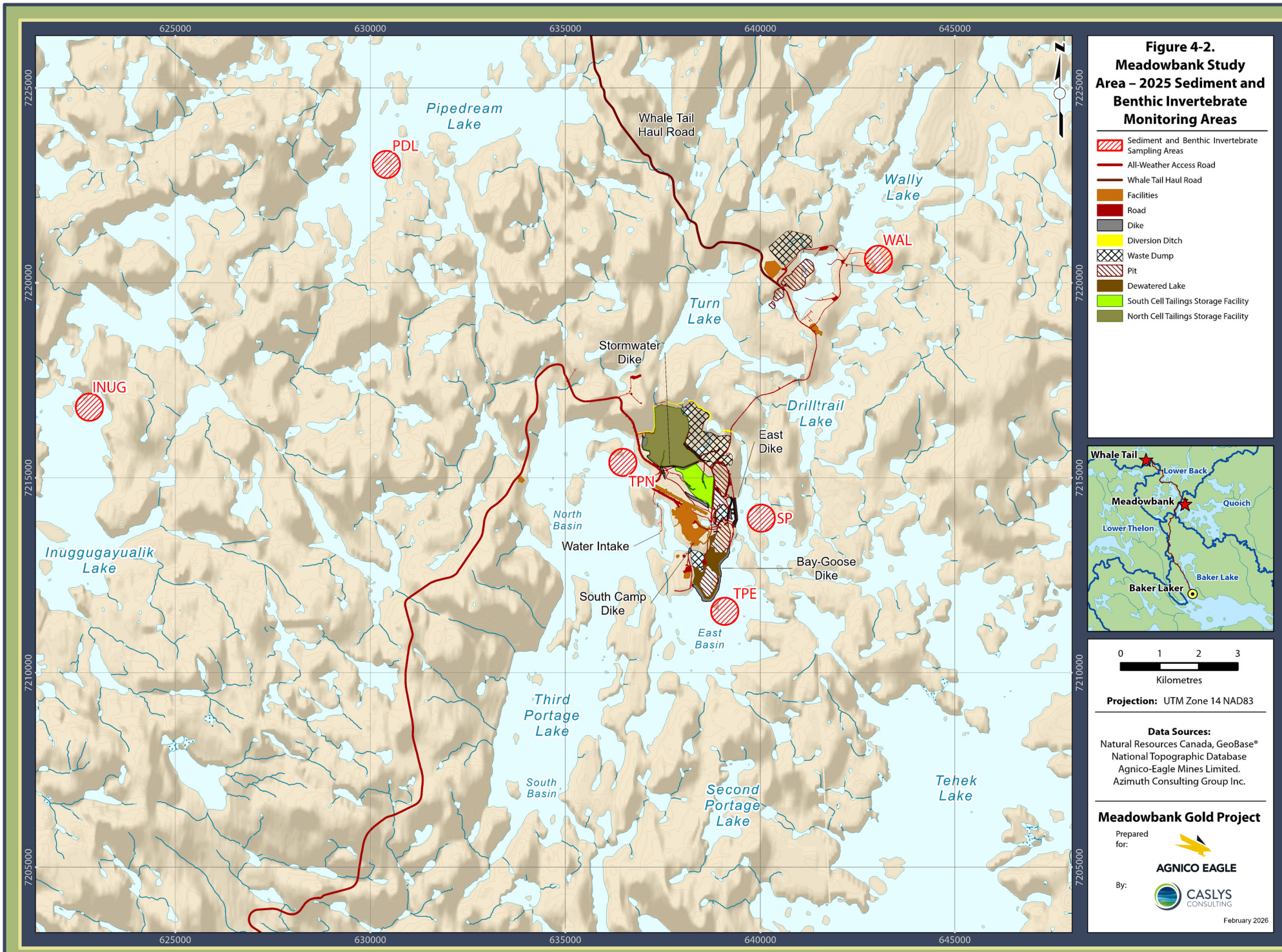


Figure 4-2. Meadowbank Study Area – 2025 Sediment and Benthic Invertebrate Monitoring Areas

- Sediment and Benthic Invertebrate Sampling Areas
- All-Weather Access Road
- Whale Tail Haul Road
- Facilities
- Road
- Dike
- Diversion Ditch
- Waste Dump
- Pit
- Dewatered Lake
- South Cell Tailings Storage Facility
- North Cell Tailings Storage Facility

0 1 2 3

Kilometres

Projection: UTM Zone 14 NAD83

Data Sources:
Natural Resources Canada, GeoBase® National Topographic Database
Agnico-Eagle Mines Limited.
Azimuth Consulting Group Inc.

Meadowbank Gold Project

Prepared for: AGNICO EAGLE

By: CASLYS CONSULTING

February 2026

Limnology Tables and Figures

Figure 4-3. Mean monthly field-measured temperature (°C) at 3 m depth since 2006, Meadowbank study area lakes.

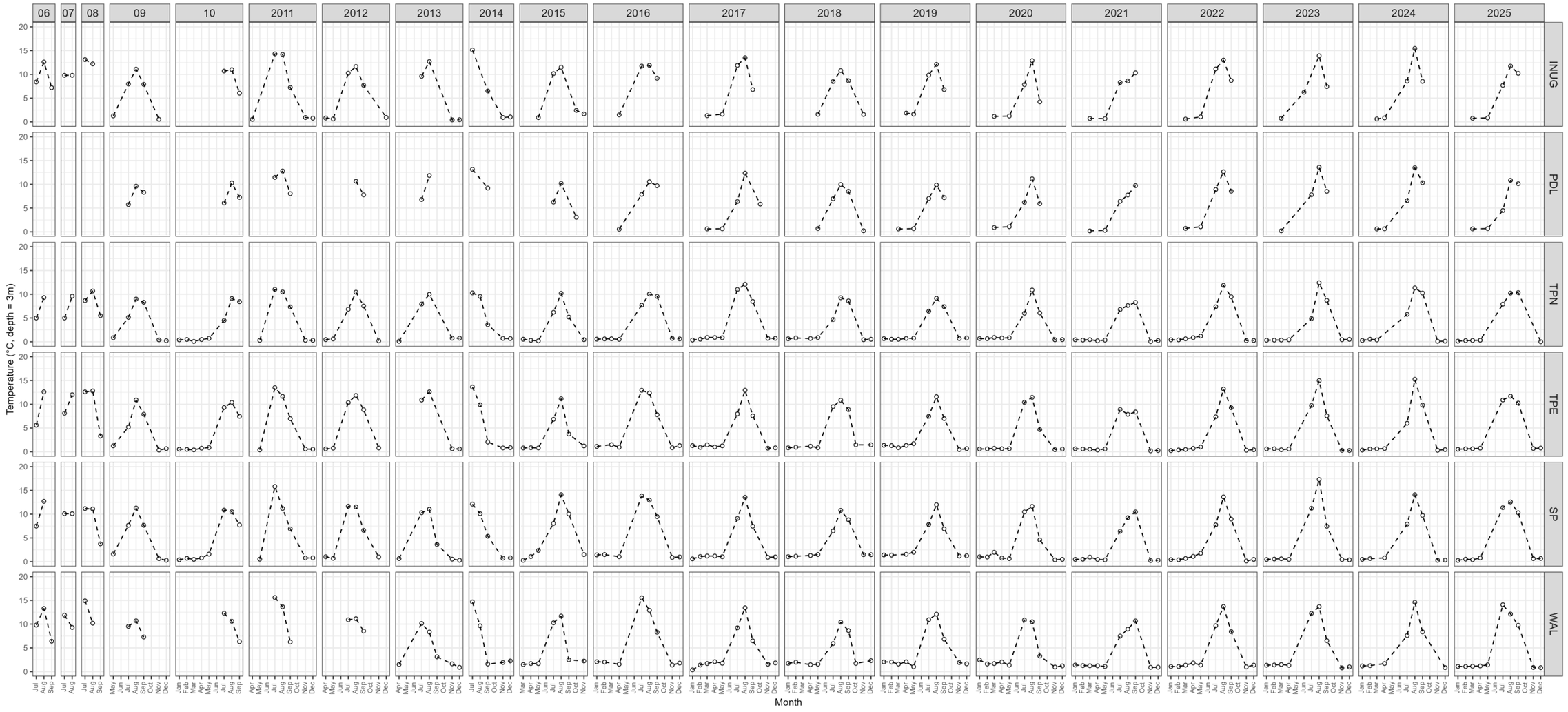


Figure 4-4. Meadowbank – Field-measured temperature profiles, 2025.

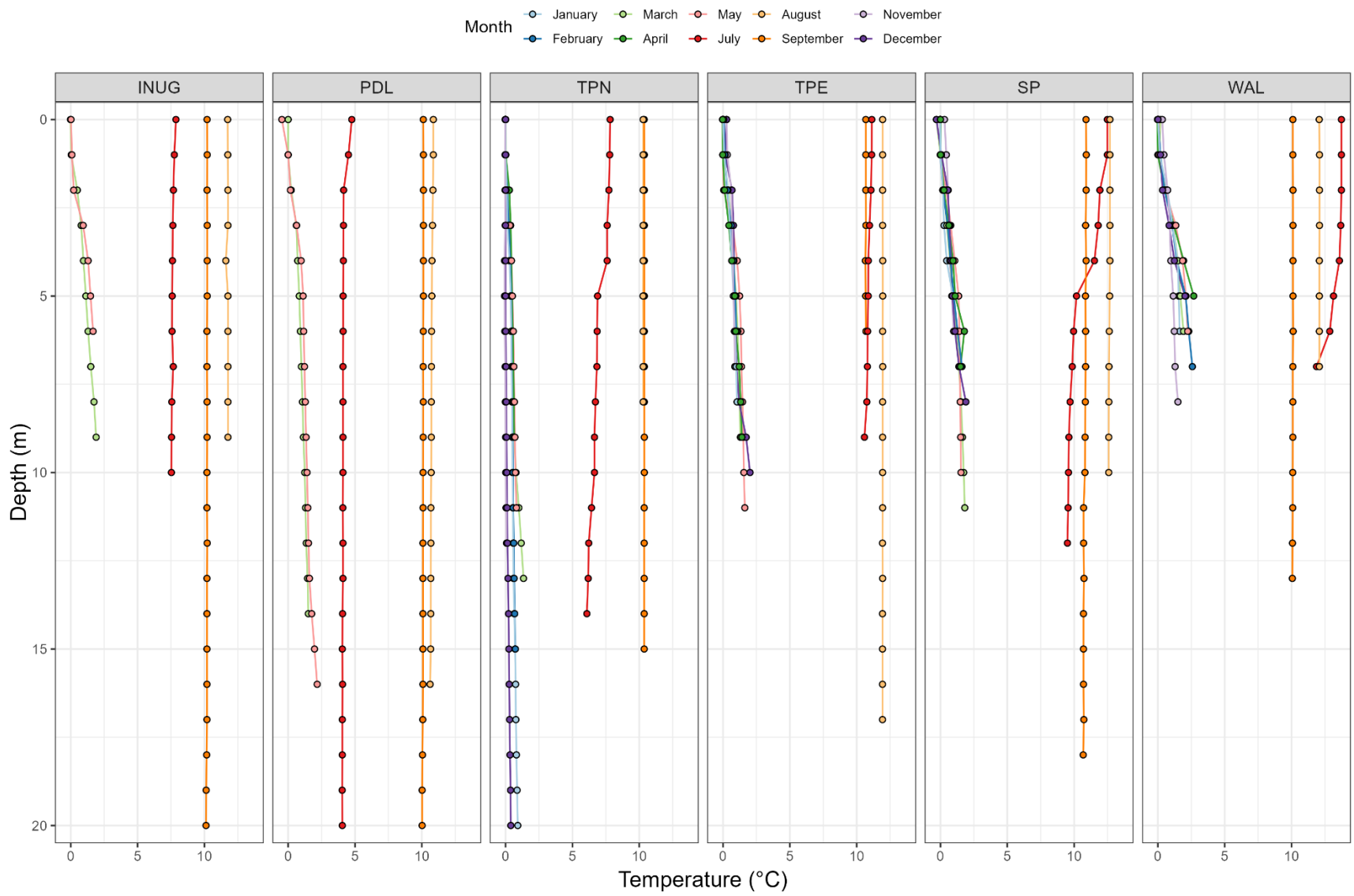


Figure 4-5. Meadowbank – Field-measured dissolved oxygen profiles, 2025.

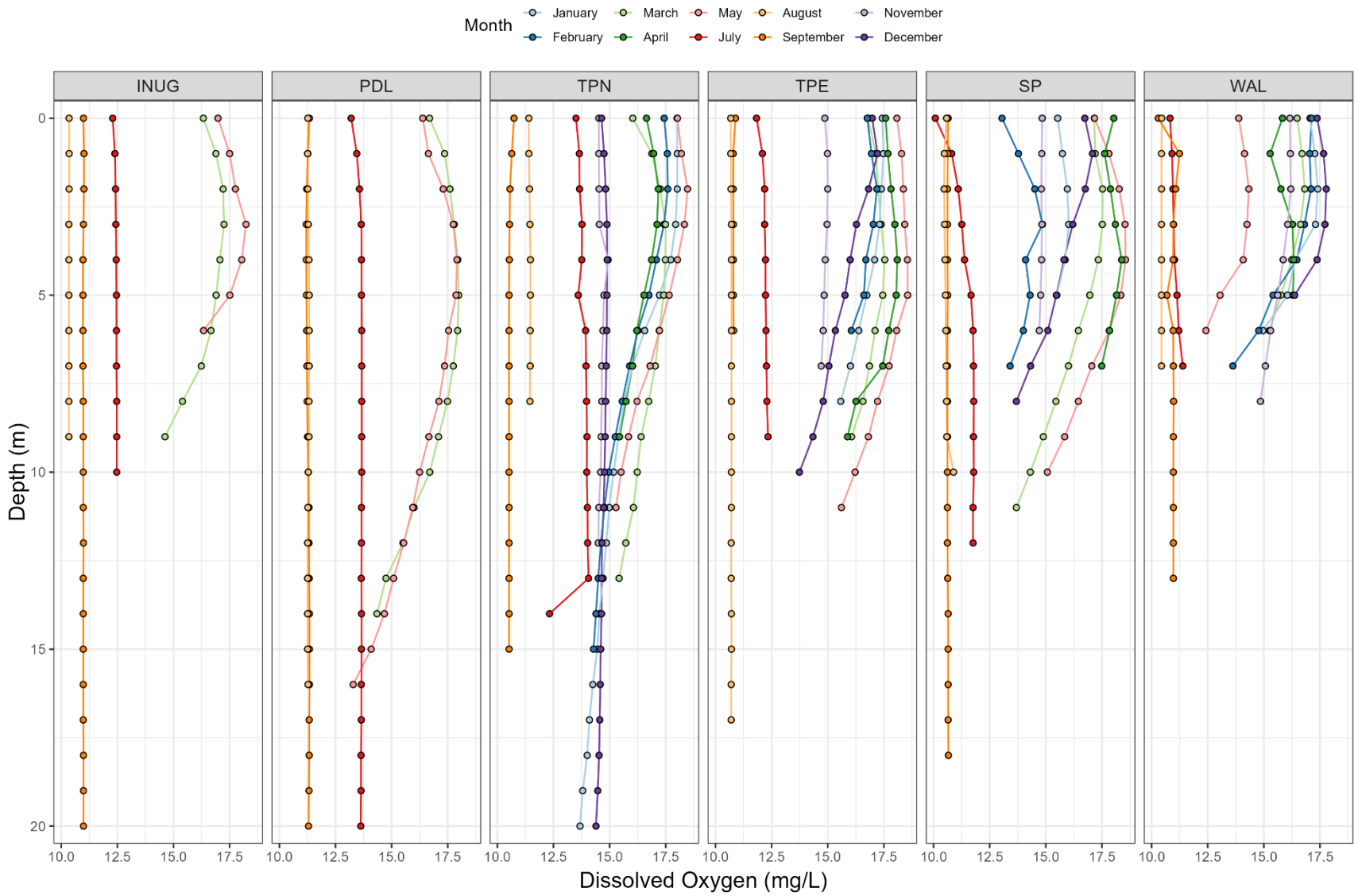
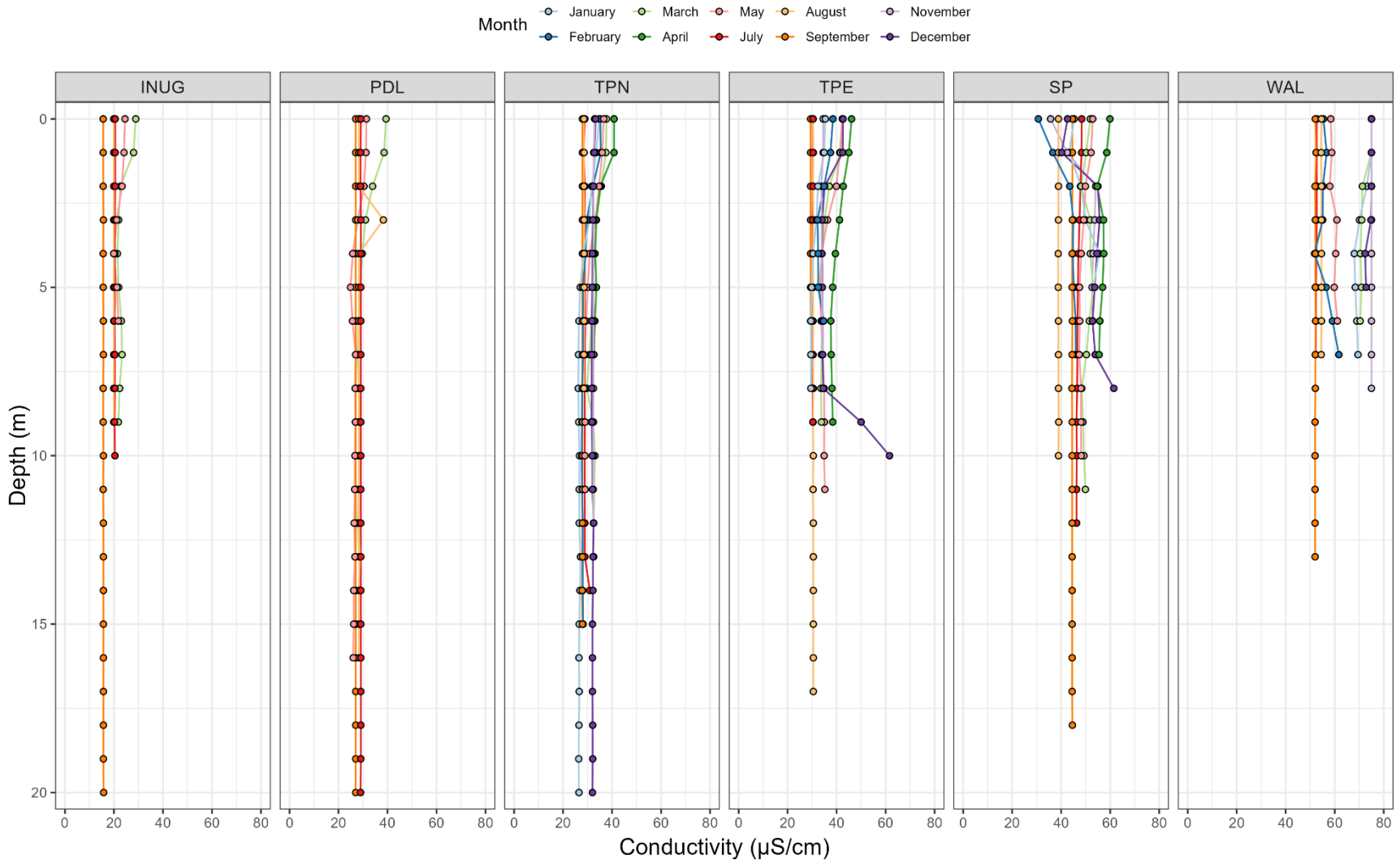


Figure 4-6. Meadowbank – Field-measured conductivity profiles, 2025.



Water Chemistry Tables and Figures

Table 4-2. Assessment process for water quality parameters, Meadowbank study area lakes, 2025.

Parameters	Trigger Exceedance[2]	Screening Level and Rule[1] 1 >DL ≥ 10% Frequency	2 C-I > 0.1 Frequency	3 Pattern = Activity
CONVENTIONALS				
Conductivity	All areas except INUG	**Yes**		
TSS	-	No	No	No
Hardness	All areas except INUG	**Yes**		
T-Alkalinity	SP, WAL, and PDL	**Yes**		
B-Alkalinity	SP, WAL, and PDL	**Yes**		
C-Alkalinity	-	No	No	No
TDS & MAJOR IONS				
TDS	SP, TPE, TPN, and WAL	**Yes**		
Calcium	All areas except INUG	**Yes**		
Chloride	-	**Yes**		
Fluoride	TPE and SP	**Yes**		
Magnesium	All areas	**Yes**		
Potassium	TPE and SP	**Yes**		
Sodium	WAL	**Yes**		
Sulphate	-	**Yes**		
NUTRIENTS & OTHERS				
Ammonia-N	-	**Yes**		
Nitrate-N	-	**Yes**		
Nitrite-N	-	No	No	No
TKN	-	**Yes**		
T-phosphorus	-	**Yes**		
Ortho-phosphate	-	No	No	No
DOC	INUG	**Yes**		
TOC	INUG	**Yes**		
Reactive silica	WAL	**Yes**		
T-Cyanide	-	No	No	No
Free Cyanide	-	No	No	No

Parameters	Trigger Exceedance[2]	Screening Level and Rule[1] 1 >DL ≥ 10% Frequency	2 C-I > 0.1 Frequency	3 Pattern = Activity
TOTAL METALS				
Aluminum	-	**Yes**		
Antimony	-	No	No	No
Arsenic	-	**Yes**		
Barium	-	**Yes**		
Beryllium	-	No	No	No
Boron	-	No	No	No
Cadmium	-	No	No	No
Chromium	-	**Yes**		
Copper	SP, TPN, and INUG	**Yes**		
Iron	-	**Yes**		
Lead	-	No	No	No
Lithium	-	No	No	No
Manganese	-	**Yes**		
Mercury	-	No	No	No
Molybdenum	-	**Yes**		
Nickel	-	**Yes**		
Selenium	-	No	No	No
Silicon	SP, WAL, INUG, and PDL	**Yes**		
Silver	-	No	No	No
Strontium	-	**Yes**		
Thallium	-	No	No	No
Tin	-	No	No	No
Titanium	-	No	No	No
Uranium	-	**Yes**		
Vanadium	-	No	No	No
Zinc	-	No	No	No

Parameters	Trigger Exceedance[2]	Screening Level and Rule[1] 1 >DL ≥ 10% Frequency	2 C-I > 0.1 Frequency	3 Pattern = Activity
DISSOLVED METALS				
Aluminum	-	**Yes**		
Antimony	-	No	No	No
Arsenic	-	**Yes**		
Barium	-	**Yes**		
Beryllium	-	No	No	No
Boron	-	No	No	No
Cadmium	-	No	No	No
Chromium	-	No	No	No
Copper	SP, TPN, and INUG	**Yes**		
Iron	-	No	No	No
Lead	-	No	No	No
Lithium	-	No	No	No
Manganese	-	**Yes**		
Mercury	-	No	No	No
Molybdenum	-	**Yes**		
Nickel	-	**Yes**		
Selenium	-	No	No	No
Silicon	SP, WAL, INUG, and PDL	**Yes**		
Silver	-	No	No	No
Strontium	-	**Yes**		
Thallium	-	No	No	No
Tin	-	No	No	No
Titanium	-	No	No	No
Uranium	-	**Yes**		
Vanadium	-	No	No	No
Zinc	INUG	No	No	No

Notes:
C-I = Control-Impact
DL = Detection Limit
1. A three-step assessment process was used to identify parameters to include in the formal temporal and spatial trend assessment (**Section 2.5.1** and **Section 4.3.2**).
Parameters were assigned "Yes" if the following criteria were met:
(1) **>DL ≥ 10% Frequency**: parameters that exceeded DLs in at least 10% of the samples.
(2) **C-I > 0.1 Frequency**: parameters detected more often in impact areas and the proportion of detected values increased by 0.1 or more.
(3) **Pattern = Activity**: an additional step was included to avoid screening out potentially important parameters. Trend plots were reviewed to determine whether infrequently detected parameters showed a trend and/or included values greater than 5 x DL in at least one sampling event at NF areas.
2. Indicates that a trigger exceedance occurred at the listed Meadowbank study area lakes in one or more sampling event.
Shaded parameters are included in the temporal and spatial trend assessment.
Plots for all individual parameters are presented in **Appendix C1**.

Table 4-3. Water quality variables at the Meadowbank study areas for which the 2025 mean concentration exceeded the trigger.

Meadowbank Study Areas

Parameter	Trigger	Threshold	2025 Mean		
			TPN	TPE	SP
			NF	NF	NF
Conductivity	27.4	-	32.9	34.9	50.5
Hardness	9.5	-	11.5	12.6	19.7
Bicarbonate Alkalinity	8.7	-	-	-	12.2
Total Alkalinity	8.7	-	-	-	12.2
TDS	19.0	-	21.5	21.3	28.9
Calcium	2.39	-	2.7	3.0	5.0
Fluoride	0.088	0.12	-	0.089	0.092
Potassium	0.58	-	-	0.61	0.64
Magnesium	0.93	-	1.1	1.2	1.8
T. Silicon	0.20	-	-	-	0.39
D. Silicon	0.18	-	-	-	0.33

Wally Lake

Parameter	Trigger	Threshold	2025 Mean
Conductivity	36.6	-	65.9
Hardness	16.7	-	28.2
Bicarbonate Alkalinity	17.8	-	18.5
Total Alkalinity	17.8	-	18.5
TDS	25.3	-	46.6
Calcium	4.9	-	7.4
Magnesium	1.4	-	2.4
Sodium	0.72	-	0.86
Reactive Silica	1.1	-	1.5
T. Silicon	0.65	-	0.73
D. Silicon	0.67	-	0.69

Notes:

"-" indicates no threshold available, and/or mean annual concentration was less than the trigger value.
All mean values are reported in units of mg/L except for conductivity (µS/cm).

Table 4-4. Results of BACI tests for selected water variables at Meadowbank study areas in 2025.

Parameter	Test Area	n(B)	n(A)	Estimate	SE	P-value[1]	Proportional change		
							exp(Est)	LCI	UCI
Conductivity	TPN	6	5	0.46	0.041	**< 0.001**	1.6	1.4	1.7
	TPE	8	5	0.51	0.046	**< 0.001**	1.7	1.5	1.8
	SP	5	5	0.38	0.040	**< 0.001**	1.5	1.3	1.6
	WAL	18	5	0.31	0.077	**< 0.001**	1.4	1.2	1.6
Hardness	TPN	6	5	0.41	0.043	**< 0.001**	1.5	1.4	1.7
	TPE	8	5	0.50	0.048	**< 0.001**	1.7	1.5	1.8
	SP	5	5	0.38	0.046	**< 0.001**	1.5	1.3	1.6
	WAL	18	5	0.38	0.068	**< 0.001**	1.5	1.3	1.7
TDS	TPN	6	5	0.31	0.11	**0.010**	1.4	1.1	1.8
	TPE	8	5	0.40	0.066	**< 0.001**	1.5	1.3	1.7
	SP	5	5	0.57	0.12	**0.00063**	1.8	1.4	2.3
	WAL	5	5	0.38	0.040	**< 0.001**	1.5	1.3	1.6
Total Alkalinity	SP	5	5	0.30	0.052	**< 0.001**	1.3	1.2	1.5
	WAL	18	5	0.24	0.072	**0.0016**	1.3	1.1	1.5
Bicarbonate Alkalinity	SP	5	5	0.30	0.052	**< 0.001**	1.3	1.2	1.5
	WAL	18	5	0.24	0.072	**0.0017**	1.3	1.1	1.5
Fluoride	TPE	4	5	0.086	0.050	0.064	1.1	0.97	1.2
	SP	2	5	0.074	0.061	0.14	1.1	0.92	1.3
Calcium	TPN	6	5	0.46	0.044	**< 0.001**	1.6	1.4	1.7
	TPE	8	5	0.55	0.050	**< 0.001**	1.7	1.5	1.9
	SP	5	5	0.39	0.049	**< 0.001**	1.5	1.3	1.6
	WAL	18	5	0.32	0.048	**< 0.001**	1.4	1.3	1.5
Potassium	TPE	8	5	0.23	0.029	**< 0.001**	1.3	1.2	1.3
	SP	5	5	0.29	0.053	**< 0.001**	1.3	1.2	1.5
Magnesium	TPN	6	5	0.36	0.046	**< 0.001**	1.4	1.3	1.6
	TPE	8	5	0.42	0.048	**< 0.001**	1.5	1.4	1.7
	SP	5	5	0.36	0.045	**< 0.001**	1.4	1.3	1.6
	WAL	18	5	0.43	0.054	**< 0.001**	1.5	1.4	1.7
Sodium	WAL	18	5	-0.024	0.040	0.72	0.98	0.90	1.1
T. Silicon	WAL	6	5	-0.091	0.11	0.79	0.91	0.72	1.2
D. Silicon	WAL	6	5	-0.10	0.15	0.74	0.90	0.64	1.3
Reactive Silica	WAL	16	5	0.40	0.22	**0.047**	1.5	0.93	2.4

Notes:
1. Bolded P-values are statistically significant (p <0.05).
Test area = area compared to control (INUG).
N(B) = number of paired months in the *before* period.
N(A) = number of paired months in the *after* period (i.e., in 2025).
Estimate = BACI model estimate of the 2025 change in mean for log-transformed data.
SE = standard error of the estimate.
DF = degrees of freedom.
P-value = one-tailed test of the null hypothesis (no change or a decrease in mean [opposite for lower pH trigger]).
Exp(Est.) = estimated proportional change.
LCI = lower 95% confidence interval; UCI = upper 95% confidence interval.

Table 4-5. Sampling effort and frequency assessment results for the Meadowbank study area lakes, 2025.

Areas	Area Designation	Triggers Exceeded?	Minor Changes [1]		Moderate Changes [2]		Major Changes [3]		Plan for 2026
		Yes/No	Yes/No	Parameters	Yes/No	Parameters	Yes/No	Parameters	
Sampling Strategy for Reference Areas									
INUG	Ref	Yes	Yes	TOC & DOC, Mg, T.& D. Silicon	No	-	No	-	Full CREMP (reference area)
PDL	Ref	Yes	Yes	Cond., Hard., Alkalinity (HCO_3 & Total), Ca, Mg, T.& D. Silicon	No	-	No	-	Full CREMP (reference area)
Sampling Strategy for Near-field Areas									
TPE	NF	Yes	Yes	Cond., Hard., Ca, F, K, Mg, TDS	No	-	No	-	Full CREMP (near-field area)
TPN	NF	Yes	Yes	Cond., Hard., Ca, Mg, TDS	No	-	No	-	Full CREMP (near-field area)
SP	NF	Yes	Yes	Cond., Hard., Alkalinity (HCO_3 & Total), Ca, F, K, Mg, TDS, T.& D. Silicon	No	-	No	-	Full CREMP (near-field area)
WAL	NF	Yes	Yes	Cond., Hard., Alkalinity (HCO_3 & Total), Ca, Mg, Na, TDS, Reactive silica, T.& D. Silicon	No	-	No	-	Full CREMP (near-field area)
Sampling Strategy for Mid-field and Far-field Areas									
TE	MF	-	-	-	-	-	-	-	Sampling suspended
TEFF	FF	-	-	-	-	-	-	-	Sampling suspended
TPS	MF	-	-	-	-	-	-	-	Sampling suspended

Notes:

1. Minor = exceedance of the early warning trigger values for parameters without effects-based threshold values.
2. Moderate = exceedance of the early warning trigger values for parameters with effects-based thresholds.
3. Major = exceedance of the effects-based threshold values.

NA = Routine water sampling at MF and FF areas was not required in 2025. Sampling will be conducted at MF and FF areas if monitoring data from the NF areas suggest there are “moderate” changes in water quality. See *CREMP Plan Update* for details (Azimuth, 2022b).

Table 4-6. Meadowbank study area FEIS screening predictions compared to 2025 mean concentrations.

	Meadowbank Study Area							
	FEIS Screening Prediction				2025 Annual Mean			
Parameter	**TPN**	**TPE**	**SP**	**WAL**	**TPN**	**TPE**	**SP**	**WAL**
Hardness	5.7	5.7	8.9	17.2	11.5	12.6	19.7	28.2
Total Alkalinity	4.1	4.1	7.0	13.2	-	-	12.2	18.5
HCO_3 Alkalinity	4.1	4.1	7.0	13.2	-	-	12.2	18.5
Calcium	1.3	1.3	2.3	4.7	2.7	3.0	5.0	7.4
Fluoride	0.070	0.070	0.070	0.050	-	0.089	0.092	-
Potassium	2.0	2.0	2.0	2.0	-	0.61	0.64	-
Magnesium	0.60	0.60	0.80	1.3	1.1	1.2	1.8	2.4
Sodium	2.0	2.0	2.0	2.0	-	-	-	0.86
Silicon (T)	0.010	0.010	0.010	0.040	-	-	0.39	0.73

Notes:
Mean concentrations are reported in units of mg/L.
"-" indicates mean annual concentration was less than the trigger value.

Figure 4-7. Conventional parameters in water samples from Meadowbank study area lakes since 2006.

Note: Conductivity data from 2014 should be interpreted with caution (See Azimuth [2015c] for more details).

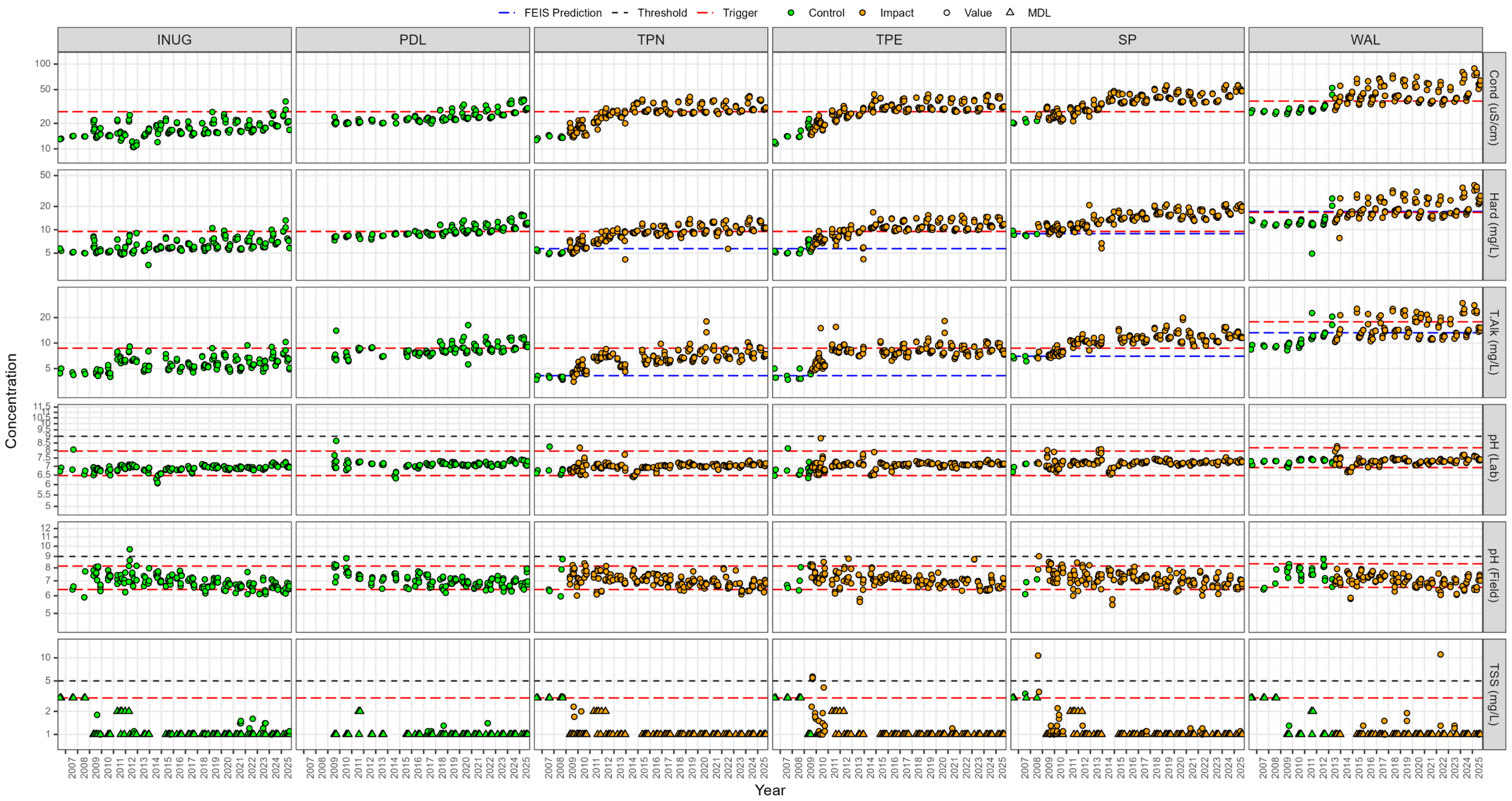


Figure 4-8. Major ions in water samples from Meadowbank study area lakes since 2006.

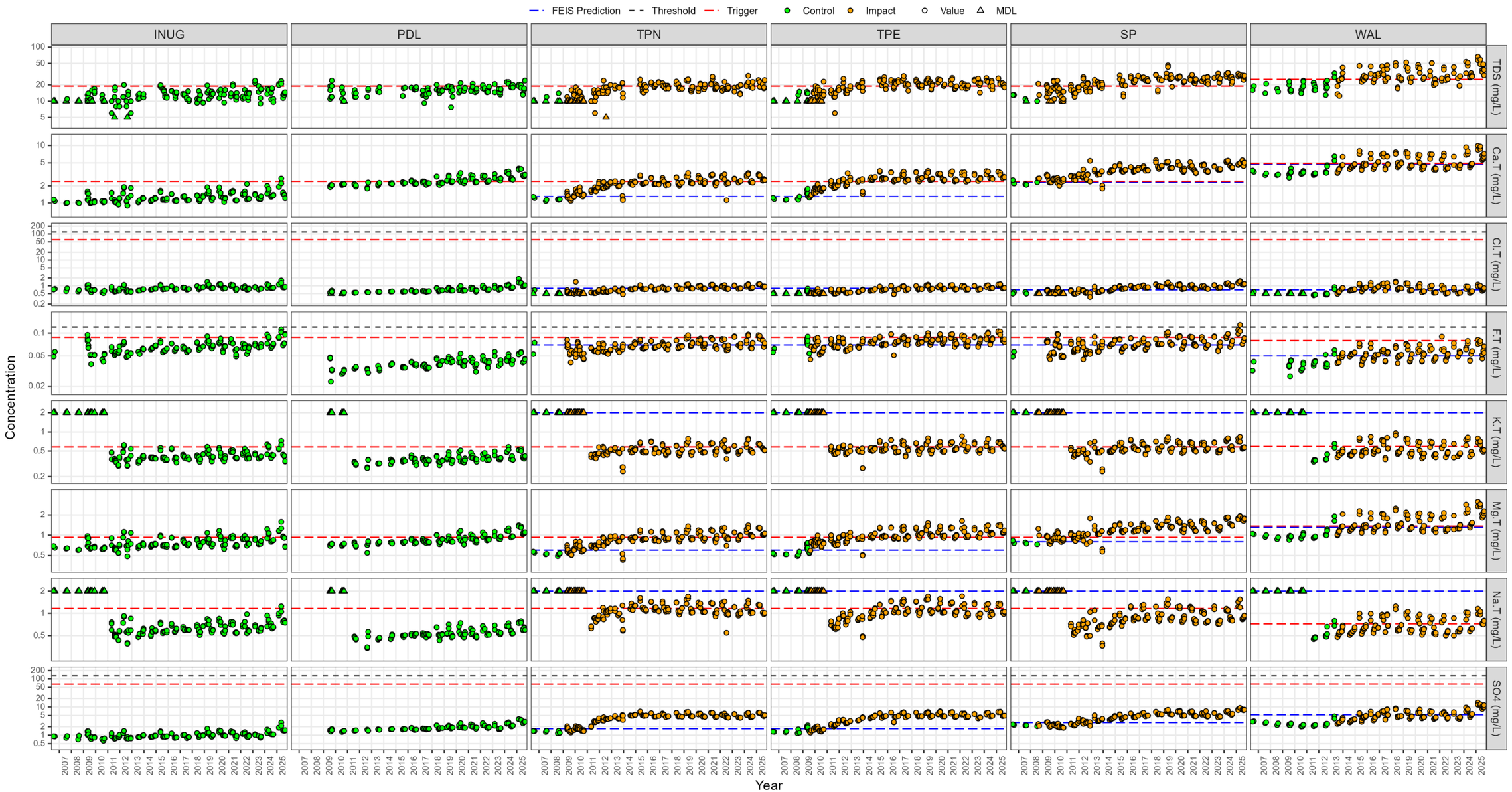


Figure 4-9. Nutrients in water samples from Meadowbank study area lakes since 2006.

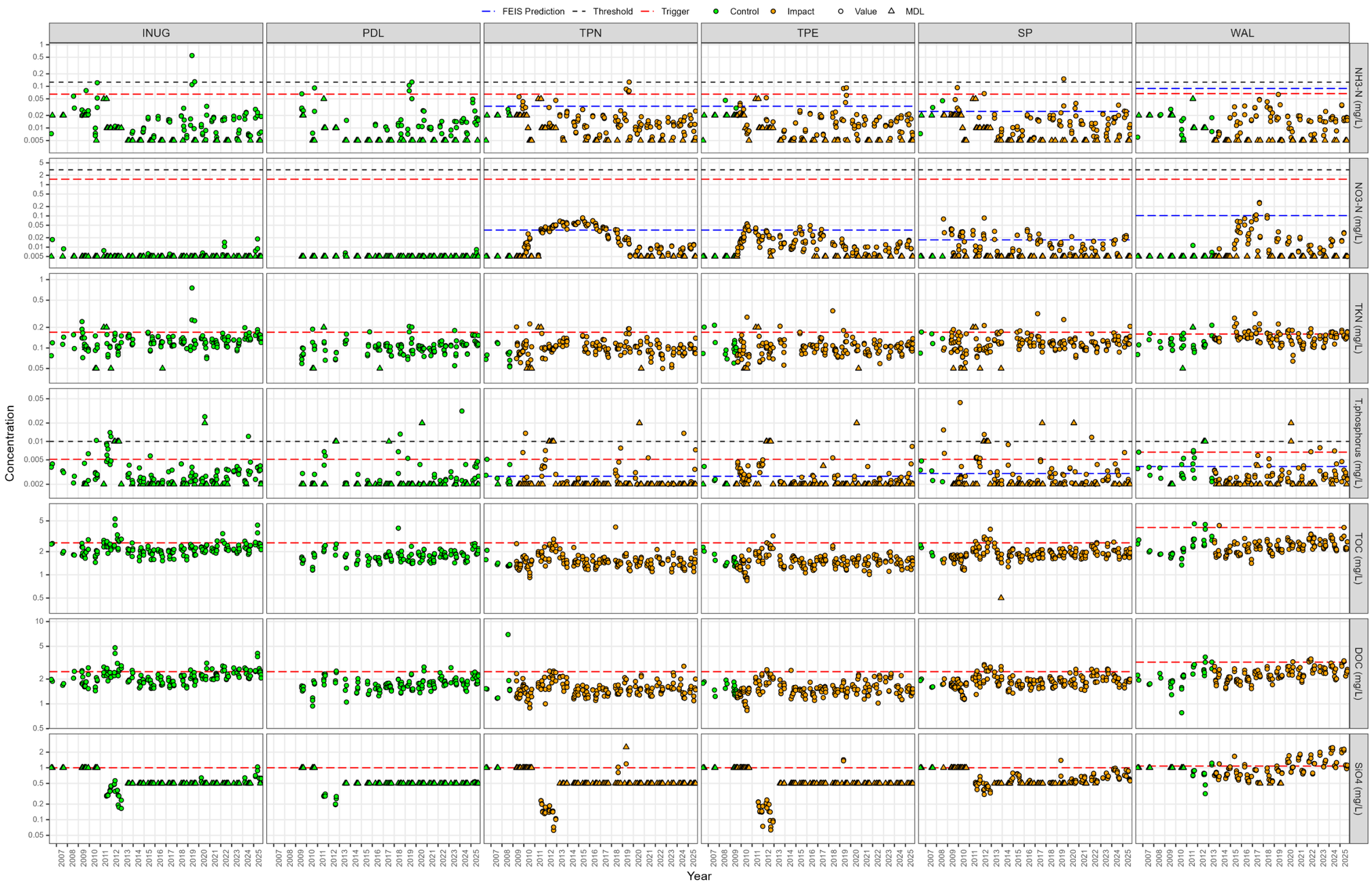


Figure 4-10. Metals in water samples from Meadowbank study area lakes since 2006.

Note: The FEIS prediction is equal to the threshold value for total arsenic at WAL.

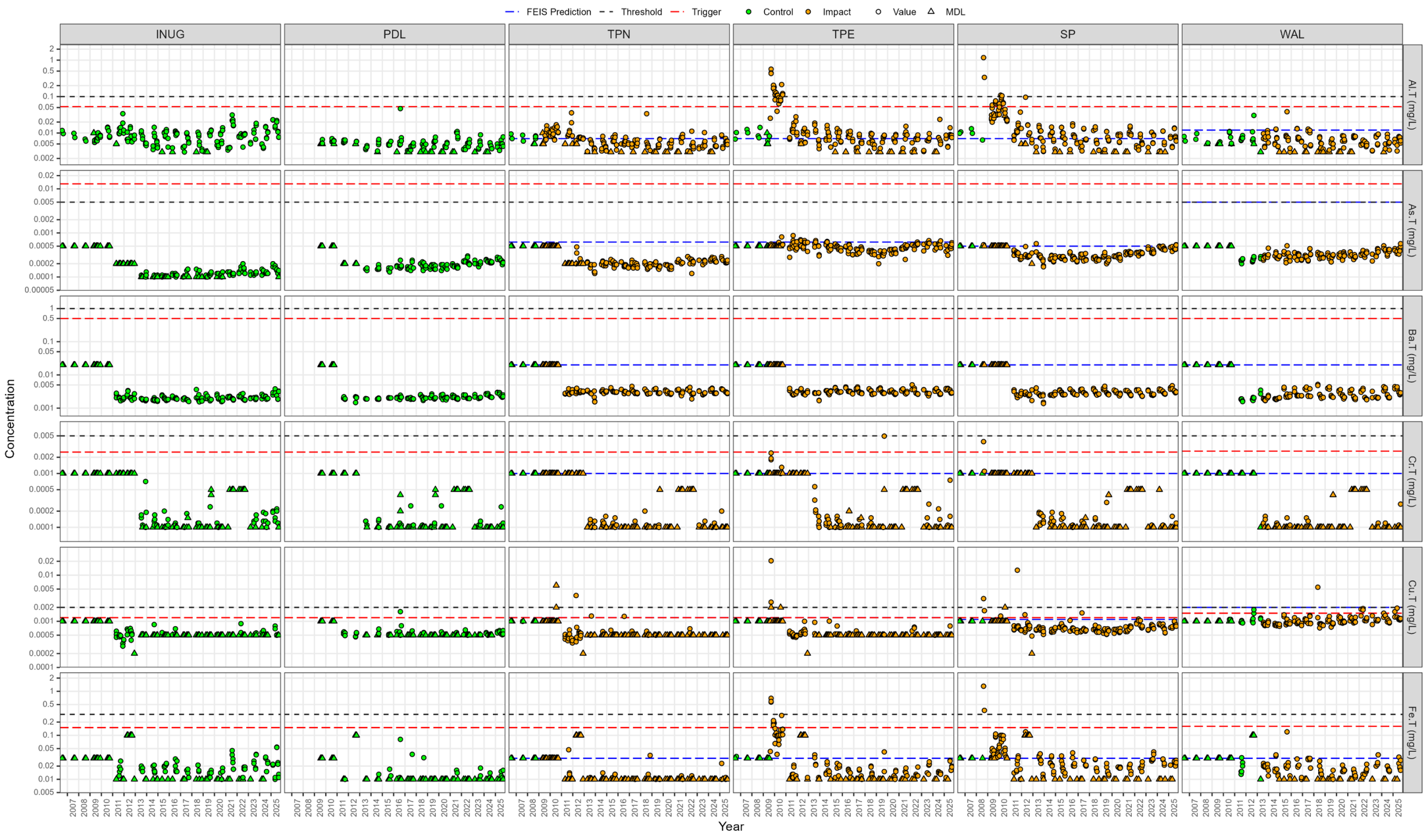


Figure 4-11. Metals in water samples from Meadowbank study lakes since 2006.

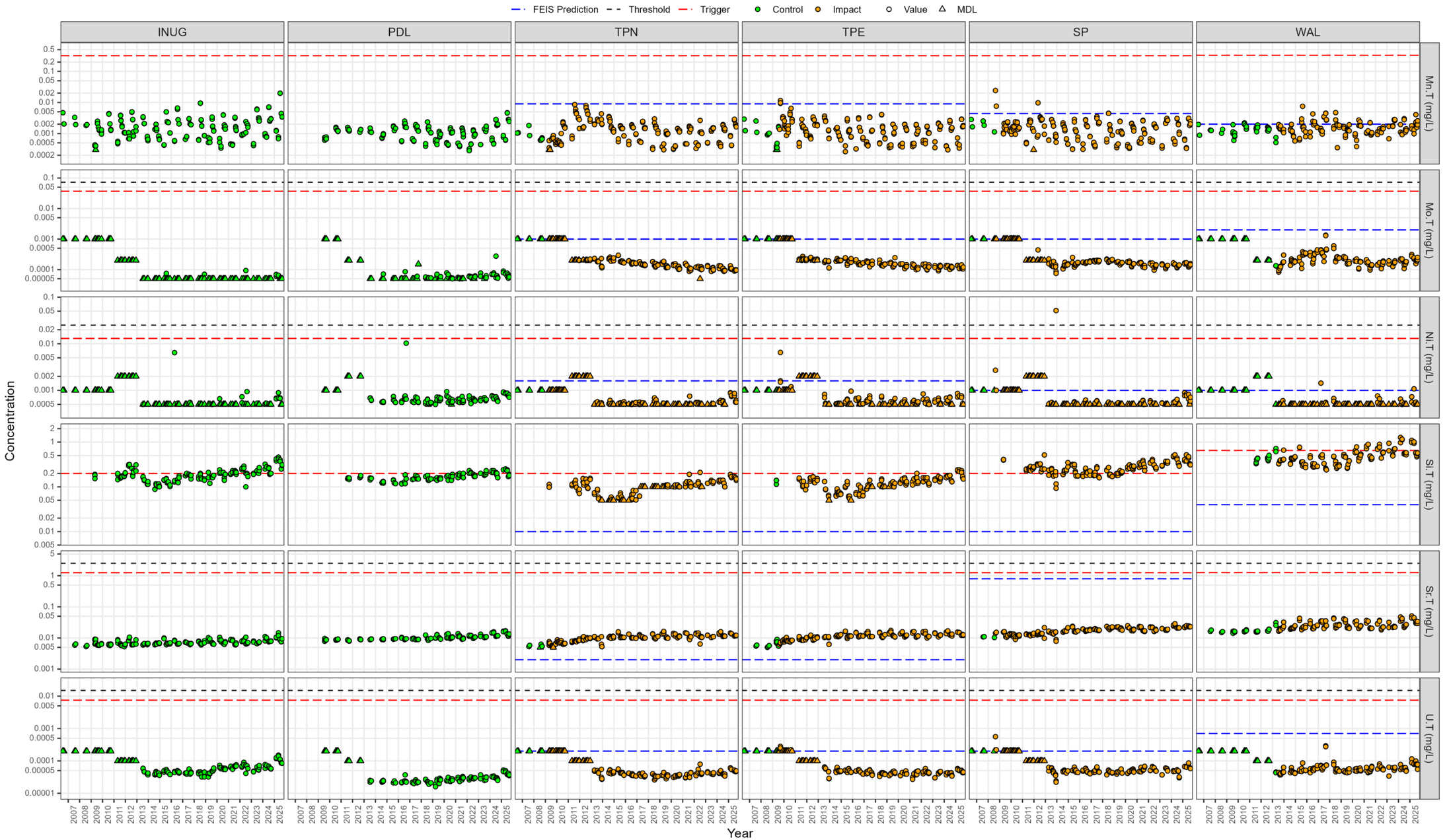
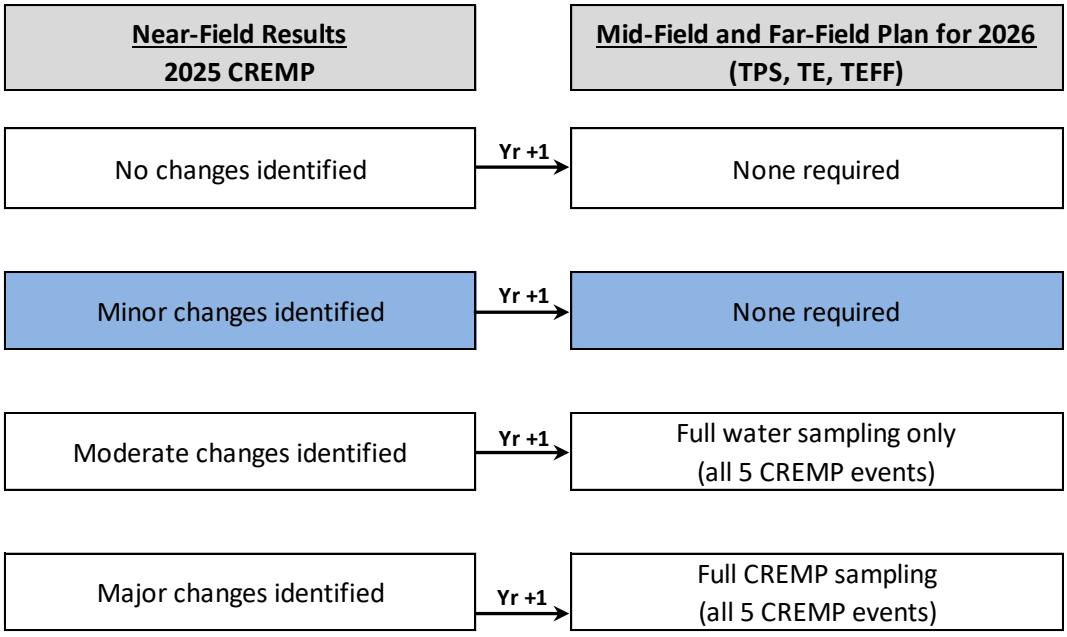


Figure 4-12. Flow chart showing sampling effort and frequency plan for mid-field and far-field sampling in 2025.



Note: Blue-shaded cells show the linkage between 2025 CREMP results and the sampling effort and frequency for mid-field and far-field sampling in 2026. *Minor changes* refer to statistically significant increased concentrations for parameters without effects-based threshold values that exceed the early warning trigger values. Refer to **Section 2.4** for more information.

Phytoplankton Tables and Figures

Table 4-7. Results of the BACI test for phytoplankton variables at Meadowbank areas, 2025.

Parameter Measured	Test Area	n(B)	n(A)	Estimate	SE	P-value*	Effect size (%)		
							ES	LCI	UCI
Total Biomass	TPN	7	3	0.04	0.36	0.920	4	-55	140
	TPE	8	3	0.02	0.31	0.941	2	-49	105
	SP	6	3	-0.19	0.25	0.475	-17	-55	50
	WAL	19	3	-0.38	0.25	0.152	-31	-60	16
Taxa Richness	TPN	7	3	-0.01	0.11	0.928	-1	-24	29
	TPE	8	3	-0.04	0.06	0.536	-4	-17	11
	SP	6	3	-0.02	0.05	0.712	-2	-12	10
	WAL	19	3	-0.15	0.07	**0.053**	-14	-26	0

Notes:

*** Bolded** values are P-values < 0.1.

Shaded cells indicate positive (increased) or negative (reduced) effect sizes of 20% or more.

Test area = area compared to control (INUG).

n(B) = number of months in the "before" period.

n(A) = number of months in the "after" period (i.e., in 2025).

Estimate = BACI model estimate of the 2025 change in mean for log-transformed data.

SE = standard error of the estimate.

P-value = two-tailed test of the null hypothesis of no change.

ES = estimated effect size (i.e., 100%*(exp[Estimate]-1)).

LCI = lower 95% confidence interval; UCI = upper 95% confidence interval.

Figure 4-13. Chlorophyll-a (µg/L) in water samples from Meadowbank study area lakes since 2006.

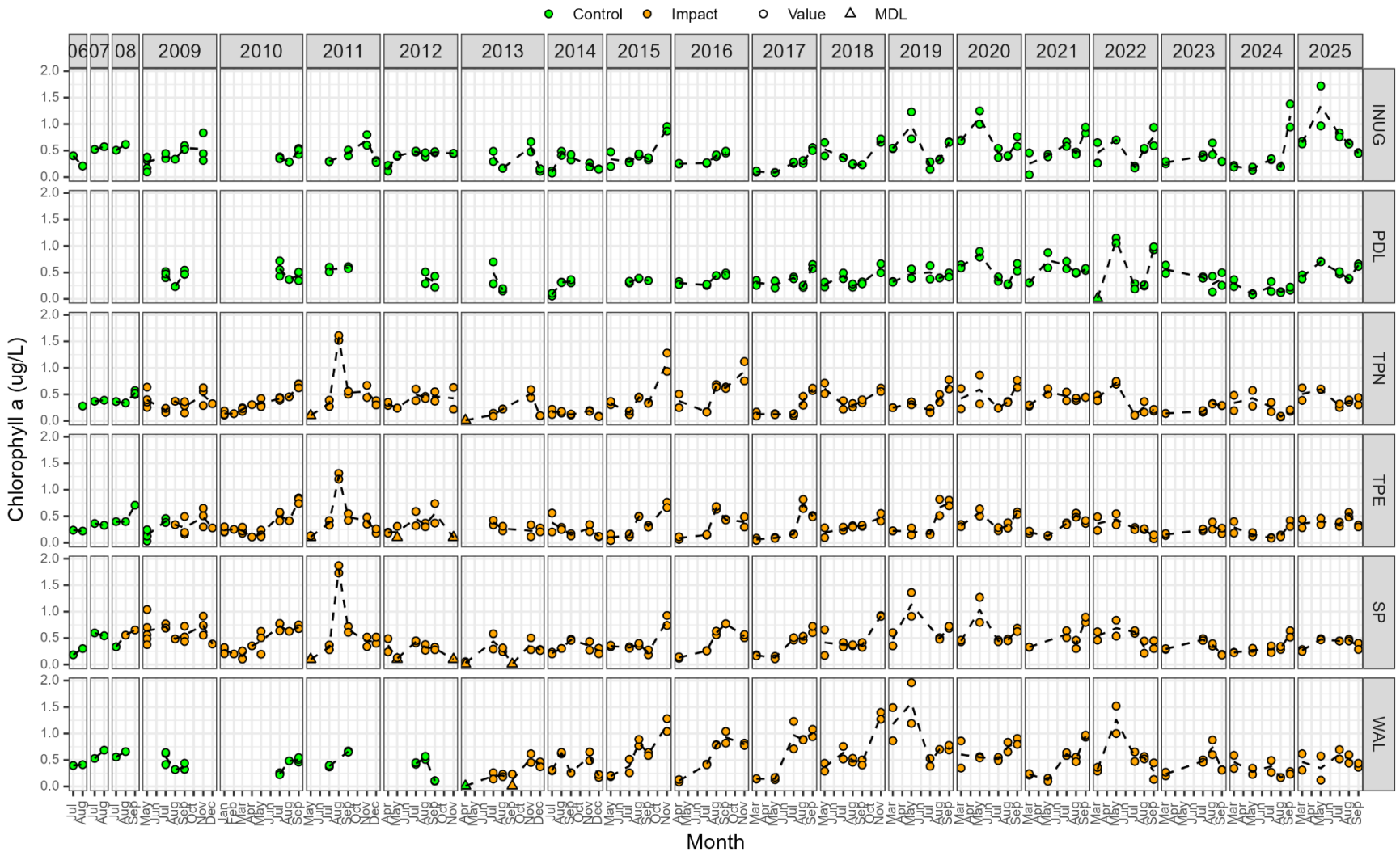


Figure 4-14. Total phytoplankton biomass (mg/m^3) from Meadowbank study area lakes since 2006.

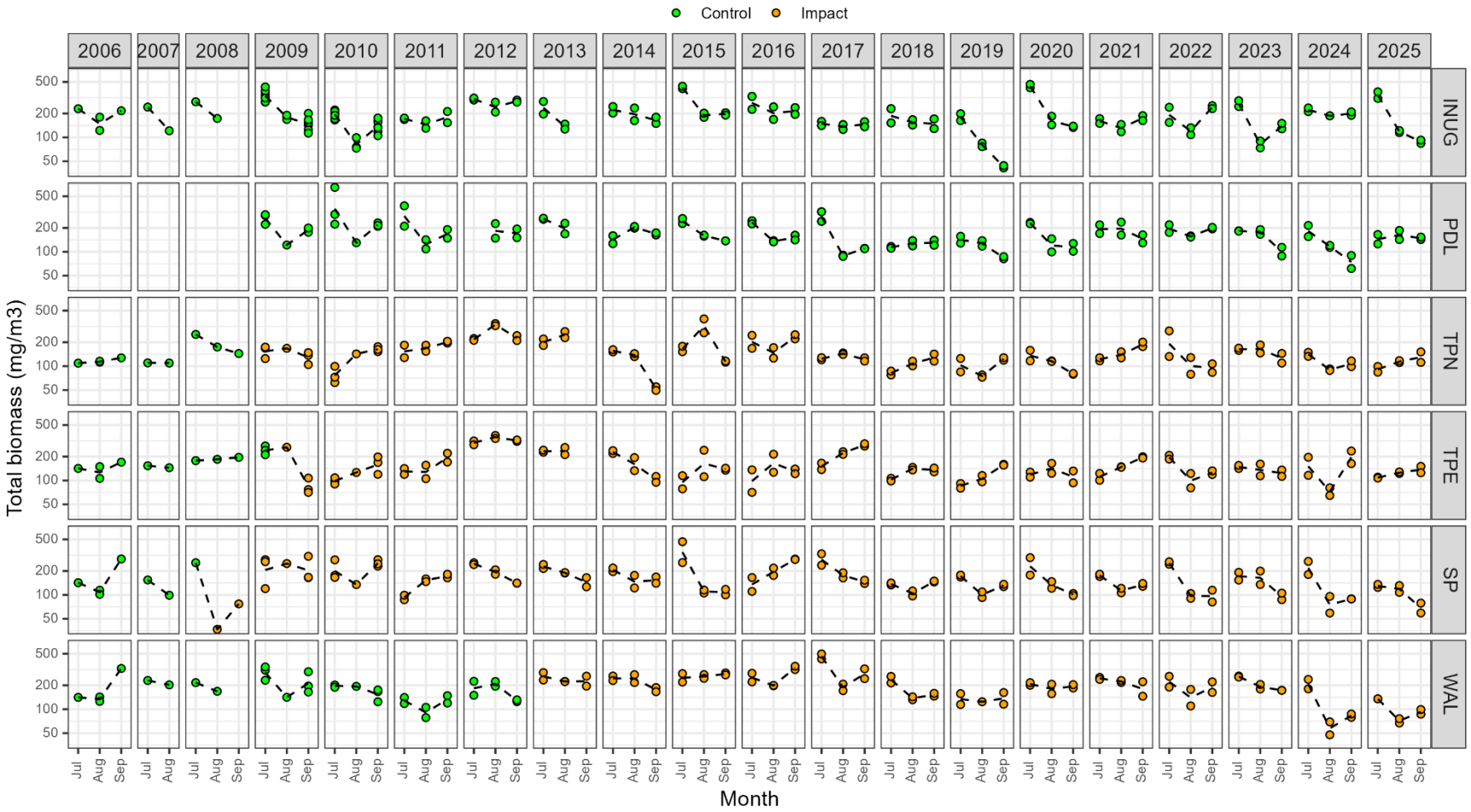


Figure 4-15. Phytoplankton biomass (mg/m^3) by major taxa from Meadowbank study area lakes since 2006.

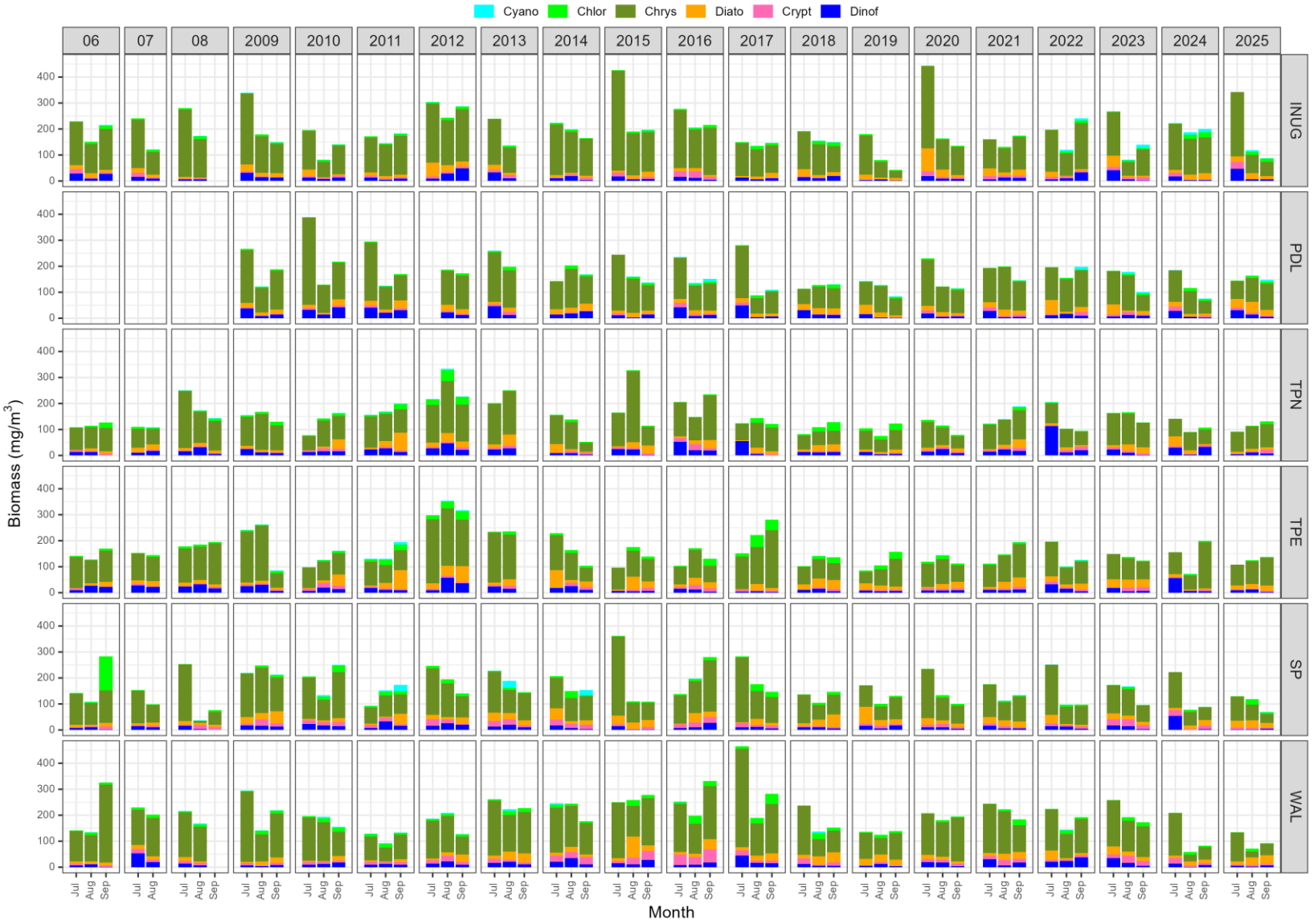


Figure 4-16. Relative phytoplankton biomass by major taxa group from Meadowbank study area lakes since 2006.

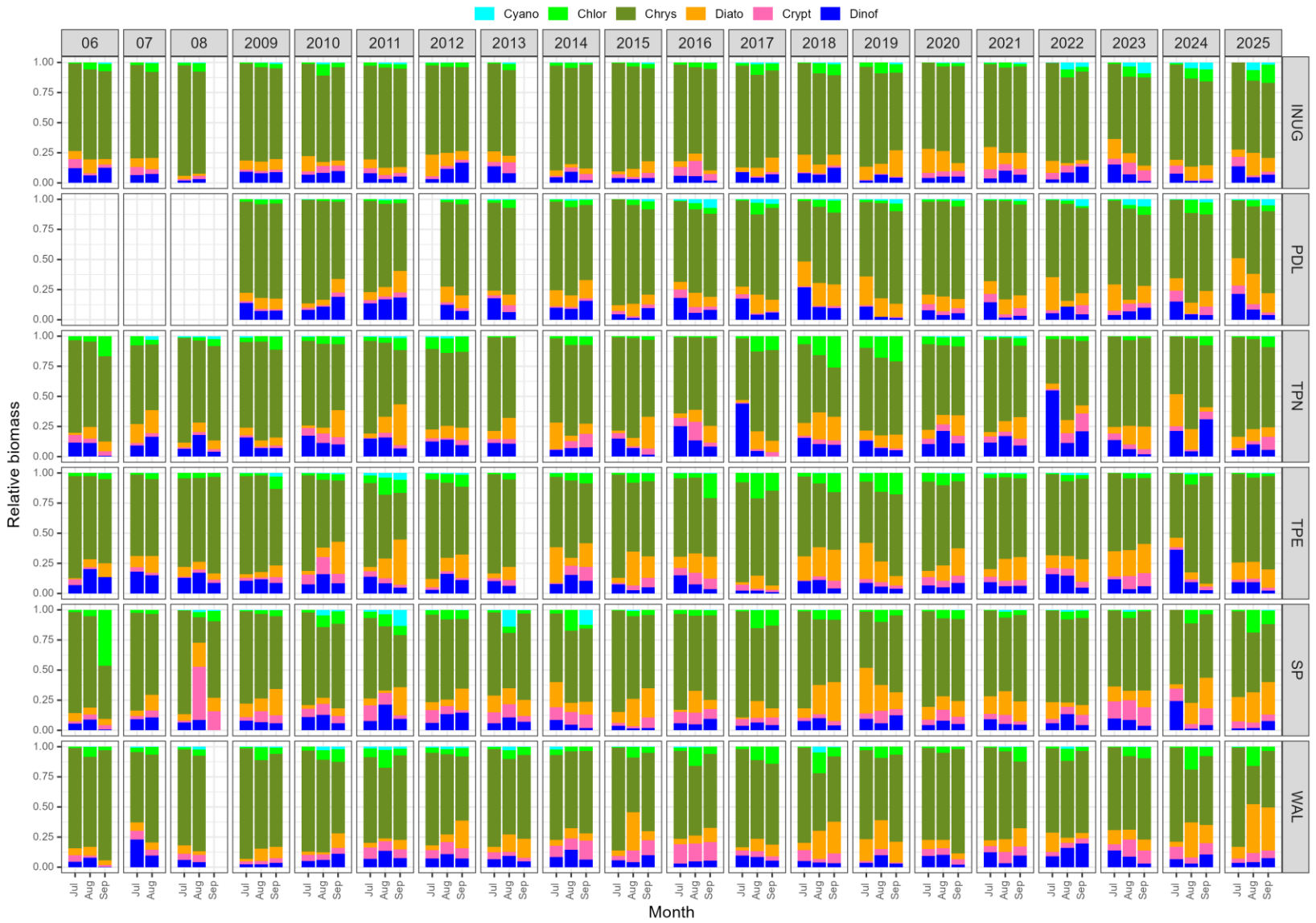
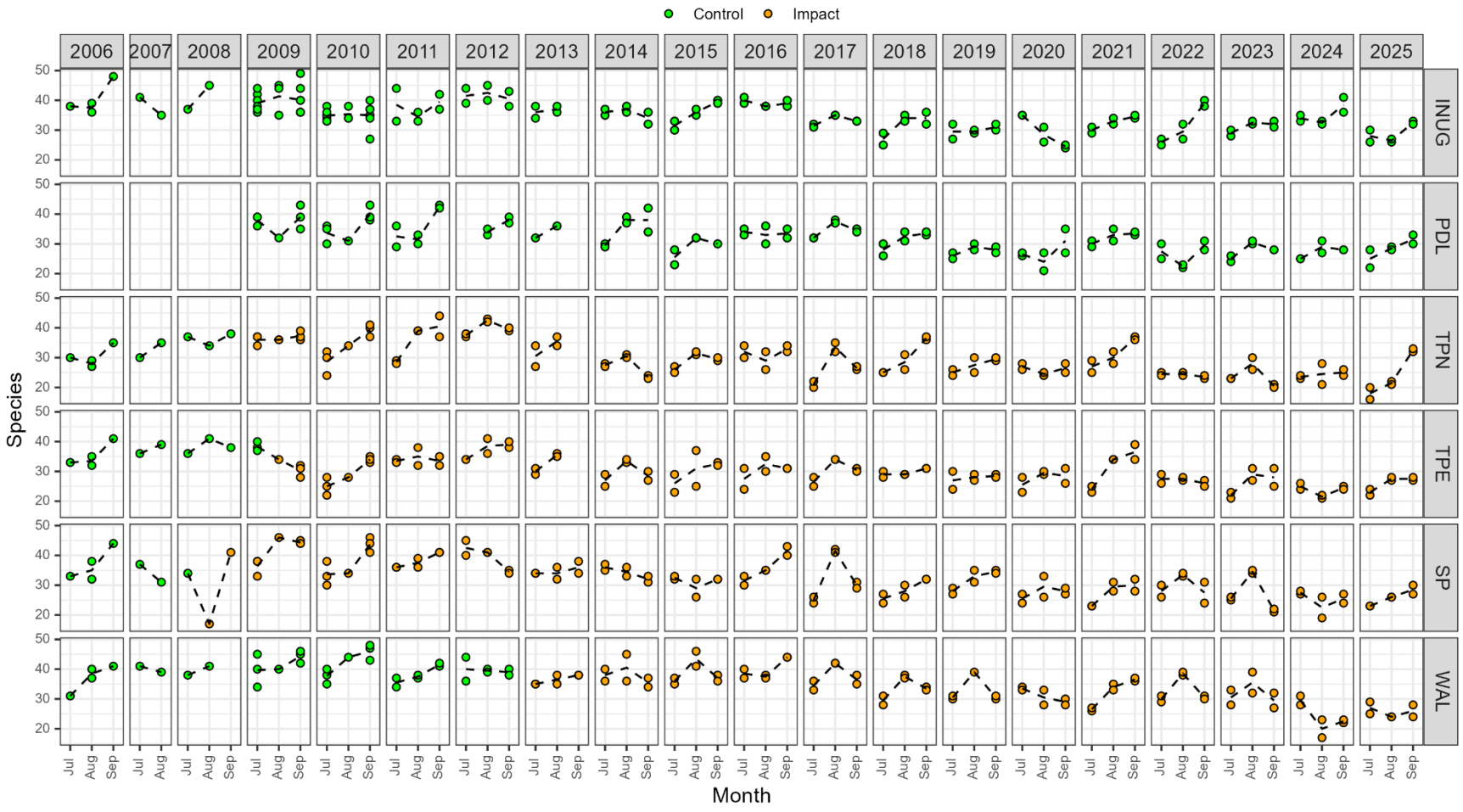


Figure 4-17. Phytoplankton species richness from Meadowbank study area lakes since 2006.



Sediment Chemistry Tables and Figures

Figure 4-18. TOC (%) in sediment from Meadowbank study lakes since 2006.

Notes: In 2021, a batch of sediment samples were not analyzed due to a sample receipt error by the laboratory. Missing results in 2021 correspond to samples that were discarded prior to analysis. No TOC was analyzed for INUG and PDL in 2022 due to high moisture content in the samples.

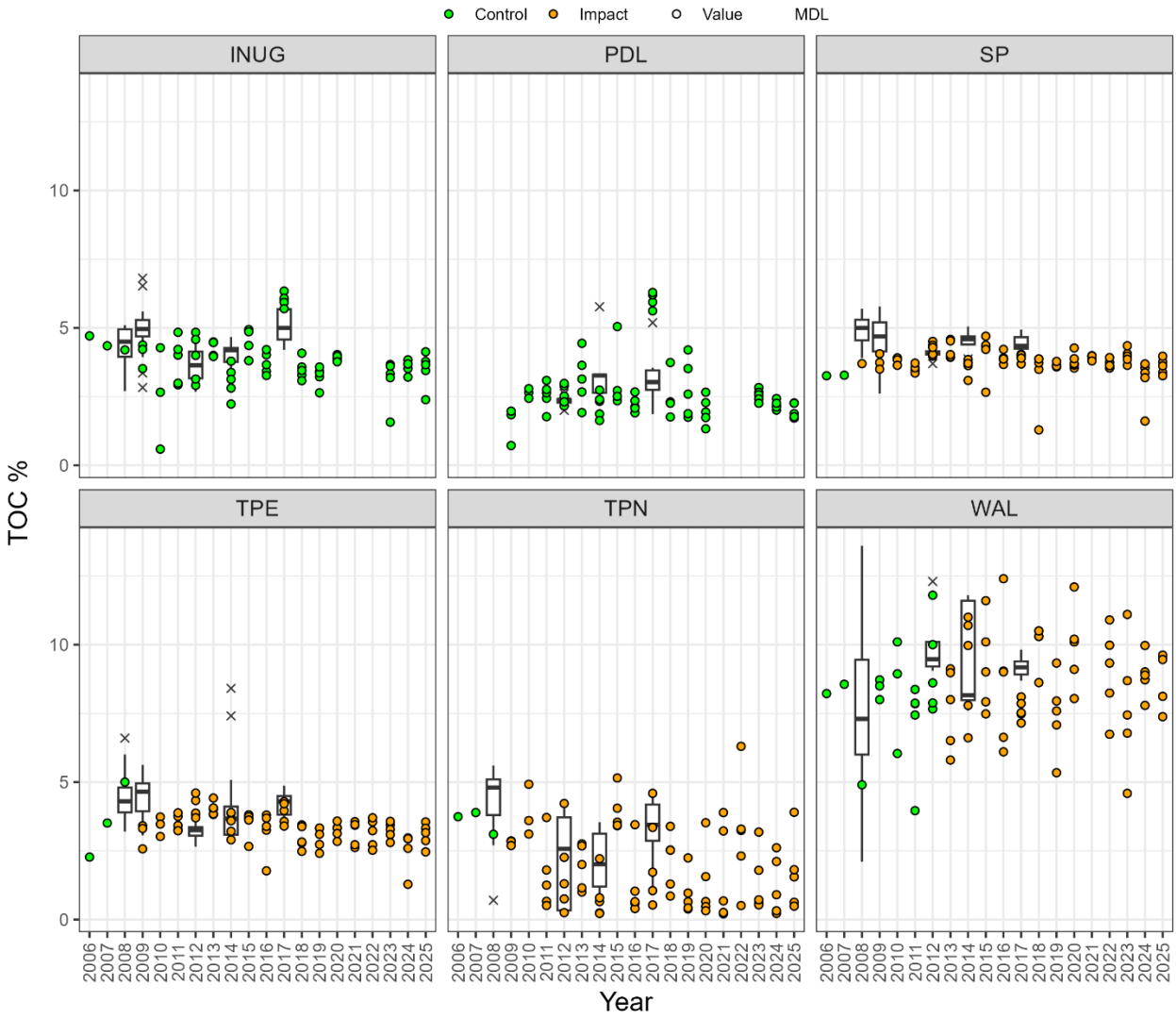
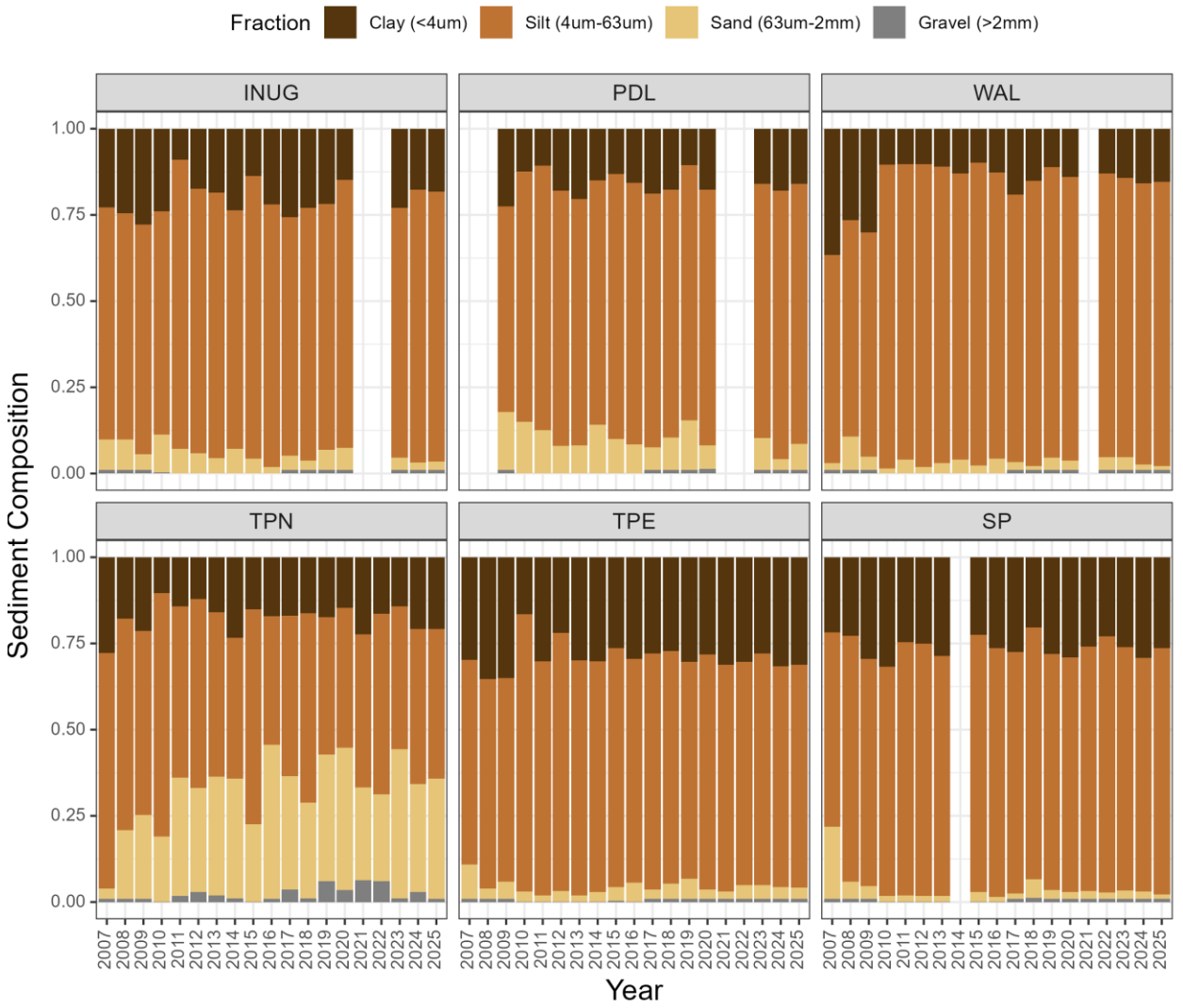


Figure 4-19. Sediment grain size in sediment samples from Meadowbank study lakes since 2007.

Notes: No grain size was analyzed for INUG and PDL in 2022 due to high moisture content in the samples. Grain size was not analyzed in WAL, PDL, or INUG in 2021 as the sediment was discarded prior to analysis (see **Appendix A2** in Azimuth, 2023a).



Benthic Invertebrate Tables and Figures

Table 4-8. Geometric means for benthic invertebrate total abundance and total richness, Meadowbank study lakes.

Geometric means for total abundance (no. of organisms/m^2)																				
Test Area	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
INUG	731 (18)	975 (15)	1300 (10)	1129 (11)	628 (19)	881 (16)	1042 (13)	1975 (3)	621 (20)	1648 (6)	2100 (1)	1712 (4)	1497 (7)	1452 (8)	2055 (2)	1398 (9)	1070 (12)	1656 (5)	843 (17)	991 (14)
PDL	NA	NA	NA	1522 (1)	776 (13)	927 (10)	942 (9)	1279 (3)	473 (17)	1127 (4)	1373 (2)	748 (15)	779 (12)	990 (6)	951 (8)	829 (11)	963 (7)	1045 (5)	753 (14)	646 (16)
WAL	12894 (2)	4357 (6)	1057 (19)	1834 (13)	1727 (15)	800 (20)	1874 (12)	1445 (18)	2222 (11)	1568 (16)	14253 (1)	4942 (5)	12035 (3)	1761 (14)	6117 (4)	1524 (17)	4065 (7)	2798 (10)	3574 (8)	3078 (9)
TPN	NA	1359 (6)	864 (14)	1214 (8)	1029 (11)	498 (18)	1141 (9)	1407 (5)	373 (19)	3025 (1)	1696 (4)	1309 (7)	2051 (3)	594 (16)	1075 (10)	2283 (2)	917 (13)	610 (15)	522 (17)	976 (12)
TPE	3220 (6)	1563 (19)	5556 (1)	1663 (17)	1126 (20)	1584 (18)	3915 (2)	2244 (13)	2827 (8)	2765 (10)	2787 (9)	3147 (7)	2485 (11)	3490 (4)	3224 (5)	3505 (3)	2379 (12)	1767 (15)	1670 (16)	1888 (14)
SP	619 (17)	842 (13)	395 (19)	771 (16)	241 (20)	563 (18)	1169 (10)	2279 (2)	2796 (1)	1927 (4)	1420 (6)	2058 (3)	1298 (8)	842 (14)	1631 (5)	1222 (9)	1055 (11)	1299 (7)	829 (15)	979 (12)
TPS	935 (9)	1597 (4)	1501 (6)	1714 (3)	1130 (8)	932 (10)	1932 (2)	1581 (5)	1217 (7)	5939 (1)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TE	913 (4)	930 (3)	743 (8)	757 (6)	517 (10)	725 (9)	747 (7)	819 (5)	1158 (2)	1548 (1)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TEFF	NA	NA	NA	1215 (1)	886 (5)	615 (7)	921 (3)	955 (2)	891 (4)	816 (6)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Geometric means for total richness (no. of taxa)																				
Test Area	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
INUG	11 (18)	12 (13)	14 (7)	14 (8)	9 (20)	11 (17)	11 (16)	16 (3)	10 (19)	13 (11)	16 (2)	14 (5)	15 (4)	14 (9)	17 (1)	13 (10)	13 (12)	12 (14)	12 (15)	14 (6)
PDL	NA	NA	NA	11 (1)	9 (9)	10 (5)	8 (12)	10 (3)	5 (17)	9 (6)	11 (2)	10 (4)	6 (16)	9 (10)	9 (11)	8 (15)	9 (7)	9 (8)	8 (14)	8 (13)
WAL	12 (8)	14 (5)	8 (19)	11 (13)	11 (17)	7 (20)	12 (9)	11 (14)	11 (12)	11 (18)	15 (3)	14 (6)	15 (2)	12 (11)	16 (1)	12 (10)	14 (7)	11 (15)	14 (4)	11 (16)
TPN	NA	10 (11)	8 (18)	10 (13)	11 (8)	8 (16)	11 (9)	13 (3)	6 (18)	11 (7)	13 (4)	13 (5)	13 (2)	9 (14)	10 (11)	15 (1)	12 (6)	9 (15)	9 (13)	12 (6)
TPE	9 (20)	11 (17)	14 (5)	12 (15)	10 (17)	10 (18)	13 (11)	14 (6)	11 (15)	15 (4)	14 (7)	13 (10)	13 (9)	16 (1)	16 (2)	15 (3)	13 (8)	13 (12)	13 (13)	14 (8)
SP	7 (19)	9 (16)	8 (17)	7 (18)	5 (19)	10 (14)	13 (6)	11 (10)	14 (4)	13 (5)	16 (1)	12 (7)	11 (12)	11 (11)	15 (2)	14 (3)	11 (13)	12 (8)	11 (9)	11 (10)
TPS	11 (5)	10 (8)	11 (3)	11 (3)	9 (9)	8 (10)	11 (6)	11 (7)	11 (2)	17 (1)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TE	5 (10)	9 (5)	10 (2)	8 (7)	6 (9)	6 (8)	9 (4)	8 (6)	9 (3)	13 (1)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TEFF	NA	NA	NA	11 (3)	11 (2)	9 (6)	9 (7)	10 (5)	11 (3)	12 (1)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

1. Total abundance in organisms/m^2.

Rank order of abundance and richness shown in parentheses.

Red vertical lines mark the year that area designations switched from *control* to *impact*.

NA = Benthic invertebrate sampling was not completed for the given area/year.

Table 4-9. Results of the BACI tests for benthic invertebrate abundance at Meadowbank study lakes.

After Period	Test Area	n(B)	n(A)	Estimate	SE	P-value*	Effect size (%)		
							ES	LCI	UCI
2025	TPN	2	1	0.02	0.47	0.97	2	-100	37,735
	TPE	3	1	-0.48	0.67	0.55	-38	-96	997
	SP	2	1	0.14	0.29	0.71	15	-97	4,517
	WAL	7	1	0.29	0.98	0.78	33	-88	1,378
2024-25	TPN	2	2	-0.21	0.42	0.67	-19	-87	395
	TPE	3	2	-0.45	0.43	0.37	-36	-84	150
	SP	2	2	0.14	0.25	0.63	15	-61	239
	WAL	7	2	0.45	0.68	0.53	56	-69	682
2023-25	TPN	2	3	-0.46	0.41	0.34	-37	-83	133
	TPE	3	3	-0.65	0.39	0.17	-48	-82	54
	SP	2	3	0.06	0.23	0.80	7	-49	125
	WAL	7	3	0.19	0.56	0.74	21	-67	341
2022-25	TPN	2	4	-0.37	0.36	0.35	-31	-74	85
	TPE	3	4	-0.56	0.34	0.16	-43	-76	37
	SP	2	4	0.08	0.23	0.74	9	-42	105
	WAL	7	4	0.27	0.48	0.58	31	-56	288

Notes:

* **Bolded & underlined** values are P-values <0.1.

Shaded cells indicate positive (increased) or negative (reduced) effect sizes of 20% or more.

Test area = area compared to control (INUG).

n(B) = number of years in the "before" period.

n(A) = number of years in the "after" period.

Estimate = BACI model estimate of the after-period change in mean for log-transformed data.

SE = standard error of the estimate.

P-value = two-tailed test of the null hypothesis of no change.

ES = estimated effect size (i.e., 100%*(exp[Estimate]-1)).

LCI = lower 95% confidence interval; UCI = upper 95% confidence interval.

Table 4-10. Results of the BACI tests for benthic invertebrate taxa richness at Meadowbank study area lakes.

After Period	Test Area	n(B)	n(A)	Estimate	SE	P-value*	Effect size (%)		
							ES	LCI	UCI
2025	TPN	2	1	0.29	0.24	0.43	34	-93	2,557
	TPE	3	1	0.06	0.14	0.70	6	-41	92
	SP	2	1	0.15	0.21	0.60	16	-92	1,499
	WAL	7	1	-0.16	0.31	0.62	-15	-60	81
2024-25	TPN	2	2	0.22	0.22	0.42	24	-51	215
	TPE	3	2	0.09	0.10	0.43	10	-21	53
	SP	2	2	0.24	0.17	0.30	27	-39	163
	WAL	7	2	0.04	0.22	0.87	4	-39	76
2023-25	TPN	2	3	0.18	0.19	0.41	19	-34	116
	TPE	3	3	0.10	0.10	0.35	11	-15	45
	SP	2	3	0.26	0.16	0.19	30	-21	114
	WAL	7	3	0.02	0.18	0.92	2	-33	55
2022-25	TPN	2	4	0.22	0.17	0.26	25	-22	101
	TPE	3	4	0.11	0.09	0.27	12	-12	42
	SP	2	4	0.25	0.14	0.15	29	-13	91
	WAL	7	4	0.06	0.16	0.73	6	-26	51

Notes:

* **Bolded & underlined** values are P-values < 0.1.

Shaded cells indicate positive (increased) or negative (reduced) effect sizes of 20% or more.

Test area = area compared to control (INUG).

n(B) = number of years in the "before" period.

n(A) = number of years in the "after" period.

Estimate = BACI model estimate of the after-period change in mean for log-transformed data.

SE = standard error of the estimate.

P-value = two-tailed test of the null hypothesis of no change.

ES = estimated effect size (i.e., 100%*(exp[Estimate]-1)).

LCI = lower 95% confidence interval; UCI = upper 95% confidence interval.

Figure 4-20. Benthic invertebrate total abundance (#/m^2) from Meadowbank study area lakes since 2006.

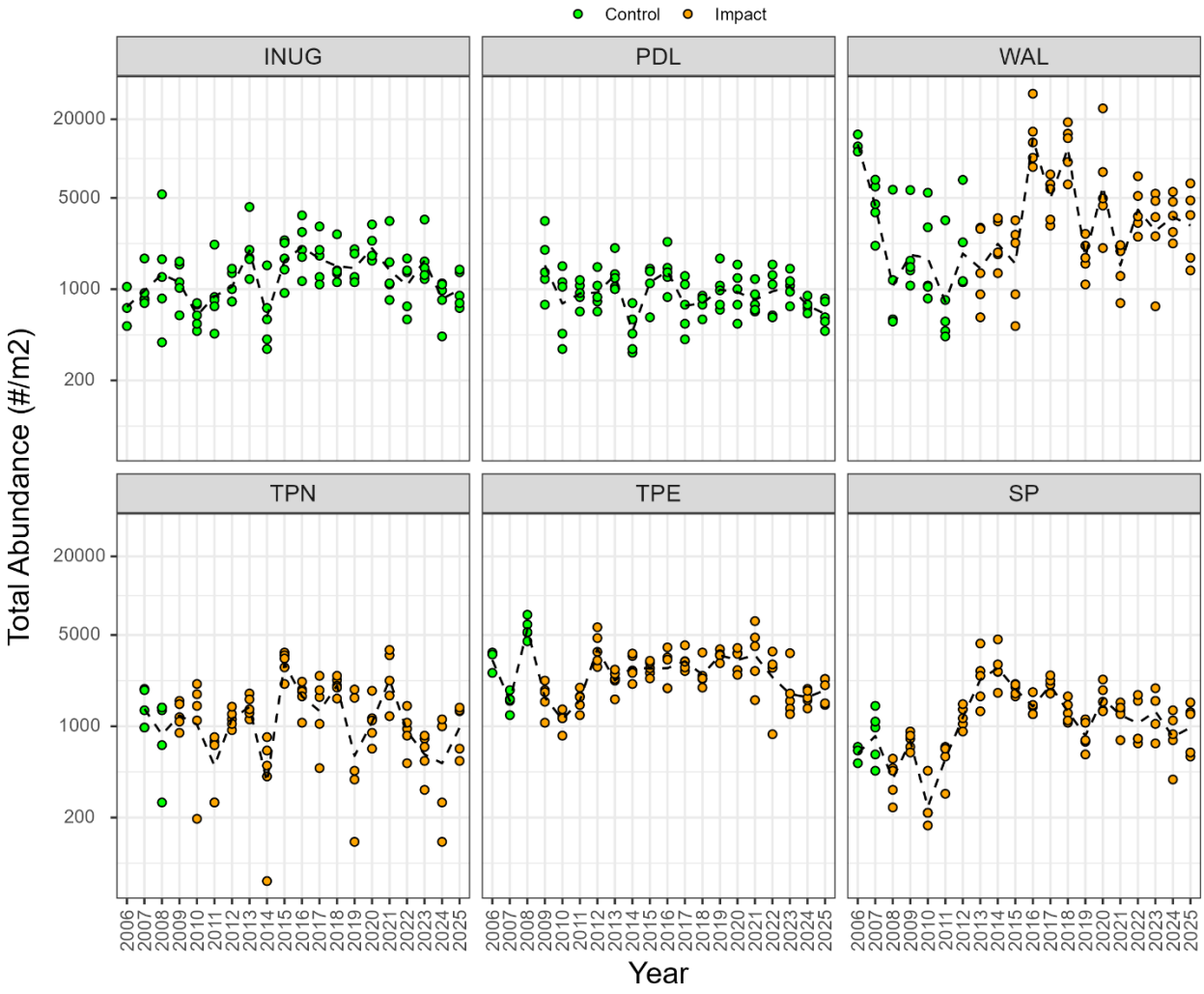


Figure 4-21. Benthic invertebrate abundance (#/m²) by major taxa from Meadowbank study area lakes since 2006.

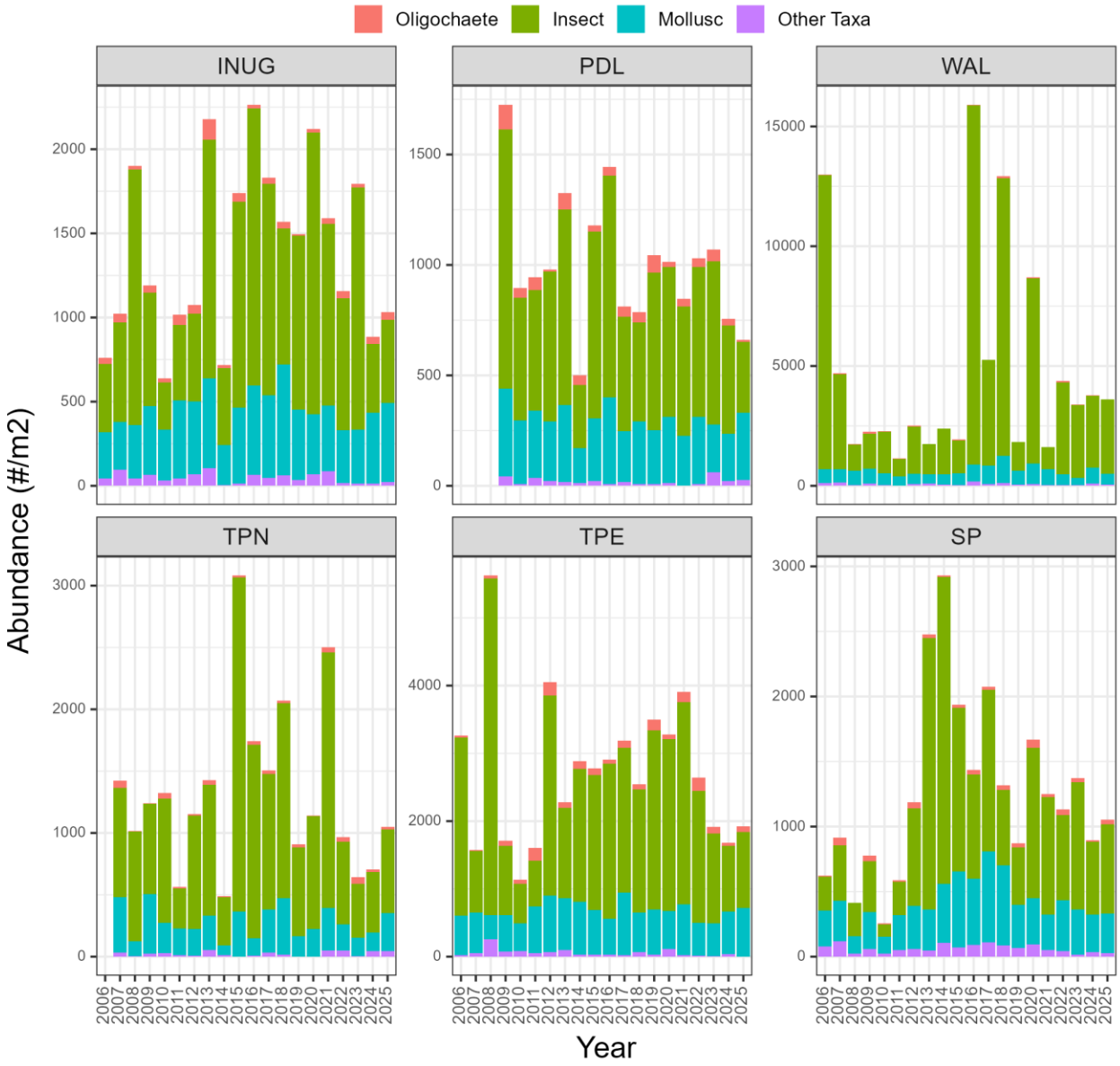


Figure 4-22. Benthic invertebrate relative abundance by major taxa from Meadowbank study area lakes since 2006.

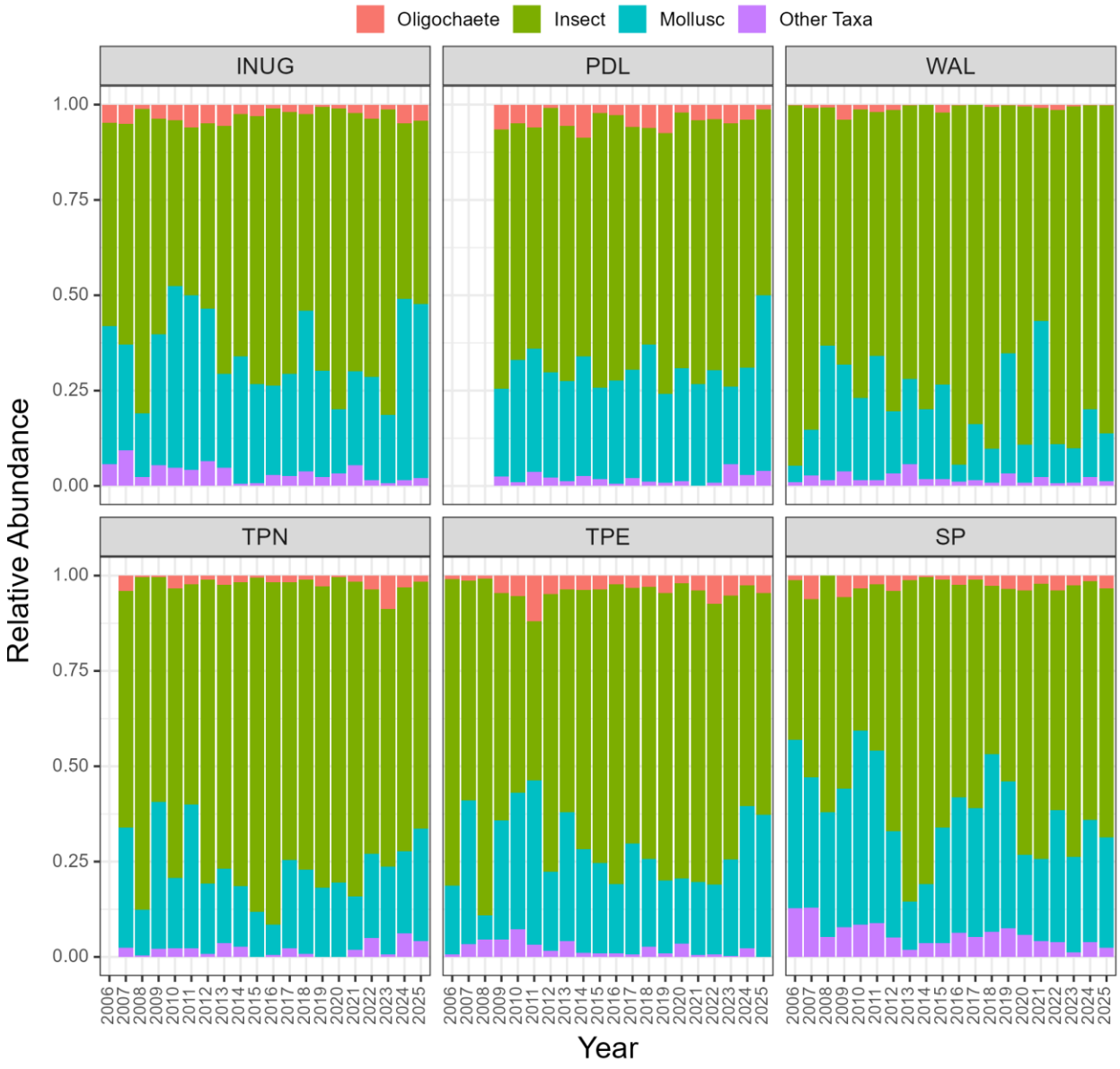


Figure 4-23. Benthic invertebrate total richness (# taxa) from Meadowbank study area lakes since 2006.

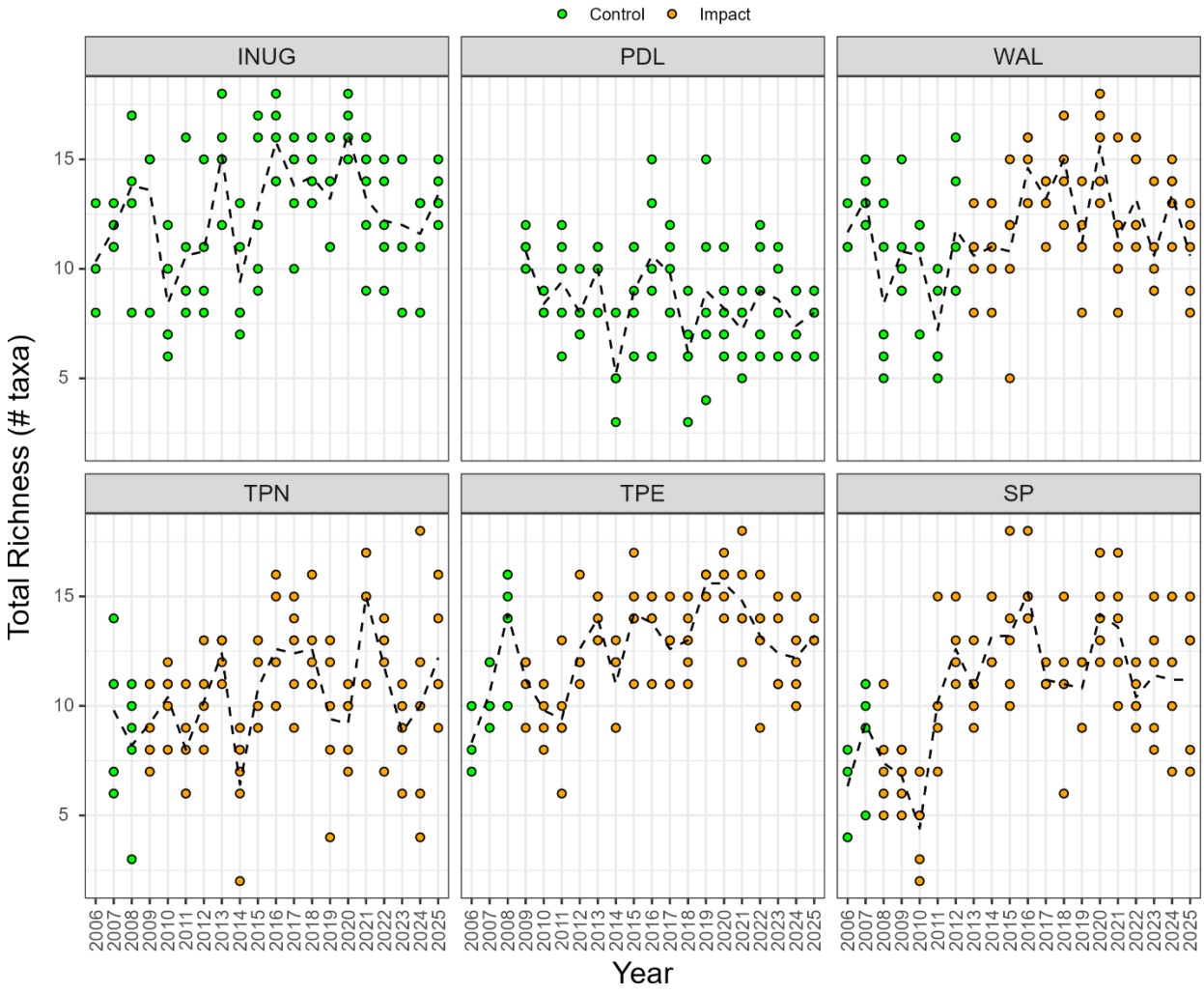


Figure 4-24. Benthic invertebrate richness (# taxa) by major taxa from Meadowbank study area lakes since 2006.

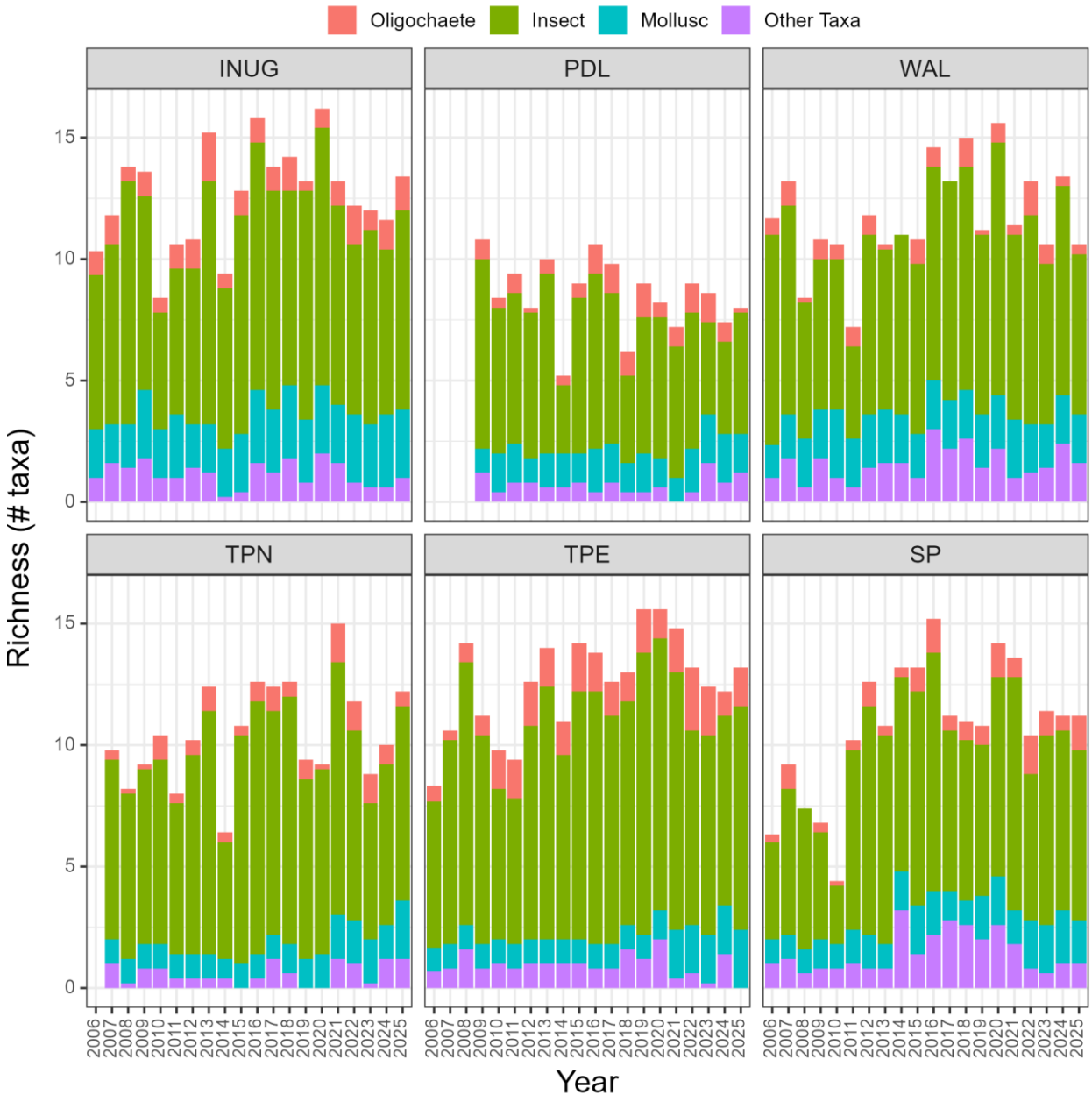
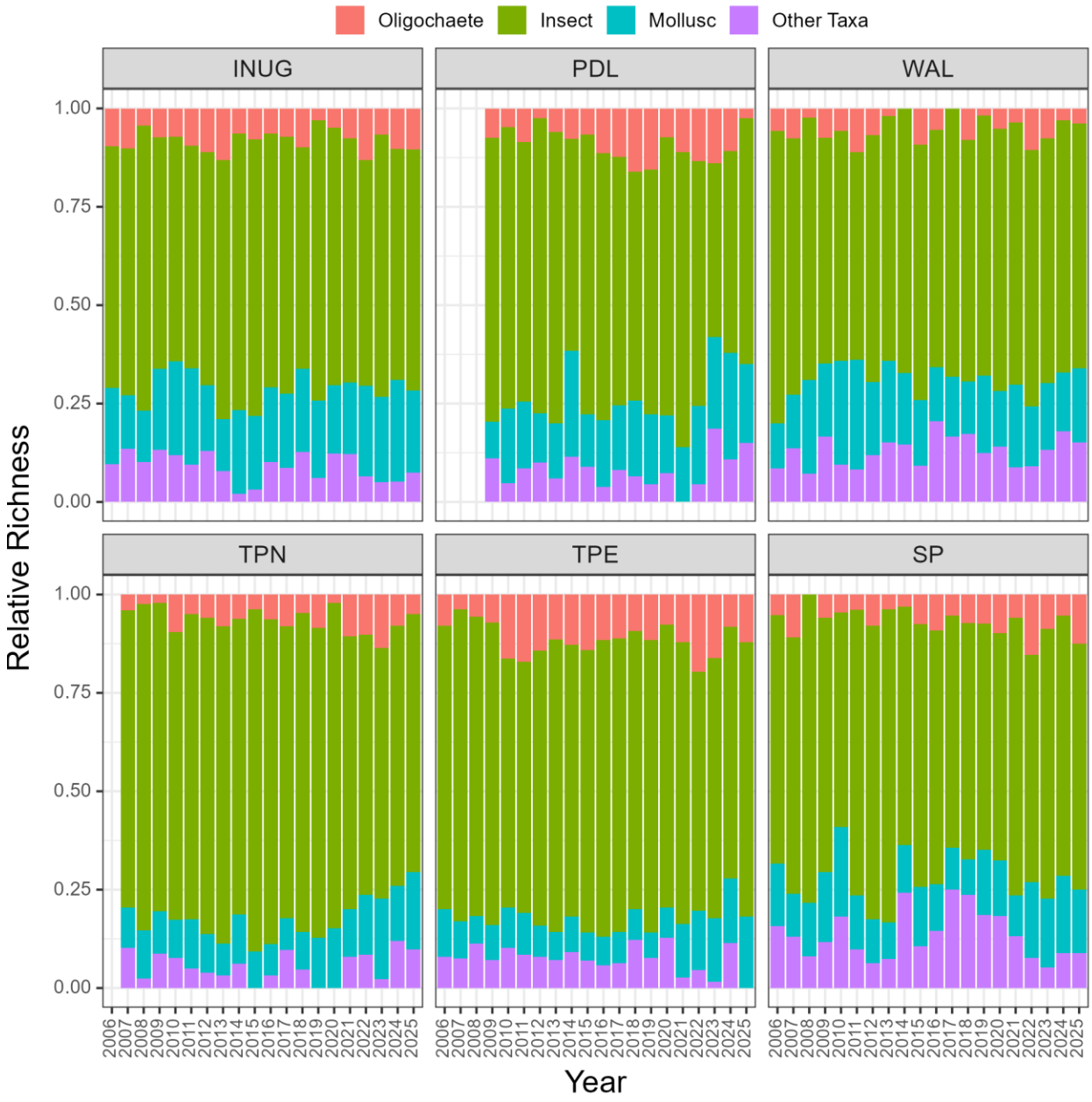


Figure 4-25. Benthic invertebrate relative richness by major taxa from Meadowbank study area lakes since 2006.



5 WHALE TAIL

Similar to Meadowbank, the Whale Tail mine (also part of the Meadowbank Complex) and the nearby lakes are located in Nunavut's barren-ground central Arctic region, within the Wager Bay Plateau, an area characterized by continuous permafrost (Campbell et al., 2012). A description of the Meadowbank Complex is provided in **Section 1.2.1**. The Whale Tail area lakes support healthy communities of plankton, benthos, and fish that are typical of oligotrophic Arctic lakes (Azimuth, 2005b). Biological productivity of the lakes is limited by nutrient availability, cold water, and a short growing season.

5.1 Overview of the Whale Tail CREMP

This section presents results of the 2025 CREMP for the Whale Tail study area lakes. The scope of the 2025 program included water quality, sediment TOC and grain size, phytoplankton community, and benthic invertebrate community monitoring. Relevant figures and tables are organized at the end of the section by study component.

Six lakes are currently included in the study design for monitoring mining-related changes downstream of the Whale Tail mine:

- **Near-field**: Whale Tail Lake - South Basin (WTS), Kangislulik Lake[28] (KAN), and Nemo Lake (NEM);
- **Mid-field**: Lake A20 and Lake A76; and
- **Far-field**: Lake DS1.

INUG and PDL are the primary reference areas for the Whale Tail CREMP. Water sampling locations for 2025 are shown in **Figure 5-1**. Sediment and benthic invertebrate sampling areas are shown in **Figure 5-2**.

All lakes in the Whale Tail study area, except Nemo Lake, are part of the *A* Watershed, which flows southeast to northwest and drains into Amur Lake (DS1). Nemo Lake lies north of the Whale Tail mine in Watershed *C*, separated from WTS and KAN by a drainage divide to the north of Whale Tail Lake.

The construction of the Whale Tail Dike in 2018 to develop the Whale Tail Pit deposit altered the flow path and hydrology south of Whale Tail Lake. Before the dike's construction, water flowed from Lake A20 through WTS, KAN, Lake A76, and into Lake DS1. The construction of the dike and resulting changes in the local hydrology raised water levels in the south basin of Whale Tail Lake. Higher water levels flooded tributary lakes A20, A65, and A63, among others, and created an impoundment. Lake A20 is no

[28] Kangislulik Lake (KAN) was previously referred to as Mammoth Lake (MAM).

longer *upstream* due to flooding of the channel between WTS and A20. However, the connection remains shallow, and hydrostatic pressure from inflows to Lake A20 likely limits water exchange. To regulate impoundment water levels, a diversion channel was constructed in 2019-2020, allowing water to flow from the north end of Lake A20 to the south end of KAN. The changes to Whale Tail Lake and Lake A20 are shown in **Figure 5-1**.

In 2018, WTS and KAN designations changed from baseline (*control*) to *impact* areas due to the onset of construction activities. The other four lakes were unaffected by construction activities in 2018 and remained designated as *control areas*. In early 2019, Lakes A20, A76, and DS1 changed from *control* to *impact* as mine construction and mine activities continued to expand. Nemo Lake switched to *impact* after the July 2019 sampling event following heavy precipitation that necessitated dewatering AP5 (sump) onto the tundra within the Nemo Lake watershed.

A chronology of construction activities relevant for interpreting results from the Whale Tail CREMP are provided in **Appendix A**. Construction activities and onsite water management in 2025 are summarized below:

- **Whale Tail Impoundment.** Currently, seepage water is directed to the Whale Tail Attenuation Pond and managed as part of this infrastructure.
- **Effluent Discharge to Whale Tail South Basin.** Treated effluent from the Attenuation Ponds was discharged to WTS via the WTS diffuser from April 13 through June 28, from October 6 through December 13, and from December 28 through December 30. During this time, water met the MDMER and Water License limits.
- **Effluent Discharge to Kangislulik Lake.** Treated effluent was discharged to Kangislulik Lake from the Attenuation Ponds via the Kangislulik lake diffuser from July 6 through September 27. During this time, water met the MDMER and Water License limits.

5.2 Limnology

Limnology data provide an initial assessment of potential changes within a sampling area that may require additional investigation. The timing of the limnology and water sampling program for Whale Tail coincided with the Meadowbank CREMP sampling program. Limnology profiles were conducted at the locations shown in **Figure 5-1**. Points on the map are labelled to indicate the month the profiles were collected (e.g., 1 = January). For each lake, results focus on the deepest location sampled per event; corresponding 2025 water chemistry sample IDs (where available) are provided in **Table 5-1**.

Table 5-1. Samples included in the limnology profiles for the Whale Tail study area lakes in 2025.

Area[1]	Jan	Feb	Mar	Apr	May[2]	Jun	Jul	Aug	Sep[3]	Oct	Nov	Dec
KAN	☑	☑	MAM-97	☑	MAM-99	Ice not safe for travel	MAM-101	MAM-104	MAM-106	Ice not safe for travel	☑	☑
WTS	☑	☑	WTS-98	☑	WTS-100		WTS-102	WTS-103	WTS-106		☑	☑
A20	☑	☑	A20-89	☑	A20-91		A20-93	A20-95	A20-98		☑	☑
NEM	☑	☑	NEM-96	☑	NEM-98		NEM-99	NEM-101	NEM-104		☑	☑
A76			A76-88		A76-90		A76-91	A76-93	-			
DS1			DS1-85		DS1-88		DS1-90	DS1-92	-			

Notes:
Empty cells indicate no limnology profiles were collected, consistent with the study design.
☑ = One profile is collected from the NF areas (and occasionally one MF area) in months where water sampling is not completed.
The sample IDs shown represent the deeper of the two locations sampled each month.
1. Monitoring area KAN was previously referred to as MAM. Sample IDs still use MAM for consistency with historical data.
2. Ice melt occurred earlier than typical in 2025, resulting in some May samples being collected at the end of April.
3. Due to accessibility challenges, samples were not collected from A76 and DS1 in September.

5.2.1 General Observations

All the lakes in the Whale Tail study area are shallow, except for DS1. Lake DS1 is the deepest lake in the study area, with a maximum recorded depth of approximately 33 m. Lakes A20, A76, and NEM have areas of steep relief, but most of the surface area is less than 15 m deep.

Like the Meadowbank study area lakes, the ice-free season is short for lakes within the Whale Tail study area. Ice break-up usually occurs during mid to late June in the region and begins to form again in October. Sampling in June and October is typically avoided due to safety concerns surrounding ice conditions. Due to earlier ice melt observed in recent years, the May sampling event was expanded to include sample collection from late April to early May.

Temperature, dissolved oxygen, and specific conductivity profiles for each of the 2025 sample events are shown in **Figure 5-4** to **Figure 5-6**. Profiles for reference areas INUG and PDL are included where available.

5.2.2 Temporal and Spatial Trends

Temperature and Dissolved Oxygen

Lakes in the Whale Tail study area are generally unstratified for temperature and oxygen during the open-water season due to shallow depths and wind-driven mixing. When present, thermal stratification is brief and typically limited to surface-to-bottom temperature differences of 4°C to 5°C. Surface water

temperatures measured at 3 m depth typically reach an annual high between 10°C and 15°C in August, followed by cooling in the fall (**Figure 5-3**). In 2025, the strongest evidence of thermal stratification occurred at DS1 in July where water temperatures differed by approximately 7.4°C between surface and bottom (**Figure 5-4**). Water temperatures observed in 2025 were within the typical historical range and comparable to those measured in 2024 (**Figure 5-3**).

Dissolved oxygen (DO) concentrations in 2025 were generally consistent with previous years and followed seasonal patterns typical of lakes in this Arctic area (**Figure 5-5**). The lakes remained well oxygenated year-round, with DO concentrations generally above 10 mg/L. Slight vertical DO stratification was observed during the ice-covered period (January–May), most notably in KAN and, to a lesser extent, in A20, potentially reflecting differences in lake morphometry (e.g., size and/or depth). During the open-water season (July–September), DO concentrations were relatively stable and remained near 10 mg/L throughout the water column.

Conductivity

The conductivity results from the limnology profiles collected throughout the year at Whale Tail study area lakes are shown in **Figure 5-6** and discussed below.

Overall, conductivity remained less than 250 µS/cm at all Whale Tail area lakes in 2025, with the highest conductivities observed in NF areas WTS and KAN. Across all Whale Tail area lakes, the ice-covered months demonstrated the highest conductivities, which is common as the process of ice formation tends to exclude dissolved ions which effectively concentrates them in the water below the ice. The ice-free months (July to September) had similar profiles, all characterized by the lowest conductivities. The conductivity results show that the lakes were largely unstratified across each month of sampling.

Whale Tail Lake - South Basin. In 2025, conductivity in WTS ranged from approximately 90 to 237 µS/cm, which was higher than in 2024. Generally, higher conductivities corresponded to discharging periods at WTS (April to June and October through December).

Kangislulik Lake. Prior to November 2018, conductivity in KAN was characteristically unstratified, measuring below 60 µS/cm (Azimuth, 2019a). In late 2018, the conductivity in KAN increased to 150 µS/cm, following the discharge of treated contact water into the east basin. Through 2021, there was an overall increase in conductivity with concentrations often exceeding 175 µS/cm and as high as 360 µS/cm. Since 2020, the highest conductivities have occurred during the winter months followed by declines during open-water periods. In 2025, conductivities generally ranged between 126 and 251 µS/cm.

Kangislulik Lake is fairly shallow and somewhat hourglass shaped, with distinct east and west basins. Water chemistry sampling and limnology profiling targets water depths greater than 5 m. To meet these requirements, samples are collected in the deeper east and west basins of the lake. This provides good

spatial coverage while meeting minimum depth requirements. The narrow portion in the middle of the lake is relatively shallow and creates a natural sill that slows water exchange between basins, especially in winter when thick ice cover further limits water exchange. Mine influences on water quality are temporarily concentrated in the east basin near the effluent discharge point, a pattern previously confirmed by plume delineation surveys (Portt and Associates and Kilgour & Associates, 2021).

In 2025, for paired water samples, the maximum conductivity readings observed during each sampling event in 2024 and 2025 are provided in **Table 5-2**. Overall, conductivity was lower in 2025 than in 2024, but remained consistently higher in the east basin than in the west basin. These findings are corroborated by the major ion water chemistry results (**Section 5.3.2**).

Nemo Lake, Lake A20, Lake A76, and Lake DS1. In 2019, field conductivity measurements at NEM after August indicated an upward trend, likely in response to the temporary discharge of contact water into NEM. Since then, conductivities have shown amplified seasonal fluctuations, ranging from 100 µS/cm to 140 µS/cm by the late ice-covered period (April/May). More pronounced seasonal conductivity fluctuations appear to be a characteristic of the near-field lakes and can be seen to the greatest extent at WTS and KAN (**Figure 5-6**).

Nemo Lake and Lakes A20, A76, and DS1 demonstrated a much smaller seasonal range in conductivities compared to WTS and KAN. In 2025, conductivities at NEM, A20, and A76 remained between 100 µS/cm and 150 µS/cm, while DS1 remained around 40 µS/cm.

Table 5-2. Maximum conductivity readings from each sampling event in Kangislulik Lake and relative percent difference (RPD) between readings from 2024 and 2025.

Month	West Basin			East Basin		
	2024	2025	RPD	2024	2025	RPD
January	-	-	NA	236	236	0%
February	-	-	NA	279	226	-21%
March	244	228	-7%	280	252	-11%
April	-	229	NA	-	-	NA
May[1]	229	221	-4%	276	239	-14%
July	130	127	-2%	152	131	-14%
August	147	140	-5%	180	-	NA
September	164	148	-11%	195	-	NA
November	-	-	NA	190	196	3%
December	-	-	NA	195	221	12%
Annual Mean[2]	**183**	**182**	**-1%**	**220**	**214**	**-3%**

Notes:
1. Ice melt occurred earlier than typical in 2025, resulting in some May samples being collected at the end of April.
2. Mean calculated only where data was available for a given month across both years.
"-" no sample collected; NA = RPD not calculated.

5.3 Water Chemistry

Water chemistry samples were collected simultaneously with limnology samples in March, May, July, August, and September (see **Section 4.2** for limnology results).

5.3.1 Key Findings from the 2025 Water Chemistry Monitoring Program

- There were no trigger exceedances for parameters with effects-based thresholds (e.g., aquatic life guidelines).
- Several parameters showed statistically significant increases at NF and/or MF Whale Tail study area lakes relative to baseline/reference conditions: major ions (TDS, Ca, Mg, K, Na, HCO_3 alkalinity), hardness, conductivity, nutrients (TKN, total phosphorus, TOC, and DOC), lithium (at WTS and KAN). At FF area DS1, conductivity, hardness, Ca, Mg, and Na concentrations increased significantly compared to baseline/reference conditions.
- Total phosphorus and arsenic concentrations at WTS and KAN were within the normal operating ranges in 2025 and Level 0 water management strategy is in effect in 2026 as per the *Adaptive Management Plan* (Agnico Eagle, 2021).

5.3.2 Temporal and Spatial Trends

Parameters included in the temporal and spatial trends assessment are listed in **Table 5-4**. A total of 55 parameters out of 75 (approximately 73%) were retained for further examination in 2025. Of these, all were retained because the frequency of detected concentrations exceeded 10%.

Parameters retained for further analysis are plotted in **Figure 5-8** through **Figure 5-12**. Trigger values[29] are shown on the time series plots as a red dashed line. Water quality predictions were developed as part of the FEIS process for some parameters in Kangislulik Lake and Whale Tail Lake - South Basin (see **Section 2.5.1** and Golder, 2019); these are depicted as a blue dashed line in the plots. Water chemistry figures and raw data for all parameters, including those that were not retained for discussion based on the parameter assessment are presented in **Appendix C2**.

The study applied BACI analyses to parameter-area combinations with mean 2025 concentrations exceeding trigger values to assess changes *relative to baseline/reference* conditions (see **Section 2.5.1** and **Table 5-5**). BACI analysis results are presented in **Table 5-6**; these are discussed in terms of ecological significance and spatial context below, by parameter type.

[29] Refer to Appendix I in the 2019 CREMP report (Azimuth, 2020a) for a description of the methods used to establish triggers for each parameter.

Major Ions and Conventional Parameters

Major ions, commonly referred to as dissolved salts, are the seven ionic compounds that occur in the greatest abundances in freshwater systems. These include the cations calcium, magnesium, potassium, and sodium, as well as the anions chloride, bicarbonate, and sulphate. These ions are measured either individually or indirectly through composite conventional water quality measures such as total alkalinity, conductivity, TDS, and hardness (**Figure 5-8**). Collectively, these parameters have shown the greatest proportional changes in water chemistry since mining operations began (**Table 5-6**). The most pronounced increases in major ion concentrations and associated parameters occurred at NF lake WTS and MF lake A20. Increases occurred to a lesser extent at NF lakes KAN and NEM, and MF lake A76. The year-over-year changes were more subtle at FF lake DS1.

None of the major ions and conventional parameters that exceeded triggers in 2025 (**Table 5-5**) have effects-based thresholds (e.g., CCME water quality guidelines). As discussed in **Section 4.3.2**, major ions are essential elements, and all species of aquatic life, from algae to fish, have evolved to actively regulate their osmotic, ionic, and acid-base balance by uptake of ions from their environment (Martemyanov and Mavrin, 2012). Furthermore, in oligotrophic freshwater lake environments adverse effects on primary producers and secondary consumers (e.g., zooplankton) are more commonly associated with major cation deficiency than enrichment (Alstad et al., 1999; Arnott et al., 2017). Nevertheless, elevated concentrations can lead to effects on aquatic life (e.g., Weber-Scannell & Duffy, 2007), highlighting the need to monitor ecological resources such as phytoplankton and benthic invertebrates.

The major ions and conventional parameters with effects-based thresholds are chloride, fluoride, and sulphate. Although their concentrations have increased since mining began, mean annual concentrations have not exceeded their respective triggers in any sampling area. These results indicate that mine-related changes have occurred, but at current concentrations are not expected to result in adverse effects to aquatic life (see similar discussion in **Section 4.3.2**).

Nutrients

In 2025, mean annual concentrations of TKN, TOC, and DOC exceeded their respective triggers (**Table 5-5**). TKN concentrations were significantly ($p < 0.05$) higher at WTS, KAN, A20, and A76 in 2025 compared to baseline/reference conditions. TOC concentrations were significantly higher at WTS and A20, and DOC was significantly higher at A20 than baseline/reference conditions (**Table 5-6**). For total phosphorus, in 2025 concentrations in a few samples exceeded the trigger in WTS, however, the annual mean concentration was less than the trigger (**Appendix C2**).

Total Phosphorus. Total phosphorus is one of the main constituents of concern for the Whale Tail mine. It is a key macronutrient for plants and is often limiting in freshwater ecosystems, making it one of the

crucial nutrients for primary productivity. For total phosphorus, the CCME provides guidance for site-specific application rather than a single effects-based numeric guideline. Within the CCME framework, ultra-oligotrophic lakes are characterized by reference total phosphorus concentrations of <0.004 mg/L, and increases of up to 50% above baseline conditions are considered acceptable (Azimuth, 2020; see Appendix I). The 95th percentile baseline concentrations of total phosphorus for Meadowbank, Wally, Baker, and Whale Tail exceeded 0.004 mg/L. Therefore, lake-specific triggers were set to the 95th percentile baseline concentrations and the 0.01 mg/L threshold was used, which is the higher end of the range for oligotrophic lakes (CCME, 2004).

In 2025, total phosphorus concentrations exceeded the applicable trigger in all *impact* Whale Tail study area lakes at least once (**Figure 5-10**). However, the annual mean total phosphorus concentrations were less than the trigger.

The increase in nutrients at WTS, KAN, and A20 since 2019/2020 combined with occasional exceedances in other lakes downstream is likely contributing towards an increase in primary productivity, as predicted in the FEIS (Golder, 2018). Phosphorus is discussed further as it relates to the AMP in **Section 5.3.4**.

TOC and DOC. In 2025, TOC and DOC were higher than applicable triggers at least once in all *impact* lakes (**Figure 5-10**). Mean annual TOC concentrations were higher than the trigger value of 2.42 mg/L at all Whale Tail study area lakes except NEM. Mean annual DOC concentrations were higher than the trigger value of 2.43 mg/L at all Whale Tail area lakes except NEM and A76. Increases in mean TOC concentrations were statistically significant at WTS and A20, and DOC concentrations were statistically significant at A20 (**Table 5-6**).

The increase in TOC and DOC observed in WTS beginning in late 2019 is likely due to the flooding of terrestrial habitat from the south basin impoundment and dewatering inputs from WTN. Similar increases were observed in Lake A20 which experienced flooding and has been connected to WTS since 2019. Increases in TOC and DOC concentrations in lakes located downstream of WTS, such as KAN and A76, may reflect inputs originating from WTS, however, regional increases in TOC and DOC may be contributing as discussed below.

Since 2018, a more muted increase in TOC and DOC has also been observed in the reference lake INUG. This pattern suggests that organic carbon inputs to lakes in the region may be increasing, which could contribute to changes observed in mine-influenced lakes. In a pan-Arctic assessment of lake DOC, Stolpmann and colleagues (2020) identified associations between higher DOC concentrations and factors such as evaporation rates, lake connectivity, and permafrost extent. Accordingly, regional multi-year climatic variability or longer-term climate change may be contributing to broader temporal changes in organic carbon across the study lakes. Regional patterns in organic carbon are further discussed for Baker Lake in **Section 6.3**.

Although no effects-based thresholds are available for TOC or DOC, increases in these parameters can be associated with changes in local productivity or increased allochthonous (i.e., from a different source) carbon inputs. Changes in TOC and DOC at WTS and A20 were likely due to inputs from flooded terrestrial areas, whereas changes observed at the far-field Lake DS1 were more likely associated with natural sources, such as terrestrial organic matter (BC MOE, 1998). This interpretation is supported by higher TOC/DOC concentrations at far-field Lake DS1 compared to Lake A76, which lies between the NF lakes and DS1.

Nitrogen-containing Compounds. TKN is one of four nitrogen-containing compounds in the CREMP. It is a composite parameter that includes both organic and inorganic forms including ammonia, nitrate, nitrite, and organic nitrogen compounds. TKN is the only nitrogen-containing compound in the CREMP that does not have an effects-based threshold. While the other nitrogen-containing compounds have increased due to mining activity; they are generally stable with all annual mean concentrations below their respective triggers. A few samples from WTS, KAN, and DS1 exceeded ammonia (NH_3) triggers in 2025, however these did not represent an increasing trend (**Figure 5-10**). Overall, nitrogen-containing compounds are not a concern at the Whale Tail study lakes.

Metals

Several metals show increasing concentrations that may be associated with mining activities, including aluminum, antimony, arsenic, barium, copper, iron, lithium, manganese, molybdenum, nickel, selenium, silicon, strontium, titanium, and uranium (**Figure 5-11** and **Figure 5-12**). Of these, lithium, silicon, and titanium, had annual mean concentration exceeding triggers (**Table 5-5**). These parameters do not have effects-based thresholds.

Interestingly, lithium (total and dissolved) may be a unique tracer of mining-related changes at the Whale Tail study area lakes, apparently unaffected by regional climatic changes. This may be a combination of a stronger association with local mineralization and the proximity of ambient concentrations to the MDL. Concentrations in most areas were <MDL prior to development, but sharply increased at WTS and KAN once mining started. Concentrations at lakes A20 and A76 show weaker responses but have a higher frequency of detection after the onset of mining. The trend at NEM shows a sharp increase in 2019/2020 after contact water was briefly discharged into this watershed during heavy precipitation, followed by a gradual decline. Other metals, like arsenic and barium (**Figure 5-11**) and nickel and strontium (**Figure 5-12**), have increased at NEM but are not showing similar declining trends, potentially due to the influence of ongoing regional climatic changes in these relatively small headwater lakes.

Lithium. The annual mean concentrations of total and dissolved lithium exceeded the trigger values at WTS and KAN in 2025 (total and dissolved lithium trigger = 0.002 mg/L). Peak concentrations occurred in

2019 and since 2022 concentrations appear to have stabilized at both lakes. The BACI analysis indicated that the change in total and dissolved lithium relative to INUG was statistically significant at both WTS and KAN (p-value <0.05).

Lithium does not have an established effects-based threshold. Although the United States Environmental Protection Agency (US EPA) has published a freshwater lithium toxicity factsheet (MDEQ, 2008), it is not a formal water quality guideline. The factsheet reports chronic toxicity data for zooplankton (water flea *Ceriodaphnia dubia*) and fish (fathead minnow *Pimephales promelas*). For *C. dubia*, the 6-day reproduction test resulted in a no-observable-effect-concentration (NOEC) of 1.97 mg/L and a lowest observable effect concentration (LOEC) of 3.6 mg/L. For *P. promelas*, the 7-day growth test reported a NOEC of 3.6 mg/L and a LOEC of 6.9 mg/L. These toxicity test concentrations are two to three orders of magnitude higher than the lithium concentrations measured in the Whale Tail study lakes.

Silicon. Silicon concentrations have historically been close to the trigger value for most Whale Tail study area lakes, even prior to the start of mining development (**Figure 5-11**). In 2025, total and dissolved silicon concentrations exceeded the trigger (total = 0.61 mg/L and dissolved = 0.57 mg/L) in at least one sample at all Whale Tail study area lakes except at NEM. Importantly, temporal increases are clear at both reference areas, suggesting that regional climatic changes need to be taken into consideration when looking at potential mining-related changes. The only trigger exceedance for the mean annual concentration in 2025 was at DS1 (total = 0.73 mg/L, dissolved = 0.69 mg/L; **Table 5-5**), but the change was not statistically significant (**Table 5-6**). Given temporal increases observed at both reference areas, the higher concentrations at DS1 relative to A76, and the downward trend at WTS and KAN since 2020, the changes observed at DS1 do not appear related to mining activity.

5.3.3 Comparison to FEIS Model Predictions

Development activities and/or effluent discharge to the downstream environment have resulted in changes to water quality in the Whale Tail mine area. The FEIS water quality predictions provide estimated changes in KAN and WTS. Monthly mean water quality results were screened against the FEIS monthly predictions for KAN and WTS, and a summary of exceedances is provided in **Table 5-8**. Individual water quality samples collected in 2025 were screened against the FEIS predictions and the results are tabulated in **Appendix C2**.

Often, parameters that exceed their trigger also exceed the FEIS predictions in one or more sampling events. In 2025, the yearly mean concentrations for total alkalinity, TDS, lithium, and the ionic compounds calcium, potassium, magnesium, and sodium exceeded both their respective triggers and the monthly FEIS predictions in WTS and KAN. Of the parameters that exceeded their respective trigger values and FEIS model predictions, the absolute concentrations of these parameters remain *low*. Several COPCs (e.g., phosphorus, nitrate, arsenic) were predicted by the FEIS to exceed baseline conditions

following the discharge of treated effluent into WTS and KAN. Of those parameters, phosphorus was the only COPC that was also predicted to exceed water quality guidelines (Golder, 2018).

The FEIS predicted the magnitude of potential effects on water quality in each of the lakes as *low* (i.e., <1x CCME WQG) for all parameters. More details on the decision criteria for effects magnitude are provided in **Section 2.5.1**. The Whale Tail study area water quality results in 2025 are generally consistent with FEIS predictions.

5.3.4 Comparison to Adaptive Management Thresholds

Total phosphorus and arsenic are the main COPCs for the Whale Tail mine. These parameters are subject to AMP water quality thresholds that correspond to defined adaptive management levels, as described in **Section 2.5.1**. The applicable AMP thresholds, associated adaptive management levels, and response strategies for mine discharge areas WTS and KAN are summarized in **Table 2-3**. Water quality data collected under the annual CREMP were used to assess adaptive management levels for 2026. Mean concentrations from paired monthly sampling results were compared to AMP thresholds. The results are summarized in **Table 5-3** and discussed below.

Whale Tail South

- Mean total phosphorus and total arsenic concentrations remained at Level 0 for each month of sampling at WTS in 2025.
- **Conclusion**. Level 0 is in effect for both total phosphorus and total arsenic based on the results of the September 2025 sampling event.

Kangislulik Lake

- Mean total phosphorus and total arsenic concentrations remained at Level 0 for each month of sampling at KAN in 2025.
- **Conclusion**. Kangislulik Lake is within the normal operating range and Level 0 water management strategy is in effect based on the results of the September 2025 sampling event.

Table 5-3. Water chemistry data compared to AMP thresholds for total phosphorus and arsenic for Whale Tail Lake (South Basin) and Kangislulik Lake, 2024 and 2025.

Lake & Area	AMP Benchmark[1]	WTS FEIS Predictions										Whale Tail Lake South Basin (Impoundment) – Mean Monthly Concentrations (mg/L)										Current Mgmt Level
Year		2024					2025					2024					2025					
Month		Mar	May	Jul	Aug	Sep	Mar	May	Jul	Aug	Sep	Mar	May	Jul	Aug	Sep	Mar	May	Jul	Aug	Sep	
Phosphorus (mg/L)	0.01	0.011	0.011	0.012	0.012	0.012	0.012	0.012	0.013	0.013	0.013	0.0066	0.0036	0.0064	0.0047	0.0037	0.0036	0.0046	0.0042	0.0039	0.0046	Level 0
Arsenic (mg/L)	0.025	0.013	0.013	0.014	0.015	0.016	0.016	0.016	0.016	0.017	0.018	0.00061	0.00059	0.0012	0.00082	0.00085	0.0013	0.0019	0.0019	0.0011	0.0011	Level 0

Lake & Area	AMP Benchmark[1]	KAN FEIS Predictions										Kangislulik Lake – Mean Monthly Concentrations (mg/L)										Current Mgmt Level
Month		2024					2025					2024					2025					
Area-Replicate ID		Mar	May	Jul	Aug	Sep	Mar	May	Jul	Aug	Sep	Mar	May	Jul	Aug	Sep	Mar	May	Jul	Aug	Sep	
Phosphorus (mg/L)	0.01	0.0077	0.0077	0.0083	0.0084	0.0085	0.0086	0.0086	0.0094	0.0094	0.0095	0.0037	0.0020	0.0043	0.0041	0.0047	0.0033	0.0047	0.0038	0.0042	0.0032	Level 0
Arsenic (mg/L)	0.025	0.0074	0.0074	0.0086	0.0087	0.0089	0.0092	0.0092	0.010	0.010	0.011	0.00098	0.00097	0.00090	0.0014	0.0016	0.0019	0.0011	0.0014	0.0014	0.0015	Level 0

Notes:

[1] The AMP Benchmark for phosphorus guideline is the upper limit of oligotrophic status from CCME (2004); The AMP Benchmark for arsenic is the site-specific water quality objective (Golder, 2019).

Formatting aligns with the AMP thresholds in the *Whale Tail Expansion Project – Adaptive Management Plan* (Agnico Eagle, 2021):

Level 0	Normal conditions	<= 20% FEIS predictions.
Level 1	Area of concern	>= 20% FEIS predictions AND < 80% water quality guideline.
Level 2	Area of concern	>= 20% FEIS predictions AND between 80% and 100% water quality guideline.
Level 3	High risk	>= 20% FEIS predictions AND between 100% and 120% water quality guideline.
Level 4	Emergency situation	>= 20% FEIS predictions AND > 120% water quality guideline.

5.3.5 Summary and Recommendations

The assessment strategy for MF and FF areas, as outlined in the *CREMP Plan Update* (Azimuth, 2022b), evaluates 2025 trigger exceedances against the decision criteria outlined in **Section 2.4** to determine the monitoring effort and sampling frequency required for 2026. The strategy uses water quality results from the NF areas in the current year (i.e., 2025) to inform sampling requirements at MF and FF areas the following year (i.e., 2026; **Figure 5-7**).

Trigger screening results for the Whale Tail study areas are summarized in **Table 5-7** based on the following decision criteria for the magnitude of change:

- no trigger exceedance,
- minor changes = trigger exceeded for parameters without effects-based thresholds,
- moderate changes = trigger exceeded for parameters with effects-based thresholds, or
- major changes = exceedance of the effects-based threshold.

In 2025, observed water quality differences and trigger exceedances were classified as *minor changes* (**Table 5-7**). The 2025 water quality results from Whale Tail area lakes do not require additional management actions as per the *CREMP Plan Update* and *Adaptive Management Plan* (Azimuth, 2022b, Agnico Eagle, 2021). **Routine water quality monitoring will continue in 2026 to track emerging spatial and temporal trends.**

5.4 Phytoplankton Community

WTS and KAN have been classified as *impact* areas since August 2018. Lakes A20, A76, and DS1 have been classified as *impact* areas since early 2019. NEM was classified as an *impact* lake in August 2019[30]. In 2025, winter phytoplankton samples collected in March and May were archived as per the *CREMP Plan Update* (Azimuth, 2022b). Phytoplankton collected at the reference and Whale Tail area lakes during open-water sampling in July, August, and September[31] were analyzed.

5.4.1 Key Findings from the 2025 Phytoplankton Monitoring Program

- Chlorophyll-a concentrations in 2025 were generally consistent with baseline oligotrophic conditions (<1 µg/L) across the Whale Tail study area lakes. Chlorophyll-a serves as an indicator of phytoplankton productivity, whereas phytoplankton biomass provides a more direct measure of primary productivity.

[30] Baseline phytoplankton taxonomy data for the Whale Tail study area lakes was summarized in (Azimuth, 2018b). The baseline report focused on describing the dominant species and seasonal variability in taxonomy metrics (e.g., biomass and richness) within and between areas.

[31] Phytoplankton samples were not collected at A76 or DS1 in September due to accessibility challenges.

- In 2025, mean total biomass during the open-water season was the highest since monitoring began at NEM and the second highest at KAN and A76. However, the BACI analysis showed no statistically significant changes in biomass relative to baseline/reference conditions at any of the Whale Tail area lakes. Temporal trends were variable among the study area lakes with large increases in phytoplankton biomass at WTS, KAN, NEM, A20, and to a lesser extent A76, and a large apparent decrease at DS1. These changes are exacerbated by low biomass at reference area INUG in 2025.
- The increases in biomass observed at the NF areas in the first few years after mining were consistent with predictions made in the FEIS regarding increasing nutrient concentrations in these lakes (Golder, 2018) and appear to have stabilized in recent years.
- Taxa richness in 2025 was within the historical range for each area. No statistically significant apparent changes in phytoplankton richness were identified in the BACI analyses.
- Water chemistry data showed lower nutrient concentrations in 2025 relative to 2024 (**Section 5.3.2**). Nutrient concentrations and phytoplankton responses appear to be generally aligned across both temporal and spatial scales. However, phytoplankton communities are influenced by a number of seasonal factors, including light availability and water temperature, which makes it difficult to distinguish the effects of natural seasonal variability and regional changes from potential nutrient-related effects associated with mining activities. Overall, observed patterns in phytoplankton biomass suggest a combination of mining influence and natural variability.

5.4.2 General Observations

The general description of phytoplankton taxa in Meadowbank project lakes (**Section 4.4**) applies equally to the lakes within the Whale Tail study area. Six major taxonomic groups of phytoplankton are present in the Whale Tail study lakes. These are blue-green algae (Cyanophyta), green algae (Chlorophyta), golden-brown algae (Chrysophyta), diatoms (Bacillariophyta), cryptophytes (Cryptophyta), and dinoflagellates (Dinoflagellata). Species composition varies throughout the year depending on water temperature, nutrient concentration, water clarity, amount of sunlight, and predation by zooplankton. In general, the biomass of the phytoplankton community during the baseline period or at the reference areas was comprised predominately of chrysophytes (golden-brown algae; **Figure 5-16**).

5.4.3 Temporal and Spatial Trends

The assessment of potential mine-related impacts used two complementary approaches. First, plots were visually examined for temporal-spatial patterns in monitoring data to identify trends potentially associated with mine activities, as described in **Section 5.1** and summarized in **Appendix A**. Second, a

BACI statistical model was applied to the 2025 dataset to test for changes relative to baseline/reference conditions, as described in **Section 2.5.3**. Together, these methods look for evidence of temporal-spatial patterns of effects consistent with mine-related activities.

An important consideration when working with phytoplankton data is the naturally high variability of control data. This potentially confounding *noise* effect can make it difficult to identify mining-related influences or *signals* at impact areas, unless the signals are quite large. The metrics used to assess changes in the community were chlorophyll-a (**Figure 5-13**), total phytoplankton biomass (**Figure 5-14** to **Figure 5-16**), and species richness (**Figure 5-17**).

Tabulated phytoplankton community data from 2025, along with supplemental plots of major taxa biomass (mg/m^3) and density (mg/L), are provided in **Appendix E2**. The 2025 BACI statistical analysis results assessing changes in the phytoplankton community, including total biomass and total species richness, relative to baseline and reference conditions are presented in **Table 5-10**. Key results are described below.

Chlorophyll-a

Chlorophyll-a is an indicator of primary productivity and is commonly used as a surrogate for phytoplankton biomass. Total phytoplankton biomass was measured directly (see below); therefore, statistical analysis of chlorophyll-a was not conducted. The time series plots presented in **Figure 5-13** show that chlorophyll-a concentrations occasionally increased to approximately 2 µg/L, slightly above baseline levels in most Whale Tail study area lakes. In 2025, chlorophyll-a concentrations at all Whale Tail study lakes were approximately 1 µg/L or lower on average, which is characteristic of oligotrophic systems (Kasprzak et al., 2008). Overall, chlorophyll-a concentrations in the Whale Tail area lakes in 2025 were generally representative of baseline trophic conditions. Factors potentially influencing observed patterns in chlorophyll-a and phytoplankton biomass are discussed further below.

Total Biomass

Time series plots for total phytoplankton biomass (mg/m^3) during the open-water period (July–September) are presented in **Figure 5-14**[32]. Chrysophytes and diatoms were the dominant contributors to community biomass across the Whale Tail study area lakes (**Figure 5-15** and **Figure 5-16**).

The BACI analyses (see **Section 2.5.3**) tested for changes in phytoplankton metrics *relative* to baseline/reference conditions, with results provided in **Table 5-10**. None of the 2025 results were

[32] The time series plot uses a log-scale for total biomass as mg/m^3. This is a common approach for data that ranges broadly within or across years. While the approach reduces emphasis on extreme values, it could also lessen the appearance of certain mine-related trends.

statistically significant. Observed trend directions were mixed, with apparent increases at WTS, KAN, A20, A76, and NEM and an apparent decrease at DS1.

In 2025, mean total biomass was the highest since monitoring began at NEM, and the second highest at KAN and A76 (**Table 5-9**). The increases in total phytoplankton biomass identified at NF and MF areas in the first few years of mining activities were consistent with predictions made in the FEIS regarding increasing nutrient concentrations in these lakes (Golder, 2018). While still higher than baseline, total biomass at NF and MF lakes appears to have corrected and stabilized in recent years (**Figure 5-14**).

Major Taxa Composition

The number of taxa varies seasonally, with higher community diversity typically observed during the open-water season compared to periods of ice cover. More than 30 phytoplankton species are generally present during the open-water season (**Figure 5-15**).

In 2025, chrysophytes and diatoms dominated the biomass across most Whale Tail study lakes, while cyanobacteria and dinoflagellates remained minor contributors (**Figure 5-16**). During the baseline period, diatoms made up a small proportion of the phytoplankton community at KAN and WTS. In recent years, the proportion of diatoms appears to have increased in KAN and WTS, a pattern that is less pronounced in NF lake NEM and MF lakes A20 and A76.

The factors driving the observed shift toward a diatom-dominated phytoplankton community are not yet clearly understood. Mining activity appears to be contributing to the observed increases in productivity, particularly at KAN and WTS that continue to receive treated effluent discharge. However, there is evidence to suggest that phytoplankton communities may be responding to regional climatic trends and associated changes in water quality. Baker Lake, which is characterized by naturally-higher concentrations of major ions, also supports a phytoplankton community with a greater prevalence of diatoms (see **Section 6.4** for more information; **Figure 6-13**).

Earlier ice melt and warmer summer conditions observed in recent years are also consistent with increased productivity patterns in Arctic lakes. A recent study of shallow Arctic lakes in Greenland documented increased phytoplankton biomass linked to greater nutrient availability associated with warmer temperatures (Moedt et al., 2024). The study found that nutrient levels were positively associated with total phytoplankton biomass, a pattern observed in the Whale Tail area lakes (**Figure 5-18**), and that diatom biomass increased concurrently with increasing conductivity levels.

Taxa Richness

Taxa richness in 2025 was similar to previous years at all Whale Tail lakes (**Figure 5-17**), with the NF areas tracking within their respective historical ranges and baseline/reference conditions (**Table 5-9**). Relative to INUG, there was a decrease in taxa richness at WTS (-16%), KAN (-19%), A76 (-14%), and

NEM (-11%), an increase at A20 (19.5%), and no change at DS1. The effect sizes across all Whale Tail study area lakes were less than the trigger (increase or decrease of 20% or more) and not statistically significant.

5.4.4 Summary and Recommendations

The FEIS predicted that mining activities would increase nutrients in the lakes nearby, leading to elevated phytoplankton biomass in the first few years of operations (Golder, 2018). Specifically, phosphorus and nitrate concentrations at WTS and KAN were projected to continue increasing through 2026 before declining, with phytoplankton biomass expected to remain elevated or potentially increase over the next year of monitoring. Although FEIS predictions are limited to WTS and KAN, similar nutrient effects were expected to extend to the MF lakes, but to a lesser degree.

In 2025, there were large increases in phytoplankton biomass at WTS, KAN, NEM, A20, and to a lesser extent A76, and there was a large decrease at DS1. These changes are exacerbated by low biomass at the reference area INUG. In recent years, phytoplankton biomass appears to have moderated and stabilized.

Taxa richness in 2025 was within the historical range for each area. No statistically significant apparent changes in phytoplankton richness were identified in the BACI analyses. Phytoplankton taxa richness has remained relatively stable in recent years.

Overall, observed patterns in phytoplankton biomass suggest a combination of mining influence and natural variability influence (e.g., light availability and water temperatures). As outlined in **Section 5.3**, changes in water quality associated with mining activities have been documented in all NF and MF Whale Tail area lakes. In oligotrophic systems, where nutrients typically limit phytoplankton growth, even small nutrient inputs can influence productivity. Since mining began, increases in nutrient concentrations at WTS, KAN, and A20 have generally coincided with higher phytoplankton biomass as predicted in the FEIS (Golder, 2018) though there is high year-to-year variability (**Figure 5-18**).

Phytoplankton productivity, biomass, and richness, as well as associated patterns in key nutrients, will continue to be monitored in 2026. **The Whale Tail phytoplankton program will follow the same schedule as the routine water quality monitoring component in 2026.**

5.5 Sediment Chemistry

5.5.1 Key Findings from the 2025 Sediment Chemistry Monitoring Program

- In 2025, sediment grab samples were collected from all Whale Tail area lakes and analyzed for moisture content, TOC, grain size, and selected organic compounds. The complete suite of sediment chemistry parameters (e.g., including metals) is conducted on a three-year cycle to match MDMER requirements; the next full survey will be conducted in 2026.
- Total organic carbon proportions varied across the Whale Tail study area lakes, with KAN consistently exhibiting the highest proportions and DS1 the lowest. Importantly, these differences persist from the baseline period, reflecting natural differences in productivity among the lakes; no obvious temporal trends have been identified.

5.5.2 General Observations

For interpreting sediment results, the Whale Tail study area lakes (KAN, NEM, A20, A76, DS1) were considered *impact* starting in 2019 except for WTS, which was designated as *impact* in 2018 (**Table 2-2**).

In 2025, sediment grab samples were collected from all Whale Tail area lakes and analyzed for moisture content, TOC, grain size, and selected organic compounds (**Figure 5-2**). The 2025 sediment results are discussed below and tabulated data are provided in **Appendix D2**.

Grain size and TOC are key sediment parameters relevant for benthic invertebrate community habitat characteristics. Results from 2025 were the following:

- **Total Organic Carbon**. Since 2015, monitoring data show no evidence of an increasing trend in TOC at any of the Whale Tail study area lakes (**Figure 5-19**). Total organic carbon varies slightly between years, but has remained consistent within each lake over time. What is apparent, is the difference in TOC among the study lakes, with KAN consistently having higher TOC and the far-field Lake DS1 and reference lakes (INUG, PDL) having the lowest TOC. The observed pattern aligns with general lake characteristics, where shallower, lower-volume lakes tend to be more productive than deeper, high-volume lakes.
- **Grain Size**. Grain size results were similar to those observed in previous years, with sediments generally characterized by fine-grained material often dominated by silt (**Figure 5-20**).

Composite grab samples were analyzed for hydrocarbons; the results are provided in **Appendix D2**. All parameters with CCME screening values were below both detection limits and Probable Effects Levels (PEL). The results from 2025 verify that hydrocarbons are not a COPC at the Meadowbank or Whale Tail study area lakes.

5.5.3 Temporal and Spatial Trends

In 2025, sediment was only analyzed for TOC, moisture, grain size, and organic compounds. Core sampling is planned for 2026 to assess temporal trends in sediment chemistry.

5.5.4 Summary and Recommendations

The 2025 sediment chemistry results from Whale Tail area lakes do not require additional management actions as per the *CREMP Plan Update* (Azimuth, 2022b). **In 2026, sediment coring will be conducted to review trends in chemistry and grab samples will be collected to support the benthic invertebrate community sampling program.**

5.6 Benthos Community

The benthic community results are presented and discussed in this section. Supplemental information (e.g., plots at the major taxonomic group level since baseline sampling began) is provided in **Appendix F2**.

5.6.1 Key Findings from the 2025 Benthos Community Monitoring Program

The analysis of the benthic invertebrate community data focused on two key metrics: total abundance and total taxa richness. The BACI statistical analysis tests for changes relative to baseline/reference conditions for four time periods: the current year, last two years, last three years, and last four years. Key findings for 2025 were as follows:

- The benthic community at the Whale Tail study area lakes is characterized by higher abundance and richness compared to PDL and INUG. Moreover, temporal patterns at the reference lakes show a decreasing trend over the past six years or so relative to the baseline period (2015 through 2018/2019), so the BACI analysis could identify apparent changes even when trends are stable at the impact areas. This needs to be kept in mind when interpreting the BACI results.
- Total abundance measured at the NF areas has varied year-to-year. Statistically significant changes were identified in the BACI results across all time periods, but the cause of these apparent differences between the exposure and reference lakes is unclear. KAN and NEM have consistently shown higher abundance relative to their respective baseline periods, despite having different exposure patterns to mining-related discharges. Similarly, abundance at WTS and A76 has varied over time, with no strong temporal trend, despite differences in their exposure to mine discharges.
- Total taxa richness showed a similar pattern to abundance. Apparent changes were identified in the BACI across all time periods, but the cause of those apparent changes is uncertain. As discussed for total abundance, response patterns relative to their respective baseline periods were similar at KAN/NEM (more taxa now than baseline) and WTS/A76 (variable but largely similar to baseline), despite different levels of exposure to mining-related discharges for each pair.
- Comparing responses between areas highlights the challenge of attributing observed benthic community changes to a single definitive cause. Rather, these results suggest that a combination of mining-related activities, regional climate patterns, and other factors (e.g., lake morphology and natural variability) are likely responsible for the observed changes in benthic invertebrate community abundance in lakes near the Mine.

5.6.2 General Observations

Benthic invertebrate (benthos) abundance in the Whale Tail study area can vary annually within individual lakes, however, multiple years of baseline data help characterize this variability. In contrast, richness tends to be relatively stable year-over-year. While the relative proportions of different taxa may vary, the number of total taxa was consistent throughout the baseline period and early construction in the Whale Tail study area. Abundance (organisms/m^2) and richness (number of unique taxa) is characteristic of depositional areas in northern, low productivity lakes, where chironomids (insects from subfamilies Chironominae and Tanypodinae) and fingernail clams (Sphaeriidae) dominate.

5.6.3 Temporal and Spatial Trends

The methods and approaches used to assess benthos community metrics described for the Meadowbank CREMP were also applied to the Whale Tail study area. Potential mine-related impacts were identified by visually examining the data for spatial and temporal patterns aligned with mining-related events. Time-series plots showing total abundance and richness endpoints were used to assess spatial and temporal trends for the Whale Tail lakes (**Figure 5-21** to **Figure 5-26**). This was augmented with statistical analyses using the BACI model to test for changes in total abundance and taxa richness relative to baseline/reference conditions (see **Section 2.5.3**). The key results are summarized below.

Total Abundance

Total benthos abundance is highly variable within the Whale Tail area lakes and among years (**Table 5-11**). In 2025, the means for total abundance were variable compared to previous years. Total abundances at NF lakes WTS and KAN were within the mid-range of results across all years, whereas NF lake NEM showed the highest abundance since monitoring began in 2015. For the MF lakes, A20 showed the third lowest abundance and A76 was within the mid-range compared to previous years. Far-field lake DS1 showed the lowest abundance since monitoring began. For the reference lakes INUG and PDL, mean total abundance in 2025 was at its second lowest (INUG) and lowest (PDL) since 2015.

Mean total abundance at WTS (3,570 organisms/m^2) in 2025 was within its baseline range (1,675 to 3,546 organisms/m^2) and KAN (5,156 organisms/m^2) was slightly higher than its baseline range (3,050 to 4,236 organisms/m^2). Mean abundance at both these areas was lower than the peak values seen in 2022. The highest mean abundance in 2025 was observed at NEM (5,518 organisms/m^2), which was nearly double the maximum of its baseline range (1,712 to 2,897 organisms/m^2).

In a BACI context[33], where change is measured relative to baseline/reference conditions, lower abundance at the reference area in a given year may appear as a relative increase at NF and MF lakes if

[33] Note that the BACI analysis was run as a two-tailed test, to better define the significance of enriching effects (**Section 2.5.3**)

their abundance remained stable. We refer to such cases as *apparent* changes (increases or decreases). In 2025, there were large (41–290%) apparent increases in benthic invertebrate abundance at all Whale Tail area lakes except DS1 where there was a slight decrease (**Table 5-12** and **Figure 5-21**). For all time periods, there were significant (p-value <0.1) increases in benthic invertebrate abundance at KAN and NEM compared to baseline/reference. There were also significant increases at WTS in the 2024–25, 2023–25, and 2022–25 time periods, as well as A20 in the 2022–25 time period.

Major Taxa Abundance

Similar to past results, insects (predominantly midge larvae) were the dominant taxon at most Whale Tail areas in 2025, typically comprising more than 50% of the relative abundance, followed by molluscs at approximately 20–47% (**Figure 5-22** and **Figure 5-23**). An exception was WTS, where the abundance of molluscs has been higher since 2022; they were dominant (69%) in 2025, with insects accounting for 28% of the relative abundance. Temporal increases in mollusc abundance are also apparent at KAN and NEM.

Taxa Richness

In 2025, total taxa richness in NF areas WTS and A20 was generally consistent with baseline/reference conditions. At near-field areas KAN and NEM, there were large apparent increases (34–68%) in taxa richness relative to baseline/reference conditions. Whereas, lakes WTS, A20, and A76 only showed small apparent increases (1–18%). Across the four time periods, the BACI analysis found significant increases in benthic invertebrate taxa richness at KAN and NEM (p-values <0.1; **Table 5-13**). In other time periods, there were significant (p-values <0.1) increases in benthic invertebrate taxa richness at WTS (2022–25 and 2023–25) and at A20 (2022–25 and 2023–25) compared to baseline/reference. In all time periods, the effect sizes were slightly higher than the threshold (reduced or increased by 50%) for the statistically significant changes observed at NEM.

Major Taxa Richness

The taxa observed in Meadowbank lakes were also documented during the baseline period for Whale Tail lakes. Taxa richness in Whale Tail lakes typically ranges from 10 to 20 taxa (**Figure 5-24**). Insects dominate the benthic community, representing both the highest number of taxa (generally 6 to 11 taxa; **Figure 5-25**) and the greatest proportion of total sample richness (**Figure 5-26**). Molluscs are the second most dominant group, contributing 2-4 taxa and high relative richness. Overall, benthic invertebrate community composition in the Whale Tail study area lakes in 2025 appeared generally consistent with baseline/reference conditions.

Causality

Benthic invertebrate abundance and richness are generally higher at the NF (i.e., KAN, WTS, and NEM) and MF (i.e., A20 and A76) Whale Tail area lakes compared to the reference areas INUG and PDL. In recent years, total abundance and richness at reference areas INUG and PDL have trended lower compared to the baseline period. A similar temporal pattern is evident at DS1, which, like INUG and PDL, is larger and deeper than the NF lakes. Patterns for abundance and diversity are broadly consistent. Differences between the smaller headwater lakes near the Mine and the larger reference lakes suggest that benthic community responses vary among lakes and may be influenced by mining activities, morphology, or regional environmental factors.

The following discussion examines factors that may be responsible for the observed spatial and temporal patterns in the benthic invertebrate community in recent years. Attributing causality is inherently challenging due to interacting and overlapping influences within the lakes.

Water Quality and Benthic Invertebrate Habitat

Discharge of contact water to KAN and WTS has resulted in increases in major ions, nutrients, and metals in the lakes downstream from the Mine (**Section 5.3.5**). Depending on the composition and concentration of the effluent, exposure may result in inhibitory effects (e.g., direct toxicity) or stimulatory effects (e.g., nutrient enrichment). Total phosphorus is a stimulatory COPC, as elevated concentrations can enhance primary productivity. In contrast, arsenic is a potentially inhibitory COPC at elevated concentrations.

Although increased water-column primary productivity would generally be expected to increase sediment TOC, sediment TOC concentrations have not increased in the NF or MF Whale Tail area lakes. Differences in sediment TOC among the study area lakes reflect inherent morphological differences, with higher TOC in smaller, shallower lakes (**Figure 5-19**). It is possible that changes in the quality of organic carbon, rather than quantity, have occurred or that shifts in TOC are too subtle to detect in grab samples.

The FEIS predicted that effluent discharged to WTS and KAN would lead to increased primary productivity and potentially increase benthic invertebrate abundance, although the magnitude of response was uncertain (Golder, 2018). The observed changes in benthic invertebrate abundance and primary productivity (**Section 5.4.4**) at the Whale Tail study area lakes KAN, WTS, NEM, A20, and A76 are consistent with those predictions. Overall, effluent-related nutrient inputs have likely contributed to shifts in benthic community productivity at NF and MF lakes.

Regional Climate Change

Regional climate change has also been linked to changes in water quality in Arctic lakes and rivers. Several studies have shown that warming in the Arctic has led to permafrost thaw and the release of

major ions, nutrients, metals, and other parameters to surface waters (e.g., Kokelj et al., 2009; Lewis et al., 2015; O'Donnell et al., 2024; Saros et al., 2025). These changes have the potential to alter the structure of the phytoplankton community and lake productivity, including shifts from benthic to pelagic diatom species (e.g., Moedt et al., 2024; Saros et al., 2025).

Studies have also documented higher proportions of filter-feeding taxa (e.g., bivalves) in Nunavut lakes and ponds with elevated nutrient concentrations, likely reflecting increased water column primary productivity (Namayandeh and Quilan, 2011). Similarly, a small-scale experimental lake-warming study in Alaska observed higher benthic invertebrate density and higher relative abundance of filter-feeding mollusks in a warmed experimental lake compared to a colder, deeper reference lake (Huish, 2020). Paleoecological evidence further supports climate-related benthic community shifts, with higher abundance and diversity of chironomid subfossils associated with historical and recent warming periods (Luoto and Ojala, 2018). In summary, environmental changes related to broadscale warming trends have been shown to affect benthic community density and diversity.

Confounding Factors and Uncertainty

Given the similarities in the nature of the stimulatory effects to the benthic community from mining and climate change, with both stemming from increases in major ion and nutrient concentrations, it can be hard to disentangle which is the key driver when both appear to be occurring at the same time. At the NF Whale Tail study area lakes, exposure to mining activity differs among KAN, WTS, and NEM, which provides insight into the relative importance of mining-related inputs to observed changes in the benthic invertebrate community. Some of the Whale Tail study area lakes are only affected by non-point source discharges (e.g., dust) and altered hydrology (e.g., NEM), while other lakes also receive direct inputs of treated mining effluent (e.g., WTS and KAN). WTS and A20 have also been impacted by flooding of the Whale Tail Impoundment which has influenced water quality.

Since the onset of mining, KAN has shown consistently higher abundance relative to baseline, whereas the response pattern at WTS has been more variable, with mean abundance remaining within the baseline range in approximately half of the post-baseline years. In contrast, the NEM watershed was briefly exposed to contact water in 2019 when heavy precipitation during construction necessitated dewatering of sump AP5 onto the tundra within the NEM catchment. Since then, there have been no direct inputs to Nemo Lake. Despite moderate changes in nutrients and major ions, increases in abundance and diversity at NEM have been generally similar to or greater than to those observed at WTS and KAN. Lake A76 has also experienced moderate changes in nutrients and major ions; however, benthic abundance has been variable and largely within the baseline range. Reference areas INUG and PDL and FF area Lake DS1, all larger and deeper lakes that have exhibited lower-magnitude increases in several water quality parameters, have shown broadly similar trends in benthic community abundance,

characterized by an apparent decreasing trend over the past six years. The patterns in abundance in the Whale Tail area lakes are generally consistent with those observed for diversity.

Overall, benthic responses align with the FEIS predictions, though the relative contribution of mining-related activities and other factors to the observed changes is unclear. Although the highest magnitude of changes in water quality occurred at KAN and WTS, benthic community responses differed between these lakes, and the benthic community at NEM exhibited comparable or greater apparent changes despite moderate changes in water quality (**Section 5.3.2**). Comparing responses between areas highlights the challenge of attributing observed benthic community changes to a single definitive cause. Rather, these results suggest that a combination of mining-related activities, regional climate patterns, and other factors (e.g., lake morphology and natural variability) are likely responsible for the observed changes in benthic invertebrate community abundance in lakes near the Mine.

5.6.4 Summary and Recommendations

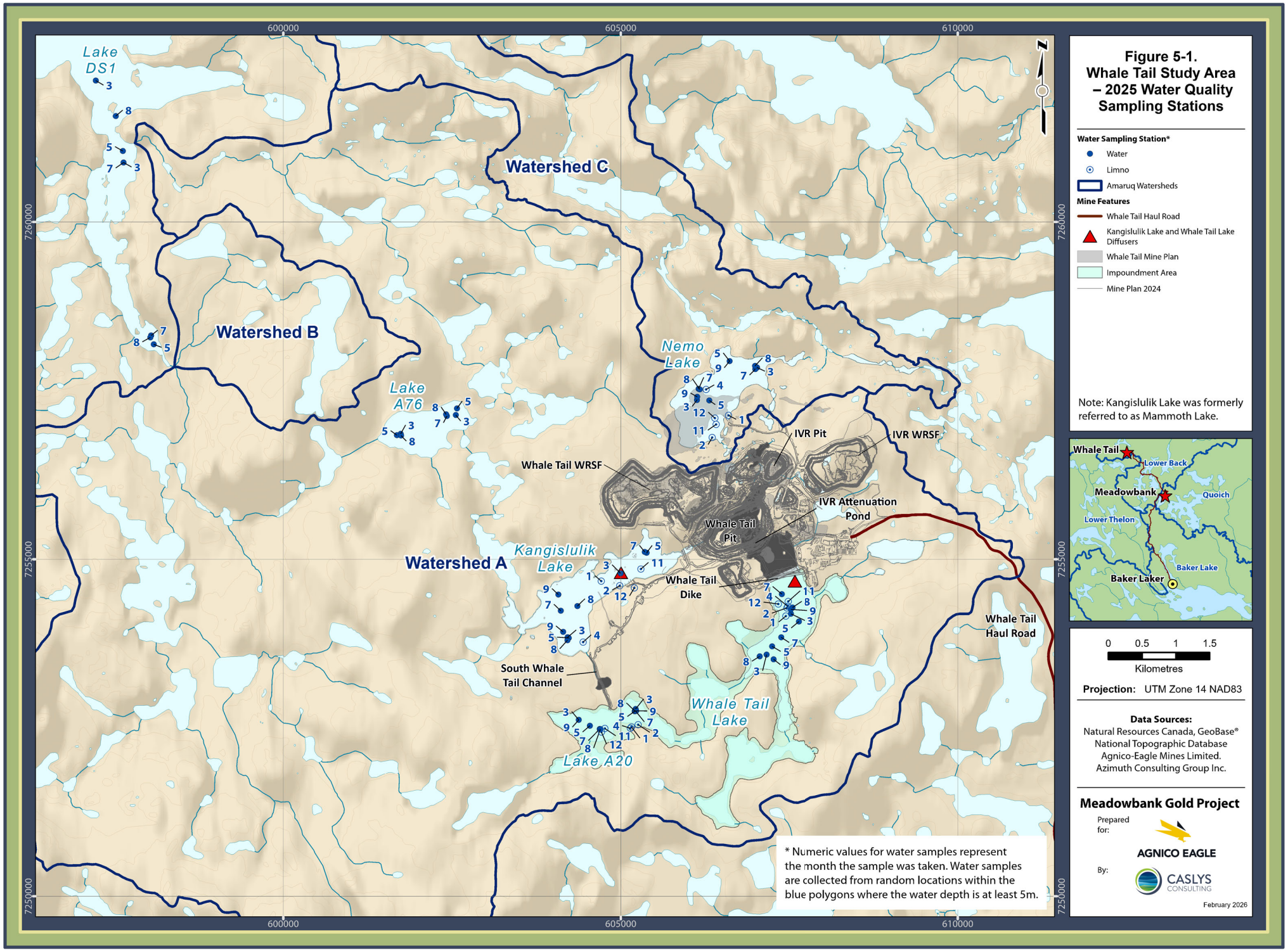
For benthic invertebrate abundance, statistically significant increases were observed at NF areas KAN and NEM across all time periods compared to baseline/reference. In past time periods, there were also statistically significant increases at WTS and A20. As discussed above, these responses appear to be due to a combination of mining activity, regional climatic patterns, and other factors such as lake morphology and natural variability.

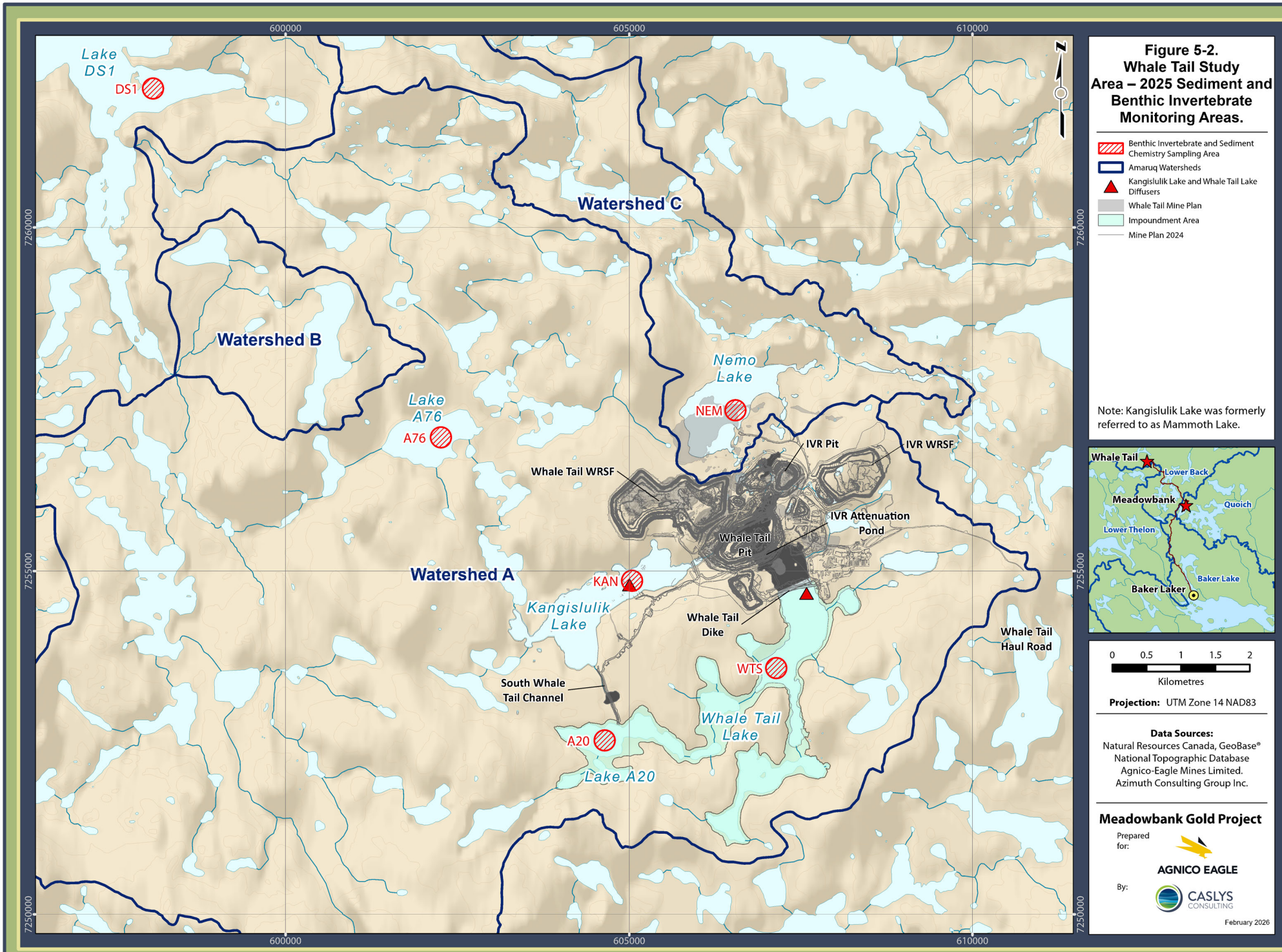
For taxa richness, significant increases were observed at KAN and NEM in all time periods compared to baseline/reference. Similar to abundance, in past time periods, there were significant increases at WTS and A20. Although episodic nutrient enrichment and increased phytoplankton production have been observed in the water column, no corresponding increases in sediment TOC have occurred to suggest that these changes in benthic parameters are driven solely by an enrichment effect.

Continued monitoring in 2026 will support further evaluation of the potential drivers of apparent changes in the benthic community.

5.7 Whale Tail Tables and Figures

This section includes tables and figures for the Whale Tail study areas, except for large tabulated data and figures for parameters not covered in the detailed analysis (refer to in-text references for relevant appendices). Subsections are organized by CREMP components including limnology, water chemistry, phytoplankton, sediment chemistry, and benthos.


600000
605000
610000
7260000
7255000
7250000
Lake DS1
Watershed C
Watershed B
Watershed A
Lake A76
Nemo Lake
Kangislulik Lake
Whale Tail Lake
Lake A20
Whale Tail WRSF
IVR Pit
IVR WRSF
IVR Attenuation Pond
Whale Tail Pit
Whale Tail Dike
Whale Tail Haul Road
South Whale Tail Channel
* Numeric values for water samples represent the month the sample was taken. Water samples are collected from random locations within the blue polygons where the water depth is at least 5m.
Figure 5-1.
Whale Tail Study Area – 2025 Water Quality Sampling Stations
Water Sampling Station*
Water
Limno
Amaruq Watersheds
Mine Features
Whale Tail Haul Road
Kangislulik Lake and Whale Tail Lake Diffusers
Whale Tail Mine Plan
Impoundment Area
Mine Plan 2024
Note: Kangislulik Lake was formerly referred to as Mammoth Lake.
Whale Tail
Lower Back
Meadowbank
Quoich
Lower Thelon
Baker Lake
Baker Lake
0 0.5 1 1.5
Kilometres
Projection: UTM Zone 14 NAD83
Data Sources:
Natural Resources Canada, GeoBase® National Topographic Database
Agnico-Eagle Mines Limited.
Azimuth Consulting Group Inc.
Meadowbank Gold Project
Prepared for:
AGNICO EAGLE
By:
CASLYS CONSULTING
February 2026


600000
605000
610000
7260000
7255000
7250000
Lake DS1
DS1
Watershed C
Watershed B
Watershed A
Nemo Lake
NEM
Lake A76
A76
IVR Pit
IVR WRSF
Whale Tail WRSF
IVR Attenuation Pond
Whale Tail Pit
KAN
Kangislulik Lake
Whale Tail Dike
Whale Tail Haul Road
WTS
South Whale Tail Channel
Whale Tail Lake
A20
Lake A20
N
Figure 5-2.
Whale Tail Study Area – 2025 Sediment and Benthic Invertebrate Monitoring Areas.
Benthic Invertebrate and Sediment Chemistry Sampling Area
Amaruq Watersheds
Kangislulik Lake and Whale Tail Lake Diffusers
Whale Tail Mine Plan
Impoundment Area
Mine Plan 2024
Note: Kangislulik Lake was formerly referred to as Mammoth Lake.
Whale Tail
Lower Back
Meadowbank
Quoich
Lower Thelon
Baker Lake
Baker Laker
0
0.5
1
1.5
2
Kilometres
Projection: UTM Zone 14 NAD83
Data Sources:
Natural Resources Canada, GeoBase® National Topographic Database
Agnico-Eagle Mines Limited.
Azimuth Consulting Group Inc.
Meadowbank Gold Project
Prepared for:
AGNICO EAGLE
By:
CASLYS CONSULTING
February 2026

Limnology Tables and Figures

Figure 5-3. Mean monthly field-measured temperature (°C) at 3 m depth since 2014, Whale Tail study area lakes.

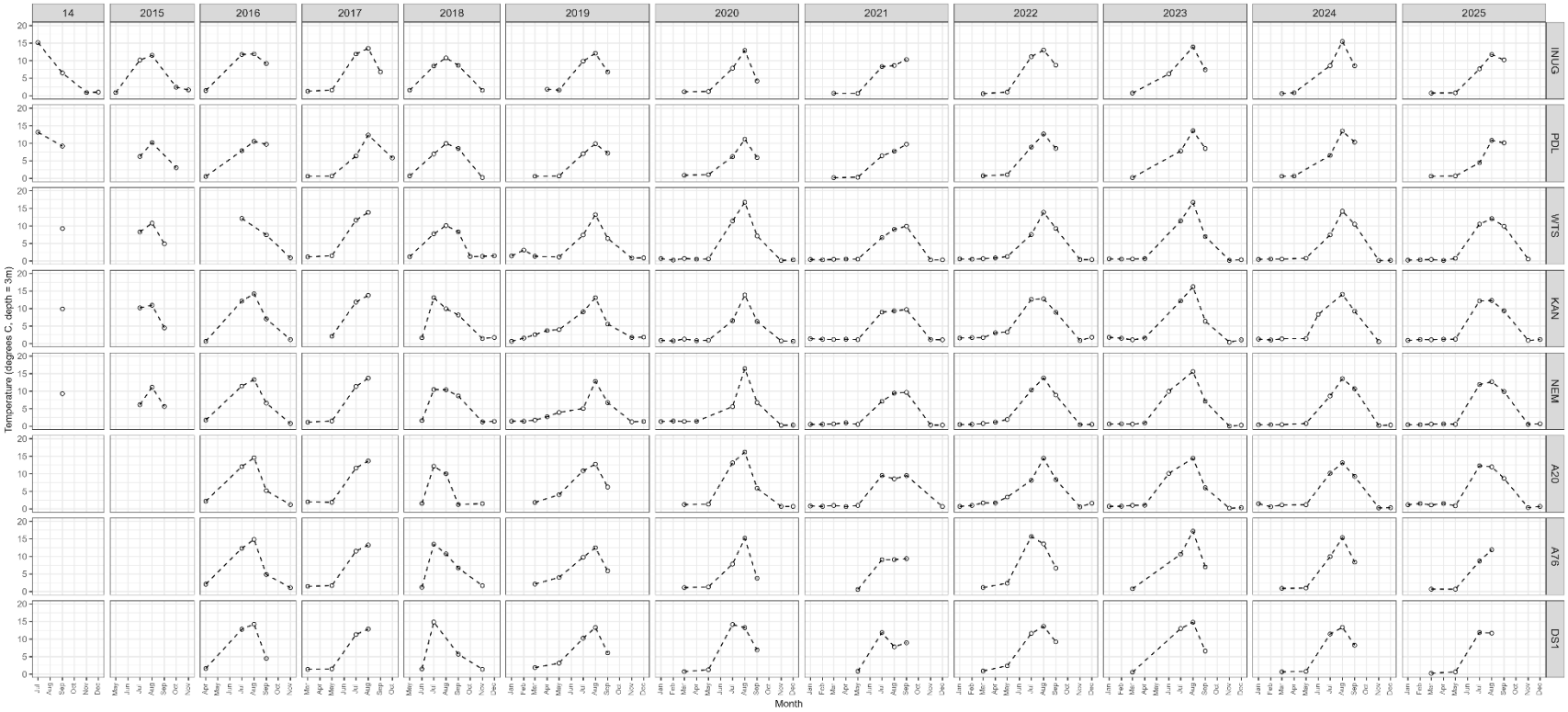


Figure 5-4. Whale Tail – Field-measured temperature profiles, 2025.

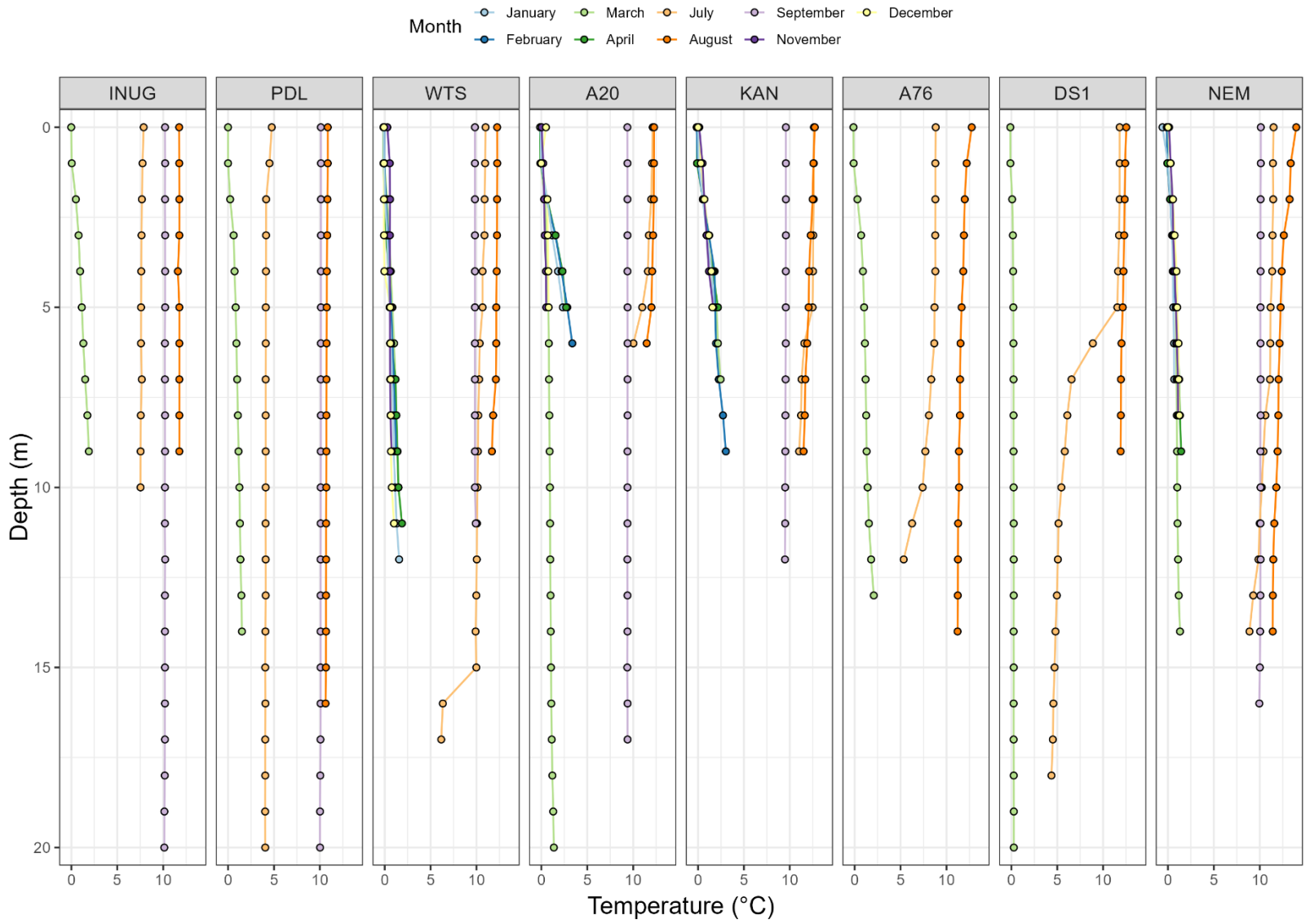


Figure 5-5. Whale Tail – Field-measured dissolved oxygen profiles, 2025.

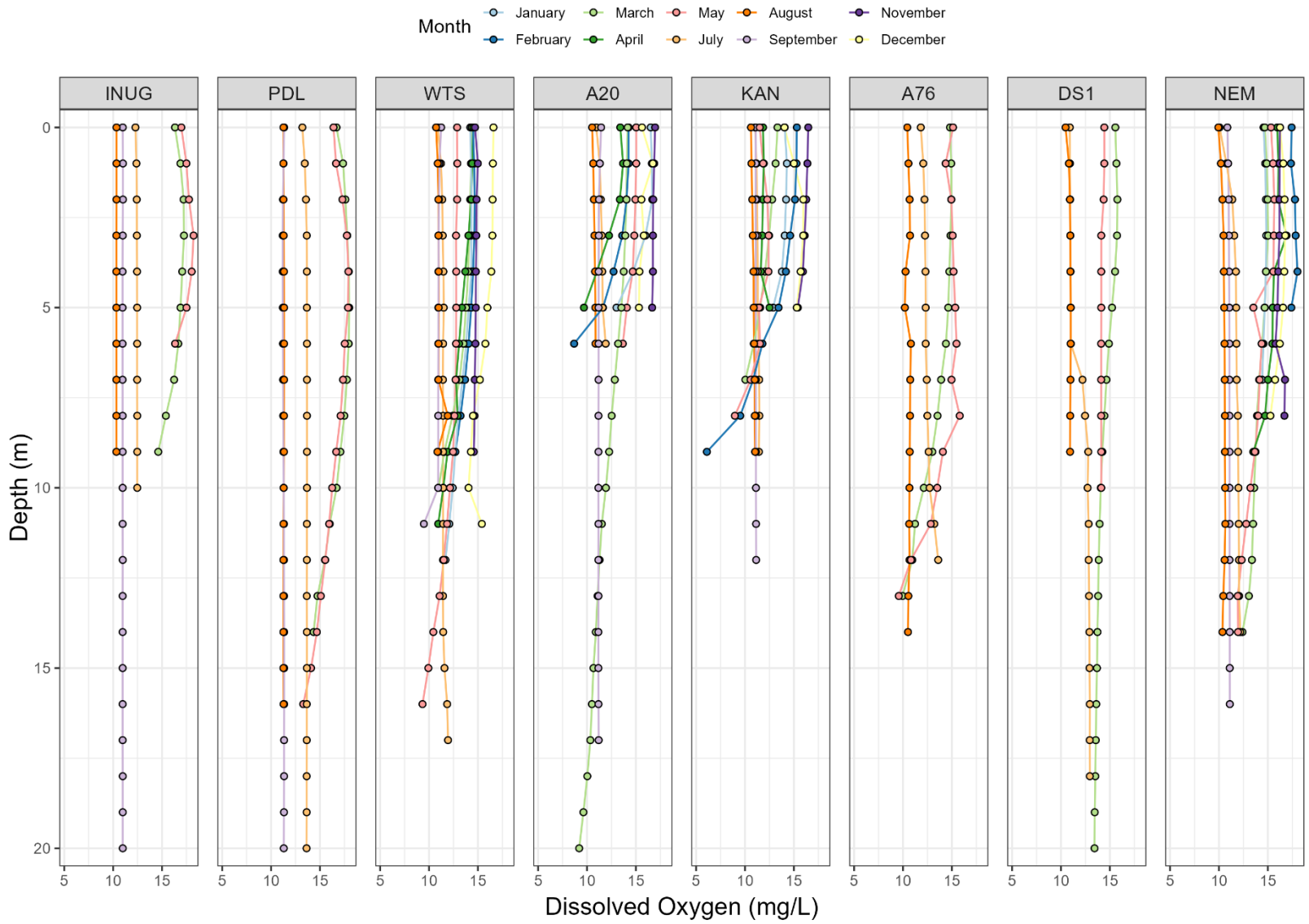
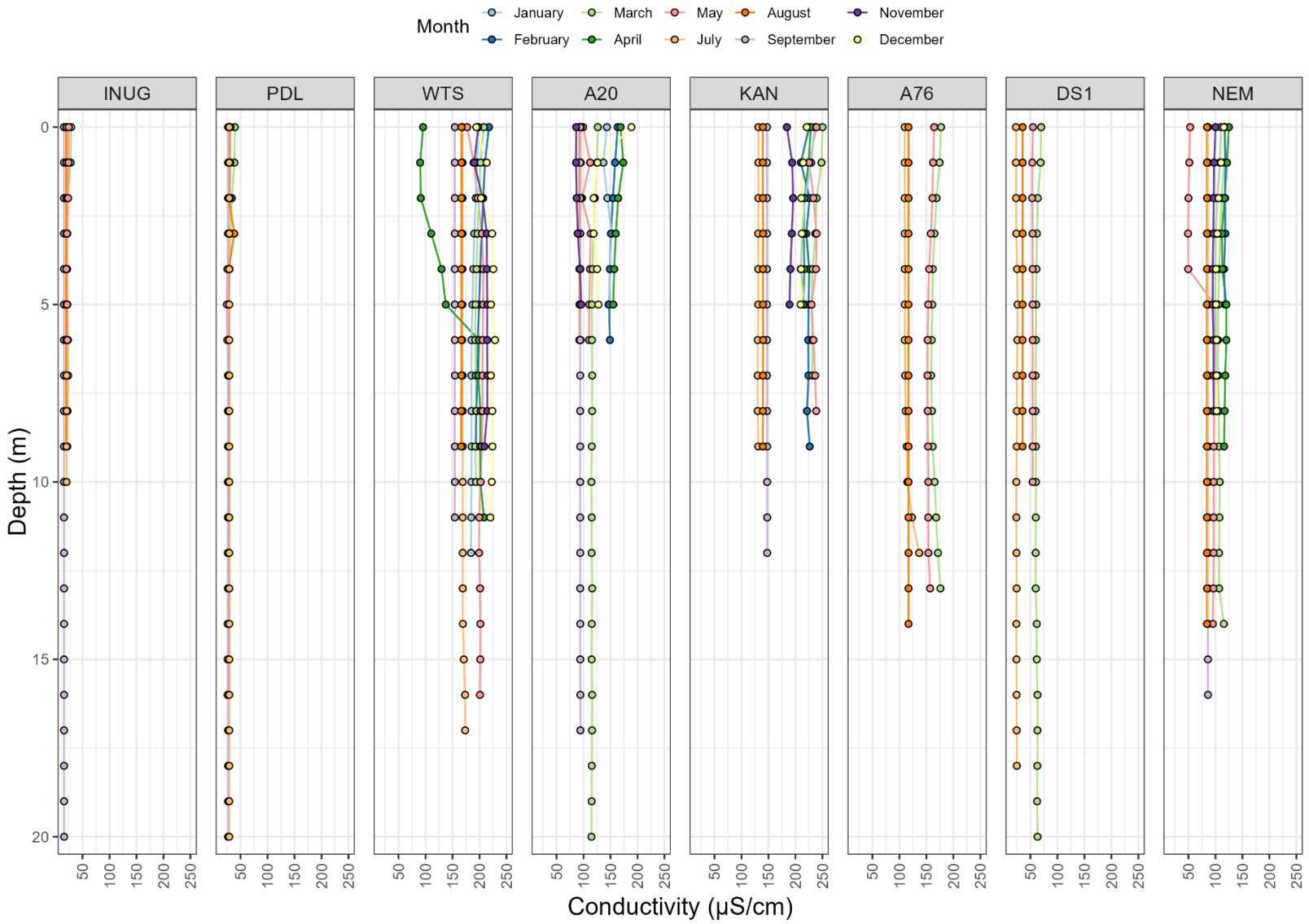


Figure 5-6. Whale Tail – Field-measured conductivity profiles, 2025.



Water Chemistry Tables and Figures

Table 5-4. Screening process for water quality parameters, Whale Tail study area lakes, 2025.

Parameters	Trigger Exceedance[2]	Screening Level and Rule[1] 1 >DL ≥ 10% Frequency	2 C-I > 0.1 Frequency	3 Pattern = Activity
CONVENTIONALS				
Conductivity	All areas	**Yes**		
TSS	-	**Yes**		
Hardness	All areas	**Yes**		
T-Alkalinity	All areas except DS1	**Yes**		
B-Alkalinity	All areas except DS1	**Yes**		
C-Alkalinity	-	No	No	No
TDS & MAJOR IONS				
TDS	All areas except DS1	**Yes**		
Calcium	All areas	**Yes**		
Chloride	-	**Yes**		
Fluoride	-	**Yes**		
Magnesium	All areas	**Yes**		
Potassium	All areas except DS1	**Yes**		
Sodium	All areas	**Yes**		
Sulphate	-	**Yes**		
NUTRIENTS & OTHERS				
Ammonia-N	-	**Yes**		
Nitrate-N	-	**Yes**		
Nitrite-N	-	**Yes**		
TKN	All areas except NEM	**Yes**		
T-phosphorus	-	**Yes**		
Ortho-phosphate	-	**Yes**		
DOC	All areas except NEM and A76	**Yes**		
TOC	All areas except NEM	**Yes**		
Reactive silica	DS1	**Yes**		
T-Cyanide	*Not measured since 2019*			
Free Cyanide	*Not measured since 2019*			

Parameters	Trigger Exceedance[2]	Screening Level and Rule[1] 1 >DL ≥ 10% Frequency	2 C-I > 0.1 Frequency	3 Pattern = Activity
TOTAL METALS				
Aluminum	-	**Yes**		
Antimony	-	**Yes**		
Arsenic	-	**Yes**		
Barium	-	**Yes**		
Beryllium	-	No	No	No
Boron	-	No	No	No
Cadmium	-	No	No	No
Chromium	-	**Yes**		
Copper	-	**Yes**		
Iron	-	**Yes**		
Lead	-	No	No	No
Lithium	WTS and KAN	**Yes**		
Manganese	-	**Yes**		
Mercury	-	No	No	No
Molybdenum	-	**Yes**		
Nickel	-	**Yes**		
Selenium	-	**Yes**		
Silicon	DS1	**Yes**		
Silver	-	No	No	No
Strontium	-	**Yes**		
Thallium	-	No	No	No
Tin	-	No	No	No
Titanium	WTS	**Yes**		
Uranium	-	**Yes**		
Vanadium	-	No	No	No
Zinc	-	No	No	No

Parameters	Trigger Exceedance[2]	Screening Level and Rule[1] 1 >DL ≥ 10% Frequency	2 C-I > 0.1 Frequency	3 Pattern = Activity
DISSOLVED METALS				
Aluminum	-	**Yes**		
Antimony	-	**Yes**		
Arsenic	-	**Yes**		
Barium	-	**Yes**		
Beryllium	-	No	No	No
Boron	-	No	No	No
Cadmium	-	No	No	No
Chromium	-	**Yes**		
Copper	-	**Yes**		
Iron	-	**Yes**		
Lead	-	**Yes**		
Lithium	WTS and KAN	**Yes**		
Manganese	-	**Yes**		
Mercury	-	No	No	No
Molybdenum	-	**Yes**		
Nickel	-	**Yes**		
Selenium	-	**Yes**		
Silicon	DS1	**Yes**		
Silver	-	No	No	No
Strontium	-	**Yes**		
Thallium	-	No	No	No
Tin	-	No	No	No
Titanium	-	No	No	No
Uranium	-	**Yes**		
Vanadium	-	No	No	No
Zinc	WTS	**Yes**		

Notes:

1. A three-step assessment process was used to identify parameters to include in the formal temporal and spatial trend assessment (**Section 2.5.1** and **Section 4.3.2**).
   Parameters were assigned a "Yes" if the following criteria were met:
(1) **>DL ≥ 10% Frequency**: parameters that exceeded DLs in at least 10% of the samples.
(2) **C-I > 0.1 Frequency**: parameters that were detected more often in impact areas and the proportion of detected values increased by 0.1 or more.
(3) **Pattern = Activity**: an additional step to avoid screening out potentially important parameters. Trend plots were reviewed to determine whether infrequently detected parameters showed a trend and/or included values greater than 5 x DL in at least one sampling event at NF areas.
2. Indicates that a trigger exceedance occurred at the listed Whale Tail study area lakes in one or more sampling event.
Shaded parameters are included in the temporal and spatial trend assessment.
Plots for all individual parameters are presented in **Appendix C2**.

Table 5-5. Water quality variables at the Whale Tail study area lakes for which 2025 mean concentrations exceeded the trigger.

Parameter	Trigger	Threshold	2025 Mean					
			WTS NF	KAN NF	NEM NF	A20 MF	A76 MF	DS1 FF
Conventionals								
Conductivity	48.6	-	176	176	95.3	118	140	51.6
Hardness	17.4	-	65.6	67.6	37.8	43.1	52.8	17.8
Alkalinity - Bicarbonate	9.6	-	23.9	23.8	15.4	18.3	20.5	-
Alkalinity - Total (as $CaCO_3$)	9.6	-	23.9	23.8	15.4	18.3	20.5	-
Reactive Silica (as SiO_2)	1.3	-	-	-	-	-	-	1.5
TDS & Major Ions								
TDS	38.5	-	118	124	69.5	79.9	83.9	-
Calcium	4.6	-	17.3	18.6	10.5	11.4	14.2	4.7
Magnesium	1.4	-	5.4	5.1	2.8	3.6	4.2	1.5
Potassium	0.84	-	4.2	4.1	1.8	2.6	2.9	-
Sodium	0.97	-	4.0	3.7	1.0	2.8	2.7	1.7
Nutrients								
TKN	0.17	-	0.26	0.25	-	0.23	0.18	0.17
TOC	2.4	-	3.5	2.9	-	3.5	2.5	3.1
DOC	2.4	-	3.3	3.0	-	3.5	-	3.0
Metals								
Lithium (T)	0.0020	-	0.0027	0.0025	-	-	-	-
Silicon (T)	0.61	-	-	-	-	-	-	0.73
Titanium (T)	0.00041	-	0.00045	-	-	-	-	-
Lithium (D)	0.0020	-	0.0027	0.0024	-	-	-	-
Silicon (D)	0.57	-	-	-	-	-	-	0.69

Notes:
"-" indicates mean annual concentration was less than the trigger value.
Reported mean values are all in units of mg/L except for conductivity (µS/cm).

Table 5-6. Results of BACI tests for selected water variables at the Whale Tail study area lakes in 2025.

Parameter	Station	n(B)	n(A)	Estimate	SE	P-value[1]	Proportional change		
							exp(Est)	LCI	UCI
Conventionals									
Conductivity	WTS	14	5	1.5	0.15	**< 0.001**	4.5	3.3	6.2
	KAN	15	5	1.2	0.16	**< 0.001**	3.2	2.3	4.5
	A20	13	5	1.7	0.072	**< 0.001**	5.5	4.7	6.4
	A76	13	4	1.0	0.099	**< 0.001**	2.8	2.2	3.4
	DS1	13	4	0.42	0.10	**< 0.001**	1.5	1.2	1.9
	NEM	20	5	0.94	0	**< 0.001**	2.6	2.6	2.6
Hardness	WTS	14	5	1.6	0.14	**< 0.001**	4.7	3.5	6.4
	KAN	15	5	1.2	0.15	**< 0.001**	3.4	2.5	4.7
	A20	13	5	1.8	0.077	**< 0.001**	5.8	4.9	6.8
	A76	13	4	1.0	0.087	**< 0.001**	2.8	2.3	3.4
	DS1	13	4	0.39	0.11	**0.0012**	1.5	1.2	1.9
	NEM	20	5	0.98	0.049	**< 0.001**	2.7	2.4	3.0
HCO_3 alkalinity	WTS	13	5	1.4	0.067	**< 0.001**	3.9	3.4	4.5
	KAN	14	5	1.2	0.078	**< 0.001**	3.4	2.8	4.0
	A20	13	5	0.99	0.079	**< 0.001**	2.7	2.3	3.2
	A76	13	4	0.79	0.060	**< 0.001**	2.2	1.9	2.5
	NEM	19	5	0.44	0.053	**< 0.001**	1.6	1.4	1.7
Total alkalinity	WTS	13	5	1.4	0.067	**< 0.001**	3.9	3.4	4.5
	KAN	14	5	1.2	0.078	**< 0.001**	3.4	2.8	4.0
	A20	13	5	0.99	0.079	**< 0.001**	2.7	2.3	3.2
	A76	13	4	0.79	0.060	**< 0.001**	2.2	1.9	2.5
	NEM	19	5	0.44	0.053	**< 0.001**	1.6	1.4	1.7
Reactive Silica	DS1	13	4	0.11	0.23	0.31	1.1	0.69	1.8
Nutrients & Others									
TKN	WTS	13	5	0.45	0.096	**< 0.001**	1.6	1.3	1.9
	KAN	14	5	0.47	0.093	**< 0.001**	1.6	1.3	2.0
	A20	13	5	0.57	0.11	**< 0.001**	1.8	1.4	2.2
	A76	13	4	0.26	0.12	**0.019**	1.3	1.0	1.7
	DS1	13	4	0.0038	0.10	0.49	1.0	0.81	1.3
TOC	WTS	14	5	0.16	0.065	**0.013**	1.2	1.0	1.3
	KAN	15	5	0.10	0.074	0.087	1.1	0.95	1.3
	A20	13	5	0.36	0.078	**< 0.001**	1.4	1.2	1.7
	A76	13	4	0.020	0.074	0.39	1.0	0.87	1.2
	DS1	13	4	-0.060	0.076	0.78	0.94	0.80	1.1
DOC	WTS	14	5	0.061	0.066	0.19	1.1	0.92	1.2
	KAN	15	5	0.11	0.074	0.073	1.1	0.96	1.3
	A20	13	5	0.34	0.082	**< 0.001**	1.4	1.2	1.7
	DS1	13	4	-0.083	0.091	0.81	0.92	0.76	1.1
TDS & Major Ions									
TDS	WTS	13	5	1.4	0.20	**< 0.001**	4.2	2.8	6.3
	KAN	14	5	1.2	0.22	**< 0.001**	3.2	2.0	5.1
	A20	13	5	1.5	0.14	**< 0.001**	4.6	3.4	6.1
	A76	13	4	0.96	0.16	**< 0.001**	2.6	1.9	3.7
	NEM	19	5	1.1	0.13	**< 0.001**	2.9	2.2	3.8
Calcium	WTS	14	5	1.5	0.18	**< 0.001**	4.6	3.2	6.8
	KAN	15	5	1.2	0.18	**< 0.001**	3.4	2.4	4.9
	A20	13	5	1.7	0.082	**< 0.001**	5.7	4.8	6.8
	A76	13	4	1.0	0.090	**< 0.001**	2.9	2.4	3.5
	DS1	13	4	0.41	0.10	**0.00065**	1.5	1.2	1.9
	NEM	20	5	1.2	0	**< 0.001**	3.2	3.2	3.2
Magnesium	WTS	14	5	1.5	0.12	**< 0.001**	4.7	3.7	6.0
	KAN	15	5	1.2	0.12	**< 0.001**	3.4	2.7	4.4
	A20	13	5	1.7	0.093	**< 0.001**	5.5	4.5	6.7
	A76	13	4	0.95	0.077	**< 0.001**	2.6	2.2	3.0
	DS1	13	4	0.31	0.11	**0.0067**	1.4	1.1	1.7
	NEM	20	5	0.63	0.060	**< 0.001**	1.9	1.7	2.1
Potassium	WTS	14	5	2.0	0.12	**< 0.001**	7.6	6.0	9.7
	KAN	15	5	1.6	0.12	**< 0.001**	5.0	3.9	6.3
	A20	13	5	1.8	0.094	**< 0.001**	5.8	4.8	7.1
	A76	13	4	1.1	0.076	**< 0.001**	3.1	2.7	3.7
	NEM	20	5	0.92	0.062	**< 0.001**	2.5	2.2	2.9
Sodium	WTS	14	5	1.5	0.086	**< 0.001**	4.4	3.6	5.2
	KAN	15	5	1.3	0.091	**< 0.001**	3.7	3.1	4.5
	A20	13	5	1.1	0.088	**< 0.001**	3.0	2.5	3.6
	A76	13	4	0.95	0.070	**< 0.001**	2.6	2.2	3.0
	DS1	13	4	0.23	0.12	**0.038**	1.3	0.97	1.6
	NEM	20	5	0.27	0.050	**< 0.001**	1.3	1.2	1.5
Metals									
T. Lithium	WTS	14	5	0.92	0.068	**< 0.001**	2.5	2.2	2.9
	KAN	15	5	0.65	0.16	**< 0.001**	1.9	1.4	2.6
T. Silicon	DS1	13	4	-0.41	0.22	0.96	0.66	0.41	1.1
T.Titanium	WTS	14	5	0.18	0.14	0.10	1.2	0.89	1.6
D. Lithium	WTS	14	5	0.96	0.046	**< 0.001**	2.6	2.4	2.9
	KAN	15	5	0.66	0.15	**< 0.001**	1.9	1.4	2.6
D. Silicon	DS1	13	4	-0.43	0.25	0.95	0.65	0.38	1.1

Notes:

1. **Bolded** p-values are statistically significant ($p < 0.05$).

Test area = impact area compared to control area (INUG).

n(B) = number of paired months in the "before" period.

n(A) = number of paired months in the "after" period (i.e., in 2025).

Estimate = BACI model estimate of the 2025 change in mean for log-transformed data.

SE = standard error of the estimate.

P-value = one-tailed test of the null hypothesis (no change or a decrease in mean [opposite for lower pH trigger]).

Exp(Est) = estimated proportional change.

LCI = lower 95% confidence interval; UCI = upper 95% confidence interval.

Table 5-7. Sampling effort and frequency assessment results for the Whale Tail study area lakes, 2025.

Areas	Area Designation	Triggers Exceeded?	Minor Changes [1]		Moderate Changes [2]		Major Changes [3]		Plan for 2026
		Yes/No	Yes/No	Parameters	Yes/No	Parameters	Yes/No	Parameters	
Sampling Strategy for Near-field Areas									
WTS	NF	Yes	Yes	Cond., Hard., Alkalinity (HCO_3 & Total), TDS, Ca, Mg, K, Na, TKN, TOC, DOC, T. & D. Lithium, T. Titanium	No	-	No	-	Full CREMP (near-field area)
KAN	NF	Yes	Yes	Cond., Hard., Alkalinity (HCO_3 & Total), TDS, Ca, Mg, K, Na, TKN, TOC, DOC, T. & D. Lithium	No	-	No	-	Full CREMP (near-field area)
NEM	NF	Yes	Yes	Cond., Hard., Alkalinity (HCO_3 & Total), TDS, Ca, Mg, K, Na	No	-	No	-	Full CREMP (near-field area)
Sampling Strategy for Mid-field and Far-field Areas									
A20	MF	Yes	Yes	Cond., Hard., Alkalinity (HCO_3 & Total), TDS, Ca, Mg, K, Na, TKN, TOC, DOC	No	-	No	-	Full water sampling
A76	MF	Yes	Yes	Cond., Hard., Alkalinity (HCO_3 & Total), TDS, Ca, Mg, K, Na, TKN, TOC	No	-	No	-	Full water sampling
DS1	FF	Yes	Yes	Cond., Hard., Reactive Silica, Ca, Mg, Na, TKN, TOC, DOC, T. & D. Silicon	No	-	No	-	Full water sampling

Notes:

1. Minor = exceedance of the early warning trigger values for parameters without effects-based threshold values.
2. Moderate = exceedance of the early warning trigger values for parameters with effects-based thresholds.
3. Major = exceedance of the effects-based threshold values.

Table 5-8. Number of monthly mean concentrations exceeding monthly FEIS screening predictions, annual mean trigger exceedances and trend directions for parameters in Kangislulik Lake and Whale Tail South in 2025.

	Number of Monthly Exceedances of FEIS Predictions [1]		Annual Mean Exceeds Trigger		Direction of Change [2]	
Parameter	**Whale Tail South**	**Kangislulik Lake**	**Whale Tail South**	**Kangislulik Lake**	**Whale Tail South**	**Kangislulik Lake**
Conventionals						
Total Alkalinity	5	5	**Yes**	**Yes**	↑	↑
TDS & Major Ions						
TDS	5	5	**Yes**	**Yes**	=	=
Chloride	5	5	No	No	=	↑
Fluoride	5	4	No	No	=	↑
Calcium	5	5	**Yes**	**Yes**	=	↑
Potassium	5	5	**Yes**	**Yes**	=	↑
Magnesium	5	5	**Yes**	**Yes**	=	↑
Sodium	5	5	**Yes**	**Yes**	=	=
Sulphate	5	5	No	No	=	=
Total Metals						
Aluminum	5	3	No	No	↑	↓
Antimony	5	5	No	No	=	↑
Barium	5	5	No	No	=	=
Chromium	1	1	No	No	↑	↑
Iron	1	0	No	No	↑	↑
Lithium	5	5	**Yes**	**Yes**	=	↑
Molybdenum	5	5	No	No	=	=
Strontium	5	5	No	No	=	=
Total	**77**	**73**	-	-		

Notes:

1 In all cases, five months of data were available.

2 Qualitative direction of trend at the end of 2025 sampling.

Shaded values indicate parameter exceeded FEIS prediction during all 2025 monthly sampling events.

Bolded and underlined values indicate yearly mean exceeded trigger.

Bolded arrows indicate parameter concentrations appeared to be increasing in last sampling events of 2025.

Figure 5-7. Flow chart showing sampling effort and frequency plan for mid-field and far-field sampling at the Whale Tail study area lakes in 2025 and 2026.

Note: Blue-shaded cells show the linkage between 2025 CREMP results and the sampling effort and frequency for mid-field and far-field sampling in 2026. *Moderate changes* refer to statistically significant increased concentrations for parameters with effects-based threshold values that exceed the early warning trigger values. Refer to **Section 2.4** for more information.

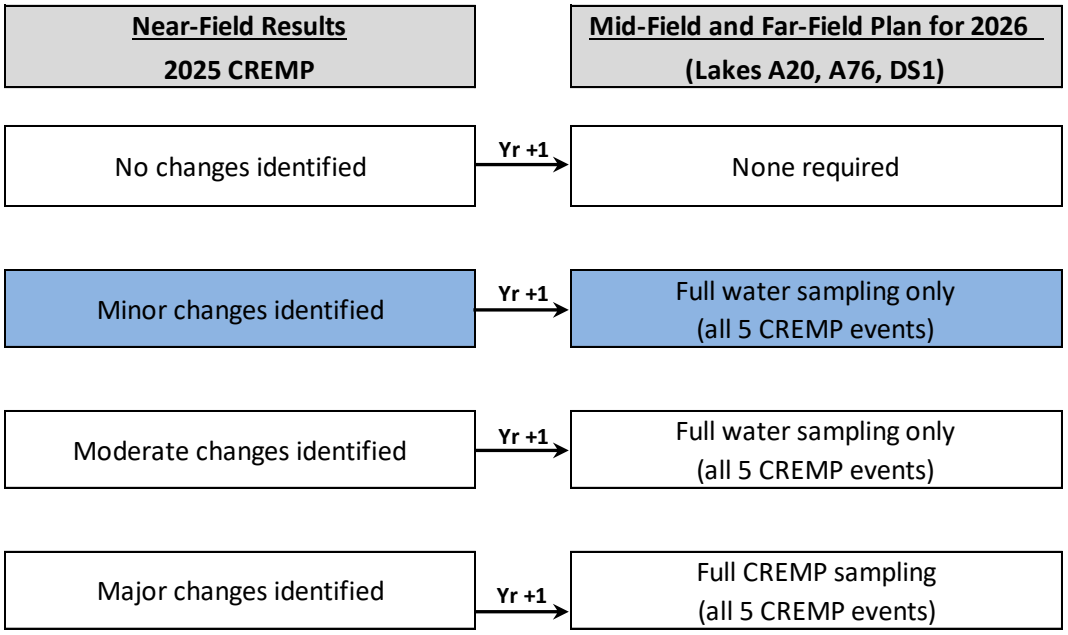


Figure 5-8. Conventional parameters measured in water samples from Whale Tail study area lakes since 2014.

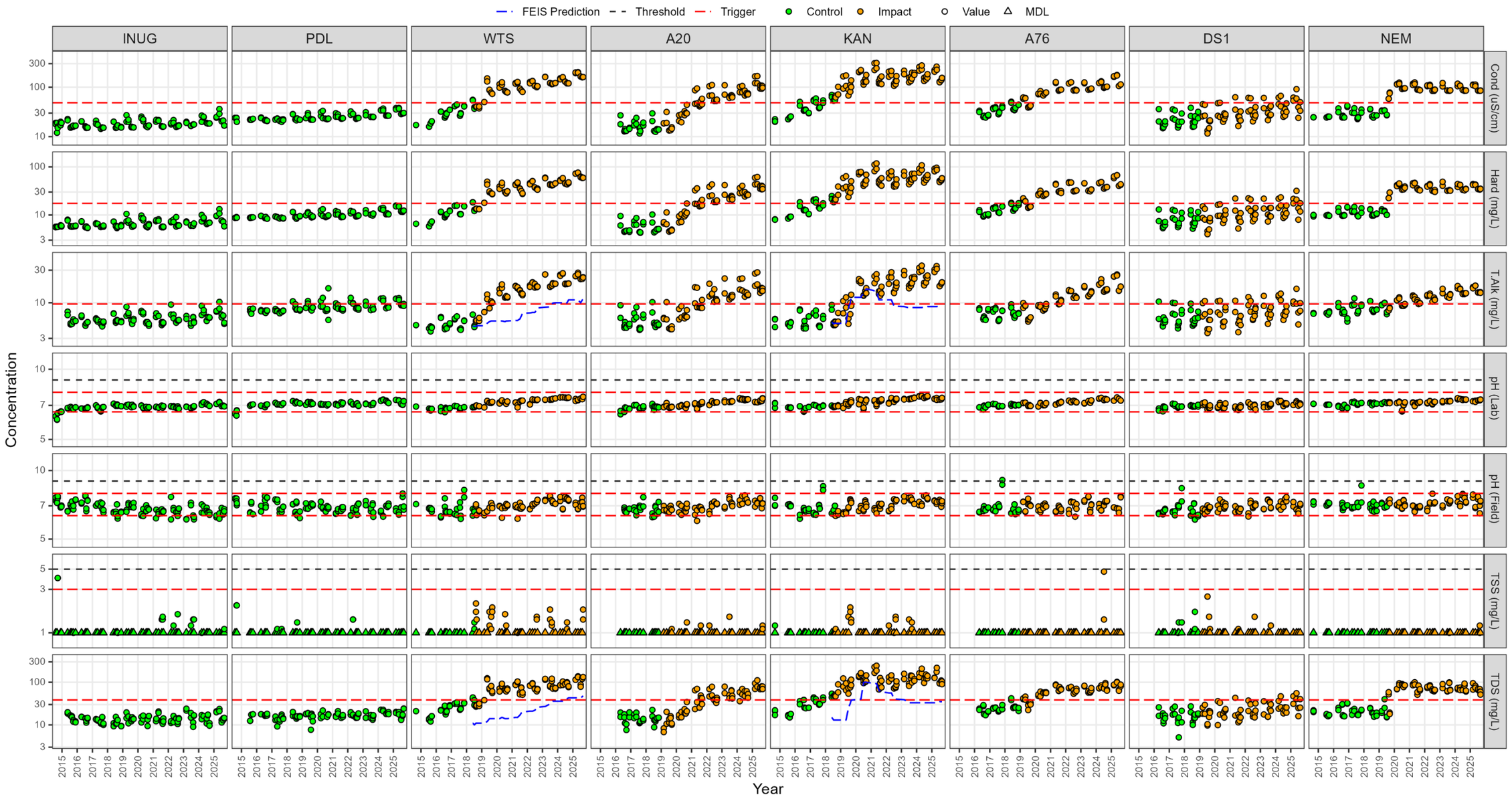


Figure 5-9. Major ions (mg/L) measured in water samples from Whale Tail study area lakes since 2014.

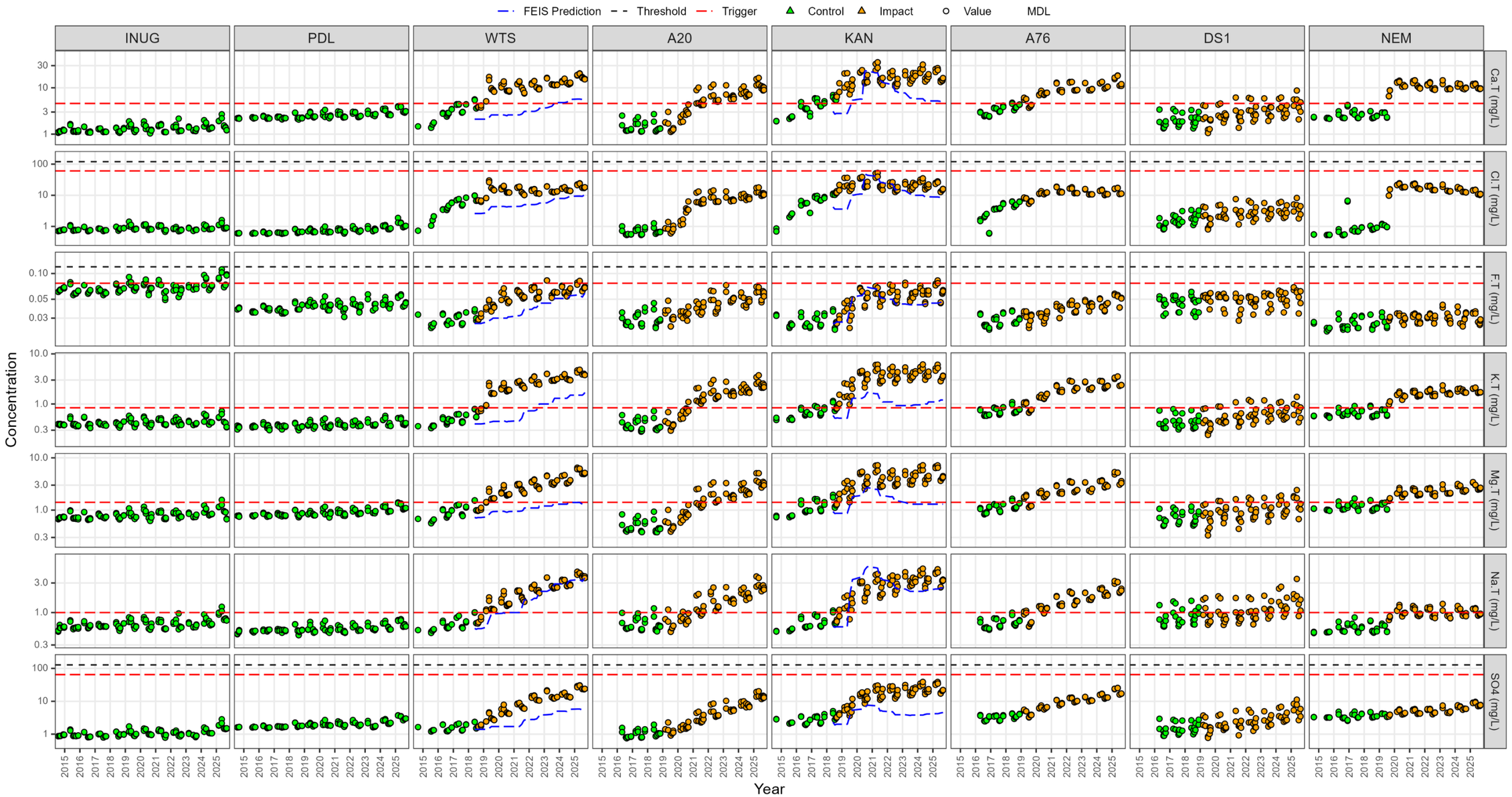


Figure 5-10. Nutrient parameters measured in water samples from Whale Tail study area lakes since 2014.

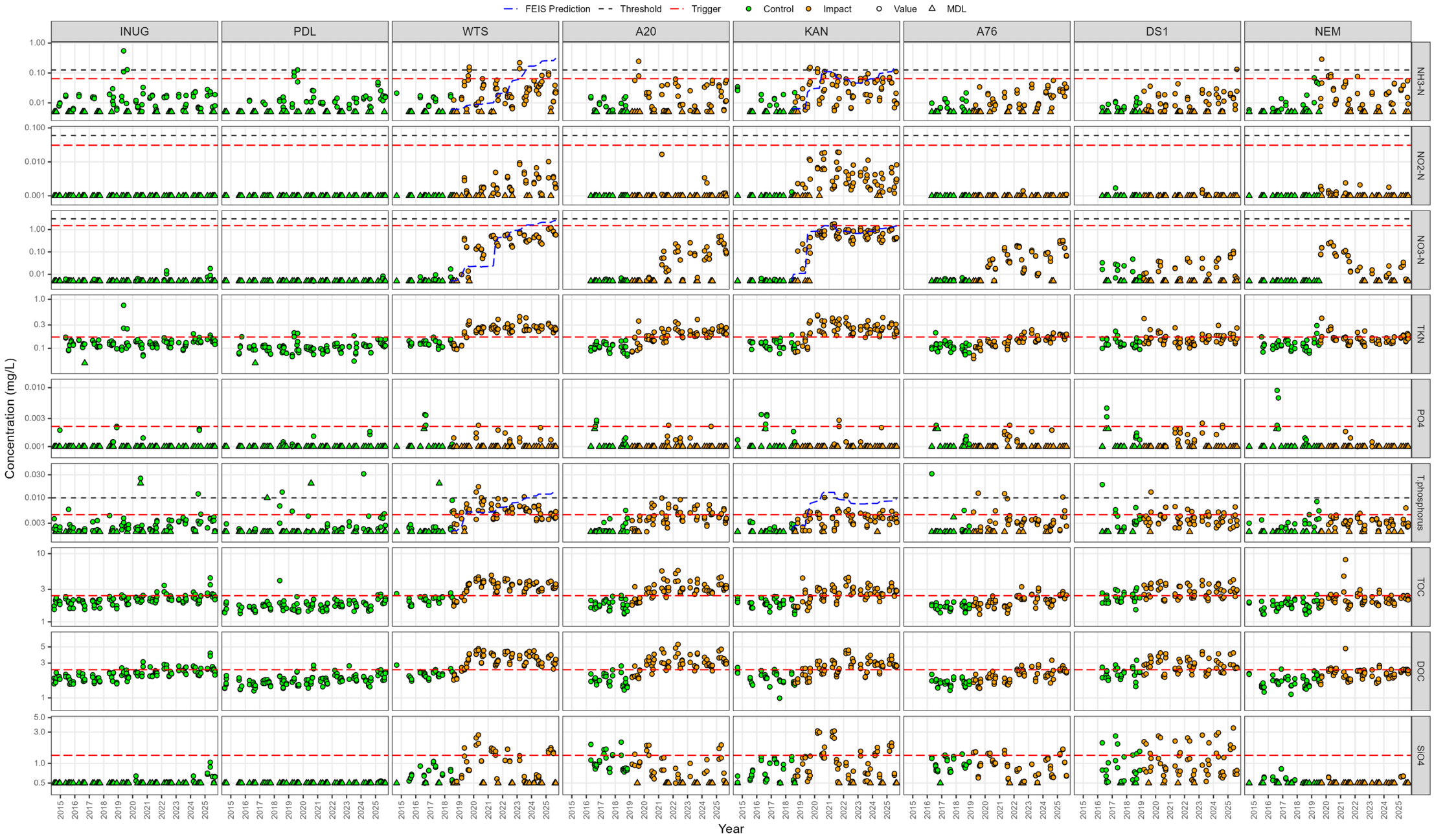


Figure 5-11. Metals measured in water samples from Whale Tail study area lakes since 2014.

Note: The detection limit for total chromium was adjusted from 0.0001 mg/L to 0.0005 mg/L for samples collected since May 2021.

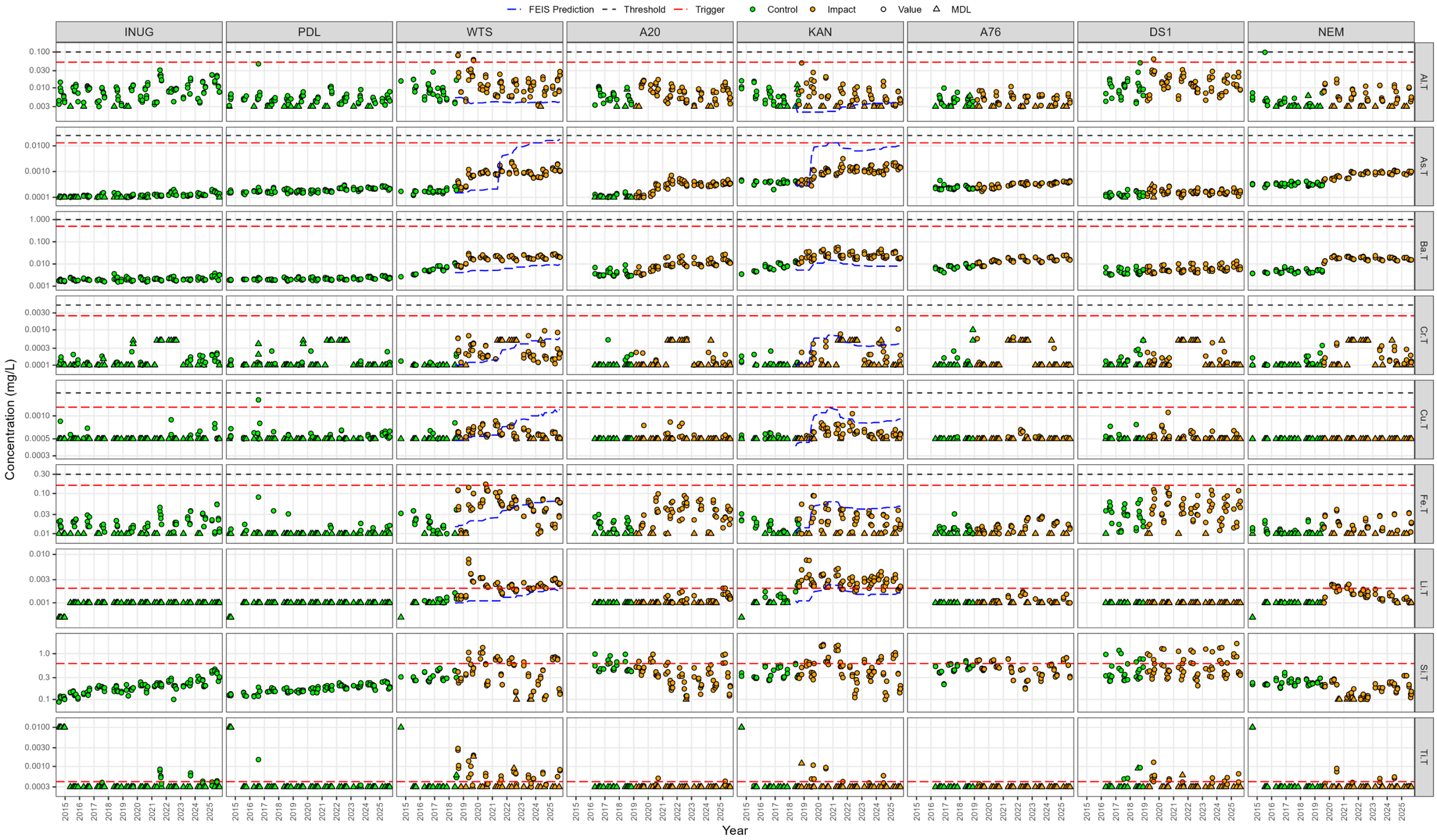
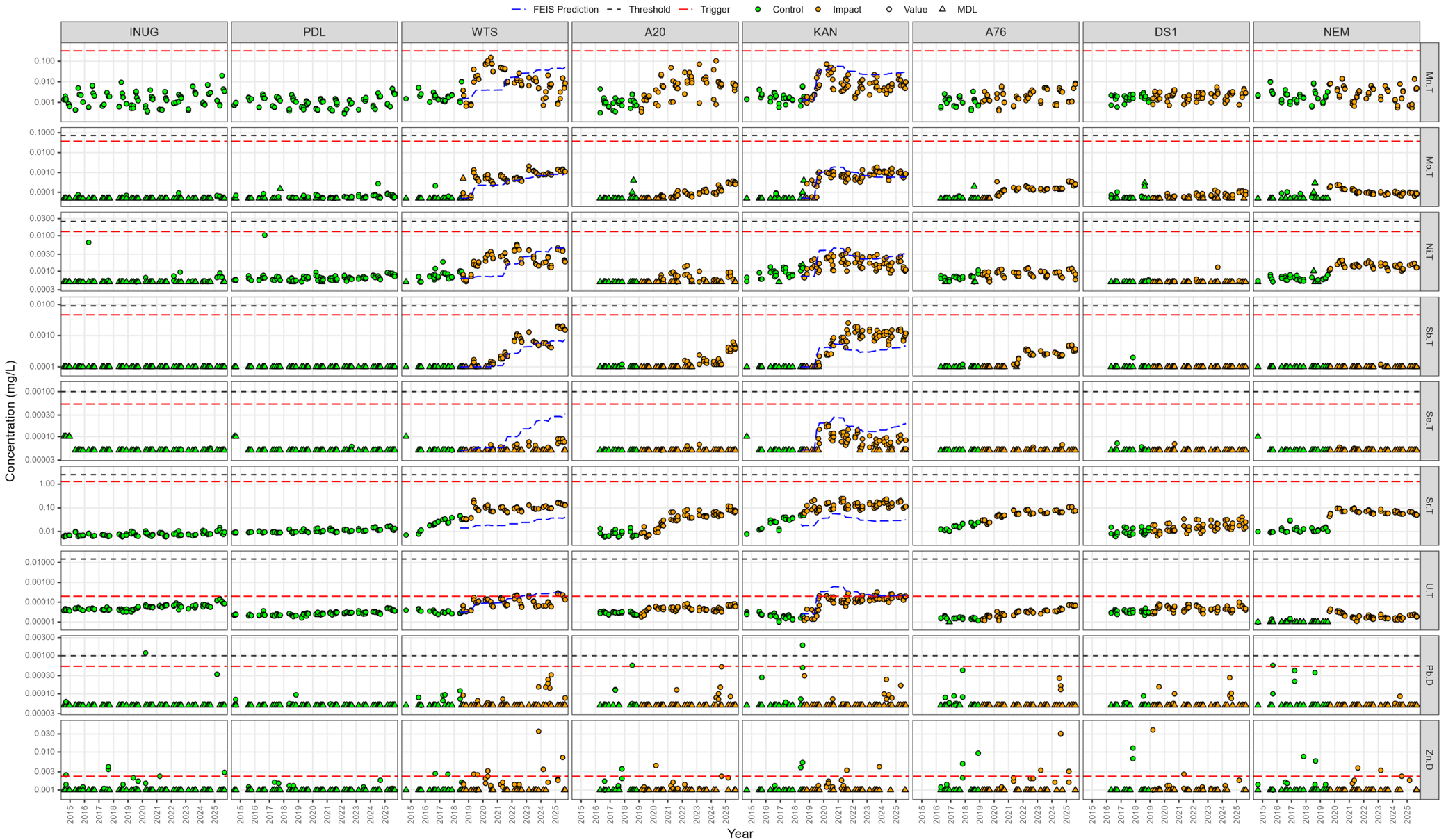


Figure 5-12. Metals measured in water samples from Whale Tail study area lakes since 2014.



Phytoplankton Tables and Figures

Table 5-9. Geometric means for total biomass and total richness, Whale Tail study area lakes since 2014.

Geometric means for total biomass												
Test Area	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
INUG	193 (5)	253 (1)	229 (2)	144 (11)	163 (7)	86 (12)	215 (3)	155 (8)	177 (6)	145 (10)	203 (4)	153 (9)
PDL	170 (4)	184 (1)	169 (5)	140 (9)	124 (10)	116 (12)	147 (8)	177 (3)	183 (2)	149 (7)	117 (11)	152 (6)
WTS	240 (8)	222 (10)	201 (11)	111 (12)	240 (7)	517 (1)	256 (6)	383 (4)	408 (2)	394 (3)	231 (9)	316 (5)
KAN	271 (5)	196 (8)	164 (10)	116 (12)	163 (11)	422 (3)	208 (7)	747 (1)	194 (9)	269 (6)	406 (4)	472 (2)
A20	NA	NA	80 (10)	90 (9)	108 (8)	125 (7)	311 (5)	809 (1)	279 (6)	535 (2)	336 (4)	401 (3)
A76	NA	NA	107 (9)	116 (8)	125 (7)	102 (10)	199 (4)	497 (1)	239 (3)	159 (6)	177 (5)	306 (2)
DS1	NA	NA	120 (10)	149 (7)	148 (8)	138 (9)	223 (2)	182 (4)	172 (5)	187 (3)	291 (1)	156 (6)
NEM	150 (7)	150 (8)	91 (12)	113 (10)	111 (11)	143 (9)	276 (2)	226 (3)	154 (6)	175 (5)	191 (4)	297 (1)

Geometric means for total richness												
Test Area	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
INUG	36 (2)	36 (3)	39 (1)	34 (5)	32 (7)	30 (10)	29 (11)	33 (6)	31 (9)	32 (8)	35 (4)	29 (12)
PDL	35 (1)	29 (6)	34 (3)	35 (2)	32 (5)	28 (9)	27 (11)	33 (4)	27 (12)	28 (8)	28 (10)	29 (7)
WTS	38 (1)	35 (2)	34 (3)	32 (6)	31 (7)	33 (5)	23 (12)	34 (4)	30 (9)	31 (8)	29 (10)	25 (11)
KAN	35 (1)	35 (2)	27 (6)	29 (4)	27 (5)	34 (3)	22 (12)	27 (7)	23 (11)	26 (8)	23 (10)	24 (9)
A20	NA	NA	22 (10)	24 (9)	28 (8)	31 (4)	32 (2)	29 (7)	30 (6)	32 (1)	31 (3)	31 (5)
A76	NA	NA	27 (5)	34 (1)	29 (2)	29 (3)	26 (6)	28 (4)	26 (7)	24 (10)	25 (8)	24 (9)
DS1	NA	NA	30 (7)	34 (2)	34 (3)	34 (4)	32 (6)	35 (1)	27 (10)	30 (8)	33 (5)	30 (9)
NEM	35 (1)	31 (3)	29 (6)	32 (2)	30 (5)	30 (4)	24 (11)	27 (8)	24 (12)	25 (10)	27 (7)	26 (9)

Notes:
For each year, the geometric means were calculated based on results from the open-water season (i.e., July, August, and September).
Rank order of abundance and richness shown in parentheses.
Red vertical lines mark the year that area designations switched from control to impact.
NA = Benthic invertebrate sampling was not completed for the given area/year.

Table 5-10. Results of the BACI test for phytoplankton variables at Whale Tail study area lakes, 2025.

Parameter Measured	Test Area	n(B)	n(A)	Estimate	SE	P-value*	Effect size (%)		
							ES	LCI	UCI
Total Biomass	WTS	15	3	0.43	0.47	0.378	53	-43	315
	KAN	16	3	0.66	0.63	0.307	94	-49	630
	A20	14	3	0.89	0.62	0.173	143	-35	814
	A76	14	2	0.18	0.71	0.801	20	-74	449
	DS1	14	2	-0.86	0.82	0.311	-58	-93	144
	NEM	21	3	0.65	0.52	0.227	91	-35	465
Taxa Richness	WTS	15	3	-0.17	0.11	0.138	-16	-34	6
	KAN	16	3	-0.21	0.22	0.355	-19	-48	28
	A20	14	3	0.18	0.22	0.428	20	-25	90
	A76	14	2	-0.15	0.24	0.552	-14	-48	45
	DS1	14	2	0.00	0.21	1.0	0	-37	58
	NEM	21	3	-0.12	0.14	0.414	-11	-34	20

Notes:

*** Bolded** values are P-values < 0.1.

Shaded cells indicate positive (increased) or negative (reduced) effect sizes of 20% or more.

Test area = area compared to control (INUG).

n(B) = number of months in the "before" period.

n(A) = number of months in the "after" period (i.e., in 2025).

Estimate = BACI model estimate of the 2025 change in mean for log-transformed data.

SE = standard error of the estimate.

P-value = two-tailed test of the null hypothesis of no change.

ES = estimated effect size (i.e., 100%*(exp[Estimate]-1)).

LCI = lower 95% confidence interval; UCI = upper 95% confidence interval.

Figure 5-13. Chlorophyll-a (µg/L) in water samples from Whale Tail study area lakes since 2014.

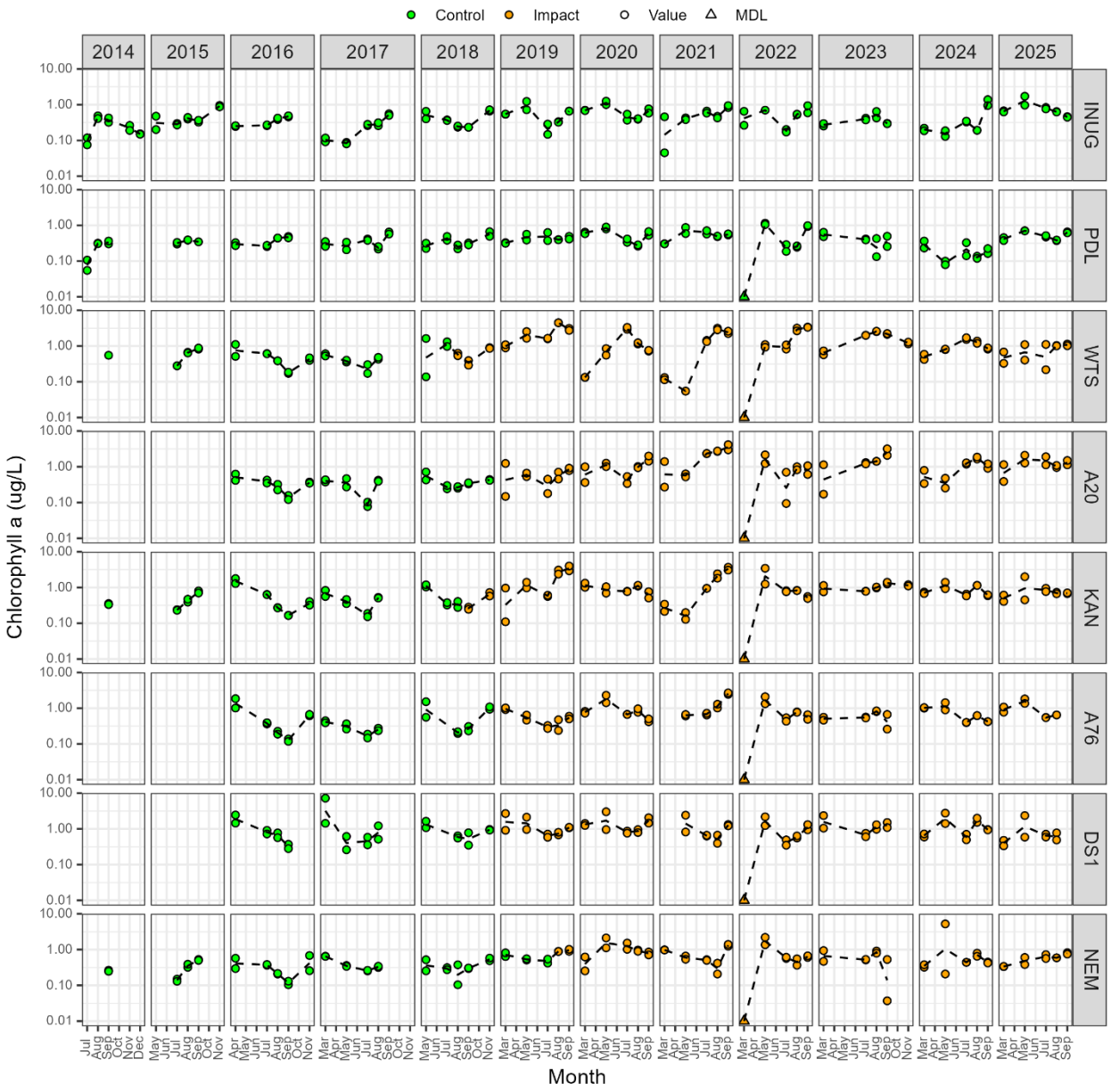


Figure 5-14. Total phytoplankton biomass (mg/m³) from Whale Tail study area lakes since 2014.

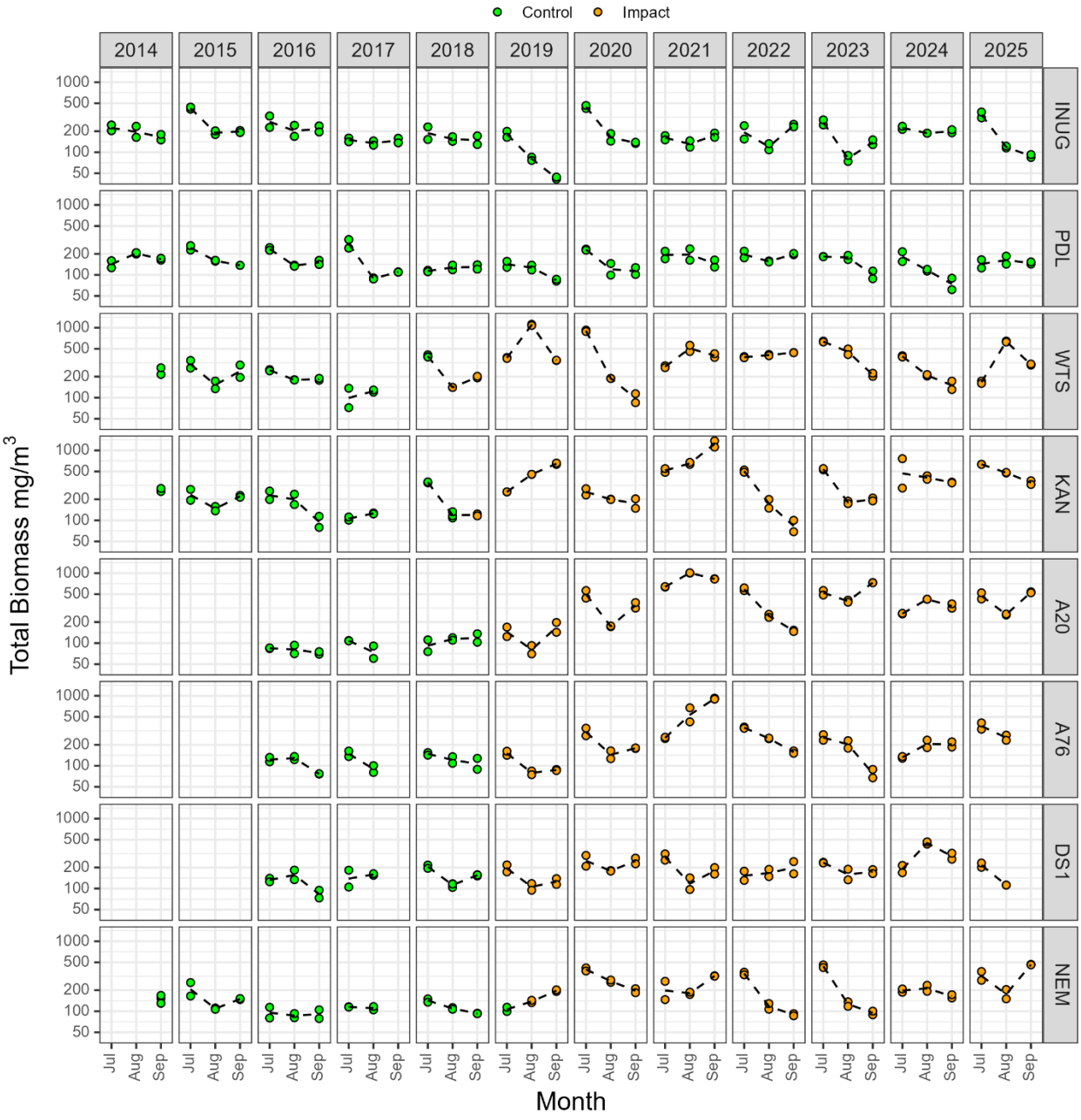


Figure 5-15. Phytoplankton biomass (mg/m³) by major taxa group from Whale Tail study area lakes since 2014.

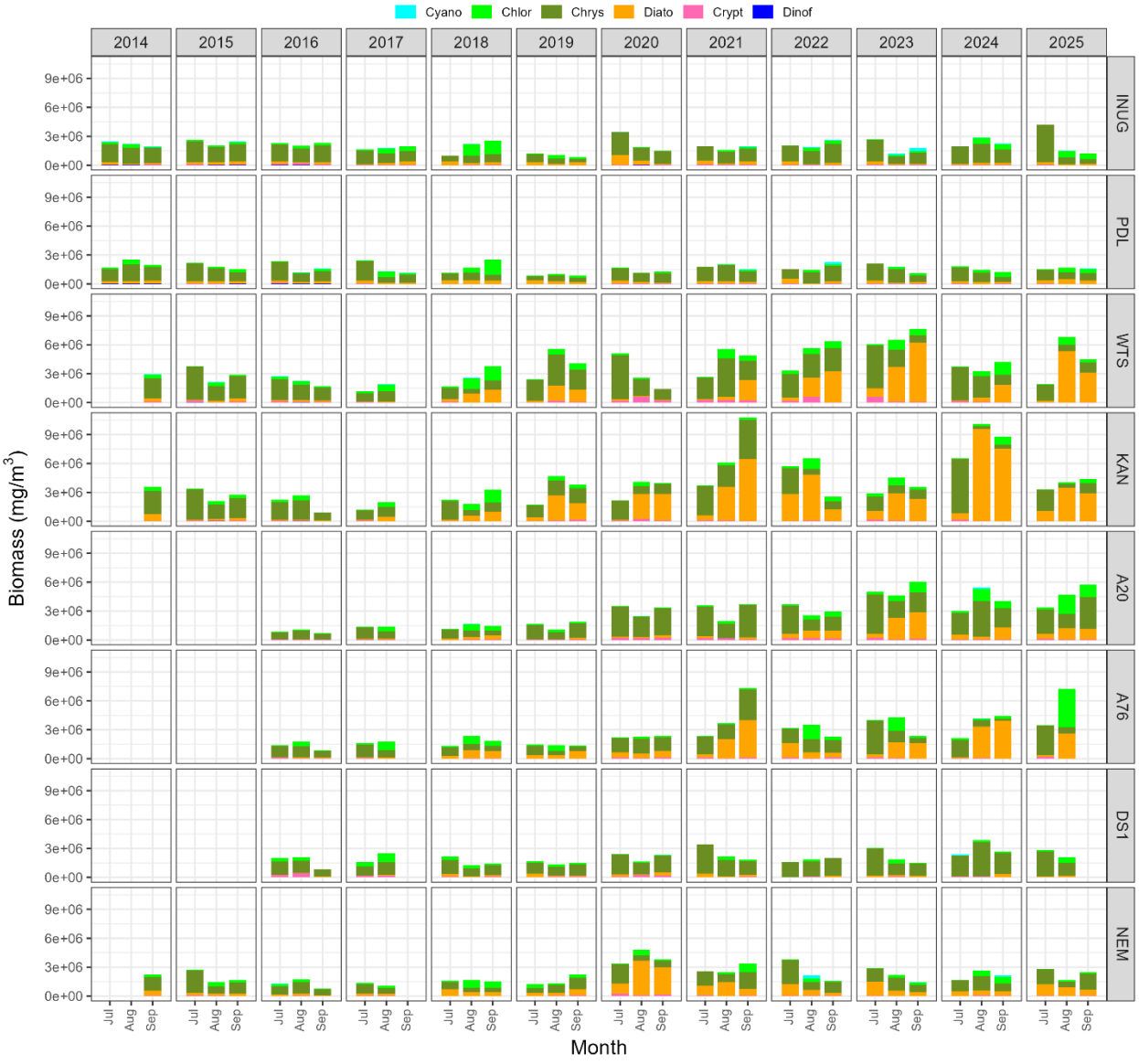


Figure 5-16. Relative phytoplankton biomass by major taxa from Whale Tail study area lakes since 2014.

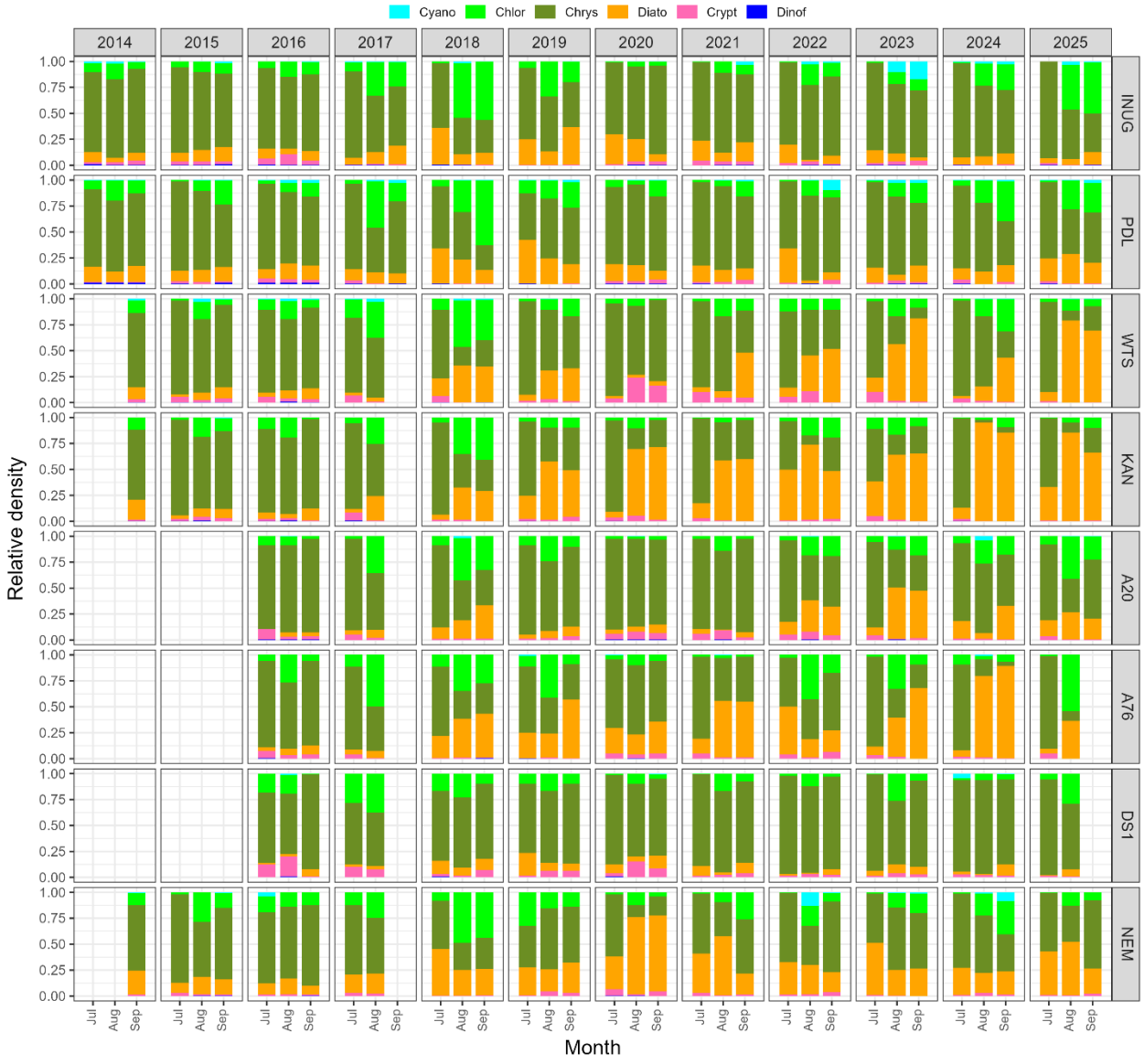


Figure 5-17. Phytoplankton species richness from Whale Tail study area lakes since 2014.

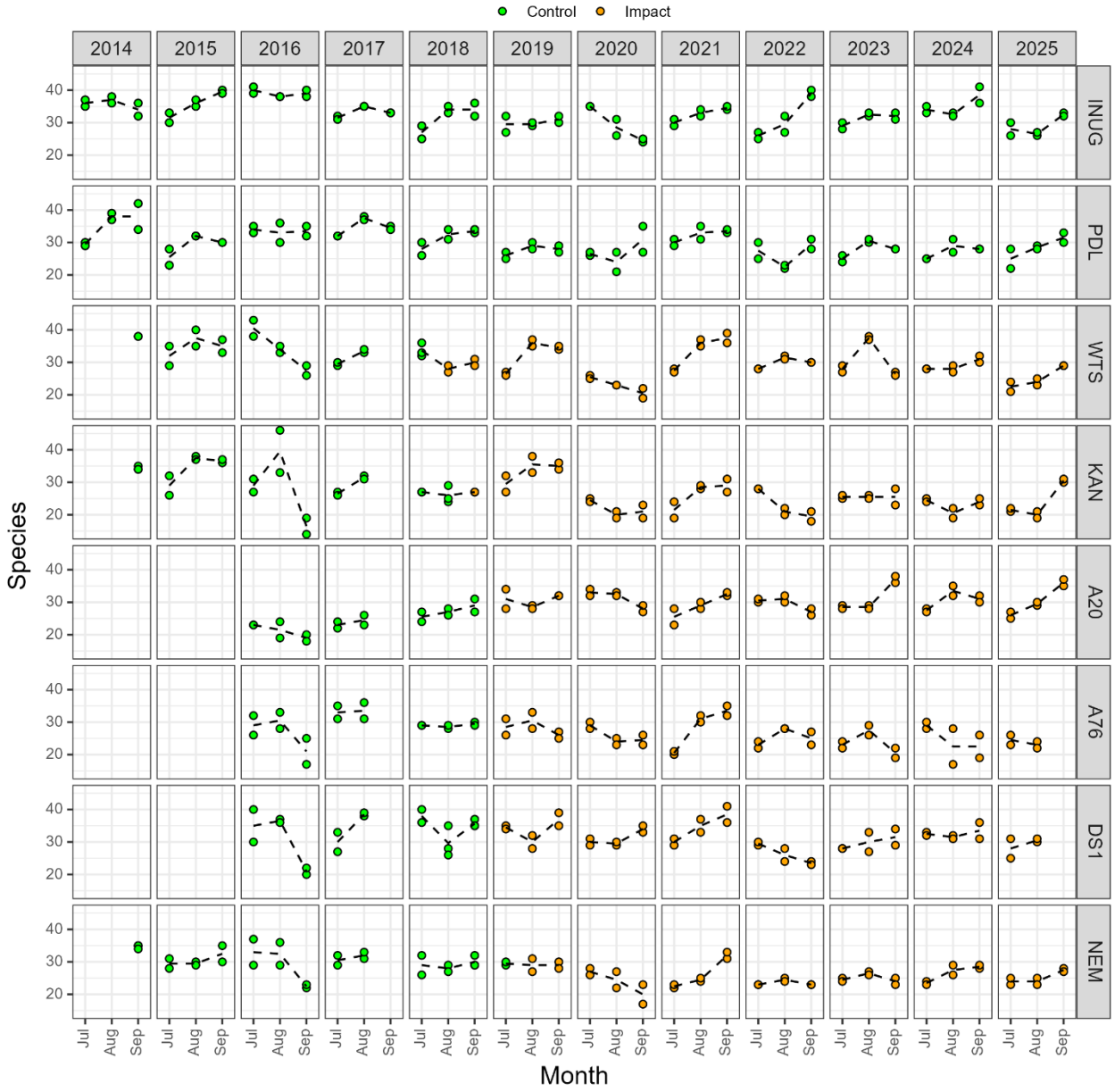
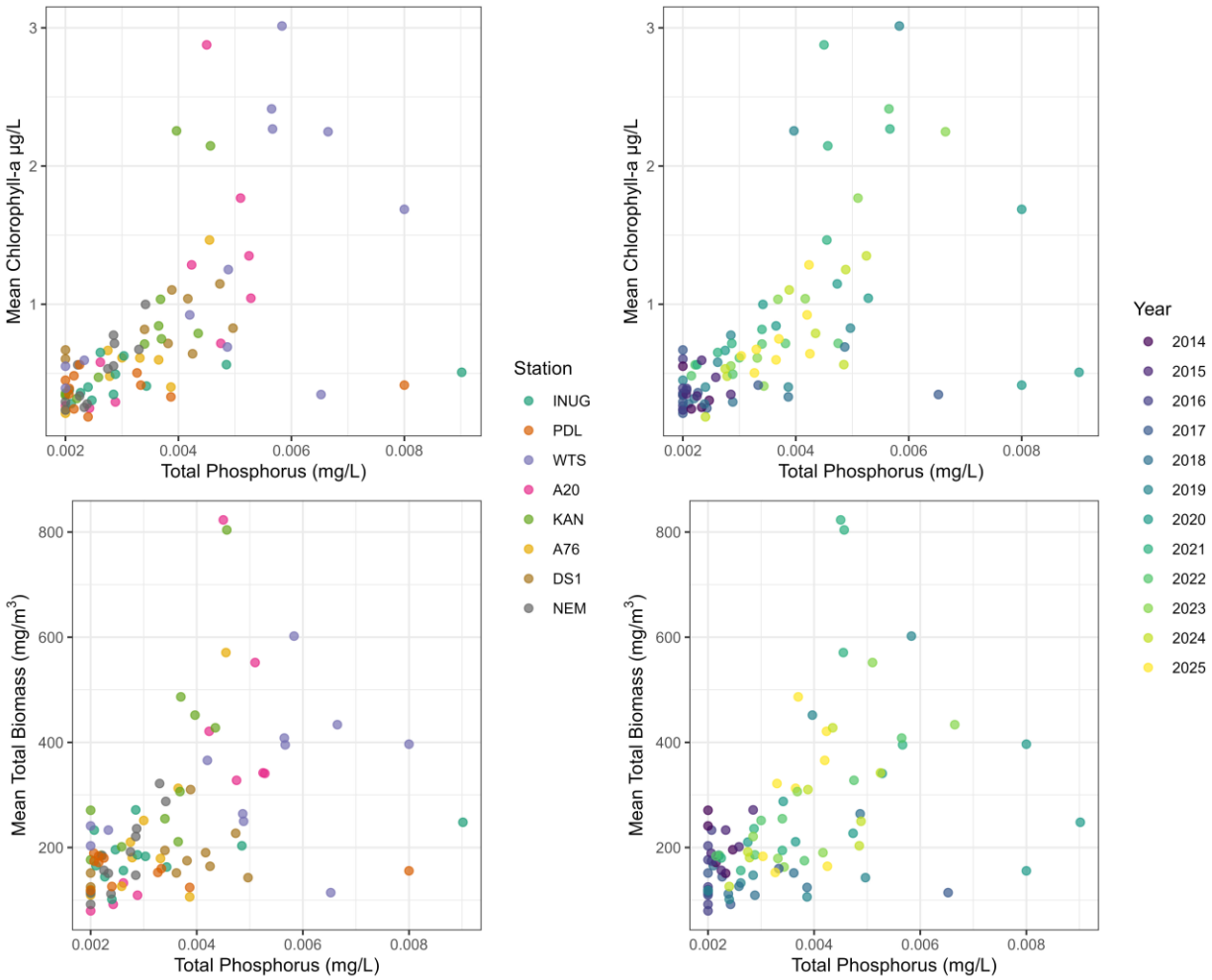


Figure 5-18. Relationships between chlorophyll-a and phytoplankton total biomass plotted against total phosphorus concentrations in surface water during the open-water season (July–September) at Whale Tail study area lakes since 2014.



Sediment Chemistry Tables and Figures

Figure 5-19. TOC (%) in sediment from the Whale Tail study area lakes.

Note: In 2021, a batch of sediment samples were not analyzed due to a sample receipt error by the laboratory. Missing results in 2021 correspond to samples that were discarded prior to analysis. No TOC was analyzed for INUG, PDL, and A76 in 2022 due to high moisture content in the samples (See Azimuth, 2022a for details).

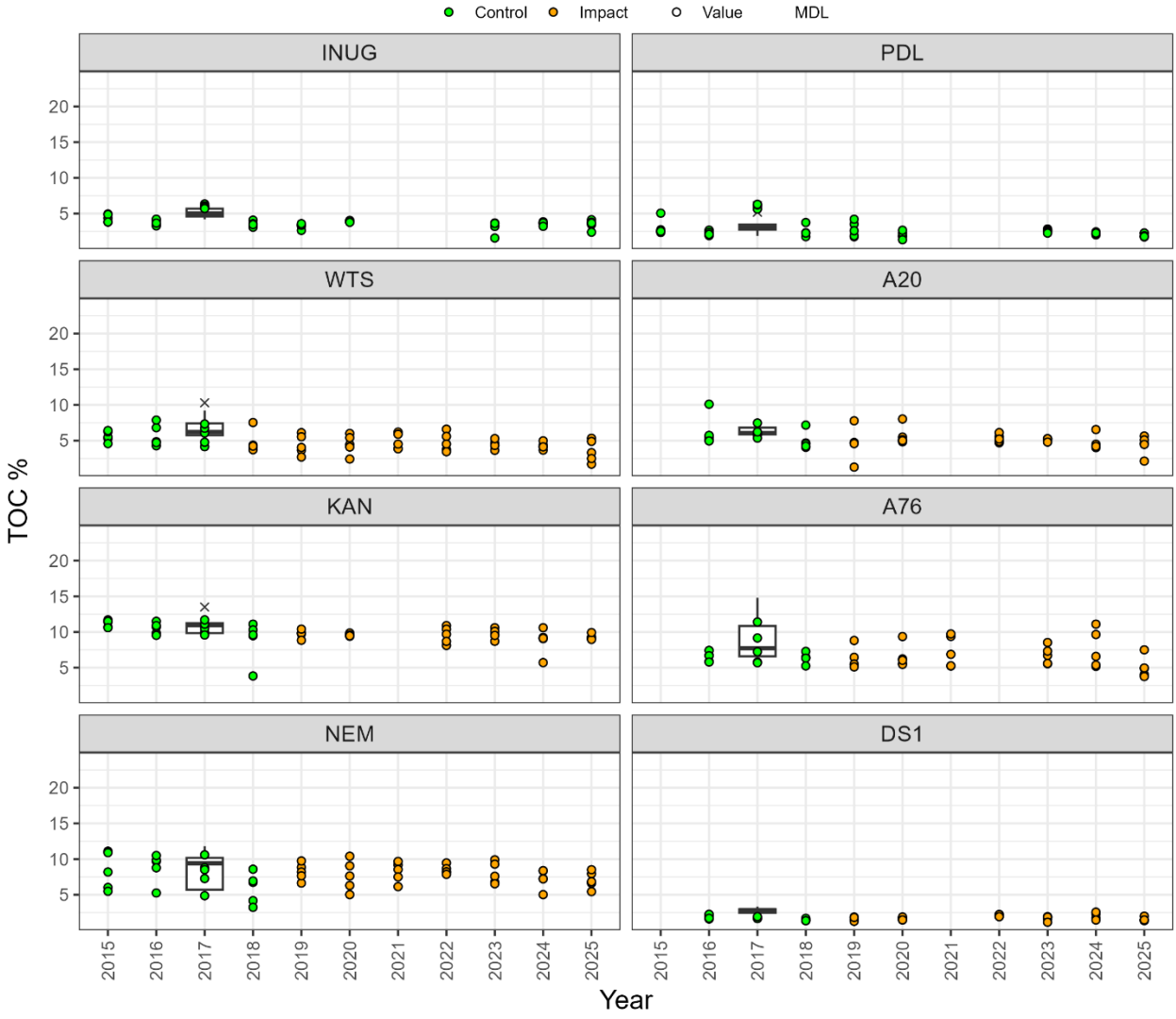
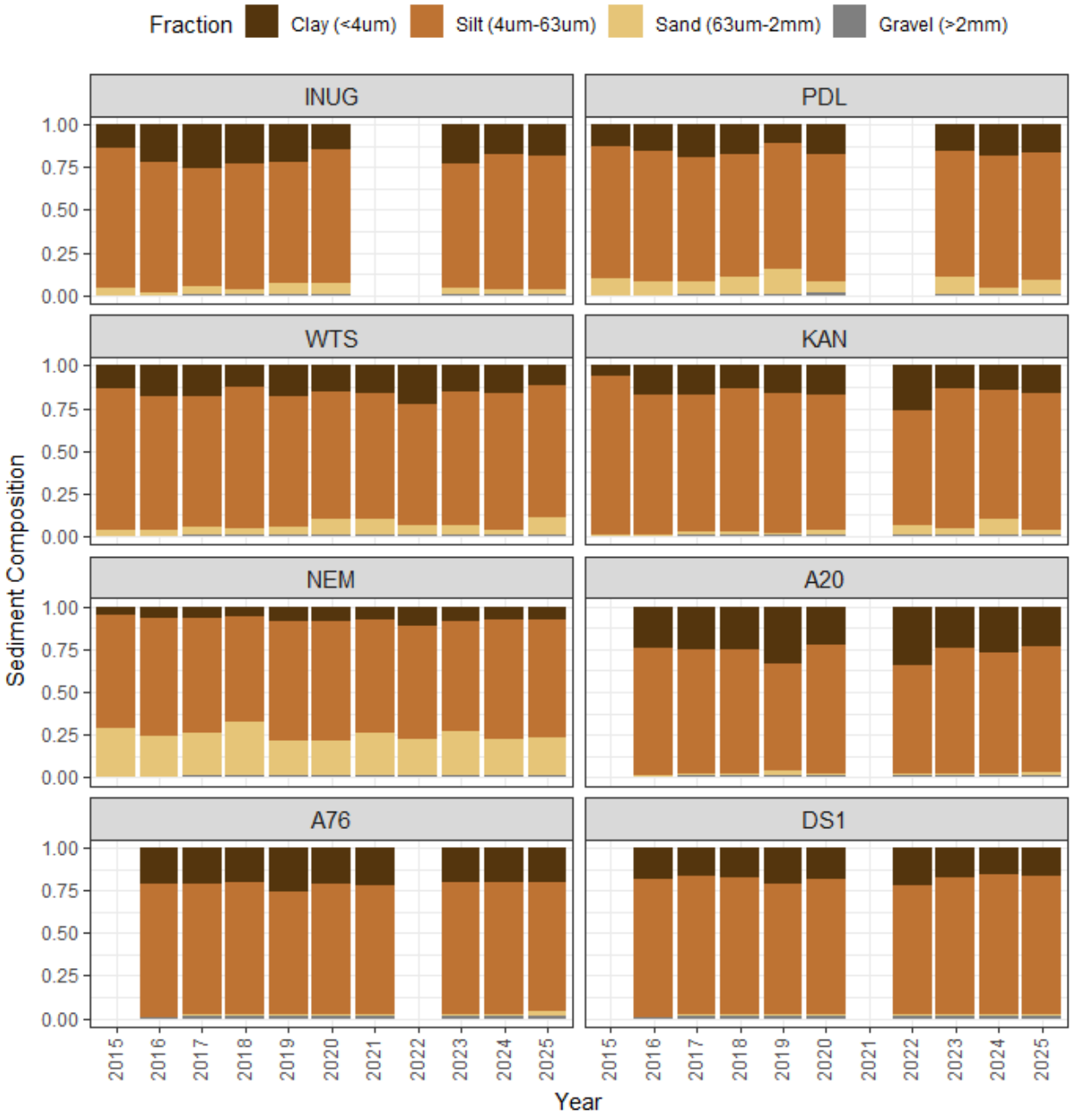


Figure 5-20. Grain size composition in sediment from the Whale Tail study area lakes since 2015.

Note: There are missing results for 2021, because a batch of sediment samples were inadvertently discarded prior to analysis due to a sample receipt error by the laboratory (See Azimuth, 2022a for details). In 2022, samples collected at INUG, PDL, and A76 had high water content so grain size composition could not be completed.



Benthic Invertebrate Tables and Figures

Table 5-11. Geometric means for total abundance and total richness, Whale Tail study area lakes since 2015.

Geometric means for total abundance (no. of organisms/m^2)												
Control/Impact	Test Area	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Control	INUG	1648 (5)	2100 (1)	1712 (3)	1497 (6)	1452 (7)	2056 (2)	1398 (8)	1070 (9)	1656 (4)	843 (11)	991 (10)
	PDL	1127 (2)	1373 (1)	748 (10)	779 (8)	990 (4)	951 (6)	829 (7)	963 (5)	1045 (3)	753 (9)	646 (11)
Impact	WTS	1675 (11)	2102 (9)	3546 (5)	4005 (3)	2757 (7)	2356 (8)	1911 (10)	5017 (2)	5047 (1)	3155 (6)	3570 (4)
	KAN	3964 (8)	3050 (11)	4236 (7)	3444 (10)	7235 (3)	6133 (5)	3878 (9)	13066 (1)	9285 (2)	6896 (4)	5156 (6)
	A20	NA	2562 (6)	4246 (2)	2793 (4)	2546 (7)	2662 (5)	2146 (10)	3353 (3)	4274 (1)	2420 (9)	2483 (8)
	A76	NA	2525 (9)	6312 (2)	3094 (6)	2823 (7)	2794 (8)	2269 (10)	12072 (1)	3192 (5)	5048 (3)	3835 (4)
	DS1	NA	3090 (3)	1919 (8)	2564 (6)	2205 (7)	2619 (5)	3095 (2)	2969 (4)	1822 (9)	3112 (1)	1376 (10)
	NEM	2897 (7)	2744 (8)	1712 (11)	2708 (9)	5278 (2)	3945 (6)	2374 (10)	4619 (5)	5087 (3)	4644 (4)	5518 (1)

Geometric means for total richness (no. of taxa)												
Control/Impact	Test Area	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Control	INUG	13 (8)	16 (2)	14 (4)	15 (3)	14 (6)	17 (1)	13 (7)	13 (9)	12 (10)	12 (11)	14 (5)
	PDL	9 (3)	11 (1)	10 (2)	6 (11)	9 (6)	9 (7)	8 (10)	9 (4)	9 (5)	8 (9)	8 (8)
Impact	WTS	15 (7)	15 (6)	15 (9)	18 (1)	13 (10)	15 (8)	11 (11)	15 (5)	17 (2)	16 (4)	16 (3)
	KAN	13 (11)	14 (10)	15 (7)	15 (9)	15 (8)	19 (1)	17 (6)	18 (5)	19 (3)	19 (2)	18 (4)
	A20	NA	14 (8)	13 (9)	15 (6)	15 (7)	18 (1)	17 (2)	16 (4)	16 (3)	12 (10)	16 (5)
	A76	NA	16 (4)	17 (2)	15 (9)	15 (8)	17 (3)	15 (7)	18 (1)	14 (10)	15 (5)	15 (6)
	DS1	NA	12 (6)	15 (2)	14 (4)	14 (5)	10 (10)	11 (9)	16 (1)	15 (3)	11 (8)	12 (7)
	NEM	12 (9)	12 (7)	10 (11)	10 (10)	12 (8)	13 (6)	14 (4)	13 (5)	15 (2)	14 (3)	18 (1)

Notes:

1. Total abundance in organisms/m^2.

Rank order of abundance and richness shown in parentheses.

Red vertical lines mark the year that area designations switched from *control* to *impact*.

NA = Benthic invertebrate sampling was not completed for the given area/year.

Table 5-12. Results of the BACI tests for benthic invertebrate abundance from Whale Tail study area lakes.

After Period	Test Area	n(B)	n(A)	Estimate	SE	P-value*	Effect Size (%)		
							ES	LCI	UCI
2025	WTS	3	1	1.03	0.47	0.16	181	-63	2016
	KAN	4	1	0.90	0.34	**0.08**	146	-16	620
	A20	3	1	0.34	0.37	0.45	41	-71	588
	A76	3	1	0.62	0.59	0.41	85	-85	2237
	DS1	3	1	-0.02	0.26	0.95	-2	-67	196
	NEM	4	1	1.36	0.31	**0.02**	290	44	954
2024-25	WTS	3	2	1.05	0.31	**0.04**	187	7	669
	KAN	4	2	1.13	0.25	**0.01**	209	55	515
	A20	3	2	0.41	0.25	0.19	51	-31	230
	A76	3	2	0.83	0.40	0.13	130	-35	719
	DS1	3	2	0.47	0.38	0.30	60	-52	437
	NEM	4	2	1.36	0.21	**0.003**	288	117	596
2023-25	WTS	3	3	0.99	0.25	**0.02**	169	35	436
	KAN	4	3	1.08	0.21	**0.004**	194	69	411
	A20	3	3	0.40	0.21	0.13	49	-17	167
	A76	3	3	0.53	0.38	0.24	70	-41	390
	DS1	3	3	0.23	0.36	0.55	26	-53	240
	NEM	4	3	1.16	0.23	**0.004**	219	75	481
2022-25	WTS	3	4	1.07	0.23	**0.005**	191	62	421
	KAN	4	4	1.25	0.23	**0.002**	248	97	516
	A20	3	4	0.44	0.19	**0.06**	55	-4	150
	A76	3	4	0.82	0.46	0.14	127	-31	639
	DS1	3	4	0.34	0.32	0.34	41	-39	222
	NEM	4	4	1.15	0.20	**0.001**	215	94	410

Notes:

* **Bolded & underlined** values are P-values < 0.1.

Shaded cells indicate positive (increased) or negative (reduced) effect sizes of 20% or more.

Test area = area compared to control (INUG).

n(B) = number of years in the "before" period.

n(A) = number of years in the "after" period.

Estimate = BACI model estimate of the after-period change in mean for log-transformed data.

SE = standard error of the estimate.

P-value = two-tailed test of the null hypothesis of no change.

ES = estimated effect size (i.e., 100%*(exp[Estimate]-1)).

LCI = lower 95% confidence interval; UCI = upper 95% confidence interval.

Table 5-13. Results of the BACI tests for benthic invertebrate taxa richness from Whale Tail study area lakes.

After Period	Test Area	n(B)	n(A)	Estimate	SE	P-value*	Effect Size (%)		
							ES	LCI	UCI
2025	WTS	3	1	0.14	0.14	0.42	15	-36	105
	KAN	4	1	0.29	0.12	**0.09**	34	-9	96
	A20	3	1	0.17	0.12	0.30	18	-30	100
	A76	3	1	0.01	0.13	0.95	1	-43	78
	DS1	3	1	-0.07	0.17	0.72	-7	-55	92
	NEM	4	1	0.52	0.13	**0.03**	68	12	151
2024-25	WTS	3	2	0.20	0.10	0.14	22	-11	67
	KAN	4	2	0.38	0.10	**0.02**	47	12	92
	A20	3	2	0.13	0.10	0.26	14	-16	55
	A76	3	2	0.09	0.10	0.44	10	-21	52
	DS1	3	2	-0.02	0.13	0.90	-2	-34	46
	NEM	4	2	0.49	0.09	**0.005**	64	29	108
2023-25	WTS	3	3	0.23	0.09	**0.06**	26	-2	62
	KAN	4	3	0.40	0.08	**0.004**	50	21	84
	A20	3	3	0.19	0.09	**0.10**	21	-5	55
	A76	3	3	0.09	0.10	0.41	10	-17	46
	DS1	3	3	0.09	0.13	0.53	10	-24	59
	NEM	4	3	0.48	0.08	**0.002**	62	33	98
2022-25	WTS	3	4	0.21	0.08	**0.05**	24	0	53
	KAN	4	4	0.40	0.07	**0.002**	49	24	78
	A20	3	4	0.21	0.09	**0.06**	24	-1	55
	A76	3	4	0.14	0.10	0.19	16	-10	48
	DS1	3	4	0.16	0.13	0.30	17	-17	65
	NEM	4	4	0.45	0.07	**0.001**	57	32	87

Notes:

* **Bolded & underlined** values are P-values < 0.1.

Shaded cells indicate positive (increased) or negative (reduced) effect sizes of 20% or more.

Test area = area compared to control (INUG).

n(B) = number of years in the "before" period.

n(A) = number of years in the "after" period.

Estimate = BACI model estimate of the after-period change in mean for log-transformed data.

SE = standard error of the estimate.

P-value = two-tailed test of the null hypothesis of no change.

ES = estimated effect size (i.e., 100%*(exp[Estimate]-1)).

LCI = lower 95% confidence interval; UCI = upper 95% confidence interval.

Figure 5-21. Benthic invertebrate total abundance (#/m^2) from Whale Tail study area lakes since 2015.

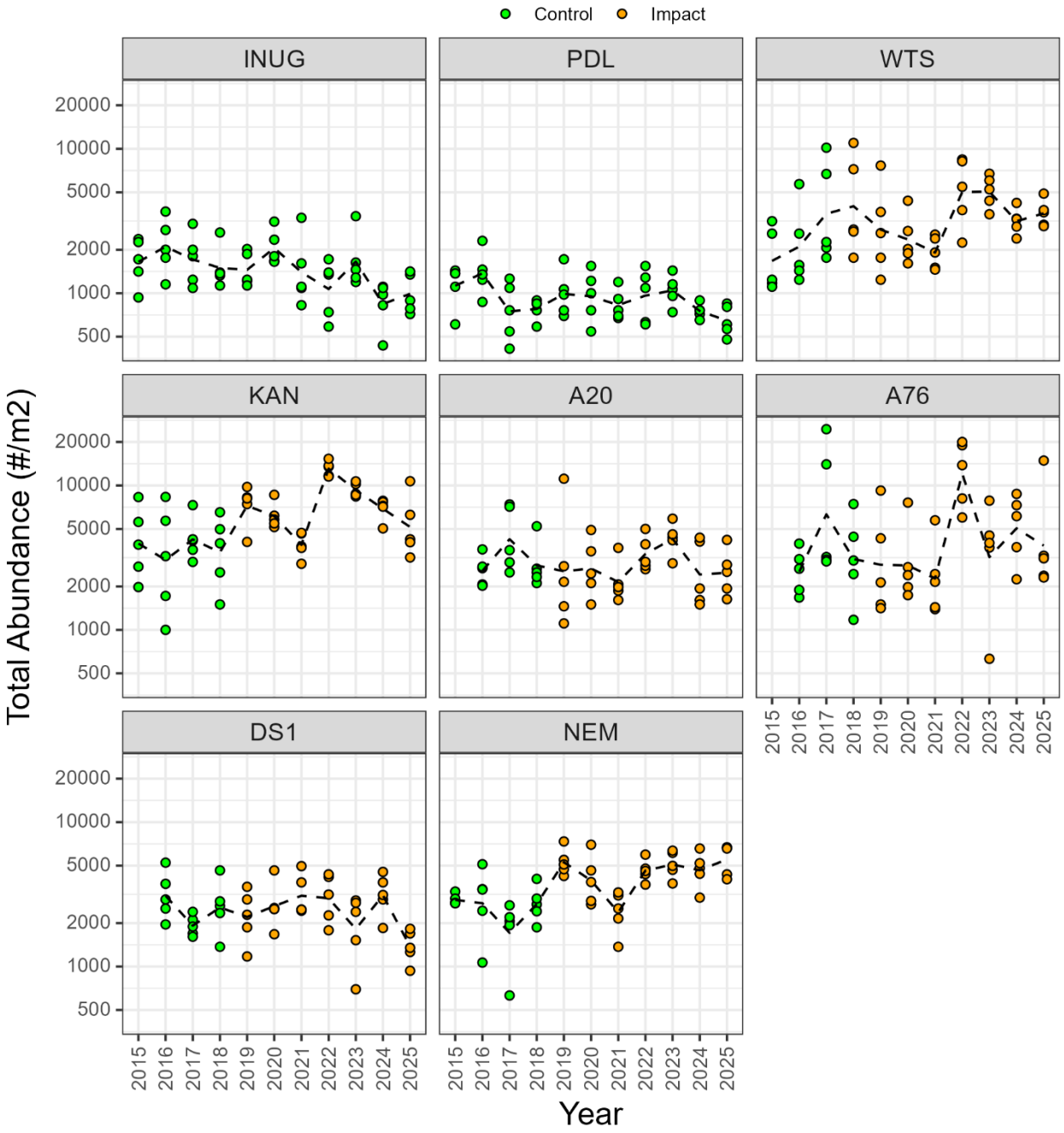


Figure 5-22. Benthic invertebrate abundance (#/m²) by major taxa group from Whale Tail study area lakes since 2015.

Figure 5-23. Benthic invertebrate relative abundance by major taxa from Whale Tail study area lakes since 2015.

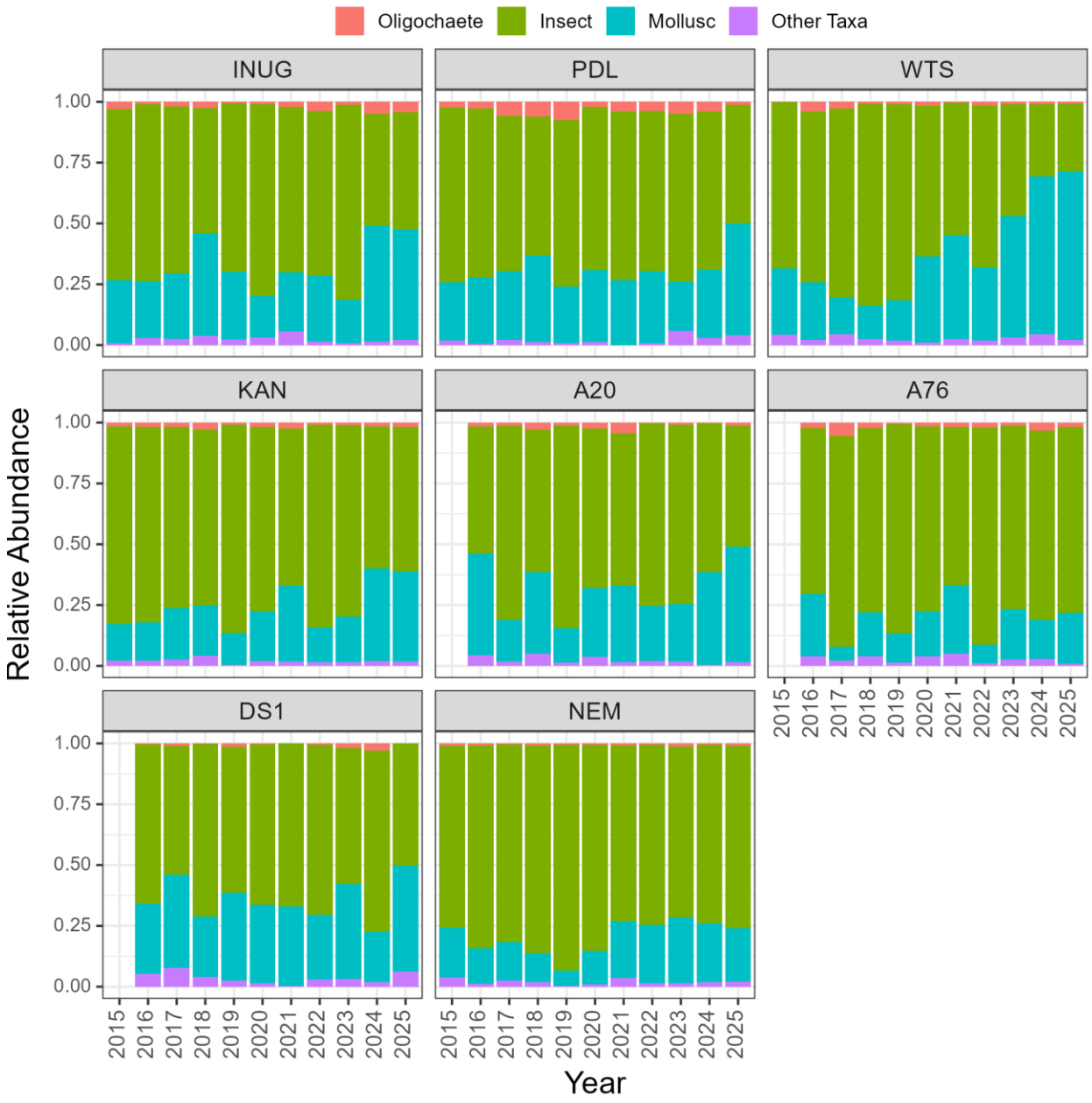


Figure 5-24. Benthic invertebrate total richness (# taxa) from Whale Tail study area lakes since 2015.

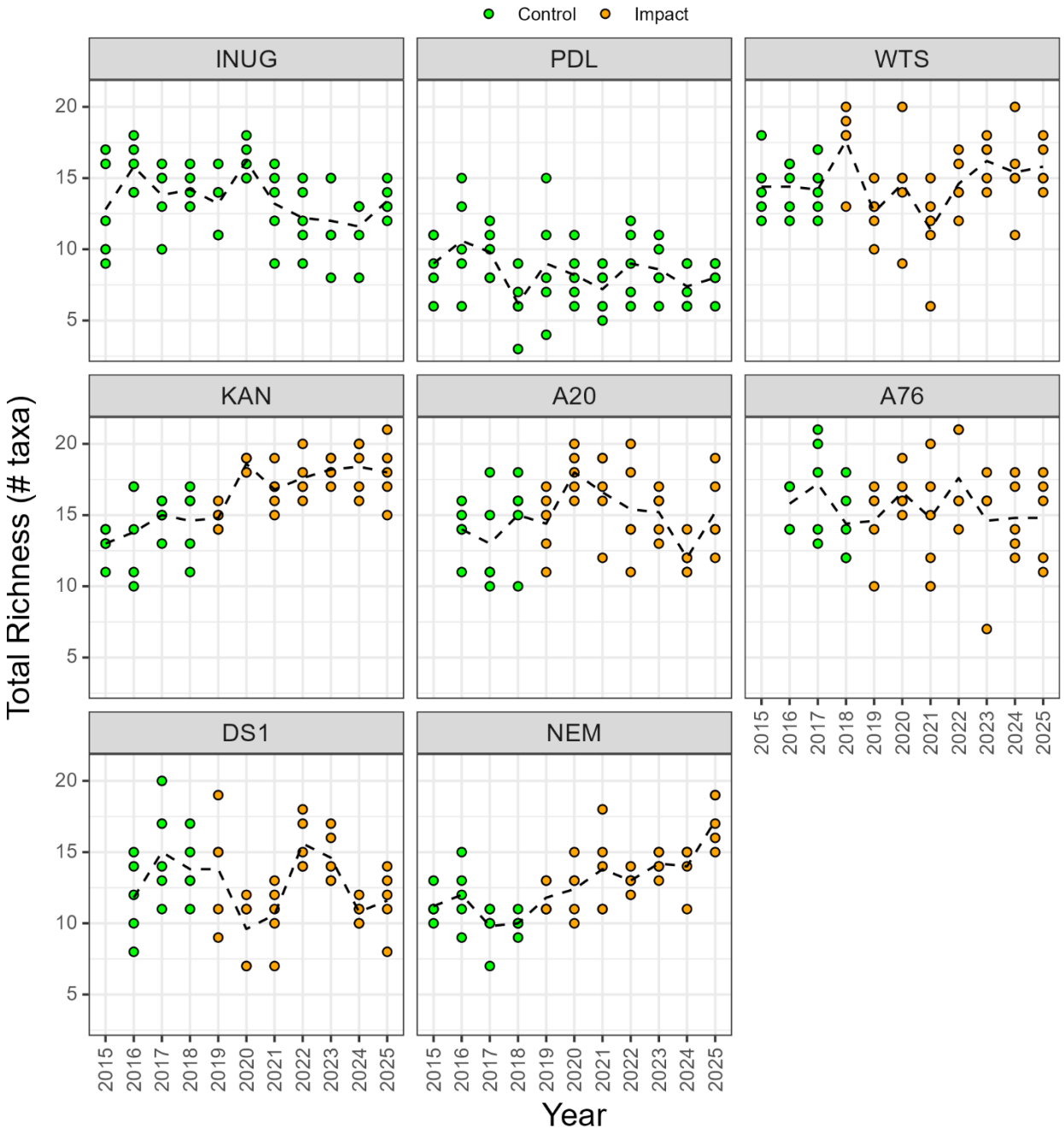


Figure 5-25. Benthic invertebrate richness (# taxa) by major taxa group from Whale Tail study area lakes since 2015.

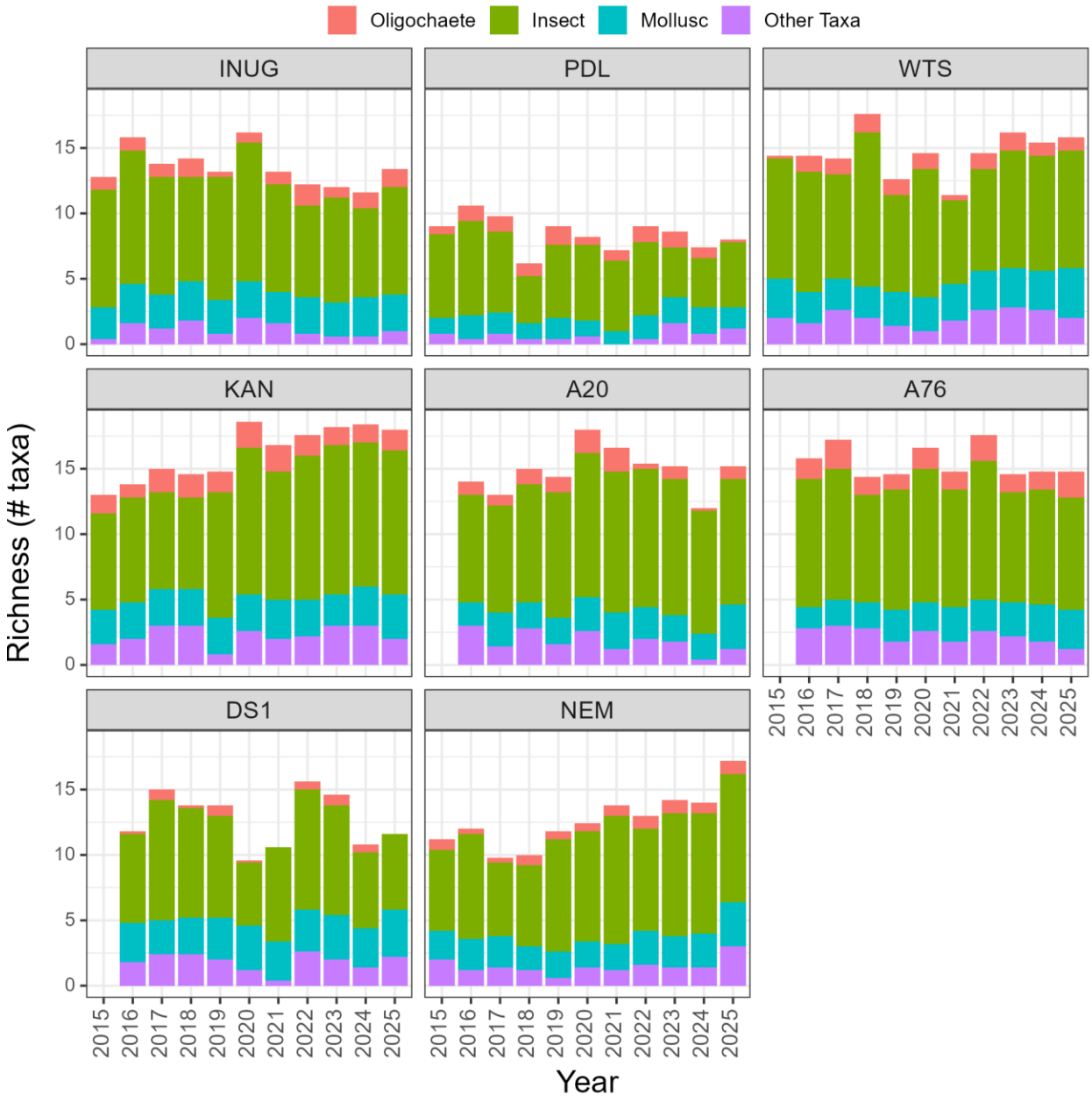
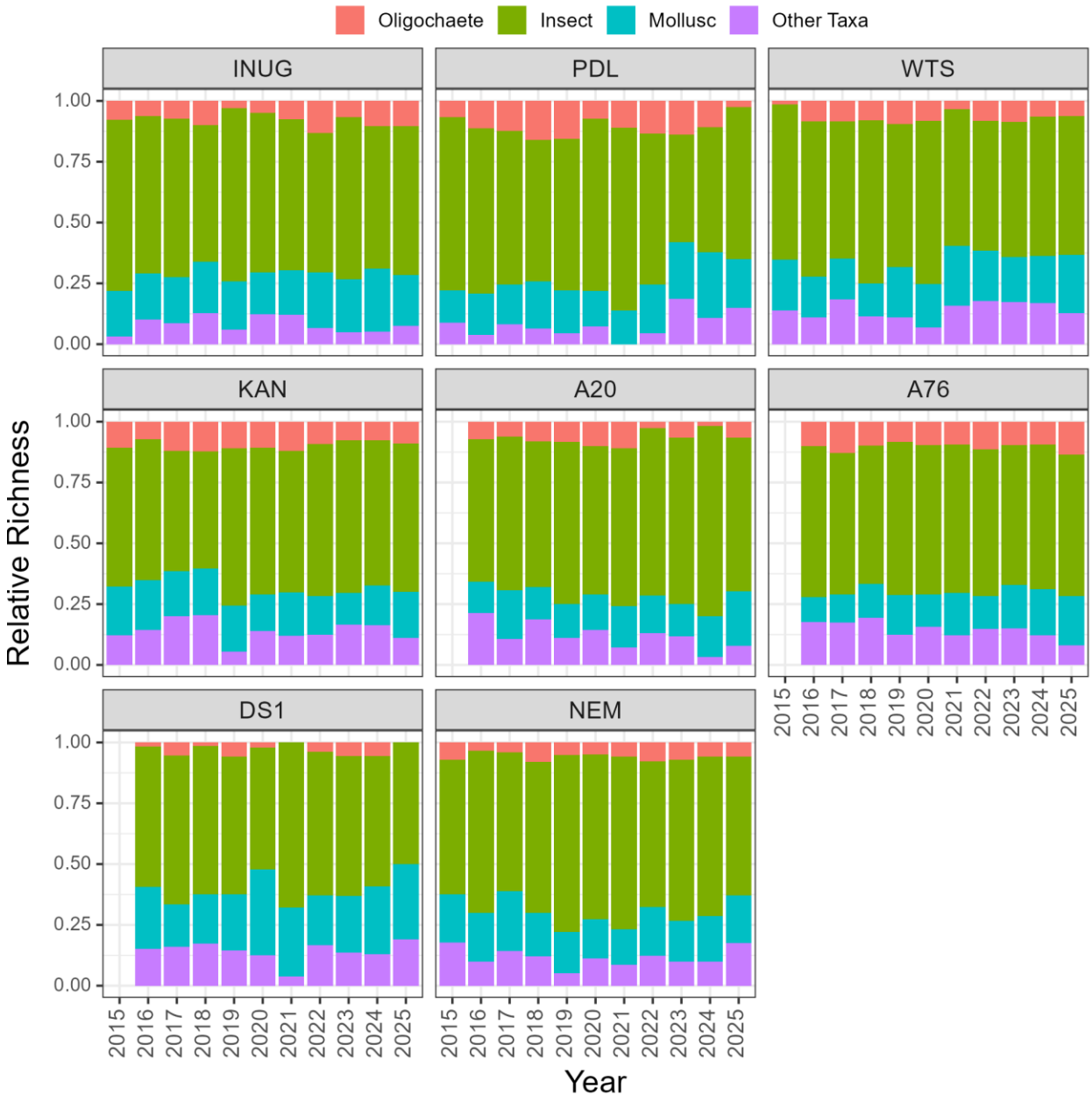


Figure 5-26. Benthic invertebrate relative richness by major taxa from Whale Tail study area lakes since 2015.



6 BAKER LAKE

6.1 Overview of the Baker Lake CREMP

This section summarizes the 2025 CREMP results for water chemistry and the phytoplankton community in Baker Lake. No sediment chemistry or benthos sampling was completed in 2025 as per the *CREMP Plan Update* (Azimuth, 2022b).

Baker Lake monitoring was added to the core program in 2008 to ensure activities related primarily to barge traffic and shipping in the area were tracked (**Appendix A**). There are two near-field impact areas, one targeting the hamlet's barge landing area (BBD) and the other Agnico Eagle's fuel storage facility (BPJ). The initial (since 2008) reference area (BAP) is several kilometers to the east of the hamlet along the north shore of the lake. A second reference area (BES) was added in 2011 to provide a broader perspective on temporal patterns in sediment chemistry and benthic community structure, although it is not monitored for water quality or phytoplankton communities. Sampling locations are shown in **Figure 6-1**.

Barge trips from Chesterfield Inlet to Baker Lake in 2025 numbered 39 for general cargo and 27 for fuel (**Figure 6-2**). Trips were higher in 2025 compared to 2024, but lower than years 2021 through 2023.

Since monitoring began in 2008, there has been no evidence that barge traffic or other Agnico Eagle activities impact water, sediment, phytoplankton, or benthic communities in Baker Lake. As such, sediment chemistry and benthos sampling now occur every three years, aligning with the EEM program. The most recent sediment chemistry and benthos sampling was in 2023, with the next event scheduled for 2026.

6.2 Limnology

6.2.1 General Observations

Baker Lake is large with much greater wind fetch than the Meadowbank or Whale Tail study area lakes and has a unique set of limnological characteristics. Factors that contribute to the unique limnology include the lake's proximity to the tidally-influenced Chesterfield Inlet, the influence of the Thelon River, and deep water that is naturally elevated in dissolved solids. These natural complexities interact, leading to the *competing* influences of Thelon River water, which is less-saline and Baker Lake water, which is more-saline. Freshet on the Thelon River coupled with shifts in north/south wind speed and direction lead to variable degrees of horizontal and vertical mixing of the water column. When sampling near the north shore, these factors may combine to confound the detection of potential subtle changes in water quality related to barge activity, with the *signal* getting lost in the *noise* of natural variability in this dynamic location.

Parameters associated with more-saline or higher conductivity water that appears to be present in deep water (>10–15 m) and which demonstrate considerable fluctuations within and between years include conductivity, hardness, calcium, chloride, magnesium, sodium, and TDS. Other parameters that have a high level of natural variability and appear to be correlated with these deep-water parameters in Baker Lake include ammonia, nitrate, TKN, total phosphorus, and sulphate. A deep limnology survey was conducted in August 2012 to explore this situation specifically. While it provided a single *snapshot* of this dynamic limnological process, all parameters measured (temperature, conductivity, dissolved oxygen, pH, total dissolved solids, and salinity) showed a strong and abrupt stratification from 8 to12 m depth at areas BBD 1 and 2, and BPJ. For example, conductivity increased from less than 20 µS/cm in shallow near-shore water to over 200 µS/cm between 8 and 12 m depth, depending on location. Conductivity remained uniformly high down to the maximum sampled depth (40 m). This indicates that measurements from any event will reflect the relative influence of the deeper, brackish Baker Lake water and the less-saline Thelon River water on the day of the event. Ultimately, wind-induced currents and vertical mixing are important factors dictating the relative influence of the less-saline Thelon River water versus the more-saline Baker Lake water. Stronger winds enhance turbulence, promoting gas exchange in the mixed layer and redistributing heat, nutrients, and dissolved oxygen more evenly by disrupting the thermocline. Conversely, weaker winds limit mixing to surface layers, allowing stratification to persist.

6.2.2 Temporal and Spatial Trends

In addition to the Thelon-Baker influence, several other factors have the potential to affect limnology. Seasonal barge traffic is the major mine-related activity in the area, occurring during the summer months when Baker Lake is ice-free. The hamlet of Baker Lake's sewage lagoons and landfill are situated in a watershed that discharges seasonally into Baker Lake between BBD and BPJ. And locally, propeller wash may cause vertical mixing in very discrete areas when there is active traffic. Otherwise, except for spills and occasional discharge from commercial vessels etc., no other activities have the potential to alter limnological parameters.

Limnological conditions at Baker Lake are similar to the Meadowbank study area lakes, except that water temperatures are cooler, typically reaching no more than 10°C in mid-summer. In 2025, mean temperatures at all Baker areas ranged between 3.83 and 10.7°C (**Figure 6-3**).

In 2025, summer stratification was observed to varying degrees at each of the Baker Lake sampling areas (**Figure 6-4**). In July, conductivity at BAP was elevated relative to BBD and BPJ, with a maximum value reaching 115 µS/cm. By September, all three areas converged to similar values ranging from 137 to 140 µS/cm.

Temperature and conductivity profile patterns show the influence of both seasonal mixing and of the relative contributions of the Thelon River on Baker Lake water. In July, BBD was substantially warmer and less saline than BAP, showing the influence of the Thelon River at BBD; while conductivity is consistent vertically at each of the two areas, surface waters were warmer than at depth; BPJ was similar to BBD near the surface, but progressively became more similar to BAP with depth. August shows similar trends at all three areas: surface water influenced by the Thelon River and sharp stratification to the colder, more saline water at depth at the two deeper areas (BAP, BPJ) further from the influence of the Thelon River. September was well mixed at all three areas and was more representative of the more-saline water in Baker Lake.

6.3 Water Chemistry

6.3.1 Key Findings from the 2025 Water Chemistry Monitoring Program

- Mean annual TOC, DOC, total silicon, and dissolved silicon concentrations exceeded their respective trigger values at both impact areas (BBD, BPJ) and reference (BAP) in 2025. For all other parameters, mean annual concentrations were below the triggers at Baker Lake.
- There was no statistically significant change in TOC, DOC, total silicon or dissolved silicon concentrations compared to baseline/reference conditions.

6.3.2 General Observations

As discussed in **Section 6.2**, Baker Lake is large and exposed to high winds and wind-generated currents. Adding to the complexity, monitoring areas along the north shore are exposed to two different water masses: the less-saline Thelon River, which discharges into Baker Lake at its western end, and the saline-influenced deeper water in Baker Lake. Depending on wind speed and direction, water from these two sources (e.g., individually or mixed) can strongly influence some surface water chemistry parameters (conductivity, salts, and dissolved solids). Consequently, certain parameters can display pronounced spatial (horizontal and vertical) and temporal variability. This variability is evident mainly in the *conventional* parameters (described above); in contrast, concentrations of metals in the Baker Lake samples are typically below laboratory MDLs. There were no spill events at Baker Lake in 2025.

6.3.3 Temporal and Spatial Trends

CREMP monitoring results since 2008 were used to assess temporal and spatial trends related to mining activities (**Appendix A**). The general rationale for assessing these trends (**Section 2.5.1**) was tailored slightly for the water chemistry assessment in Baker Lake, as described below.

Baker Lake water chemistry results for 2025, screened against site-specific triggers and effects-based thresholds, are tabulated in **Appendix C3**. Most water quality parameters in Baker Lake, similar to the

results for the Meadowbank study lakes, are routinely below laboratory MDLs. Data screening for Baker Lake followed the same methodology as Meadowbank and Whale Tail (**Section 2.5.1**) except that matching patterns in mining activity was not conducted as it is not relevant to this study area.

The results for all parameters that were screened into the assessment process are summarized in **Table 6-1** and shown in **Figure 6-5** through **Figure 6-9**. In each figure, the red dashed line indicates the Baker Lake trigger value for that parameter[34]. Parameters excluded from the trend assessment were assumed to have no spatial or temporal trends related to barge activities or natural variability and were removed from further consideration; for transparency, plots for these parameters are provided in **Appendix C3**.

During the three sampling events in 2025 (July, August, September), several parameters including total alkalinity, bicarbonate alkalinity, TKN, total phosphorus, DOC, TOC, and total and dissolved silicon exceeded trigger values in at least one sample (**Figure 6-5**, **Figure 6-7**, **Figure 6-9**, and **Appendix C3**). Mean annual TOC, DOC, total silicon, and dissolved silicon concentrations exceeded their respective trigger values at both impact areas (BBD, BPJ) and reference (BAP) in 2025. For all other parameters, mean annual concentrations were below the triggers at Baker Lake. The BACI analysis showed no significant changes in TOC, DOC, total and dissolved silicon concentrations at BBD and BPJ compared to reference/baseline conditions.

Across all three areas (BBD, BPJ, BAP), similar temporal trends occurred for the carbon parameters (TOC/DOC) in 2025. Total organic carbon concentrations at each sampling area peaked at a similar concentration (~4.46 mg/L) in August with DOC at each area also peaking in August. Since 2008, annual patterns in TOC/DOC concentrations have been notably similar between reference and exposure locations. The common patterns suggest that the carbon parameters are being influenced by regional environmental factors. If local anthropogenic activities were impacting TOC/DOC a distinct signature would be expected at impact areas (BBD, BPJ) compared to the reference area BAP.

Mean annual TOC/DOC concentrations have increased at all three Baker Lake sampling areas since 2018 and more broadly since sampling began in 2008, indicating a long-term increasing trend. Similar patterns have also been observed in the Meadowbank study area lakes (**Figure 4-9**).

Total silicon concentrations have exceeded trigger values at all three Baker Lake areas in previous years, with mean annual concentrations exceeding the trigger at BBD in 2021. In 2025, mean annual total silicon concentrations exceeded the trigger at all three areas (BAP, BBD, and BPJ) for the first time (**Figure 6-9**). Despite these exceedances, concentrations at the impact areas were similar to concentrations observed at the reference area and there was no evidence of consistent divergence

[34] See Appendix I in the 2019 CREMP report (Azimuth, 2020a) for details on trigger updates and derivation for Baker Lake.

between areas. Additionally, similar changes in total silicon concentrations in 2025 were observed at the regional Whale Tail FF area DS1, and at Meadowbank areas TPE, SP, and WAL. This pattern indicates that the exceedances at Baker Lake are likely attributed to a broader regional pattern rather than mine-related activities (**Figure 5-11** and **Figure 4-11**). Overall, the long-term data indicate inter-annual variability in total silicon concentrations rather than a sustained increasing trend or a pattern indicative of mine-related effects.

There are no follow-up measures for management beyond routine CREMP water quality sampling during the open-water season.

6.4 Phytoplankton Community

6.4.1 Key Findings from the 2025 Phytoplankton Monitoring Program

- There were no statistically significant changes in total biomass or taxa richness at any of the sampling areas in Baker Lake.
- The phytoplankton community in Baker Lake was similar to previous years and has not exhibited any changes attributable to Agnico Eagle's activities in Baker Lake.

6.4.2 General Observations

The phytoplankton community of Baker Lake is relatively similar to the Meadowbank study area lakes, despite some seasonal differences in water quality due to the competing influences of less saline water from the Thelon River and more saline water from the deeper portion of Baker Lake (see **Section 6.2**). Taxonomic composition and biomass in Baker Lake were similar to the Meadowbank study lakes, with chrysophytes (golden algae, e.g., *Chrysococcus, Kephyrion, Dinobryon*) having been the dominant taxonomic group since monitoring began in 2008. Mean summer phytoplankton biomass in Baker Lake is generally similar to the Meadowbank study area lakes, reaching a maximum between 135 to 300 mg/m^3.

6.4.3 Temporal and Spatial Trends

Sampling at the Baker Lake areas is only conducted during the summer open-water period, which coincides with barge activity. Because of Baker Lake's large size, it is unlikely that barge traffic (in the absence of a substantial fuel or chemical spill) could influence the phytoplankton community of the whole lake.

The 2025 density and biomass results for phytoplankton are tabulated in **Appendix E3**. The BACI model statistical test results comparing 2025 data to baseline/reference conditions are provided in **Table 6-2**. Major findings at Baker Lake areas in 2025 for chlorophyll-a (not included in BACI), total biomass, taxa richness, and major taxa group composition (not included in BACI) were as follows:

- **Chlorophyll-a.** Concentrations at reference area BAP historically ranged between 0.4 to 1.5 µg/L (**Figure 6-10**). In 2025, the range and pattern of chlorophyll-a concentrations at the three Baker Lake areas were similar relative to previous years. Though concentrations appear to have generally declined since 2021, they remain within historical ranges.
- **Total biomass.** Annual biomass patterns generally co-vary across areas. In 2025, the lowest biomass was observed in September at BAP and BBD. At BPJ, biomass levels were similar in July and September, with a decrease in August. Although lower biomass in August has been observed in previous years, it is more typical for the lowest biomass to occur in September (**Figure 6-11** to **Figure 6-13**). There were no statistically significant changes in total biomass or taxa richness at any area (**Table 6-2**).
- **Major taxa composition.** There were no apparent differences in the relative composition of phytoplankton communities between BAP and impact areas BBD and BPJ in 2025 (**Figure 6-13**). In August 2025, cryptophyte biomass was slightly higher at BBD and BPJ relative to BAP, however the biomass distribution was very comparable. Chrysophytes are typically the dominant taxa in all sampling areas, and in 2025 comprised 40 to 59% of the total phytoplankton biomass in each area. Diatoms consisted of 24 to 33%, while cryptophytes comprised 5.8 to 15%. The remainder of the biomass is made up of chlorophytes and dinoflagellates (**Appendix E3**).
- **Taxa richness.** Richness in Baker Lake phytoplankton samples were very similar to the 2024 results, and comparable to historical ranges at both the impact and reference areas. A generally decreasing trend in species richness has been observed at all three Baker Lake areas 2008 (**Figure 6-14**). There were no statistically significant changes in total biomass or taxa richness any areas (**Table 6-2**).

Phytoplankton biomass will continue to be monitored for potential temporal trends, but no follow-up measures other than routine monitoring is recommended for 2026.

6.5 Baker Lake Tables and Figures

This section includes tables and figures for the Baker Lake CREMP, except for large tabulated data and figures for parameters not covered in the detailed analysis (refer to in-text references for relevant appendices). Subsections are organized by CREMP components including limnology, water chemistry and phytoplankton.

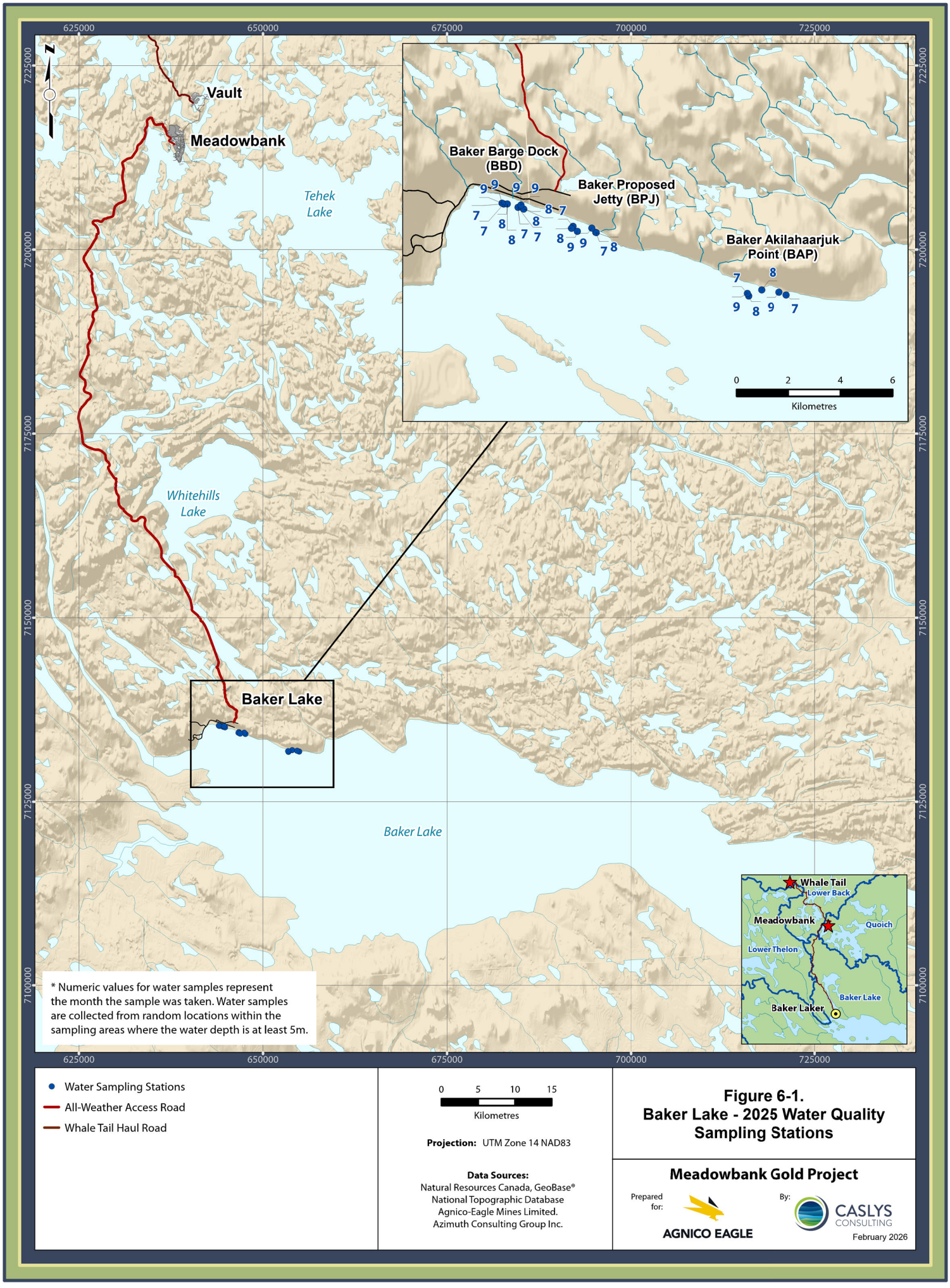
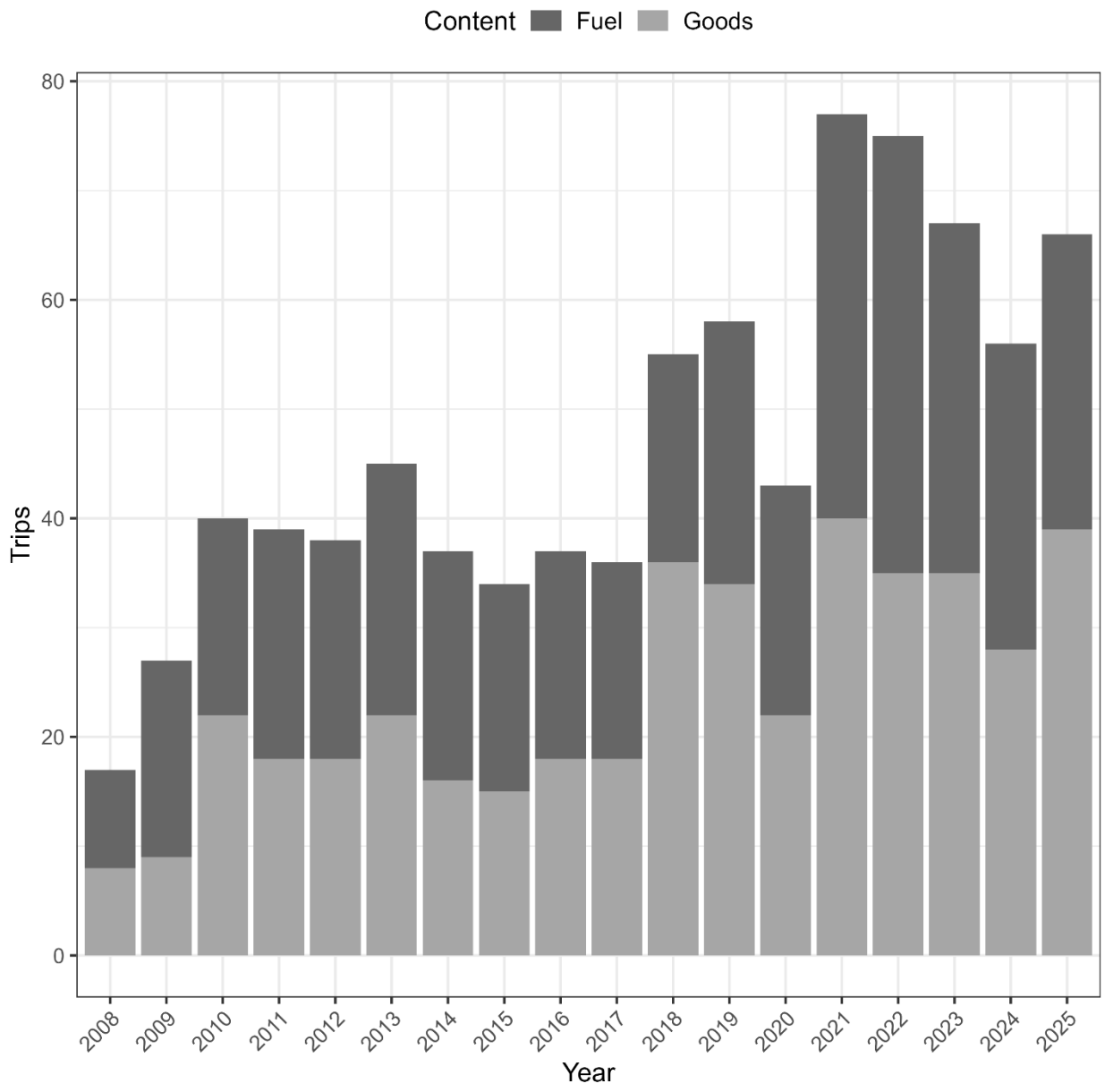

625000
650000
675000
700000
725000
7225000
7200000
7175000
7150000
7125000
7100000
N
Vault
Meadowbank
Tehek Lake
Whitehills Lake
Baker Lake
Baker Lake
Baker Barge Dock (BBD)
Baker Proposed Jetty (BPJ)
Baker Akilahaarjuk Point (BAP)
0 2 4 6
Kilometres
Whale Tail
Lower Back
Meadowbank
Quoich
Lower Thelon
Baker Lake
Baker Laker
* Numeric values for water samples represent the month the sample was taken. Water samples are collected from random locations within the sampling areas where the water depth is at least 5m.
Water Sampling Stations
All-Weather Access Road
Whale Tail Haul Road
0 5 10 15
Kilometres
Projection: UTM Zone 14 NAD83
Data Sources:
Natural Resources Canada, GeoBase®
National Topographic Database
Agnico-Eagle Mines Limited.
Azimuth Consulting Group Inc.
Figure 6-1.
Baker Lake - 2025 Water Quality Sampling Stations
Meadowbank Gold Project
Prepared for:
AGNICO EAGLE
By:
CASLYS CONSULTING
February 2026

Figure 6-2. Baker Lake barge traffic from Chesterfield Inlet since 2008.



Limnology Tables and Figures

Figure 6-3. Mean monthly field-measured temperature (°C) at 3 m depth since 2008, Baker Lake.

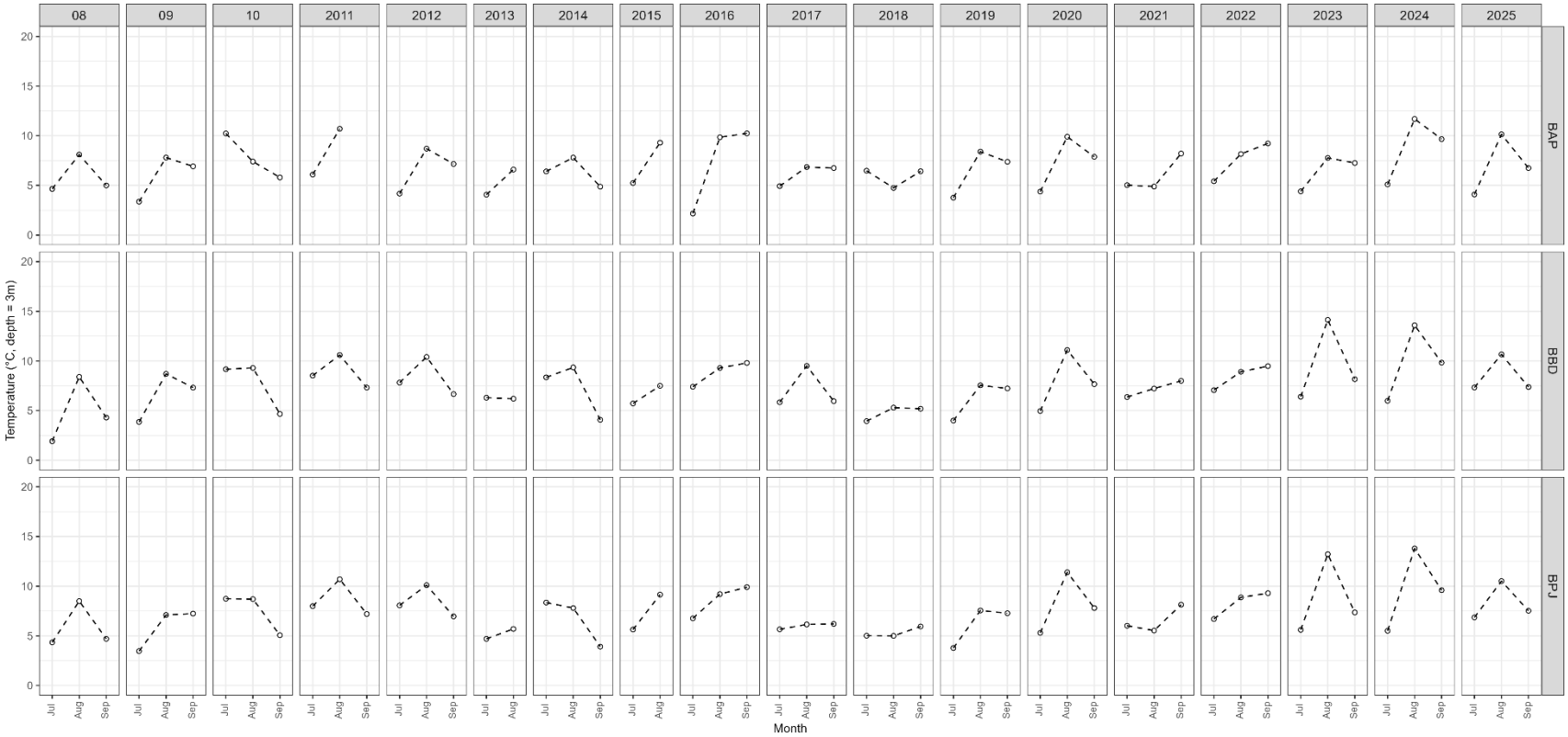
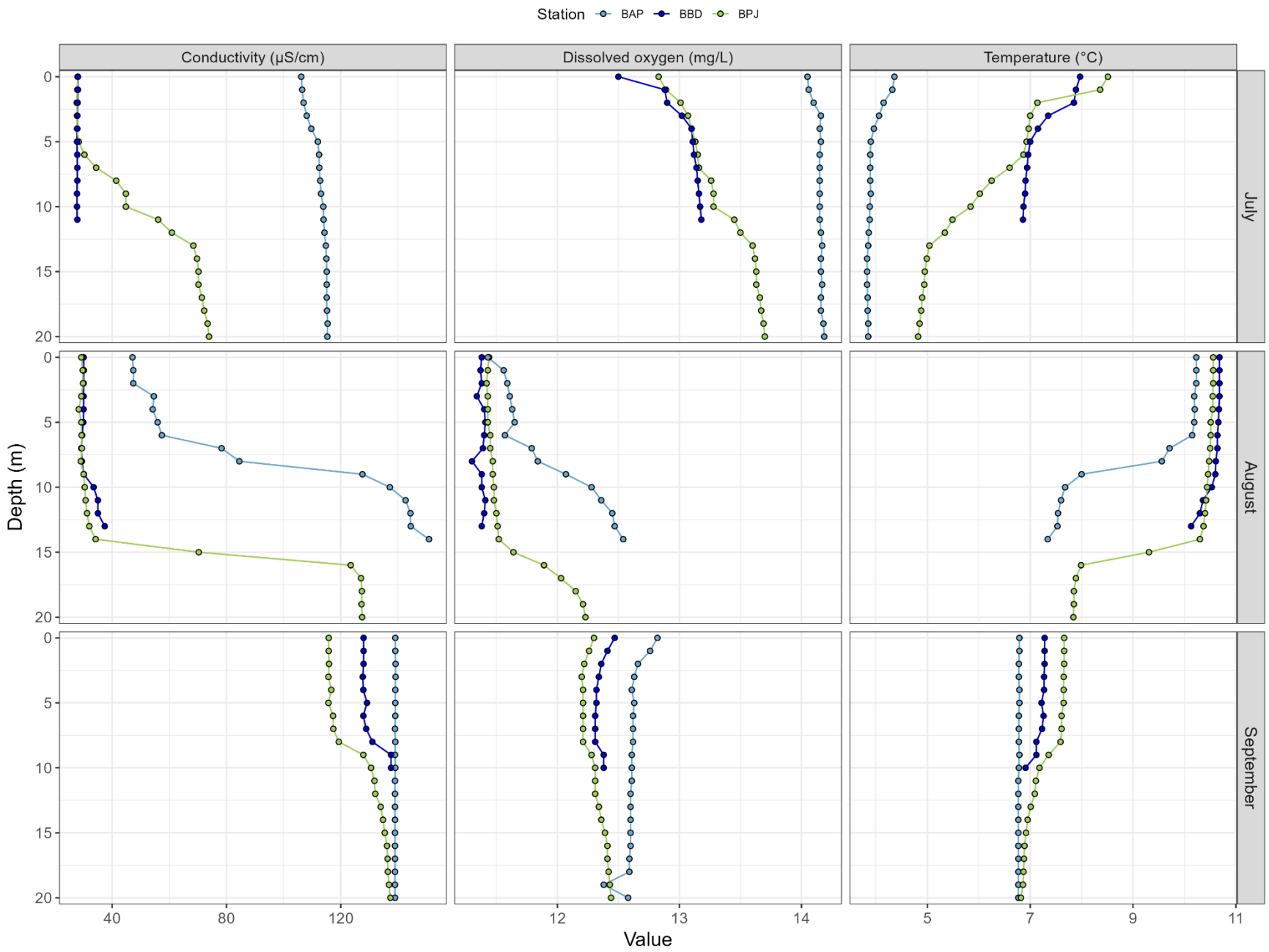


Figure 6-4. Baker Lake – Field-measured conductivity, dissolved oxygen, and temperature profiles, 2025.

Note: Only the field measured values up to 20 m depth are shown in the figure.



Water Chemistry Tables and Figures

Table 6-1. Screening process for water quality parameters, Baker Lake, 2025.

Parameters	Trigger Exceedance[2]	Screening Level and Rule[1] 1 >DL ≥ 10% Frequency	2 C-I > 0.1 Frequency
CONVENTIONALS			
Conductivity	-	**Yes**	
TSS	-	**Yes**	
Hardness	-	**Yes**	
T-Alkalinity	BAP, BBD	**Yes**	
B-Alkalinity	BAP, BBD	**Yes**	
C-Alkalinity	-	No	No
pH-Field	-	**Yes**	
pH-Lab	-	**Yes**	
MAJOR IONS			
TDS	-	**Yes**	
Calcium	-	**Yes**	
Chloride	-	**Yes**	
Fluoride	-	**Yes**	
Magnesium	-	**Yes**	
Potassium	-	**Yes**	
Sodium	-	**Yes**	
Sulphate	-	**Yes**	
NUTRIENTS & OTHERS			
Ammonia-N	-	**Yes**	
Nitrate-N	-	**Yes**	
Nitrite-N	-	No	No
TKN	BBD	**Yes**	
T-Phosphorus	BAP, BBD, BPJ	**Yes**	
Ortho-phosphate	-	**Yes**	
DOC	BAP, BBD, BPJ	**Yes**	
TOC	BAP, BBD, BPJ	**Yes**	
Reactive Silica	-	**Yes**	
T-Cyanide	*Not measured since 2019*		
Free Cyanide	*Not measured since 2019*		

Parameters	Trigger Exceedance[2]	Screening Level and Rule[1] 1 >DL ≥ 10% Frequency	2 C-I > 0.1 Frequency
TOTAL METALS			
Aluminum	-	**Yes**	
Antimony	-	No	No
Arsenic	-	**Yes**	
Barium	-	**Yes**	
Beryllium	-	No	No
Boron	-	**Yes**	
Cadmium	-	No	No
Chromium	-	**Yes**	
Copper	-	**Yes**	
Iron	-	**Yes**	
Lead	-	No	No
Lithium	-	**Yes**	
Manganese	-	**Yes**	
Mercury	-	No	No
Molybdenum	-	**Yes**	
Nickel	-	No	No
Selenium	-	No	No
Silicon	BAP, BBD, BPJ	**Yes**	
Silver	-	No	No
Strontium	-	**Yes**	
Thallium	-	No	No
Tin	-	No	No
Titanium	-	**Yes**	
Uranium	-	**Yes**	
Vanadium	-	No	No
Zinc	-	No	No

Parameters	Trigger Exceedance[2]	Screening Level and Rule[1] 1 >DL ≥ 10% Frequency	2 C-I > 0.1 Frequency
DISSOLVED METALS			
Aluminum	-	**Yes**	
Antimony	-	No	No
Arsenic	-	**Yes**	
Barium	-	**Yes**	
Beryllium	-	No	No
Boron	-	**Yes**	
Cadmium	-	No	No
Chromium	BAP, BBD, BPJ	No	No
Copper	-	**Yes**	
Iron	-	**Yes**	
Lead	-	No	No
Lithium	-	**Yes**	
Manganese	-	**Yes**	
Mercury	-	No	No
Molybdenum	-	**Yes**	
Nickel	-	No	No
Selenium	-	No	No
Silicon	BAP, BBD, BPJ	**Yes**	
Silver	-	No	No
Strontium	-	**Yes**	
Thallium	-	No	No
Tin	-	No	No
Titanium	-	No	No
Uranium	-	**Yes**	
Vanadium	-	No	No
Zinc	-	No	No

Notes:
C-I = Control-Impact
DL = Detection Limit
1. A three-step assessment process was used to identify parameters to include in the formal temporal and spatial trend assessment (**Section 2.5.1**).
Parameters were assigned "Yes" if the following criteria were met:
(1) >DL ≥ 10% Frequency: parameters that exceeded DLs in at least 10% of the samples.
(2) C-I > 0.1 Frequency: parameters that were detected more often in impact stations and the proportion of detected values increased by 0.1 or more.
2. Indicates that a trigger exceedance occurred at the listed Baker Lake area during one or more sampling event.
Shaded parameters are included in the temporal and spatial trend assessment.
Plots for all individual parameters are presented in **Appendix C3**.

Figure 6-5. Conventional parameters in water samples from Baker Lake since 2008.

Note: Laboratory-measured conductivity data from 2014 should be interpreted with caution, particularly at low concentrations (see Azimuth, 2015c for details).

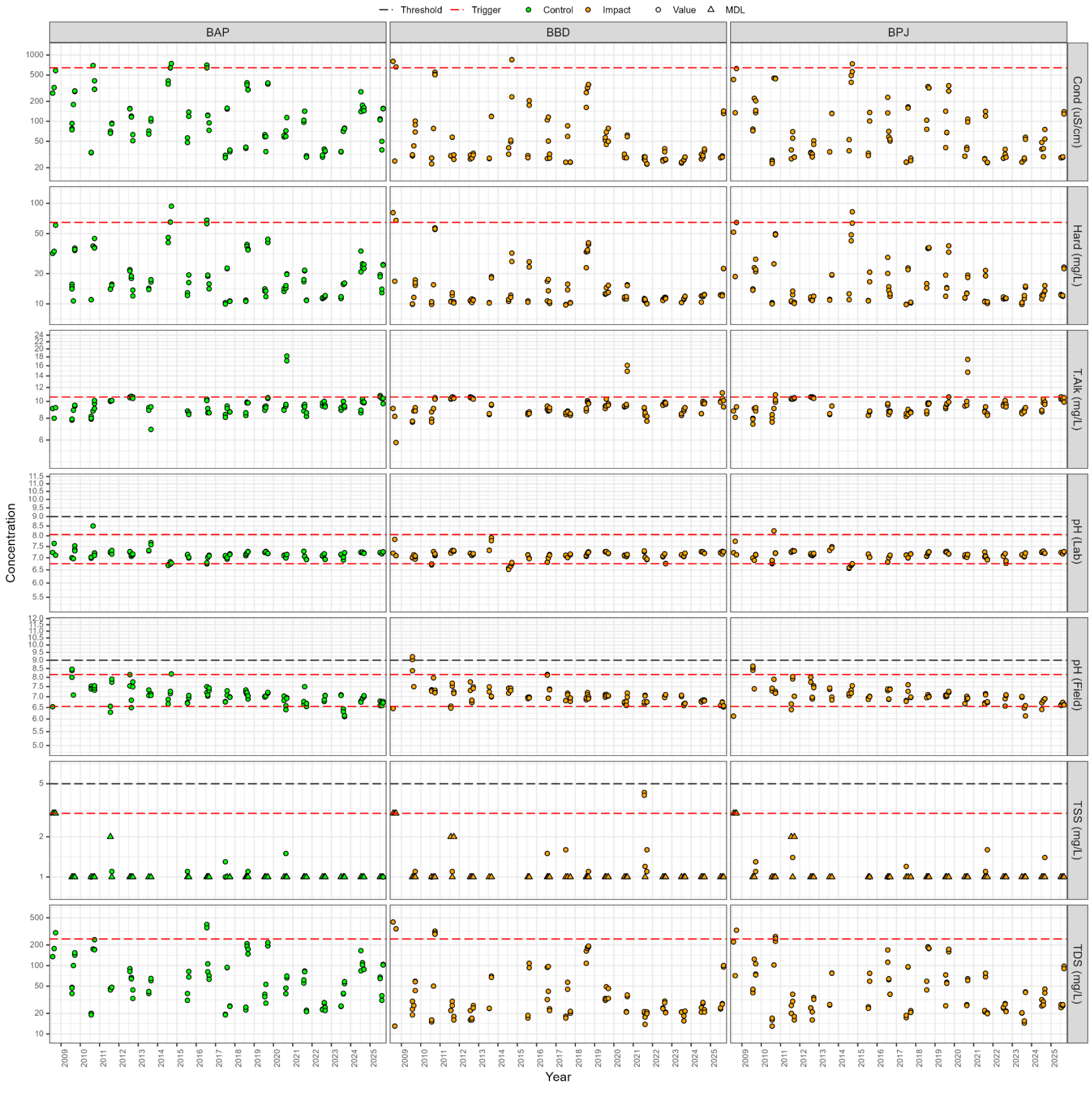


Figure 6-6. Major ions in water samples from Baker Lake since 2008.

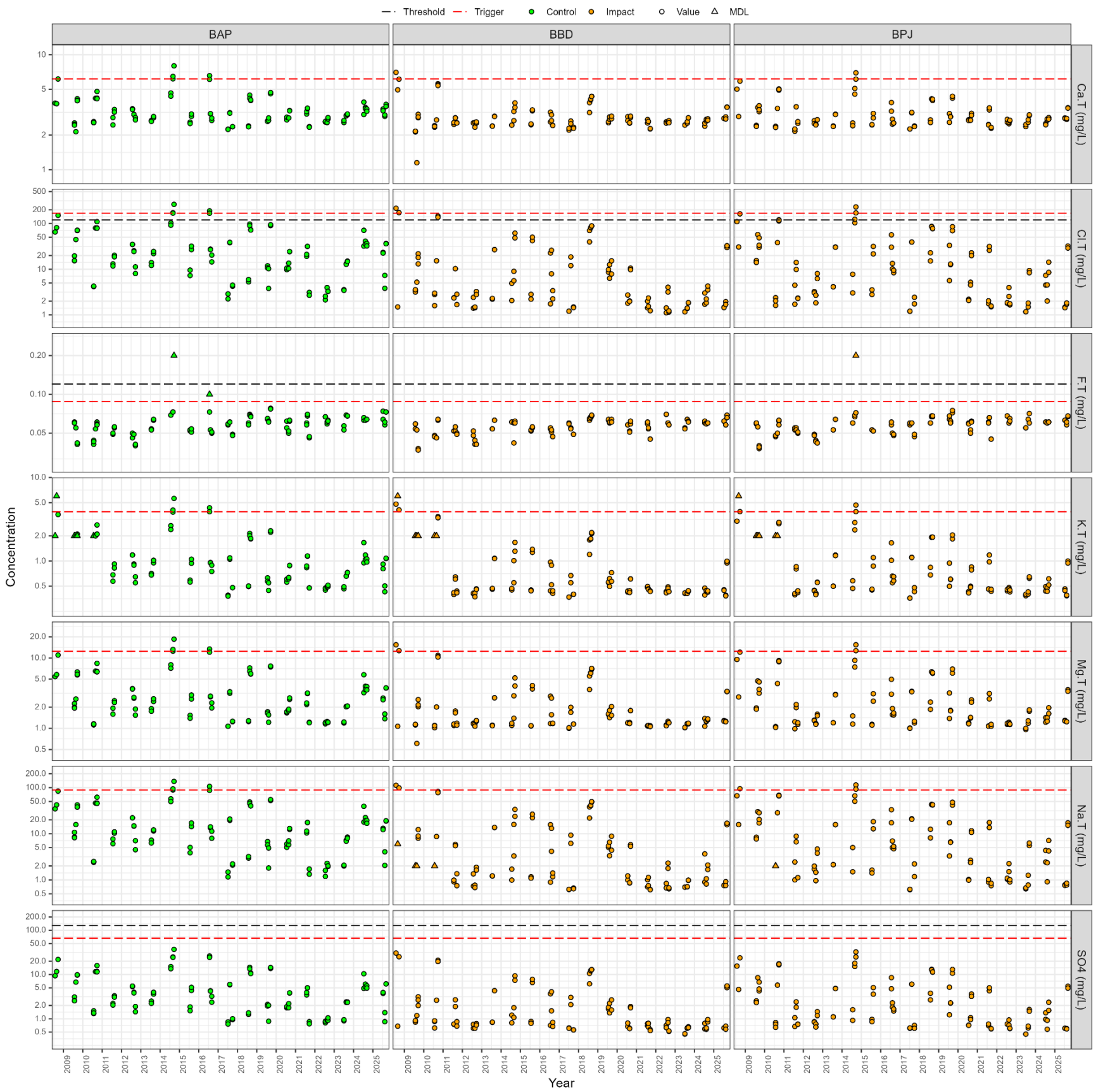


Figure 6-7. Nutrients in water samples from Baker Lake since 2008.

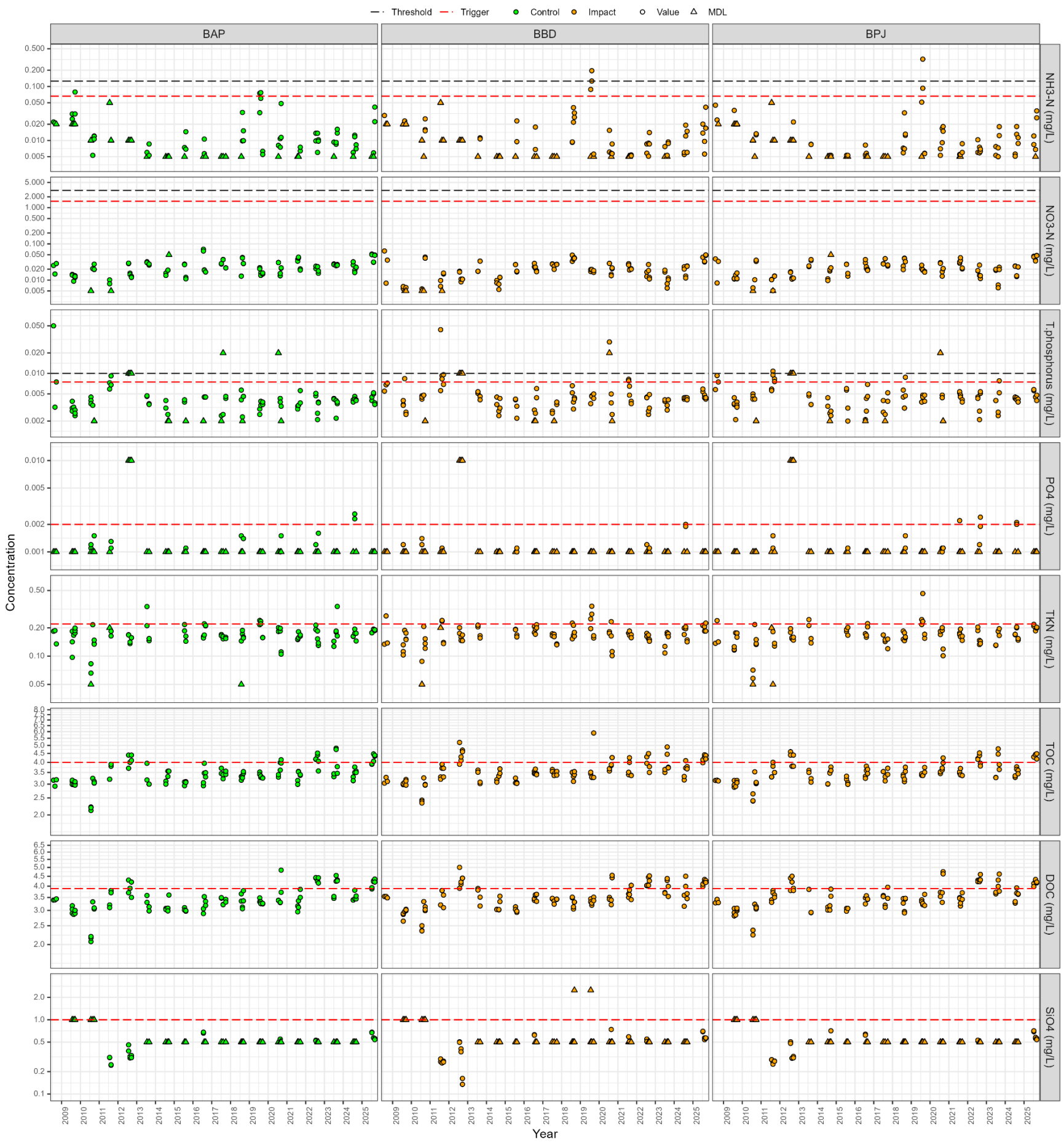


Figure 6-8. Metals in water samples from Baker Lake since 2008.

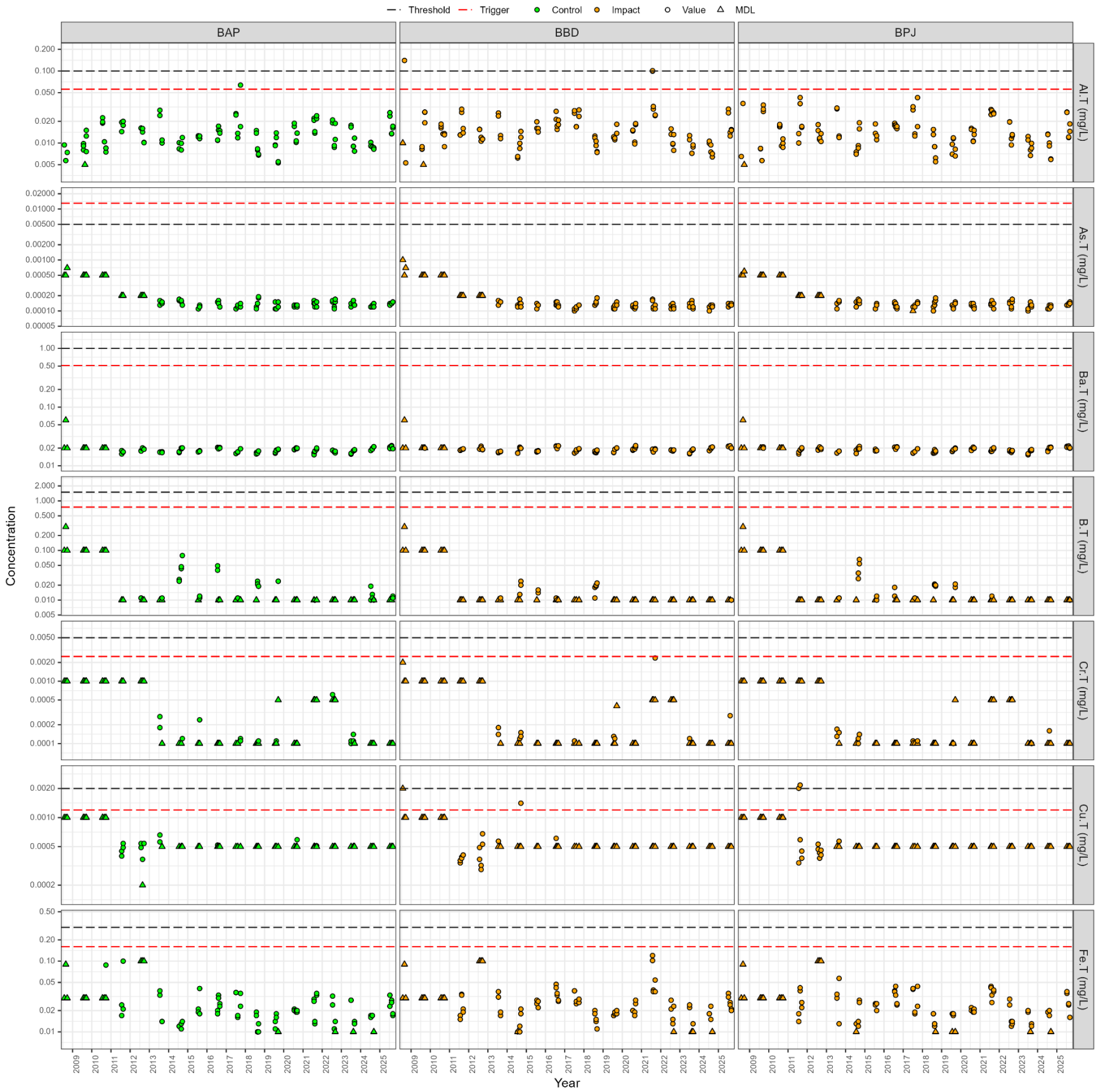
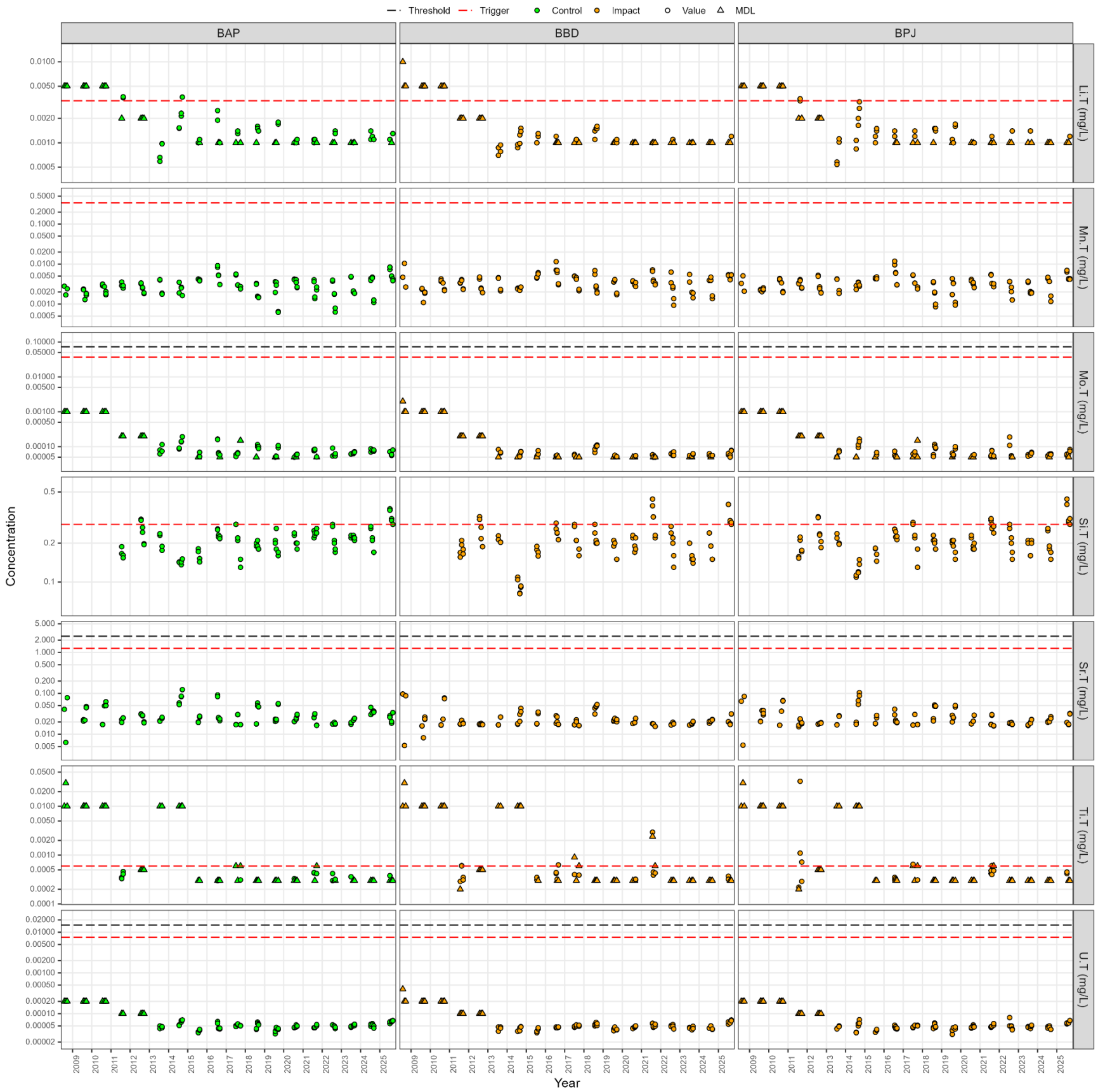


Figure 6-9. Metals in water samples from Baker Lake since 2008.



Phytoplankton Tables and Figures

Table 6-2. Results of the BACI tests for phytoplankton variables at Baker Lake areas, 2025.

Parameter Measured	Test Area	n(B)	n(A)	Estimate	SE	P-value*	Effect Size (%)		
							ES	LCI	UCI
Total Biomass	BBD	48	3	-0.09	0.25	0.723	-8	-44	51
	BPJ	48	3	-0.03	0.18	0.862	-3	-33	40
Taxa Richness	BBD	48	3	0.00	0.07	0.964	0	-13	15
	BPJ	48	3	0.02	0.05	0.654	2	-8	14

Notes:

*** Bolded** values are P-values < 0.1.

Shaded cells indicate positive (increased) or negative (reduced) effect sizes of 20% or more.

Test area = area compared to control (BAP).

n(B) = number of months in the "before" period.

n(A) = number of months in the "after" period (i.e., in 2025).

Estimate = BACI model estimate of the 2025 change in mean for log-transformed data.

SE = standard error of the estimate.

P-value = two-tailed test of the null hypothesis of no change.

ES = estimated effect size (i.e., 100%*(exp[Estimate]-1)).

LCI = lower 95% confidence interval; UCI = upper 95% confidence interval.

Figure 6-10. Chlorophyll-a (µg/L) in water samples from Baker Lake since 2008.

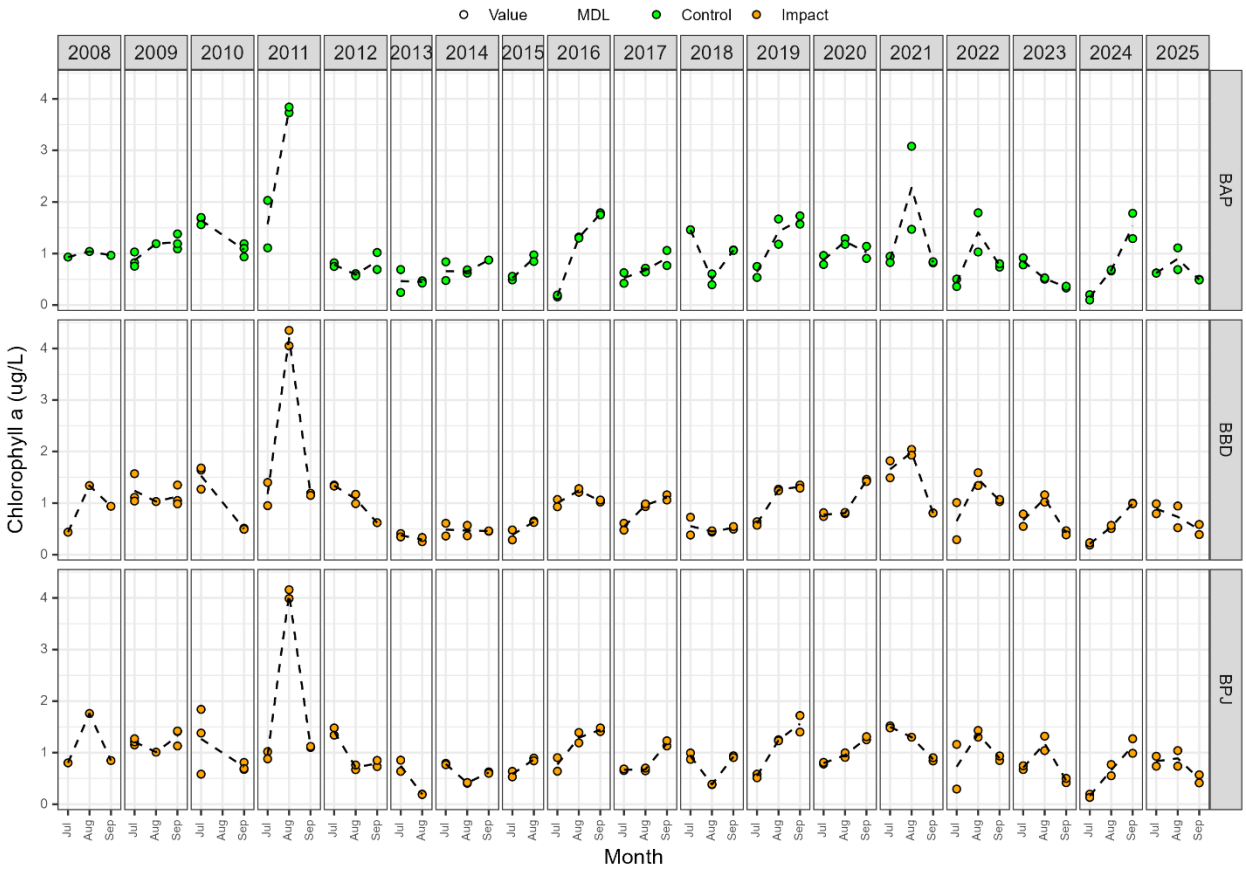


Figure 6-11. Total phytoplankton biomass (mg/m^3) from Baker Lake since 2008.

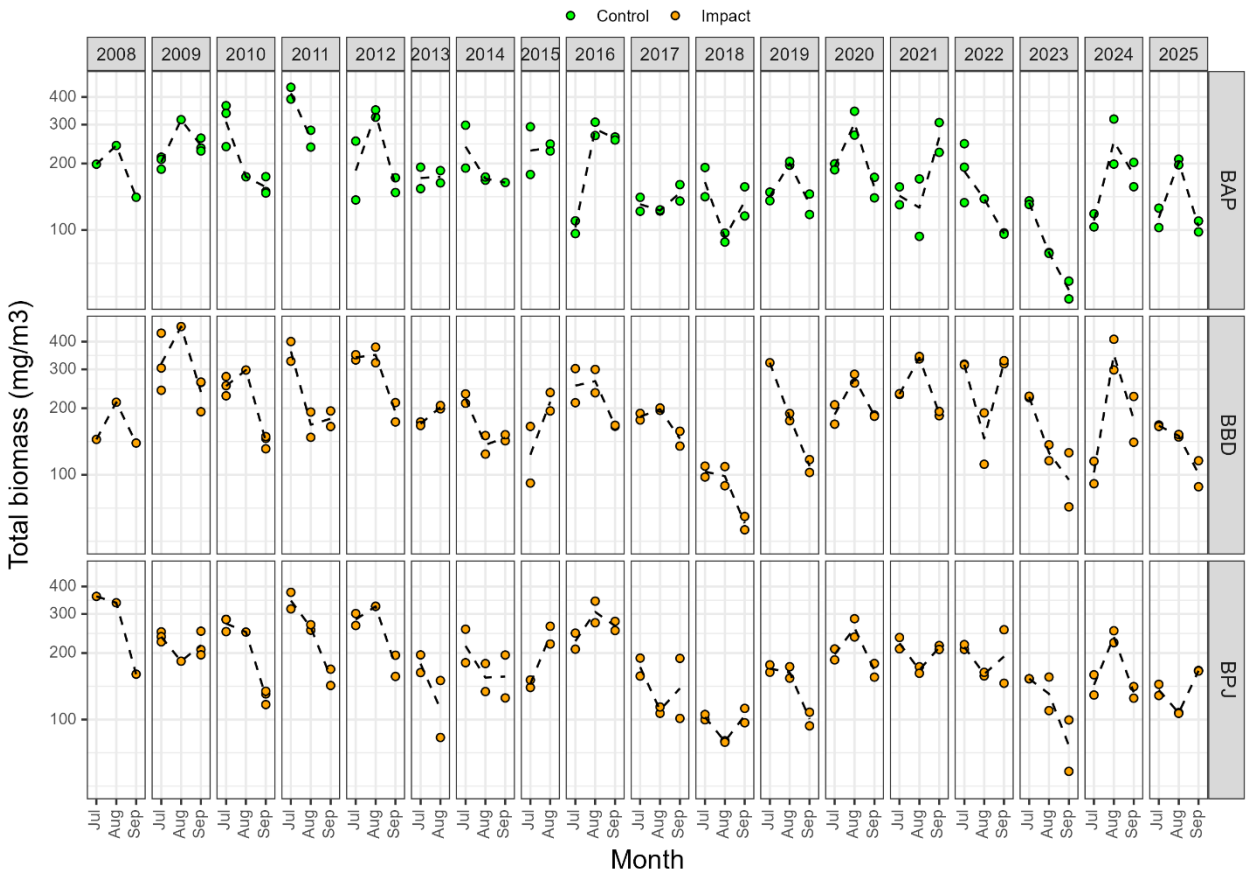


Figure 6-12. Phytoplankton biomass (mg/m^3) by major taxa from Baker Lake since 2008.

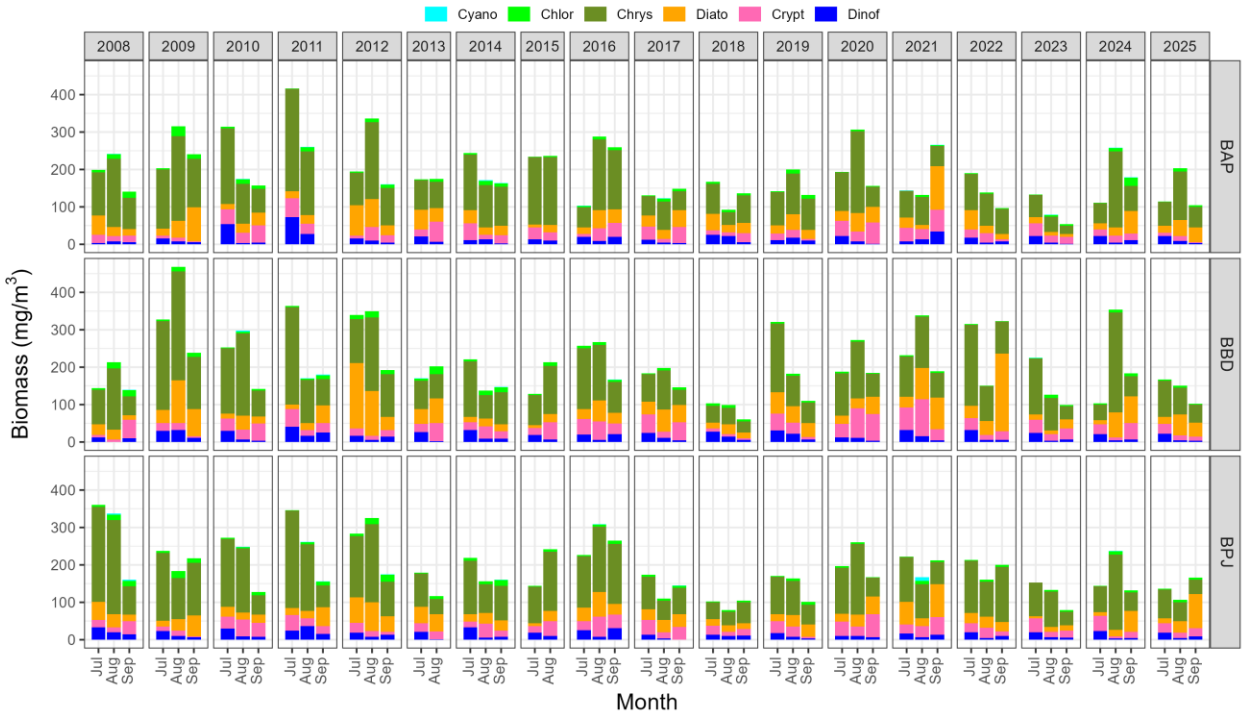


Figure 6-13. Relative phytoplankton biomass by major taxa from Baker Lake since 2008.

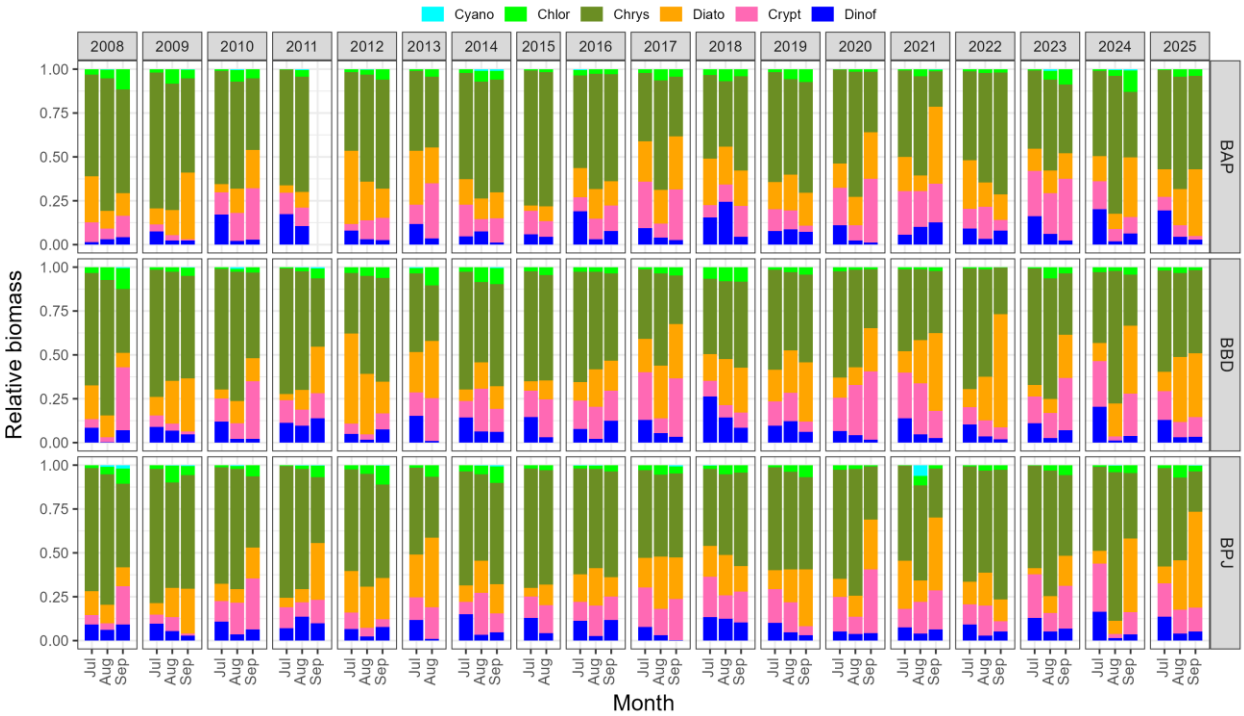
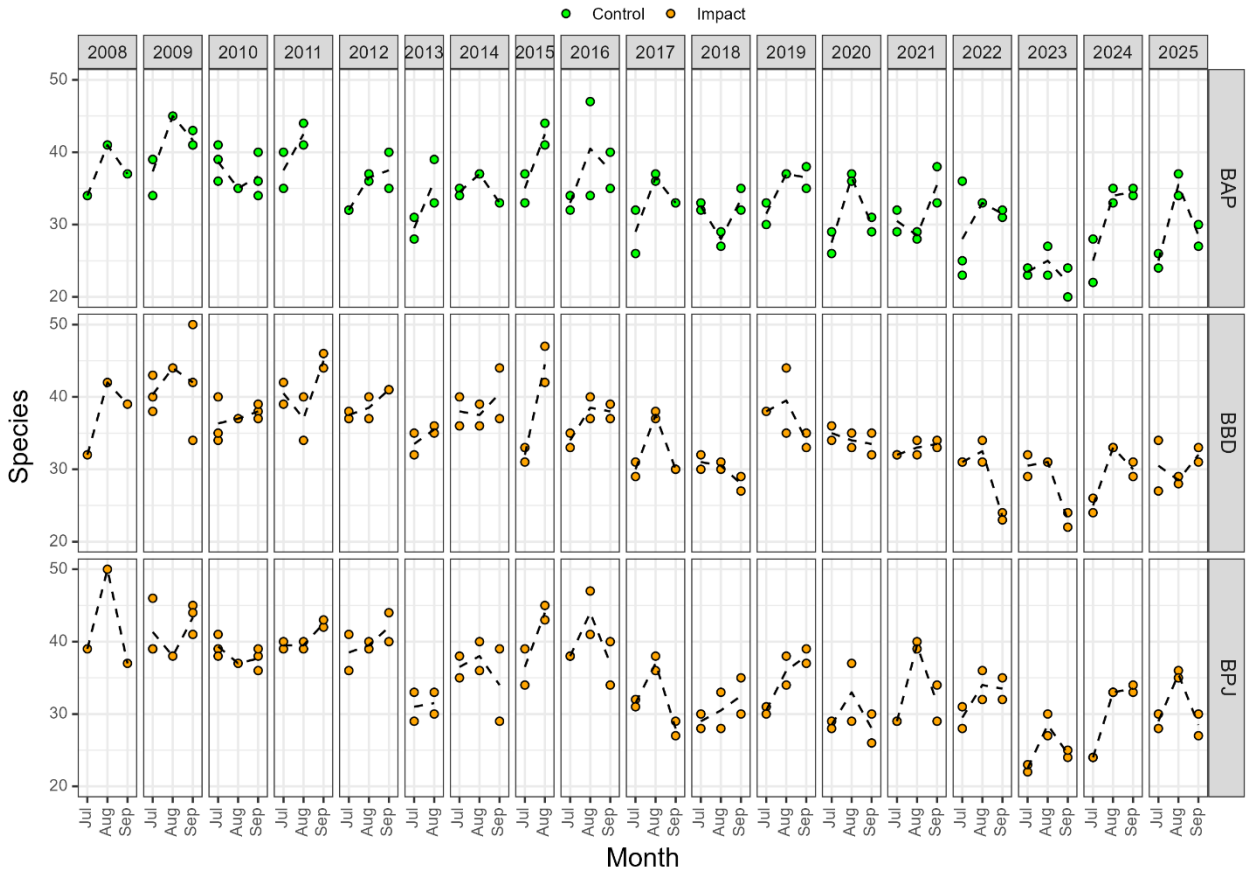


Figure 6-14. Phytoplankton species richness from Baker Lake since 2008.



7 SCOPE OF THE 2026 CREMP

The CREMP focuses on identifying changes in limnology, water, and sediment chemistry, and primary (phytoplankton) and secondary (benthic invertebrate community) aquatic producers that may be associated with mine development activities. This is accomplished by applying a temporal/spatial trend assessment that includes applying quantitative decision criteria (i.e., early warning *triggers* and action *thresholds*) to facilitate making immediate and objective decisions about appropriate management actions. CREMP results are integrated annually into the Aquatic Ecosystem Monitoring Program (AEMP) for holistic environmental management and decision making. Recommendations for the scope of the 2026 CREMP are provided for Meadowbank, Whale Tail, and Baker Lake based on the 2025 monitoring results discussed in **Sections 4**, **5**, and **6**, respectively.

7.1 Meadowbank

Based on the 2025 results and the annual decision framework for the sampling strategy (**Section 2.4**), the components and schedule for the 2026 CREMP for the Meadowbank study area is summarized in **Table 7-1**. The scope of work proposed for 2026 includes:

- **Water quality**. Water sampling for three open-water and two through-ice sampling events at the NF and reference areas. Through-ice limnology and water chemistry sampling at TPS, TE, and TEFF will continue to be suspended unless monitoring data from NF areas suggest there are "moderate changes" in water quality[35]. In addition, contingency water samples may need to be collected during the limnology-only, through-ice sampling event(s) at the NF areas, if anomalous *in-situ* limnology results are observed.
- **Phytoplankton**. Routine sampling at the NF areas, at the same time as the three open-water and two through-ice sampling events. Winter phytoplankton samples will be archived and may be submitted for analysis depending on the results from the open-water sampling events. Sampling at MF and FF areas is not required.
- **Sediment chemistry**. Sediment chemistry samples will be collected by grab sampler with benthos samples at all NF and reference areas. A full coring program will be completed at NF areas to coincide with EEM monitoring.
- **Benthos**. Routine benthos samples and supporting habitat data (TOC and grain size) will be collected by grab sampler at the NF and reference areas.

[35] "Moderate changes" in water quality are defined as statistically significant increases exceeding the early warning trigger for parameters with effects-based thresholds (i.e., CCME FWAL).

7.2 Whale Tail

Timing of the field sampling at the Whale Tail study area lakes matches the schedule for Meadowbank because of share-reference area sampling at INUG and PDL. The frequency of sampling and study components at each area are outlined in **Table 7-1**. The scope of work proposed for Whale Tail study area lakes in 2026 includes:

- **Water quality**. The full CREMP program (through-ice and open-water) at the NF, MF, FF, and reference areas. Through-ice limnology profiles are recommended at KAN, WTS, and NEM in the months when water sampling is not completed. In addition, contingency water samples may need to be collected during the limnology-only, through-ice sampling event(s), if anomalous *in-situ* limnology results are observed.
- **Phytoplankton**. Routine sampling at the same time as the three open-water and two through-ice sampling events. Winter phytoplankton samples will be archived and may be submitted for analysis depending on the results from the open-water sampling events.
- **Sediment chemistry**. Sediment chemistry samples will be collected by grab sampler with benthos at all Whale Tail areas and reference areas. A full coring program will be completed at NF areas to coincide with EEM monitoring.
- **Benthos**. Benthos samples and supporting habitat data (TOC and grain size) will be collected by grab sampler at the Whale Tail study area lakes and reference areas on the same schedule as the Meadowbank study area lakes. Sampling will occur at NF areas (WTS and KAN) to monitor for changes in the community due to construction and discharge. Sampling will occur at NEM will be completed to monitor potential changes related to the temporary authorized discharge into the Nemo Lake watershed in 2019. Sampling will occur at A20 to monitor potential changes related to the connectivity with WTS since the impoundment. Sampling will occur at areas A76 and DS1 to provide more information on the range of normal conditions to support future BACI-style analysis.

7.3 Baker Lake

The scope of the 2026 Baker Lake CREMP is presented in **Table 7-1**. Monthly water quality monitoring is planned for July, August, and September consistent with previous years. Sediment chemistry and benthos monitoring is planned for August 2026. Sediment chemistry and benthos monitoring frequency for this area occurs on a three-year cycle as per the *CREMP Plan Update* (Azimuth, 2022b).

Table 7-1. Monitoring components planned for 2026 Meadowbank, Whale Tail, and Baker Lake CREMP.

Sampling Month[1]	Conditions	Components[2]	Meadowbank[3]									Whale Tail[3]						Baker Lake			
			INUG	PDL	TPN	SP	TPE	WAL	TPS	TE	TEFF	WTS	KAN	NEM	A20	A76	DS1	BAP	BES	BBD	BPJ
January	Ice	L			✓	✓	✓	✓				✓	✓	✓	✓						
February	Ice	L			✓	✓	✓	✓				✓	✓	✓	✓						
March	Ice	L,W,P	✓	✓	✓	✓	✓	✓				✓	✓	✓	✓	✓	✓				
April	Ice	L			✓	✓	✓	✓				✓	✓	✓	✓						
May	Ice	L,W,P	✓	✓	✓	✓	✓	✓				✓	✓	✓	✓	✓	✓				
June	***Ice not safe***																				
July	Open-water	L,W,P	✓	✓	✓	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓		✓	✓
August	Open-water	L,W,P	✓	✓	✓	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓		✓	✓
		B,S	✓	✓	✓	✓	✓	✓				✓	✓	✓	✓	✓	✓				
September	Open-water	L,W,P	✓	✓	✓	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓		✓	✓
October	***Ice not safe***																				
November	Ice	L			✓	✓	✓	✓				✓	✓	✓	✓						
December	Ice	L			✓	✓	✓	✓				✓	✓	✓	✓						

Notes:

✓ = monitoring components were collected.

Area designations: C=Control; I=Impact; REF=reference (in grey shading); NF=near-field (in blue shading); MF=mid-field (in pink shading); FF=far-field (in teal shading)

Area IDs:

Meadowbank and Whale Tail Reference areas: INUG = Inuggugayualik Lake; PDL = Pipedream Lake.

Meadowbank areas: TPN, TPE, TPS = Third Portage Lake – North, East, South basins; SP = Second Portage Lake; WAL = Wally Lake;

TE, TEFF = Tehek Lake (Mid-field and Far-field).

Whale Tail areas: WTS = Whale Tail Lake South Basin; KAN/MAM = Kangislulik Lake; NEM = Nemo Lake; A20 = Lake A20; A76 = Lake A76; DS1 = Lake DS1.

Baker Lake areas: BAP, BES, BBD, BPJ=Baker Lake – Akilahaarjuk Point, East Shore, Barge Dock, Proposed Jetty.

1. Azimuth collects samples in August, while Agnico handles sampling in remaining months. No sampling in June and October due to unsafe ice conditions.
2. Components: L=Limnology; W=Water chemistry; P=Phytoplankton; B=Benthic invertebrates; S=Sediment grab chemistry.
   Phytoplankton samples collected at Meadowbank lakes in winter months (March and May) are archived as per the *CREMP Plan Update*.
   Limnology – 1 limno depth profile should be collected at key near-field areas during the winter months; water chemistry will also be collected if profiling shows unusual results.
   Water Chemistry – 2 replicate samples from 3 m depth and limno profiles at each area.
   Phytoplankton – 2 replicate samples from 3 m depth; same areas as limno.
   Sediment – 1 composite of grabs for organics (LEPH, HEPH, PAH (low), Mineral Oil and Grease); 5 replicates for grab physical (TOC, grain size, moisture); 10 replicates for core chemistry (metals, TOC, moisture).
   Benthos – 5 replicate samples (2 grab composite/sample); same areas as sediment.
3. Monitoring at MF and FF areas TPE, TE, and TEFF is only required if *moderate* changes are detected upstream at the NF areas consistent with the *CREMP Plan Update* (Azimuth, 2022b).

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APPENDICES

APPENDIX A
MINE ACTIVITIES

LIST OF TABLES

Table A-1. Chronology of major mine development and operational activities at the Meadowbank Complex and Baker Lake, along with corresponding receiving environment findings since 2008. 2

Mine Activity Overview

Annual site activities and corresponding Core Receiving Monitor Environment Program (CREMP) results dating back to 2008 are summarized in **Table A-1**. This overview provides context for interpreting spatial and temporal trends and potential mining-related effects within the Meadowbank Complex and Baker Lake study areas.

Table A-1. Chronology of major mine development and operational activities at the Meadowbank Complex and Baker Lake, along with corresponding receiving environment findings since 2008.

Note: The summary provided here pertains to Meadowbank (since 2008) and Whale Tail (since 2018) study areas.

Year	Major Mine-Related Activities	Receiving Environment Overview
2008	• Major in-water construction activities included the East Dike (located in Second Portage Lake) and the Western Channel Dike (located between Third Portage Lake and Second Portage Lake); the closest CREMP sampling area to these activities was the Second Portage Lake area (SP). • Other site-related activities included rock crushing, road building, pit blasting, ground preparation, and infrastructure construction. • Barge traffic increased in Baker Lake to support construction.	• As described in detail elsewhere (Azimuth, 2009a; 2009b), East Dike construction led to a sedimentation event that extended through Second Portage Lake (SP) to Tehek Lake (TE). The potential impact of construction-related sediment releases to the aquatic environment was the focus of the four-year EAS study (Azimuth, 2009b, 2010d, 2011a, 2012c).
2009	• Dewatering discharges (i.e., impounded Second Portage Lake water with total suspended solids [TSS]) were directed primarily into the north basin of Third Portage Lake (TPN), but also into Second Portage Lake (March to July and Oct to Dec, 2009). • Bay-Goose Dike construction started in late July 2009. • Most of the site preparation and road infrastructure was completed in 2009. • North Portage Pit was the primary focus of blasting and mine operations. • Barge traffic increased in Baker Lake.	• Despite several precautions, storm winds broke the Bay-Goose Dike turbidity barrier containment system, leading to another sedimentation event in late August. • Elevated TSS (and other parameters) was primarily restricted to east basin of Third Portage Lake (TPE) and to a minor extent into SP and TE. The implications of the release were assessed in the EAS study (see above).
2010	• Bay-Goose Dike construction completed using additional mitigation measures. • Mine officially opened on 27 February 2010, marking the start of the operations period. • Pit development focused on North Portage and South Portage pits. • Waste rock to rock storage facility (RSF). Tailings to impoundment area (TIA). Contact water from operations not discharged to receiving environment. • Dewatering of SP impoundment to TPN continued, with discharge now subject to MMER. • Barge traffic increased in Baker Lake.	• Bay-Goose Dike construction led to less-pronounced sedimentation event in TPE and extended through SP to TE; EAS studies continued. • TPN (dewatering) TSS concentrations generally consistent with baseline conditions.
2011	• Mining operations focused on North Portage and South Portage pits. • Waste rock to rock storage facility (RSF). Tailings to impoundment area (TIA). • Construction activities limited to mine footprint. • Dewatering of SP and TPE to TPN continued, with treatment added to reduce fine sediment and turbidity. • Barge traffic stabilized in Baker Lake.	• TPN focus of routine EEM study - no mine-related effects detected (Azimuth, 2012e). • TPN TSS concentrations consistent with baseline. • The TSS EAS targeting dike construction sedimentation events completed.
2012	• SP and TPE dewatering discharges to TPN finished by spring. Diffuser installed and effluent (mix of residual Bay-Goose water, contact water, East Dike seepage and run-off) discharge to TPN commenced; treatment (for fine sediment, turbidity) continued. • North cell non-contact water diversion ditches completed in August (intercepting run-off prior to the tailings and waste rock areas and diverting to NP2 and Dogleg ponds). • Vault access road constructed and site preparation activities for the Vault Pit and Vault Dike commenced. • Barge traffic remains stable in Baker Lake; 200-L diesel spill occurs, but cleaned up successfully.	• TPN TSS concentrations generally consistent with baseline. • Minor mine-related trends identified for several water chemistry parameters at near-field areas: conductivity, sulphate and total dissolved solids. • Spill-related monitoring shows no traces of hydrocarbons in Baker Lake.
2013	• Effluent discharge to TPN continued. • Fishout activity in Vault lake was completed. • Vault lake was dewatered into Wally Lake (ongoing) and did not require TSS treatment. • Minor construction modifications to north cell diversion ditches completed. • Completion of the Airstrip extension (18m) into Third Portage Lake in March. • Seepage from Rock Storage Facility (ST-16) through the road into NP2 identified (additional monitoring in NP2 to evaluate near-shore water quality).	• TPN TSS concentrations consistent with baseline. • Minor mine-related trends identified for several water chemistry parameters at near-field areas: alkalinity, conductivity, calcium and total dissolved solids. • TPE sediment chromium concentrations were elevated above trigger value; better spatial coverage needed to reduce uncertainty in 2014.

Year	Major Mine-Related Activities	Receiving Environment Overview
2014	• Effluent discharge to TPN from the Portage Attenuation Pond occurred only from June 10 to July 5. Discharge to TPN is now complete. The former Portage Attenuation Pond has now become the South Cell for tailings deposition. • EEM Cycle 2 Study Design was conducted at the end of August through the beginning of September (no TPN discharge at this time). • Vault Dewatering into Wally Lake from June 20 to 29 (now complete); discharge from Vault Attenuation Pond into Wally Lake from July 24 to August 14. No TSS treatment for Vault Discharge. • New discharge into Second Portage Lake during all of 2014 (except from May 3 to July 28): two seepage collection points (North and South) are situated on west side of the East Dike to collect seepage through dike from SP. Water is pumped from both collection points, which are connected together before discharging back into Second Portage Lake through a diffuser. No TSS treatment for East Dike Discharge. • No seepage water from Rock Storage Facility (ST-16) reaching the NP2 Lake in 2014. • Commercial mining in Vault Pit started at the beginning of 2014. No major construction or modifications in 2014.	• Minor mine-related trends identified for a number of water chemistry parameters at near-field areas: conductivity, hardness, Ca/Mg/K/Na and total dissolved solids. • Temporal trend in TPE sediment chromium confirmed in coring study; targeted study recommended for 2015.
2015	• No discharge to TPN in 2015. • Vault discharge to Wally from July 7 to September 10. No TSS treatment needed. • East dike (North-South) discharge to SP all year except from June 16 to August 10. Discharge was stopped for increasing TSS levels as no treatment is available for this location. The discharge from East Dike that was not directed to 2PL was discharged in the Portage Pit and then pumped to the South Cell TSF (Tailings Storage Facility). • No seepage water from Rock Storage Facility to NP-2. Monitoring ongoing. • Habitat Compensation Monitoring Program (HCMP) work completed for TP, SP and Dogleg lakes and at water crossing R02 along the all weather access road (AWAR). • One incident of elevated TSS from Vault road culverts to NP-1, early June, during freshet. Barriers installed. No impacts observed to Dogleg Lake.	• Minor mine-related trends identified for a number of water chemistry parameters at near-field areas: conductivity, hardness, Ca/Mg/K/Na and total dissolved solids. Parameters with effects-based thresholds (e.g., CCME water quality criteria) were below their respective trigger values in 2016. • Targeted sediment bioavailability and toxicity testing was completed at TPE. Toxicity test results on *Chironomus dilutus* and *Hyalella azteca*, combined with sequential extraction tests on the sediment, indicated current chromium concentrations at TPE are unlike to adversely affect the benthic invertebrate community. Continued monitoring was recommended for 2016, but addition target studies were not recommended for 2016. • Phytoplankton and benthic invertebrate community results for the impact areas were within the range of reference/baseline conditions.
2016	• Vault discharge to Wally from June to September. No TSS treatment needed. • East dike (North-South) discharge to SP all year. • No seepage water from Rock Storage Facility to NP-2. Monitoring ongoing. • Phaser lake dewatering - August 26 to September 10 and September 15 to October 4. • Phaser Lake fishout from August 13 to 31 and September 10 to 25. • No Goose Pit reflooding activities. • Pit E and pushback assessment. • Mining focused on Vault Pit and Pit A. • Amaruq exploration road construction (km 25 at end of 2016).	• Minor mine-related trends identified for a number of water chemistry parameters at near-field areas: conductivity, hardness, Ca/Mg/K/Na and total dissolved solids. • Similar trend of elevated chromium in sediment grab samples from TPE, but the concentrations appear stable relative to those measured in 2015. • Phytoplankton and benthic invertebrate community results for the impact areas were within the range of reference/baseline conditions.
2017	• Vault discharge to Wally from June to October. No TSS treatment needed. • East dike (North-South) discharge to SP all year except from May 12 to September 5. Discharge was also stopped from September 23 to October 29. Discharge was stopped for increasing TSS levels as no treatment is available for this location. The discharge from East Dike that was not directed to SP was discharged in the Portage Pit and then pumped to the South Cell TSF (Tailings Storage Facility). • No seepage water from Rock Storage Facility to NP-2. Monitoring ongoing. • No Goose Pit reflooding activities. • Mining focused on Vault Pit and Pit A, Pit E, and Phaser Pit. • Amaruq exploration road completed. • Phaser Pit started in November. • HCMP work completed for TP, SP and Dogleg lakes and at water crossing R02 along the AWAR. • One incident of elevated TSS from Vault road to NP-1, early June, during freshet. Barriers installed. No impacts observed to Dogleg Lake.	• Minor mine-related trends identified for a number of water chemistry parameters at near-field areas: conductivity, hardness, Ca/Mg/K/Na and total dissolved solids. Parameters with effects-based thresholds (e.g., CCME water quality criteria) were below their respective trigger values in 2017. • Phytoplankton and benthic invertebrate community results for the impact areas were within the range of reference/baseline conditions. • Core chemistry was analyzed for all study areas in 2017. Chromium in TPE and Arsenic in WAL were flagged for follow-up assessment in 2018 based on BACI results.

Year	Major Mine-Related Activities	Receiving Environment Overview
2018	*Meadowbank* • East dike (North-South) discharge to SP all year except from June 4 to August 21. Discharge was stopped for increasing TSS levels as no treatment is available for this location. The discharge from East Dike that was not directed to SP was discharged in the Portage Pit and then pumped to the South Cell TSF (Tailings Storage Facility). • No seepage water from Rock Storage Facility to NP-2; monitoring ongoing. • No Goose Pit reflooding activities. • Mining focused on Vault Pit and Pit A, Pit E and Phaser Pit. • No discharge to Wally in 2018.	• Minor mine-related trends identified for a number of water chemistry parameters at near-field areas: conductivity, hardness, Ca/Mg/K/Na and total dissolved solids. Parameters with effects-based thresholds (e.g., CCME water quality criteria) were below their respective trigger values in 2018. • Phytoplankton and benthic invertebrate community results for the impact areas were within the range of reference/baseline conditions. • Core chemistry was collected for TPE and WAL to follow-up on 2017 results. The 2018 results showed an overall improvement though concentrations for Chromium in TPE and Arsenic in WAL remain slightly above background concentrations.
	Whale Tail • Whale Tail Dike Construction began on July 27. • Whale Tail Pit commencement of Quarry 2 began in September. • Freshwater intake from Nemo Lake started on October 28. • Whale Tail North fishout August 13 - September 28. • Newterra Wastewater treatment system at AMQ operational in March. • Crusher activities started on the waste rock storage facility (WRSF) on October 21. • Quarry 2 overburden stripping. • Snow removal in preparation of dike construction near Kangislulik Lake (WRSF dike and Kangislulik Dike).	• 2018 was a transition year for the Whale Tail Mine study area. Only WTS was considered *impact* from August onwards and impacts to water quality, sediments, and biota were not found for 2018.
2019	*Meadowbank* • East dike (North-South) discharge to SP was stopped on March 30. Restarted on November 13. • No seepage water from Rock Storage Facility to NP-2; monitoring ongoing. • Goose Pit water transfer from South Cell to Goose started on June 11. • In-pit disposal started at Bay-Goose in July. • End of mine production at Phaser Pit, BB Phaser Pit, Vault (Q1), and Pit E (Q4). • No discharge to Wally in 2019. • Addition of tank infrastructure at Baker Lake (1 tank, containment for 2).	• Study focused on monitoring changes in the near field study areas in TPE, SP and WAL. • Targeted bioavailability studies conducted at TPE. • Limnology results were consistent with previous years. • Minor mine-related trends identified for a number of water chemistry parameters at near-field areas: conductivity, hardness, Ca/Mg/K/Na, total silicon and total dissolved solids. • Phytoplankton community results for the impact areas showed an increase in biomass and taxa richness in 2019 compared to 2018. • Benthic invertebrate community results for the impact areas were within the range of reference/baseline conditions. • Core chemistry was collected for TPE to follow-up on 2018 results. Results were comparable to 2018 with concentrations of chromium in TPE still slightly above background concentrations. In 2019, concentrations of zinc in one core sample exceeded the trigger and threshold values.
	Whale Tail • Mining from the Whale Tail Pit (WTP) began in 2019. • Dewatering/Diversion pumping into Whale Tail Lake South Basin (WTS) started April 1 and is ongoing. • Dewatering of Whale Tail Lake North Basin (WTN) to WTS occurred from April 1 to April 9, May 3 to May 17 and again from May 24 to May 29. • Dewatering/Diversion pumping into Kangislulik Lake (KAN) started June 22 and ended November 18. • Higher than expected precipitation in June and July required additional water management. • NE Dike impoundment pumped to AP5 and through to Nemo watershed June 21 to September 27. • Dewatering of WTN to KAN occurred from June 22 to June 30 and August 1 to October 26. • Water transfer from Quarry 1 pond to KAN occurred August 26 to October 23. • Water seep from WTS through dike pumped back into WTS from October 4 to November 2, and November 7 to 16. • Dewatering of WTN to WTS through WTP November 7 was ongoing. • Whale Tail Dike Grouting project started on November 14 was ongoing. • Pumping from WTS to KAN occurred October 24 to December 9. • Lake A45 dewatering to the tundra near KAN shoreline occurred from November 25 to November 27. • Construction in the South Whale Tail Channel (SWTC) between A20 and KAN began around December 1.	• 2019 was a transition year for the Whale Tail study area when most lakes switched designation from *control* to *impact*. • Minor mine-related trends identified for 16 water chemistry parameters at WTS. • Phytoplankton community results for WTS and KAN showed an increase in biomass in 2019 compared to 2018. • Benthic invertebrate community results for the impact areas were within the range of baseline conditions. • Sediment chemistry results for 2019 were generally consistent with previous years and showed no indications of construction-related changes.

Year	Major Mine-Related Activities	Receiving Environment Overview
2020	*Meadowbank* • East Dike seepage discharge to SP was stopped on June 5 and restarted on October 23. • No seepage water from Portage RSF to NP2; monitoring ongoing. • Tailings discharge to Goose Pit up to July 2020 and the in-pit deposition started at Pit E started in August. • Reclaim water set up in Pit A completed in October. • No discharge to Wally in 2020.	• Study focused on monitoring changes in the near field study areas in TPN, TPE, SP and WAL. • Limnology results were consistent with previous years. • Minor mine-related trends identified for a number of water chemistry parameters at near-field areas: conductivity, hardness, Ca/Mg, TDS, and alkalinity. Other minor trends were identified for reactive silica, total & dissolved silicon, and dissolved zinc which were not mine-related. • Phytoplankton community results for the impact areas showed a slight decrease in biomass and an increase in taxa richness in 2020 compared to 2019. • The sediment coring program focused on NF and reference areas only. The mean sediment concentrations exceeded the trigger for arsenic at WAL, for chromium at TPE, and for zinc at SP and TPE. Concentrations were similar or less than those in 2019. • Benthic invertebrate community data for impact areas were within the range of reference/baseline conditions.
	Whale Tail • South Whale Tail Channel (SWTC) Construction between Lake A20 and Kangislulik Lake is completed. • Whale Tail Dike Remedial Grouting Project January 11 to March 25. • WRSF Dike Mitigation Work from April 8 to April 28. • NE Dike dismantling occurred in September. • IVR Diversion construction. • Temporary diffuser installation in WTS occurred in October. • Fishout occurred from August 1 to September 8. • Dewatering of fishout lakes and installation of dewatering line from July to September. • Construction of IVR Ring Road and IVR Waste Dump occurred in September. • Mining from IVR Pit began September 20. • IVR Attenuation Pond jetty occurred in October. • Dewatering completed and WTN became attenuation pond on May 20. • Water transfer from WTN to WTS from January 1 to January 26, February 11 to February 23, February 29 to March 8, March 15 to March 22, March 30 to April 3, April 15 to April 20, April 25 to April 30, and May 7 to May 15. • Water transfer from Quarry 1 to KAN occurred from April 13 to April 15 and April 25 to April 29. • Water transfer from attenuation pond to KAN occurred from May 20 to May 28, June 14 to July 5, July 7 to July 22, July 25 to August 5, August 7 to September 20, September 15 to October 7. • Water transfer from attenuation pond to WTS occurred from May 28 to June 16 and October 12 to November 1, November 6 to December 2, December 5 to December 14, December 27 to December 31.	• All Whale Tail study area lakes designated as *impact* in 2020. • Minor mine-related trends identified for about 18 water chemistry parameters at WTS and KAN, about 10 parameters at NEM, and 2-7 parameters at the MF/FF areas. • Phytoplankton community results for WTS and KAN showed a decrease in biomass and total species in 2020 compared to 2019. • Sediment chemistry results showed exceedances of As, Cr, and Cu in 2020; however, it is uncertain whether these changes are related to mining activities. • Benthic invertebrate community results for the impact areas were within the range of baseline conditions.
2021	*Meadowbank* • East Dike seepage discharge to SPL (MMER-3) stopped on May 6 and restarted on December 9. • No seepage water from Portage RSF to NP2; monitoring ongoing. • Tailings discharge to Pit E all year long, with a hiatus in July and August when tailings were discharged in the North Cell. • Reclaim water from Pit A all year. • Reclaim water from Pit E ongoing November to December. • Aerial application of dust suppression on the Tailings Storage Facility in August. • No discharge to Wally Lake or Third Portage Lake in 2021.	• Overall, results from NF areas were consistent with the previous 5 years demonstrating stabilization since mine activities ceased. • Minor water chemistry trigger exceedances identified for physical/ionic parameters (conductivity, hardness, TDS, alkalinity Ca/Mg/K) at NF areas TPN, TPE, SP, and WAL. Minor trigger exceedances for Si and reactive silica at SP and WAL respectively. • Long-term trend analysis on physical/ionic parameters supported the hypothesis that concentrations had increased during mine activity (2009-2013) and have now stabilized since 2014. • Phytoplankton community results for the impact areas showed a slight increase in biomass and taxa richness in 2021 compared to 2020. • Only sediment grabs were collected in 2021. A laboratory error resulted in a subset of the grab samples that were collected in 2021 to be discarded prior to analysis. Sediment chemistry results for samples that were analyzed showed no mining related temporal and spatial patterns. Sediment concentrations for a few replicates at TPE and SP exceeded the trigger for Cr (TPE only) and Zn. Concentrations were similar to 2020. • Benthic invertebrate community data for impact areas were within the range of reference/baseline conditions.
	Whale Tail • First year of operation - IVR diversion ditch.	• Greatest magnitude of exceedances at NF area KAN where physical/ionic parameters (conductivity, hardness, TDS, alkalinity Ca/Mg/K), anions/nutrients (TKN, reactive silica), metals (Li and Si), and TOC/DOC exceeded triggers.

Year	Major Mine-Related Activities	Receiving Environment Overview
2021	• Construction of IVR Dike D1. • Commissioning of IVR attenuation pond. • Excavation IVR West Pit began October 22. • Start of IVR WRSF. • Discharge to WTS through MDMER-5 occurred between March 1 and June 8. • Discharge to WTS through MDMER-11 occurred between January 1 to February 13, June 6 to June 17 and October 2 to November 23. • Discharge to KAN through MDMER-7 occurred between June 9 and September 28. • Discharge to KAN through MDMER-8 occurred between June 18 and August 26.	• Increasing mine influence on MF areas A76 (down gradient of KAN) and A20 (inundated in summer 2019 and now connected to NF area WTS) where physical/ionic and TOC/DOC trigger exceedances occurred, in addition to a threshold exceedance for P. • Phytoplankton community results for KAN, A76, and A20 showed an increase in biomass in 2021 compared to 2020. Taxa richness was similar to 2020. • A laboratory oversight upon sample receipt resulted in a subset of the grab samples that were collected in 2021 to be discarded prior to analysis. Sediment chemistry results for samples that were analyzed showed trigger exceedances in individual replicates for As, Cr, Cu, and Zn in 2021. Formal statistical assessment is planned for the next coring event in 2023. • Benthic invertebrate community results for the impact areas were within the range of baseline conditions.
2022	*Meadowbank* • Construction of additional 3.3ML fuel tank, completed in January 2023. • All Weather Access Road bridge repair/ maintenance ongoing (at KM 62 and 69). • East Dike seepage discharge to SPL (MMER-3) occurred from January 1 to January 25, from April 7 to April 30, and from November 20 until the end of the year. • Reclaim water from Pit A from January 1 to mid-April. • Reclaim water from Pit E from mid-April until the end of 2022. • Aerial application of dust suppression on the Tailings Storage Facility in August. • Tailings discharge to Pit E all year long. • No discharge to Wally or Third Portage Lake in 2022.	• Overall, results from NF areas were consistent with the previous six years demonstrating stabilization since mine activities ceased. • Minor water chemistry trigger exceedances were identified for physical/ionic parameters (conductivity, alkalinity, hardness, TDS, Ca/Mg/K) at one or more NF areas TPN, TPE, SP, and WAL. Minor trigger exceedances identified for reactive silica at WAL and total and dissolved silicon at SP. • Phytoplankton community results for the impact areas in 2022 showed that total biomass was higher than reference/baseline conditions, though results were not statistically significant. Only slight changes reported for taxa richness compared to baseline/reference. • Sediment grabs were collected in 2022 and analyzed for grain size, and TOC. Remaining sediment was archived for chemistry analysis. The next sediment coring program to review trends in chemistry is planned for August 2023. • Benthic invertebrate community data for impact areas were within the range of reference/baseline conditions except for taxa richness at SP in the 2019-2022 time period which showed an apparent increase relative to reference/baseline conditions.
	Whale Tail • Commercial production from the underground mine began in 2022. • Landfarm construction completed on September 30. • Discharge to WTS through MDMER-11: sporadic in January, February and April, from May 22 to June 16, and from October 3 to October 29. • Discharge to KAN through MDMER-8 occurred between June 16 and September 20. • Construction of a thermal berm at the West abutment of Whale Tail Dike (upstream) from September 24 to September 30.	• Greatest magnitude of exceedances occurred at MF area A20 where physical/ionic parameters (conductivity, hardness, TDS, alkalinity, Ca/Mg/K/Na), anions/nutrients (TKN, total phosphorus), and TOC/DOC exceeded triggers. Only metals that exceeded the trigger in 2022 were lithium at NF area KAN and titanium at WTS. Total phosphorus, a parameter with an effects-based threshold exceeded the trigger at WTS, KAN, and A20. • Mine influence increased at MF areas A76 (downgradient of KAN) and A20 (inundated in summer 2019 and now connected to NF area WTS). • Phytoplankton community results for WTS, KAN, A20, and A76 showed an increase in biomass in 2022 compared to reference/baseline, but results were not significant. Taxa richness was similar to 2021. • Sediment chemistry results for samples that were analyzed showed trigger exceedances in individual replicates for As, Cu, Cd, and Zn in 2022. Formal statistical assessment is planned for the next coring event in 2023. • Benthic invertebrate abundance and taxa richness increased at KAN and NEM compared to baseline/reference. Taxa richness also increased compared to baseline/reference at A20, however only in some of the time periods assessed.
2023	*Meadowbank* • All Weather Access Road bridge repair from March 31 to April 11 at KM 8 and bridge repair at KM 69 ongoing. • Tailings discharge to Pit E all year except in August and September when it was discharged to South Cell. • Pit A discharge to Goose Pit from September 22 to October 6 and from October 15 to November 7. • East Dike seepage discharge to SPL (MMER-3) from January 1 to April 29. • Reclaim water from Pit E from January to mid-June and from mid-September to December. • Reclaim water from Pit A from mid-June to mid-September. • Resurfacing Airstrip from July 7 to 14. • Resurfacing SD1/SD2, East Dike, and Goose Dike in 2023. • Ditch capping at RF1 and RF2. • No seepage water from Portage RSF to NP2; monitoring ongoing. • No discharge to Wally Lake in 2023.	• Overall, results from NF areas were consistent with the previous seven years demonstrating stabilization since mine activities ceased. • Minor water chemistry trigger exceedances were identified for physical/ionic parameters (conductivity, alkalinity, hardness, TDS, Ca/Mg) at one or more NF areas TPN, TPE, SP, and WAL. Minor trigger exceedance for TKN at TPE and for total and dissolved silicon at SP. Minor trigger exceedances identified for reactive silica and total silicon at WAL. • Phytoplankton community results for the impact areas showed that total biomass was higher than reference/baseline conditions, though results were not statistically significant. Only slight changes reported for taxa richness compared to baseline/reference. Small reduction at TPE was found to be statistically significant though taxa richness still within range of baseline/reference. • The sediment coring program focused on NF and reference areas only. The mean sediment concentrations exceeded the trigger for chromium at TPE. Concentrations were less than those in 2020.

Year	Major Mine-Related Activities	Receiving Environment Overview
2023		• Benthic invertebrate community data for impact areas were within the range of reference/baseline conditions except for taxa richness at SP in the 2020-2023 time period which showed an apparent increase relative to reference/baseline conditions.
	Whale Tail • Effluent water sent to IVR-1 Pit from October to December. • Landfarm became operational in 2023. • Discharge to WTS through MDMER-11: sporadic from January 8 to 15, February 20 to 27, March 19 to 24, April 10 to 15, April 24, April 26 to 29, May 10 to 22, September 18 and19, and October 8 to 11. • Discharge to Kangislulik Lake MDMER-8 occurred from June 4 to July 7, July 16 to 18, July 21 to 22, August 6 to 18 and September 3 to 14. • Discharge to Kangislulik Lake MDMER-7 occurred from June 11 to 28. • Whale Tail Dike Thermal Berm construction upstream occurred from April 12 to 17.	• Greatest magnitude of exceedances occurred at MF area A20 where physical/ionic parameters (conductivity, hardness, TDS, alkalinity, Ca/Mg/K/Na), anions/nutrients (TKN, total phosphorus), and TOC/DOC exceeded triggers. Only metals that exceeded the trigger in 2023 were lithium at NF areas KAN and WTS and dissolved silicon at FF area DS1. • Mine influence increased at MF areas A76 (downgradient of KAN) and A20 (inundated in summer 2019 and now connected to NF area WTS). • Phytoplankton community results for WTS, KAN, A20, and NEM showed an increase in biomass in 2023 compared to reference/baseline with statistically significant results at WTS and A20. Taxa richness showed slight decreases at all areas in 2023. • Sediment chemistry results showed exceedances of As and Cr at WTS, KAN, and A20 in 2023. Copper exceeded the trigger slightly at A20 in 2023. • Benthic invertebrate abundance increased at KAN and NEM compared to baseline/reference in all time periods assessed. Benthos abundance increased at WTS in the 2022-2023 time period. Taxa richness also increased compared to baseline/reference at KAN, A20, and NEM in most time periods assessed. Taxa richness increased at DS1 compared to baseline/reference in the 2022-2023 time period.
2024	*Meadowbank* • In-pit tailings deposition and reclaim from Portage Pits. • East dike seepage discharge to Second Portage Lake. • Progressive closure work on TSF. • Bay Goose Pit *in-situ* treatment/aeration. • Seepage observed on west side of assay lab road on May 20. • Turbid water runoff release from the Marshalling Facilities into Baker Lake on June 6 and September 8. • On September 20, during a routine freshet inspection of the Diversion Ditches, a turbid plume of water was observed at the exit of the diversion ditch where it meets the shores of Third Portage Lake and NP2 Lake. • No discharge to Wally Lake in 2024. • Some AWAR bridge repairs and maintenance. • Chesterfield Inlet to Baker Lake barge trips included 28 for general cargo and 28 for fuel.	• Overall, results from NF areas were consistent with the previous eight years demonstrating stabilization since mine activities ceased. • Minor water chemistry trigger exceedances were identified for physical/ionic parameters (conductivity, alkalinity, hardness, TDS, Ca/Mg) at one or more NF areas TPN, TPE, SP, and WAL. Minor trigger exceedance for total silicon at SP. Minor trigger exceedances identified for reactive silica and total silicon at WAL. • Phytoplankton community results for the impact areas showed that total biomass decreased compared to previous years, and was statistically significant at WAL compared to reference/baseline. Similarly, there were small but significant decreases in taxa richness at NF areas compared to baseline/reference. • Sediment grabs were collected in 2024 and analyzed for grain size and TOC. Remaining sediment was archived for chemistry analysis. The next sediment coring program to review trends in chemistry is planned for August 2026. • Benthic invertebrate community data for impact areas were within the range of reference/baseline conditions except for taxa richness at SP in the 2021-2024 time period which showed an apparent increase relative to reference/baseline conditions.
	Whale Tail • Discharge from IVR attenuation pond to Kangislulik Lake and Whale Tail Lake – South Basin. • Some Whale Tail Haul Road (WTHR) bridge repairs and maintenance. • Whale Tail Dike thermal capping. • Discharge to Kangislulik Lake from July 1 to 16 and from August 1 to September 30. • Discharge to WTS between April 14 to June 29 and intermittently from October 1 to November 16.	• Several parameters showed increased concentrations at NF and MF Whale Tail area lakes relative to baseline/reference conditions: major ions (TDS, Ca, Mg, K, Na, HCO_3 [alkalinity]), hardness, conductivity, nutrients (TKN, total phosphorus, TOC, and dissolved organic carbon [DOC]). Only metals that exceeded the trigger in 2024 were lithium at NF areas KAN and WTS and dissolved silicon at FF area DS1. • Increasing mine influence on MF areas A76 (downgradient of KAN) and A20 (inundated in summer 2019 and now connected to NF area WTS). • Phytoplankton community results showed no significant changes in biomass relative to baseline conditions at the Whale Tail area lakes. Taxa richness showed slight decreases at all areas in 2024, with significant decreases at WTS, KAN, A76, and NEM. • Results from a targeted coring program in WTS showed that chromium sediment concentrations are spatially heterogeneous and the apparent increase in sediment concentrations relative to baseline conditions is most likely explained by natural spatial heterogeneity. • Benthic invertebrate abundance and taxa richness increased at all Whale Tail area lakes compared to baseline/reference. Significant increases in benthic invertebrate taxa richness were observed at WTS in two time periods (2022-24 and 2023-24), at KAN and NEM in all time periods, and at A20 in two time periods (2021-24 and 2022-24) compared to baseline/reference.

Year	Major Mine-Related Activities	Receiving Environment Overview
2025	*Meadowbank* • In-pit tailings deposition and reclaim from Portage Pits. • East dike seepage discharge to Second Portage Lake from January 1 through March 4, and from March 23 through April 30. • Progressive closure work on TSF. • Construction of water management infrastructure in the former Quarry 23. • Bay Goose Pit *in-situ* treatment/aeration. • Vault attenuation pond discharge to Wally Lake on September 1 and 2 and then September 21 through November 10. • Chesterfield Inlet to Baker Lake barge trips included 39 for general cargo and 27 for fuel.	• Overall, results from NF areas were consistent with the previous nine years demonstrating stabilization since mine activities ceased. • Minor water chemistry trigger exceedances were identified for physical/ionic parameters (conductivity, alkalinity, hardness, TDS, Ca/Mg/K/Na) at one or more NF areas TPN, TPE, SP, and WAL. Minor trigger exceedance for total silicon at SP, WAL, INUG, and PDL. Minor trigger exceedances identified for reactive silica at WAL, and for DOC and TOC at INUG. The mean fluoride concentration slightly exceeded the trigger for the first time at TPE and SP. • Phytoplankton community results for the impact areas showed that there were apparent decreases in phytoplankton biomass observed at NF areas SP and WAL relative to reference area INUG; however, results were not statistically significant. Similarly, small reductions were observed in taxa richness at all NF areas, with a statistically significant decrease at WAL. • Sediment grabs were collected in 2025 and analyzed for grain size and TOC. The next sediment coring program to review trends in chemistry is planned for August 2026. • Benthic invertebrate community data for impact areas were within the range of reference/baseline conditions.
	Whale Tail • Discharge from attenuation pond to KAN and WTS. • Some WTHR bridge repairs and maintenance. • Discharge to KAN from July 6 through September 27. • Discharge to WTS between from April 13 through June 28, from October 6 through December 13, and from December 28 through December 30.	• For major ions and conventional parameters, TDS and constituent ions such as calcium, magnesium, potassium, and sodium were elevated relative to baseline/reference conditions in all Whale Tail area lakes, with more pronounced increases at NF lakes KAN and WTS and MF lake A20. Increases were less pronounced at NEM and downstream areas Lake A76 and Lake DS1. A similar pattern was observed for conventional parameters such as conductivity, hardness, and alkalinity (total and bicarbonate). • For nutrients, TKN and TOC were elevated at all areas except NEM. DOC was elevated at WTS, KAN, A20, and DS1. • The only metals that exceeded the trigger in 2025 were total and dissolved lithium at WTS and KAN, total and dissolved silicon at DS1, and total titanium at WTS. • Total phosphorus and arsenic at WTS and KAN were within the normal operating ranges and Level 0 water management strategy is in effect in 2026 as per the *Adaptive Management Plan*. • Phytoplankton community results showed that the mean total biomass during the open-water season was the highest since monitoring began at NEM and the second highest at KAN and A76. However, the BACI analysis showed no significant changes in biomass relative to baseline/reference conditions at any of the Whale Tail area lakes. Taxa richness was within the historical range at each area, with no significant decreases identified. • Sediment grabs were collected in 2025 and analyzed for grain size and TOC. The next sediment coring program to review trends in chemistry is planned for August 2026. Total organic carbon proportions varied across the Whale Tail study area lakes, with KAN consistently exhibiting the highest proportions and DS1 the lowest. • Benthic invertebrate abundance and taxa richness at all Whale Tail area lakes except DS1 were higher compared to baseline/reference. Significant increases in benthic invertebrate total biomass were observed at WTS in three time periods (2022-25, 2023-25, 2024-25), at KAN and NEM in all time periods, and at A20 in one time period (2022-25) compared to baseline/reference. • Similar to abundance, significant increases in benthic invertebrate taxa richness were observed at WTS in two time periods (2022-25 and 2023-25), at KAN and NEM in all time periods, and at A20 in two time periods (2022-25 and 2023-25) compared to baseline/reference.

APPENDIX B
QUALITY ASSURANCE / QUALITY CONTROL ASSESSMENT

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B.1 INTRODUCTION

B.1.1 Quality Assurance / Quality Control

The objective of quality assurance and quality control (QA/QC) is to ensure that the chemical and biological data are representative of the material or populations being sampled, are of known quality, have sufficient laboratory precision to be highly repeatable, are properly documented, and are scientifically defensible. Data quality was maintained throughout sample collection and analysis by following standardized procedures, using laboratories that are certified for all applicable methods, and employing experienced technicians.

Quality assurance and quality control practices are briefly described here.

- *Quality Assurance* (QA) are the practices used to collect scientifically defensible samples meeting pre-defined data quality objectives (DQOs). For example, employing experienced field staff, standard operating procedures (SOPs), field data sheets, and certified laboratories.
- *Quality Control* (QC) are measures taken to verify that the specific DQOs are met.
- The QA/QC program is completed by technicians at Meadowbank and Whale Tail to ensure consistency and help identify site-specific issues as they arise. The QA/QC program is completed at each area to refine the sample procedures and QA/QC protocols and ensure consistency between Meadowbank and Whale Tail Environment teams. An overview of the QA/QC program for each component is provided below; refer to the *CREMP 2022 Plan Update* (Azimuth, 2022) for a complete description.

The QA/QC results presented below for the 2025 CREMP program are summarized in **Section 3** of the main report.

Sample Integrity

The first step in the QC program involved documenting any issues with the sample submission. This step applies to all sampling components (e.g., water chemistry, sediment chemistry, phytoplankton, benthic invertebrates). ALS Environmental was the analytical laboratory used for water and sediment chemistry and who reported concerns surrounding sample submission as “Sample Integrity” issues in the Sample receipt confirmation (SRC) email after the samples were received. Plankton-R-Us Inc. (phytoplankton) and Zaranko Environmental Assessment Services (ZEAS; benthic invertebrates) also reported sample integrity concerns via email.

For ALS reports, sample integrity issues were typically recorded for one of three reasons: (1) samples were damaged during transport, (2) the temperature inside the cooler was above 10°C when received

by the laboratory, or (3) the recommended hold time was exceeded before analysis. Sample integrity issues do not necessarily mean the data were unreliable; rather, they help us make an informed decision on whether the results warrant closer scrutiny before being included in the report.

Data Quality Objectives - Duplicates

Quality control results of the laboratory and field duplicates were assessed by measuring the relative percent difference (RPD) as a percentage between original and duplicate measurements. The RPD serves as a measure of precision by the laboratory and the magnitude of variability between original and field duplicate samples, respectively. The variability in field duplicates may be attributed to sampling procedures but may also be attributed to natural conditions (i.e., spatial heterogeneity in the sampling media). The equation used to calculate the RPD is:

$$RPD = \frac{(A - B)}{(\frac{A + B}{2})} \times 100$$

where: A = analytical result; B = duplicate result.

Laboratory duplicate DQOs were parameter-specific and depended on the concentration in the sample. Laboratory duplicates were completed for water chemistry, sediment chemistry, phytoplankton, and benthic invertebrates. Field duplicate samples were collected for water and sediment chemistry, and phytoplankton. DQOs for the duplicate samples are discussed below.

The DQOs for field duplicates are equal to 1.5 times the laboratory RPDs. The laboratory RPDs for water and sediment chemistry for most parameters is 20% and the DQOs for field duplicate samples were ±30%. For parameters without a laboratory RPD DQO (e.g., for chlorophyll-a where the laboratory does not run duplicates), the field duplicate DQO was set to ±40% by default. Field DQOs were adjusted above laboratory RPD levels to reflect that field duplicates are inherently more variable compared to laboratory duplicates. This is partly because field duplicate samples are collected from a large sample volume (i.e., the lake or stream) as opposed to a small, well mixed sample volume (i.e., the single sample container in the laboratory). The use of a 1.5 times multiplier for field duplicates is based on guidance from the Canadian Council of Ministers of the Environment (CCME) that states that acceptance limits for field-based QC are broader than laboratory QC and are typically 1.5 to 2 times the laboratory QC limits (CCME, 2016).

Uncertainty in measured concentrations increases as values approach the detection limit, and the acceptance criteria are relaxed for parameters measured at concentrations greater than 5-times the DL. For parameters with concentrations measured at less than 5-times the DL, the DQO is an absolute difference between duplicates less than 3-times the DL (referred to in the tables as DIFF).

The RPD and DIFF values may be either positive or negative and ideally should provide a mix of the two, clustered around zero. RPDs and DIFF values are not calculated when one of the samples (i.e., either A or B above) is below detection and the other is not. If an RPD or DIFF value falls outside the field duplicate DQO, it is flagged for review. The importance of reduced precision becomes more important when concentrations are near regulatory guidelines (CCME, 2016). Laboratory precision is reduced close to the DLs as smaller concentrations of parameters per volume tends to magnify variability between the original sample and the duplicate. These occurrences were still flagged, however, given the inherent analytical effects on precision, they were not weighted as heavily unless unusual RPD patterns were observed (e.g., relatively high percentage of RPD values not meeting DQOs or very high RPD values). Parameter concentrations that were greater than 10X DL and did not meet the DQOs were given more weight in the QA/QC assessment.

Phytoplankton DQOs did not change in 2025. The laboratory did not calculate RPD values though they did run duplicate samples. The DQOs for phytoplankton laboratory duplicates were less than ±25% RPD and for field duplicates were less than ±50% RPD.

There were no benthic invertebrate field duplicates and RPDs were not calculated for laboratory duplicates. For laboratory duplicates, ZEAS calculated the re-sort and re-count percent recovery (the difference between the original sorting and a second sorting from the same sample) with DQOs of 90% or better.

B.1.2 Overview

QA/QC procedures consisted of careful field collection and sample handling, collecting field duplicate samples and analyzing laboratory replicates and standard reference materials. A discussion of sample shipping and handling procedures is provided upfront, followed by a discussion of the results pertaining to the various components of the CREMP.

Sample Shipping and Handling

Sample shipping and handling concerns documented in previous CREMP reports have largely been rectified in recent years. The Meadowbank and Whale Tail Environment departments plan water sampling events to minimize the amount of time that samples are in transit between Site, Val d'Or, and ALS in Burnaby. The remote location of the mine will always present challenges with some parameters meeting recommended hold times but the effect of slightly exceeding hold times on the quality of the results is considered negligible. Correspondence with the laboratory regarding hold time exceedances has not led to establishing definitive benchmarks for data quality. ALS recommends using *professional judgement* when interpreting chemistry data for parameters that exceeded hold times for analysis.

In 2025, there were a few discrepancies between samples submitted and the chain of custodies (CoCs) but most were rectified without impacting the analytical results. The sample integrity observations (e.g., broken sample containers, mislabeled containers), the temperature in shipping coolers upon arrival to the laboratory, and parameters that exceeded their recommended hold times for analysis are summarized in **Table B-1**.

The target temperature for samples arriving at ALS is between 5°C and 10°C. The temperatures reported in 2025 ranged from a low of 1°C in March to a high of 24.8°C in July. Temperatures in the coolers for the winter events (March and May) were within the range of previous years. Temperatures in the coolers for the open-water events (July, August and September) were similar to past years and reflect the ambient temperatures. The effect on preserved samples is considered negligible, but for chlorophyll-a samples, the increase in temperature means samples may have arrived thawed. Keeping the chlorophyll-a samples frozen is a recurring challenge for this program given the logistics of shipping samples from Nunavut to Vancouver in a timely fashion.

There were several incidents of CoC discrepancies – mislabeled samples or samples either submitted and not included on the CoC or included on the CoC but not submitted. CoC discrepancies were identified and forwarded to CREMP project managers immediately after the laboratory received the samples. As such, these types of errors were often rectified shortly after ALS received the samples. The discrepancies are listed in **Table B-1**.

Recommended hold times were provided by the laboratory for water quality parameters. The hold times varied from a low of 0.25 hours for pH to six months for metals. Hold times for water samples were routinely exceeded for turbidity, laboratory pH, ammonia, total Kjeldahl nitrogen (TKN), nitrate, nitrite, total dissolved solids (TDS), total suspended solids (TSS), total and dissolved organic carbon, dissolved orthophosphate (as P), and cyanides (free and total). Very occasionally hold times were exceeded for total mercury and chlorophyll-a. Hold times for sediments were exceeded for polycyclic aromatic hydrocarbons (PAHs) and petroleum hydrocarbons (PHCs). Samples were generally shipped very soon after collection and the distances and logistics make it impossible to meet short hold times. However, it is highly unlikely that results were affected for those parameters where hold times were not met in 2025.

B.2 WATER CHEMISTRY

B.2.1 Methods

B.2.1.1 Field

The standard field QA procedures required flushing the flexible tubing and pump to prevent cross-contamination between areas. Field QC procedures included collecting and analyzing field duplicates, and three types of *blank* samples: travel blanks, de-ionized water (DI) blanks, and equipment blanks.

- **Travel blank (TB)**. Detects contamination from transport and handling. A sealed bottle of certified DI water from ALS is returned to the lab unopened.
- **De-ionized (DI) water blank**. DI blanks, also known as field blanks, assess contamination from field handling and environmental exposure. DI water provided by ALS is poured into a sample bottle at the field site, mimicking sample collection.
- **Equipment blank (EB)**. Equipment blanks assess contamination from sampling equipment (i.e., pump and tubing). DI water provided by ALS is circulated through the pump and tubing and collected in a sample bottle. Filtered parameters are processed using the syringes and filters provided by the laboratory.

Collecting blank samples requires careful planning, attention to detail, and focus on the importance of cleanliness. Collecting blank samples also provides an opportunity to assess the effectiveness of QA procedures.

Results from the equipment and travel blanks were examined for detectable concentrations of any measured parameters. If a parameter was detected in both the DI water blank and the equipment blank, and the concentration in the equipment blank was equal to or lower than that in the DI blank, the results were considered unreliable for assessing potential cross-contamination within the same sampling event.

Sample results were then compared to parameter concentrations in the equipment blank. Results measuring less than five times the equipment blank concentration were flagged for potential cross-contamination. In the QA/QC assessment, flagged results were assigned either a cautionary flag or an unreliable flag:

- **Cautionary flags** were applied when a parameter was detected in the blank, but the potential impact of cross-contamination was minor (e.g., results were consistent with historical data); and

- **Unreliable flags** were assigned to results deemed unrepresentative of actual water quality (e.g., elevated metal concentrations in a sample that were not observed in other replicate samples collected during the same event).

The water chemistry data with *cautionary* and *unreliable* data flags are provided in **Appendix C** for clarity on which results were examined further and/or excluded from decision-making.

B.2.1.2 Laboratory

ALS is accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA). Performance evaluations are conducted under CALA's accreditation program for laboratory methods, protocols, and QC samples. There are four types of QC samples components of the water chemistry laboratory QC program to assess analytical precision, bias, and completeness:

Laboratory Duplicate. Duplicates provide insight into the precision of laboratory analyses. The laboratory randomly chose samples to re-run as duplicates. Duplicate aliquots were taken from the same sample and run through the laboratory analytical process. The difference between the concentrations in the two samples is a measure of the variability associated with duplicate analyses of the same sample in the laboratory.

Method Blank (MB). Samples were analyzed to assess potential background interference or contamination in the analytical system that could cause elevated concentrations or false positives. A parameter-free matrix, such as de-ionized water, underwent the entire analytical process to demonstrate that the analytical system did not introduce contamination.

Matrix Spike (MS) / Matrix Duplicate (MD). A known amount of a compound that is chemically similar to the target parameter, was added to samples to ascertain any matrix effects on recoveries and to determine the accuracy and precision of the method in this matrix.

Laboratory Control Sample (LCS). An LCS is a well-characterized sample with known parameters and concentrations. An LCS may be reference material (i.e., certified reference material) containing certified amounts of target parameters. The percent recovery of target parameters in the LCS was compared to established control limits to assess whether the methodology was under control and if the laboratory could produce accurate and precise measurements at the required reporting limit.

Laboratory QC results are included in each laboratory report for CREMP water quality samples.

B.2.1.3 Data Reliability Check

Part of the QA assessment involved conducting two 'data reliability checks' to identify potentially anomalous data:

- **Dissolved vs Total Comparison.** Dissolved and total concentrations for a given parameter were compared for each location/event combination. Samples where the dissolved concentrations were greater than the total with an RPD of more than 30% were reviewed further.
- **Paired Samples from Same Area/Event.** Concentrations from the paired samples located within each water body (lake or basin) were compared. Parameters for which the difference between the paired intra-lake samples was greater than a factor of 5 (or factor of 10 in cases where at least one of the samples was within a factor of 10 of the DL) were flagged for further review.

Similar to the assessment of blanks discussed above, cases where these checks showed data as being questionable but still useable resulted in their being flagged as *cautionary*; cases where the data were clearly anomalous resulted in their being flagged as *unreliable*.

B.2.2 Results and Discussion

Field duplicates, laboratory duplicates, and blank samples were analyzed as part of the QA/QC program in each sampling event in 2025. The results of blank samples and field duplicates have been integrated in the QA/QC evaluation across all CREMP study areas. Consistent with previous years, QA/QC responsibilities were shared between the two teams (Meadowbank Environment and Whale Tail Environment) to help identify potential weaknesses in sample collection. Each team alternated in collecting blank samples, and the field duplicate samples were distributed evenly between the Meadowbank/Baker Lake and the Whale Tail study areas. This approach ensured that both teams remained familiar with QA/QC procedures and gained a clear understanding of the nuances associated with sample collection and handling. Blank sample collection, particularly equipment blank samples, required careful planning, attention to detail, focus on the importance of cleanliness, and generally provided an opportunity to assess QA procedures.

Results of the QA/QC analysis are discussed below, along with a discussion on the implications of the QA/QC assessment on the 2025 sample results.

Travel Blanks

Travel blank results are summarized in **Table B-2** and complete results are provided in **Table B-4**. Travel blanks were included in every bottle shipment and stored in a cool place. There were no detectable concentrations of parameters in the travel blanks.

De-ionized Blanks

De-ionized (DI) blanks with the full suite of analyses were submitted for each sampling event in 2025; results are reported in **Table B-4**.

In the DI blanks, there were detectable concentrations of total ammonia (as N) in March, August, and September. All other parameters in the DI blanks were below detection limits in 2025.

Equipment Blanks

At least one parameter was detected in the EB samples submitted for each sampling event in 2025; results are provided in **Table B-4**. Parameters detected in the EB samples are summarized for each sampling event herein:

- **March**. Total phosphorus, total dissolved phosphorus, total barium, total magnesium, total zinc, dissolved zinc;
- **May**. Total dissolved phosphorus, dissolved lead, dissolved zinc;
- **July**. Total manganese, dissolved zinc;
- **August**. Total ammonia (as N), total aluminum, total manganese; and
- **September**. Turbidity, total ammonia (as N), total aluminum, and total magnesium.

The EB results were directly compared with the corresponding month/parameter water chemistry sample results in **Appendix C** (see Tables C1-1, C2-1, and C3-1) to identify any cross-contamination warranting *cautionary* or *unreliable* flags. While some data were assigned *cautionary* flags based on the EB results, none were considered *unreliable*.

Field Duplicates

In 2025, there was a combined total of 20 duplicates collected between the Meadowbank Lakes, Baker Lake, and the Whale Tail Lakes, corresponding to approximately 16% of the total number of water samples (n=128). Across all CREMP study areas, four field duplicates were collected in each sampling event. The results of the field duplicate assessment are provided in **Table B-5**.

As mentioned in **Section B.1.1**, the DQOs for field duplicates were set at 1.5 times the laboratory RPD or DIFF DQOs for each parameter; if no RPD DQO was reported by the lab a default of 40% was used. The laboratory RPD for water chemistry is 20% for most parameters; therefore, the DQOs for field duplicates were typically set at ±30%. The DIFF DQO was 3 (i.e., 1.5 x the 2 x MDL lab DIFF DQO).

In 2025, 99.4% (12 of 2073 calculated field duplicates) met the field duplicate DQOs (**Table B-5**). This indicates that sample collection and handling in 2025 were maintained at a high standard. Key observations for the field duplicates not meeting DQOs were as follows:

- **Ammonia**. The two cases were both in August, when ammonia was detected in the DI Blank and EB.
- **Dissolved Zinc**. The three cases occurred in March, May, and July, when dissolved zinc was detected in the EBs, so any results affected by the issue would have been assessed for

potential data flagging. Interestingly, the field duplicates were all much lower than their paired samples, suggesting possible cross-contamination from the sampling pump.

- **Other Parameters**. The remainder of the cases were mainly single episodes of parameters not meeting their respective DQOs.

Laboratory QC Samples

The results of the laboratory QC assessment from ALS[1] are provided in **Table B-3**. The various components of the QA assessment are provided to help make informed decisions when interpreting the data. The QA program was comprised of four main elements:

- **Laboratory Duplicates.** The laboratory DQO for most parameters was an RPD of less than 20%. There were six cases in which the water chemistry laboratory duplicates failed the DQOs in 2025. Although the number of laboratory duplicates not meeting DQOs increased relative to 2024, relatively few laboratory duplicates failed to meet the DQOs overall.
- **Method blanks (MB).** The MB was a blank matrix sample carried through the entire analytical procedure to assess variability in the analytical method and potential analytical bias. MB results were equal to the limit of reporting (LOR or DL[2] as termed here). MB qualifiers were either:
    - "B" – MB exceeded ALS DQO. Associated sample results which were less than DL or greater than 5X blank levels were considered reliable.
    - "MB-LOR" – MB exceeded ALS DQO. DLs were adjusted for samples with positive hits below 5x blank levels.
- For most sample analyses, there were no flags or very few flags (e.g., one or two parameters in a sample may have been flagged with a "B" in the method blank results). However, the two cases with DQO flags for MB samples were reviewed; the results did not affect the interpretation of the water quality data.
- **Matrix Spike (MS).** MS recovery is periodically flagged in the QC assessment due to high concentrations of the parameter in the sample. These instances are generally rare, and

[1] The COA from ALS may include data qualifiers that relate to the sample "batch". The sample batch may include samples that are from other projects and the qualifiers included in the COA may relate to those and not the CREMP samples. In general, this does not impact the assessment of laboratory QA. In some instances, particularly for sediment laboratory duplicates, data qualifiers in the COA related to sample heterogeneity may not relate to CREMP samples. The Microsoft Excel® report that accompanies the COA includes tabs with detailed assessments of laboratory QA that are project specific and can be reviewed in conjunction with the COAs.

[2] The DL is sometimes referred to as the MDL (method detection limit) in this appendix and the main report.

typically associated with parameters such as major cations (e.g., magnesium) or certain metals with detected results (e.g., strontium in 2020).

- **Laboratory Control Samples (LCS) / Certified Reference Material (CRM) / Internal Reference Material (IRM).** All samples met DQOs for the laboratory control samples in 2025.

Data Reliability Check

The two sample review checks (i.e., dissolved versus total and paired sample check) resulted in some data being flagged as *unreliable* (see below). These data were removed from formal analysis in the main report (e.g., figures and statistical analyses); they are retained in the water chemistry tables provided in **Appendix C** and their *unreliable* status is clearly shown.

Copper

In March 2025, copper concentrations were higher than historical throughout the Meadowbank lakes (including INUG). These results were flagged as *unreliable* during the QC screening for the following reasons:

- The majority of total copper concentrations in 2025 were close to or below DLs, whereas samples collected on March 2nd and 3rd showed copper concentrations approximately an order of magnitude above the DL. While elevated copper concentrations were observed consistently in the Meadowbank lakes and reference area INUG sampled on March 2nd and 3rd, copper was below the DL in the EB collected using the same sampling equipment on March 4th. No QAQC flags were reported by ALS for the copper results, indicating that analytical error is unlikely. The spatially widespread nature of the elevated results, including at the reference area, combined with the subsequent return to below-detection concentrations, indicates that the March 2nd and 3rd results are unlikely to reflect true environmental conditions. A new pump was introduced to the sampling program in early 2025, coinciding with the timing of the elevated copper concentrations. In the absence of a plausible environmental driver, cross-contamination associated with the new pump or related sampling equipment is considered the most likely explanation for the elevated results. Ultimately, the March total copper results from TPE, TPN, SP, and INUG are considered unreliable and were excluded from further analysis.

Dissolved Tin

In 2025, dissolved tin exceeded the trigger at Whale Tail Lakes A20 and KAN in August, and at DS1 in July. These results were flagged as *unreliable* during the QC screening for the following reasons:

- Total tin concentrations were all below DLs in 2025, whereas dissolved tin concentrations were up to 5 times greater than the DL.

- ALS flagged the dissolved tin results with a DTMF[3] qualifier, indicating measurement uncertainty.

Dissolved Zinc

Similar to 2024, dissolved zinc concentrations exceeded the trigger in samples from all Whale Tail area lakes across multiple sampling events. However, many of these results were flagged as *unreliable* during the QC screening for the following reasons:

- Total zinc concentrations were nearly all below DLs in 2025, whereas dissolved zinc concentrations were up to 172 times greater than the DL. ALS flagged most of the dissolved zinc results with a dissolved concentration exceeding total (DTC)[4] qualifier, indicating measurement uncertainty.
- Azimuth's internal screening also found most dissolved zinc results from the Whale Tail area lakes to be *unreliable* due to high relative percent differences (RPDs) between total and dissolved zinc measurements, often exceeding 100%, well above the 30% threshold.
- Finally, dissolved zinc concentrations did not align with mining activities. Some of the highest dissolved zinc concentrations were reported at FF area DS1.

Dissolved Chromium

In 2025, dissolved chromium exceeded the trigger at WAL in August. This result was flagged as *unreliable* during the QC screening assessment. The result was greater than 10 times the DL, whereas dissolved chromium concentrations in all other samples collected from Meadowbank area lakes in 2025 were close to or below the DL. Furthermore, the laboratory flagged the results with a DTC qualifier, indicating measurement uncertainty.

Other Metals

There were a few instances where other metals were below the trigger and were flagged as *unreliable*. Manganese concentrations at Lake A20 in March were flagged as *unreliable* because the difference between these two intra-lake samples was greater than a factor of 10. Molybdenum was also flagged as *unreliable* for one sample collected in July from BPJ and *cautionary* for one sample collected from NEM

[3] DTMF = The dissolved concentration exceeds the total concentration for the field-filtered metals sample, suggesting potential introduction of metallic contaminants during field filtration.

[4] In each case where a DTC flag was applied results were confirmed by re-analysis.

as the dissolved concentrations were substantially higher than the total concentrations. For both samples, the laboratory flagged the results with a DTC qualifier, indicating measurement uncertainty.

Detection Limits

Overall, DLs in 2025 were consistent with previous years. Refer to Appendix C of the 2024 CREMP report for information about DL adjustments for beryllium from 0.00002 to 0.0001 mg/L and for chromium from 0.0001 to 0.0005 mg/L (Azimuth, 2025).

B.2.3 Water Chemistry QA/QC Summary

The field and laboratory QA/QC results for the 2025 water chemistry were acceptable with most of the results meeting the DQOs of the study.

Sample Integrity. Sample integrity was acceptable in 2025. As is typical for most northern mining operations, sample temperatures occasionally exceeded 10°C during transit to ALS. Hold times were also routinely exceeded for parameters with recommended hold times less than seven days.

Detection Limits. Detection limits in 2025 were consistent with previous years and across sampling events.

Blanks. The 2025 blank results confirmed reliable sample handling and negligible risk of cross-contamination from the pump, tubing, syringes, and filters. Very few parameters were detected in blank samples from most events. In August and September, total ammonia (as N) was detected in the DI blank and EB. Therefore, the EB ammonia results from August and September were not used to determine the implication of possible cross-contamination for those sampling events.

Overall, approximately 6% of parameters were assigned cautionary flags for one or more samples. Despite the assigned cautionary flags, potential cross-contamination is considered unlikely to bias interpretation of the 2025 water quality analysis.

Field Duplicates. More than 99% of the field duplicate analyte/sample combinations met their DQOs in 2025, indicating the sampling and analysis procedures consistently produce repeatable (precise) results.

Laboratory QC Assessment. Water quality data were typically within the laboratory DQOs. In the few instances where a DQO was exceeded, the laboratory concluded the results were reliable and fit for use in the water quality assessment.

Data Reliability Checks. The two data reliability review checks resulted some results being flagged as *unreliable*. Overall, 99% of the results were considered reliable for use in the report. The few results that were flagged as *unreliable* were not included in statistical analyses or figures in the main report. Unreliable results are clearly flagged in the water chemistry tables in **Appendix C**.

B.3 SEDIMENT

Field duplicates were analyzed as part of the QA/QC program in the August sediment sampling event. The results of the QA/QC analysis and their implications on the sample results are discussed below.

B.3.1 Field Methods

Field QA consisted of taking care between sampling areas by rinsing and cleaning the sampling gear for sediment grabs (Petite Ponar grab, stainless steel bowls, and spoons) using site water and phosphate-free cleaning detergent, to minimize the potential for cross-contamination. Field QC measures included collecting and analyzing field duplicates. In 2025, no rinsate was analyzed as there were no metals analyzed in sediment grabs.

B.3.2 Laboratory Methods

Laboratory duplicates were analyzed for sediment chemistry parameters similar to water chemistry parameters. The full list of laboratory DQOs for each parameter are presented in the SOP appended to the *CREMP 2022 Plan Update* (Azimuth, 2022).

B.3.3 Results and Discussion

Field Duplicates

Eight grab sample field duplicates were collected for moisture content, TOC, and particle size. Additionally, two composite field duplicates were collected for moisture content, hydrocarbon, and PAH chemistry. The field duplicates for grab samples are provided in **Table B-6** (moisture content, TOC, particle size), and **Table B-7** (hydrocarbons and PAHs). The DQOs for sediment samples are outlined in **Section B.1.1**. Generally, the RPD limits were 1.5 times the laboratory RPDs unless no RPD was provided, in which case a default DQO of ±40% was applied. RPDs were also calculated for particle size and moisture content, where default DQOs of 40% and 30% were applied, respectively.

In 2025, all parameters met DQOs for sediment grabs and composite grab samples. The field duplicate results indicate high precision for the parameters analyzed and a high degree of replicability in sampling.

Laboratory QC Samples

Laboratory QC for sediment samples included laboratory duplicates, method blanks, matrix spikes, and reference material. The summary for the laboratory QC is provided in **Table B-3**.

The laboratory QC assessment completed by ALS indicated the 2025 sediment quality data were typically within the established DQOs. In the few instances where a DQO was exceeded, the laboratory concluded the results were reliable and fit for use in the sediment quality assessment.

B.4 PHYTOPLANKTON

The phytoplankton QA/QC assessment included the Meadowbank, Baker Lake, and Whale Tail study areas. Four field duplicate samples were collected during each sampling event. Samples from the under-ice events (i.e., March and May) were archived as per the *CREMP 2022 Plan Update* (Azimuth, 2022). For total density and total biomass, RPDs were calculated between the original sample and the duplicate for both field and laboratory duplicates.

Results of the RPD analysis for all these parameters are presented in **Table B-8** (field) and **Table B-9** (laboratory) and are discussed below.

B.4.1 Field Methods

Water samples for phytoplankton were collected during monthly sampling events. Sampling gear was thoroughly rinsed between sampling areas to ensure that there was no inadvertent introduction (i.e., cross-contamination) from one area to another. Water samples were stored in a cooler with ice packs until returning to the camp. Water samples were processed back at camp within 6 hours of sampling. Processing involved preserving 50 mL of water with Lugol's iodine solution for phytoplankton taxonomy. The samples were stored in dark containers at room temperature.

Sample Shipping and Handling

The phytoplankton samples for taxonomy arrived at Plankton R Us (Winnipeg) without any sample integrity concerns.

Field Duplicates

Quality control implemented during the 2025 sampling events included collecting duplicate phytoplankton samples using the same methods and timing as the corresponding field samples.

Four field duplicate phytoplankton samples were collected per sampling event alongside water sample duplicates. Duplicate samples were submitted *blind* to the laboratory to assess sampling variability and homogeneity. For field duplicates, an RPD of 50% for total density and biomass concentrations is considered acceptable. Relative percent differences were calculated for total density and biomass, as well as for major taxa groups. However, RPDs calculated for major taxa groups were not relied on for QC purposes due to the potential for small differences in abundance or biomass between the original and

the duplicate to cause large differences in the RPD. Therefore, data quality was evaluated based on total density and total biomass.

B.4.2 Laboratory Methods

Samples collected for taxonomic analysis of phytoplankton were submitted to Plankton-R-Us Inc., a reputable taxonomic laboratory.

The first step in the QC program involves documenting any issues with the sample submission. This step applies to all sampling components. Plankton-R-Us reports sample integrity concerns via email. In 2025, there were no sample integrity concerns.

As a measure of laboratory QA/QC on the enumeration method, replicate counts are to be performed on 10% of the samples. In 2025, 9 laboratory replicates (10 % of the total number of samples) were analyzed. Replicate samples are randomly chosen and processed at different times from the original analysis to reduce bias. The laboratory replicate is a new aliquot (10 mL) from the sample jar and is counted in the same manner as the original aliquot (10 mL) taken from the jar. An RPD of 25% for total density and biomass concentrations is considered acceptable for laboratory replicates.

B.4.3 Results and Discussion

Field duplicates. All RPDs in 2025 for total biomass and total density were below 50% indicating good replicability in sample collection. Variability is expected in field collected phytoplankton samples and is mitigated in the study design by collecting two discrete samples from each sampling area. See **Table B-8** for the field duplicate results, including RPDs calculated for major taxa groups.

Laboratory duplicates. In 2025, all laboratory RPDs for total density and total biomass met the DQOs. See **Table B-9** for the laboratory duplicate results, including RPDs calculated for major taxa groups.

B.4.4 Phytoplankton QA/QC Summary

Phytoplankton laboratory QA/QC in 2025 was considered acceptable and overall results of the QA/QC analysis were similar to previous years. This indicates very good replicability and sample handling in the field and in the laboratory. Overall, the reliability of the analytical results is considered high.

B.5 BENTHIC INVERTEBRATES

Standard procedures were used to collect benthic invertebrate samples (Azimuth, 2022). Sampling gear was thoroughly rinsed between sampling areas to ensure that there was no inadvertent introduction (i.e., cross-contamination) of biota from one area to another.

B.5.1 Field QA/QC

Field replicates (5 per area) were collected for benthic invertebrates to determine natural variability and heterogeneity. Replicates were collected at least 20 m apart from one another within the defined sampling areas.

B.5.2 Laboratory QC

ZEAS re-sorted and re-counted approximately 10% of the samples, targeting greater than 90% recovery between the original and re-sorted sample.

No field duplicate samples were collected for benthic invertebrates. Laboratory replicate counts were performed on approximately 10% of all samples. Replicate samples were chosen at random and processed at different times from the original analysis to reduce bias. Percent recovery was above 95% in all re-sorted samples, with an average percent recovery of 97.5% (**Table B-10**). These results indicate that the majority of individual organisms are recovered during taxonomic enumeration. Consistent with previous years, the project's reference collection of benthic taxa has been maintained.

There were no QA/QC concerns for benthic invertebrates in 2025.

B.6 REFERENCES

Azimuth. 2025. 2024 Core Receiving Environment Monitoring Program, Meadowbank Complex. Report prepared by Azimuth Consulting Group, Vancouver, BC for Agnico Eagle Mines Ltd., Baker Lake, NU. March 2025.

Azimuth. 2022. Core Receiving Environment Monitoring Program (CREMP): 2022 Plan Update. Report prepared by Azimuth Consulting Group, Vancouver, BC for Agnico Eagle Mines Ltd., Baker Lake, NU. April, 2022.

Canadian Council of Ministers of the Environment (CCME). 2016. Guidance Manual for Environmental Site Characterization in Support of Environmental and Human Health Risk Assessment. PN 1557.

TABLES

Table B-1. Sample submission and integrity QA/QC summary for the water and phytoplankton for all CREMP study areas, 2025.

Event [1]	Lab ID(s)	Parameters Measured	Sample Integrity Observations	Temperature Range in Coolers (°C)	Hold-time Exceedances[2]
March	VA25A5048 VA25A5207 VA25A5654 VA25A5656 VA25A5659	All parameters	Sample TPE-178: Total Hg was listed on CoC but no total Hg vial was received. Total Hg will be tested from total metals bottle. Labeling Issue: Received two field filtered/preserved dissolved Hg vials where a black dot was one cap & other cap without dot on cap. Observed a pattern on all other samples on all Diss Hg vial a black dot was on cap while on all Total Hg vial no black dot on cap. Labelled the dissolved Hg with black dot on cap as dissolved Hg and testing will proceed, the other dissolved Hg without black dot was put on hold. Sample WAL-148: Labeling Issue on total nutrient, diss nutrient & total metal. Minor sample ID discrepancy. Container sample ID "WAL-138" does not match CoC. Sample will be identified as per CoC notation. Sample March-TB: Labeling Issue - sample ID was absent on total nutrient bottle but it has ALS Travel blank label and it was inside a bag containing other containers labelled as sample March-TB. Labelled total nutrient bottle as March-TB. Samples "PDL-131" & "PDL-132" general bottle, total/dissolved nutrients/metal/mercury and CN containers not received at laboratory, but requested on CoC request form; subsample cannot be obtained from other containers to meet request. The requested analysis cannot be performed. (Samples "PDL-131" & "PDL-132" sent in subsequent batch).	1-11	D. O-OP_4, Nitrate, Nitrite, pH, Turbidity, TDS, TSS, Ammonia, T-D Phosphorus, TKN, T.Hg, TOC and DOC. See lab reports.
May	VA25B0049 VA25B0623 VA25B0834 VA25B1633 VA25B2005 VA25B2006 VA25B2008	All parameters	Sample: May DI has no marked as total and dissolved. Labelled randomly. Sample 1 and 2 (ALS #) listed Chloro -a but we did not receive, analysis will be deleted. Sample ID (TPN-181) #002: Total Nutrient Bottle container received empty. Subsample obtained from General bottle. Amendment (21/05/2025): This report has been amended as a result of a request to change sample identification numbers (IDs) received by ALS, specifically ALS ID -5. All analysis results are as per the previous report. Amendment (04/06/2025): This report has been amended following changes to the analytical data reported. The quality system is being utilised to resolve this issue. The specific data affected includes Chloro-a data for sample NEM-98 only, due to a transcription error during initial data entry. Amendment (13/06/2025): This report has been amended as a result of misinterpretation of sample identification numbers (IDs). All analysis results are as per the previous report.	9-17	D. O-OP_4, Nitrate, Nitrite, pH, Turbidity, TDS, TSS, Free and Total Cyanide, Ammonia, TKN, T.Phosphorus, Chl-a, TOC and DOC. See lab reports.
July	VA25B6882 VA25B6987 VA25B7113 VA25B7115 VA25B7585 VA25B7586 VA25B7589 VA25B7591	All parameters	Sample BAP-98: Extra chlorophyll tube received but not listed on submitted CoC / analytical request form. Put on hold. Please contact ALS PM if you want to add analysis Sample July DI & July DB: Total cyanide container not received at laboratory, but requested on CoC / analytical request form; subsample cannot be obtained from other containers to meet request. The requested analysis cannot be performed. Samples TPE-183 & July-Dup-4 :- Total mercury vial received broken in transit. Analysis will be done from from total metal bottle to meet request. Test results may be qualified in the Certificate of Analysis. Labeling Issue. Container sample ID (July Dup-1) does not match Chain of Custody (July Dup-3). Sample will be identified as per CoC notation. Amendment (24/07/2025): This report has been amended as a result of a request to change sample identification numbers (IDs) received by ALS. All analysis results are as per the previous report.	13-24.8	D. O-OP_4, Nitrate, Nitrite, pH, Turbidity, TDS, TSS, T.Hg. See lab reports.
August	VA25C0385 VA25C0593 VA25C0699 VA25C1553 VA25C1585 VA25C1599	Water chemistry	Sample MAM-104: Labeling Issue on Chl-a 15ml test tube, minor sample ID discrepancy. Container sample ID MAME-104 does not match Chain of Custody (COC). Sample will be identified as per COC notation.	18-24	D. O-OP_4, Nitrate, Nitrite, pH, Turbidity, TDS, TSS. See lab reports.
	VA25C0823 VA25C1753 VA25C1775	Sediment Chemistry (Moisture, pH, grain size, TOC)	PSAL: Sample 001-005,007-011,013-017,022,025-026: Limited sample was available for PSA (100g minimum is standard). Measurement Uncertainty for PSA results may be higher than usual. Sample #26, "Rinse 1" was received without the appropriate containers (a water sample received in a soil jar). Analysis can proceed, but data will be qualified. Sample will be placed on hold awaiting further instructions.3 PSAL: Sample 001-004,009-010,013-015,019,021,027: Limited sample was available for PSA (100g minimum is standard). Measurement Uncertainty for PSA results may be higher than usual. PSAL: Sample 010-017, 025-029, 038-041: Limited sample was available for PSA (100g minimum is standard). Measurement Uncertainty for PSA results may be higher than usual. Amendment (29/10/2025): This report has been amended as a result of a request to change sample identification numbers (IDs) received by ALS. All analysis results are as per the previous report.	20-23	PHCs and PAHs. See lab reports.
September	VA25C3221 VA25C3235 VA25C3360 VA25C3361 VA25C3661 VA25C3701	All parameters	All Samples: COC says 'tissue' but these are actually filtered water samples. Logged in samples as water.	12-21	D. O-OP_4, Nitrate, Nitrite, pH, Turbidity, TDS, TSS. See lab reports.

Notes

1. Note that pH is included in the suite of field measurements and has a very short recommended hold time, so exceeding the hold time for laboratory analysis is expected and of little importance.
2. Rinsate was not analyzed as no metals sampled in sediment for the CREMP in 2025.

Acronyms

CoA = Certifacte of analysis
CoC = Chain of custody
Chl-a = Chlorophyll-a
CN = Cyanide
DI = De-ionized water blank
DOC = Dissolved organic carbon
D. O-PO4 = Dissolved Orthophosphate
EB = Equipment blank
PSA = Particle size analysis
PTFE = Polytetrafluoroethylene
MeHg = Methylmercury
TB = Travel blank
TDS = Total dissolved solids
TKN = Total Kjeldahl nitrogen
T.Hg = Total mercury
TOC = Total organic carbon
TSS = Total suspended solids

Table B-2. Field QA/QC summary for the water and chlorophyll-a at CREMP study areas, 2025.

Chlorophyll-a field duplicate samples were collected at the same time as surface water field duplicates; chlorophyll-a was not analyzed in the blanks.

Event	Field QC Summary [1]			
	Travel Blank	DI Blank	Equipment Blank	Duplicates
March	None	1 result failed to meet QC objectives; see lab reports	6 results failed to meet QC objectives; see lab reports	2 results failed to meet QC objectives; see lab reports
May	None	None	None	1 result failed to meet QC objectives; see lab reports
July	None	None	None	5 results failed to meet QC objectives; see lab reports
August	None	None	3 results failed to meet QC objectives; see lab reports	4 results failed to meet QC objectives; see lab reports
September	None	1 result failed to meet QC objectives; see lab reports	4 results failed to meet QC objectives; see lab reports	9 results failed to meet QC objectives; see lab reports

Notes:
1 - For more details on parameters that failed to meet QC objectives, see lab reports.
DI = De-ionized
QC = Quality control

Table B-3. Laboratory QC summary for the water, chlorophyll-a, and sediment for all CREMP study areas, 2025.

Event	Laboratory QC Summary [1]				
	Detection Limits	Duplicates	Method Blanks	Matrix Spike	LCS / CRM
March	None	1 result failed to meet QC objectives	None	1 result failed to meet QC objectives	None
May	None	3 results failed to meet QC objectives	None	1 result failed to meet QC objectives	None
July	None	None	None	2 results failed to meet QC objectives	None
August	DLM for one sample	2 results failed to meet QC objectives	1 result failed to meet QC objectives	4 results failed to meet QC objectives	None
August (Sediment)	DLHM for PAHs in some composite samples	None	None	None	None
September	DLM for one sample	None	1 result failed to meet QC objectives	3 results failed to meet QC objectives	None

Notes:

[1] Data qualifiers referring to laboratory QC methods (e.g., Method Blanks, Matrix Spikes, and LCS/CRM) are flagged here.

B = Method Blank exceeds ALS DQO. All associated sample results are at least 5 times greater than blank levels and are considered reliable.

DLHM = Detection limit adjusted: Sample has high moisture content.

DLM = Detection limit adjusted.

DQO = Data quality objectives.

LCS / CRM = laboratory control sample / certified reference material.

MES = Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).

PAH = Polycyclic aromatic hydrocarbons.

Table B-4. Laboratory detection limits and blanks (travel, de-ionized, and equipment) for all CREMP study areas, 2025.

Month	March				May				July				August					September			
Blank (Travel, DI, or EB)		Travel Blank	DI Blank	Equip. Blank		Travel Blank	DI Blank	Equip. Blank		Travel Blank	DI Blank	Equip. Blank		Travel Blank	DI Blank [1]	Equip. Blank 1	Equip. Blank 2		Travel Blank	DI Blank	Equip. Blank
Date	**Detection Limits**	02-Mar-2025	04-Mar-2025	04-Mar-2025	**Detection Limits**	26-Apr-2025	26-Apr-2025	18-May-2025	**Detection Limits**	09-Jul-2025	13-Jul-2025	09-Jul-2025	**Detection Limits**	16-Aug-2025	17-Aug-2025	18-Aug-2025	17-Aug-2025	**Detection Limits**	07-Sep-2025	07-Sep-2025	07-Sep-2025
ALS Sample ID		VA25A5048-013	VA25A5207-016	VA25A5207-015		VA25B0049-003	VA25B0049-002	VA25B2005-006		VA25B7586-004	VA25B7586-002	VA25B7586-003		VA25C1585-010	VA25C1585-011	VA25C1553-015	VA25C1585-012		VA25C3661-013	VA25C3661-012	VA25C3661-014
Media		Water	Water	Water		Water	Water	Water		Water	Water	Water		Water	Water	Water	Water		Water	Water	Water
Physical Tests																					
Conductivity (µS/cm)	2.0	<2.0	<2.0	<2.0	2.0	<2.0	<2.0	<2.0	2.0	<2.0	<2.0	<2.0	2.0	<2.0	<2.0	<2.0	<2.0	2.0	<2.0	<2.0	<2.0
Alkalinity, Bicarbonate	1.0	<1.0	<1.0	<1.0	1.0	<1.0	<1.0	<1.0	1.0	<1.0	<1.0	<1.0	1.0	<1.0	<1.0	<1.0	<1.0	1.0	<1.0	<1.0	<1.0
Alkalinity, Carbonate	1.0	<1.0	<1.0	<1.0	1.0	<1.0	<1.0	<1.0	1.0	<1.0	<1.0	<1.0	1.0	<1.0	<1.0	<1.0	<1.0	1.0	<1.0	<1.0	<1.0
Alkalinity, Hydroxide	1.0	<1.0	<1.0	<1.0	1.0	<1.0	<1.0	<1.0	1.0	<1.0	<1.0	<1.0	1.0	<1.0	<1.0	<1.0	<1.0	1.0	<1.0	<1.0	<1.0
Alkalinity, Total	1.0	<1.0	<1.0	<1.0	1.0	<1.0	<1.0	<1.0	1.0	<1.0	<1.0	<1.0	1.0	<1.0	<1.0	<1.0	<1.0	1.0	<1.0	<1.0	<1.0
Hardness (mg/L), Dissolved	0.60	<0.60	<0.60	<0.60	0.60	<0.60	<0.60	<0.60	0.60	<0.60	<0.60	<0.60	0.60	<0.60	<0.60	<0.60	<0.60	0.60	<0.60	<0.60	<0.60
Hardness (as $CaCO_3$), from total Ca/Mg	0.60	<0.60	<0.60	<0.60	0.60	<0.60	<0.60	<0.60	0.60	<0.60	<0.60	<0.60	0.60	<0.60	<0.60	<0.60	<0.60	0.60	<0.60	<0.60	<0.60
Total Dissolved Solids (mg/L)	3.0	<3.0	<3.0	<3.0	3.0	<3.0	<3.0	<3.0	3.0	<3.0	<3.0	<3.0	3.0	<3.0	<3.0	<3.0	<3.0	3.0	<3.0	<3.0	<3.0
Total Suspended Solids (mg/L)	1.0	<1.0	<1.0	<1.0	1.0	<1.0	<1.0	<1.0	1.0	<1.0	<1.0	<1.0	1.0	<1.0	<1.0	<1.0	<1.0	1.0	<1.0	<1.0	<1.0
Turbidity (NTU)	0.10	<0.10	<0.10	<0.10	0.10	<0.10	<0.10	<0.10	0.10	<0.10	<0.10	<0.10	0.10	<0.10	<0.10	<0.10	<0.10	0.10	<0.10	<0.10	**0.18**
pH (Laboratory)	0.10	5.6	5.3	5.5	0.10	5.2	5.2	5.4	0.10	5.5	5.5	5.5	0.10	5.3	5.3	5.2	5.4	0.10	5.5	5.5	5.4
Anions and Nutrients (mg/L)																					
Ammonia, Total (as N)	0.0050	<0.0050	**0.019**	<0.0050	0.0050	<0.0050	<0.0050	<0.0050	0.0050	<0.0050	<0.0050	<0.0050	0.0050	<0.0050	**0.0396**	**0.0094**	**0.0088**	0.0050	<0.0050	**0.023**	**0.025**
Bromide (Br)	0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050
Chloride (Cl)	0.10	<0.10	<0.10	<0.10	0.10	<0.10	<0.10	<0.10	0.10	<0.10	<0.10	<0.10	0.10	<0.10	<0.10	<0.10	<0.10	0.10	<0.10	<0.10	<0.10
Fluoride (F)	0.020	<0.020	<0.020	<0.020	0.020	<0.020	<0.020	<0.020	0.020	<0.020	<0.020	<0.020	0.020	<0.020	<0.020	<0.020	<0.020	0.020	<0.020	<0.020	<0.020
Total Kjeldahl Nitrogen	0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050
Nitrate (as N)	0.0050	<0.0050	<0.0050	<0.0050	0.0050	<0.0050	<0.0050	<0.0050	0.0050	<0.0050	<0.0050	<0.0050	0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	<0.0050	<0.0050	<0.0050
Nitrite (as N)	0.0010	<0.0010	<0.0010	<0.0010	0.0010	<0.0010	<0.0010	<0.0010	0.0010	<0.0010	<0.0010	<0.0010	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	<0.0010	<0.0010	<0.0010
Orthophosphate-Dissolved (as P)	0.0010	<0.0010	<0.0010	<0.0010	0.0010	<0.0010	<0.0010	<0.0010	0.0010	<0.0010	<0.0010	<0.0010	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	<0.0010	<0.0010	<0.0010
Phosphorus (P)-Total	0.0020	<0.0020	<0.0020	**0.014**	0.0020	<0.0020	<0.0020	<0.0020	0.0020	<0.0020	<0.0020	<0.0020	0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	<0.0020	<0.0020	<0.0020
Phosphorus (P)-Total Dissolved	0.0020	<0.0020	<0.0020	**0.0028**	0.0020	<0.0020	<0.0020	**0.0026**	0.0020	<0.0020	<0.0020	<0.0020	0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	<0.0020	<0.0020	<0.0020
Reactive Silica (as SiO_2)	0.50	<0.50	<0.50	<0.50	0.50	<0.50	<0.50	<0.50	0.50	<0.50	<0.50	<0.50	0.50	<0.50	<0.50	<0.50	<0.50	0.50	<0.50	<0.50	<0.50
Sulfate (SO_4)	0.30	<0.30	<0.30	<0.30	0.30	<0.30	<0.30	<0.30	0.30	<0.30	<0.30	<0.30	0.30	<0.30	<0.30	<0.30	<0.30	0.30	<0.30	<0.30	<0.30
Cyanides (mg/L)																					
Free Cyanide	0.0010	<0.0010	-	-	0.0010	-	-	-	0.0010	<0.0010	-	-	0.0010	-	-	<0.0010	-	0.0010	-	-	-
Total Cyanide	0.0010	<0.0010	-	-	0.0010	-	-	-	0.0010	<0.0010	-	-	0.0010	-	-	<0.0010	-	0.0010	-	-	-
Organic / Inorganic Carbon (mg/L)																					
Dissolved Organic Carbon	0.50	<0.50	<0.50	<0.50	0.50	<0.50	<0.50	<0.50	0.50	<0.50	<0.50	<0.50	0.50	<0.50	<0.50	<0.50	<0.50	0.50	<0.50	<0.50	<0.50
Total Organic Carbon	0.50	<0.50	<0.50	<0.50	0.50	<0.50	<0.50	<0.50	0.50	<0.50	<0.50	<0.50	0.50	<0.50	<0.50	<0.50	<0.50	0.50	<0.50	<0.50	<0.50
Total Metals (mg/L)																					
Aluminum	0.0030	<0.0030	<0.0030	<0.0030	0.0030	<0.0030	<0.0030	<0.0030	0.0030	<0.0030	<0.0030	<0.0030	0.0030	<0.0030	<0.0030	**0.0058**	<0.0030	0.0030	<0.0030	<0.0030	**0.0042**
Antimony	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010
Arsenic	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010
Barium	0.00010	<0.00010	<0.00010	**0.00017**	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010
Beryllium	0.00010	<0.000100	<0.000100	<0.000100	0.00010	<0.000100	<0.000100	<0.000100	0.00010	<0.000100	<0.000100	<0.000100	0.00010	<0.000100	<0.000100	<0.000100	<0.000100	0.00010	<0.000100	<0.000100	<0.000100
Bismuth	0.000050	<0.000050	<0.000050	<0.000050	0.000050	<0.000050	<0.000050	<0.000050	0.000050	<0.000050	<0.000050	<0.000050	0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.000050	<0.000050	<0.000050	<0.000050
Boron	0.010	<0.010	<0.010	<0.010	0.010	<0.010	<0.010	<0.010	0.010	<0.010	<0.010	<0.010	0.010	<0.010	<0.010	<0.010	<0.010	0.010	<0.010	<0.010	<0.010
Cadmium	0.000005	<0.0000050	<0.0000050	<0.0000050	0.000005	<0.0000050	<0.0000050	<0.0000050	0.000005	<0.0000050	<0.0000050	<0.0000050	0.000005	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.000005	<0.0000050	<0.0000050	<0.0000050
Calcium	0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050
Cesium	0.000010	<0.000010	<0.000010	<0.000010	0.000010	<0.000010	<0.000010	<0.000010	0.000010	<0.000010	<0.000010	<0.000010	0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000010	<0.000010	<0.000010	<0.000010
Chromium	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	0.00050	<0.00010	<0.00010	<0.00010	0.00050	<0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010
Cobalt	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010
Copper	0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050
Iron	0.010	<0.010	<0.010	<0.010	0.010	<0.010	<0.010	<0.010	0.010	<0.010	<0.010	<0.010	0.010	<0.010	<0.010	<0.010	<0.010	0.010	<0.010	<0.010	<0.010
Lead	0.000050	<0.000050	<0.000050	<0.000050	0.000050	<0.000050	<0.000050	<0.000050	0.000050	<0.000050	<0.000050	<0.000050	0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.000050	<0.000050	<0.000050	<0.000050
Lithium	0.0010	<0.0010	<0.0010	<0.0010	0.0010	<0.0010	<0.0010	<0.0010	0.0010	<0.0010	<0.0010	<0.0010	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	<0.0010	<0.0010	<0.0010
Magnesium	0.0050	<0.0050	<0.0050	**0.017**	0.0050	<0.0050	<0.0050	<0.0050	0.0050	<0.0050	<0.0050	<0.0050	0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	<0.0050	<0.0050	**0.0057**
Manganese	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	**0.0001**	0.00010	<0.00010	<0.00010	**0.00023**	<0.00010	0.00010	<0.00010	<0.00010	<0.00010
Mercury	0.000005	<0.0000050	<0.0000050	<0.0000050	0.000005	<0.0000050	<0.0000050	<0.0000050	0.000005	<0.0000050	<0.0000050	<0.0000050	0.000005	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.000005	<0.0000050	<0.0000050	<0.0000050
Molybdenum	0.000050	<0.000050	<0.000050	<0.000050	0.000050	<0.000050	<0.000050	<0.000050	0.000050	<0.000050	<0.000050	<0.000050	0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.000050	<0.000050	<0.000050	<0.000050
Nickel	0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050
Phosphorus	0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050
Potassium	0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050
Rubidium	0.00020	<0.00020	<0.00020	<0.00020	0.00020	<0.00020	<0.00020	<0.00020	0.00020	<0.00020	<0.00020	<0.00020	0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00020	<0.00020	<0.00020	<0.00020
Selenium	0.000050	<0.000050	<0.000050	<0.000050	0.000050	<0.000050	<0.000050	<0.000050	0.000050	<0.000050	<0.000050	<0.000050	0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.000050	<0.000050	<0.000050	<0.000050
Silicon	0.10	<0.10	<0.10	<0.10	0.10	<0.10	<0.10	<0.10	0.10	<0.10	<0.10	<0.10	0.10	<0.10	<0.10	<0.10	<0.10	0.10	<0.10	<0.10	<0.10
Silver	0.000010	<0.000010	<0.000010	<0.000010	0.000010	<0.000010	<0.000010	<0.000010	0.000010	<0.000010	<0.000010	<0.000010	0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000010	<0.000010	<0.000010	<0.000010
Sodium	0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050
Strontium	0.00020	<0.00020	<0.00020	<0.00020	0.00020	<0.00020	<0.00020	<0.00020	0.00020	<0.00020	<0.00020	<0.00020	0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00020	<0.00020	<0.00020	<0.00020
Sulfur	0.50	<0.50	<0.50	<0.50	0.50	<0.50	<0.50	<0.50	0.50	<0.50	<0.50	<0.50	0.50	<0.50	<0.50	<0.50	<0.50	0.50	<0.50	<0.50	<0.50
Tellurium	0.00020	<0.00020	<0.00020	<0.00020	0.00020	<0.00020	<0.00020	<0.00020	0.00020	<0.00020	<0.00020	<0.00020	0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00020	<0.00020	<0.00020	<0.00020
Thallium	0.000010	<0.000010	<0.000010	<0.000010	0.000010	<0.000010	<0.000010	<0.000010	0.000010	<0.000010	<0.000010	<0.000010	0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000010	<0.000010	<0.000010	<0.000010
Thorium	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010
Tin	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010
Titanium	0.00030	<0.00030	<0.00030	<0.00030	0.00030	<0.00030	<0.00030	<0.00030	0.00030	<0.00030	<0.00030	<0.00030	0.00030	<0.00030	<0.00030	<0.00030	<0.00030	0.00030	<0.00030	<0.00030	<0.00030
Tungsten	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010
Uranium	0.000010	<0.000010	<0.000010	<0.000010	0.000010	<0.000010	<0.000010	<0.000010	0.000010	<0.000010	<0.000010	<0.000010	0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000010	<0.000010	<0.000010	<0.000010
Vanadium	0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050
Zinc	0.0030	<0.0030	<0.0030	**0.0053**	0.0030	<0.0030	<0.0030	<0.0030	0.0030	<0.0030	<0.0030	<0.0030	0.0030	<0.0030	<0.0030	<0.0030	<0.0030	0.0030	<0.0030	<0.0030	<0.0030
Zirconium	0.00020	<0.00020	<0.00020	<0.00020	0.00020	<0.00020	<0.00020	<0.00020	0.00020	<0.00020	<0.00020	<0.00020	0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00020	<0.00020	<0.00020	<0.00020
Dissolved Metals (mg/L)																					
Aluminum	0.0010	<0.0010	<0.0010	<0.0010	0.0010	<0.0010	<0.0010	<0.0010	0.0010	<0.0010	<0.0010	<0.0010	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	<0.0010	<0.0010	<0.0010
Antimony	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010
Arsenic	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010
Barium	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010
Beryllium	0.00010	<0.000100	<0.000100	<0.000100	0.00010	<0.000100	<0.000100	<0.000100	0.00010	<0.000100	<0.000100	<0.000100	0.00010	<0.000100	<0.000100	<0.000100	<0.000100	0.00010	<0.000100	<0.000100	<0.000100
Bismuth	0.000050	<0.000050	<0.000050	<0.000050	0.000050	<0.000050	<0.000050	<0.000050	0.000050	<0.000050	<0.000050	<0.000050	0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.000050	<0.000050	<0.000050	<0.000050
Boron	0.010	<0.010	<0.010	<0.010	0.010	<0.010	<0.010	<0.010	0.010	<0.010	<0.010	<0.010	0.010	<0.010	<0.010	<0.010	<0.010	0.010	<0.010	<0.010	<0.010
Cadmium	0.000005	<0.0000050	<0.0000050	<0.0000050	0.000005	<0.0000050	<0.0000050	<0.0000050	0.000005	<0.0000050	<0.0000050	<0.0000050	0.000005	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.000005	<0.0000050	<0.0000050	<0.0000050
Calcium	0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050
Cesium	0.000010	<0.000010	<0.000010	<0.000010	0.000010	<0.000010	<0.000010	<0.000010	0.000010	<0.000010	<0.000010	<0.000010	0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000010	<0.000010	<0.000010	<0.000010
Chromium	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	0.00050	<0.00010	<0.00010	<0.00010	0.00050	<0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010
Cobalt	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010
Copper	0.00020	<0.00020	<0.00020	<0.00020	0.00020	<0.00020	<0.00020	<0.00020	0.00020	<0.00020	<0.00020	<0.00020	0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00020	<0.00020	<0.00020	<0.00020
Iron	0.010	<0.010	<0.010	<0.010	0.010	<0.010	<0.010	<0.010	0.010	<0.010	<0.010	<0.010	0.010	<0.010	<0.010	<0.010	<0.010	0.010	<0.010	<0.010	<0.010
Lead	0.000050	<0.000050	<0.000050	<0.000050	0.000050	<0.000050	<0.000050	**0.000052**	0.000050	<0.000050	<0.000050	<0.000050	0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.000050	<0.000050	<0.000050	<0.000050
Lithium	0.0010	<0.0010	<0.0010	<0.0010	0.0010	<0.0010	<0.0010	<0.0010	0.0010	<0.0010	<0.0010	<0.0010	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	<0.0010	<0.0010	<0.0010
Magnesium	0.0050	<0.0050	<0.0050	<0.0050	0.0050	<0.0050	<0.0050	<0.0050	0.0050	<0.0050	<0.0050	<0.0050	0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	<0.0050	<0.0050	<0.0050
Manganese	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010
Mercury	0.000005	<0.0000050	<0.0000050	<0.0000050	0.000005	<0.0000050	<0.0000050	<0.0000050	0.000005	<0.0000050	<0.0000050	<0.0000050	0.000005	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.000005	<0.0000050	<0.0000050	<0.0000050
Molybdenum	0.000050	<0.000050	<0.000050	<0.000050	0.000050	<0.000050	<0.000050	<0.000050	0.000050	<0.000050	<0.000050	<0.000050	0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.000050	<0.000050	<0.000050	<0.000050
Nickel	0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050
Phosphorus	0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050
Potassium	0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050
Rubidium	0.00020	<0.00020	<0.00020	<0.00020	0.00020	<0.00020	<0.00020	<0.00020	0.00020	<0.00020	<0.00020	<0.00020	0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00020	<0.00020	<0.00020	<0.00020
Selenium	0.000050	<0.000050	<0.000050	<0.000050	0.000050	<0.000050	<0.000050	<0.000050	0.000050	<0.000050	<0.000050	<0.000050	0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.000050	<0.000050	<0.000050	<0.000050
Silicon	0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050
Silver	0.000010	<0.000010	<0.000010	<0.000010	0.000010	<0.000010	<0.000010	<0.000010	0.000010	<0.000010	<0.000010	<0.000010	0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000010	<0.000010	<0.000010	<0.000010
Sodium	0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050
Strontium	0.00020	<0.00020	<0.00020	<0.00020	0.00020	<0.00020	<0.00020	<0.00020	0.00020	<0.00020	<0.00020	<0.00020	0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00020	<0.00020	<0.00020	<0.00020
Sulfur	0.50	<0.50	<0.50	<0.50	0.50	<0.50	<0.50	<0.50	0.50	<0.50	<0.50	<0.50	0.50	<0.50	<0.50	<0.50	<0.50	0.50	<0.50	<0.50	<0.50
Tellurium	0.00020	<0.00020	<0.00020	<0.00020	0.00020	<0.00020	<0.00020	<0.00020	0.00020	<0.00020	<0.00020	<0.00020	0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00020	<0.00020	<0.00020	<0.00020
Thallium	0.000010	<0.000010	<0.000010	<0.000010	0.000010	<0.000010	<0.000010	<0.000010	0.000010	<0.000010	<0.000010	<0.000010	0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000010	<0.000010	<0.000010	<0.000010
Thorium	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010
Tin	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010
Titanium	0.00030	<0.00030	<0.00030	<0.00030	0.00030	<0.00030	<0.00030	<0.00030	0.00030	<0.00030	<0.00030	<0.00030	0.00030	<0.00030	<0.00030	<0.00030	<0.00030	0.00030	<0.00030	<0.00030	<0.00030
Tungsten	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010
Uranium	0.000010	<0.000010	<0.000010	<0.000010	0.000010	<0.000010	<0.000010	<0.000010	0.000010	<0.000010	<0.000010	<0.000010	0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000010	<0.000010	<0.000010	<0.000010
Vanadium	0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050
Zinc	0.0010	<0.0010	<0.0010	**0.0014**	0.0010	<0.0010	<0.0010	**0.003**	0.0010	<0.0010	<0.0010	**0.0011**	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	<0.0010	<0.0010	<0.0010
Zirconium	0.00020	<0.00020	<0.00020	<0.00020	0.00020	<0.00020	<0.00020	<0.00020	0.00020	<0.00020	<0.00020	<0.00020	0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00020	<0.00020	<0.00020	<0.00020

Notes:

1. DI water for DI Blank mistakenly taken from a secondary container suspected to be contaminated. Results deemed unreliable.

Bolded Travel, DI, or Equipment Blank concentration exceeds laboratory DLs but < 10x DL.

Italicized numbers are below detection limits.

"-" analyte not measured.

Table B-5. Water quality field duplicate results for all CREMP study areas in 2025.

Month	Units	Relative Percent Difference DQOs		March DLs	March DUP-1 (INUG-166)					March DUP-2 (WAL-147)					March DUP-3 (DS1-86)					March DUP-4 (NEM-95)				
Station					INUG-166	DUP	Field Dup Method [a]	Result [b] (RPD or Diff)	Outcome	WAL-147	DUP	Field Dup Method [a]	Result [b] (RPD or Diff)	Outcome	DS1-86	DUP	Field Dup Method [a]	Result [b] (RPD or Diff)	Outcome	NEM-95	DUP	Field Dup Method [a]	Result [b] (RPD or Diff)	Outcome
Date Sampled					03-Mar-2025	03-Mar-2025				01-Mar-2025	01-Mar-2025				05-Mar-2025	05-Mar-2025				07-Mar-2025	07-Mar-2025			
Time Sampled					11:45	11:45				15:00	15:00				09:37	09:37				09:45	09:45			
ALS Sample ID		Lab	Field		VA25A5048-010	VA25A5048-012				VA25A5048-001	VA25A5048-003				VA25A5659-012	VA25A5656-001				VA25A5659-005	VA25A5656-002			
Parameter					Water	Water				Water	Water				Water	Water				Water	Water			
Physical Tests																								
Conductivity	µS/cm	10	15	2	24	24	RPD	2.5	Pass RPD	89	88	RPD	1.2	Pass RPD	54	47	RPD	13	Pass RPD	113	108	RPD	4.5	Pass RPD
Alkalinity, Bicarbonate		20	30	1	7.40	7.10	RPD	4.1	Pass RPD	28	27	RPD	1.8	Pass RPD	10	10	RPD	0	Pass RPD	17	17	RPD	1.2	Pass RPD
Alkalinity, Carbonate		20	30	1	<1.0	<1.0	<DL	<DL	<DL	<1.0	<1.0	<DL	<DL	<DL	<1.0	<1.0	<DL	<DL	<DL	<1.0	<1.0	<DL	<DL	<DL
Alkalinity, Hydroxide		20	30	1	<1.0	<1.0	<DL	<DL	<DL	<1.0	<1.0	<DL	<DL	<DL	<1.0	<1.0	<DL	<DL	<DL	<1.0	<1.0	<DL	<DL	<DL
Alkalinity, Total (as $CaCO_3$)	mg/L	20	30	1	7.40	7.10	RPD	4.1	Pass RPD	28	27	RPD	1.8	Pass RPD	10	10	RPD	0	Pass RPD	17	17	RPD	1.2	Pass RPD
Hardness (mg/L), Dissolved			40	0.6	9.26	9.24	RPD	0.20	Pass RPD	39	38	RPD	2.3	Pass RPD	17	16	RPD	2.5	Pass RPD	41	42	RPD	-1.0	Pass RPD
Hardness (as $CaCO_3$), from total Ca/Mg			40	0.6	9.46	9.22	RPD	2.6	Pass RPD	38	38	RPD	-0.50	Pass RPD	17	18	RPD	-1.7	Pass RPD	44	43	RPD	1.6	Pass RPD
Total Dissolved Solids	mg/L		40	3	21	18	RPD	13	Pass RPD	67	66	RPD	1.5	Pass RPD	31	34	RPD	-7.7	Pass RPD	95	69	RPD	32	Pass RPD
Total Suspended Solids	mg/L		40	1	<1.0	<1.0	<DL	<DL	<DL	<1.0	<1.0	<DL	<DL	<DL	<1.0	<1.0	<DL	<DL	<DL	<1.0	<1.0	<DL	<DL	<DL
Turbidity	NTU	15	23	0.1	0.46	0.46	DIFF	0	Pass Diff	0	0	DIFF	0.020	Pass Diff	0.34	0.28	DIFF	0.060	Pass Diff	0.1	0.13	DIFF	0.030	Pass Diff
pH (Laboratory)	pH		40	0.1	7.11	7.08	RPD	0.40	Pass RPD	8	8	RPD	0	Pass RPD	7.03	7.11	RPD	-1.1	Pass RPD	7.29	7.39	RPD	-1.4	Pass RPD
Anions and Nutrients																								
Ammonia, Total (as N)	mg/L	20	30	0.0050	0.028	0.026	RPD	6.6	Pass RPD	0.035	0.024	DIFF	0.011	Pass Diff	0.021	0.018	DIFF	0.0025	Pass Diff	0.026	0.024	DIFF	0.0018	Pass Diff
Bromide (Br)	mg/L	20	30	0.050	<0.050	<0.050	<DL	<DL	<DL	<0.050	<0.050	<DL	<DL	<DL	<0.050	<0.050	<DL	<DL	<DL	0.096	0.089	DIFF	0.0073	Pass Diff
Chloride (Cl)	mg/L	20	30	0.1	1.10	1.05	RPD	4.7	Pass RPD	1.1	1.1	RPD	0.90	Pass RPD	3.02	3.03	RPD	-0.30	Pass RPD	15	15	RPD	-2.7	Pass RPD
Fluoride (F)	mg/L	20	30	0.020	0.086	0.081	DIFF	0.0050	Pass Diff	0.082	0.086	DIFF	0.0040	Pass Diff	0.069	0.070	DIFF	0.00070	Pass Diff	0.035	0.038	DIFF	0.0031	Pass Diff
Total Kjeldahl Nitrogen	mg/L	20	30	0.050	0.15	0.15	DIFF	0.0040	Pass Diff	0.18	0.17	DIFF	0.0090	Pass Diff	0.2	0.196	DIFF	0.0040	Pass Diff	0.162	0.16	DIFF	0.0020	Pass Diff
Nitrate (as N)	mg/L	20	30	0.0050	0.0075	<0.0050	<DL	<DL	<DL	0.016	0.016	DIFF	0.00050	Pass Diff	0.056	0.056	RPD	-1.6	Pass RPD	0.021	0.021	DIFF	0.000100	Pass Diff
Nitrite (as N)	mg/L	20	30	0.0010	<0.0010	<0.0010	<DL	<DL	<DL	<0.0010	<0.0010	<DL	<DL	<DL	<0.0010	<0.0010	<DL	<DL	<DL	<0.0010	<0.0010	<DL	<DL	<DL
Orthophosphate-Dissolved (as P)	mg/L	20	30	0.0010	<0.0010	<0.0010	<DL	<DL	<DL	<0.0010	<0.0010	<DL	<DL	<DL	<0.0010	<0.0010	<DL	<DL	<DL	<0.0010	<0.0010	<DL	<DL	<DL
Phosphorus (P)-Total	mg/L	20	30	0.0020	0.0024	0.0020	DIFF	0.00040	Pass Diff	0.0022	0.0022	DIFF	0	Pass Diff	0.0033	0.0033	DIFF	0	Pass Diff	<0.0020	<0.0020	<DL	<DL	<DL
Phosphorus (P)-Total Dissolved	mg/L	25	38	0.0020	<0.0020	<0.0020	<DL	<DL	<DL	<0.0020	0.0033	<DL	<DL	<DL	0.0028	0.0030	DIFF	0.00020	Pass Diff	<0.0020	<0.0020	<DL	<DL	<DL
Silica, Reactive (as SiO2)	mg/L	20	30	0.5	0.68	0.66	DIFF	0.020	Pass Diff	2.2	2.3	DIFF	0.030	Pass Diff	1.91	1.89	DIFF	0.020	Pass Diff	0.63	0.628	DIFF	0.0020	Pass Diff
Sulfate (SO4)	mg/L	20	30	0.3	1.82	1.78	RPD	2.2	Pass RPD	14	14	RPD	0	Pass RPD	5.32	5.53	RPD	-3.9	Pass RPD	9.09	9.57	RPD	-5.1	Pass RPD
Cyanides																								
Cyanide, Free	mg/L	20	30	0.0010	<0.0010	<0.0010	<DL	<DL	<DL	<0.0010	<0.0010	<DL	<DL	<DL	-	-	<DL	<DL	<DL	-	-	<DL	<DL	<DL
Cyanide, Total	mg/L	20	30	0.0010	<0.0010	<0.0010	<DL	<DL	<DL	<0.0010	<0.0010	<DL	<DL	<DL	-	-	<DL	<DL	<DL	-	-	<DL	<DL	<DL
Organic / Inorganic Carbon																								
Dissolved Organic Carbon	mg/L	20	30	0.5	2.47	2.30	DIFF	0.17	Pass Diff	3.0	3.0	RPD	0	Pass RPD	3.97	4.02	RPD	-1.3	Pass RPD	2.24	2.36	DIFF	0.12	Pass Diff
Total Organic Carbon	mg/L	20	30	0.5	2.45	2.39	DIFF	0.060	Pass Diff	2.9	3.1	RPD	-5.3	Pass RPD	3.85	3.89	RPD	-1.0	Pass RPD	2.25	2.3	DIFF	0.050	Pass Diff
Total Metals																								
Aluminum (Al)-Total	mg/L	20	30	0.0030	0.023	0.020	RPD	13	Pass RPD	0.0067	0.0048	DIFF	0.0019	Pass Diff	0.020	0.018	RPD	11	Pass RPD	<0.0030	<0.0030	<DL	<DL	<DL
Antimony (Sb)-Total	mg/L	20	30	0.00010	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL
Arsenic (As)-Total	mg/L	20	30	0.00010	0.00017	0.00017	DIFF	0	Pass Diff	0.00044	0.00045	DIFF	0.000010	Pass Diff	0.00023	0.00023	DIFF	0	Pass Diff	0.00082	0.00080	RPD	2.5	Pass RPD
Barium (Ba)-Total	mg/L	20	30	0.00010	0.0025	0.0025	RPD	-0.80	Pass RPD	0.0044	0.0043	RPD	2.1	Pass RPD	0.0074	0.0076	RPD	-2.8	Pass RPD	0.019	0.020	RPD	-4.7	Pass RPD
Beryllium (Be)-Total	mg/L	20	30	0.00010	<0.000100	<0.000100	<DL	<DL	<DL	<0.000100	<0.000100	<DL	<DL	<DL	<0.000100	<0.000100	<DL	<DL	<DL	<0.000100	<0.000100	<DL	<DL	<DL
Bismuth (Bi)-Total	mg/L	20	30	0.000050	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL
Boron (B)-Total	mg/L	20	30	0.010	<0.010	<0.010	<DL	<DL	<DL	<0.010	<0.010	<DL	<DL	<DL	<0.010	<0.010	<DL	<DL	<DL	<0.010	<0.010	<DL	<DL	<DL
Cadmium (Cd)-Total	mg/L	20	30	0.000005	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL
Calcium (Ca)-Total	mg/L	20	30	0.050	1.91	1.88	RPD	1.6	Pass RPD	9.9	10	RPD	-1.3	Pass RPD	4.09	4.17	RPD	-1.9	Pass RPD	12	12	RPD	3.4	Pass RPD
Cesium (Cs)-Total	mg/L	20	30	0.000010	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL	0.000014	0.000015	DIFF	0.000001	Pass Diff
Chromium (Cr)-Total	mg/L	20	30	0.00010	0.00020	0.00026	DIFF	0.000060	Pass Diff	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	0.00012	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL
Cobalt (Co)-Total	mg/L	20	30	0.00010	<0.00010	0.00041	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL
Copper (Cu)-Total	mg/L	20	30	0.00050	0.0051	0.0059	RPD	-13.6	Pass RPD	0.0016	0.0016	DIFF	0.000020	Pass Diff	0.00064	0.00063	DIFF	0.000010	Pass Diff	<0.00050	<0.00050	<DL	<DL	<DL
Iron (Fe)-Total	mg/L	20	30	0.010	0.021	0.021	DIFF	0	Pass Diff	<0.010	<0.010	<DL	<DL	<DL	0.041	0.042	DIFF	0.0010	Pass Diff	<0.010	<0.010	<DL	<DL	<DL
Lead (Pb)-Total	mg/L	20	30	0.000050	0.00029	0.00034	RPD	-15.7	Pass RPD	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL
Lithium (Li)-Total	mg/L	20	30	0.0010	<0.0010	<0.0010	<DL	<DL	<DL	<0.0010	<0.0010	<DL	<DL	<DL	<0.0010	<0.0010	<DL	<DL	<DL	0.0012	0.0012	DIFF	0	Pass Diff
Magnesium (Mg)-Total	mg/L	20	30	0.0050	1.14	1.10	RPD	3.6	Pass RPD	3.1	3.1	RPD	0.30	Pass RPD	1.74	1.78	RPD	-2.3	Pass RPD	3.33	3.39	RPD	-1.8	Pass RPD
Manganese (Mn)-Total	mg/L	20	30	0.00010	0.0013	0.0012	RPD	7.5	Pass RPD	0.0018	0.0017	RPD	5.2	Pass RPD	0.00077	0.00079	RPD	-2.6	Pass RPD	0.00066	0.00064	RPD	3.1	Pass RPD
Mercury (Hg)-Total	µg/L	20	30	0.000005	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL
Molybdenum (Mo)-Total	mg/L	20	30	0.000050	0.000060	0.000057	DIFF	0.000003	Pass Diff	0.00031	0.00033	RPD	-5.0	Pass RPD	0.000098	0.000094	DIFF	0.000004	Pass Diff	0.00010	0.00010	DIFF	0.000001	Pass Diff
Nickel (Ni)-Total	mg/L	20	30	0.00050	0.00068	0.00069	DIFF	0.000010	Pass Diff	0.00073	0.00072	DIFF	0.000010	Pass Diff	0.00054	0.00053	DIFF	0.000010	Pass Diff	0.0015	0.0015	DIFF	0	Pass Diff
Phosphorus (P)-Total	mg/L	20	30	0.050	<0.050	<0.050	<DL	<DL	<DL	<0.050	<0.050	<DL	<DL	<DL	<0.050	<0.050	<DL	<DL	<DL	<0.050	<0.050	<DL	<DL	<DL
Potassium (K)-Total	mg/L	20	30	0.050	0.53	0.52	RPD	2.5	Pass RPD	0.79	0.79	RPD	-0.90	Pass RPD	0.603	0.619	RPD	-2.6	Pass RPD	2.01	2.03	RPD	-1.0	Pass RPD
Rubidium (Rb)-Total	mg/L	20	30	0.00020	0.00076	0.00071	DIFF	0.000050	Pass Diff	0.0010	0.0011	RPD	-3.8	Pass RPD	0.00081	0.00081	DIFF	0	Pass Diff	0.0032	0.0035	RPD	-8.6	Pass RPD
Selenium (Se)-Total	mg/L	20	30	0.000050	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL
Silicon (Si)-Total	mg/L	20	30	0.1	0.38	0.38	DIFF	0	Pass Diff	1.1	1.1	RPD	0.90	Pass RPD	0.99	0.97	RPD	2.00	Pass RPD	0.33	0.33	DIFF	0	Pass Diff
Silver (Ag)-Total	mg/L	20	30	0.000010	0.000052	0.000056	RPD	-7.4	Pass RPD	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL
Sodium (Na)-Total	mg/L	20	30	0.050	0.93	0.91	RPD	1.7	Pass RPD	1.2	1.1	RPD	0.90	Pass RPD	1.66	1.68	RPD	-1.2	Pass RPD	1.15	1.14	RPD	0.90	Pass RPD
Strontium (Sr)-Total	mg/L	20	30	0.00020	0.010	0.0099	RPD	2.3	Pass RPD	0.051	0.050	RPD	1.2	Pass RPD	0.018	0.018	RPD	0.6	Pass RPD	0.068	0.071	RPD	-5.5	Pass RPD
Sulfur (S)-Total	mg/L	20	30	0.5	0.58	0.58	DIFF	0	Pass Diff	4.8	4.9	RPD	-2.9	Pass RPD	1.56	1.67	DIFF	0.1	Pass Diff	2.77	3.03	RPD	-9.0	Pass RPD
Tellurium (Te)-Total	mg/L	20	30	0.00020	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL
Thallium (Tl)-Total	mg/L	20	30	0.000010	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL
Thorium (Th)-Total	mg/L	20	30	0.00010	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL
Tin (Sn)-Total	mg/L	20	30	0.00010	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL
Titanium (Ti)-Total	mg/L	20	30	0.00030	0.00040	0.00040	DIFF	0	Pass Diff	<0.00030	<0.00030	<DL	<DL	<DL	<0.00030	<0.00030	<DL	<DL	<DL	<0.00030	<0.00030	<DL	<DL	<DL
Tungsten (W)-Total	mg/L	20	30	0.00010	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL
Uranium (U)-Total	mg/L	20	30	0.000010	0.00012	0.00012	RPD	0.90	Pass RPD	0.00012	0.00011	RPD	2.6	Pass RPD	0.00010	0.00010	RPD	1.0	Pass RPD	0.000022	0.000022	DIFF	0	Pass Diff
Vanadium (V)-Total	mg/L	20	30	0.00050	<0.00050	<0.00050	<DL	<DL	<DL	<0.00050	<0.00050	<DL	<DL	<DL	<0.00050	<0.00050	<DL	<DL	<DL	<0.00050	<0.00050	<DL	<DL	<DL
Zinc (Zn)-Total	mg/L	20	30	0.0030	0.0043	0.0047	DIFF	0.00040	Pass Diff	<0.0030	<0.0030	<DL	<DL	<DL	<0.0030	<0.0030	<DL	<DL	<DL	0.0097	<0.0030	<DL	<DL	<DL
Zirconium (Zr)-Total	mg/L	20	30	0.00020	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL
Dissolved Metals																								
Aluminum (Al)-Dissolved	mg/L	20	30	0.0010	0.0083	0.0085	RPD	-2.4	Pass RPD	0.0030	0.0029	DIFF	0.00010	Pass Diff	0.015	0.013	RPD	10	Pass RPD	0.0011	0.0014	DIFF	0.00030	Pass Diff
Antimony (Sb)-Dissolved	mg/L	20	30	0.00010	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL
Arsenic (As)-Dissolved	mg/L	20	30	0.00010	0.00016	0.00015	DIFF	0.000010	Pass Diff	0.00044	0.00045	DIFF	0.000010	Pass Diff	0.00022	0.00022	DIFF	0	Pass Diff	0.00080	0.00077	RPD	3.8	Pass RPD
Barium (Ba)-Dissolved	mg/L	20	30	0.00010	0.0024	0.0024	RPD	-1.2	Pass RPD	0.0045	0.0045	RPD	0.20	Pass RPD	0.0073	0.0072	RPD	1.50	Pass RPD	0.018	0.019	RPD	-4.8	Pass RPD
Beryllium (Be)-Dissolved	mg/L	20	30	0.00010	<0.000100	<0.000100	<DL	<DL	<DL	<0.000100	<0.000100	<DL	<DL	<DL	<0.000100	<0.000100	<DL	<DL	<DL	<0.000100	<0.000100	<DL	<DL	<DL
Bismuth (Bi)-Dissolved	mg/L	20	30	0.000050	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL
Boron (B)-Dissolved	mg/L	20	30	0.010	<0.010	<0.010	<DL	<DL	<DL	<0.010	<0.010	<DL	<DL	<DL	<0.010	<0.010	<DL	<DL	<DL	<0.010	<0.010	<DL	<DL	<DL
Cadmium (Cd)-Dissolved	mg/L	20	30	0.000005	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL
Calcium (Ca)-Dissolved	mg/L	20	30	0.050	1.88	1.87	RPD	0.50	Pass RPD	10	10	RPD	1.0	Pass RPD	3.83	3.8	RPD	0.8	Pass RPD	11	12	RPD	-0.90	Pass RPD
Cesium (Cs)-Dissolved	mg/L	20	30	0.000010	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL	0.000013	0.000015	DIFF	0.000002	Pass Diff
Chromium (Cr)-Dissolved	mg/L	20	30	0.00010	0.00011	0.00011	DIFF	0	Pass Diff	<0.00010	<0.00010	<DL	<DL	<DL	0.00016	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL
Cobalt (Co)-Dissolved	mg/L	20	30	0.00010	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL
Copper (Cu)-Dissolved	mg/L	20	30	0.00020	0.0060	0.0059	RPD	2.0	Pass RPD	0.0015	0.0015	RPD	0.70	Pass RPD	0.00060	0.00061	DIFF	0.000010	Pass Diff	0.00035	0.00035	DIFF	0	Pass Diff
Iron (Fe)-Dissolved	mg/L	20	30	0.010	<0.010	<0.010	<DL	<DL	<DL	<0.010	<0.010	<DL	<DL	<DL	0.036	0.034	DIFF	0.0020	Pass Diff	<0.010	<0.010	<DL	<DL	<DL
Lead (Pb)-Dissolved	mg/L	20	30	0.000050	0.00032	0.00030	RPD	7.4	Pass RPD	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL
Lithium (Li)-Dissolved	mg/L	20	30	0.0010	<0.0010	<0.0010	<DL	<DL	<DL	<0.0010	<0.0010	<DL	<DL	<DL	<0.0010	<0.0010	<DL	<DL	<DL	0.0012	0.0012	DIFF	0	Pass Diff
Magnesium (Mg)-Dissolved	mg/L	20	30	0.0050	1.11	1.11	RPD	0	Pass RPD	3.4	3.2	RPD	5.2	Pass RPD	1.68	1.6	RPD	4.9	Pass RPD	3.15	3.17	RPD	-0.60	Pass RPD
Manganese (Mn)-Dissolved	mg/L	20	30	0.00010	0.00042	0.00046	DIFF	0.000040	Pass Diff	0.0011	0.0010	RPD	2.8	Pass RPD	0.00059	0.00053	RPD	11	Pass RPD	0.00021	0.00028	DIFF	0.000070	Pass Diff
Mercury (Hg)-Dissolved	µg/L	20	30	0.000005	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL
Molybdenum (Mo)-Dissolved	mg/L	20	30	0.000050	0.000051	<0.000050	<DL	<DL	<DL	0.00030	0.00032	RPD	-7.5	Pass RPD	0.000093	0.000087	DIFF	0.000006	Pass Diff	0.000079	0.000084	DIFF	0.000005	Pass Diff
Nickel (Ni)-Dissolved	mg/L	20	30	0.00050	0.00063	0.00063	DIFF	0	Pass Diff	0.00071	0.00072	DIFF	0.000010	Pass Diff	0.00056	0.00052	DIFF	0.000040	Pass Diff	0.0014	0.0015	DIFF	0.000090	Pass Diff
Phosphorus (P)-Dissolved	mg/L	20	30	0.050	<0.050	<0.050	<DL	<DL	<DL	<0.050	<0.050	<DL	<DL	<DL	<0.050	<0.050	<DL	<DL	<DL	<0.050	<0.050	<DL	<DL	<DL
Potassium (K)-Dissolved	mg/L	20	30	0.050	0.51	0.52	RPD	-1.2	Pass RPD	0.78	0.78	RPD	1.2	Pass RPD	0.628	0.599	RPD	4.7	Pass RPD	2.02	2.1	RPD	-3.9	Pass RPD
Rubidium (Rb)-Dissolved	mg/L	20	30	0.00020	0.00070	0.00076	DIFF	0.000060	Pass Diff	0.00099	0.0010	DIFF	0.000030	Pass Diff	0.00085	0.00083	DIFF	0.000020	Pass Diff	0.0033	0.0033	RPD	-1.2	Pass RPD
Selenium (Se)-Dissolved	mg/L	20	30	0.000050	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL
Silicon (Si)-Dissolved	mg/L	20	30	0.050	0.300	0.305	RPD	-1.7	Pass RPD	1.0	1.0	RPD	0	Pass RPD	0.887	0.864	RPD	3	Pass RPD	0.268	0.27	RPD	-0.70	Pass RPD
Silver (Ag)-Dissolved	mg/L	20	30	0.000010	0.000057	0.000053	RPD	7.3	Pass RPD	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL
Sodium (Na)-Dissolved	mg/L	20	30	0.050	0.932	0.936	RPD	-0.40	Pass RPD	1.2	1.1	RPD	3.4	Pass RPD	1.72	1.67	RPD	2.9	Pass RPD	1.14	1.19	RPD	-4.3	Pass RPD
Strontium (Sr)-Dissolved	mg/L	20	30	0.00020	0.0098	0.0098	RPD	0.10	Pass RPD	0.049	0.050	RPD	-2.6	Pass RPD	0.018	0.017	RPD	1.7	Pass RPD	0.065	0.065	RPD	-0.50	Pass RPD
Sulfur (S)-Dissolved	mg/L	20	30	0.5	<0.50	<0.50	<DL	<DL	<DL	4.1	4.2	RPD	-3.8	Pass RPD	1.42	1.48	DIFF	0.060	Pass Diff	2.83	2.65	RPD	6.6	Pass RPD
Tellurium (Te)-Dissolved	mg/L	20	30	0.00020	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL
Thallium (Tl)-Dissolved	mg/L	20	30	0.000010	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL
Thorium (Th)-Dissolved	mg/L	20	30	0.00010	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL
Tin (Sn)-Dissolved	mg/L	20	30	0.00010	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL
Titanium (Ti)-Dissolved	mg/L	20	30	0.00030	<0.00030	<0.00030	<DL	<DL	<DL	<0.00030	<0.00030	<DL	<DL	<DL	<0.00030	<0.00030	<DL	<DL	<DL	<0.00030	<0.00030	<DL	<DL	<DL
Tungsten (W)-Dissolved	mg/L	20	30	0.00010	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL
Uranium (U)-Dissolved	mg/L	20	30	0.000010	0.00010	0.000097	RPD	5.0	Pass RPD	0.000099	0.000096	RPD	3.1	Pass RPD	0.000098	0.000098	RPD	0	Pass RPD	0.000022	0.000022	DIFF	0	Pass Diff
Vanadium (V)-Dissolved	mg/L	20	30	0.00050	<0.00050	<0.00050	<DL	<DL	<DL	<0.00050	<0.00050	<DL	<DL	<DL	<0.00050	<0.00050	<DL	<DL	<DL	<0.00050	<0.00050	<DL	<DL	<DL
Zinc (Zn)-Dissolved	mg/L	20	30	0.0010	0.0050	0.0043	DIFF	0.00070	Pass Diff	<0.0010	<0.0010	<DL	<DL	<DL	0.068	0.0059	RPD	168	Fail	0.0018	0.0017	DIFF	0.00010	Pass Diff
Zirconium (Zr)-Dissolved	mg/L		40	0.00020	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL
Dissolved Mercury Filtration Location	-	20	30		Field	Field		<DL		Field	Field		<DL		Field	Field		<DL			Field		<DL	
Dissolved Metals Filtration Location	-	20	30		Field	Field		<DL		Field	Field		<DL		Field	Field		<DL			Field		<DL	
Plant Pigments (µg/L)																								
chlorophyll-a	µg/L		40	0.010	0.364	0.306	RPD	17	Pass RPD	0.22	0.17	RPD	26	Pass RPD	0.322	0.264	RPD	20	Pass RPD	0.422	0.424	RPD	0.50	Pass RPD

Notes:

[a] Field Dup Methods are based on the concentrations:

RPD = relative percent difference is used to compare field duplicates when the measured concentration is > 5x the DL

DIFF = when concentrations < 5x the DL

[b] Results refer to the RPD or absolute difference in concentration:

DQO for RPDs is < Field RPD values

DQO for DIFF is < 2x the DL

Italicized numbers are below detection limits.

Table B-5. Water quality field duplicate results for all CREMP study areas in 2025.

Month	Units	Relative Percent Difference DQOs		May DLs	May DUP-1 (TPN-181)					May DUP-2 (PDL-133)					May DUP-3 (NEM-98)					May DUP-4 (DS1-87)				
Station		Lab	Field		TPN-181	DUP	Field Dup Method [a]	Result [b] (RPD or Diff)	Outcome	PDL-133	DUP	Field Dup Method [a]	Result [b] (RPD or Diff)	Outcome	NEM-98	DUP	Field Dup Method [a]	Result [b] (RPD or Diff)	Outcome	DS1-87	DUP	Field Dup Method [a]	Result [b] (RPD or Diff)	Outcome
Date Sampled					27-Apr-2025	27-Apr-2025				13-May-2025	13-May-2025				04-May-2025	04-May-2025				18-May-2025	18-May-2025			
Time Sampled					12:55	00:00				11:50	00:00				13:30	13:30				08:40	00:00			
ALS Sample ID					VA25B0834-002 VA25B2008-008	VA25B0834-007 VA25B2006-001				VA25B1633-003 VA25B2008-003	VA25B1633-007 VA25B2006-002				VA25B0623-002 VA25B2006-004	VA25B0623-003 VA25B2006-011				VA25B2005-001	VA25B2005-005			
Parameter					Water	Water				Water	Water				Water	Water				Water	Water			
Physical Tests																								
Conductivity	µS/cm	10	15	2	38	37	RPD	4.0	Pass RPD	38	38	RPD	-0.30	Pass RPD	105	107	RPD	-1.9	Pass RPD	91	92	RPD	-0.30	Pass RPD
Alkalinity, Bicarbonate		20	30	1	8.8	8.5	RPD	3.5	Pass RPD	12	12	RPD	-0.90	Pass RPD	18	18	RPD	1.7	Pass RPD	16	16	RPD	-1.9	Pass RPD
Alkalinity, Carbonate		20	30	1	<1.0	<1.0	<DL	<DL	<DL	<1.0	<1.0	<DL	<DL	<DL	<1.0	<1.0	<DL	<DL	<DL	<1.0	<1.0	<DL	<DL	<DL
Alkalinity, Hydroxide		20	30	1	<1.0	<1.0	<DL	<DL	<DL	<1.0	<1.0	<DL	<DL	<DL	<1.0	<1.0	<DL	<DL	<DL	<1.0	<1.0	<DL	<DL	<DL
Alkalinity, Total (as $CaCO_3$)	mg/L	20	30	1	8.8	8.5	RPD	3.5	Pass RPD	12	12	RPD	-0.90	Pass RPD	18	18	RPD	1.7	Pass RPD	16	16	RPD	-1.9	Pass RPD
Hardness (mg/L), Dissolved			40	0.6	13	13	RPD	4.7	Pass RPD	15	16	RPD	-2.6	Pass RPD	42	42	RPD	-0.50	Pass RPD	29	29	RPD	1.4	Pass RPD
Hardness (as $CaCO_3$), from total Ca/Mg			40	0.6	13	12	RPD	4.8	Pass RPD	15	15	RPD	0	Pass RPD	42	41	RPD	2.9	Pass RPD	32	32	RPD	-1.3	Pass RPD
Total Dissolved Solids	mg/L		40	1	18	20	RPD	-9.3	Pass RPD	20	24	RPD	-19.8	Pass RPD	74	77	RPD	-3.2	Pass RPD	55	54	RPD	1.8	Pass RPD
Total Suspended Solids	mg/L		40	3	<1.0	<1.0	<DL	<DL	<DL	<1.0	<1.0	<DL	<DL	<DL	<1.0	<1.0	<DL	<DL	<DL	<1.0	<1.0	<DL	<DL	<DL
Turbidity	NTU	15	23	0.1	0.15	0.14	DIFF	0.0100	Pass Diff	0.12	0.12	DIFF	0	Pass Diff	<0.10	<0.10	<DL	<DL	<DL	0.28	0.26	DIFF	0.020	Pass Diff
pH (Laboratory)	pH		40	0.1	7.11	7.1	RPD	0.1	Pass RPD	7.37	7.37	RPD	0	Pass RPD	7.25	7.25	RPD	0	Pass RPD	7.29	7.3	RPD	-0.10	Pass RPD
Anions and Nutrients																								
Ammonia, Total (as N)	mg/L	20	30	0.0050	0.012	0.026	DIFF	0.014	Pass Diff	0.026	0.014	DIFF	0.012	Pass Diff	0.039	0.031	RPD	23	Pass RPD	0.015	0.017	DIFF	0.0021	Pass Diff
Bromide (Br)	mg/L	20	30	0.050	<0.050	<0.050	<DL	<DL	<DL	<0.050	<0.050	<DL	<DL	<DL	0.1	0.099	DIFF	0.0010	Pass Diff	0.056	0.060	DIFF	0.0040	Pass Diff
Chloride (Cl)	mg/L	20	30	0.1	1.16	1.12	RPD	3.5	Pass RPD	1.32	1.32	RPD	0	Pass RPD	15	15	RPD	2.0	Pass RPD	8.19	8.36	RPD	-2.1	Pass RPD
Fluoride (F)	mg/L	20	30	0.020	0.092	0.088	DIFF	0.0040	Pass Diff	0.057	0.058	DIFF	0.0010	Pass Diff	0.034	0.035	DIFF	0.0010	Pass Diff	0.063	0.064	DIFF	0.0010	Pass Diff
Total Kjeldahl Nitrogen	mg/L	20	30	0.050	0.111	0.123	DIFF	0.012	Pass Diff	0.153	0.119	DIFF	0.034	Pass Diff	0.179	0.184	DIFF	0.0050	Pass Diff	0.193	0.19	DIFF	0.0030	Pass Diff
Nitrate (as N)	mg/L	20	30	0.0050	0.0094	0.0094	DIFF	0	Pass Diff	<0.0050	<0.0050	<DL	<DL	<DL	0.034	0.034	RPD	2.4	Pass RPD	0.106	0.108	RPD	-1.9	Pass RPD
Nitrite (as N)	mg/L	20	30	0.0010	<0.0010	<0.0010	<DL	<DL	<DL	<0.0010	<0.0010	<DL	<DL	<DL	<0.0010	<0.0010	<DL	<DL	<DL	<0.0010	<0.0010	<DL	<DL	<DL
Orthophosphate-Dissolved (as P)	mg/L	20	30	0.0010	<0.0010	<0.0010	<DL	<DL	<DL	<0.0010	<0.0010	<DL	<DL	<DL	<0.0010	<0.0010	<DL	<DL	<DL	<0.0010	<0.0010	<DL	<DL	<DL
Phosphorus (P)-Total	mg/L	20	30	0.0020	<0.0020	0.0057	<DL	<DL	<DL	0.0025	<0.0020	<DL	<DL	<DL	0.0029	0.0028	DIFF	0.000100	Pass Diff	0.0042	0.0038	DIFF	0.00040	Pass Diff
Phosphorus (P)-Total Dissolved	mg/L	25	38	0.0020	0.0029	0.0051	DIFF	0.0022	Pass Diff	0.0022	<0.0020	<DL	<DL	<DL	<0.0020	<0.0020	<DL	<DL	<DL	0.0026	0.0039	DIFF	0.0013	Pass Diff
Silica, Reactive (as SiO2)	mg/L	20	30	0.5	<0.50	<0.50	<DL	<DL	<DL	0.54	0.54	DIFF	0	Pass Diff	0.64	0.64	DIFF	0	Pass Diff	3.47	3.46	RPD	0.30	Pass RPD
Sulfate (SO4)	mg/L	20	30	0.3	6.31	6.05	RPD	4.2	Pass RPD	3.52	3.53	RPD	-0.30	Pass RPD	9.14	9.17	RPD	-0.30	Pass RPD	11	11	RPD	-1.8	Pass RPD
Cyanides																								
Cyanide, Free	mg/L	20	30	0.0010	<0.0010	-	<DL	<DL	<DL	<0.0020	<0.0020	<DL	<DL	<DL	-	-	<DL	<DL	<DL	-	-	<DL	<DL	<DL
Cyanide, Total	mg/L	20	30	0.0010	<0.0010	-	<DL	<DL	<DL	<0.0020	<0.0020	<DL	<DL	<DL	-	-	<DL	<DL	<DL	-	-	<DL	<DL	<DL
Organic / Inorganic Carbon																								
Dissolved Organic Carbon	mg/L	20	30	0.5	1.63	1.51	DIFF	0.12	Pass Diff	2.43	2.39	DIFF	0.040	Pass Diff	2.46	2.37	DIFF	0.090	Pass Diff	4.14	3.86	RPD	7.0	Pass RPD
Total Organic Carbon	mg/L	20	30	0.5	1.64	1.57	DIFF	0.070	Pass Diff	2.54	2.13	DIFF	0.41	Pass Diff	2.39	2.33	DIFF	0.060	Pass Diff	4.14	3.95	RPD	4.7	Pass RPD
Total Metals																								
Aluminum (Al)-Total	mg/L	20	30	0.0030	0.0038	0.0034	DIFF	0.00040	Pass Diff	0.0034	<0.0030	<DL	<DL	<DL	<0.0030	<0.0030	<DL	<DL	<DL	0.011	0.011	DIFF	0	Pass Diff
Antimony (Sb)-Total	mg/L	20	30	0.00010	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL
Arsenic (As)-Total	mg/L	20	30	0.00010	0.00024	0.00024	DIFF	0	Pass Diff	0.00025	0.00027	DIFF	0.000020	Pass Diff	0.00075	0.00073	RPD	2.7	Pass RPD	0.00017	0.00017	DIFF	0	Pass Diff
Barium (Ba)-Total	mg/L	20	30	0.00010	0.0036	0.0035	RPD	4.5	Pass RPD	0.0029	0.0028	RPD	6.3	Pass RPD	0.019	0.019	RPD	0.50	Pass RPD	0.013	0.014	RPD	-3.7	Pass RPD
Beryllium (Be)-Total	mg/L	20	30	0.00010	<0.000100	<0.000100	<DL	<DL	<DL	<0.000100	<0.000100	<DL	<DL	<DL	<0.000100	<0.000100	<DL	<DL	<DL	<0.000100	<0.000100	<DL	<DL	<DL
Bismuth (Bi)-Total	mg/L	20	30	0.000050	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL
Boron (B)-Total	mg/L	20	30	0.010	<0.010	<0.010	<DL	<DL	<DL	<0.010	<0.010	<DL	<DL	<DL	<0.010	<0.010	<DL	<DL	<DL	<0.010	<0.010	<DL	<DL	<DL
Cadmium (Cd)-Total	mg/L	20	30	0.000005	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL
Calcium (Ca)-Total	mg/L	20	30	0.050	3.04	2.89	RPD	5.1	Pass RPD	3.91	3.93	RPD	-0.50	Pass RPD	12	12	RPD	2.6	Pass RPD	8.7	8.78	RPD	-0.90	Pass RPD
Cesium (Cs)-Total	mg/L	20	30	0.000010	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL	0.000014	0.000015	DIFF	0.000001	Pass Diff	<0.000010	<0.000010	<DL	<DL	<DL
Chromium (Cr)-Total	mg/L	20	30	0.00010	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	0.00028	0.00011	DIFF	0.00017	Pass Diff	<0.00010	<0.00010	<DL	<DL	<DL
Cobalt (Co)-Total	mg/L	20	30	0.00010	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL
Copper (Cu)-Total	mg/L	20	30	0.00050	<0.00050	<0.00050	<DL	<DL	<DL	0.00063	0.00063	DIFF	0	Pass Diff	<0.00050	<0.00050	<DL	<DL	<DL	0.00058	0.00058	DIFF	0	Pass Diff
Iron (Fe)-Total	mg/L	20	30	0.010	<0.010	<0.010	<DL	<DL	<DL	<0.010	<0.010	<DL	<DL	<DL	<0.010	<0.010	<DL	<DL	<DL	0.019	0.018	DIFF	0.0010	Pass Diff
Lead (Pb)-Total	mg/L	20	30	0.000050	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL
Lithium (Li)-Total	mg/L	20	30	0.0010	<0.0010	<0.0010	<DL	<DL	<DL	<0.0010	<0.0010	<DL	<DL	<DL	0.0013	0.0012	DIFF	0.00010	Pass Diff	<0.0010	<0.0010	<DL	<DL	<DL
Magnesium (Mg)-Total	mg/L	20	30	0.0050	1.28	1.24	RPD	3.2	Pass RPD	1.34	1.33	RPD	0.70	Pass RPD	3.04	2.93	RPD	3.7	Pass RPD	2.42	2.48	RPD	-2.4	Pass RPD
Manganese (Mn)-Total	mg/L	20	30	0.00010	0.00042	0.00040	DIFF	0.000020	Pass Diff	0.00061	0.00059	RPD	3.3	Pass RPD	0.00080	0.00066	RPD	19	Pass RPD	0.0026	0.0027	RPD	-2.3	Pass RPD
Mercury (Hg)-Total	µg/L	20	30	0.000005	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL
Molybdenum (Mo)-Total	mg/L	20	30	0.000050	0.00011	0.00011	DIFF	0.000004	Pass Diff	0.000073	0.000073	DIFF	0	Pass Diff	0.000095	0.000095	DIFF	0	Pass Diff	0.00012	0.00011	DIFF	0.000007	Pass Diff
Nickel (Ni)-Total	mg/L	20	30	0.00050	0.00078	0.00077	DIFF	0.000010	Pass Diff	0.00088	0.00088	DIFF	0	Pass Diff	0.0016	0.0016	DIFF	0.000020	Pass Diff	<0.00050	<0.00050	<DL	<DL	<DL
Phosphorus (P)-Total	mg/L	20	30	0.050	<0.050	<0.050	<DL	<DL	<DL	<0.050	<0.050	<DL	<DL	<DL	<0.050	<0.050	<DL	<DL	<DL	<0.050	<0.050	<DL	<DL	<DL
Potassium (K)-Total	mg/L	20	30	0.050	0.639	0.614	RPD	4.0	Pass RPD	0.534	0.524	RPD	1.9	Pass RPD	2.12	2.05	RPD	3.4	Pass RPD	1.39	1.41	RPD	-1.4	Pass RPD
Rubidium (Rb)-Total	mg/L	20	30	0.00020	0.00094	0.00081	DIFF	0.00013	Pass Diff	0.00067	0.00075	DIFF	0.000080	Pass Diff	0.0032	0.0030	RPD	5.4	Pass RPD	0.0014	0.0014	RPD	-4.3	Pass RPD
Selenium (Se)-Total	mg/L	20	30	0.000050	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL
Silicon (Si)-Total	mg/L	20	30	0.1	0.17	0.18	DIFF	0.0100	Pass Diff	0.25	0.24	DIFF	0.010	Pass Diff	0.33	0.34	DIFF	0.010	Pass Diff	1.67	1.65	RPD	1.2	Pass RPD
Silver (Ag)-Total	mg/L	20	30	0.000010	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL
Sodium (Na)-Total	mg/L	20	30	0.050	1.29	1.23	RPD	4.80	Pass RPD	0.783	0.775	RPD	1.0	Pass RPD	1.14	1.13	RPD	0.90	Pass RPD	3.49	3.54	RPD	-1.4	Pass RPD
Strontium (Sr)-Total	mg/L	20	30	0.00020	0.014	0.013	RPD	5.2	Pass RPD	0.017	0.017	RPD	2.4	Pass RPD	0.066	0.065	RPD	2.3	Pass RPD	0.040	0.042	RPD	-4.6	Pass RPD
Sulfur (S)-Total	mg/L	20	30	0.5	1.94	2.08	DIFF	0.1	Pass Diff	1.08	0.92	DIFF	0.16	Pass Diff	3.22	2.94	RPD	9.1	Pass RPD	3.94	3.89	RPD	1.3	Pass RPD
Tellurium (Te)-Total	mg/L	20	30	0.00020	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL
Thallium (Tl)-Total	mg/L	20	30	0.000010	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL
Thorium (Th)-Total	mg/L	20	30	0.00010	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL
Tin (Sn)-Total	mg/L	20	30	0.00010	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL
Titanium (Ti)-Total	mg/L	20	30	0.00030	<0.00030	<0.00030	<DL	<DL	<DL	<0.00030	<0.00030	<DL	<DL	<DL	<0.00030	<0.00030	<DL	<DL	<DL	<0.00030	<0.00030	<DL	<DL	<DL
Tungsten (W)-Total	mg/L	20	30	0.00010	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL
Uranium (U)-Total	mg/L	20	30	0.000010	0.000055	0.000056	RPD	-1.8	Pass RPD	0.000050	0.000046	DIFF	0.000004	Pass Diff	0.000022	0.000021	DIFF	0.000001	Pass Diff	0.000067	0.000069	RPD	-2.9	Pass RPD
Vanadium (V)-Total	mg/L	20	30	0.00050	<0.00050	<0.00050	<DL	<DL	<DL	<0.00050	<0.00050	<DL	<DL	<DL	<0.00050	<0.00050	<DL	<DL	<DL	<0.00050	<0.00050	<DL	<DL	<DL
Zinc (Zn)-Total	mg/L	20	30	0.0030	<0.0030	<0.0030	<DL	<DL	<DL	<0.0030	<0.0030	<DL	<DL	<DL	<0.0030	<0.0030	<DL	<DL	<DL	<0.0030	<0.0030	<DL	<DL	<DL
Zirconium (Zr)-Total	mg/L	20	30	0.00020	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL
Dissolved Metals																								
Aluminum (Al)-Dissolved	mg/L	20	30	0.0010	0.0012	0.0016	DIFF	0.00040	Pass Diff	0.0014	0.0014	DIFF	0	Pass Diff	<0.0010	0.0034	<DL	<DL	<DL	0.011	0.010	RPD	4.7	Pass RPD
Antimony (Sb)-Dissolved	mg/L	20	30	0.00010	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL
Arsenic (As)-Dissolved	mg/L	20	30	0.00010	0.00023	0.00024	DIFF	0.000010	Pass Diff	0.00022	0.00023	DIFF	0.000010	Pass Diff	0.00074	0.00071	RPD	4.1	Pass RPD	0.00017	0.00015	DIFF	0.000020	Pass Diff
Barium (Ba)-Dissolved	mg/L	20	30	0.00010	0.0035	0.0034	RPD	3.2	Pass RPD	0.0030	0.0031	RPD	-2.9	Pass RPD	0.019	0.018	RPD	1.6	Pass RPD	0.014	0.014	RPD	0.70	Pass RPD
Beryllium (Be)-Dissolved	mg/L	20	30	0.00010	<0.000100	<0.000100	<DL	<DL	<DL	<0.000100	<0.000100	<DL	<DL	<DL	<0.000100	<0.000100	<DL	<DL	<DL	<0.000100	<0.000100	<DL	<DL	<DL
Bismuth (Bi)-Dissolved	mg/L	20	30	0.000050	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL
Boron (B)-Dissolved	mg/L	20	30	0.010	<0.010	<0.010	<DL	<DL	<DL	<0.010	<0.010	<DL	<DL	<DL	<0.010	<0.010	<DL	<DL	<DL	<0.010	<0.010	<DL	<DL	<DL
Cadmium (Cd)-Dissolved	mg/L	20	30	0.000005	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL
Calcium (Ca)-Dissolved	mg/L	20	30	0.050	3.22	3.06	RPD	5.10	Pass RPD	3.83	3.96	RPD	-3.3	Pass RPD	12	12	RPD	0	Pass RPD	7.86	7.66	RPD	2.6	Pass RPD
Cesium (Cs)-Dissolved	mg/L	20	30	0.000010	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL	0.000013	0.000016	DIFF	0.000003	Pass Diff	<0.000010	<0.000010	<DL	<DL	<DL
Chromium (Cr)-Dissolved	mg/L	20	30	0.00010	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	0.00013	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL
Cobalt (Co)-Dissolved	mg/L	20	30	0.00010	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL
Copper (Cu)-Dissolved	mg/L	20	30	0.00020	0.00044	0.00044	DIFF	0	Pass Diff	0.00054	0.00056	DIFF	0.000020	Pass Diff	0.00030	0.00036	DIFF	0.000060	Pass Diff	0.00055	0.00060	DIFF	0.000050	Pass Diff
Iron (Fe)-Dissolved	mg/L	20	30	0.010	<0.010	<0.010	<DL	<DL	<DL	<0.010	<0.010	<DL	<DL	<DL	<0.010	<0.010	<DL	<DL	<DL	0.017	0.016	DIFF	0.0010	Pass Diff
Lead (Pb)-Dissolved	mg/L	20	30	0.000050	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL
Lithium (Li)-Dissolved	mg/L	20	30	0.0010	<0.0010	<0.0010	<DL	<DL	<DL	<0.0010	<0.0010	<DL	<DL	<DL	0.0012	0.0012	DIFF	0	Pass Diff	<0.0010	<0.0010	<DL	<DL	<DL
Magnesium (Mg)-Dissolved	mg/L	20	30	0.0050	1.25	1.21	RPD	3.30	Pass RPD	1.34	1.36	RPD	-1.5	Pass RPD	2.86	2.9	RPD	-1.4	Pass RPD	2.35	2.38	RPD	-1.3	Pass RPD
Manganese (Mn)-Dissolved	mg/L	20	30	0.00010	0.00033	0.00021	DIFF	0.00012	Pass Diff	0.00022	0.00022	DIFF	0	Pass Diff	0.00030	0.00039	DIFF	0.000090	Pass Diff	0.0018	0.0017	RPD	4.1	Pass RPD
Mercury (Hg)-Dissolved	µg/L	20	30	0.000005	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL
Molybdenum (Mo)-Dissolved	mg/L	20	30	0.000050	0.00011	0.00011	DIFF	0.000008	Pass Diff	0.000071	0.000071	DIFF	0	Pass Diff	0.00011	0.000091	DIFF	0.000014	Pass Diff	0.00013	0.00011	DIFF	0.000015	Pass Diff
Nickel (Ni)-Dissolved	mg/L	20	30	0.00050	0.00072	0.00072	DIFF	0	Pass Diff	0.00084	0.00090	DIFF	0.000060	Pass Diff	0.0014	0.0014	DIFF	0.000020	Pass Diff	<0.00050	<0.00050	<DL	<DL	<DL
Phosphorus (P)-Dissolved	mg/L	20	30	0.050	<0.050	<0.050	<DL	<DL	<DL	<0.050	<0.050	<DL	<DL	<DL	<0.050	<0.050	<DL	<DL	<DL	<0.050	<0.050	<DL	<DL	<DL
Potassium (K)-Dissolved	mg/L	20	30	0.050	0.643	0.633	RPD	1.6	Pass RPD	0.575	0.592	RPD	-2.9	Pass RPD	2.01	2.01	RPD	0	Pass RPD	1.51	1.52	RPD	-0.70	Pass RPD
Rubidium (Rb)-Dissolved	mg/L	20	30	0.00020	0.00084	0.00086	DIFF	0.000020	Pass Diff	0.00072	0.00073	DIFF	0.000010	Pass Diff	0.0031	0.0033	RPD	-7.2	Pass RPD	0.0014	0.0014	RPD	-0.70	Pass RPD
Selenium (Se)-Dissolved	mg/L	20	30	0.000050	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	0.000059	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL
Silicon (Si)-Dissolved	mg/L	20	30	0.050	0.136	0.135	DIFF	0.0010	Pass Diff	0.206	0.231	DIFF	0.025	Pass Diff	0.276	0.278	RPD	-0.70	Pass RPD	1.72	1.66	RPD	3.6	Pass RPD
Silver (Ag)-Dissolved	mg/L	20	30	0.000010	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL
Sodium (Na)-Dissolved	mg/L	20	30	0.050	1.18	1.16	RPD	1.7	Pass RPD	0.767	0.783	RPD	-2.1	Pass RPD	1.08	1.09	RPD	-0.90	Pass RPD	3.58	3.68	RPD	-2.8	Pass RPD
Strontium (Sr)-Dissolved	mg/L	20	30	0.00020	0.014	0.013	RPD	9.60	Pass RPD	0.016	0.016	RPD	-0.60	Pass RPD	0.064	0.064	RPD	-0.20	Pass RPD	0.043	0.043	RPD	0	Pass RPD
Sulfur (S)-Dissolved	mg/L	20	30	0.5	1.96	1.78	DIFF	0.2	Pass Diff	1.13	0.97	DIFF	0.16	Pass Diff	2.71	2.75	RPD	-1.5	Pass RPD	3.73	3.52	RPD	5.8	Pass RPD
Tellurium (Te)-Dissolved	mg/L	20	30	0.00020	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL
Thallium (Tl)-Dissolved	mg/L	20	30	0.000010	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL
Thorium (Th)-Dissolved	mg/L	20	30	0.00010	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL
Tin (Sn)-Dissolved	mg/L	20	30	0.00010	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL
Titanium (Ti)-Dissolved	mg/L	20	30	0.00030	<0.00030	<0.00030	<DL	<DL	<DL	<0.00030	<0.00030	<DL	<DL	<DL	<0.00030	<0.00030	<DL	<DL	<DL	<0.00030	<0.00030	<DL	<DL	<DL
Tungsten (W)-Dissolved	mg/L	20	30	0.00010	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL
Uranium (U)-Dissolved	mg/L	20	30	0.000010	0.000057	0.000054	RPD	5	Pass RPD	0.000042	0.000044	DIFF	0.000002	Pass Diff	0.000020	0.000021	DIFF	0.000001	Pass Diff	0.000067	0.000066	RPD	1.5	Pass RPD
Vanadium (V)-Dissolved	mg/L	20	30	0.00050	<0.00050	<0.00050	<DL	<DL	<DL	<0.00050	<0.00050	<DL	<DL	<DL	<0.00050	<0.00050	<DL	<DL	<DL	<0.00050	<0.00050	<DL	<DL	<DL
Zinc (Zn)-Dissolved	mg/L	20	30	0.0010	<0.0010	<0.0010	<DL	<DL	<DL	<0.0010	<0.0010	<DL	<DL	<DL	0.176	0.059	RPD	99	Fail	0.0090	0.0086	RPD	4.5	Pass RPD
Zirconium (Zr)-Dissolved	mg/L		40	0.00020	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL
Dissolved Mercury Filtration Location	-	20	30		Field	Field		<DL		Field	Field		<DL		Field	Field		<DL		Field	Field		<DL	
Dissolved Metals Filtration Location	-	20	30		Field	Field		<DL		Field	Field		<DL		Field	Field		<DL		Field	Field		<DL	
Plant Pigments (µg/L)																								
chlorophyll-a	µg/L		40	0.010	0.602	0.58	RPD	3.70	Pass RPD	0.71	0.656	RPD	7.9	Pass RPD	0.604	0.554	RPD	8.6	Pass RPD	2.36	2.06	RPD	14	Pass RPD

Notes:

[a] Field Dup Methods are based on the concentrations:

RPD = relative percent difference is used to compare field duplicates when the measured concentration is > 5x the DL

DIFF = when concentrations < 5x the DL

[b] Results refer to the RPD or absolute difference in concentration:

DQO for RPDs is < Field RPD values

DQO for DIFF is < 2x the DL

Italicized numbers are below detection limits.

Table B-5. Water quality field duplicate results for all CREMP study areas in 2025.

Month	Units	Relative Percent Difference DQOs		July DLs	July DUP-1 (DS1-89)					July DUP-2 (MAM-102)					July DUP-3 (SP-183)					July DUP-4 (TPN-183)				
Station					DS1-89	DUP	Field Dup Method [a]	Result [b] (RPD or Diff)	Outcome	MAM-102	DUP-2	Field Dup Method [a]	Result [b] (RPD or Diff)	Outcome	SP-182	DUP	Field Dup Method [a]	Result [b] (RPD or Diff)	Outcome	TPN-183	DUP	Field Dup Method [a]	Result [b] (RPD or Diff)	Outcome
Date Sampled					03-Jul-2025	03-Jul-2025				08-Jul-2025	08-Jul-2025				08-Jul-2025	08-Jul-2025				09-Jul-2025	09-Jul-2025			
Time Sampled					10:46	10:46				11:37	00:00				12:15	00:00				12:30	00:00			
ALS Sample ID		Lab	Field		VA25B6882-001 VA25B7586-005	VA25B6882-005 VA25B7585-005				VA25B7115-002 VA25B7585-002	VA25B7115-005 VA25B7585-006				VA25B7113-001 VA25B7585-011	VA25B7113-003 VA25B7589-001				VA25B7591-002	VA25B7591-003			
Parameter					Water	Water				Water	Water				Water	Water				Water	Water			
Physical Tests																								
Conductivity	µS/cm	10	15	2	39	39	RPD	0.50	Pass RPD	126	126	RPD	0	Pass RPD	50	50	RPD	-0.40	Pass RPD	29	29	RPD	0.30	Pass RPD
Alkalinity, Bicarbonate		20	30	1	7.2	7.1	RPD	1.4	Pass RPD	18	17	RPD	2.9	Pass RPD	12	12	RPD	-0.90	Pass RPD	6.9	7.1	RPD	-2.9	Pass RPD
Alkalinity, Carbonate		20	30	1	<1.0	<1.0	<DL	<DL	<DL	<1.0	<1.0	<DL	<DL	<DL	<1.0	<1.0	<DL	<DL	<DL	<1.0	<1.0	<DL	<DL	<DL
Alkalinity, Hydroxide		20	30	1	<1.0	<1.0	<DL	<DL	<DL	<1.0	<1.0	<DL	<DL	<DL	<1.0	<1.0	<DL	<DL	<DL	<1.0	<1.0	<DL	<DL	<DL
Alkalinity, Total (as $CaCO_3$)	mg/L	20	30	1	7.2	7.1	RPD	1.4	Pass RPD	18	17	RPD	2.9	Pass RPD	12	12	RPD	-0.90	Pass RPD	6.9	7.1	RPD	-2.9	Pass RPD
Hardness (mg/L), Dissolved			40	0.6	13	13	RPD	-1.5	Pass RPD	46	46	RPD	-1.5	Pass RPD	19	20	RPD	-2.6	Pass RPD	10	10	RPD	-3.9	Pass RPD
Hardness (as $CaCO_3$), from total Ca/Mg			40	0.6	14	14	RPD	1.5	Pass RPD	48	49	RPD	-1.0	Pass RPD	21	21	RPD	-0.50	Pass RPD	11	10	RPD	2.9	Pass RPD
Total Dissolved Solids	mg/L		40	1	25	25	RPD	-2.4	Pass RPD	94	88	RPD	6.6	Pass RPD	29	28	RPD	3.5	Pass RPD	21	18	RPD	14	Pass RPD
Total Suspended Solids	mg/L		40	3	<1.0	<1.0	<DL	<DL	<DL	<1.0	<1.0	<DL	<DL	<DL	<1.0	<1.0	<DL	<DL	<DL	<1.0	<1.0	<DL	<DL	<DL
Turbidity	NTU	15	23	0.1	0.81	0.74	RPD	9.0	Pass RPD	0.5	0.53	DIFF	0.030	Pass Diff	0.34	0.4	DIFF	0.060	Pass Diff	0.19	0.19	DIFF	0	Pass Diff
pH (Laboratory)	pH		40	0.1	7.13	7.17	RPD	-0.60	Pass RPD	7.41	7.43	RPD	-0.30	Pass RPD	7.38	7.41	RPD	-0.40	Pass RPD	7.1	7.1	RPD	0	Pass RPD
Anions and Nutrients																								
Ammonia, Total (as N)	mg/L	20	30	0.0050	0.0086	0.0086	DIFF	0	Pass Diff	0.0069	0.0062	DIFF	0.00070	Pass Diff	<0.0050	<0.0050	<DL	<DL	<DL	0.0083	<0.0050	<DL	<DL	<DL
Bromide (Br)	mg/L	20	30	0.050	<0.050	<0.050	<DL	<DL	<DL	0.145	0.147	DIFF	0.0020	Pass Diff	<0.050	<0.050	<DL	<DL	<DL	<0.050	<0.050	<DL	<DL	<DL
Chloride (Cl)	mg/L	20	30	0.1	3.66	3.59	RPD	1.9	Pass RPD	13	13	RPD	0	Pass RPD	1.12	1.13	RPD	-0.90	Pass RPD	0.94	0.94	RPD	0	Pass RPD
Fluoride (F)	mg/L	20	30	0.020	0.034	0.035	DIFF	0.0010	Pass Diff	0.046	0.045	DIFF	0.0010	Pass Diff	0.072	0.073	DIFF	0.0010	Pass Diff	0.080	0.079	DIFF	0.0010	Pass Diff
Total Kjeldahl Nitrogen	mg/L	20	30	0.050	0.125	0.139	DIFF	0.014	Pass Diff	0.197	0.191	DIFF	0.0060	Pass Diff	0.113	0.141	DIFF	0.028	Pass Diff	0.096	0.094	DIFF	0.0020	Pass Diff
Nitrate (as N)	mg/L	20	30	0.0050	0.0082	<0.0050	<DL	<DL	<DL	0.355	0.356	RPD	-0.30	Pass RPD	<0.0050	<0.0050	<DL	<DL	<DL	0.012	0.012	DIFF	0	Pass Diff
Nitrite (as N)	mg/L	20	30	0.0010	<0.0010	<0.0010	<DL	<DL	<DL	0.0012	0.0011	DIFF	0.000100	Pass Diff	<0.0010	<0.0010	<DL	<DL	<DL	<0.0010	<0.0010	<DL	<DL	<DL
Orthophosphate-Dissolved (as P)	mg/L	20	30	0.0010	<0.0010	<0.0010	<DL	<DL	<DL	<0.0010	<0.0010	<DL	<DL	<DL	<0.0010	<0.0010	<DL	<DL	<DL	<0.0010	<0.0010	<DL	<DL	<DL
Phosphorus (P)-Total	mg/L	20	30	0.0020	0.0044	0.0082	DIFF	0.0038	Pass Diff	0.0036	0.0037	DIFF	0.00010	Pass Diff	0.0024	0.0034	DIFF	0.0010	Pass Diff	<0.0020	0.0020	<DL	<DL	<DL
Phosphorus (P)-Total Dissolved	mg/L	25	38	0.0020	0.0076	0.0030	DIFF	0.0046	Pass Diff	0.0020	<0.0020	<DL	<DL	<DL	<0.0020	<0.0020	<DL	<DL	<DL	0.0034	<0.0020	<DL	<DL	<DL
Silica, Reactive (as SiO2)	mg/L	20	30	0.5	0.68	0.7	DIFF	0.020	Pass Diff	0.7	0.69	DIFF	0.010	Pass Diff	0.85	0.85	DIFF	0	Pass Diff	<0.50	<0.50	<DL	<DL	<DL
Sulfate (SO4)	mg/L	20	30	0.3	4.61	4.55	RPD	1.3	Pass RPD	17	17	RPD	0	Pass RPD	8.02	8.08	RPD	-0.70	Pass RPD	5.13	5.13	RPD	0	Pass RPD
Cyanides																								
Cyanide, Free	mg/L	20	30	0.0010	-	-	<DL	<DL	<DL	-	-	<DL	<DL	<DL	<0.0010	-	<DL	<DL	<DL	<0.0010	<0.0010	<DL	<DL	<DL
Cyanide, Total	mg/L	20	30	0.0010	-	-	<DL	<DL	<DL	-	-	<DL	<DL	<DL	<0.0010	-	<DL	<DL	<DL	<0.0010	<0.0010	<DL	<DL	<DL
Organic / Inorganic Carbon																								
Dissolved Organic Carbon	mg/L	20	30	0.5	2.53	2.64	RPD	-4.3	Pass RPD	2.87	2.9	RPD	-1.0	Pass RPD	1.87	1.89	DIFF	0.020	Pass Diff	1.24	1.24	DIFF	0	Pass Diff
Total Organic Carbon	mg/L	20	30	0.5	2.74	2.53	RPD	8.0	Pass RPD	2.38	2.52	DIFF	0.14	Pass Diff	1.84	2.06	DIFF	0.22	Pass Diff	1.24	1.22	DIFF	0.020	Pass Diff
Total Metals																								
Aluminum (Al)-Total	mg/L	20	30	0.0030	0.027	0.026	RPD	2.6	Pass RPD	0.0078	0.0073	DIFF	0.00050	Pass Diff	0.014	0.020	DIFF	0.0065	Pass Diff	0.0071	0.0050	DIFF	0.0021	Pass Diff
Antimony (Sb)-Total	mg/L	20	30	0.00010	<0.00010	<0.00010	<DL	<DL	<DL	0.00068	0.00071	RPD	-4.3	Pass RPD	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL
Arsenic (As)-Total	mg/L	20	30	0.00010	0.00014	0.00015	DIFF	0.000010	Pass Diff	0.0012	0.0012	RPD	-1.7	Pass RPD	0.00043	0.00045	DIFF	0.000020	Pass Diff	0.00023	0.00022	DIFF	0.000010	Pass Diff
Barium (Ba)-Total	mg/L	20	30	0.00010	0.0069	0.0067	RPD	2.9	Pass RPD	0.018	0.017	RPD	1.1	Pass RPD	0.0032	0.0035	RPD	-8.1	Pass RPD	0.0031	0.0030	RPD	4.6	Pass RPD
Beryllium (Be)-Total	mg/L	20	30	0.00010	<0.000100	<0.000100	<DL	<DL	<DL	<0.000100	<0.000100	<DL	<DL	<DL	<0.000100	<0.000100	<DL	<DL	<DL	<0.000100	<0.000100	<DL	<DL	<DL
Bismuth (Bi)-Total	mg/L	20	30	0.000050	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL
Boron (B)-Total	mg/L	20	30	0.010	<0.010	<0.010	<DL	<DL	<DL	<0.010	<0.010	<DL	<DL	<DL	<0.010	<0.010	<DL	<DL	<DL	<0.010	<0.010	<DL	<DL	<DL
Cadmium (Cd)-Total	mg/L	20	30	0.000005	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL
Calcium (Ca)-Total	mg/L	20	30	0.050	3.69	3.61	RPD	2.2	Pass RPD	13	14	RPD	-2.2	Pass RPD	5.48	5.46	RPD	0.40	Pass RPD	2.51	2.45	RPD	2.4	Pass RPD
Cesium (Cs)-Total	mg/L	20	30	0.000010	<0.000010	<0.000010	<DL	<DL	<DL	0.000013	0.000013	DIFF	0	Pass Diff	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL
Chromium (Cr)-Total	mg/L	20	30	0.00010	<0.00010	0.00013	<DL	<DL	<DL	0.0011	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL
Cobalt (Co)-Total	mg/L	20	30	0.00010	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL
Copper (Cu)-Total	mg/L	20	30	0.00050	<0.00050	<0.00050	<DL	<DL	<DL	<0.00050	<0.00050	<DL	<DL	<DL	0.00098	0.0010	DIFF	0.000040	Pass Diff	<0.00050	<0.00050	<DL	<DL	<DL
Iron (Fe)-Total	mg/L	20	30	0.010	0.117	0.116	RPD	0.90	Pass RPD	0.038	0.022	DIFF	0.016	Pass Diff	0.025	0.046	DIFF	0.021	Pass Diff	0.011	<0.010	<DL	<DL	<DL
Lead (Pb)-Total	mg/L	20	30	0.000050	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	0.00022	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL
Lithium (Li)-Total	mg/L	20	30	0.0010	<0.0010	<0.0010	<DL	<DL	<DL	0.0018	0.0018	DIFF	0	Pass Diff	<0.0010	<0.0010	<DL	<DL	<DL	<0.0010	<0.0010	<DL	<DL	<DL
Magnesium (Mg)-Total	mg/L	20	30	0.0050	1.1	1.08	RPD	1.8	Pass RPD	3.64	3.58	RPD	1.7	Pass RPD	1.68	1.72	RPD	-2.4	Pass RPD	1.02	0.998	RPD	2.2	Pass RPD
Manganese (Mn)-Total	mg/L	20	30	0.00010	0.0046	0.0046	RPD	0	Pass RPD	0.0062	0.0064	RPD	-2.5	Pass RPD	0.0029	0.0034	RPD	-15.2	Pass RPD	0.0029	0.0029	RPD	0.30	Pass RPD
Mercury (Hg)-Total	µg/L	20	30	0.000005	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL
Molybdenum (Mo)-Total	mg/L	20	30	0.000050	0.000082	0.000080	DIFF	0.000002	Pass Diff	0.00071	0.00047	RPD	42	Fail	0.00012	0.00015	DIFF	0.000030	Pass Diff	0.000089	0.000096	DIFF	0.000007	Pass Diff
Nickel (Ni)-Total	mg/L	20	30	0.00050	<0.00050	<0.00050	<DL	<DL	<DL	0.0011	0.0011	DIFF	0.000070	Pass Diff	0.00065	0.00079	DIFF	0.00014	Pass Diff	0.00086	0.00085	DIFF	0.000010	Pass Diff
Phosphorus (P)-Total	mg/L	20	30	0.050	<0.050	<0.050	<DL	<DL	<DL	<0.050	<0.050	<DL	<DL	<DL	<0.050	<0.050	<DL	<DL	<DL	<0.050	<0.050	<DL	<DL	<DL
Potassium (K)-Total	mg/L	20	30	0.050	0.717	0.693	RPD	3.4	Pass RPD	2.85	2.82	RPD	1.1	Pass RPD	0.541	0.551	RPD	-1.8	Pass RPD	0.55	0.544	RPD	1.1	Pass RPD
Rubidium (Rb)-Total	mg/L	20	30	0.00020	0.00086	0.00085	DIFF	0.000010	Pass Diff	0.0037	0.0037	RPD	-0.30	Pass RPD	0.00080	0.00085	DIFF	0.000050	Pass Diff	0.00076	0.00070	DIFF	0.000060	Pass Diff
Selenium (Se)-Total	mg/L	20	30	0.000050	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL
Silicon (Si)-Total	mg/L	20	30	0.1	0.37	0.38	DIFF	0.010	Pass Diff	0.36	0.37	DIFF	0.010	Pass Diff	0.44	0.45	DIFF	0.010	Pass Diff	0.17	0.16	DIFF	0.010	Pass Diff
Silver (Ag)-Total	mg/L	20	30	0.000010	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL
Sodium (Na)-Total	mg/L	20	30	0.050	1.37	1.35	RPD	1.5	Pass RPD	2.59	2.64	RPD	-1.9	Pass RPD	0.826	0.829	RPD	-0.40	Pass RPD	1.02	0.985	RPD	3.5	Pass RPD
Strontium (Sr)-Total	mg/L	20	30	0.00020	0.022	0.020	RPD	6.2	Pass RPD	0.096	0.095	RPD	0.80	Pass RPD	0.024	0.025	RPD	-4.5	Pass RPD	0.012	0.011	RPD	0.90	Pass RPD
Sulfur (S)-Total	mg/L	20	30	0.5	1.65	1.71	DIFF	0.060	Pass Diff	5.79	5.94	RPD	-2.6	Pass RPD	2.6	2.61	RPD	-0.40	Pass RPD	1.61	1.83	DIFF	0.22	Pass Diff
Tellurium (Te)-Total	mg/L	20	30	0.00020	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL
Thallium (Tl)-Total	mg/L	20	30	0.000010	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL
Thorium (Th)-Total	mg/L	20	30	0.00010	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL
Tin (Sn)-Total	mg/L	20	30	0.00010	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL
Titanium (Ti)-Total	mg/L	20	30	0.00030	0.00065	0.00060	DIFF	0.000050	Pass Diff	<0.00030	<0.00030	<DL	<DL	<DL	<0.00030	0.00076	<DL	<DL	<DL	<0.00030	<0.00030	<DL	<DL	<DL
Tungsten (W)-Total	mg/L	20	30	0.00010	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL
Uranium (U)-Total	mg/L	20	30	0.000010	0.000052	0.000053	RPD	-1.9	Pass RPD	0.00013	0.00012	RPD	1.6	Pass RPD	0.000082	0.000084	RPD	-2.4	Pass RPD	0.000052	0.000049	DIFF	0.000003	Pass Diff
Vanadium (V)-Total	mg/L	20	30	0.00050	<0.00050	<0.00050	<DL	<DL	<DL	<0.00050	<0.00050	<DL	<DL	<DL	<0.00050	<0.00050	<DL	<DL	<DL	<0.00050	<0.00050	<DL	<DL	<DL
Zinc (Zn)-Total	mg/L	20	30	0.0030	<0.0030	<0.0030	<DL	<DL	<DL	<0.0030	<0.0030	<DL	<DL	<DL	<0.0030	<0.0030	<DL	<DL	<DL	<0.0030	<0.0030	<DL	<DL	<DL
Zirconium (Zr)-Total	mg/L	20	30	0.00020	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL
Dissolved Metals																								
Aluminum (Al)-Dissolved	mg/L	20	30	0.0010	0.0096	0.0086	RPD	11	Pass RPD	0.0024	0.0034	DIFF	0.0010	Pass Diff	0.0045	0.0060	DIFF	0.0015	Pass Diff	0.0027	0.0024	DIFF	0.00030	Pass Diff
Antimony (Sb)-Dissolved	mg/L	20	30	0.00010	<0.00010	<0.00010	<DL	<DL	<DL	0.00066	0.00066	RPD	0	Pass RPD	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL
Arsenic (As)-Dissolved	mg/L	20	30	0.00010	0.00012	0.00014	DIFF	0.000020	Pass Diff	0.0010	0.0011	RPD	-7.7	Pass RPD	0.00039	0.00063	DIFF	0.00024	Pass Diff	0.00024	0.00020	DIFF	0.000040	Pass Diff
Barium (Ba)-Dissolved	mg/L	20	30	0.00010	0.0064	0.0067	RPD	-4.1	Pass RPD	0.017	0.018	RPD	-7.5	Pass RPD	0.0032	0.0032	RPD	-0.90	Pass RPD	0.0030	0.0030	RPD	0	Pass RPD
Beryllium (Be)-Dissolved	mg/L	20	30	0.00010	<0.000100	<0.000100	<DL	<DL	<DL	<0.000100	<0.000100	<DL	<DL	<DL	<0.000100	<0.000100	<DL	<DL	<DL	<0.000100	<0.000100	<DL	<DL	<DL
Bismuth (Bi)-Dissolved	mg/L	20	30	0.000050	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL
Boron (B)-Dissolved	mg/L	20	30	0.010	<0.010	<0.010	<DL	<DL	<DL	<0.010	<0.010	<DL	<DL	<DL	<0.010	<0.010	<DL	<DL	<DL	<0.010	<0.010	<DL	<DL	<DL
Cadmium (Cd)-Dissolved	mg/L	20	30	0.000005	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL
Calcium (Ca)-Dissolved	mg/L	20	30	0.050	3.55	3.59	RPD	-1.1	Pass RPD	13	13	RPD	0.80	Pass RPD	4.96	5.11	RPD	-3.0	Pass RPD	2.35	2.48	RPD	-5.4	Pass RPD
Cesium (Cs)-Dissolved	mg/L	20	30	0.000010	<0.000010	<0.000010	<DL	<DL	<DL	0.000012	0.000011	DIFF	0.000001	Pass Diff	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL
Chromium (Cr)-Dissolved	mg/L	20	30	0.00010	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL
Cobalt (Co)-Dissolved	mg/L	20	30	0.00010	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL
Copper (Cu)-Dissolved	mg/L	20	30	0.00020	0.00033	0.00037	DIFF	0.000040	Pass Diff	0.00040	0.00045	DIFF	0.000050	Pass Diff	0.00091	0.00091	DIFF	0	Pass Diff	0.00047	0.00036	DIFF	0.00011	Pass Diff
Iron (Fe)-Dissolved	mg/L	20	30	0.010	0.058	0.058	RPD	0	Pass RPD	<0.010	<0.010	<DL	<DL	<DL	<0.010	0.011	<DL	<DL	<DL	<0.010	<0.010	<DL	<DL	<DL
Lead (Pb)-Dissolved	mg/L	20	30	0.000050	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL
Lithium (Li)-Dissolved	mg/L	20	30	0.0010	<0.0010	<0.0010	<DL	<DL	<DL	0.0016	0.0016	DIFF	0	Pass Diff	<0.0010	<0.0010	<DL	<DL	<DL	<0.0010	<0.0010	<DL	<DL	<DL
Magnesium (Mg)-Dissolved	mg/L	20	30	0.0050	1.04	1.05	RPD	-1.0	Pass RPD	3.23	3.47	RPD	-7.2	Pass RPD	1.69	1.71	RPD	-1.2	Pass RPD	1.01	1.01	RPD	0	Pass RPD
Manganese (Mn)-Dissolved	mg/L	20	30	0.00010	0.0036	0.0036	RPD	0.60	Pass RPD	0.0011	0.0011	RPD	0	Pass RPD	0.0016	0.0017	RPD	-4.8	Pass RPD	0.0021	0.0021	RPD	-0.50	Pass RPD
Mercury (Hg)-Dissolved	µg/L	20	30	0.000005	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL
Molybdenum (Mo)-Dissolved	mg/L	20	30	0.000050	0.000071	0.000093	DIFF	0.000022	Pass Diff	0.00047	0.00046	RPD	3.0	Pass RPD	0.00013	0.00014	DIFF	0.000009	Pass Diff	0.000090	0.000093	DIFF	0.000003	Pass Diff
Nickel (Ni)-Dissolved	mg/L	20	30	0.00050	<0.00050	<0.00050	<DL	<DL	<DL	0.0010	0.0011	DIFF	0.000050	Pass Diff	0.00073	0.00081	DIFF	0.000080	Pass Diff	0.00083	0.00081	DIFF	0.000020	Pass Diff
Phosphorus (P)-Dissolved	mg/L	20	30	0.050	<0.050	<0.050	<DL	<DL	<DL	<0.050	<0.050	<DL	<DL	<DL	<0.050	<0.050	<DL	<DL	<DL	<0.050	<0.050	<DL	<DL	<DL
Potassium (K)-Dissolved	mg/L	20	30	0.050	0.688	0.699	RPD	-1.6	Pass RPD	2.85	3.01	RPD	-5.5	Pass RPD	0.573	0.583	RPD	-1.7	Pass RPD	0.56	0.546	RPD	2.5	Pass RPD
Rubidium (Rb)-Dissolved	mg/L	20	30	0.00020	0.00085	0.00090	DIFF	0.000050	Pass Diff	0.0036	0.0036	RPD	-0.30	Pass RPD	0.00084	0.00079	DIFF	0.000050	Pass Diff	0.00074	0.00072	DIFF	0.000020	Pass Diff
Selenium (Se)-Dissolved	mg/L	20	30	0.000050	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL
Silicon (Si)-Dissolved	mg/L	20	30	0.050	0.321	0.335	RPD	-4.3	Pass RPD	0.31	0.326	RPD	-5.0	Pass RPD	0.394	0.377	RPD	4.4	Pass RPD	0.128	0.135	DIFF	0.0070	Pass Diff
Silver (Ag)-Dissolved	mg/L	20	30	0.000010	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL
Sodium (Na)-Dissolved	mg/L	20	30	0.050	1.28	1.33	RPD	-3.8	Pass RPD	2.47	2.66	RPD	-7.4	Pass RPD	0.869	0.868	RPD	0.10	Pass RPD	0.996	0.984	RPD	1.2	Pass RPD
Strontium (Sr)-Dissolved	mg/L	20	30	0.00020	0.020	0.021	RPD	-2.4	Pass RPD	0.094	0.093	RPD	0.60	Pass RPD	0.025	0.025	RPD	-0.80	Pass RPD	0.011	0.012	RPD	-5.4	Pass RPD
Sulfur (S)-Dissolved	mg/L	20	30	0.5	1.54	1.61	DIFF	0.070	Pass Diff	5.58	5.73	RPD	-2.7	Pass RPD	2.67	2.56	RPD	4.2	Pass RPD	1.64	1.57	DIFF	0.070	Pass Diff
Tellurium (Te)-Dissolved	mg/L	20	30	0.00020	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL
Thallium (Tl)-Dissolved	mg/L	20	30	0.000010	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL
Thorium (Th)-Dissolved	mg/L	20	30	0.00010	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL
Tin (Sn)-Dissolved	mg/L	20	30	0.00010	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	0.00013	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL
Titanium (Ti)-Dissolved	mg/L	20	30	0.00030	<0.00030	<0.00030	<DL	<DL	<DL	<0.00030	<0.00030	<DL	<DL	<DL	<0.00030	<0.00030	<DL	<DL	<DL	<0.00030	<0.00030	<DL	<DL	<DL
Tungsten (W)-Dissolved	mg/L	20	30	0.00010	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL
Uranium (U)-Dissolved	mg/L	20	30	0.000010	0.000043	0.000045	DIFF	0.000002	Pass Diff	0.00010	0.00011	RPD	-4.7	Pass RPD	0.000068	0.000064	RPD	6.1	Pass RPD	0.000046	0.000045	DIFF	0.000001	Pass Diff
Vanadium (V)-Dissolved	mg/L	20	30	0.00050	<0.00050	<0.00050	<DL	<DL	<DL	<0.00050	<0.00050	<DL	<DL	<DL	<0.00050	<0.00050	<DL	<DL	<DL	<0.00050	<0.00050	<DL	<DL	<DL
Zinc (Zn)-Dissolved	mg/L	20	30	0.0010	<0.0010	0.028	<DL	<DL	<DL	0.011	0.0066	RPD	51	Fail	<0.0010	<0.0010	<DL	<DL	<DL	0.0013	0.0014	DIFF	0.00010	Pass Diff
Zirconium (Zr)-Dissolved	mg/L		40	0.00020	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL
Dissolved Mercury Filtration Location	-	20	30		Field	Field		<DL		Field	Field		<DL		Field	Field		<DL		Field	Field		<DL	
Dissolved Metals Filtration Location	-	20	30		Field	Field		<DL		Field	Field		<DL		Field	Field		<DL		Field	Field		<DL	
Plant Pigments (µg/L)																								
chlorophyll-a	µg/L		40	0.010	0.712	0.71	RPD	0.30	Pass RPD	0.768	0.944	RPD	21	Pass RPD	0.448	0.402	RPD	11	Pass RPD	0.32	0.274	RPD	16	Pass RPD

Notes:

[a] Field Dup Methods are based on the concentrations:

RPD = relative percent difference is used to compare field duplicates when the measured concentration is > 5x the DL

DIFF = when concentrations < 5x the DL

[b] Results refer to the RPD or absolute difference in concentration:

DQO for RPDs is < Field RPD values

DQO for DIFF is < 2x the DL

Italicized numbers are below detection limits.

Table B-5. Water quality field duplicate results for all CREMP study areas in 2025.

Month	Units	Relative Percent Difference DQOs		August DLs	August DUP-1 (SP-185)					August DUP-2 (PDL-138)					August DUP-3 (DS1-91)					August DUP-4 (A20-96)				
Station					SP-185	AUG-DUP-1	Field Dup Method [a]	Result [b] (RPD or Diff)	Outcome	PDL-138	AUG-DUP-2	Field Dup Method [a]	Result [b] (RPD or Diff)	Outcome	DS1-91	AUG-DUP-3	Field Dup Method [a]	Result [b] (RPD or Diff)	Outcome	A20-96	AUG-DUP-4	Field Dup Method [a]	Result [b] (RPD or Diff)	Outcome
Date Sampled					09-Aug-2025	09-Aug-2025				12-Aug-2025	12-Aug-2025				15-Aug-2025	15-Aug-2025				16-Aug-2025	16-Aug-2025			
Time Sampled					13:05	13:05				16:43	16:43				09:30	09:30				14:00	14:00			
ALS Sample ID		Lab	Field		VA25C0385-002	VA25C0385-005				VA25C0699-004	VA25C0699-005				VA25C1553-007	VA25C1553-009				VA25C1585-004	VA25C1585-009			
Parameter					Water	Water				Water	Water				Water	Water				Water	Water			
Physical Tests																								
Conductivity	µS/cm	10	15	2	48	48	RPD	-0.20	Pass RPD	29	29	RPD	0.30	Pass RPD	50	50	RPD	0.80	Pass RPD	108	110	RPD	-1.8	Pass RPD
Alkalinity, Bicarbonate		20	30	1	12	11	RPD	2.6	Pass RPD	9.3	9.4	RPD	-1.1	Pass RPD	9.9	9.5	RPD	4.1	Pass RPD	17	17	RPD	-0.60	Pass RPD
Alkalinity, Carbonate		20	30	1	<1.0	<1.0	<DL	<DL	<DL	<1.0	<1.0	<DL	<DL	<DL	<1.0	<1.0	<DL	<DL	<DL	<1.0	<1.0	<DL	<DL	<DL
Alkalinity, Hydroxide		20	30	1	<1.0	<1.0	<DL	<DL	<DL	<1.0	<1.0	<DL	<DL	<DL	<1.0	<1.0	<DL	<DL	<DL	<1.0	<1.0	<DL	<DL	<DL
Alkalinity, Total (as $CaCO_3$)	mg/L	20	30	1	12	11	RPD	2.6	Pass RPD	9.3	9.4	RPD	-1.1	Pass RPD	9.9	9.5	RPD	4.1	Pass RPD	17	17	RPD	-0.60	Pass RPD
Hardness (mg/L), Dissolved			40	0.6	18	18	RPD	0	Pass RPD	12	12	RPD	-0.90	Pass RPD	18	17	RPD	1.7	Pass RPD	40	40	RPD	1.3	Pass RPD
Hardness (as $CaCO_3$), from total Ca/Mg			40	0.6	18	18	RPD	-1.1	Pass RPD	12	12	RPD	0.80	Pass RPD	18	18	RPD	0.60	Pass RPD	41	41	RPD	-1.2	Pass RPD
Total Dissolved Solids	mg/L		40	3	25	28	RPD	-10.7	Pass RPD	17	18	RPD	-2.8	Pass RPD	40	40	RPD	1.8	Pass RPD	80	83	RPD	-2.8	Pass RPD
Total Suspended Solids	mg/L		40	1	<1.0	<1.0	<DL	<DL	<DL	<1.0	<1.0	<DL	<DL	<DL	<1.0	<1.0	<DL	<DL	<DL	<1.0	<1.0	<DL	<DL	<DL
Turbidity	NTU	15	23	0.1	0.39	0.41	DIFF	0.020	Pass Diff	0.3	0.32	DIFF	0.020	Pass Diff	0.27	0.28	DIFF	0.010	Pass Diff	0.36	0.34	DIFF	0.020	Pass Diff
pH (Laboratory)	pH		40	0.1	7.24	7.26	RPD	-0.30	Pass RPD	7.05	7.07	RPD	-0.30	Pass RPD	7.14	7.15	RPD	-0.10	Pass RPD	7.34	7.31	RPD	0.40	Pass RPD
Anions and Nutrients																								
Ammonia, Total (as N)	mg/L	20	30	0.0050	<0.0050	0.0054	<DL	<DL	<DL	<0.0050	<0.0050	<DL	<DL	<DL	0.025	0.0063	DIFF	0.018	Fail	0.047	0.019	DIFF	0.028	Fail
Bromide (Br)	mg/L	20	30	0.050	<0.050	<0.050	<DL	<DL	<DL	<0.050	<0.050	<DL	<DL	<DL	<0.050	<0.050	<DL	<DL	<DL	0.114	0.113	DIFF	0.0010	Pass Diff
Chloride (Cl)	mg/L	20	30	0.1	1.1	1.11	RPD	-0.90	Pass RPD	0.98	0.99	RPD	-1.0	Pass RPD	4.46	4.4	RPD	1.4	Pass RPD	12	12	RPD	0	Pass RPD
Fluoride (F)	mg/L	20	30	0.020	0.079	0.079	DIFF	0	Pass Diff	0.042	0.043	DIFF	0.00100	Pass Diff	0.045	0.044	DIFF	0.0010	Pass Diff	0.062	0.062	DIFF	0	Pass Diff
Total Kjeldahl Nitrogen	mg/L	20	30	0.050	0.114	0.138	DIFF	0.024	Pass Diff	0.117	0.125	DIFF	0.0080	Pass Diff	0.156	0.134	DIFF	0.022	Pass Diff	0.253	0.226	DIFF	0.027	Pass Diff
Nitrate (as N)	mg/L	20	30	0.0050	<0.0050	0.0053	<DL	<DL	<DL	<0.0050	<0.0050	<DL	<DL	<DL	0.0066	0.0055	DIFF	0.0011	Pass Diff	0.118	0.116	RPD	1.7	Pass RPD
Nitrite (as N)	mg/L	20	30	0.0010	<0.0010	<0.0010	<DL	<DL	<DL	<0.0010	<0.0010	<DL	<DL	<DL	<0.0010	<0.0010	<DL	<DL	<DL	0.0012	<0.0010	<DL	<DL	<DL
Orthophosphate-Dissolved (as P)	mg/L	20	30	0.0010	<0.0010	<0.0010	<DL	<DL	<DL	<0.0010	<0.0010	<DL	<DL	<DL	<0.0010	<0.0010	<DL	<DL	<DL	<0.0010	<0.0010	<DL	<DL	<DL
Phosphorus (P)-Total	mg/L	20	30	0.0020	<0.0020	<0.0020	<DL	<DL	<DL	<0.0020	0.0078	<DL	<DL	<DL	0.0034	0.0026	DIFF	0.00080	Pass Diff	0.0034	0.0049	DIFF	0.0015	Pass Diff
Phosphorus (P)-Total Dissolved	mg/L	25	38	0.0020	<0.0020	<0.0020	<DL	<DL	<DL	0.0030	<0.0020	<DL	<DL	<DL	<0.0020	<0.0020	<DL	<DL	<DL	<0.0020	<0.0020	<DL	<DL	<DL
Silica, Reactive (as SiO2)	mg/L	20	30	0.5	0.59	0.58	DIFF	0.010	Pass Diff	<0.50	<0.50	<DL	<DL	<DL	0.78	0.78	DIFF	0	Pass Diff	<0.50	<0.50	<DL	<DL	<DL
Sulfate (SO4)	mg/L	20	30	0.3	7.66	7.65	RPD	0.10	Pass RPD	2.88	2.89	RPD	-0.30	Pass RPD	5.83	5.74	RPD	1.6	Pass RPD	15	15	RPD	0	Pass RPD
Cyanides																								
Cyanide, Free	mg/L	20	30	0.0010	-	<0.0010	<DL	<DL	<DL	-	<0.0010	<DL	<DL	<DL	-	-	<DL	<DL	<DL	-	-	<DL	<DL	<DL
Cyanide, Total	mg/L	20	30	0.0010	-	<0.0010	<DL	<DL	<DL	-	<0.0010	<DL	<DL	<DL	-	-	<DL	<DL	<DL	-	-	<DL	<DL	<DL
Organic / Inorganic Carbon																								
Dissolved Organic Carbon	mg/L	20	30	0.5	1.99	1.9	DIFF	0.090	Pass Diff	1.9	1.86	DIFF	0.040	Pass Diff	2.63	2.7	RPD	-2.6	Pass RPD	2.92	3.12	RPD	-6.6	Pass RPD
Total Organic Carbon	mg/L	20	30	0.5	1.67	1.75	DIFF	0.080	Pass Diff	1.88	1.82	DIFF	0.060	Pass Diff	2.88	2.61	RPD	9.8	Pass RPD	3.4	3.34	RPD	1.8	Pass RPD
Total Metals																								
Aluminum (Al)-Total	mg/L	20	30	0.0030	0.0074	0.0080	DIFF	0.00060	Pass Diff	0.0050	0.0049	DIFF	0.00010	Pass Diff	0.0087	0.0078	DIFF	0.00090	Pass Diff	0.0070	0.0057	DIFF	0.0013	Pass Diff
Antimony (Sb)-Total	mg/L	20	30	0.00010	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	0.00049	0.00050	DIFF	0.000010	Pass Diff
Arsenic (As)-Total	mg/L	20	30	0.00010	0.00043	0.00043	DIFF	0	Pass Diff	0.00019	0.00020	DIFF	0.000010	Pass Diff	0.00015	0.00015	DIFF	0	Pass Diff	0.00034	0.00035	DIFF	0.000010	Pass Diff
Barium (Ba)-Total	mg/L	20	30	0.00010	0.0029	0.0029	RPD	-0.30	Pass RPD	0.0022	0.0022	RPD	-0.90	Pass RPD	0.0073	0.0069	RPD	4.4	Pass RPD	0.013	0.013	RPD	1.6	Pass RPD
Beryllium (Be)-Total	mg/L	20	30	0.00010	<0.000100	<0.000100	<DL	<DL	<DL	<0.000100	<0.000100	<DL	<DL	<DL	<0.000100	<0.000100	<DL	<DL	<DL	<0.000100	<0.000100	<DL	<DL	<DL
Bismuth (Bi)-Total	mg/L	20	30	0.000050	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL
Boron (B)-Total	mg/L	20	30	0.010	<0.010	<0.010	<DL	<DL	<DL	<0.010	<0.010	<DL	<DL	<DL	<0.010	<0.010	<DL	<DL	<DL	<0.010	<0.010	<DL	<DL	<DL
Cadmium (Cd)-Total	mg/L	20	30	0.000005	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL
Calcium (Ca)-Total	mg/L	20	30	0.050	4.4	4.46	RPD	-1.4	Pass RPD	2.99	2.99	RPD	0	Pass RPD	4.88	4.82	RPD	1.2	Pass RPD	11	11	RPD	0	Pass RPD
Cesium (Cs)-Total	mg/L	20	30	0.000010	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL
Chromium (Cr)-Total	mg/L	20	30	0.00010	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	0.00012	<0.00010	<DL	<DL	<DL
Cobalt (Co)-Total	mg/L	20	30	0.00010	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL
Copper (Cu)-Total	mg/L	20	30	0.00050	0.00079	0.00076	DIFF	0.000030	Pass Diff	0.00051	0.00052	DIFF	0.000010	Pass Diff	<0.00050	<0.00050	<DL	<DL	<DL	<0.00050	<0.00050	<DL	<DL	<DL
Iron (Fe)-Total	mg/L	20	30	0.010	0.020	0.022	DIFF	0.0020	Pass Diff	0.011	0.013	DIFF	0.0020	Pass Diff	0.064	0.066	RPD	-3.1	Pass RPD	0.036	0.031	DIFF	0.0050	Pass Diff
Lead (Pb)-Total	mg/L	20	30	0.000050	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL
Lithium (Li)-Total	mg/L	20	30	0.0010	<0.0010	<0.0010	<DL	<DL	<DL	<0.0010	<0.0010	<DL	<DL	<DL	<0.0010	<0.0010	<DL	<DL	<DL	0.0014	0.0014	DIFF	0	Pass Diff
Magnesium (Mg)-Total	mg/L	20	30	0.0050	1.62	1.62	RPD	0	Pass RPD	1.07	1.05	RPD	1.9	Pass RPD	1.32	1.32	RPD	0	Pass RPD	3.47	3.59	RPD	-3.4	Pass RPD
Manganese (Mn)-Total	mg/L	20	30	0.00010	0.0018	0.0019	RPD	-5.8	Pass RPD	0.0028	0.0028	RPD	-0.40	Pass RPD	0.0028	0.0027	RPD	3.3	Pass RPD	0.0053	0.0053	RPD	0.20	Pass RPD
Mercury (Hg)-Total	µg/L	20	30	0.000005	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL
Molybdenum (Mo)-Total	mg/L	20	30	0.000050	0.00013	0.00015	DIFF	0.000014	Pass Diff	0.000068	0.000055	DIFF	0.000013	Pass Diff	0.00011	0.000086	DIFF	0.000022	Pass Diff	0.00034	0.00034	RPD	-0.90	Pass RPD
Nickel (Ni)-Total	mg/L	20	30	0.00050	<0.00050	0.00051	<DL	<DL	<DL	0.00075	0.00073	DIFF	0.000020	Pass Diff	<0.00050	<0.00050	<DL	<DL	<DL	<0.00050	<0.00050	<DL	<DL	<DL
Phosphorus (P)-Total	mg/L	20	30	0.050	<0.050	<0.050	<DL	<DL	<DL	<0.050	<0.050	<DL	<DL	<DL	<0.050	<0.050	<DL	<DL	<DL	<0.050	<0.050	<DL	<DL	<DL
Potassium (K)-Total	mg/L	20	30	0.050	0.562	0.553	RPD	1.6	Pass RPD	0.398	0.391	RPD	1.8	Pass RPD	0.85	0.87	RPD	-2.3	Pass RPD	2.55	2.56	RPD	-0.40	Pass RPD
Rubidium (Rb)-Total	mg/L	20	30	0.00020	0.00085	0.00082	DIFF	0.000030	Pass Diff	0.00056	0.00052	DIFF	0.000040	Pass Diff	0.0010	0.0011	DIFF	0.000090	Pass Diff	0.0035	0.0035	RPD	-0.30	Pass RPD
Selenium (Se)-Total	mg/L	20	30	0.000050	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL
Silicon (Si)-Total	mg/L	20	30	0.1	0.32	0.31	DIFF	0.010	Pass Diff	0.17	0.17	DIFF	0	Pass Diff	0.37	0.4	DIFF	0.030	Pass Diff	0.13	0.15	DIFF	0.020	Pass Diff
Silver (Ag)-Total	mg/L	20	30	0.000010	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL
Sodium (Na)-Total	mg/L	20	30	0.050	0.883	0.876	RPD	0.80	Pass RPD	0.635	0.624	RPD	1.7	Pass RPD	1.62	1.58	RPD	2.5	Pass RPD	2.75	2.87	RPD	-4.3	Pass RPD
Strontium (Sr)-Total	mg/L	20	30	0.00020	0.023	0.022	RPD	0.40	Pass RPD	0.012	0.012	RPD	0.80	Pass RPD	0.025	0.024	RPD	2.0	Pass RPD	0.079	0.080	RPD	-0.50	Pass RPD
Sulfur (S)-Total	mg/L	20	30	0.5	2.49	2.39	DIFF	0.10	Pass Diff	0.78	0.86	DIFF	0.080	Pass Diff	1.8	1.98	DIFF	0.18	Pass Diff	4.97	5.12	RPD	-3.0	Pass RPD
Tellurium (Te)-Total	mg/L	20	30	0.00020	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL
Thallium (Tl)-Total	mg/L	20	30	0.000010	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL
Thorium (Th)-Total	mg/L	20	30	0.00010	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL
Tin (Sn)-Total	mg/L	20	30	0.00010	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL
Titanium (Ti)-Total	mg/L	20	30	0.00030	<0.00030	<0.00030	<DL	<DL	<DL	<0.00030	<0.00030	<DL	<DL	<DL	<0.00030	<0.00030	<DL	<DL	<DL	<0.00030	<0.00030	<DL	<DL	<DL
Tungsten (W)-Total	mg/L	20	30	0.00010	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL
Uranium (U)-Total	mg/L	20	30	0.000010	0.000062	0.000065	RPD	-4.7	Pass RPD	0.000041	0.000037	DIFF	0.000004	Pass Diff	0.000040	0.000040	DIFF	0	Pass Diff	0.000081	0.000089	RPD	-9.4	Pass RPD
Vanadium (V)-Total	mg/L	20	30	0.00050	<0.00050	<0.00050	<DL	<DL	<DL	<0.00050	<0.00050	<DL	<DL	<DL	<0.00050	<0.00050	<DL	<DL	<DL	<0.00050	<0.00050	<DL	<DL	<DL
Zinc (Zn)-Total	mg/L	20	30	0.0030	<0.0030	<0.0030	<DL	<DL	<DL	<0.0030	0.0040	<DL	<DL	<DL	<0.0030	<0.0030	<DL	<DL	<DL	<0.0030	<0.0030	<DL	<DL	<DL
Zirconium (Zr)-Total	mg/L	20	30	0.00020	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL
Dissolved Metals																								
Aluminum (Al)-Dissolved	mg/L	20	30	0.0010	0.0035	0.0035	DIFF	0	Pass Diff	0.0024	0.0024	DIFF	0	Pass Diff	0.0057	0.0041	DIFF	0.0016	Pass Diff	0.0023	0.0022	DIFF	0.000100	Pass Diff
Antimony (Sb)-Dissolved	mg/L	20	30	0.00010	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	0.00049	0.00050	DIFF	0.000010	Pass Diff
Arsenic (As)-Dissolved	mg/L	20	30	0.00010	0.00035	0.00035	DIFF	0	Pass Diff	0.00021	0.00023	DIFF	0.000020	Pass Diff	0.00014	0.00013	DIFF	0.000010	Pass Diff	0.00029	0.00031	DIFF	0.000020	Pass Diff
Barium (Ba)-Dissolved	mg/L	20	30	0.00010	0.0029	0.0029	RPD	1.0	Pass RPD	0.0022	0.0023	RPD	-1.3	Pass RPD	0.0076	0.0071	RPD	6.3	Pass RPD	0.012	0.012	RPD	0.80	Pass RPD
Beryllium (Be)-Dissolved	mg/L	20	30	0.00010	<0.000100	<0.000100	<DL	<DL	<DL	<0.000100	<0.000100	<DL	<DL	<DL	<0.000100	<0.000100	<DL	<DL	<DL	<0.000100	<0.000100	<DL	<DL	<DL
Bismuth (Bi)-Dissolved	mg/L	20	30	0.000050	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL
Boron (B)-Dissolved	mg/L	20	30	0.010	<0.010	<0.010	<DL	<DL	<DL	<0.010	<0.010	<DL	<DL	<DL	<0.010	<0.010	<DL	<DL	<DL	<0.010	<0.010	<DL	<DL	<DL
Cadmium (Cd)-Dissolved	mg/L	20	30	0.000005	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL
Calcium (Ca)-Dissolved	mg/L	20	30	0.050	4.61	4.64	RPD	-0.60	Pass RPD	2.91	2.93	RPD	-0.70	Pass RPD	4.67	4.62	RPD	1.1	Pass RPD	11	10	RPD	1.0	Pass RPD
Cesium (Cs)-Dissolved	mg/L	20	30	0.000010	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL
Chromium (Cr)-Dissolved	mg/L	20	30	0.00010	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL
Cobalt (Co)-Dissolved	mg/L	20	30	0.00010	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL
Copper (Cu)-Dissolved	mg/L	20	30	0.00020	0.00074	0.00072	DIFF	0.000020	Pass Diff	0.00049	0.00047	DIFF	0.000020	Pass Diff	0.00032	0.00032	DIFF	0	Pass Diff	0.00035	0.00033	DIFF	0.000020	Pass Diff
Iron (Fe)-Dissolved	mg/L	20	30	0.010	<0.010	<0.010	<DL	<DL	<DL	<0.010	<0.010	<DL	<DL	<DL	0.036	0.034	DIFF	0.0020	Pass Diff	<0.010	<0.010	<DL	<DL	<DL
Lead (Pb)-Dissolved	mg/L	20	30	0.000050	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL
Lithium (Li)-Dissolved	mg/L	20	30	0.0010	<0.0010	<0.0010	<DL	<DL	<DL	<0.0010	<0.0010	<DL	<DL	<DL	<0.0010	<0.0010	<DL	<DL	<DL	0.0014	0.0013	DIFF	0.00010	Pass Diff
Magnesium (Mg)-Dissolved	mg/L	20	30	0.0050	1.57	1.56	RPD	0.60	Pass RPD	1.03	1.03	RPD	0	Pass RPD	1.45	1.4	RPD	3.5	Pass RPD	3.38	3.31	RPD	2.1	Pass RPD
Manganese (Mn)-Dissolved	mg/L	20	30	0.00010	0.00062	0.00064	RPD	-3.2	Pass RPD	0.0011	0.0011	RPD	-2.8	Pass RPD	0.0015	0.0013	RPD	14	Pass RPD	0.00068	0.00070	RPD	-2.9	Pass RPD
Mercury (Hg)-Dissolved	µg/L	20	30	0.000005	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL	<0.0000050	<0.0000050	<DL	<DL	<DL
Molybdenum (Mo)-Dissolved	mg/L	20	30	0.000050	0.00015	0.00014	DIFF	0.000014	Pass Diff	0.000054	0.000050	DIFF	0.000004	Pass Diff	0.000093	0.000086	DIFF	0.000007	Pass Diff	0.00031	0.00033	RPD	-5.6	Pass RPD
Nickel (Ni)-Dissolved	mg/L	20	30	0.00050	0.00050	<0.00050	<DL	<DL	<DL	0.00070	0.00072	DIFF	0.000020	Pass Diff	<0.00050	<0.00050	<DL	<DL	<DL	<0.00050	<0.00050	<DL	<DL	<DL
Phosphorus (P)-Dissolved	mg/L	20	30	0.050	<0.050	<0.050	<DL	<DL	<DL	<0.050	<0.050	<DL	<DL	<DL	<0.050	<0.050	<DL	<DL	<DL	<0.050	<0.050	<DL	<DL	<DL
Potassium (K)-Dissolved	mg/L	20	30	0.050	0.569	0.566	RPD	0.50	Pass RPD	0.428	0.426	RPD	0.50	Pass RPD	0.923	0.89	RPD	3.6	Pass RPD	2.63	2.6	RPD	1.1	Pass RPD
Rubidium (Rb)-Dissolved	mg/L	20	30	0.00020	0.00078	0.00084	DIFF	0.000060	Pass Diff	0.00052	0.00046	DIFF	0.000060	Pass Diff	0.0011	0.0011	RPD	2.7	Pass RPD	0.0033	0.0035	RPD	-5.7	Pass RPD
Selenium (Se)-Dissolved	mg/L	20	30	0.000050	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL	<0.000050	<0.000050	<DL	<DL	<DL
Silicon (Si)-Dissolved	mg/L	20	30	0.050	0.264	0.267	RPD	-1.1	Pass RPD	0.141	0.135	DIFF	0.0060	Pass Diff	0.353	0.358	RPD	-1.4	Pass RPD	0.096	0.097	DIFF	0.0010	Pass Diff
Silver (Ag)-Dissolved	mg/L	20	30	0.000010	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL
Sodium (Na)-Dissolved	mg/L	20	30	0.050	0.878	0.874	RPD	0.50	Pass RPD	0.596	0.597	RPD	-0.20	Pass RPD	1.8	1.78	RPD	1.1	Pass RPD	2.66	2.56	RPD	3.8	Pass RPD
Strontium (Sr)-Dissolved	mg/L	20	30	0.00020	0.022	0.022	RPD	-0.50	Pass RPD	0.012	0.012	RPD	-2.4	Pass RPD	0.026	0.025	RPD	2.0	Pass RPD	0.076	0.079	RPD	-3.1	Pass RPD
Sulfur (S)-Dissolved	mg/L	20	30	0.5	2.3	2.29	DIFF	0.0100	Pass Diff	0.79	0.9	DIFF	0.11	Pass Diff	1.72	1.8	DIFF	0.080	Pass Diff	4.68	4.77	RPD	-1.9	Pass RPD
Tellurium (Te)-Dissolved	mg/L	20	30	0.00020	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL
Thallium (Tl)-Dissolved	mg/L	20	30	0.000010	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL	<0.000010	<0.000010	<DL	<DL	<DL
Thorium (Th)-Dissolved	mg/L	20	30	0.00010	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL
Tin (Sn)-Dissolved	mg/L	20	30	0.00010	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL
Titanium (Ti)-Dissolved	mg/L	20	30	0.00030	<0.00030	<0.00030	<DL	<DL	<DL	<0.00030	<0.00030	<DL	<DL	<DL	<0.00030	<0.00030	<DL	<DL	<DL	<0.00030	<0.00030	<DL	<DL	<DL
Tungsten (W)-Dissolved	mg/L	20	30	0.00010	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL	<0.00010	<0.00010	<DL	<DL	<DL
Uranium (U)-Dissolved	mg/L	20	30	0.000010	0.000058	0.000058	RPD	0	Pass RPD	0.000031	0.000032	DIFF	0.000001	Pass Diff	0.000037	0.000035	DIFF	0.000002	Pass Diff	0.000071	0.000074	RPD	-4.1	Pass RPD
Vanadium (V)-Dissolved	mg/L	20	30	0.00050	<0.00050	<0.00050	<DL	<DL	<DL	<0.00050	<0.00050	<DL	<DL	<DL	<0.00050	<0.00050	<DL	<DL	<DL	<0.00050	<0.00050	<DL	<DL	<DL
Zinc (Zn)-Dissolved	mg/L	20	30	0.0010	<0.0010	<0.0010	<DL	<DL	<DL	<0.0010	<0.0010	<DL	<DL	<DL	<0.0010	<0.0010	<DL	<DL	<DL	<0.0010	<0.0010	<DL	<DL	<DL
Zirconium (Zr)-Dissolved	mg/L		40	0.00020	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL	<0.00020	<0.00020	<DL	<DL	<DL
Dissolved Mercury Filtration Location	-	20	30		Field	Field		<DL		Field	Field		<DL		Field	Field		<DL		Field	Field		<DL	
Dissolved Metals Filtration Location	-	20	30		Field	Field		<DL		Field	Field		<DL		Field	Field		<DL		Field	Field		<DL	
Plant Pigments (µg/L)																								
chlorophyll-a	µg/L		40	0.010	0.446	0.34	RPD	27	Pass RPD	0.388	0.336	RPD	14	Pass RPD	0.774	0.502	RPD	43	Fail	1.09	0.962	RPD	13	Pass RPD

Notes:

[a] Field Dup Methods are based on the concentrations:

RPD = relative percent difference is used to compare field duplicates when the measured concentration is > 5x the DL

DIFF = when concentrations < 5x the DL

[b] Results refer to the RPD or absolute difference in concentration:

DQO for RPDs is < Field RPD values

DQO for DIFF is < 2x the DL

Italicized numbers are below detection limits.

Table B-5. Water quality field duplicate results for all CREMP study areas in 2025.

Month	Units	Relative Percent Difference DQOs		September DLs	September DUP-1 (NEM-104)					September DUP-2 (PDL-139)					September DUP-3 (TPE-187)					September DUP-4 (INUG-174)				
Station					NEM-104	DUP-1	Field Dup Method [a]	Result [b] (RPD or Diff)	Outcome	PDL-139	DUP-2	Field Dup Method [a]	Result [b] (RPD or Diff)	Outcome	TPE-187	Sept DUP-3	Field Dup Method [a]	Result [b] (RPD or Diff)	Outcome	INUG-174	DUP-4	Field Dup Method [a]	Result [b] (RPD or Diff)	Outcome
Date Sampled					03-Sep-2025	03-Sep-2025				07-Sep-2025	07-Sep-2025				03-Sep-2025	03-Sep-2025				07-Sep-2025	07-Sep-2025			
Time Sampled					13:59	00:00				10:40	00:00				15:00	00:00				10:15	00:00			
ALS Sample ID		Lab	Field		VA25C3361-001	VA25C3361-003				VA25C3661-009	VA25C3661-011				VA25C3360-002	VA25C3360-003				VA25C3701-002	VA25C3701-003			
Parameter					Water	Water				Water	Water				Water	Water				Water	Water			
Physical Tests																								
Conductivity	µS/cm	10	15	2	85	89	RPD	-3.8	Pass RPD	30	30	RPD	-1.3	Pass RPD	31	31	RPD	0	Pass RPD	17	17	RPD	0	Pass RPD
Alkalinity, Bicarbonate		20	30	1	14	14	RPD	-0.70	Pass RPD	9.6	9.1	RPD	5.3	Pass RPD	7.5	7.5	RPD	0	Pass RPD	4.9	5	DIFF	0.100	Pass Diff
Alkalinity, Carbonate		20	30	1	*<1.0*	*<1.0*	<DL	<DL	<DL	*<1.0*	*<1.0*	<DL	<DL	<DL	*<1.0*	*<1.0*	<DL	<DL	<DL	*<1.0*	*<1.0*	<DL	<DL	<DL
Alkalinity, Hydroxide		20	30	1	*<1.0*	*<1.0*	<DL	<DL	<DL	*<1.0*	*<1.0*	<DL	<DL	<DL	*<1.0*	*<1.0*	<DL	<DL	<DL	*<1.0*	*<1.0*	<DL	<DL	<DL
Alkalinity, Total (as $CaCO_3$)	mg/L	20	30	1	14	14	RPD	-0.70	Pass RPD	9.6	9.1	RPD	5.3	Pass RPD	7.5	7.5	RPD	0	Pass RPD	4.9	5	DIFF	0.100	Pass Diff
Hardness (mg/L), Dissolved			40	0.6	35	35	RPD	0.90	Pass RPD	12	12	RPD	0.80	Pass RPD	12	12	RPD	-0.90	Pass RPD	5.87	5.85	RPD	0.30	Pass RPD
Hardness (as $CaCO_3$), from total Ca/Mg			40	0.6	35	35	RPD	-0.60	Pass RPD	12	12	RPD	4.1	Pass RPD	12	11	RPD	3.4	Pass RPD	5.85	5.9	RPD	-0.90	Pass RPD
Total Dissolved Solids	mg/L		40	3	51	56	RPD	-8.2	Pass RPD	24	23	RPD	4.2	Pass RPD	18	22	RPD	-20.4	Pass RPD	14	14	DIFF	0.20	Pass Diff
Total Suspended Solids	mg/L		40	1	*<1.0*	*<1.0*	<DL	<DL	<DL	*<1.0*	*<1.0*	<DL	<DL	<DL	*<1.0*	*<1.0*	<DL	<DL	<DL	*<1.0*	*<1.0*	<DL	<DL	<DL
Turbidity	NTU	15	23	0.1	0.22	0.23	DIFF	0.010	Pass Diff	0.25	0.24	DIFF	0.010	Pass Diff	0.28	0.32	DIFF	0.040	Pass Diff	0.3	0.31	DIFF	0.010	Pass Diff
pH (Laboratory)	pH		40	0.1	7.41	7.41	RPD	0	Pass RPD	7.3	7.32	RPD	-0.30	Pass RPD	7.15	7.17	RPD	-0.30	Pass RPD	6.95	6.96	RPD	-0.10	Pass RPD
Anions and Nutrients																								
Ammonia, Total (as N)	mg/L	20	30	0.0050	0.0092	0.011	DIFF	0.0015	Pass Diff	0.017	0.010	DIFF	0.0062	Pass Diff	0.0067	0.022	DIFF	0.015	Pass Diff	0.019	0.023	DIFF	0.0043	Pass Diff
Bromide (Br)	mg/L	20	30	0.050	0.069	0.069	DIFF	0	Pass Diff	*<0.050*	*<0.050*	<DL	<DL	<DL	*<0.050*	*<0.050*	<DL	<DL	<DL	*<0.050*	*<0.050*	<DL	<DL	<DL
Chloride (Cl)	mg/L	20	30	0.1	11	11	RPD	-0.90	Pass RPD	1.04	1.03	RPD	1.0	Pass RPD	0.83	0.84	RPD	-1.2	Pass RPD	0.9	1	RPD	-10.5	Pass RPD
Fluoride (F)	mg/L	20	30	0.020	0.029	0.029	DIFF	0	Pass Diff	0.046	0.044	DIFF	0.0020	Pass Diff	0.083	0.081	DIFF	0.0020	Pass Diff	0.098	0.096	DIFF	0.0020	Pass Diff
Total Kjeldahl Nitrogen	mg/L	20	30	0.050	0.189	0.161	DIFF	0.028	Pass Diff	0.152	0.108	DIFF	0.044	Pass Diff	0.137	0.131	DIFF	0.0060	Pass Diff	0.141	0.141	DIFF	0	Pass Diff
Nitrate (as N)	mg/L	20	30	0.0050	*<0.0050*	*<0.0050*	<DL	<DL	<DL	*<0.0050*	*<0.0050*	<DL	<DL	<DL	*<0.0050*	*<0.0050*	<DL	<DL	<DL	*<0.0050*	*<0.0050*	<DL	<DL	<DL
Nitrite (as N)	mg/L	20	30	0.0010	*<0.0010*	*<0.0010*	<DL	<DL	<DL	*<0.0010*	*<0.0010*	<DL	<DL	<DL	*<0.0010*	*<0.0010*	<DL	<DL	<DL	*<0.0010*	*<0.0010*	<DL	<DL	<DL
Orthophosphate-Dissolved (as P)	mg/L	20	30	0.0010	*<0.0010*	*<0.0010*	<DL	<DL	<DL	*<0.0010*	*<0.0010*	<DL	<DL	<DL	*<0.0010*	*<0.0010*	<DL	<DL	<DL	*<0.0010*	*<0.0010*	<DL	<DL	<DL
Phosphorus (P)-Total	mg/L	20	30	0.0020	0.0026	0.0027	DIFF	0.00010	Pass Diff	0.0027	*<0.0020*	<DL	<DL	<DL	*<0.0020*	*<0.0020*	<DL	<DL	<DL	0.0021	0.0021	DIFF	0	Pass Diff
Phosphorus (P)-Total Dissolved	mg/L	25	38	0.0020	*<0.0020*	*<0.0020*	<DL	<DL	<DL	*<0.0020*	*<0.0020*	<DL	<DL	<DL	*<0.0020*	*<0.0020*	<DL	<DL	<DL	*<0.0020*	*<0.0020*	<DL	<DL	<DL
Silica, Reactive (as SiO2)	mg/L	20	30	0.5	*<0.50*	*<0.50*	<DL	<DL	<DL	*<0.50*	*<0.50*	<DL	<DL	<DL	*<0.50*	*<0.50*	<DL	<DL	<DL	0.63	0.63	DIFF	0	Pass Diff
Sulfate (SO4)	mg/L	20	30	0.3	7.63	7.69	RPD	-0.80	Pass RPD	2.98	2.97	RPD	0.30	Pass RPD	4.9	4.97	RPD	-1.4	Pass RPD	1.46	1.58	DIFF	0.12	Pass Diff
Cyanides																								
Cyanide, Free	mg/L	20	30	0.0010	-	-	<DL	<DL	<DL	*<0.0010*	*<0.0010*	<DL	<DL	<DL	-	*<0.0010*	<DL	<DL	<DL	*<0.0010*	*<0.0010*	<DL	<DL	<DL
Cyanide, Total	mg/L	20	30	0.0010	-	-	<DL	<DL	<DL	*<0.0010*	*<0.0010*	<DL	<DL	<DL	-	*<0.0010*	<DL	<DL	<DL	*<0.0010*	*<0.0010*	<DL	<DL	<DL
Organic / Inorganic Carbon																								
Dissolved Organic Carbon	mg/L	20	30	0.5	2.39	2.36	DIFF	0.030	Pass Diff	2.27	1.94	DIFF	0.33	Pass Diff	1.52	1.42	DIFF	0.10	Pass Diff	2.26	2.1	DIFF	0.16	Pass Diff
Total Organic Carbon	mg/L	20	30	0.5	2.1	2.09	DIFF	0.010	Pass Diff	2.19	2.05	DIFF	0.14	Pass Diff	1.36	1.54	DIFF	0.18	Pass Diff	2.32	2.25	DIFF	0.070	Pass Diff
Total Metals																								
Aluminum (Al)-Total	mg/L	20	30	0.0030	0.0055	0.0056	DIFF	0.00010	Pass Diff	0.0078	0.0043	DIFF	0.0035	Pass Diff	0.0075	0.015	DIFF	0.0074	Pass Diff	0.0076	0.0092	DIFF	0.0016	Pass Diff
Antimony (Sb)-Total	mg/L	20	30	0.00010	*<0.00010*	*<0.00010*	<DL	<DL	<DL	*<0.00010*	*<0.00010*	<DL	<DL	<DL	*<0.00010*	*<0.00010*	<DL	<DL	<DL	*<0.00010*	*<0.00010*	<DL	<DL	<DL
Arsenic (As)-Total	mg/L	20	30	0.00010	0.0010	0.0010	RPD	0	Pass RPD	0.00022	0.00022	DIFF	0	Pass Diff	0.00055	0.00051	RPD	7.5	Pass RPD	0.00014	0.00012	DIFF	0.000020	Pass Diff
Barium (Ba)-Total	mg/L	20	30	0.00010	0.016	0.016	RPD	-0.60	Pass RPD	0.0025	0.0023	RPD	9.2	Pass RPD	0.0029	0.0030	RPD	-2.0	Pass RPD	0.0033	0.0033	RPD	-2.1	Pass RPD
Beryllium (Be)-Total	mg/L	20	30	0.00010	*<0.000100*	*<0.000100*	<DL	<DL	<DL	*<0.000100*	*<0.000100*	<DL	<DL	<DL	*<0.000100*	*<0.000100*	<DL	<DL	<DL	*<0.000100*	*<0.000100*	<DL	<DL	<DL
Bismuth (Bi)-Total	mg/L	20	30	0.000050	*<0.000050*	*<0.000050*	<DL	<DL	<DL	*<0.000050*	*<0.000050*	<DL	<DL	<DL	*<0.000050*	*<0.000050*	<DL	<DL	<DL	*<0.000050*	*<0.000050*	<DL	<DL	<DL
Boron (B)-Total	mg/L	20	30	0.010	*<0.010*	*<0.010*	<DL	<DL	<DL	*<0.010*	*<0.010*	<DL	<DL	<DL	*<0.010*	*<0.010*	<DL	<DL	<DL	*<0.010*	*<0.010*	<DL	<DL	<DL
Cadmium (Cd)-Total	mg/L	20	30	0.000005	*<0.0000050*	*<0.0000050*	<DL	<DL	<DL	*<0.0000050*	*<0.0000050*	<DL	<DL	<DL	*<0.0000050*	*<0.0000050*	<DL	<DL	<DL	*<0.0000050*	*<0.0000050*	<DL	<DL	<DL
Calcium (Ca)-Total	mg/L	20	30	0.050	9.54	9.65	RPD	-1.1	Pass RPD	3.13	2.95	RPD	5.9	Pass RPD	2.82	2.76	RPD	2.2	Pass RPD	1.21	1.24	RPD	-2.4	Pass RPD
Cesium (Cs)-Total	mg/L	20	30	0.000010	0.000015	0.000016	DIFF	0.000001	Pass Diff	*<0.000010*	*<0.000010*	<DL	<DL	<DL	0.000013	0.000016	DIFF	0.000003	Pass Diff	*<0.000010*	*<0.000010*	<DL	<DL	<DL
Chromium (Cr)-Total	mg/L	20	30	0.00050	0.00012	0.00012	DIFF	0	Pass Diff	0.00012	*<0.00010*	<DL	<DL	<DL	*<0.00010*	0.00013	<DL	<DL	<DL	*<0.00010*	*<0.00010*	<DL	<DL	<DL
Cobalt (Co)-Total	mg/L	20	30	0.00010	*<0.00010*	*<0.00010*	<DL	<DL	<DL	*<0.00010*	*<0.00010*	<DL	<DL	<DL	*<0.00010*	*<0.00010*	<DL	<DL	<DL	*<0.00010*	*<0.00010*	<DL	<DL	<DL
Copper (Cu)-Total	mg/L	20	30	0.00050	*<0.00050*	*<0.00050*	<DL	<DL	<DL	0.00063	0.00055	DIFF	0.000080	Pass Diff	*<0.00050*	0.00052	<DL	<DL	<DL	*<0.00050*	*<0.00050*	<DL	<DL	<DL
Iron (Fe)-Total	mg/L	20	30	0.010	0.019	0.019	DIFF	0	Pass Diff	0.016	*<0.010*	<DL	<DL	<DL	0.019	0.026	DIFF	0.0070	Pass Diff	0.013	0.011	DIFF	0.0020	Pass Diff
Lead (Pb)-Total	mg/L	20	30	0.000050	*<0.000050*	*<0.000050*	<DL	<DL	<DL	0.000067	*<0.000050*	<DL	<DL	<DL	*<0.000050*	*<0.000050*	<DL	<DL	<DL	*<0.000050*	0.00012	<DL	<DL	<DL
Lithium (Li)-Total	mg/L	20	30	0.0010	*<0.0010*	*<0.0010*	<DL	<DL	<DL	*<0.0010*	*<0.0010*	<DL	<DL	<DL	*<0.0010*	*<0.0010*	<DL	<DL	<DL	*<0.0010*	*<0.0010*	<DL	<DL	<DL
Magnesium (Mg)-Total	mg/L	20	30	0.0050	2.67	2.64	RPD	1.1	Pass RPD	1.09	1.09	RPD	0	Pass RPD	1.17	1.1	RPD	6.2	Pass RPD	0.687	0.681	RPD	0.90	Pass RPD
Manganese (Mn)-Total	mg/L	20	30	0.00010	0.0049	0.0051	RPD	-3.4	Pass RPD	0.0028	0.0026	RPD	7.2	Pass RPD	0.0017	0.0020	RPD	-14.2	Pass RPD	0.0034	0.0035	RPD	-2.0	Pass RPD
Mercury (Hg)-Total	µg/L	20	30	0.000005	*<0.0000050*	*<0.0000050*	<DL	<DL	<DL	*<0.0000050*	*<0.0000050*	<DL	<DL	<DL	*<0.0000050*	*<0.0000050*	<DL	<DL	<DL	*<0.0000050*	*<0.0000050*	<DL	<DL	<DL
Molybdenum (Mo)-Total	mg/L	20	30	0.000050	0.000085	0.000088	DIFF	0.000003	Pass Diff	0.000061	0.000054	DIFF	0.000007	Pass Diff	0.00012	0.00011	DIFF	0.000010	Pass Diff	*<0.000050*	*<0.000050*	<DL	<DL	<DL
Nickel (Ni)-Total	mg/L	20	30	0.00050	0.0013	0.0012	DIFF	0.000030	Pass Diff	0.00080	0.00078	DIFF	0.000020	Pass Diff	*<0.00050*	0.00052	<DL	<DL	<DL	*<0.00050*	*<0.00050*	<DL	<DL	<DL
Phosphorus (P)-Total	mg/L	20	30	0.050	*<0.050*	*<0.050*	<DL	<DL	<DL	*<0.050*	*<0.050*	<DL	<DL	<DL	*<0.050*	*<0.050*	<DL	<DL	<DL	*<0.050*	*<0.050*	<DL	<DL	<DL
Potassium (K)-Total	mg/L	20	30	0.050	1.72	1.7	RPD	1.2	Pass RPD	0.407	0.406	RPD	0.20	Pass RPD	0.549	0.52	RPD	5.4	Pass RPD	0.342	0.349	RPD	-2.0	Pass RPD
Rubidium (Rb)-Total	mg/L	20	30	0.00020	0.0029	0.0027	RPD	6.1	Pass RPD	0.00058	0.00056	DIFF	0.000020	Pass Diff	0.00088	0.00088	DIFF	0	Pass Diff	0.00056	0.00052	DIFF	0.000040	Pass Diff
Selenium (Se)-Total	mg/L	20	30	0.000050	*<0.000050*	*<0.000050*	<DL	<DL	<DL	*<0.000050*	*<0.000050*	<DL	<DL	<DL	*<0.000050*	*<0.000050*	<DL	<DL	<DL	*<0.000050*	*<0.000050*	<DL	<DL	<DL
Silicon (Si)-Total	mg/L	20	30	0.1	0.15	0.13	DIFF	0.020	Pass Diff	0.19	0.18	DIFF	0.010	Pass Diff	0.15	0.17	DIFF	0.020	Pass Diff	0.3	0.31	DIFF	0.010	Pass Diff
Silver (Ag)-Total	mg/L	20	30	0.000010	*<0.000010*	*<0.000010*	<DL	<DL	<DL	*<0.000010*	*<0.000010*	<DL	<DL	<DL	*<0.000010*	*<0.000010*	<DL	<DL	<DL	*<0.000010*	*<0.000010*	<DL	<DL	<DL
Sodium (Na)-Total	mg/L	20	30	0.050	0.959	0.932	RPD	2.9	Pass RPD	0.598	0.599	RPD	-0.20	Pass RPD	1.05	0.998	RPD	5.1	Pass RPD	0.751	0.759	RPD	-1.1	Pass RPD
Strontium (Sr)-Total	mg/L	20	30	0.00020	0.050	0.050	RPD	-1.0	Pass RPD	0.013	0.013	RPD	0	Pass RPD	0.013	0.013	RPD	-4.7	Pass RPD	0.0094	0.0094	RPD	0.30	Pass RPD
Sulfur (S)-Total	mg/L	20	30	0.5	2.76	2.64	RPD	4.4	Pass RPD	0.75	0.94	DIFF	0.19	Pass Diff	1.61	1.71	DIFF	0.100	Pass Diff	*<0.50*	*<0.50*	<DL	<DL	<DL
Tellurium (Te)-Total	mg/L	20	30	0.00020	*<0.00020*	*<0.00020*	<DL	<DL	<DL	*<0.00020*	*<0.00020*	<DL	<DL	<DL	*<0.00020*	*<0.00020*	<DL	<DL	<DL	*<0.00020*	*<0.00020*	<DL	<DL	<DL
Thallium (Tl)-Total	mg/L	20	30	0.000010	*<0.000010*	*<0.000010*	<DL	<DL	<DL	*<0.000010*	*<0.000010*	<DL	<DL	<DL	*<0.000010*	*<0.000010*	<DL	<DL	<DL	*<0.000010*	*<0.000010*	<DL	<DL	<DL
Thorium (Th)-Total	mg/L	20	30	0.00010	*<0.00010*	*<0.00010*	<DL	<DL	<DL	*<0.00010*	*<0.00010*	<DL	<DL	<DL	*<0.00010*	*<0.00010*	<DL	<DL	<DL	*<0.00010*	0.00016	<DL	<DL	<DL
Tin (Sn)-Total	mg/L	20	30	0.00010	*<0.00010*	*<0.00010*	<DL	<DL	<DL	*<0.00010*	*<0.00010*	<DL	<DL	<DL	*<0.00010*	*<0.00010*	<DL	<DL	<DL	*<0.00010*	*<0.00010*	<DL	<DL	<DL
Titanium (Ti)-Total	mg/L	20	30	0.00030	*<0.00030*	*<0.00030*	<DL	<DL	<DL	*<0.00030*	*<0.00030*	<DL	<DL	<DL	*<0.00030*	0.00043	<DL	<DL	<DL	*<0.00030*	*<0.00030*	<DL	<DL	<DL
Tungsten (W)-Total	mg/L	20	30	0.00010	*<0.00010*	*<0.00010*	<DL	<DL	<DL	*<0.00010*	*<0.00010*	<DL	<DL	<DL	*<0.00010*	*<0.00010*	<DL	<DL	<DL	*<0.00010*	*<0.00010*	<DL	<DL	<DL
Uranium (U)-Total	mg/L	20	30	0.000010	0.000019	0.000018	DIFF	0.000001	Pass Diff	0.000035	0.000035	DIFF	0	Pass Diff	0.000045	0.000045	DIFF	0	Pass Diff	0.000084	0.000081	RPD	3.6	Pass RPD
Vanadium (V)-Total	mg/L	20	30	0.00050	*<0.00050*	*<0.00050*	<DL	<DL	<DL	*<0.00050*	*<0.00050*	<DL	<DL	<DL	*<0.00050*	*<0.00050*	<DL	<DL	<DL	*<0.00050*	*<0.00050*	<DL	<DL	<DL
Zinc (Zn)-Total	mg/L	20	30	0.0030	*<0.0030*	*<0.0030*	<DL	<DL	<DL	*<0.0030*	*<0.0030*	<DL	<DL	<DL	*<0.0030*	*<0.0030*	<DL	<DL	<DL	*<0.0030*	*<0.0030*	<DL	<DL	<DL
Zirconium (Zr)-Total	mg/L	20	30	0.00020	*<0.00020*	*<0.00020*	<DL	<DL	<DL	*<0.00020*	*<0.00020*	<DL	<DL	<DL	*<0.00020*	*<0.00020*	<DL	<DL	<DL	*<0.00020*	*<0.00020*	<DL	<DL	<DL
Dissolved Metals																								
Aluminum (Al)-Dissolved	mg/L	20	30	0.0010	0.0021	0.0024	DIFF	0.00030	Pass Diff	0.0017	0.0021	DIFF	0.00040	Pass Diff	0.0020	0.049	DIFF	0.047	Fail	0.0082	0.0038	DIFF	0.0044	Fail
Antimony (Sb)-Dissolved	mg/L	20	30	0.00010	*<0.00010*	*<0.00010*	<DL	<DL	<DL	*<0.00010*	*<0.00010*	<DL	<DL	<DL	*<0.00010*	*<0.00010*	<DL	<DL	<DL	*<0.00010*	*<0.00010*	<DL	<DL	<DL
Arsenic (As)-Dissolved	mg/L	20	30	0.00010	0.00082	0.00095	RPD	-14.7	Pass RPD	0.00021	0.00021	DIFF	0	Pass Diff	0.00045	0.00097	DIFF	0.00052	Fail	*<0.00010*	0.00010	<DL	<DL	<DL
Barium (Ba)-Dissolved	mg/L	20	30	0.00010	0.015	0.015	RPD	0	Pass RPD	0.0024	0.0025	RPD	-2.5	Pass RPD	0.0027	0.0043	RPD	-45.8	Fail	0.0032	0.0030	RPD	5.9	Pass RPD
Beryllium (Be)-Dissolved	mg/L	20	30	0.00010	*<0.000100*	*<0.000100*	<DL	<DL	<DL	*<0.000100*	*<0.000100*	<DL	<DL	<DL	*<0.000100*	*<0.000100*	<DL	<DL	<DL	*<0.000100*	*<0.000100*	<DL	<DL	<DL
Bismuth (Bi)-Dissolved	mg/L	20	30	0.000050	*<0.000050*	*<0.000050*	<DL	<DL	<DL	*<0.000050*	*<0.000050*	<DL	<DL	<DL	*<0.000050*	*<0.000050*	<DL	<DL	<DL	*<0.000050*	*<0.000050*	<DL	<DL	<DL
Boron (B)-Dissolved	mg/L	20	30	0.010	*<0.010*	*<0.010*	<DL	<DL	<DL	*<0.010*	*<0.010*	<DL	<DL	<DL	*<0.010*	*<0.010*	<DL	<DL	<DL	*<0.010*	*<0.010*	<DL	<DL	<DL
Cadmium (Cd)-Dissolved	mg/L	20	30	0.000005	*<0.0000050*	*<0.0000050*	<DL	<DL	<DL	*<0.0000050*	*<0.0000050*	<DL	<DL	<DL	*<0.0000050*	0.000006	<DL	<DL	<DL	*<0.0000050*	*<0.0000050*	<DL	<DL	<DL
Calcium (Ca)-Dissolved	mg/L	20	30	0.050	9.68	9.57	RPD	1.1	Pass RPD	2.96	2.93	RPD	1.0	Pass RPD	2.8	2.9	RPD	-3.5	Pass RPD	1.26	1.24	RPD	1.6	Pass RPD
Cesium (Cs)-Dissolved	mg/L	20	30	0.000010	0.000018	0.000014	DIFF	0.000004	Pass Diff	*<0.000010*	*<0.000010*	<DL	<DL	<DL	0.000011	0.000024	DIFF	0.000013	Pass Diff	*<0.000010*	*<0.000010*	<DL	<DL	<DL
Chromium (Cr)-Dissolved	mg/L	20	30	0.00050	*<0.00010*	*<0.00010*	<DL	<DL	<DL	*<0.00010*	*<0.00010*	<DL	<DL	<DL	*<0.00010*	0.0010	<DL	<DL	<DL	*<0.00010*	*<0.00010*	<DL	<DL	<DL
Cobalt (Co)-Dissolved	mg/L	20	30	0.00010	*<0.00010*	*<0.00010*	<DL	<DL	<DL	*<0.00010*	*<0.00010*	<DL	<DL	<DL	*<0.00010*	0.00011	<DL	<DL	<DL	*<0.00010*	*<0.00010*	<DL	<DL	<DL
Copper (Cu)-Dissolved	mg/L	20	30	0.00020	0.00034	0.00031	DIFF	0.000030	Pass Diff	0.00050	0.00049	DIFF	0.000010	Pass Diff	0.00040	0.00086	DIFF	0.00046	Pass Diff	0.00036	0.00031	DIFF	0.000050	Pass Diff
Iron (Fe)-Dissolved	mg/L	20	30	0.010	*<0.010*	*<0.010*	<DL	<DL	<DL	*<0.010*	*<0.010*	<DL	<DL	<DL	*<0.010*	0.108	<DL	<DL	<DL	0.017	*<0.010*	<DL	<DL	<DL
Lead (Pb)-Dissolved	mg/L	20	30	0.000050	*<0.000050*	*<0.000050*	<DL	<DL	<DL	*<0.000050*	*<0.000050*	<DL	<DL	<DL	*<0.000050*	0.00020	<DL	<DL	<DL	*<0.000050*	*<0.000050*	<DL	<DL	<DL
Lithium (Li)-Dissolved	mg/L	20	30	0.0010	0.0010	0.0010	DIFF	0	Pass Diff	*<0.0010*	*<0.0010*	<DL	<DL	<DL	*<0.0010*	*<0.0010*	<DL	<DL	<DL	*<0.0010*	*<0.0010*	<DL	<DL	<DL
Magnesium (Mg)-Dissolved	mg/L	20	30	0.0050	2.58	2.57	RPD	0.40	Pass RPD	1.12	1.12	RPD	0	Pass RPD	1.14	1.12	RPD	1.8	Pass RPD	0.662	0.668	RPD	-0.90	Pass RPD
Manganese (Mn)-Dissolved	mg/L	20	30	0.00010	0.00074	0.00080	RPD	-7.8	Pass RPD	0.00055	0.00055	RPD	0	Pass RPD	0.00056	0.0032	RPD	-140	Fail	0.0013	0.0011	RPD	15	Pass RPD
Mercury (Hg)-Dissolved	µg/L	20	30	0.000005	*<0.0000050*	*<0.0000050*	<DL	<DL	<DL	*<0.0000050*	*<0.0000050*	<DL	<DL	<DL	*<0.0000050*	*<0.0000050*	<DL	<DL	<DL	*<0.0000050*	*<0.0000050*	<DL	<DL	<DL
Molybdenum (Mo)-Dissolved	mg/L	20	30	0.000050	0.000081	0.000073	DIFF	0.000008	Pass Diff	*<0.000050*	0.000061	<DL	<DL	<DL	0.00011	0.00013	DIFF	0.000022	Pass Diff	*<0.000050*	*<0.000050*	<DL	<DL	<DL
Nickel (Ni)-Dissolved	mg/L	20	30	0.00050	0.0012	0.0012	DIFF	0	Pass Diff	0.00069	0.00064	DIFF	0.000050	Pass Diff	*<0.00050*	0.00087	<DL	<DL	<DL	*<0.00050*	*<0.00050*	<DL	<DL	<DL
Phosphorus (P)-Dissolved	mg/L	20	30	0.050	*<0.050*	*<0.050*	<DL	<DL	<DL	*<0.050*	*<0.050*	<DL	<DL	<DL	*<0.050*	*<0.050*	<DL	<DL	<DL	*<0.050*	*<0.050*	<DL	<DL	<DL
Potassium (K)-Dissolved	mg/L	20	30	0.050	1.76	1.72	RPD	2.3	Pass RPD	0.436	0.438	RPD	-0.50	Pass RPD	0.566	0.555	RPD	2.0	Pass RPD	0.346	0.35	RPD	-1.1	Pass RPD
Rubidium (Rb)-Dissolved	mg/L	20	30	0.00020	0.0029	0.0028	RPD	2.1	Pass RPD	0.00056	0.00055	DIFF	0.000010	Pass Diff	0.00078	0.00090	DIFF	0.00012	Pass Diff	0.00046	0.00045	DIFF	0.000010	Pass Diff
Selenium (Se)-Dissolved	mg/L	20	30	0.000050	*<0.000050*	*<0.000050*	<DL	<DL	<DL	*<0.000050*	*<0.000050*	<DL	<DL	<DL	*<0.000050*	*<0.000050*	<DL	<DL	<DL	*<0.000050*	*<0.000050*	<DL	<DL	<DL
Silicon (Si)-Dissolved	mg/L	20	30	0.050	0.101	0.106	DIFF	0.0050	Pass Diff	0.141	0.144	DIFF	0.0030	Pass Diff	0.118	0.186	DIFF	0.068	Pass Diff	0.274	0.273	RPD	0.40	Pass RPD
Silver (Ag)-Dissolved	mg/L	20	30	0.000010	*<0.000010*	*<0.000010*	<DL	<DL	<DL	*<0.000010*	*<0.000010*	<DL	<DL	<DL	*<0.000010*	*<0.000010*	<DL	<DL	<DL	*<0.000010*	*<0.000010*	<DL	<DL	<DL
Sodium (Na)-Dissolved	mg/L	20	30	0.050	0.918	0.915	RPD	0.30	Pass RPD	0.611	0.615	RPD	-0.70	Pass RPD	0.991	1.03	RPD	-3.9	Pass RPD	0.715	0.731	RPD	-2.2	Pass RPD
Strontium (Sr)-Dissolved	mg/L	20	30	0.00020	0.053	0.053	RPD	-1.5	Pass RPD	0.012	0.012	RPD	0	Pass RPD	0.012	0.013	RPD	-7.2	Pass RPD	0.0088	0.0088	RPD	0.70	Pass RPD
Sulfur (S)-Dissolved	mg/L	20	30	0.5	2.53	2.58	RPD	-2.0	Pass RPD	0.84	0.88	DIFF	0.040	Pass Diff	1.61	1.46	DIFF	0.15	Pass Diff	*<0.50*	*<0.50*	<DL	<DL	<DL
Tellurium (Te)-Dissolved	mg/L	20	30	0.00020	*<0.00020*	*<0.00020*	<DL	<DL	<DL	*<0.00020*	*<0.00020*	<DL	<DL	<DL	*<0.00020*	*<0.00020*	<DL	<DL	<DL	*<0.00020*	*<0.00020*	<DL	<DL	<DL
Thallium (Tl)-Dissolved	mg/L	20	30	0.000010	*<0.000010*	*<0.000010*	<DL	<DL	<DL	*<0.000010*	*<0.000010*	<DL	<DL	<DL	*<0.000010*	*<0.000010*	<DL	<DL	<DL	*<0.000010*	*<0.000010*	<DL	<DL	<DL
Thorium (Th)-Dissolved	mg/L	20	30	0.00010	*<0.00010*	*<0.00010*	<DL	<DL	<DL	*<0.00010*	*<0.00010*	<DL	<DL	<DL	*<0.00010*	*<0.00010*	<DL	<DL	<DL	*<0.00010*	*<0.00010*	<DL	<DL	<DL
Tin (Sn)-Dissolved	mg/L	20	30	0.00010	*<0.00010*	*<0.00010*	<DL	<DL	<DL	*<0.00010*	*<0.00010*	<DL	<DL	<DL	*<0.00010*	0.00022	<DL	<DL	<DL	*<0.00010*	*<0.00010*	<DL	<DL	<DL
Titanium (Ti)-Dissolved	mg/L	20	30	0.00030	*<0.00030*	*<0.00030*	<DL	<DL	<DL	*<0.00030*	*<0.00030*	<DL	<DL	<DL	*<0.00030*	0.0019	<DL	<DL	<DL	*<0.00030*	*<0.00030*	<DL	<DL	<DL
Tungsten (W)-Dissolved	mg/L	20	30	0.00010	*<0.00010*	*<0.00010*	<DL	<DL	<DL	*<0.00010*	*<0.00010*	<DL	<DL	<DL	*<0.00010*	*<0.00010*	<DL	<DL	<DL	*<0.00010*	*<0.00010*	<DL	<DL	<DL
Uranium (U)-Dissolved	mg/L	20	30	0.000010	0.000019	0.000018	DIFF	0.000001	Pass Diff	0.000029	0.000029	DIFF	0	Pass Diff	0.000038	0.000048	DIFF	0.000010	Pass Diff	0.000070	0.000070	RPD	0	Pass RPD
Vanadium (V)-Dissolved	mg/L	20	30	0.00050	*<0.00050*	*<0.00050*	<DL	<DL	<DL	*<0.00050*	*<0.00050*	<DL	<DL	<DL	*<0.00050*	*<0.00050*	<DL	<DL	<DL	*<0.00050*	*<0.00050*	<DL	<DL	<DL
Zinc (Zn)-Dissolved	mg/L	20	30	0.0010	*<0.0010*	*<0.0010*	<DL	<DL	<DL	*<0.0010*	*<0.0010*	<DL	<DL	<DL	*<0.0010*	0.0094	<DL	<DL	<DL	0.0029	*<0.0010*	<DL	<DL	<DL
Zirconium (Zr)-Dissolved	mg/L		40	0.00020	*<0.00020*	*<0.00020*	<DL	<DL	<DL	*<0.00020*	*<0.00020*	<DL	<DL	<DL	*<0.00020*	*<0.00020*	<DL	<DL	<DL	*<0.00020*	*<0.00020*	<DL	<DL	<DL
Dissolved Mercury Filtration Location	-	20	30	-	Field	Field		<DL		Field	Field		<DL		Field	Field		<DL		Field	Field		<DL	
Dissolved Metals Filtration Location	-	20	30	-	Field	Field		<DL		Field	Field		<DL		Field	Field		<DL		Field	Field		<DL	
Plant Pigments (µg/L)																								
chlorophyll-a	µg/L		40	0.010	0.748	0.818	RPD	8.9	Pass RPD	0.658	0.478	RPD	32	Pass RPD	0.298	0.384	RPD	25	Pass RPD	0.462	0.442	RPD	4.4	Pass RPD

Notes:

[a] Field Dup Methods are based on the concentrations:

RPD = relative percent difference is used to compare field duplicates when the measured concentration is > 5x the DL

DIFF = when concentrations < 5x the DL

[b] Results refer to the RPD or absolute difference in concentration:

DQO for RPDs is < Field RPD values

DQO for DIFF is < 2x the DL

Italicized numbers are below detection limits.

Table B-6. Field duplicate results for the sediment grabs collected in 2025.

Month	Units	Relative Percent Difference DQOs (%)		August DLs	DUP-1 (WAL-3)					DUP-2 (TPE-2)				
Station					WAL-3	Grab-DUP-1	Field Dup Method [a]	Result [b] (RPD or Diff)	Outcome	TPE-2	Grab-DUP-2	Field Dup	Result [b]	Outcome
Date Sampled					09-Aug-2025	09-Aug-2025				10-Aug-2025	10-Aug-2025			
ALS Sample ID		Lab	Field		VA25C0823-009	VA25C0823-025				VA25C0823-014	VA25C0823-026			
Parameter					Sediment	Sediment				Sediment	Sediment			
Physical Tests														
Moisture (%)	%	20	30	0.25	90	90	RPD	-0.10	Pass RPD	82	83	RPD	-0.80	Pass RPD
pH (Laboratory)	pH units	5.0	7.5	0.10	6.4	6.4	RPD	0.50	Pass RPD	5.9	5.8	RPD	1.7	Pass RPD
Particle Size														
Gravel (>2mm)	%	-	40	1.0	*<1.0*	*<1.0*	*<DL*	*<DL*	*<DL*	*<1.0*	*<1.0*	*<DL*	*<DL*	*<DL*
Sand (2.0mm - 0.063mm)	%	-	40	1.0	1.1	2.6	DIFF	1.5	Pass Diff	*<1.0*	2.3	*<DL*	*<DL*	*<DL*
Silt (0.063mm - 0.004mm)	%	-	40	1.0	83	83	RPD	0.50	Pass RPD	69	69	RPD	-0.90	Pass RPD
Clay (<0.004mm)	%	-	40	1.0	16	14	RPD	7.4	Pass RPD	31	29	RPD	7.1	Pass RPD
Organic / Inorganic Carbon														
Carbon, total organic [TOC]	%	20	30	0.050	9.5	8.9	RPD	5.7	Pass RPD	3.3	3.3	RPD	0	Pass RPD
Total Metals														
Mercury (Hg)-Total	mg/kg	20	30	0.0050	-	-	-	*<DL*	-	-	-	*<DL*	*<DL*	*<DL*

Notes:

[a] Field Dup Methods are based on the concentrations:

RPD = relative percent difference is used to compare field duplicates when the measured concentration is > 5x the DL

DIFF = when concentrations < 5* DL

[b] Results refer to the RPD or absolute difference in concentration

DQO for RPDs is < Field RPD values

DQO for DIFF is < 2x the DL

Italicized numbers are below detection limits.

Table B-6. Field duplicate results for the sediment grabs collected in 2025.

Month	Units	Relative Percent Difference DQOs (%)		August DLs	DUP-3 (PDL-2)					DUP-4 (INUG-1)						DUP-5 (PDL-N-2)				
Station					PDL-2	Grab-DUP-3	Field Dup	Result [b]	Outcome	August DLs	INUG-1	Grab-DUP-4	Field Dup Method [a]	Result [b] (RPD or Diff)	Outcome	PDL-N-2	Grab-DUP-5	Field Dup Method [a]	Result [b] (RPD or Diff)	Outcome
Date Sampled					12-Aug-2025	12-Aug-2025					12-Aug-2025	12-Aug-2025				13-Aug-2025	13-Aug-2025			
ALS Sample ID		Lab	Field		VA25C1775-002	VA25C1775-038					VA25C1775-019	VA25C1775-039				VA25C1775-008	VA25C1775-040			
Parameter					Sediment	Sediment					Sediment	Sediment				Sediment	Sediment			
Physical Tests																				
Moisture (%)	%	20	30	0.25	77	78	RPD	-1.6	Pass RPD	0.25	84	85	RPD	-1.4	Pass RPD	77	79	RPD	-1.9	Pass RPD
pH (Laboratory)	pH units	5.0	7.5	0.10	6.2	6.0	RPD	3.1	Pass RPD	0.10	5.1	5.1	RPD	-0.60	Pass RPD	5.8	5.8	RPD	-0.70	Pass RPD
Particle Size																				
Gravel (>2mm)	%	-	40	1.0	*<1.0*	*<1.0*	*<DL*	*<DL*	*<DL*	1.0	*<1.0*	*<1.0*	*<DL*	*<DL*	*<DL*	3.4	*<1.0*	*<DL*	*<DL*	*<DL*
Sand (2.0mm - 0.063mm)	%	-	40	1.0	2.9	1.9	DIFF	1.0	Pass Diff	1.0	1.5	1.1	DIFF	0.40	Pass Diff	2.6	1.7	DIFF	0.90	Pass Diff
Silt (0.063mm - 0.004mm)	%	-	40	1.0	78	79	RPD	-0.90	Pass RPD	1.0	84	82	RPD	1.7	Pass RPD	73	76	RPD	-4.0	Pass RPD
Clay (<0.004mm)	%	-	40	1.0	19	19	RPD	-1.6	Pass RPD	1.0	15	17	RPD	-11.	Pass RPD	21	22	RPD	-6.0	Pass RPD
Organic / Inorganic Carbon																				
Carbon, total organic [TOC]	%	20	30	0.050	2.3	2.3	RPD	0	Pass RPD	0.050	4.1	4.0	RPD	4.0	Pass RPD	2.5	2.5	RPD	-0.80	Pass RPD
Total Metals																				
Mercury (Hg)-Total	mg/kg	20	30	0.0050	0.011	0.010	-	*<DL*	-	0.0050	0.030	0.028	-	*<DL*	-	0.015	0.013	DIFF	0.0025	Pass Diff

Notes:

[a] Field Dup Methods are based on the concentrations:

RPD = relative percent difference is used to compare field duplicates when the measured concentration is > 5x the DL

DIFF = when concentrations < 5* DL

[b] Results refer to the RPD or absolute difference in concentration

DQO for RPDs is < Field RPD values

DQO for DIFF is < 2x the DL

Italicized numbers are below detection limits.

Table B-6. Field duplicate results for the sediment grabs collected in 2025.

Month	Units	Relative Percent Difference DQOs (%)		August DLs	DUP-6 (INUG-N-1)					DUP-7 (DS1-1)					DUP-8 (A20-1)				
Station					INUG-N-1	Grab-DUP-6	Field Dup Method [a]	Result [b] (RPD or Diff)	Outcome	DS1-1	Grab-DUP-7	Field Dup Method [a]	Result [b] (RPD or Diff)	Outcome	A20-1	Grab-DUP-8	Field Dup Method [a]	Result [b] (RPD or Diff)	Outcome
Date Sampled					13-Aug-2025	13-Aug-2025				15-Aug-2025	15-Aug-2025				16-Aug-2025	16-Aug-2025			
ALS Sample ID		Lab	Field		VA25C1775-013	VA25C1775-041				VA25C1775-031	VA25C1775-037				VA25C1753-019	VA25C1753-027			
Parameter					Sediment	Sediment				Sediment	Sediment				Sediment	Sediment			
Physical Tests																			
Moisture (%)	%	20	30	0.25	82	83	RPD	-2.2	Pass RPD	63	73	RPD	-14.	Pass RPD	83	85	RPD	-1.7	Pass RPD
pH (Laboratory)	pH units	5.0	7.5	0.10	5.4	5.4	RPD	0	Pass RPD	6.1	5.7	RPD	5.9	Pass RPD	5.3	5.3	RPD	0	Pass RPD
Particle Size																			
Gravel (>2mm)	%	-	40	1.0	*<1.0*	*<1.0*	*<DL*	*<DL*	*<DL*	*<1.0*	*<1.0*	*<DL*	*<DL*	*<DL*	*<1.0*	*<1.0*	*<DL*	*<DL*	*<DL*
Sand (2.0mm - 0.063mm)	%	-	40	1.0	1.5	1.8	DIFF	0.30	Pass Diff	*<1.0*	*<1.0*	*<DL*	*<DL*	*<DL*	*<1.0*	1.1	*<DL*	*<DL*	*<DL*
Silt (0.063mm - 0.004mm)	%	-	40	1.0	77	77	RPD	-0.50	Pass RPD	84	83	RPD	1.4	Pass RPD	78	79	RPD	-0.90	Pass RPD
Clay (<0.004mm)	%	-	40	1.0	22	21	RPD	3.3	Pass RPD	16	17	RPD	-6.6	Pass RPD	22	20	RPD	7.6	Pass RPD
Organic / Inorganic Carbon																			
Carbon, total organic [TOC]	%	20	30	0.050	3.1	3.1	RPD	-0.30	Pass RPD	1.4	1.5	RPD	-7.0	Pass RPD	4.6	4.8	RPD	-4.0	Pass RPD
Total Metals																			
Mercury (Hg)-Total	mg/kg	20	30	0.0050	0.025	0.021	DIFF	0.0039	Pass Diff	-	-	-	*<DL*	-	0.049	0.050	-	*<DL*	-

Notes:

[a] Field Dup Methods are based on the concentrations:

RPD = relative percent difference is used to compare field duplicates when the measured concentration is > 5x the DL

DIFF = when concentrations < 5* DL

[b] Results refer to the RPD or absolute difference in concentration

DQO for RPDs is < Field RPD values

DQO for DIFF is < 2x the DL

Italicized numbers are below detection limits.

Table B-7. Field duplicate results for hydrocarbon and PAH analyses in sediment composite duplicates collected in 2025.

Analyte	Detection Limits	Lab DQO Values	Field DQO Values[1]	COMP-DUP-1			COMP-DUP-2		
				SP-COMP	Dup[2]	RPD (%)	A20-COMP	Dup[2]	RPD (%)
Date Sampled				09-Aug-2025	09-Aug-2025		16-Aug-2025	16-Aug-2025	
ALS Sample ID				VA25C0823-006	VA25C0823-027		VA25C1753-024	VA25C1753-025	
Physical Parameters									
Moisture (%)	*0.25*	20	30	82.4	83	0.7	85	85	0.2
Aggregate Organics (mg/kg)									
Mineral Oil and Grease	*500*	<1000	1500	*<500*	*<500*	-	*<500*	*<500*	-
Hydrocarbons (mg/kg)									
EPH (10-19)	*200*	<400	600	*<330*	*<350*	-	*<360*	*<360*	-
EPH (19-32)	*200*	<400	600	*<330*	*<350*	-	*<360*	*<360*	-
LEPHs	*200*	<400	600	*<330*	*<350*	-	*<360*	*<360*	-
HEPHs	*200*	<400	600	*<330*	*<350*	-	*<360*	*<360*	-
Hydrocarbons Surrogates (%)									
2-Bromobenzotrifluoride	*5.8*	60-140	17.4	98.8	103	4.2	112	106	5.5
Polycyclic Aromatic Hydrocarbons (mg/kg)									
acenaphthene	*0.005*	<0.01	0.015	*<0.0167*	*<0.0174*	-	*<0.0089*	*<0.0089*	-
acenaphthylene	*0.005*	<0.01	0.015	*<0.0167*	*<0.0174*	-	*<0.0089*	*<0.0089*	-
acridine	*0.01*	<0.02	0.03	*<0.017*	*<0.017*	-	*<0.018*	*<0.018*	-
anthracene	*0.004*	<0.008	0.012	*<0.0167*	*<0.0174*	-	*<0.0089*	*<0.0089*	-
benz(a)anthracene	*0.01*	<0.02	0.03	*<0.017*	*<0.017*	-	*<0.018*	*<0.018*	-
benzo(a)pyrene	*0.01*	<0.02	0.03	*<0.017*	*<0.017*	-	*<0.018*	*<0.018*	-
benzo(b+j)fluoranthene	*0.01*	<0.02	0.03	*<0.017*	*<0.017*	-	*<0.018*	*<0.018*	-
benzo(b+j+k)fluoranthene	*0.015*	<0.03	0.045	*<0.024*	*<0.024*	-	*<0.025*	*<0.025*	-
benzo(g,h,i)perylene	*0.01*	<0.02	0.03	*<0.017*	*<0.017*	-	*<0.018*	*<0.018*	-
benzo(k)fluoranthene	*0.01*	<0.02	0.03	*<0.017*	*<0.017*	-	*<0.018*	*<0.018*	-
chrysene	*0.01*	<0.02	0.03	*<0.017*	*<0.017*	-	*<0.018*	*<0.018*	-
dibenz(a,h)anthracene	*0.005*	<0.01	0.015	*<0.0167*	*<0.0174*	-	*<0.0089*	*<0.0089*	-
fluoranthene	*0.01*	<0.02	0.03	*<0.017*	*<0.017*	-	*<0.018*	*<0.018*	-
fluorene	*0.01*	<0.02	0.03	*<0.017*	*<0.017*	-	*<0.018*	*<0.018*	-
indeno(1,2,3-c,d)pyrene	*0.01*	<0.02	0.03	*<0.017*	*<0.017*	-	*<0.018*	*<0.018*	-
methylnaphthalene, 1-	*0.01*	<0.02	0.03	*<0.017*	*<0.017*	-	*<0.018*	*<0.018*	-
methylnaphthalene, 2-	*0.01*	<0.02	0.03	*<0.017*	*<0.017*	-	*<0.018*	*<0.018*	-
naphthalene	*0.01*	<0.02	0.03	*<0.017*	*<0.017*	-	*<0.018*	*<0.018*	-
phenanthrene	*0.01*	<0.02	0.03	*<0.017*	*<0.017*	-	*<0.018*	*<0.018*	-
pyrene	*0.01*	<0.02	0.03	*<0.017*	*<0.017*	-	*<0.018*	*<0.018*	-
quinoline	*0.01*	<0.02	0.03	*<0.017*	*<0.017*	-	*<0.018*	*<0.018*	-
PAH Surrogates (%)									
acridine-d9	*0.1*	35	52.5	118	110	7.0	109	106	2.8
chrysene-d12	*0.1*	35	52.5	138	126	9.1	128	124	3.2
naphthalene-d8	*0.1*	40	60	120	114	5.1	117	118	0.9
phenanthrene-d10	*0.1*	35	52.5	124	115	7.5	118	116	1.7

Notes:

[1] The DQO for field duplicates is an RPD 1.5x the laboratory DQO or 1.5x twice the DL when lab DQOs are "<" values.

[2] Field Dup grab samples are homogenized duplicates - the original and duplicate samples were split from the same homogenized bowl of sediment.

RPD = Relative Percent Difference (%) = ((original - duplicate) / (original + duplicate)/2) x 100.

RPDs are only calculated when both samples are above detection.

Bold RPDs	**RPD values exceeded but < 10 x MDL.**
Shaded RPDs	RPD values exceeded and > 10 x MDL.

Table B-8. Field QA/QC data for phytoplankton for all CREMP study areas, 2025.

Area-Replicate	Date	Phytoplankton Biomass (mg/m^3)							Taxa Richness
		Cyanophyte	Chlorophyte	Chrysophyte	Diatom	Cryptophyte	Dinoflagellate	**TOTAL**	
DS1 - 89	3-Jul-25	0	0.42	141	7.0	34	19	201	25
DUP - 1	3-Jul-25	0	0.43	138	2.3	20	17	177	23
RPD (%)			-4	2	**102**	**52**	13	13	8
MAM - 102	8-Jul-25	0	1.3	234	379	9.6	7.1	631	22
DUP - 2	8-Jul-25	0	0.43	201	205	14	0.79	422	20
RPD (%)			**100**	15	**60**	-41	**160**	40	10
SP - 183	8-Jul-25	0	1.7	99	27	5.9	2.2	135	23
DUP - 3	8-Jul-25	0	2.1	71	14	6.8	4.7	99	24
RPD (%)			-19	33	**61**	-13	**-72**	31	-4
TPN - 183	9-Jul-25	0	0.36	72	6.8	0.70	4.0	84	16
DUP - 4	9-Jul-25	0	0	57	15	1.4	19	93	14
RPD (%)			**NA**	23	**-78**	**-67**	**-131**	-10	13
SP - 185	9-Aug-25	0	6.4	62	29	7.7	3.1	108	26
DUP - 1	9-Aug-25	0	11	53	38	2.1	2.5	107	27
RPD (%)			**-54**	15	-28	**113**	23	0	-4
PDL - 138	12-Aug-25	1.5	9.4	108	39	8.5	19	186	28
DUP - 2	12-Aug-25	2.3	9.5	94	28	9.1	12	156	32
RPD (%)		-39	-1	14	31	-7	44	17	-13
DS1 - 91	15-Aug-25	0	9.0	80	7.4	8.9	6.6	112	30
DUP - 3	15-Aug-25	3.9	16	88	7.4	8.6	8.1	132	30
RPD (%)		**NA**	**-56**	-9	0	3	-20	-16	0.0
A20 - 96	16-Aug-25	0.20	42	121	61	24	12	260	30
DUP - 4	16-Aug-25	0.20	50	132	61	25	9.0	278	24
RPD (%)		0.0	-17	-9	0	-7	29	-6	22
NEM - 104	3-Sep-25	0.90	8.1	414	26	4.8	6.3	461	27
DUP - 1	3-Sep-25	1.7	5.1	356	11	9.1	12	395	22
RPD (%)		**-61**	46	15	**79**	**-62**	**-62**	15	20
PDL - 139	7-Sep-25	7.8	8.6	92	22	5.0	7.0	143	33
DUP - 2	7-Sep-25	7.4	9.0	104	22	7.0	9.2	158	29
RPD (%)		6	-4	-12	0	-33	-27	-10	13
TPE - 187	3-Sep-25	0.69	4.2	98	22	0.81	0	125	28
DUP - 3	3-Sep-25	0.72	4.9	94	12	9.8	3.3	125	28
RPD (%)		-5	-15	4	**58**	**-169**	**NA**	0	0.0
INUG - 174	7-Sep-25	0.51	12	53	7.0	3.5	7.4	84	33
DUP - 4	7-Sep-25	1.6	17	49	9.5	1.3	2.2	80	31
RPD (%)		**-105**	-31	9	-30	**94**	**107**	5	6

Notes:

RPD = Relative Percent Difference (%) = ((original - duplicate) / (original + duplicate)/2) x 100.

Bolded RPD values exceed 50%.

RPDs have not been calculated for cases where one or both of the samples is "0".

Table B-8. Field QA/QC data for phytoplankton for all CREMP study areas, 2025.

Area-Replicate	Date	Phytoplankton Density (cells/L)						
		Cyanophyte	Chlorophyte	Chrysophyte	Diatom	Cryptophyte	Dinoflagellate	**TOTAL**
DS1 - 89	3-Jul-25	0	28,936	2,813,144	32,752	25,584	3,800	2,904,216
DUP - 1	3-Jul-25	0	600	2,187,336	11,000	17,984	3,000	2,219,920
RPD (%)			**192**	25	**99**	35	24	27
MAM - 102	8-Jul-25	0	21,552	2,241,056	1,092,664	11,984	1,200	3,368,456
DUP - 2	8-Jul-25	0	7,184	1,772,696	629,936	14,784	200	2,424,800
RPD (%)			**100**	23	**54**	-21	**143**	33
SP - 183	8-Jul-25	0	7,984	1,238,648	345,912	23,952	400	1,616,896
DUP - 3	8-Jul-25	0	8,384	810,608	299,008	3,800	600	1,122,400
RPD (%)			-5	42	15	**145**	-40	36
TPN - 183	9-Jul-25	0	35,920	820,392	141,160	400	600	998,472
DUP - 4	9-Jul-25	0	0	569,352	241,936	800	2,800	814,888
RPD (%)			**NA**	36	**-53**	**-67**	**-129**	20
SP - 185	9-Aug-25	0	604,256	604,656	343,648	24,352	800	1,577,712
DUP - 1	9-Aug-25	0	633,192	460,576	186,800	1,200	400	1,282,168
RPD (%)			-5	27	**59**	**181**	**67**	21
PDL - 138	12-Aug-25	7,200	632,392	829,960	421,672	4,800	1,800	1,897,824
DUP - 2	12-Aug-25	15,984	467,760	678,896	457,992	25,152	1,200	1,646,984
RPD (%)		**-76**	30	20	-8	**-136**	40	14
DS1 - 91	15-Aug-25	0	567,736	1,093,768	204,152	11,584	1,400	1,878,640
DUP - 3	15-Aug-25	114,944	697,448	1,789,616	125,528	5,000	1,800	2,734,336
RPD (%)		**NA**	-21	-48	48	**79**	-25	-37
A20 - 96	16-Aug-25	1,200	1,774,648	1,517,824	1,257,048	38,536	2,800	4,592,056
DUP - 4	16-Aug-25	1,200	2,061,808	1,640,152	1,257,448	12,000	2,400	4,975,008
RPD (%)		0.0	-15	-8	0	**105**	15	-8
NEM - 104	3-Sep-25	6,400	172,816	1,800,448	718,816	22,752	1,200	2,722,432
DUP - 1	3-Sep-25	14,184	100,576	1,608,880	487,328	45,104	800	2,256,872
RPD (%)		**-76**	**53**	11	38	**-66**	40	19
PDL - 139	7-Sep-25	46,200	590,288	788,456	304,328	9,584	1,400	1,740,256
DUP - 2	7-Sep-25	43,400	230,488	880,848	384,952	10,784	1,800	1,552,272
RPD (%)		6	**88**	-11	-23	-12	-25	11
TPE - 187	3-Sep-25	2,800	288,360	777,272	727,584	400	0	1,796,416
DUP - 3	3-Sep-25	3,200	439,624	855,696	441,224	100,976	600	1,841,320
RPD (%)		-13	-42	-10	49	**-198**	**NA**	-2
INUG - 174	7-Sep-25	3,000	654,944	507,280	133,512	8,584	1,400	1,308,720
DUP - 4	7-Sep-25	31,736	468,560	477,344	175,816	7,384	400	1,161,240
RPD (%)		**-165**	33	6	-27	15	**111**	12

Notes:

RPD = Relative Percent Difference (%) = ((original - duplicate) / (original + duplicate)/2) x 100.

Bolded RPD values exceed 50%.

RPDs have not been calculated for cases where one or both of the samples is "0".

Table B-9. Laboratory QA/QC data for phytoplankton for all CREMP study areas, 2025.

Area-Replicate	Date	Phytoplankton Biomass (mg/m^3)							Taxa Richness	Simpson's Diversity	Phytoplankton Density (cells/L)						
		Cyanophyte	Chlorophyte	Chrysophyte	Diatom	Cryptophyte	Dinoflagellate	TOTAL			Cyanophyte	Chlorophyte	Chrysophyte	Diatom	Cryptophyte	Dinoflagellate	TOTAL
BAP - 97	12-Jul-25	0	0.13	73	18	12	22	126	26	0.70	0	200	857,696	18,184	54,688	3,400	934,168
BAP - 97R	12-Jul-25	0	1.3	68	15	15	22	122	27	0.73	0	50,288	857,496	36,752	42,520	2,800	989,856
RPD (%)			**-166**	6.8	23	-20	-2.4	3.3	-3.8	-4.4		**-198**	0.023	**-68**	25	19	-5.8
BAP - 99	14-Aug-25	0	9.5	132	43	18	7.3	209	37	0.91	0	503,480	1,423,648	299,416	110,360	1,000	2,337,904
BAP - 99R	14-Aug-25	0.14	12	156	39	14	4.7	225	38	0.90	600	647,960	1,453,184	341,336	88,008	600	2,531,688
RPD (%)		**NA**	-21	-17	8.8	30	42	-7.3	-2.7	0.84	**NA**	-25	-2.1	-13	23	50	-8.0
BBD - 102	6-Sep-25	0	1.8	36	35	12	3.3	88	31	0.80	0	158,048	668,712	158,544	53,688	600	1,039,592
BBD - 102R	6-Sep-25	0.14	3.8	48	31	15	13	111	32	0.87	800	280,176	655,144	148,144	41,920	1,400	1,127,584
RPD (%)		**NA**	**-73**	-27	12	-23	**-118**	-22	-3.2	-7.5	**NA**	**-56**	2.0	6.8	25	**-80**	-8.1
DS1 - 91	15-Aug-25	0	9.0	80	7.4	8.9	6.6	112	30	0.87	0	567,736	1,093,768	204,152	11,584	1,400	1,878,640
DS1 - 91R	15-Aug-25	0.14	9.2	77	21	11	3.7	123	30	0.87	600	489,112	1,157,824	308,928	19,768	800	1,977,032
RPD (%)		**NA**	-2.1	4.0	**-95**	-26	**57**	-8.7	0	0.38	**NA**	15	-5.7	-41	**-52**	**55**	-5.1
INUG - 170	7-Jul-25	0.20	0.65	217	20	25	47	310	30	0.77	1,200	400	2,841,712	203,432	80,440	7,000	3,134,184
INUG - 170R	7-Jul-25	0	0	199	29	35	53	317	28	0.71	0	0	2,368,168	188,664	119,760	7,800	2,684,392
RPD (%)		**NA**	**NA**	8.6	-34	-36	-12	-2.1	6.9	8.5	**NA**	**NA**	18	7.5	-39	-11	15
NEM - 104	3-Sep-25	0.90	8.1	414	26	4.8	6.3	461	27	0.85	6,400	172,816	1,800,448	718,816	22,752	1,200	2,722,432
NEM - 104R	3-Sep-25	1.1	6.1	377	28	3.1	8.1	424	27	0.84	7,800	151,064	1,530,840	693,864	22,352	1,600	2,407,520
RPD (%)		-20	27	9.3	-7.1	43	-25	8.3	0	0.62	-20	13	16	3.5	1.8	-29	12
TPE - 183	9-Jul-25	0	0.59	70	22	2.6	12	107	24	0.76	0	65,456	1,013,976	122,656	8,184	2,800	1,213,072
TPE - 183R	9-Jul-25	0	0.068	73	18	4.9	14	111	23	0.77	0	14,368	1,101,184	99,904	16,168	2,600	1,234,224
RPD (%)			**159**	-5.1	21	**-61**	-15	-3.0	4.3	-1.7		**128**	-8.2	20	**-66**	7.4	-1.7
WTS - 103	16-Aug-25	1.9	23	34	578	4.1	3.7	645	23	0.68	8,400	747,736	660,928	5,369,128	2,200	800	6,789,192
WTS - 103R	16-Aug-25	1.8	22	38	601	6.9	8.5	678	24	0.67	8,000	646,760	668,112	5,360,744	3,800	1,200	6,688,616
RPD (%)		4.9	4.4	-11	-3.8	**-51**	**-79**	-4.9	-4.3	1.8	4.9	14	-1.1	0.16	**-53**	-40	1.5
WTS - 106	4-Sep-25	1.3	10	91	197	0.81	1.4	302	29	0.75	8,000	308,912	1,051,264	3,134,688	400	400	4,503,664
WTS - 106R	4-Sep-25	1.0	4.3	106	204	4.7	3.3	324	29	0.74	6,400	280,176	1,007,160	3,121,720	22,552	800	4,438,808
RPD (%)		22	**83**	-16	-3.4	**-141**	**-78**	-6.9	0	0.83	22	9.8	4.3	0.41	**-193**	**-67**	1.5

Notes:

RPD = Relative Percent Difference (%) = ((original - duplicate) / (original + duplicate)/2) x 100.

Bolded RPD values exceed 25%.

RPDs have not been calculated for cases where one or both of the samples is "0".

Table B-10. Percent recovery of benthic invertebrate samples for all CREMP study areas, 2025.

Area-Replicate	Number of Organisms Recovered	Number of Organisms in Re-sort	Percent Recovery
A20-1	164	166	98.8%
A76-2	205	211	97.2%
DS1-1	63	67	94.0%
PDL-1	27	28	96.4%
SP-2	67	68	98.5%
TPE-5	135	137	98.5%
WAL-1	305	309	98.7%
		Average % Recovery	97.5%

Notes:

1. All samples were sorted in their entirety.
2. Pupae were not counted toward total number of taxa unless they were the sole representative of their taxa group.
3. Immatures were not counted toward total number of taxa unless they were the sole representative of their taxa group.
4. The exceptions to this rule are immature Tubificidae with and without hairs. Immature oligochaetes are counted as taxa as the probability of the immature being a unique taxa is high.
5. Indeterminates are unique taxa that could not be identified further for various reasons (e.g., small, damaged).

APPENDIX C
WATER CHEMISTRY DATA AND SUPPLEMENTAL PLOTS

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Water Chemistry – Meadowbank Study Area Lakes

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Lake & Area		Meadowbank Screening Values[2]			Inuggugayualik Lake (INUG)									
Month					March	March	May	May	July	July	August	August	September	September
Area-Replicate ID					INUG-166	INUG-167	INUG-168	INUG-169	INUG-170	INUG-171	INUG-172	INUG-173	INUG-174	INUG-175
Date		Triggers			03-Mar-2025	03-Mar-2025	13-May-2025	13-May-2025	07-Jul-2025	07-Jul-2025	12-Aug-2025	12-Aug-2025	07-Sep-2025	07-Sep-2025
Time					11:45	11:00	10:20	10:45	10:36	10:06	10:15	10:45	10:15	11:16
ALS Sample ID	Aquatic Life Guideline[1]	Meadowbank	Wally Lake	Thresholds	VA25A5207-010 VA25A5048-010	VA25A5207-011 VA25A5048-011	VA25B1633-001 VA25B2008-001	VA25B1633-002 VA25B2008-002	VA25B6987-001 VA25B7585-007	VA25B6987-002 VA25B7585-008	VA25C0699-001 VA25C1553-010	VA25C0699-002 VA25C1553-011	VA25C3701-002 VA25C5633-014	VA25C3701-001 VA25C5633-013
Field Measurements (Surface 3m)														
Dissolved Oxygen (mg/L)					17	17	19	18	12	12	10	10	11	11
Specific Conductivity (µS/cm)					22	23	30	21	21	20	20	20	16	16
pH	6.5 - 9.0	6.4-8.15	6.54 - 8.34	6.5 - 9.0	**6.2**	**6.4**	**6.5**	**6.1**	6.8	6.9	**6.4**	**6.5**	6.8	6.6
Temperature (°C)					0.18	0.73	0.74	0.93	7.7	7.6	12	12	10	10
Physical Tests (mg/L)														
Conductivity (µS/cm)		27	37		24	25	**36**	**29**	21	20	21	21	17	17
Alkalinity - Bicarbonate		8.7	18		7.4	7.6	**10**	8.2	6.7	6.1	6.4	6.5	4.9	5.1
Alkalinity - Carbonate		2.0	2.0		*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Alkalinity - Hydroxide					*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Alkalinity - Total (as $CaCO_3$)		8.7	18		7.4	7.6	**10**	8.2	6.7	6.1	6.4	6.5	4.9	5.1
Hardness (as CaCO3), dissolved		9.5	17		9.3	**9.6**	**13**	**10**	7.5	7.6	7.2	7.4	5.9	5.9
Hardness (as CaCO3), from total Ca/Mg					9.5	9.6	13	11	7.6	7.7	7.3	7.2	5.9	5.8
Total Dissolved Solids (TDS)		19	25		**21**	**20**	**24**	**21**	13	11	14	13	14	15
Total Suspended Solids (TSS)		3.0	3.0	5.0	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	1.1
Turbidity (NTU)					0.46	0.49	0.27	0.36	0.57	0.62	0.56	0.52	0.30	0.31
pH (Laboratory)	6.47-7.95	6.47-7.95	6.92 - 8.17	6.5 - 9.0	7.1	7.1	7.3	7.2	7.0	7.0	7.0	7.0	7.0	6.9
Anions and Nutrients (mg/L)														
Ammonia (as N)[3]	***equation***	0.42	0.42	0.84	0.028	0.017	0.020	0.024	0.0073	*<0.0050*	*<0.0050*	*<0.0050*	0.019	0.0080
Bromide					*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*
Chloride	120	60	60	120	1.1	1.1	1.6	1.3	0.88	0.86	0.86	0.86	0.90	0.91
Fluoride	0.12	0.088	0.080	0.12	0.086	**0.089**	**0.11**	**0.10**	0.071	0.069	0.074	0.073	**0.098**	**0.095**
Total Kjeldahl Nitrogen		0.17	0.16		0.15	0.15	**0.19**	0.17	0.16	0.14	0.16	0.14	0.14	0.12
Nitrate (as N)	3.0	1.5	1.5	3.0	0.0075	*<0.0050*	0.018	0.0089	*<0.0050*	*<0.0050*	*<0.0050*	*<0.0050*	*<0.0050*	*<0.0050*
Nitrite (as N)	0.06	0.031	0.031	0.060	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Ortho Phosphate (as P)		0.0020	0.0020		*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Phosphorus (P) - Total	0.01	0.0051	0.0067	0.010	0.0024	0.0024	0.0038	0.0037	0.0034	0.0033	0.0040	0.0034	0.0021	*<0.0020*
Phosphorus (P) - Total Diss.					*<0.0020*	0.0020	0.0027	0.0024	0.0074	0.0044	*<0.0020*	0.0033	*<0.0020*	*<0.0020*
Reactive Silica (as SiO_2)		1.0	1.1		0.68	0.71	**1.0**	0.88	0.63	0.63	0.51	*<0.50*	0.63	0.62
Sulphate (SO_4)		65	65	128	1.8	1.9	2.8	2.2	1.5	1.5	1.4	1.4	1.5	1.5
Cyanides (mg/L)														
Free Cyanide	0.005				*<0.0010*	-	*<0.0020*	-	*<0.0010*	-	*<0.0010*	-	*<0.0010*	-
Total Cyanide					*<0.0010*	-	*<0.0020*	-	*<0.0010*	-	*<0.0010*	-	*<0.0010*	-
Organic / Inorganic Carbon (mg/L)														
Dissolved Organic Carbon		2.5	3.2		**2.5**	**2.5**	**4.1**	**3.7**	**2.7**	2.4	**2.5**	2.4	2.3	2.1
Total Organic Carbon		2.6	4.1		2.5	**2.6**	**4.4**	**3.5**	2.3	2.6	2.5	2.5	2.3	2.1
Total Metals (mg/L)														
Aluminum[3]	***equation***	0.053	0.053	0.10	0.023	0.023	0.014	0.015	0.022	0.020	0.011	0.011	0.0076	0.0077
Antimony		0.0046	0.0046	0.0090	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Arsenic	0.005	0.0026	0.0026	0.0050	0.00017	0.00020	0.00018	0.00016	0.00014	0.00015	0.00012	0.00012	0.00014	*<0.00010*
Barium		0.50	0.50	1.0	0.0025	0.0029	0.0038	0.0028	0.0024	0.0024	0.0018	0.0019	0.0033	0.0032
Beryllium		0.00012	0.00012	0.00013	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*
Bismuth					*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Boron	1.5	0.76	0.76	1.5	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*
Cadmium[3]	***equation***	0.00002	0.00002	0.00004	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Calcium		2.4	4.9		1.9	1.9	**2.7**	2.2	1.5	1.5	1.4	1.4	1.2	1.2
Cesium					*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Chromium[4]	0.001	0.0025	0.0026	0.0050	0.00020	0.00019	0.00015	0.00013	0.00022	0.00020	0.00012	0.00012	*<0.00010*	*<0.00010*
Cobalt	0.00077			0.00077	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Copper[3]	***equation***	0.0012	0.0015	0.0020	~~0.0051~~	~~0.0058~~	0.00079	0.00069	0.00051	0.00050	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Iron	0.3	0.15	0.16	0.30	0.021	0.022	0.010	0.011	0.054	0.053	0.024	0.022	0.013	0.011
Lead[3]	***equation***	0.00053	0.00053	0.0010	0.00029	0.00033	*<0.000050*	0.00017	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Lithium		0.0020	0.0020		*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Magnesium		0.93	1.4		**1.1**	**1.2**	**1.6**	**1.3**	**0.96**	**0.94**	0.92	0.91	0.69	0.67
Manganese[3]	***equation***	0.32	0.33	***See note 3***	0.0013	0.0012	0.00078	0.00068	0.020	0.020	0.0044	0.0044	0.0034	0.0034
Mercury	0.000026	0.00002	0.00002	0.00003	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Molybdenum	0.073	0.037	0.037	0.073	0.00006	0.00007	0.00006	0.00007	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Nickel[3]	***equation***	0.013	0.013	0.025	0.00068	0.00066	0.00089	0.00069	0.00069	0.00067	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Phosphorus		0.0051	0.0067	0.0040	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*
Potassium		0.58	0.59		0.53	0.55	**0.72**	**0.63**	0.44	0.44	0.42	0.42	0.34	0.35
Rubidium					0.00076	0.00077	0.00098	0.00082	0.00067	0.00062	0.00062	0.00059	0.00056	0.00045
Selenium	0.001	0.00053	0.00053	0.0010	*<0.000050*	*<0.000050*	0.00005	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Silicon		0.20	0.65		**0.38**	**0.42**	**0.46**	**0.42**	**0.40**	**0.37**	**0.25**	**0.25**	**0.30**	**0.31**
Silver	0.0001	0.00013	0.00013	0.00025	0.00005	0.00006	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Sodium		1.2	0.72		0.93	1.00	**1.2**	1.1	0.78	0.76	0.81	0.79	0.75	0.75
Strontium		1.25	1.26	2.5	0.010	0.011	0.015	0.012	0.0084	0.0091	0.0075	0.0076	0.0094	0.0094
Sulfur					0.58	0.51	0.84	*<0.50*	0.57	*<0.50*	*<0.50*	*<0.50*	*<0.50*	*<0.50*
Thallium	0.0008	0.00041	0.00041	0.00080	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Tin		0.00020	0.00020		*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Titanium		0.00060	0.00060		0.00040	0.00032	*<0.00030*	*<0.00030*	0.00043	0.00040	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*
Uranium	0.015	0.0075	0.0075	0.015	0.00012	0.00013	0.00015	0.00014	0.00011	0.00011	0.00009	0.00009	0.00008	0.00009
Vanadium		0.060	0.060	0.12	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Zinc				0.0040	~~0.0043~~	~~0.005~~	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*
Dissolved Metals (mg/L)														
Aluminum[3]	***equation***	0.026	0.026	0.050	0.0083	0.0084	0.011	0.0070	0.0071	0.0052	0.0054	0.0058	0.0082	0.0034
Antimony		0.0046	0.0046	0.0090	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Arsenic		0.0026	0.0026	0.0050	0.00016	0.00016	0.00016	0.00014	0.00012	0.00011	0.00011	0.00011	*<0.00010*	0.00010
Barium		0.50	0.50	1.0	0.0024	0.0026	0.0041	0.0030	0.0022	0.0022	0.0020	0.0020	0.0032	0.0031
Beryllium		0.00012	0.00012	0.00013	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*
Bismuth					*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Boron		0.76	0.76	1.5	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*
Cadmium		0.00002	0.00002	0.00004	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Calcium		2.4	4.9		1.9	1.9	**2.6**	2.1	1.5	1.5	1.4	1.5	1.3	1.2
Chromium		0.00026	0.00026	0.0050	0.00011	0.00012	0.00014	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Cobalt				0.00077	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Copper		0.0012	0.0015	0.0020	~~0.0060~~	~~0.0063~~	0.00072	0.00056	0.00048	0.00046	0.00044	0.00044	0.00036	0.00035
Iron		0.16	0.16	0.30	*<0.010*	*<0.010*	*<0.010*	*<0.010*	0.012	0.010	*<0.010*	*<0.010*	0.017	*<0.010*
Lead		0.00053	0.00053	0.0010	0.00032	0.00033	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Lithium		0.0020	0.0020		*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Magnesium		0.93	1.4		**1.1**	**1.2**	**1.6**	**1.3**	0.91	0.92	0.88	0.92	0.66	0.67
Manganese[3]	***equation***	0.32	0.33	***See note 3***	0.00042	0.00051	0.00040	0.00029	0.012	0.013	0.00062	0.00066	0.0013	0.0010
Mercury		0.00002	0.00002	0.00003	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Molybdenum		0.037	0.037	0.073	0.00005	*<0.000050*	0.00005	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Nickel		0.013	0.013	0.025	0.00063	0.00066	0.00091	0.00064	0.00058	0.00060	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Phosphorus					*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*
Potassium		0.58	0.59		0.51	0.54	**0.81**	**0.64**	0.44	0.47	0.45	0.47	0.35	0.36
Selenium		0.00053	0.00053	0.0010	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Silicon		0.18	0.67		**0.30**	**0.33**	**0.45**	**0.39**	**0.32**	**0.32**	**0.23**	**0.24**	**0.27**	**0.29**
Silver		0.00013	0.00013	0.00025	0.00006	0.00006	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Sodium		1.2	0.72		0.93	0.99	**1.2**	0.99	0.73	0.74	0.76	0.79	0.72	0.74
Strontium		1.3	1.3	2.5	0.0098	0.010	0.014	0.011	0.0084	0.0082	0.0081	0.0082	0.0088	0.0089
Sulfur					*<0.50*	*<0.50*	0.91	0.71	*<0.50*	0.55	*<0.50*	*<0.50*	*<0.50*	*<0.50*
Thallium		0.00041	0.00041	0.00080	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Tin		0.00020	0.00020		*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Titanium		0.00060	0.00060		*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*
Uranium		0.0075	0.0075	0.015	0.00010	0.00011	0.00015	0.00013	0.00010	0.00009	0.00008	0.00008	0.00007	0.00007
Vanadium		0.060	0.060	0.12	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Zinc[3]	***equation***	0.0018	0.0024	***See note 3***	~~0.005~~	~~0.0048~~	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	**0.0029**	*<0.0010*
Plant Pigments (µg/L)														
Chlorophyll a					0.67	0.62	1.7	0.97	0.83	0.76	0.64	0.62	0.46	0.44

Notes:

1. CCME (Canadian Council of Ministers of the Environment) Canadian Water Quality Guidelines for the Protection of Aquatic Life, 1999, updated up to 2018.
2. Trigger and threshold values were developed in *CREMP Design Document 2012* (Azimuth, 2012d) and updated in 2019. A number of thresholds were derived from methods (or sources) other than CCME guidelines. Refer to the CREMP: 2022 Plan Update (Azimuth, 2022b) for more details.
3. "***equation***" means that CCME guidelines (or thresholds) are calculated based on an equation which is either pH or hardness dependent. The ammonia and aluminum guidelines vary with pH; the cadmium, copper, lead, manganese, nickel and zinc guidelines vary with hardness.
4. Chromium CCME guideline is for Cr VI.

123 Bolded concentrations exceed the trigger value.
123 Bolded and shaded concentrations also exceed the threshold value.
Italicized numbers are below detection limits.
underline = results were given a cautionary flag in the QC assessment (refer to **Section 3.3** for details).
~~strikethrough~~ = results flagged as unreliable in the QC assessment.
"-" not analyzed/not sampled.

Table C1-1. Water quality results from the 2025 CREMP, Meadowbank study area lakes.

Lake & Area		Meadowbank Screening Values[2]			Pipe Dream Lake (PDL)									
Month	Aquatic Life Guideline[1]				March	March	May	May	July	July	August	August	September	September
Area-Replicate ID					PDL-131	PDL-132	PDL-133	PDL-134	PDL-135	PDL-136	PDL-137	PDL-138	PDL-139	PDL-140
Date		Triggers		Thresholds	04-Mar-2025	04-Mar-2025	13-May-2025	13-May-2025	07-Jul-2025	07-Jul-2025	12-Aug-2025	12-Aug-2025	07-Sep-2025	07-Sep-2025
Time		Meadowbank	Wally Lake		10:05	10:30	11:50	12:30	11:38	12:15	17:35	16:43	10:40	10:15
ALS Sample ID					VA25A5654-001 VA25A5207-013	VA25A5654-002 VA25A5207-014	VA25B1633-003 VA25B2008-003	VA25B1633-004 VA25B2008-004	VA25B6987-003 VA25B7585-009	VA25B6987-004 VA25B7585-010	VA25C0699-003 VA25C1553-013	VA25C0699-004 VA25C1553-012	VA25C3661-009 VA25C5633-028	VA25C3661-010 VA25C5633-029
Field Measurements (Surface 3m)														
Dissolved Oxygen (mg/L)					17	18	18	18	14	14	11	11	11	11
Specific Conductivity (µS/cm)					29	31	28	27	29	29	28	28	27	27
pH	6.5 - 9.0	6.4-8.15	6.54 - 8.34	6.5 - 9.0	6.8	6.6	6.6	**6.4**	6.9	6.9	7.7	7.9	6.7	7.0
Temperature (°C)					0.63	0.61	0.63	0.73	4.1	4.8	11	11	10	10
Physical Tests (mg/L)														
Conductivity (µS/cm)		27	37		**38**	**36**	**38**	**37**	**29**	**29**	**30**	**29**	**30**	**30**
Alkalinity - Bicarbonate		8.7	18		**12**	**11**	**12**	**11**	**9.2**	**9.4**	**9.1**	**9.3**	**9.6**	**9.0**
Alkalinity - Carbonate		2.0	2.0		*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Alkalinity - Hydroxide					*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Alkalinity - Total (as $CaCO_3$)		8.7	18		**12**	**11**	**12**	**11**	**9.2**	**9.4**	**9.1**	**9.3**	**9.6**	**9.0**
Hardness (as CaCO3), dissolved		9.5	17		**15**	**14**	**15**	**15**	**12**	**12**	**12**	**12**	**12**	**12**
Hardness (as CaCO3), from total Ca/Mg					16	15	15	15	12	12	12	12	12	12
Total Dissolved Solids (TDS)		19	25		**20**	19	**20**	18	14	13	16	17	**24**	**24**
Total Suspended Solids (TSS)		3.0	3.0	5.0	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Turbidity (NTU)					0.20	0.24	0.12	0.12	0.25	0.25	0.36	0.30	0.25	0.24
pH (Laboratory)	6.47-7.95	6.47-7.95	6.92 - 8.17	6.5 - 9.0	7.4	7.4	7.4	7.3	7.1	7.1	7.0	7.1	7.3	7.3
Anions and Nutrients (mg/L)														
Ammonia (as N)[3]	***equation***	0.42	0.42	0.84	0.040	0.049	0.026	0.014	0.012	0.017	*<0.0050*	*<0.0050*	0.017	0.015
Bromide					*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*
Chloride	120	60	60	120	1.9	1.3	1.3	1.3	0.94	0.95	1.0	0.98	1.0	1.0
Fluoride	0.12	0.088	0.080	0.12	0.054	0.052	0.057	0.055	0.041	0.041	0.043	0.042	0.046	0.045
Total Kjeldahl Nitrogen		0.17	0.16		0.15	0.16	0.15	0.13	0.11	0.12	0.11	0.12	0.15	0.11
Nitrate (as N)	3.0	1.5	1.5	3.0	*<0.0050*	*<0.0050*	*<0.0050*	*<0.0050*	0.0083	0.0065	*<0.0050*	*<0.0050*	*<0.0050*	*<0.0050*
Nitrite (as N)	0.06	0.031	0.031	0.060	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Ortho Phosphate (as P)		0.0020	0.0020		*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Phosphorus (P) - Total	0.01	0.0051	0.0067	0.010	0.0023	*<0.0020*	0.0025	0.0039	0.0044	0.0038	0.0047	*<0.0020*	0.0027	*<0.0020*
Phosphorus (P) - Total Diss.					0.0033	0.0054	0.0022	*<0.0020*	0.0043	0.0022	*<0.0020*	0.0030	*<0.0020*	*<0.0020*
Reactive Silica (as SiO_2)		1.0	1.1		0.51	*<0.50*	0.54	0.52	*<0.50*	*<0.50*	*<0.50*	*<0.50*	*<0.50*	*<0.50*
Sulphate (SO_4)		65	65	128	3.7	3.7	3.5	3.4	2.7	2.6	3.0	2.9	3.0	3.0
Cyanides (mg/L)														
Free Cyanide	0.005				*<0.0010*	-	*<0.0020*	-	*<0.0010*	-	*<0.0010*	-	*<0.0010*	-
Total Cyanide					*<0.0010*	-	*<0.0020*	-	*<0.0010*	-	*<0.0010*	-	*<0.0010*	-
Organic / Inorganic Carbon (mg/L)														
Dissolved Organic Carbon		2.5	3.2		2.3	2.0	2.4	2.2	1.7	2.1	1.8	1.9	2.3	2.2
Total Organic Carbon		2.6	4.1		2.5	2.2	2.5	2.4	1.9	1.9	2.0	1.9	2.2	2.1
Total Metals (mg/L)														
Aluminum[3]	***equation***	0.053	0.053	0.10	0.0050	0.0041	0.0034	0.0033	0.0064	0.0051	0.0048	0.0050	0.0078	0.0043
Antimony		0.0046	0.0046	0.0090	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Arsenic	0.005	0.0026	0.0026	0.0050	0.00028	0.00025	0.00025	0.00027	0.00023	0.00024	0.00021	0.00019	0.00022	0.00021
Barium		0.50	0.50	1.0	0.0030	0.0029	0.0029	0.0026	0.0023	0.0024	0.0021	0.0022	0.0025	0.0022
Beryllium		0.00012	0.00012	0.00013	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*
Bismuth					*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Boron	1.5	0.76	0.76	1.5	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*
Cadmium[3]	***equation***	0.00002	0.00002	0.00004	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Calcium		2.4	4.9		**4.0**	**3.8**	**3.9**	**3.9**	**3.0**	**3.1**	**2.9**	**3.0**	**3.1**	**3.1**
Cesium					*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Chromium[4]	0.001	0.0025	0.0026	0.0050	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	0.00024	0.00011	*<0.00010*	*<0.00010*	0.00012	*<0.00010*
Cobalt	0.00077			0.00077	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Copper[3]	***equation***	0.0012	0.0015	0.0020	0.00060	0.00056	0.00063	0.00059	0.00054	0.00053	0.00053	0.00051	0.00063	0.00053
Iron	0.3	0.15	0.16	0.30	*<0.010*	*<0.010*	*<0.010*	*<0.010*	0.015	0.012	*<0.010*	0.011	0.016	*<0.010*
Lead[3]	***equation***	0.00053	0.00053	0.0010	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	0.00007	*<0.000050*
Lithium		0.0020	0.0020		*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Magnesium		0.93	1.4		**1.4**	**1.4**	**1.3**	**1.3**	**1.0**	**1.1**	**1.1**	**1.1**	**1.1**	**1.1**
Manganese[3]	***equation***	0.32	0.33	***See note 3***	0.00076	0.00086	0.00061	0.00063	0.0047	0.0046	0.0028	0.0028	0.0028	0.0024
Mercury	0.000026	0.00002	0.00002	0.00003	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Molybdenum	0.073	0.037	0.037	0.073	0.00009	0.00008	0.00007	0.00007	0.00008	0.00006	0.00005	0.00007	0.00006	0.00006
Nickel[3]	***equation***	0.013	0.013	0.025	0.00089	0.00092	0.00088	0.00085	0.00081	0.00087	0.00077	0.00075	0.00080	0.00071
Phosphorus		0.0051	0.0067	0.0040	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*
Potassium		0.58	0.59		0.52	0.52	0.53	0.50	0.39	0.41	0.38	0.40	0.41	0.42
Rubidium					0.00072	0.00068	0.00067	0.00066	0.00045	0.00054	0.00052	0.00056	0.00058	0.00049
Selenium	0.001	0.00053	0.00053	0.0010	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Silicon		0.20	0.65		**0.24**	**0.24**	**0.25**	**0.25**	**0.24**	**0.23**	0.17	0.17	0.19	0.18
Silver	0.0001	0.00013	0.00013	0.00025	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Sodium		1.2	0.72		0.76	0.74	0.78	0.75	0.59	0.61	0.65	0.64	0.60	0.60
Strontium		1.25	1.26	2.5	0.017	0.016	0.017	0.016	0.014	0.013	0.011	0.012	0.013	0.013
Sulfur					1.0	1.0	1.1	0.82	0.76	0.86	0.92	0.78	0.75	0.78
Thallium	0.0008	0.00041	0.00041	0.00080	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Tin		0.00020	0.00020		*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Titanium		0.00060	0.00060		*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*
Uranium	0.015	0.0075	0.0075	0.015	0.00005	0.00005	0.00005	0.00005	0.00004	0.00004	0.00004	0.00004	0.00004	0.00004
Vanadium		0.060	0.060	0.12	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Zinc				0.0040	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*
Dissolved Metals (mg/L)														
Aluminum[3]	***equation***	0.026	0.026	0.050	0.0014	0.0011	0.0014	0.0012	0.0024	0.0015	0.0022	0.0024	0.0017	0.0014
Antimony		0.0046	0.0046	0.0090	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Arsenic		0.0026	0.0026	0.0050	0.00027	0.00026	0.00022	0.00023	0.00022	0.00019	0.00021	0.00021	0.00021	0.00020
Barium		0.50	0.50	1.0	0.0029	0.0028	0.0030	0.0030	0.0023	0.0023	0.0023	0.0022	0.0024	0.0024
Beryllium		0.00012	0.00012	0.00013	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*
Bismuth					*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Boron		0.76	0.76	1.5	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*
Cadmium		0.00002	0.00002	0.00004	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Calcium		2.4	4.9		**3.7**	**3.6**	**3.8**	**3.7**	**3.0**	**3.1**	**3.0**	**2.9**	**3.0**	**3.0**
Chromium		0.00026	0.00026	0.0050	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Cobalt				0.00077	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Copper		0.0012	0.0015	0.0020	0.00054	0.00053	0.00054	0.00052	0.00049	0.00049	0.00048	0.00049	0.00050	0.00049
Iron		0.16	0.16	0.30	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*
Lead		0.00053	0.00053	0.0010	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Lithium		0.0020	0.0020		*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Magnesium		0.93	1.4		**1.3**	**1.3**	**1.3**	**1.3**	**1.0**	**1.0**	**1.0**	**1.0**	**1.1**	**1.1**
Manganese[3]	***equation***	0.32	0.33	***See note 3***	0.00039	0.00035	0.00022	0.00018	0.0029	0.0026	0.0011	0.0011	0.00055	0.00052
Mercury		0.00002	0.00002	0.00003	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Molybdenum		0.037	0.037	0.073	0.00007	0.00007	0.00007	0.00008	0.00006	*<0.000050*	0.00006	0.00005	*<0.000050*	0.00005
Nickel		0.013	0.013	0.025	0.00094	0.00079	0.00084	0.00082	0.00074	0.00078	0.00069	0.00070	0.00069	0.00067
Phosphorus					*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*
Potassium		0.58	0.59		0.53	0.52	0.58	0.56	0.43	0.43	0.42	0.43	0.44	0.43
Selenium		0.00053	0.00053	0.0010	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Silicon		0.18	0.67		**0.23**	**0.22**	**0.21**	**0.21**	**0.19**	**0.20**	0.14	0.14	0.14	0.14
Silver		0.00013	0.00013	0.00025	*<0.000010*	*<0.000010*	*<0.000010*	0.00002	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Sodium		1.2	0.72		0.77	0.76	0.77	0.73	0.58	0.59	0.60	0.60	0.61	0.62
Strontium		1.3	1.3	2.5	0.016	0.016	0.016	0.015	0.012	0.012	0.012	0.012	0.012	0.012
Sulfur					0.99	0.97	1.1	1.0	0.85	0.80	0.78	0.79	0.84	0.87
Thallium		0.00041	0.00041	0.00080	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Tin		0.00020	0.00020		*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Titanium		0.00060	0.00060		*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*
Uranium		0.0075	0.0075	0.015	0.00004	0.00004	0.00004	0.00004	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003
Vanadium		0.060	0.060	0.12	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Zinc[3]	***equation***	0.0018	0.0024	***See note 3***	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	0.0011	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Plant Pigments (µg/L)														
Chlorophyll a					0.45	0.38	0.71	0.70	0.47	0.52	0.37	0.39	0.66	0.62

Notes:

1. CCME (Canadian Council of Ministers of the Environment) Canadian Water Quality Guidelines for the Protection of Aquatic Life, 1999, updated up to 2018.
2. Trigger and threshold values were developed in *CREMP Design Document 2012* (Azimuth, 2012d) and updated in 2019. A number of thresholds were derived from methods (or sources) other than CCME guidelines. Refer to the CREMP: 2022 Plan Update (Azimuth, 2022b) for more details.
3. "***equation***" means that CCME guidelines (or thresholds) are calculated based on an equation which is either pH or hardness dependent. The ammonia and aluminum guidelines vary with pH; the cadmium, copper, lead, manganese, nickel and zinc guidelines vary with hardness.
4. Chromium CCME guideline is for Cr VI.

123 Bolded concentrations exceed the trigger value.
123 Bolded and shaded concentrations also exceed the threshold value.
Italicized numbers are below detection limits.
underline = results were given a cautionary flag in the QC assessment (refer to **Section 3.3** for details).
~~strikethrough~~ = results flagged as unreliable in the QC assessment.
"-" not analyzed/not sampled.

Table C1-1. Water quality results from the 2025 CREMP, Meadowbank study area lakes.

Lake & Area		Meadowbank Screening Values[2]			Third Portage Lake - East Basin (TPE)									
Month					March	March	May	May	July	July	August	August	September	September
Area-Replicate ID	Aquatic Life Guideline[1]				TPE-178	TPE-179	TPE-180	TPE-181	TPE-182	TPE-183	TPE-184	TPE-185	TPE-186	TPE-187
Date		Triggers		Thresholds	02-Mar-2025	02-Mar-2025	27-Apr-2025	27-Apr-2025	09-Jul-2025	09-Jul-2025	11-Aug-2025	11-Aug-2025	03-Sep-2025	03-Sep-2025
Time					14:15	13:40	13:40	12:55	15:00	14:00	09:54	08:50	14:00	15:00
ALS Sample ID		Meadowbank	Wally Lake		VA25A5207-006 VA25A5048-006	VA25A5207-007 VA25A5048-007	VA25B0834-001 VA25B2008-009	VA25B0834-002 VA25B2008-010	VA25B7591-005	VA25B7591-004	VA25C0593-003	VA25C0593-004	VA25C3360-001 VA25C5633-010	VA25C3360-002 VA25C5633-011
Field Measurements (Surface 3m)														
Dissolved Oxygen (mg/L)					17	18	18	17	12	12	11	11	11	11
Specific Conductivity (µS/cm)					35	37	36	36	30	30	30	31	29	29
pH	6.5 - 9.0	6.4-8.15	6.54 - 8.34	6.5 - 9.0	**6.5**	6.6	**6.5**	**6.5**	6.7	6.6	7.1	7.2	6.8	6.8
Temperature (°C)					0.59	0.65	0.72	0.77	11	11	11	12	11	9.8
Physical Tests (mg/L)														
Conductivity (µS/cm)		27	37		**40**	**42**	**42**	**39**	**31**	**30**	**31**	**31**	**32**	**31**
Alkalinity - Bicarbonate		8.7	18		**9.6**	**10**	**9.9**	**8.9**	8.2	8.1	8.0	8.1	7.3	7.5
Alkalinity - Carbonate		2.0	2.0		*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Alkalinity - Hydroxide					*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Alkalinity - Total (as $CaCO_3$)		8.7	18		**9.6**	**10**	**9.9**	**8.9**	8.2	8.1	8.0	8.1	7.3	7.5
Hardness (as CaCO3), dissolved		9.5	17		**15**	**15**	**14**	**14**	**11**	**11**	**11**	**11**	**12**	**12**
Hardness (as CaCO3), from total Ca/Mg					15	15	14	13	11	11	12	12	12	12
Total Dissolved Solids (TDS)		19	25		**26**	**26**	**22**	**21**	**21**	**22**	**19**	19	**20**	18
Total Suspended Solids (TSS)		3.0	3.0	5.0	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Turbidity (NTU)					0.16	0.16	0.14	0.15	0.64	0.30	0.34	0.33	0.30	0.28
pH (Laboratory)	6.47-7.95	6.47-7.95	6.92 - 8.17	6.5 - 9.0	7.3	7.3	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.2
Anions and Nutrients (mg/L)														
Ammonia (as N)[3]	***equation***	0.42	0.42	0.84	0.015	0.021	0.022	0.012	*<0.0050*	0.017	*<0.0050*	0.0078	*<0.0050*	0.0067
Bromide					*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*
Chloride	120	60	60	120	1.0	1.1	1.2	1.1	0.81	0.79	0.84	0.82	0.83	0.83
Fluoride	0.12	0.088	0.080	0.12	**0.10**	**0.11**	**0.11**	**0.095**	0.083	0.080	0.078	0.078	0.076	0.083
Total Kjeldahl Nitrogen		0.17	0.16		0.11	0.11	0.12	0.11	0.095	0.12	0.090	0.098	0.12	0.14
Nitrate (as N)	3.0	1.5	1.5	3.0	0.010	0.012	0.017	0.016	0.0088	0.0090	*<0.0050*	*<0.0050*	*<0.0050*	*<0.0050*
Nitrite (as N)	0.06	0.031	0.031	0.060	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Ortho Phosphate (as P)		0.0020	0.0020		*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Phosphorus (P) - Total	0.01	0.0051	0.0067	0.010	0.0026	*<0.0020*	0.0030	0.0022	0.0043	*<0.0020*	0.0021	**0.0083**	*<0.0020*	*<0.0020*
Phosphorus (P) - Total Diss.					*<0.0020*	*<0.0020*	*<0.0020*	0.0054	0.0024	*<0.0020*	*<0.0020*	*<0.0020*	*<0.0020*	*<0.0020*
Reactive Silica (as SiO_2)		1.0	1.1		*<0.50*	*<0.50*	*<0.50*	*<0.50*	*<0.50*	*<0.50*	*<0.50*	*<0.50*	*<0.50*	*<0.50*
Sulphate (SO_4)		65	65	128	6.5	6.7	6.9	6.5	4.8	4.8	4.9	4.9	4.9	4.9
Cyanides (mg/L)														
Free Cyanide	0.005				*<0.0010*	-	*<0.0010*	-	*<0.0010*	-	*<0.0010*	-	*<0.0010*	-
Total Cyanide					*<0.0010*	-	*<0.0010*	-	*<0.0010*	-	*<0.0010*	-	0.0021	-
Organic / Inorganic Carbon (mg/L)														
Dissolved Organic Carbon		2.5	3.2		1.6	1.4	1.7	1.5	1.4	1.3	1.4	1.5	1.4	1.5
Total Organic Carbon		2.6	4.1		1.2	1.5	1.6	1.6	1.2	1.3	1.7	1.5	1.5	1.4
Total Metals (mg/L)														
Aluminum[3]	***equation***	0.053	0.053	0.10	0.0070	0.0087	0.0043	0.0041	0.014	0.0090	0.0080	0.0088	0.0086	0.0075
Antimony		0.0046	0.0046	0.0090	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Arsenic	0.005	0.0026	0.0026	0.0050	0.00052	0.00038	0.00041	0.00031	0.00046	0.00048	0.00044	0.00050	0.00060	0.00055
Barium		0.50	0.50	1.0	0.0035	0.0039	0.0039	0.0037	0.0035	0.0032	0.0028	0.0029	0.0028	0.0029
Beryllium		0.00012	0.00012	0.00013	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*
Bismuth					*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Boron	1.5	0.76	0.76	1.5	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*
Cadmium[3]	***equation***	0.00002	0.00002	0.00004	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	0.00001	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Calcium		2.4	4.9		**3.5**	**3.5**	**3.4**	**3.1**	**2.7**	**2.7**	**2.9**	**2.9**	**2.8**	**2.8**
Cesium					0.00001	0.00001	*<0.000010*	*<0.000010*	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
Chromium[4]	0.001	0.0025	0.0026	0.0050	*<0.00010*	*<0.00010*	0.00011	*<0.00010*	0.00016	0.00075	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Cobalt	0.00077			0.00077	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Copper[3]	***equation***	0.0012	0.0015	0.0020	*<0.00050*	~~0.0054~~	*<0.00050*	*<0.00050*	0.00079	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Iron	0.3	0.15	0.16	0.30	*<0.010*	0.011	*<0.010*	*<0.010*	0.027	0.026	0.016	0.016	0.020	0.019
Lead[3]	***equation***	0.00053	0.00053	0.0010	*<0.000050*	0.00029	*<0.000050*	*<0.000050*	0.00006	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Lithium		0.0020	0.0020		*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Magnesium		0.93	1.4		**1.4**	**1.4**	**1.4**	**1.4**	**1.1**	**1.1**	**1.1**	**1.1**	**1.2**	**1.2**
Manganese[3]	***equation***	0.32	0.33	***See note 3***	0.00047	0.00072	0.00034	0.00043	0.0029	0.0028	0.0016	0.0016	0.0018	0.0017
Mercury	0.000026	0.00002	0.00002	0.00003	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Molybdenum	0.073	0.037	0.037	0.073	0.00014	0.00013	0.00012	0.00011	0.00011	0.00014	0.00011	0.00011	0.00011	0.00012
Nickel[3]	***equation***	0.013	0.013	0.025	0.00072	0.00086	0.00075	0.00076	0.00076	0.00070	*<0.00050*	0.00052	*<0.00050*	*<0.00050*
Phosphorus		0.0051	0.0067	0.0040	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*
Potassium		0.58	0.59		**0.68**	**0.69**	**0.69**	**0.65**	**0.60**	**0.59**	0.55	0.56	0.54	0.55
Rubidium					0.00095	0.0010	0.0010	0.00098	0.00087	0.00086	0.00087	0.00092	0.00090	0.00088
Selenium	0.001	0.00053	0.00053	0.0010	*<0.000050*	0.00007	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Silicon		0.20	0.65		**0.23**	**0.24**	**0.24**	**0.22**	**0.23**	**0.21**	0.16	0.17	0.15	0.15
Silver	0.0001	0.00013	0.00013	0.00025	*<0.000010*	0.00005	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Sodium		1.2	0.72		**1.3**	**1.4**	**1.4**	**1.3**	1.0	1.0	0.98	0.98	1.0	1.1
Strontium		1.25	1.26	2.5	0.015	0.015	0.015	0.015	0.012	0.012	0.013	0.013	0.012	0.013
Sulfur					2.1	2.2	2.2	1.8	1.9	1.9	1.8	1.6	1.6	1.6
Thallium	0.0008	0.00041	0.00041	0.00080	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Tin		0.00020	0.00020		*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Titanium		0.00060	0.00060		*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	0.00055	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*
Uranium	0.015	0.0075	0.0075	0.015	0.00006	0.00005	0.00005	0.00005	0.00005	0.00005	0.00004	0.00005	0.00004	0.00005
Vanadium		0.060	0.060	0.12	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Zinc				0.0040	*<0.0030*	~~0.0044~~	*<0.0030*	*<0.0030*	**0.0053**	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*
Dissolved Metals (mg/L)														
Aluminum[3]	***equation***	0.026	0.026	0.050	0.0036	0.0047	0.0017	0.0017	0.0050	0.0024	0.0031	0.0034	0.0061	0.0020
Antimony		0.0046	0.0046	0.0090	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Arsenic		0.0026	0.0026	0.0050	0.00045	0.00035	0.00038	0.00031	0.00046	0.00046	0.00041	0.00046	0.00048	0.00045
Barium		0.50	0.50	1.0	0.0035	0.0036	0.0039	0.0037	0.0033	0.0032	0.0029	0.0028	0.0029	0.0027
Beryllium		0.00012	0.00012	0.00013	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*
Bismuth					*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Boron		0.76	0.76	1.5	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*
Cadmium		0.00002	0.00002	0.00004	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Calcium		2.4	4.9		**3.6**	**3.5**	**3.2**	**3.3**	**2.7**	**2.7**	**2.8**	**2.8**	**2.8**	**2.8**
Chromium		0.00026	0.00026	0.0050	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	0.00011	*<0.00010*	*<0.00010*	*<0.00010*	0.00014	*<0.00010*
Cobalt				0.00077	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Copper		0.0012	0.0015	0.0020	0.00047	~~0.0057~~	0.00048	0.00048	0.00054	0.00033	0.00039	0.00037	0.00047	0.00040
Iron		0.16	0.16	0.30	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	0.012	*<0.010*
Lead		0.00053	0.00053	0.0010	*<0.000050*	0.00031	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Lithium		0.0020	0.0020		*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Magnesium		0.93	1.4		**1.4**	**1.4**	**1.4**	**1.3**	**1.1**	**1.1**	**1.1**	**1.1**	**1.2**	**1.1**
Manganese[3]	***equation***	0.32	0.33	***See note 3***	0.00029	0.00040	0.00026	0.00018	0.0022	0.0021	0.00063	0.00059	0.00085	0.00056
Mercury		0.00002	0.00002	0.00003	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Molybdenum		0.037	0.037	0.073	0.00013	0.00013	0.00010	0.00011	0.00009	0.00010	0.00010	0.00011	0.00011	0.00011
Nickel		0.013	0.013	0.025	0.00068	0.00077	0.00075	0.00071	0.00067	0.00065	*<0.00050*	0.00050	0.00051	*<0.00050*
Phosphorus					*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*
Potassium		0.58	0.59		**0.70**	**0.69**	**0.72**	**0.67**	**0.59**	**0.60**	0.56	0.57	0.57	0.57
Selenium		0.00053	0.00053	0.0010	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Silicon		0.18	0.67		**0.20**	**0.20**	**0.19**	0.18	0.17	0.18	0.11	0.12	0.13	0.12
Silver		0.00013	0.00013	0.00025	*<0.000010*	0.00005	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Sodium		1.2	0.72		**1.3**	**1.4**	**1.3**	**1.3**	1.0	1.0	0.96	0.97	0.99	0.99
Strontium		1.3	1.3	2.5	0.015	0.016	0.014	0.015	0.012	0.012	0.012	0.012	0.012	0.012
Sulfur					1.8	1.8	2.2	2.0	1.7	1.8	1.7	1.8	1.5	1.6
Thallium		0.00041	0.00041	0.00080	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Tin		0.00020	0.00020		*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Titanium		0.00060	0.00060		*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*
Uranium		0.0075	0.0075	0.015	0.00005	0.00005	0.00004	0.00005	0.00005	0.00004	0.00004	0.00004	0.00004	0.00004
Vanadium		0.060	0.060	0.12	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Zinc[3]	***equation***	0.0018	0.0024	***See note 3***	*<0.0010*	~~0.0046~~	*<0.0010*	*<0.0010*	0.0020	0.0015	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Plant Pigments (µg/L)														
Chlorophyll a					0.44	0.28	0.34	0.46	0.31	0.39	0.57	0.49	0.33	0.30

Notes:

1. CCME (Canadian Council of Ministers of the Environment) Canadian Water Quality Guidelines for the Protection of Aquatic Life, 1999, updated up to 2018.
2. Trigger and threshold values were developed in *CREMP Design Document 2012* (Azimuth, 2012d) and updated in 2019. A number of thresholds were derived from methods (or sources) other than CCME guidelines. Refer to the CREMP: 2022 Plan Update (Azimuth, 2022b) for more details.
3. "***equation***" means that CCME guidelines (or thresholds) are calculated based on an equation which is either pH or hardness dependent. The ammonia and aluminum guidelines vary with pH; the cadmium, copper, lead, manganese, nickel and zinc guidelines vary with hardness.
4. Chromium CCME guideline is for Cr VI.

123 Bolded concentrations exceed the trigger value.
123 Bolded and shaded concentrations also exceed the threshold value.
Italicized numbers are below detection limits.
underline = results were given a cautionary flag in the QC assessment (refer to **Section 3.3** for details).
~~strikethrough~~ = results flagged as unreliable in the QC assessment.
"-" not analyzed/not sampled.

Table C1-1. Water quality results from the 2025 CREMP, Meadowbank study area lakes.

Lake & Area					Third Portage Lake - North Basin (TPN)									
Month	Aquatic Life Guideline[1]	Meadowbank Screening Values[2]			March	March	May	May	July	July	August	August	September	September
Area-Replicate ID					TPN-178	TPN-179	TPN-180	TPN-181	TPN-182	TPN-183	TPN-184	TPN-185	TPN-186	TPN-187
Date		Triggers		Thresholds	02-Mar-2025	02-Mar-2025	07-Apr-2025	07-Apr-2025	09-Jul-2025	09-Jul-2025	11-Aug-2025	11-Aug-2025	04-Sep-2025	04-Sep-2025
Time					10:40	11:20	13:40	12:55	11:01	12:30	11:28	12:10	13:45	13:00
ALS Sample ID		Meadowbank	Wally Lake		VA25A5207-004 VA25A5048-004	VA25A5207-005 VA25A5048-005	VA25B0834-001 VA25B2008-007	VA25B0834-002 VA25B2008-008	VA25B7591-001	VA25B7591-002	VA25C0593-001	VA25C0593-002	VA25C3661-001 VA25C5633-020	VA25C3661-002 VA25C5633-021
Field Measurements (Surface 3m)														
Dissolved Oxygen (mg/L)					18	17	19	18	14	14	11	11	11	11
Specific Conductivity (µS/cm)					33	34	33	53	29	29	29	29	28	28
pH	6.5 - 9.0	6.4-8.15	6.54 - 8.34	6.5 - 9.0	6.9	**6.5**	6.6	6.5	**6.2**	6.7	7.1	7.0	6.7	6.9
Temperature (°C)					0.29	0.27	0.28	0.33	8.2	7.6	10	10	10	10
Physical Tests (mg/L)														
Conductivity (µS/cm)		27	37		**38**	**38**	**37**	**38**	**29**	**29**	**30**	**30**	**31**	**31**
Alkalinity - Bicarbonate		8.7	18		8.6	**8.9**	8.2	**8.8**	6.9	6.9	7.0	7.2	7.1	7.4
Alkalinity - Carbonate		2.0	2.0		*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Alkalinity - Hydroxide					*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Alkalinity - Total (as $CaCO_3$)		8.7	18		8.6	**8.9**	8.2	**8.8**	6.9	6.9	7.0	7.2	7.1	7.4
Hardness (as CaCO3), dissolved		9.5	17		**13**	**13**	**12**	**13**	**11**	**10**	**10**	**11**	**11**	**11**
Hardness (as CaCO3), from total Ca/Mg					13	13	12	13	10	11	11	11	11	11
Total Dissolved Solids (TDS)		19	25		**25**	**24**	**23**	18	**20**	**21**	17	18	**24**	**25**
Total Suspended Solids (TSS)		3.0	3.0	5.0	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Turbidity (NTU)					0.13	0.18	0.12	0.15	0.15	0.19	0.36	0.25	0.27	0.21
pH (Laboratory)	6.47-7.95	6.47-7.95	6.92 - 8.17	6.5 - 9.0	7.2	7.2	7.1	7.1	7.1	7.1	7.0	7.0	7.2	7.2
Anions and Nutrients (mg/L)														
Ammonia (as N)[3]	***equation***	0.42	0.42	0.84	0.020	0.012	0.017	0.012	*<0.0050*	0.0083	0.012	*<0.0050*	0.0059	0.025
Bromide					*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*
Chloride	120	60	60	120	1.1	1.1	1.1	1.2	0.94	0.94	0.88	0.88	0.93	0.94
Fluoride	0.12	0.088	0.080	0.12	**0.091**	**0.094**	0.084	**0.092**	0.080	0.080	0.066	0.066	0.073	0.074
Total Kjeldahl Nitrogen		0.17	0.16		0.11	0.098	0.11	0.11	0.097	0.096	0.098	0.084	0.083	0.14
Nitrate (as N)	3.0	1.5	1.5	3.0	0.0094	0.012	0.0087	0.0094	0.012	0.012	*<0.0050*	*<0.0050*	*<0.0050*	*<0.0050*
Nitrite (as N)	0.06	0.031	0.031	0.060	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Ortho Phosphate (as P)		0.0020	0.0020		*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Phosphorus (P) - Total	0.01	0.0051	0.0067	0.010	*<0.0020*	*<0.0020*	0.0022	*<0.0020*	*<0.0020*	*<0.0020*	0.0035	*<0.0020*	**0.0073**	*<0.0020*
Phosphorus (P) - Total Diss.					*<0.0020*	*<0.0020*	*<0.0020*	0.0029	*<0.0020*	0.0034	0.0029	*<0.0020*	*<0.0020*	*<0.0020*
Reactive Silica (as SiO_2)		1.0	1.1		*<0.50*	*<0.50*	*<0.50*	*<0.50*	*<0.50*	*<0.50*	*<0.50*	*<0.50*	*<0.50*	*<0.50*
Sulphate (SO_4)		65	65	128	6.2	6.3	6.1	6.3	5.1	5.1	4.7	4.7	5.1	5.1
Cyanides (mg/L)														
Free Cyanide	0.005				-	*<0.0010*	-	*<0.0010*	-	*<0.0010*	-	*<0.0010*	-	*<0.0010*
Total Cyanide					-	*<0.0010*	-	*<0.0010*	-	*<0.0010*	-	*<0.0010*	-	*<0.0010*
Organic / Inorganic Carbon (mg/L)														
Dissolved Organic Carbon		2.5	3.2		1.5	1.4	1.6	1.6	1.1	1.2	1.5	1.6	1.5	2.0
Total Organic Carbon		2.6	4.1		1.3	1.4	1.6	1.6	1.1	1.2	1.6	1.4	1.9	2.0
Total Metals (mg/L)														
Aluminum[3]	***equation***	0.053	0.053	0.10	0.0085	0.0088	0.0042	0.0038	0.0056	0.0071	0.0054	0.0060	0.0059	0.0048
Antimony		0.0046	0.0046	0.0090	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Arsenic	0.005	0.0026	0.0026	0.0050	0.00029	0.00026	0.00024	0.00024	0.00021	0.00023	0.00021	0.00022	0.00022	0.00024
Barium		0.50	0.50	1.0	0.0038	0.0037	0.0036	0.0036	0.0030	0.0031	0.0029	0.0030	0.0027	0.0029
Beryllium		0.00012	0.00012	0.00013	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*
Bismuth					*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Boron	1.5	0.76	0.76	1.5	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*
Cadmium[3]	***equation***	0.00002	0.00002	0.00004	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Calcium		2.4	4.9		**3.2**	**3.1**	**2.9**	**3.0**	**2.5**	**2.5**	**2.6**	**2.6**	**2.5**	**2.5**
Cesium					*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Chromium[4]	0.001	0.0025	0.0026	0.0050	0.00020	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Cobalt	0.00077			0.00077	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Copper[3]	***equation***	0.0012	0.0015	0.0020	~~0.0060~~	~~0.0059~~	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Iron	0.3	0.15	0.16	0.30	0.023	0.010	*<0.010*	*<0.010*	0.010	0.011	*<0.010*	*<0.010*	*<0.010*	*<0.010*
Lead[3]	***equation***	0.00053	0.00053	0.0010	0.00034	0.00033	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Lithium		0.0020	0.0020		*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Magnesium		0.93	1.4		**1.3**	**1.3**	**1.2**	**1.3**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.1**
Manganese[3]	***equation***	0.32	0.33	***See note 3***	0.00086	0.00081	0.00041	0.00042	0.0026	0.0029	0.0019	0.0020	0.0018	0.0016
Mercury	0.000026	0.00002	0.00002	0.00003	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Molybdenum	0.073	0.037	0.037	0.073	0.00013	0.00011	0.00010	0.00011	0.00009	0.00009	0.00009	0.00010	0.00010	0.00010
Nickel[3]	***equation***	0.013	0.013	0.025	0.00089	0.00087	0.00074	0.00078	0.00077	0.00086	0.00056	0.00058	0.00061	0.00056
Phosphorus		0.0051	0.0067	0.0040	**0.052**	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*
Potassium		0.58	0.59		**0.64**	**0.65**	**0.61**	**0.64**	0.55	0.55	0.52	0.53	0.51	0.51
Rubidium					0.0010	0.00099	0.00091	0.00094	0.00080	0.00076	0.00074	0.00078	0.00075	0.00079
Selenium	0.001	0.00053	0.00053	0.0010	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Silicon		0.20	0.65		0.18	0.19	0.16	0.17	0.17	0.17	0.16	0.16	0.14	0.15
Silver	0.0001	0.00013	0.00013	0.00025	0.00007	0.00006	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Sodium		1.2	0.72		**1.3**	**1.3**	**1.2**	**1.3**	1.0	1.0	0.98	0.97	1.0	1.0
Strontium		1.25	1.26	2.5	0.014	0.014	0.014	0.014	0.012	0.012	0.012	0.012	0.012	0.012
Sulfur					2.0	1.9	1.8	1.9	1.8	1.6	1.6	1.6	1.5	1.3
Thallium	0.0008	0.00041	0.00041	0.00080	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Tin		0.00020	0.00020		*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Titanium		0.00060	0.00060		*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*
Uranium	0.015	0.0075	0.0075	0.015	0.00006	0.00006	0.00005	0.00006	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005
Vanadium		0.060	0.060	0.12	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Zinc				0.0040	~~0.0049~~	~~0.0047~~	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*
Dissolved Metals (mg/L)														
Aluminum[3]	***equation***	0.026	0.026	0.050	0.0044	0.0039	0.0019	0.0012	0.0020	0.0027	0.0022	0.0025	0.0024	0.0029
Antimony		0.0046	0.0046	0.0090	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Arsenic		0.0026	0.0026	0.0050	0.00027	0.00026	0.00023	0.00023	0.00022	0.00024	0.00020	0.00020	0.00021	0.00020
Barium		0.50	0.50	1.0	0.0035	0.0034	0.0035	0.0035	0.0031	0.0030	0.0030	0.0030	0.0031	0.0030
Beryllium		0.00012	0.00012	0.00013	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*
Bismuth					*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Boron		0.76	0.76	1.5	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*
Cadmium		0.00002	0.00002	0.00004	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Calcium		2.4	4.9		**3.2**	**3.1**	**2.9**	**3.2**	**2.6**	2.4	**2.5**	**2.5**	**2.4**	**2.5**
Chromium		0.00026	0.00026	0.0050	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Cobalt				0.00077	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Copper		0.0012	0.0015	0.0020	~~0.0059~~	~~0.0051~~	0.00045	0.00044	0.00043	0.00047	0.00044	0.00041	0.00046	0.00043
Iron		0.16	0.16	0.30	0.013	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*
Lead		0.00053	0.00053	0.0010	0.00033	0.00028	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Lithium		0.0020	0.0020		*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Magnesium		0.93	1.4		**1.3**	**1.3**	**1.2**	**1.3**	**1.0**	**1.0**	**1.0**	**1.0**	**1.1**	**1.1**
Manganese[3]	***equation***	0.32	0.33	***See note 3***	0.00041	0.00044	0.00021	0.00033	0.0019	0.0021	0.00068	0.00063	0.00054	0.00055
Mercury		0.00002	0.00002	0.00003	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Molybdenum		0.037	0.037	0.073	0.00012	0.00012	0.00011	0.00011	0.00010	0.00009	0.00008	0.00007	0.00009	0.00009
Nickel		0.013	0.013	0.025	0.00083	0.00079	0.00073	0.00072	0.00072	0.00083	0.00061	0.00063	0.00056	0.00058
Phosphorus					*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*
Potassium		0.58	0.59		**0.66**	**0.66**	**0.62**	**0.64**	0.55	0.56	0.55	0.56	0.55	0.54
Selenium		0.00053	0.00053	0.0010	*<0.000050*	0.00005	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Silicon		0.18	0.67		0.15	0.15	0.14	0.14	0.13	0.13	0.11	0.11	0.10	0.11
Silver		0.00013	0.00013	0.00025	0.00005	0.00004	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Sodium		1.2	0.72		**1.4**	**1.4**	1.2	**1.2**	1.0	1.00	0.99	1.0	1.1	1.1
Strontium		1.3	1.3	2.5	0.014	0.014	0.014	0.014	0.012	0.011	0.011	0.011	0.011	0.011
Sulfur					1.8	1.7	1.9	2.0	1.7	1.6	1.7	1.8	1.4	1.5
Thallium		0.00041	0.00041	0.00080	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Tin		0.00020	0.00020		*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Titanium		0.00060	0.00060		*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*
Uranium		0.0075	0.0075	0.015	0.00005	0.00005	0.00005	0.00006	0.00005	0.00005	0.00005	0.00004	0.00004	0.00004
Vanadium		0.060	0.060	0.12	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Zinc[3]	***equation***	0.0018	0.0024	***See note 3***	~~0.005~~	~~0.0043~~	*<0.0010*	*<0.0010*	*<0.0010*	0.0013	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Plant Pigments (µg/L)														
Chlorophyll a					0.39	0.62	0.59	0.60	0.25	0.32	0.35	0.39	0.30	0.44

Notes:

1. CCME (Canadian Council of Ministers of the Environment) Canadian Water Quality Guidelines for the Protection of Aquatic Life, 1999, updated up to 2018.
2. Trigger and threshold values were developed in *CREMP Design Document 2012* (Azimuth, 2012d) and updated in 2019. A number of thresholds were derived from methods (or sources) other than CCME guidelines. Refer to the CREMP: 2022 Plan Update (Azimuth, 2022b) for more details.
3. "***equation***" means that CCME guidelines (or thresholds) are calculated based on an equation which is either pH or hardness dependent. The ammonia and aluminum guidelines vary with pH; the cadmium, copper, lead, manganese, nickel and zinc guidelines vary with hardness.
4. Chromium CCME guideline is for Cr VI.

123 Bolded concentrations exceed the trigger value.
123 Bolded and shaded concentrations also exceed the threshold value.
Italicized numbers are below detection limits.
underline = results were given a cautionary flag in the QC assessment (refer to **Section 3.3** for details).
~~strikethrough~~ = results flagged as unreliable in the QC assessment.
"-" not analyzed/not sampled.

Table C1-1. Water quality results from the 2025 CREMP, Meadowbank study area lakes.

Lake & Area		Meadowbank Screening Values[2]			Second Portage Lake (SP)									
Month					March	March	May	May	July	July	August	August	September	September
Area-Replicate ID	Aquatic Life Guideline[1]				SP-178	SP-179	SP-180	SP-181	SP-182	SP-183	SP-184	SP-185	SP-186	SP-187
Date		Triggers		Thresholds	02-Mar-2025	02-Mar-2025	27-Apr-2025	27-Apr-2025	07-Jul-2025	07-Jul-2025	09-Aug-2025	09-Aug-2025	02-Sep-2025	02-Sep-2025
Time					14:40	15:50	16:15	15:45	12:15	12:44	13:35	13:05	13:15	13:38
ALS Sample ID		Meadowbank	Wally Lake		VA25A5207-008 VA25A5048-008	VA25A5207-009 VA25A5048-009	VA25B0834-005 VA25B2008-011	VA25B0834-006 VA25B2008-012	VA25B7113-001 VA25B7585-011	VA25B7113-002 VA25B7585-012	VA25C0385-001 VA25C0593-005	VA25C0385-002 VA25C0593-006	VA25C3235-001 VA25C5633-003	VA25C3235-002 VA25C5633-004
Field Measurements (Surface 3m)														
Dissolved Oxygen (mg/L)					18	17	19	18	12	11	10	10	11	11
Specific Conductivity (µS/cm)					52	45	49	49	47	48	39	38	45	44
pH	6.5 - 9.0	6.4-8.15	6.54 - 8.34	6.5 - 9.0	6.6	**6.4**	**6.4**	6.6	7.1	7.0	7.0	7.1	6.6	6.8
Temperature (°C)					0.48	0.37	0.77	0.79	11	12	13	12	11	9.7
Physical Tests (mg/L)														
Conductivity (µS/cm)		27	37		**51**	**47**	**56**	**56**	**50**	**51**	**49**	**48**	**49**	**48**
Alkalinity - Bicarbonate		8.7	18		**13**	**12**	**14**	**13**	**12**	**12**	**12**	**12**	**12**	**12**
Alkalinity - Carbonate		2.0	2.0		*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Alkalinity - Hydroxide					*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Alkalinity - Total (as $CaCO_3$)		8.7	18		**13**	**12**	**14**	**13**	**12**	**12**	**12**	**12**	**12**	**12**
Hardness (as CaCO3), dissolved		9.5	17		**19**	**19**	**21**	**22**	**19**	**19**	**19**	**18**	**18**	**18**
Hardness (as CaCO3), from total Ca/Mg					19	19	20	20	21	21	19	18	20	20
Total Dissolved Solids (TDS)		19	25		**32**	**29**	**29**	**31**	**29**	**30**	**26**	**25**	**28**	**30**
Total Suspended Solids (TSS)		3.0	3.0	5.0	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	1.1	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Turbidity (NTU)					0.16	0.19	0.16	0.16	0.34	0.46	0.31	0.39	0.22	0.22
pH (Laboratory)	6.47-7.95	6.47-7.95	6.92 - 8.17	6.5 - 9.0	7.3	7.3	7.2	7.2	7.4	7.4	7.3	7.2	7.3	7.3
Anions and Nutrients (mg/L)														
Ammonia (as N)[3]	***equation***	0.42	0.42	0.84	0.025	0.018	0.025	0.021	*<0.0050*	*<0.0050*	0.010	*<0.0050*	0.0070	0.012
Bromide					*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*
Chloride	120	60	60	120	1.4	1.3	1.5	1.5	1.1	1.1	1.1	1.1	1.2	1.2
Fluoride	0.12	0.088	0.080	0.12	**0.11**	**0.098**	**0.13**	**0.11**	0.072	0.072	0.079	0.079	0.086	0.086
Total Kjeldahl Nitrogen		0.17	0.16		0.12	0.10	0.14	0.13	0.11	0.12	0.14	0.11	**0.21**	0.15
Nitrate (as N)	3.0	1.5	1.5	3.0	0.018	0.022	0.023	0.020	*<0.0050*	*<0.0050*	*<0.0050*	*<0.0050*	*<0.0050*	*<0.0050*
Nitrite (as N)	0.06	0.031	0.031	0.060	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	0.0026
Ortho Phosphate (as P)		0.0020	0.0020		*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Phosphorus (P) - Total	0.01	0.0051	0.0067	0.010	0.0066	*<0.0020*	*<0.0020*	*<0.0020*	0.0024	0.0022	*<0.0020*	*<0.0020*	*<0.0020*	*<0.0020*
Phosphorus (P) - Total Diss.					*<0.0020*	*<0.0020*	*<0.0020*	*<0.0020*	*<0.0020*	*<0.0020*	*<0.0020*	*<0.0020*	*<0.0020*	*<0.0020*
Reactive Silica (as SiO_2)		1.0	1.1		0.71	0.72	0.69	0.91	0.85	0.87	0.61	0.59	0.58	0.56
Sulphate (SO_4)		65	65	128	8.3	7.7	9.2	9.2	8.0	8.2	7.9	7.7	8.1	8.0
Cyanides (mg/L)														
Free Cyanide	0.005				*<0.0010*	-	*<0.0010*	-	*<0.0010*	-	*<0.0010*	-	*<0.0010*	-
Total Cyanide					*<0.0010*	-	*<0.0010*	-	*<0.0010*	-	*<0.0010*	-	*<0.0010*	-
Organic / Inorganic Carbon (mg/L)														
Dissolved Organic Carbon		2.5	3.2		1.7	1.6	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0
Total Organic Carbon		2.6	4.1		1.8	1.7	2.1	2.0	1.8	2.0	1.8	1.7	1.9	2.2
Total Metals (mg/L)														
Aluminum[3]	***equation***	0.053	0.053	0.10	0.0080	0.0072	0.0043	0.0040	0.014	0.013	0.0081	0.0074	0.0064	0.0060
Antimony		0.0046	0.0046	0.0090	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Arsenic	0.005	0.0026	0.0026	0.0050	0.00047	0.00047	0.00049	0.00038	0.00043	0.00046	0.00042	0.00043	0.00054	0.00053
Barium		0.50	0.50	1.0	0.0042	0.0037	0.0047	0.0038	0.0032	0.0034	0.0029	0.0029	0.0031	0.0030
Beryllium		0.00012	0.00012	0.00013	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*
Bismuth					*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Boron	1.5	0.76	0.76	1.5	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*
Cadmium[3]	***equation***	0.00002	0.00002	0.00004	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Calcium		2.4	4.9		**4.6**	**4.7**	**5.0**	**4.9**	**5.5**	**5.6**	**5.0**	**4.4**	**5.1**	**5.0**
Cesium					*<0.000010*	*<0.000010*	0.00001	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Chromium[4]	0.001	0.0025	0.0026	0.0050	*<0.00010*	*<0.00010*	*<0.00010*	0.00016	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	0.00012
Cobalt	0.00077			0.00077	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Copper[3]	***equation***	0.0012	0.0015	0.0020	~~0.0056~~	0.00073	0.00071	0.00077	0.00098	0.0010	0.00081	0.00079	0.00084	0.00078
Iron	0.3	0.15	0.16	0.30	0.021	*<0.010*	*<0.010*	*<0.010*	0.025	0.026	0.021	0.020	0.027	0.024
Lead[3]	***equation***	0.00053	0.00053	0.0010	0.00030	**0.0026**	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Lithium		0.0020	0.0020		*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Magnesium		0.93	1.4		**1.8**	**1.7**	**1.9**	**1.9**	**1.7**	**1.8**	**1.7**	**1.6**	**1.8**	**1.7**
Manganese[3]	***equation***	0.32	0.33	***See note 3***	0.00066	0.00061	0.00035	0.00033	0.0029	0.0031	0.0018	0.0018	0.0024	0.0020
Mercury	0.000026	0.00002	0.00002	0.00003	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Molybdenum	0.073	0.037	0.037	0.073	0.00016	0.00015	0.00016	0.00017	0.00012	0.00013	0.00014	0.00013	0.00016	0.00015
Nickel[3]	***equation***	0.013	0.013	0.025	0.00089	0.00077	0.00083	0.00077	0.00065	0.00082	0.00052	*<0.00050*	0.00059	0.00071
Phosphorus		0.0051	0.0067	0.0040	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*
Potassium		0.58	0.59		**0.79**	**0.71**	**0.84**	**0.70**	0.54	0.56	0.55	0.56	0.58	0.57
Rubidium					0.0011	0.0011	0.0012	0.0011	0.00080	0.00083	0.00084	0.00085	0.00091	0.00090
Selenium	0.001	0.00053	0.00053	0.0010	0.00006	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Silicon		0.20	0.65		**0.38**	**0.41**	**0.38**	**0.52**	**0.44**	**0.47**	**0.33**	**0.32**	**0.31**	**0.31**
Silver	0.0001	0.00013	0.00013	0.00025	0.00005	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Sodium		1.2	0.72		**1.4**	**1.2**	**1.5**	**1.2**	0.83	0.85	0.86	0.88	0.93	0.93
Strontium		1.25	1.26	2.5	0.023	0.022	0.023	0.025	0.024	0.025	0.023	0.023	0.023	0.023
Sulfur					2.4	2.5	2.9	2.9	2.6	2.4	2.6	2.5	2.7	2.8
Thallium	0.0008	0.00041	0.00041	0.00080	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Tin		0.00020	0.00020		*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Titanium		0.00060	0.00060		*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	0.00033	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*
Uranium	0.015	0.0075	0.0075	0.015	0.00007	0.00007	0.00007	0.00006	0.00008	0.00009	0.00006	0.00006	0.00006	0.00006
Vanadium		0.060	0.060	0.12	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Zinc				0.0040	~~0.0044~~	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*
Dissolved Metals (mg/L)														
Aluminum[3]	***equation***	0.026	0.026	0.050	0.0046	0.0021	0.0021	0.0014	0.0045	0.0042	0.0038	0.0035	0.0028	0.0017
Antimony		0.0046	0.0046	0.0090	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Arsenic		0.0026	0.0026	0.0050	0.00046	0.00040	0.00050	0.00039	0.00039	0.00034	0.00034	0.00035	0.00038	0.00038
Barium		0.50	0.50	1.0	0.0039	0.0039	0.0048	0.0039	0.0032	0.0031	0.0030	0.0029	0.0030	0.0030
Beryllium		0.00012	0.00012	0.00013	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*
Bismuth					*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Boron		0.76	0.76	1.5	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*
Cadmium		0.00002	0.00002	0.00004	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Calcium		2.4	4.9		**4.7**	**4.6**	**5.1**	**5.5**	**5.0**	**5.0**	**4.9**	**4.6**	**4.7**	**4.7**
Chromium		0.00026	0.00026	0.0050	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Cobalt				0.00077	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Copper		0.0012	0.0015	0.0020	~~0.0060~~	0.00063	0.00072	0.00075	0.00091	0.00089	0.00072	0.00074	0.00069	0.00068
Iron		0.16	0.16	0.30	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*
Lead		0.00053	0.00053	0.0010	0.00031	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Lithium		0.0020	0.0020		*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Magnesium		0.93	1.4		**1.7**	**1.7**	**1.9**	**1.9**	**1.7**	**1.6**	**1.6**	**1.6**	**1.6**	**1.7**
Manganese[3]	***equation***	0.32	0.33	***See note 3***	0.00051	0.00031	0.00046	0.00031	0.0016	0.0016	0.00060	0.00062	0.00083	0.00082
Mercury		0.00002	0.00002	0.00003	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Molybdenum		0.037	0.037	0.073	0.00014	0.00014	0.00015	0.00015	0.00013	0.00014	0.00016	0.00015	0.00014	0.00015
Nickel		0.013	0.013	0.025	0.00078	0.00067	0.00087	0.00077	0.00073	0.00070	*<0.00050*	0.00050	*<0.00050*	*<0.00050*
Phosphorus					*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*
Potassium		0.58	0.59		**0.76**	**0.69**	**0.88**	**0.75**	0.57	0.55	0.57	0.57	**0.59**	**0.59**
Selenium		0.00053	0.00053	0.0010	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Silicon		0.18	0.67		**0.32**	**0.35**	**0.35**	**0.44**	**0.39**	**0.38**	**0.28**	**0.26**	**0.26**	**0.25**
Silver		0.00013	0.00013	0.00025	0.00005	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Sodium		1.2	0.72		**1.5**	**1.3**	**1.5**	**1.3**	0.87	0.85	0.86	0.88	0.93	0.94
Strontium		1.3	1.3	2.5	0.022	0.021	0.023	0.024	0.025	0.024	0.023	0.022	0.024	0.024
Sulfur					2.3	2.1	3.0	2.8	2.7	2.8	2.4	2.3	2.4	2.3
Thallium		0.00041	0.00041	0.00080	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Tin		0.00020	0.00020		*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	0.00013	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Titanium		0.00060	0.00060		*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*
Uranium		0.0075	0.0075	0.015	0.00006	0.00006	0.00007	0.00007	0.00007	0.00007	0.00006	0.00006	0.00005	0.00005
Vanadium		0.060	0.060	0.12	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Zinc[3]	***equation***	0.0018	0.0024	***See note 3***	~~0.0046~~	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Plant Pigments (µg/L)														
Chlorophyll a					0.28	0.25	0.49	0.47	0.45	0.44	0.48	0.45	0.40	0.29

Notes:

1. CCME (Canadian Council of Ministers of the Environment) Canadian Water Quality Guidelines for the Protection of Aquatic Life, 1999, updated up to 2018.
2. Trigger and threshold values were developed in *CREMP Design Document 2012* (Azimuth, 2012d) and updated in 2019. A number of thresholds were derived from methods (or sources) other than CCME guidelines. Refer to the CREMP: 2022 Plan Update (Azimuth, 2022b) for more details.
3. "***equation***" means that CCME guidelines (or thresholds) are calculated based on an equation which is either pH or hardness dependent. The ammonia and aluminum guidelines vary with pH; the cadmium, copper, lead, manganese, nickel and zinc guidelines vary with hardness.
4. Chromium CCME guideline is for Cr VI.

123 Bolded concentrations exceed the trigger value.
123 Bolded and shaded concentrations also exceed the threshold value.
Italicized numbers are below detection limits.
underline = results were given a cautionary flag in the QC assessment (refer to **Section 3.3** for details).
~~strikethrough~~ = results flagged as unreliable in the QC assessment.
"-" not analyzed/not sampled.

Table C1-1. Water quality results from the 2025 CREMP, Meadowbank study area lakes.

Lake & Area		Meadowbank Screening Values[2]			Wally Lake (WAL)									
Month	Aquatic Life Guideline[1]				March	March	May	May	July	July	August	August	September	September
Area-Replicate ID					WAL-147	WAL-148	WAL-149	WAL-150	WAL-151	WAL-152	WAL-153	WAL-154	WAL-155	WAL-156
Date		Triggers		Thresholds	01-Mar-2025	01-Mar-2025	13-May-2025	13-May-2025	10-Jul-2025	10-Jul-2025	10-Aug-2025	10-Aug-2025	02-Sep-2025	02-Sep-2025
Time					15:00	14:25	14:45	15:15	09:45	09:00	09:20	10:00	15:00	15:30
ALS Sample ID		Meadowbank	Wally Lake		VA25A5048-001 VA25A5207-001	VA25A5048-002 VA25A5207-002	VA25B1633-005 VA25B2008-005	VA25B1633-006 VA25B2008-006	VA25B7591-006	VA25B7591-007	VA25C0385-003 VA25C0593-007	VA25C0385-004 VA25C0593-008	VA25C3235-003 VA25C5633-005	VA25C3235-004 VA25C5633-006
Field Measurements (Surface 3m)														
Dissolved Oxygen (mg/L)					18	17	14	14	10	11	10	10	11	11
Specific Conductivity (µS/cm)					72	71	58	61	60	53	55	56	52	58
pH	6.5 - 9.0	6.4-8.15	6.54 - 8.34	6.5 - 9.0	**6.5**	**6.4**	**6.4**	6.6	7.1	7.0	7.5	7.3	7.1	7.0
Temperature (°C)					1.1	1.1	1.5	1.3	14	14	12	12	10	9.4
Physical Tests (mg/L)														
Conductivity (µS/cm)		27	37		**89**	**74**	**74**	**79**	**58**	**51**	**56**	**57**	**57**	**64**
Alkalinity - Bicarbonate		8.7	18		**28**	**23**	**23**	**24**	15	14	14	14	14	15
Alkalinity - Carbonate		2.0	2.0		*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Alkalinity - Hydroxide					*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Alkalinity - Total (as $CaCO_3$)		8.7	18		**28**	**23**	**23**	**24**	15	14	14	14	14	15
Hardness (as CaCO3), dissolved		9.5	17		**39**	**33**	**31**	**34**	**26**	**21**	**23**	**23**	**23**	**27**
Hardness (as CaCO3), from total Ca/Mg					38	32	33	36	25	22	22	23	25	27
Total Dissolved Solids (TDS)		19	25		**67**	**57**	**48**	**59**	**38**	**35**	**47**	**48**	**30**	**38**
Total Suspended Solids (TSS)		3.0	3.0	5.0	*<1.0*	*<1.0*	*<1.0*	*<1.0*	1.0	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Turbidity (NTU)					0.15	0.17	0.11	*<0.10*	0.27	0.27	0.27	0.51	0.23	0.19
pH (Laboratory)	6.47-7.95	6.47-7.95	6.92 - 8.17	6.5 - 9.0	7.6	7.6	7.6	7.6	7.4	7.4	7.4	7.4	7.4	7.4
Anions and Nutrients (mg/L)														
Ammonia (as N)[3]	***equation***	0.42	0.42	0.84	0.035	0.036	0.015	0.017	0.015	*<0.0050*	0.018	*<0.0050*	0.017	0.015
Bromide					*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*
Chloride	120	60	60	120	1.1	0.94	0.93	1.0	0.67	0.64	0.70	0.69	0.73	0.82
Fluoride	0.12	0.088	0.080	0.12	**0.082**	0.072	0.074	0.079	0.046	0.052	0.059	0.058	0.067	0.055
Total Kjeldahl Nitrogen		0.17	0.16		**0.18**	**0.17**	0.15	0.15	0.14	0.14	0.15	0.14	**0.17**	**0.17**
Nitrate (as N)	3.0	1.5	1.5	3.0	0.016	0.015	0.029	0.028	*<0.0050*	*<0.0050*	*<0.0050*	*<0.0050*	*<0.0050*	0.0050
Nitrite (as N)	0.06	0.031	0.031	0.060	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	0.0096
Ortho Phosphate (as P)		0.0020	0.0020		*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Phosphorus (P) - Total	0.01	0.0051	0.0067	0.010	0.0022	0.0047	0.0026	0.0034	0.0029	0.0031	*<0.0020*	*<0.0020*	0.0025	0.0024
Phosphorus (P) - Total Diss.					*<0.0020*	0.0099	0.0023	0.0020	0.0024	0.0030	*<0.0020*	*<0.0020*	*<0.0020*	0.0030
Reactive Silica (as SiO_2)		1.0	1.1		**2.2**	**2.0**	**2.1**	**2.3**	**1.1**	**1.1**	0.97	0.96	1.1	**1.1**
Sulphate (SO_4)		65	65	128	14	12	11	13	10	8.5	9.7	9.9	9.9	12
Cyanides (mg/L)														
Free Cyanide	0.005				*<0.0010*	-	-	*<0.0020*	*<0.0010*	-	*<0.0010*	-	*<0.0010*	-
Total Cyanide					*<0.0010*	-	-	*<0.0020*	*<0.0010*	-	*<0.0010*	-	*<0.0010*	-
Organic / Inorganic Carbon (mg/L)														
Dissolved Organic Carbon		2.5	3.2		3.0	2.9	**3.3**	**3.3**	2.2	2.2	2.5	2.4	2.6	2.5
Total Organic Carbon		2.6	4.1		2.9	3.0	3.2	4.1	2.1	2.3	2.1	2.2	2.7	2.7
Total Metals (mg/L)														
Aluminum[3]	***equation***	0.053	0.053	0.10	0.0067	0.0054	0.0032	0.0046	0.0080	0.0078	0.0066	0.0076	0.0053	0.0061
Antimony		0.0046	0.0046	0.0090	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Arsenic	0.005	0.0026	0.0026	0.0050	0.00044	0.00040	0.00034	0.00038	0.00044	0.00033	0.00040	0.00039	0.00049	0.00057
Barium		0.50	0.50	1.0	0.0044	0.0038	0.0038	0.0044	0.0030	0.0030	0.0025	0.0026	0.0029	0.0029
Beryllium		0.00012	0.00012	0.00013	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*
Bismuth					*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Boron	1.5	0.76	0.76	1.5	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*
Cadmium[3]	***equation***	0.00002	0.00002	0.00004	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Calcium		2.4	4.9		**9.9**	**8.4**	**8.7**	**9.6**	**6.7**	**5.6**	**5.8**	**6.0**	**6.4**	**7.2**
Cesium					*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Chromium[4]	0.001	0.0025	0.0026	0.0050	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	0.00011	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	0.00027
Cobalt	0.00077			0.00077	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Copper[3]	***equation***	0.0012	0.0015	0.0020	**0.0016**	0.0012	0.0012	**0.0019**	0.0012	0.0011	0.0011	0.0011	0.0011	0.0012
Iron	0.3	0.15	0.16	0.30	*<0.010*	*<0.010*	*<0.010*	*<0.010*	0.023	0.032	0.018	0.019	0.016	0.027
Lead[3]	***equation***	0.00053	0.00053	0.0010	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Lithium		0.0020	0.0020		*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Magnesium		0.93	1.4		**3.1**	**2.7**	**2.7**	**2.9**	**2.1**	**1.8**	**1.9**	**1.9**	**2.1**	**2.3**
Manganese[3]	***equation***	0.32	0.33	***See note 3***	0.0018	0.0014	0.0013	0.00098	0.0023	0.0041	0.0016	0.0019	0.0019	0.0026
Mercury	0.000026	0.00002	0.00002	0.00003	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Molybdenum	0.073	0.037	0.037	0.073	0.00031	0.00027	0.00022	0.00024	0.00020	0.00016	0.00019	0.00021	0.00021	0.00025
Nickel[3]	***equation***	0.013	0.013	0.025	0.00073	0.00056	0.00051	0.0011	0.00051	0.00056	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Phosphorus		0.0051	0.0067	0.0040	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*
Potassium		0.58	0.59		**0.79**	**0.68**	**0.62**	**0.71**	0.52	0.51	0.49	0.49	0.52	0.52
Rubidium					0.0010	0.00090	0.00084	0.00099	0.00061	0.00074	0.00068	0.00063	0.00084	0.00067
Selenium	0.001	0.00053	0.00053	0.0010	*<0.000050*	0.00006	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	0.00009	*<0.000050*	0.00005
Silicon		0.20	0.65		**1.1**	**0.98**	**0.94**	**1.0**	0.56	0.58	0.47	0.50	0.55	0.57
Silver	0.0001	0.00013	0.00013	0.00025	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Sodium		1.2	0.72		**1.2**	**0.98**	**0.96**	**1.1**	0.72	**0.73**	0.71	0.71	**0.80**	**0.79**
Strontium		1.25	1.26	2.5	0.051	0.044	0.043	0.045	0.034	0.030	0.030	0.031	0.029	0.034
Sulfur					4.8	4.0	3.3	3.8	3.9	3.1	3.1	3.3	3.5	4.1
Thallium	0.0008	0.00041	0.00041	0.00080	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Tin		0.00020	0.00020		*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Titanium		0.00060	0.00060		*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*
Uranium	0.015	0.0075	0.0075	0.015	0.00012	0.00009	0.00008	0.00008	0.00010	0.00008	0.00008	0.00008	0.00006	0.00008
Vanadium		0.060	0.060	0.12	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Zinc				0.0040	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*
Dissolved Metals (mg/L)														
Aluminum[3]	***equation***	0.026	0.026	0.050	0.0030	0.0021	0.0016	0.0030	0.0056	0.0034	0.0029	0.0058	0.0024	0.0042
Antimony		0.0046	0.0046	0.0090	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Arsenic		0.0026	0.0026	0.0050	0.00044	0.00036	0.00033	0.00034	0.00042	0.00027	0.00031	0.00034	0.00036	0.00042
Barium		0.50	0.50	1.0	0.0045	0.0038	0.0042	0.0047	0.0032	0.0030	0.0027	0.0027	0.0029	0.0031
Beryllium		0.00012	0.00012	0.00013	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*
Bismuth					*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Boron		0.76	0.76	1.5	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*
Cadmium		0.00002	0.00002	0.00004	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Calcium		2.4	4.9		**10**	**8.5**	**8.2**	**8.9**	**6.7**	**5.6**	**6.0**	**6.1**	**6.0**	**6.8**
Chromium		0.00026	0.00026	0.0050	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	0.00015	*<0.00010*	*<0.00010*	~~0.0013~~	*<0.00010*	*<0.00010*
Cobalt				0.00077	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Copper		0.0012	0.0015	0.0020	**0.0015**	0.0012	0.0013	**0.0018**	0.0011	0.0010	0.0010	0.0011	0.00092	0.0010
Iron		0.16	0.16	0.30	*<0.010*	*<0.010*	*<0.010*	*<0.010*	0.010	0.012	*<0.010*	*<0.010*	*<0.010*	*<0.010*
Lead		0.00053	0.00053	0.0010	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	0.00005	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Lithium		0.0020	0.0020		*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Magnesium		0.93	1.4		**3.4**	**2.7**	**2.7**	**2.8**	**2.2**	**1.8**	**1.8**	**1.9**	**2.0**	**2.3**
Manganese[3]	***equation***	0.32	0.33	***See note 3***	0.0011	0.00069	0.00032	0.00036	0.0013	0.0019	0.00038	0.00049	0.00045	0.00076
Mercury		0.00002	0.00002	0.00003	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Molybdenum		0.037	0.037	0.073	0.00030	0.00026	0.00021	0.00024	0.00020	0.00016	0.00021	0.00022	0.00020	0.00024
Nickel		0.013	0.013	0.025	0.00071	0.00055	0.00056	0.0011	0.00059	*<0.00050*	*<0.00050*	0.00056	*<0.00050*	*<0.00050*
Phosphorus					*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*
Potassium		0.58	0.59		**0.78**	**0.66**	**0.72**	**0.79**	0.56	0.49	0.48	0.49	0.54	0.54
Selenium		0.00053	0.00053	0.0010	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Silicon		0.18	0.67		**1.0**	**0.90**	**0.96**	**1.1**	0.52	0.50	0.45	0.46	0.49	0.51
Silver		0.00013	0.00013	0.00025	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Sodium		1.2	0.72		**1.2**	**0.98**	**0.99**	**1.1**	**0.75**	0.70	0.70	0.71	**0.79**	**0.78**
Strontium		1.3	1.3	2.5	0.049	0.043	0.041	0.043	0.036	0.029	0.029	0.031	0.032	0.038
Sulfur					4.1	3.7	3.8	4.0	3.8	3.0	2.9	2.8	2.9	3.4
Thallium		0.00041	0.00041	0.00080	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Tin		0.00020	0.00020		*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Titanium		0.00060	0.00060		*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*
Uranium		0.0075	0.0075	0.015	0.00010	0.00008	0.00008	0.00008	0.00010	0.00008	0.00007	0.00008	0.00006	0.00007
Vanadium		0.060	0.060	0.12	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Zinc[3]	***equation***	0.0018	0.0024	***See note 3***	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	0.0016	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Plant Pigments (µg/L)														
Chlorophyll a					0.62	0.31	0.57	0.12	0.70	0.52	0.60	0.44	0.36	0.44

Notes:

1. CCME (Canadian Council of Ministers of the Environment) Canadian Water Quality Guidelines for the Protection of Aquatic Life, 1999, updated up to 2018.
2. Trigger and threshold values were developed in *CREMP Design Document 2012* (Azimuth, 2012d) and updated in 2019. A number of thresholds were derived from methods (or sources) other than CCME guidelines. Refer to the CREMP: 2022 Plan Update (Azimuth, 2022b) for more details.
3. "***equation***" means that CCME guidelines (or thresholds) are calculated based on an equation which is either pH or hardness dependent. The ammonia and aluminum guidelines vary with pH; the cadmium, copper, lead, manganese, nickel and zinc guidelines vary with hardness.
4. Chromium CCME guideline is for Cr VI.

123 Bolded concentrations exceed the trigger value.
123 Bolded and shaded concentrations also exceed the threshold value.
Italicized numbers are below detection limits.
underline = results were given a cautionary flag in the QC assessment (refer to **Section 3.3** for details).
~~strikethrough~~ = results flagged as unreliable in the QC assessment.
"-" not analyzed/not sampled.

Table C1-2. Water quality results screened against FEIS predicted concentrations for Third Portage Lake, 2025.

Lake and Area		Simulated Maximum Whole Lake Concentration (mg/L) Third Portage Lake[2]				Third Portage Lake East Basin (TPE)									
Area-Replicate ID	CCME (2012)	Upper Mixing Estimate (169 Mm^3)		Mid-range Mixing Estimate (92 Mm^3)		TPE-178	TPE-179	TPE-180	TPE-181	TPE-183	TPE-182	TPE-184	TPE-185	TPE-186	TPE-187
Depth (m)	Guideline[1]	Without Dike Leaching	With Dike Leaching	Without Dike Leaching	With Dike Leaching	3	3	3	3	3	3	3	3	3	3
Date						2-Mar-25	2-Mar-25	27-Apr-25	27-Apr-25	9-Jul-25	9-Jul-25	11-Aug-25	11-Aug-25	3-Sep-25	3-Sep-25
Physical Tests (mg/L)															
Alkalinity - Total (as CaCO3)		4.1	4.1	4.2	4.2	***9.6***	***10***	***9.9***	***8.9***	***8.2***	***8.1***	***8.0***	***8.1***	***7.3***	***7.5***
Hardness (as CaCO3), dissolved		5.7	6.0	6.0	6.4	***15***	***15***	***14***	***14***	***11***	***11***	***11***	***11***	***12***	***12***
Anions and Nutrients (mg/L)															
Ammonia (as N)[3]	***equation***	0.033	0.033	0.050	0.050	0.015	0.021	0.022	0.012	*<0.0050*	0.017	*<0.0050*	0.0078	*<0.0050*	0.0067
Chloride	120	0.80	0.80	1.0	1.1	**1.0**	***1.1***	***1.2***	***1.1***	0.81	0.79	0.84	0.82	0.83	0.83
Fluoride	0.12	0.070	0.080	0.070	0.090	***0.10***	***0.11***	***0.11***	***0.095***	**0.083**	**0.080**	**0.078**	**0.078**	**0.076**	**0.083**
Nitrate (as N)	3.0	0.035	0.036	0.057	0.059	0.010	0.012	0.017	0.016	0.0088	0.0090	*<0.0050*	*<0.0050*	*<0.0050*	*<0.0050*
Ortho Phosphate (as P)		0.0022	0.0022	0.0024	0.0024	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Phosphorus (P) - Total	0.0040	0.0027	0.0029	0.0032	0.0035	0.0026	*<0.0020*	0.0030	0.0022	***0.0043***	*<0.0020*	0.0021	***0.0083***	*<0.0020*	*<0.0020*
Sulphate (SO_4)		1.7	1.7	2.0	2.0	***6.5***	***6.7***	***6.9***	***6.5***	***4.8***	***4.8***	***4.9***	***4.9***	***4.9***	***4.9***
Total Metals (mg/L)															
Aluminum[3]	***equation***	0.0070	0.0090	0.0070	0.010	0.0070	**0.0087**	0.0043	0.0041	***0.014***	**0.0090**	**0.0080**	**0.0088**	**0.0086**	**0.0075**
Antimony		0.00056	0.00057	0.00060	0.00062	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Arsenic	0.0050	0.00062	0.00062	0.00072	0.00072	0.00052	0.00038	0.00041	0.00031	0.00046	0.00048	0.00044	0.00050	0.00060	0.00055
Barium		0.020	0.022	0.020	0.023	0.0035	0.0039	0.0039	0.0037	0.0035	0.0032	0.0028	0.0029	0.0028	0.0029
Beryllium		0.0010	0.0010	0.0010	0.0010	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*
Bismuth		0.10	0.10	0.10	0.10	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Boron	1.5	0.00001	0.00001	0.00001	0.00001	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*
Cadmium[3]	***equation***	<0.000051	<0.000051	<0.000052	<0.000052	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	0.00001	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Calcium		1.3	1.4	1.5	1.5	***3.5***	***3.5***	***3.4***	***3.1***	***2.7***	***2.7***	***2.9***	***2.9***	***2.8***	***2.8***
Chromium[4]	0.001	0.0010	0.0010	0.0010	0.0010	*<0.00010*	*<0.00010*	0.00011	*<0.00010*	0.00016	0.00075	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Cobalt		0.0040	0.0013	0.00040	0.0017	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Copper[3]	***equation***	0.0012	0.0012	0.0013	0.0013	*<0.00050*	***0.0054***	*<0.00050*	*<0.00050*	0.00079	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Iron	0.3	0.030	0.030	0.030	0.030	*<0.010*	0.011	*<0.010*	*<0.010*	0.027	0.026	0.016	0.016	0.020	0.019
Lead[3]	***equation***	0.00060	0.00060	0.00060	0.00070	*<0.000050*	0.00029	*<0.000050*	*<0.000050*	0.00006	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Lithium		0.0050	0.0050	0.0050	0.0050	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Magnesium		0.60	0.60	0.60	0.70	***1.4***	***1.4***	***1.4***	***1.4***	***1.1***	***1.1***	***1.1***	***1.1***	***1.2***	***1.2***
Manganese[3]		0.0090	0.052	0.015	0.072	0.00047	0.00072	0.00034	0.00043	0.0029	0.0028	0.0016	0.0016	0.0018	0.0017
Mercury	0.000026	0.00005	0.00005	0.00005	0.00005	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Molybdenum	0.073	0.0010	0.0010	0.0010	0.0010	0.00014	0.00013	0.00012	0.00011	0.00011	0.00014	0.00011	0.00011	0.00011	0.00012
Nickel[3]	***equation***	0.0016	0.0016	0.0020	0.0021	0.00072	0.00086	0.00075	0.00076	0.00076	0.00070	*<0.00050*	0.00052	*<0.00050*	*<0.00050*
Potassium		2.0	2.1	2.0	2.1	0.68	0.69	0.69	0.65	0.60	0.59	0.55	0.56	0.54	0.55
Selenium	0.001	0.0010	0.0010	0.0010	0.0010	*<0.000050*	0.00007	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Silicon		0.010	0.080	0.020	0.12	***0.23***	***0.24***	***0.24***	***0.22***	***0.23***	***0.21***	***0.16***	***0.17***	***0.15***	***0.15***
Silver	0.0001	0.00002	0.00002	0.00002	0.00002	*<0.000010*	***0.00005***	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Sodium		2.0	2.0	2.0	2.1	1.3	1.4	1.4	1.3	1.0	1.0	0.98	0.98	1.0	1.1
Strontium		0.0020	0.0050	0.0040	0.0070	***0.015***	***0.015***	***0.015***	***0.015***	***0.012***	***0.012***	***0.013***	***0.013***	***0.012***	***0.013***
Thallium	0.0008	0.00020	0.00020	0.00020	0.00020	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Uranium	0.015	0.00020	0.00020	0.00020	0.00030	0.00006	0.00005	0.00005	0.00005	0.00005	0.00005	0.00004	0.00005	0.00004	0.00005
Vanadium		0.030	0.030	0.030	0.030	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Zinc[3]	***equation***	0.011	0.011	0.015	0.015	*<0.0030*	0.0044	*<0.0030*	*<0.0030*	0.0053	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*

Notes:

1 . CCME (Canadian Council of Ministers of the Environment) Canadian Water Quality Guidelines for the Protection of Aquatic Life, 1999, updated up to 2016.

2. Whole lake data are given for a range of mixing conditions, representing mid-range and upper mixing estimate for the north basin discharge location. The model includes treated water releases from the project (Years 1 to 4), and long-term substance loading due to leaching from the Bay-Goose dike (Cumberland, 2005).

3. "***equation***" means that CCME guidelines (or thresholds) are calculated based on an equation which is either pH or hardness dependent. The ammonia and aluminum guidelines vary with pH; the cadmium, copper, lead, manganese, nickel and zinc guidelines vary with hardness.

4. Chromium CCME guideline is for Cr VI.

Formatting for indicating the parameters that exceed the model predictions in the FEIS:

Upper-range Mixing Estimate (169 Mm^3):

- Shaded cells = concentrations exceed the prediction "Without Dike Leaching."
- Bordered cells = concentrations exceed the prediction "With Dike Leaching."

Mid-range Mixing Estimate (92 Mm^3):

- **Bold** = concentrations exceed the prediction "Without Dike Leaching."
- ***Bold italicized*** = concentrations exceed the prediction "With Dike Leaching."

Italicized numbers are below detection limits.

"-" not analyzed/not sampled.

Table C1-2. Water quality results screened against FEIS predicted concentrations for Third Portage Lake, 2025.

Lake and Area		Simulated Maximum Whole Lake Concentration (mg/L) Third Portage Lake[2]				Third Portage Lake North Basin (TPN)									
Area-Replicate ID	CCME (2012)	Upper Mixing Estimate (169 Mm^3)		Mid-range Mixing Estimate (92 Mm^3)		TPN-178	TPN-179	TPN-181	TPN-180	TPN-182	TPN-183	TPN-184	TPN-185	TPN-186	TPN-187
Depth (m)	Guideline[1]	Without Dike Leaching	With Dike Leaching	Without Dike Leaching	With Dike Leaching	3	3	3	3	3	3	3	3	3	3
Date						2-Mar-25	2-Mar-25	7-Apr-25	7-Apr-25	9-Jul-25	9-Jul-25	11-Aug-25	11-Aug-25	4-Sep-25	4-Sep-25
Physical Tests (mg/L)															
Alkalinity - Total (as CaCO3)		4.1	4.1	4.2	4.2	***8.6***	***8.9***	***8.2***	***8.8***	***6.9***	***6.9***	***7.0***	***7.2***	***7.1***	***7.4***
Hardness (as CaCO3), dissolved		5.7	6.0	6.0	6.4	***13***	***13***	***12***	***13***	***11***	***10***	***10***	***11***	***11***	***11***
Anions and Nutrients (mg/L)															
Ammonia (as N)[3]	***equation***	0.033	0.033	0.050	0.050	0.020	0.012	0.017	0.012	*<0.0050*	0.0083	0.012	*<0.0050*	0.0059	0.025
Chloride	120	0.80	0.80	1.0	1.1	***1.1***	***1.1***	***1.1***	***1.2***	0.94	0.94	0.88	0.88	0.93	0.94
Fluoride	0.12	0.070	0.080	0.070	0.090	***0.091***	***0.094***	***0.084***	***0.092***	***0.080***	***0.080***	0.066	0.066	***0.073***	***0.074***
Nitrate (as N)	3.0	0.035	0.036	0.057	0.059	0.0094	0.012	0.0087	0.0094	0.012	0.012	*<0.0050*	*<0.0050*	*<0.0050*	*<0.0050*
Ortho Phosphate (as P)		0.0022	0.0022	0.0024	0.0024	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Phosphorus (P) - Total	0.0040	0.0027	0.0029	0.0032	0.0035	*<0.0020*	*<0.0020*	0.0022	*<0.0020*	*<0.0020*	*<0.0020*	**0.0035**	*<0.0020*	***0.0073***	*<0.0020*
Sulphate (SO_4)		1.7	1.7	2.0	2.0	***6.2***	***6.3***	***6.1***	***6.3***	***5.1***	***5.1***	***4.7***	***4.7***	***5.1***	***5.1***
Total Metals (mg/L)															
Aluminum[3]	***equation***	0.0070	0.0090	0.0070	0.010	**0.0085**	**0.0088**	0.0042	0.0038	0.0056	**0.0071**	0.0054	0.0060	0.0059	0.0048
Antimony		0.00056	0.00057	0.00060	0.00062	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Arsenic	0.0050	0.00062	0.00062	0.00072	0.00072	0.00029	0.00026	0.00024	0.00024	0.00021	0.00023	0.00021	0.00022	0.00022	0.00024
Barium		0.020	0.022	0.020	0.023	0.0038	0.0037	0.0036	0.0036	0.0030	0.0031	0.0029	0.0030	0.0027	0.0029
Beryllium		0.0010	0.0010	0.0010	0.0010	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*
Bismuth		0.10	0.10	0.10	0.10	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Boron	1.5	0.00001	0.00001	0.00001	0.00001	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*
Cadmium[3]	***equation***	<0.000051	<0.000051	<0.000052	<0.000052	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Calcium		1.3	1.4	1.5	1.5	***3.2***	***3.1***	***2.9***	***3.0***	***2.5***	***2.5***	***2.6***	***2.6***	***2.5***	***2.5***
Chromium[4]	0.001	0.0010	0.0010	0.0010	0.0010	0.00020	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Cobalt		0.0040	0.0013	0.00040	0.0017	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Copper[3]	***equation***	0.0012	0.0012	0.0013	0.0013	***0.0060***	***0.0059***	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Iron	0.3	0.030	0.030	0.030	0.030	0.023	0.010	*<0.010*	*<0.010*	0.010	0.011	*<0.010*	*<0.010*	*<0.010*	*<0.010*
Lead[3]	***equation***	0.00060	0.00060	0.00060	0.00070	0.00034	0.00033	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Lithium		0.0050	0.0050	0.0050	0.0050	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Magnesium		0.60	0.60	0.60	0.70	***1.3***	***1.3***	***1.2***	***1.3***	***1.0***	***1.0***	***1.0***	***1.0***	***1.0***	***1.1***
Manganese[3]		0.0090	0.052	0.015	0.072	0.00086	0.00081	0.00041	0.00042	0.0026	0.0029	0.0019	0.0020	0.0018	0.0016
Mercury	0.000026	0.00005	0.00005	0.00005	0.00005	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Molybdenum	0.073	0.0010	0.0010	0.0010	0.0010	0.00013	0.00011	0.00010	0.00011	0.00009	0.00009	0.00009	0.00010	0.00010	0.00010
Nickel[3]	***equation***	0.0016	0.0016	0.0020	0.0021	0.00089	0.00087	0.00074	0.00078	0.00077	0.00086	0.00056	0.00058	0.00061	0.00056
Potassium		2.0	2.1	2.0	2.1	0.64	0.65	0.61	0.64	0.55	0.55	0.52	0.53	0.51	0.51
Selenium	0.001	0.0010	0.0010	0.0010	0.0010	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Silicon		0.010	0.080	0.020	0.12	***0.18***	***0.19***	***0.16***	***0.17***	***0.17***	***0.17***	***0.16***	***0.16***	***0.14***	***0.15***
Silver	0.0001	0.00002	0.00002	0.00002	0.00002	***0.00007***	***0.00006***	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Sodium		2.0	2.0	2.0	2.1	1.3	1.3	1.2	1.3	1.0	1.0	0.98	0.97	1.0	1.0
Strontium		0.0020	0.0050	0.0040	0.0070	***0.014***	***0.014***	***0.014***	***0.014***	***0.012***	***0.012***	***0.012***	***0.012***	***0.012***	***0.012***
Thallium	0.0008	0.00020	0.00020	0.00020	0.00020	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Uranium	0.015	0.00020	0.00020	0.00020	0.00030	0.00006	0.00006	0.00005	0.00006	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005
Vanadium		0.030	0.030	0.030	0.030	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Zinc[3]	***equation***	0.011	0.011	0.015	0.015	0.0049	0.0047	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*

Notes:

1 . CCME (Canadian Council of Ministers of the Environment) Canadian Water Quality Guidelines for the Protection of Aquatic Life, 1999, updated up to 2016.

2. Whole lake data are given for a range of mixing conditions, representing mid-range and upper mixing estimate for the north basin discharge location. The model includes treated water releases from the project (Years 1 to 4), and long-term substance loading due to leaching from the Bay-Goose dike (Cumberland, 2005).

3. "***equation***" means that CCME guidelines (or thresholds) are calculated based on an equation which is either pH or hardness dependent. The ammonia and aluminum guidelines vary with pH; the cadmium, copper, lead, manganese, nickel and zinc guidelines vary with hardness.

4. Chromium CCME guideline is for Cr VI.

Formatting for indicating the parameters that exceed the model predictions in the FEIS:

Upper-range Mixing Estimate (169 Mm^3):

- Shaded cells = concentrations exceed the prediction "Without Dike Leaching."
- Bordered cells = concentrations exceed the prediction "With Dike Leaching."

Mid-range Mixing Estimate (92 Mm^3):

- **Bold** = concentrations exceed the prediction "Without Dike Leaching."
- ***Bold italicized*** = concentrations exceed the prediction "With Dike Leaching."

Italicized numbers are below detection limits.

"-" not analyzed/not sampled.

Table C1-3. Water quality results screened against FEIS predicted concentrations for Second Portage Lake, 2025.

Lake and Area		Simulated Maximum Whole Lake Concentration (mg/L) Second Portage Lake[2]				Second Portage Lake (SP)									
Area-Replicate ID	CCME (2012)	Upper Mixing Estimate (169 Mm^3)		Mid-range Mixing Estimate (92 Mm^3)		SP-178	SP-179	SP-181	SP-180	SP-182	SP-183	SP-184	SP-185	SP-186	SP-187
Depth (m)	Guideline[1]	Without Dike Leaching	With Dike Leaching	Without Dike Leaching	With Dike Leaching	3	3	3	3	3	3	3	3	3	3
Date						2-Mar-25	2-Mar-25	27-Apr-25	27-Apr-25	7-Jul-25	7-Jul-25	9-Aug-25	9-Aug-25	2-Sep-25	2-Sep-25
Physical Tests (mg/L)															
Alkalinity - Total		7.0	7.0	7.0	7.0	13	12	14	13	12	12	12	12	12	12
Hardness (as CaCO3), dissolved		8.9	8.9	8.9	8.9	19	19	21	22	19	19	19	18	18	18
Anions and Nutrients (mg/L)															
Ammonia (as N)[1]	***equation***	0.025	0.025	0.031	0.031	0.025	0.018	0.025	0.021	*<0.0050*	*<0.0050*	0.010	*<0.0050*	0.0070	0.012
Chloride	120	0.70	0.70	0.80	0.80	1.4	1.3	1.5	1.5	1.1	1.1	1.1	1.1	1.2	1.2
Fluoride	0.12	0.070	0.071	0.070	0.071	0.11	0.098	0.13	0.11	0.072	0.072	0.079	0.079	0.086	0.086
Nitrate (as N)	3.0	0.017	0.017	0.025	0.025	0.018	0.022	0.023	0.020	*<0.0050*	*<0.0050*	*<0.0050*	*<0.0050*	*<0.0050*	*<0.0050*
Ortho Phosphate (as P)		0.0030	0.0030	0.0030	0.0030	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Phosphorus (P) - Total	0.0040	0.0030	0.0030	0.0031	0.0031	0.0066	*<0.0020*	*<0.0020*	*<0.0020*	0.0024	0.0022	*<0.0020*	*<0.0020*	*<0.0020*	*<0.0020*
Sulphate (SO_4)		2.8	2.8	2.8	2.8	8.3	7.7	9.2	9.2	8.0	8.2	7.9	7.7	8.1	8.0
Total Metals (mg/L)															
Aluminum[3]	***equation***	0.0070	0.0070	0.0070	0.0070	0.0080	0.0072	0.0043	0.0040	0.014	0.013	0.0081	0.0074	0.0064	0.0060
Antimony		0.00050	0.00050	0.00050	0.00050	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Arsenic	0.0050	0.00050	0.00050	0.00060	0.00060	0.00047	0.00047	0.00049	0.00038	0.00043	0.00046	0.00042	0.00043	0.00054	0.00053
Barium		0.020	0.020	0.020	0.020	0.0042	0.0037	0.0047	0.0038	0.0032	0.0034	0.0029	0.0029	0.0031	0.0030
Beryllium		0.0010	0.0010	0.0010	0.0010	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*
Bismuth		0.10	0.10	0.10	0.10	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Boron	1.5	0.00001	0.00001	0.00001	0.00001	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*
Cadmium[3]	***equation***	<0.000050	<0.000050	<0.000051	<0.000051	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Calcium		2.3	2.3	2.3	2.3	4.6	4.7	5.0	4.9	5.5	5.6	5.0	4.4	5.1	5.0
Chromium[4]	0.001	0.0010	0.0010	0.0010	0.0010	*<0.00010*	*<0.00010*	*<0.00010*	0.00016	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	0.00012
Cobalt		0.00030	0.00040	0.00030	0.00040	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Copper[3]	***equation***	0.0011	0.0011	0.0011	0.0011	0.0056	0.00073	0.00071	0.00077	0.00098	0.0010	0.00081	0.00079	0.00084	0.00078
Iron	0.3	0.030	0.030	0.030	0.030	0.021	*<0.010*	*<0.010*	*<0.010*	0.025	0.026	0.021	0.020	0.027	0.024
Lead[3]	***equation***	0.00090	0.00090	0.00090	0.00090	0.00030	0.0026	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Lithium		0.0050	0.0050	0.0050	0.0050	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Magnesium		0.80	0.80	0.80	0.80	1.8	1.7	1.9	1.9	1.7	1.8	1.7	1.6	1.8	1.7
Manganese[3]		0.0044	0.0067	0.0066	0.0089	0.00066	0.00061	0.00035	0.00033	0.0029	0.0031	0.0018	0.0018	0.0024	0.0020
Mercury	0.000026	0.00005	0.00005	0.00005	0.00005	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Molybdenum	0.073	0.0010	0.0010	0.0010	0.0010	0.00016	0.00015	0.00016	0.00017	0.00012	0.00013	0.00014	0.00013	0.00016	0.00015
Nickel[3]	***equation***	0.0010	0.0010	0.0010	0.0010	0.00089	0.00077	0.00083	0.00077	0.00065	0.00082	0.00052	*<0.00050*	0.00059	0.00071
Phosphorus						*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*
Potassium		2.0	2.0	2.0	2.0	0.79	0.71	0.84	0.70	0.54	0.56	0.55	0.56	0.58	0.57
Selenium	0.001	0.0010	0.0010	0.0010	0.0010	0.00006	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Silicon		0.010	0.010	0.010	0.010	0.38	0.41	0.38	0.52	0.44	0.47	0.33	0.32	0.31	0.31
Silver	0.0001	0.00001	0.00001	0.00001	0.00001	0.00005	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Sodium		2.0	2.0	2.0	2.0	1.4	1.2	1.5	1.2	0.83	0.85	0.86	0.88	0.93	0.93
Thallium	0.0008	0.00020	0.00020	0.00020	0.00020	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Tin						*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Titanium						*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	0.00033	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*
Uranium	0.015	0.00020	0.00020	0.00020	0.00020	0.00007	0.00007	0.00007	0.00006	0.00008	0.00009	0.00006	0.00006	0.00006	0.00006
Vanadium		0.030	0.030	0.030	0.030	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Zinc[3]	***equation***	0.0070	0.0070	0.0090	0.0090	0.0044	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*
Zirconium						*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*

Notes:

1. CCME (Canadian Council of Ministers of the Environment) Canadian Water Quality Guidelines for the Protection of Aquatic Life, 1999, updated up to 2016.

2. The Second Portage Lake water quality model includes substance loading from the Third Portage and East dikes and inflow from Third Portage and Wally lakes. Changes in water quality in Second Portage Lake were modelled for two different mixing scenarios of water releases into Third Portage Lake (Cumberland, 2005).

3. "***equation***" means that CCME guidelines (or thresholds) are calculated based on an equation which is either pH or hardness dependent. The ammonia and aluminum guidelines vary with pH; the cadmium, copper, lead, manganese, nickel and zinc guidelines vary with hardness.

4. Chromium CCME guideline is for Cr VI.

Formatting for indicating the parameters that exceed the model predictions in the FEIS:

Upper-range Mixing Estimate (169 Mm^3):

- Shaded cells = concentrations exceed the prediction "Without Dike Leaching."
- Bordered cells = concentrations exceed the prediction "With Dike Leaching."

Mid-range Mixing Estimate (92 Mm^3):

- **Bold** = concentrations exceed the prediction "Without Dike Leaching."
- ***Bold italicized*** = concentrations exceed the prediction "With Dike Leaching."

Italicized numbers are below detection limits.

"-" not analyzed/not sampled.

Table C1-4. Water quality results screened against FEIS predicted concentrations for Wally Lake, 2025.

Lake and Area		Simulated Maximum Whole Lake Concentration (mg/L) Wally Lake[2]		Wally Lake (WAL)									
Area-Replicate ID	**CCME (2012) Guideline[1]**	Without Dike Leaching	With Dike Leaching	WAL-147	WAL-148	WAL-149	WAL-150	WAL-151	WAL-152	WAL-153	WAL-154	WAL-155	WAL-156
Depth (m)				3	3	3	3	3	3	3	3	3	3
Date				1-Mar-25	1-Mar-25	13-May-25	13-May-25	10-Jul-25	10-Jul-25	10-Aug-25	10-Aug-25	2-Sep-25	2-Sep-25
Physical Tests (mg/L)													
Alkalinity - Total		13	13	**28**	**23**	**23**	**24**	**15**	**14**	**14**	**14**	**14**	**15**
Hardness (as CaCO3), dissolved		17	17	**39**	**33**	**31**	**34**	**26**	**21**	**23**	**23**	**23**	**27**
Anions and Nutrients (mg/L)													
Ammonia (as N)[3]	***equation***	0.089	0.089	0.035	0.036	0.015	0.017	0.015	*<0.0050*	0.018	*<0.0050*	0.017	0.015
Chloride	120	0.70	0.70	**1.1**	**0.94**	**0.93**	**1.0**	0.67	0.64	0.70	0.69	**0.73**	**0.82**
Fluoride	0.12	0.050	0.050	**0.082**	**0.072**	**0.074**	**0.079**	0.046	**0.052**	**0.059**	**0.058**	**0.067**	**0.055**
Nitrate (as N)	3.0	0.10	0.10	0.016	0.015	0.029	0.028	*<0.0050*	*<0.0050*	*<0.0050*	*<0.0050*	*<0.0050*	0.0050
Nitrite (as N)	0.060			*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	0.0096
Ortho Phosphate (as P)		0.0030	0.0030	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Phosphorus (P) - Total	0.0040	0.0039	0.0040	0.0022	**0.0047**	0.0026	0.0034	0.0029	0.0031	*<0.0020*	*<0.0020*	0.0025	0.0024
Sulphate (SO_4)		5.3	5.3	**14**	**12**	**11**	**13**	**10**	**8.5**	**9.7**	**9.9**	**9.9**	**12**
Total Metals (mg/L)													
Aluminum[3]	***equation***	0.012	0.013	0.0067	0.0054	0.0032	0.0046	0.0080	0.0078	0.0066	0.0076	0.0053	0.0061
Antimony		0.00090	0.00090	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Arsenic	0.0050	0.0050	0.0060	0.00044	0.00040	0.00034	0.00038	0.00044	0.00033	0.00040	0.00039	0.00049	0.00057
Barium		0.020	0.020	0.0044	0.0038	0.0038	0.0044	0.0030	0.0030	0.0025	0.0026	0.0029	0.0029
Beryllium		0.0010	0.0010	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*
Bismuth		0.10	0.10	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Boron	1.5	0.00001	0.00001	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*
Cadmium[3]	***equation***	0.00018	0.00019	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Calcium		4.7	4.7	**9.9**	**8.4**	**8.7**	**9.6**	**6.7**	**5.6**	**5.8**	**6.0**	**6.4**	**7.2**
Chromium[4]	0.0010	0.0010	0.0010	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	0.00011	*<0.00010*	*<0.00010*	*<0.00010*	0.00027
Cobalt		0.00030	0.00030	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Copper[3]	***equation***	0.0020	0.0020	0.0016	0.0012	0.0012	0.0019	0.0012	0.0011	0.0011	0.0011	0.0011	0.0012
Iron	0.30	0.030	0.030	*<0.010*	*<0.010*	*<0.010*	*<0.010*	0.023	**0.032**	0.018	0.019	0.016	0.027
Lead[3]	***equation***	0.00070	0.00070	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Lithium		0.0050	0.0050	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Magnesium		1.3	1.3	**3.1**	**2.7**	**2.7**	**2.9**	**2.1**	**1.8**	**1.9**	**1.9**	**2.1**	**2.3**
Manganese[3]		0.0020	0.0020	0.0018	0.0014	0.0013	0.00098	**0.0023**	**0.0041**	0.0016	0.0019	0.0019	**0.0026**
Mercury	0.00003	0.00010	0.00010	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Molybdenum	0.073	0.0020	0.0020	0.00031	0.00027	0.00022	0.00024	0.00020	0.00016	0.00019	0.00021	0.00021	0.00025
Nickel[3]	***equation***	0.0010	0.0010	0.00073	0.00056	0.00051	**0.0011**	0.00051	0.00056	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Potassium		2.0	2.0	0.79	0.68	0.62	0.71	0.52	0.51	0.49	0.49	0.52	0.52
Selenium	0.0010	0.0010	0.0010	*<0.000050*	0.00006	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	0.00009	*<0.000050*	0.00005
Silicon		0.040	0.040	**1.1**	**0.98**	**0.94**	**1.0**	**0.56**	**0.58**	**0.47**	**0.50**	**0.55**	**0.57**
Silver	0.00010	0.00002	0.00002	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Sodium		2.0	2.0	1.2	0.98	0.96	1.1	0.72	0.73	0.71	0.71	0.80	0.79
Thallium	0.00080	0.00020	0.00020	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Uranium	0.015	0.00070	0.00070	0.00012	0.00009	0.00008	0.00008	0.00010	0.00008	0.00008	0.00008	0.00006	0.00008
Zinc[3]	***equation***	0.013	0.013	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*

Notes:

1. CCME (Canadian Council of Ministers of the Environment) Canadian Water Quality Guidelines for the Protection of Aquatic Life, 1999, updated up to 2016.
2. Preliminary modelling of whole lake water quality in the receiving environment water bodies incorporates long-term loadings from the Vault dike and effluent releases from the Vault Attenuation pond (Cumberland, 2005).
3. "***equation*** " means that CCME guidelines (or thresholds) are calculated based on an equation which is either pH or hardness dependent. Ammonia and aluminum guidelines vary with pH; cadmium, copper, lead, manganese, nickel and zinc guidelines vary with hardness.
4. Chromium CCME guideline is for Cr VI.

Formatting for indicating the parameters that exceed the model predictions in the FEIS:

- **Bold** = concentrations exceed the prediction "Without Dike Leaching."
- ***Bold italicized*** = concentrations exceed the prediction "With Dike Leaching."

Italicized numbers are below detection limits.

"-" not analyzed/not sampled.

Table C1-5. Water and phytoplankton sampling location coordinates (GPS, UTM, NAD83) for the Meadowbank CREMP, 2025.

Area[1]	Area Type[2]	Area-Replicate	**Water & Phytoplankton** (Monthly)				
			Month	Depth (m)	Zone	Easting	Northing
TPE	NF	TPE-limno	January	8.7	14W	637831	7210747
		TPE-limno	February	6.6	14W	638498	7211603
		TPE-limno	April	9.7	14W	638982	7210788
		TPE-limno	November	7.3	14W	638294	7212078
		TPE-limno	December	10.8	14W	638358	7212070
		TPE-178	March	9.3	14W	639490	7212286
		TPE-179	March	6.8	14W	638987	7210897
		TPE-180	May	11.3	14W	638731	7211288
		TPE-181	May	6.3	14W	637740	7211705
		TPE-182	July	9.3	14W	639456	7212274
		TPE-183	July	5.2	14W	639707	7211626
		TPE-184	August	6.3	14W	638486	7211600
		TPE-185	August	17.4	14W	639159	7211881
		TPE-186	September	6.7	14W	639073	7212425
		TPE-187	September	6.5	14W	639382	7210317
TPN	NF	TPN-limno	January	>20	14W	636531	7214605
		TPN-limno	February	15.3	14W	366604	7212627
		TPN-limno	April	9.8	14W	637006	7213287
		TPN-limno	November	12.2	14W	636728	7213523
		TPN-limno	December	>20	14W	636450	7214904
		TPN-178	March	6.0	14W	634360	7214728
		TPN-179	March	13.3	14W	635568	7216056
		TPN-180	May	10.9	14W	636503	7215322
		TPN-181	May	11.8	14W	636132	7213552
		TPN-182	July	7.7	14W	635857	7215527
		TPN-183	July	>20	14W	634461	7215808
		TPN-184	August	6.7	14W	634672	7214590
		TPN-185	August	9.0	14W	636275	7214311
		TPN-186	September	15.8	14W	636285	7214541
		TPN-187	September	12.8	14W	634919	7213886
SP	NF	SP-limno	January	5.2	14W	640293	7213369
		SP-limno	February	7.2	14W	639459	7213813
		SP-limno	April	7.7	14W	640295	7212811
		SP-limno	November	6.5	14W	639432	7213717
		SP-limno	December	8.0	14W	639538	7213737
		SP-178	March	11.3	14W	640500	7212841
		SP-179	March	6.5	14W	639417	7214011

Area[1]	Area Type[2]	Area-Replicate	Water & Phytoplankton (Monthly)				
			Month	Depth (m)	Zone	Easting	Northing
		SP-180	May	10.1	14W	640513	7213767
		SP-181	May	7.8	14W	640228	7212711
		SP-182	July	11.6	14W	640553	7212853
		SP-183	July	12.2	14W	640543	7213645
		SP-184	August	11.4	14W	640526	7213759
		SP-185	August	8.2	14W	639582	7213679
		SP-186	September	18.2	14W	640474	7213653
		SP-187	September	5.5	14W	639589	7213886
WAL	NF	WAL-limno	January	6.6	15W	360555	7221926
		WAL-limno	February	7.9	15W	361917	7221926
		WAL-limno	April	5.3	15W	360576	7222465
		WAL-limno	November	8.3	15W	360926	7220485
		WAL-limno	December	5.1	15W	360605	7221233
		WAL-147	March	5.0	15W	360853	7221799
		WAL-148	March	6.2	15W	361477	7222326
		WAL-149	May	5.7	15W	360738	7220815
		WAL-150	May	6.1	15W	361943	7222944
		WAL-151	July	6.7	15W	360779	7222719
		WAL-152	July	7.5	15W	361739	7222782
		WAL-153	August	7.9	15W	361776	7221531
		WAL-154	August	5.7	15W	360459	7221233
		WAL-155	September	13.0	15W	361926	7222663
		WAL-156	September	6.0	15W	360395	7222416
INUG	Ref	INUG-166	March	9.8	14W	622528	7214771
		INUG-167	March	7	14W	622088	7215966
		INUG-168	May	5.8	14W	621818	7216647
		INUG-169	May	6.1	14W	622810	7216844
		INUG-170	July	9.9	14W	622886	7216833
		INUG-171	July	10.3	14W	622622	7216230
		INUG-172	August	9.3	14W	622734	7214819
		INUG-173	August	7.6	14W	622559	7216766
		INUG-174	September	>20	14W	619089	7233534
		INUG-175	September	8.8	14W	618954	7232447
PDL	Ref	PDL-131	March	8.3	14W	632212	7224444
		PDL-132	March	14.3	14W	630372	7225508
		PDL-133	May	16.9	14W	630032	7223237
		PDL-134	May	10.4	14W	629860	7223886
		PDL-135	July	>20	14W	631261	7225119
		PDL-136	July	10.7	14W	629786	7225081

Notes:

1. Area IDs are as follows: TPE, TPN =Third Portage Lake - East, North basins; SP=Second Portage Lake; INUG=Inuggugayualik Lake; WAL=Wally Lake; PDL=Pipedream Lake

2. Area types: NF=near-field; MF=mid-field; FF=far-field; Ref=reference.

FIGURES

Figure C1-1. Laboratory-measured conductivity (µS/cm).

Note: Conductivity data from 2014 should be interpreted with caution. See Azimuth (2015) for more details.

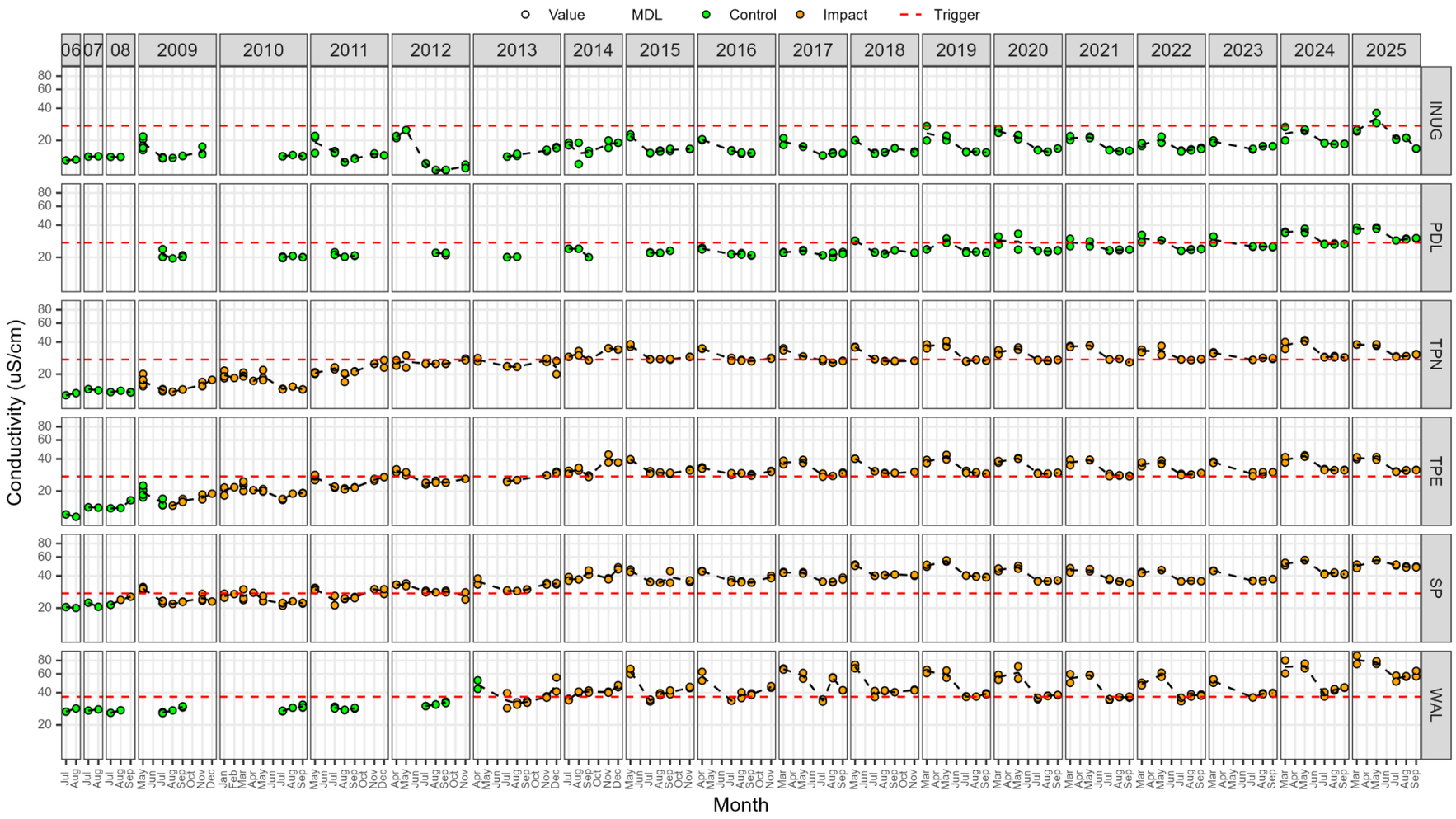


Figure C1-2. Laboratory-measured hardness (mg/L).

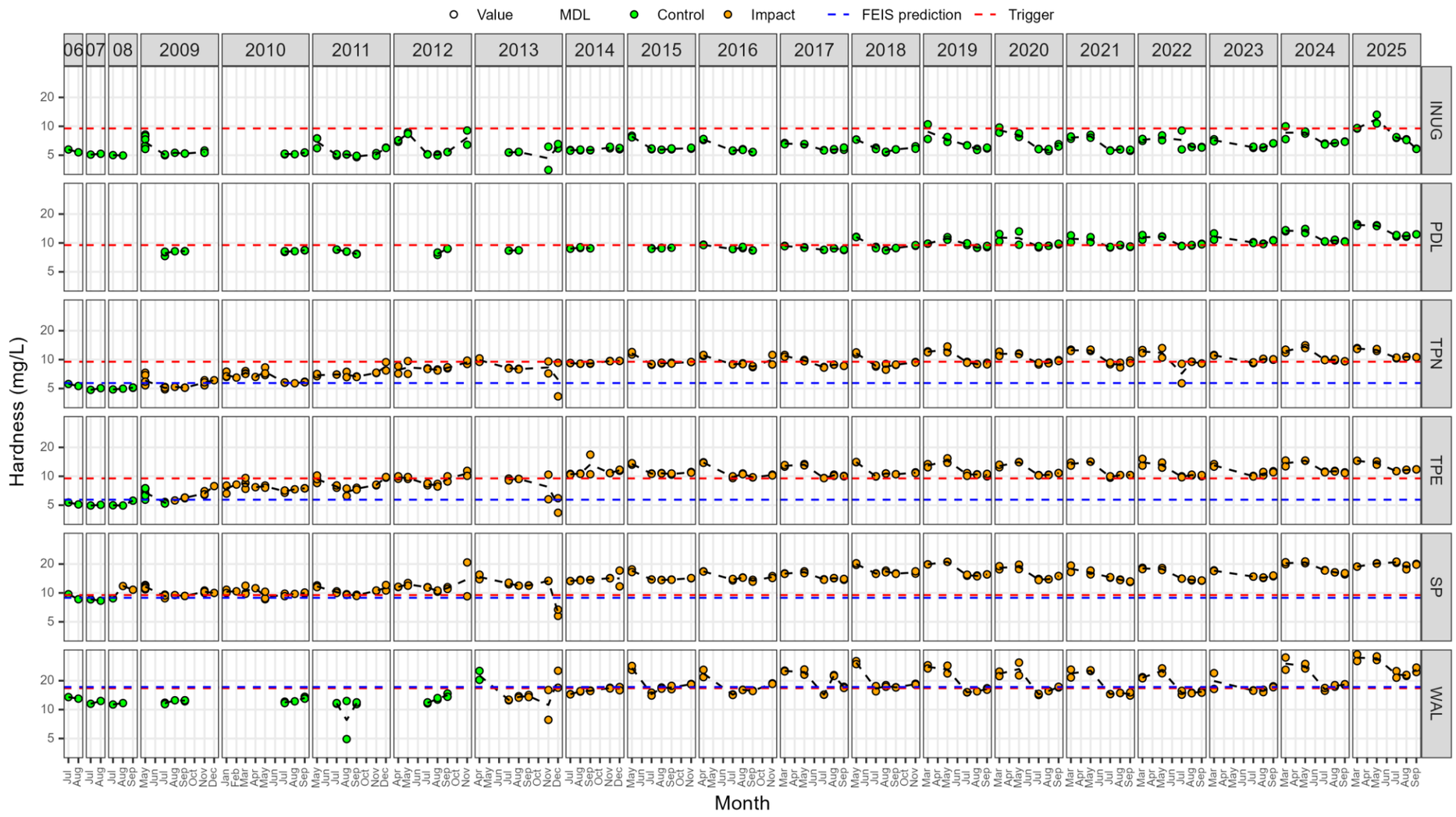


Figure C1-3. Field-measured pH.

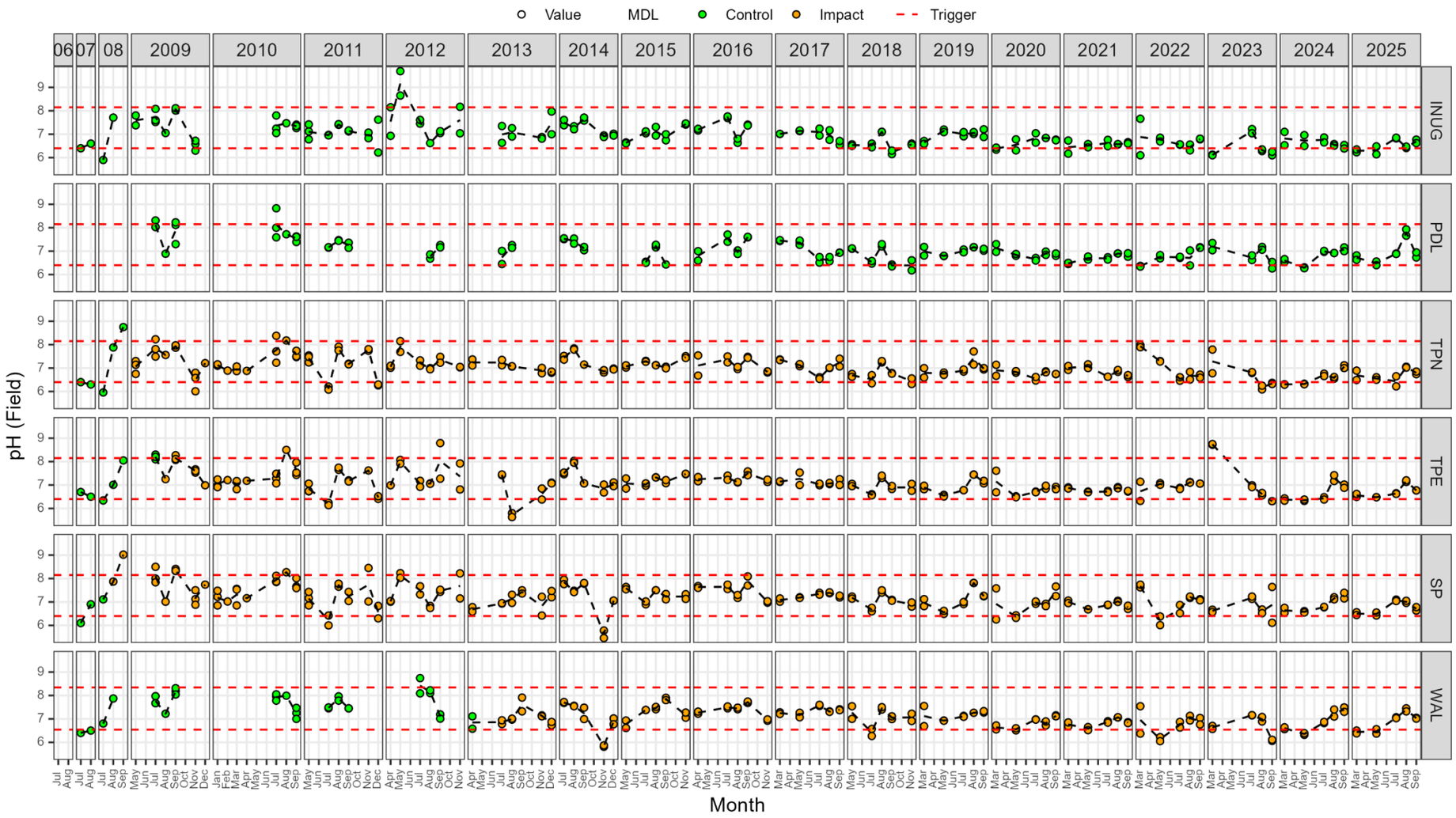


Figure C1-4. Laboratory-measured pH.

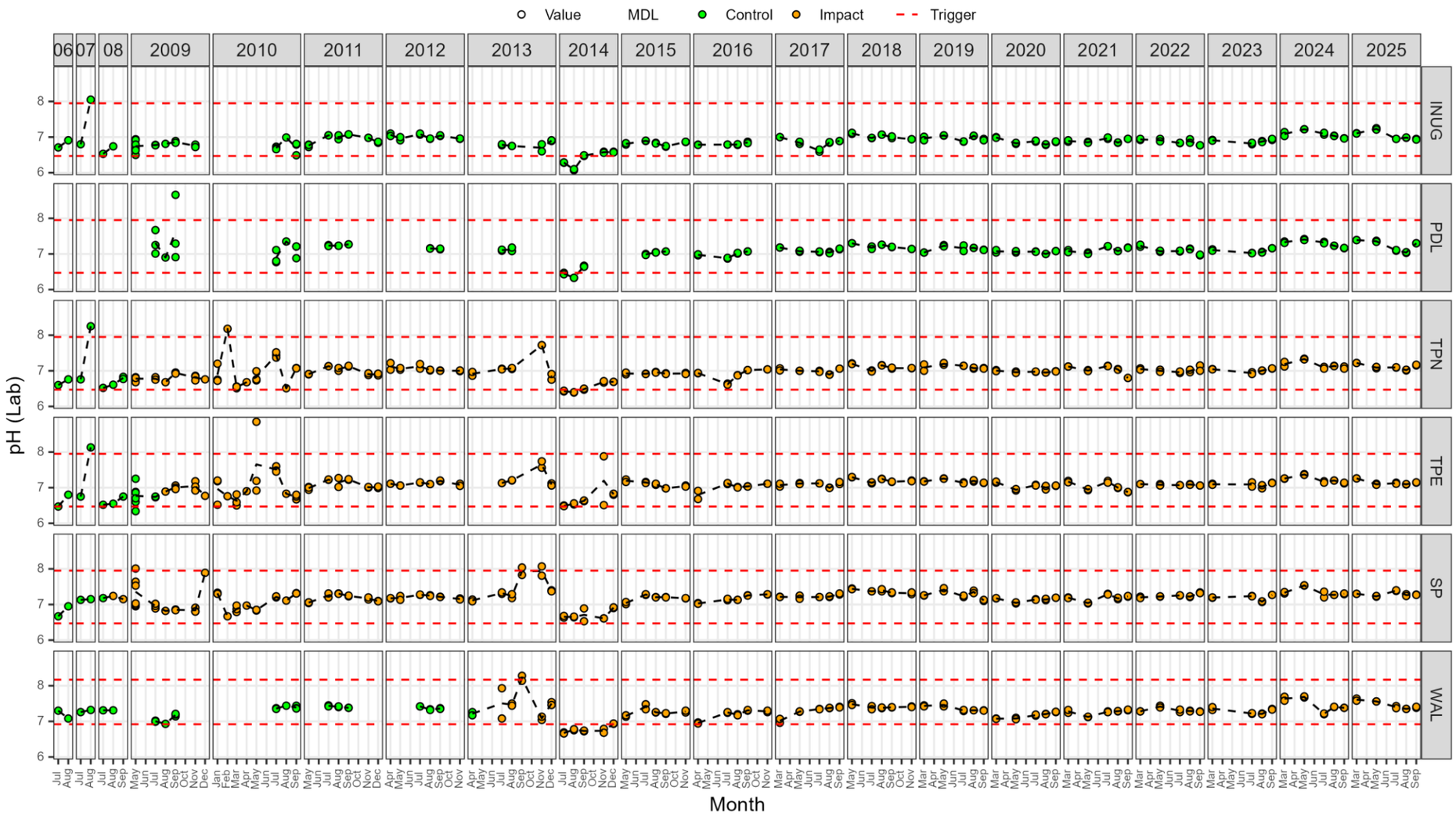


Figure C1-5. Total dissolved solids (TDS; mg/L).

Note: TDS data from 2014 were removed due to data quality concerns. See Azimuth (2015) for more details.

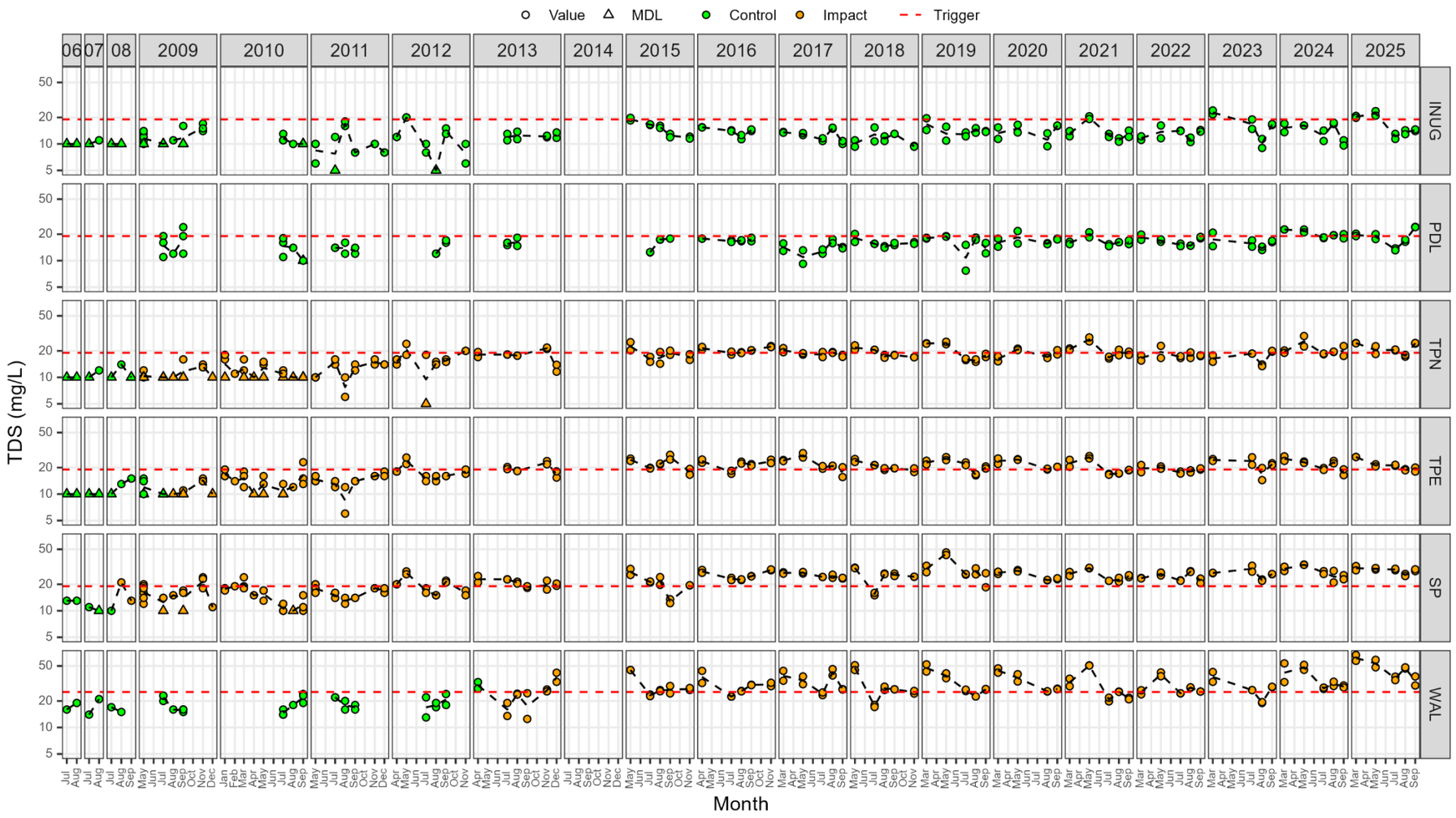


Figure C1-6. Total suspended solids (TSS; mg/L).

Note: TDS data from 2014 were removed due to data quality concerns. See Azimuth (2015) for more details.

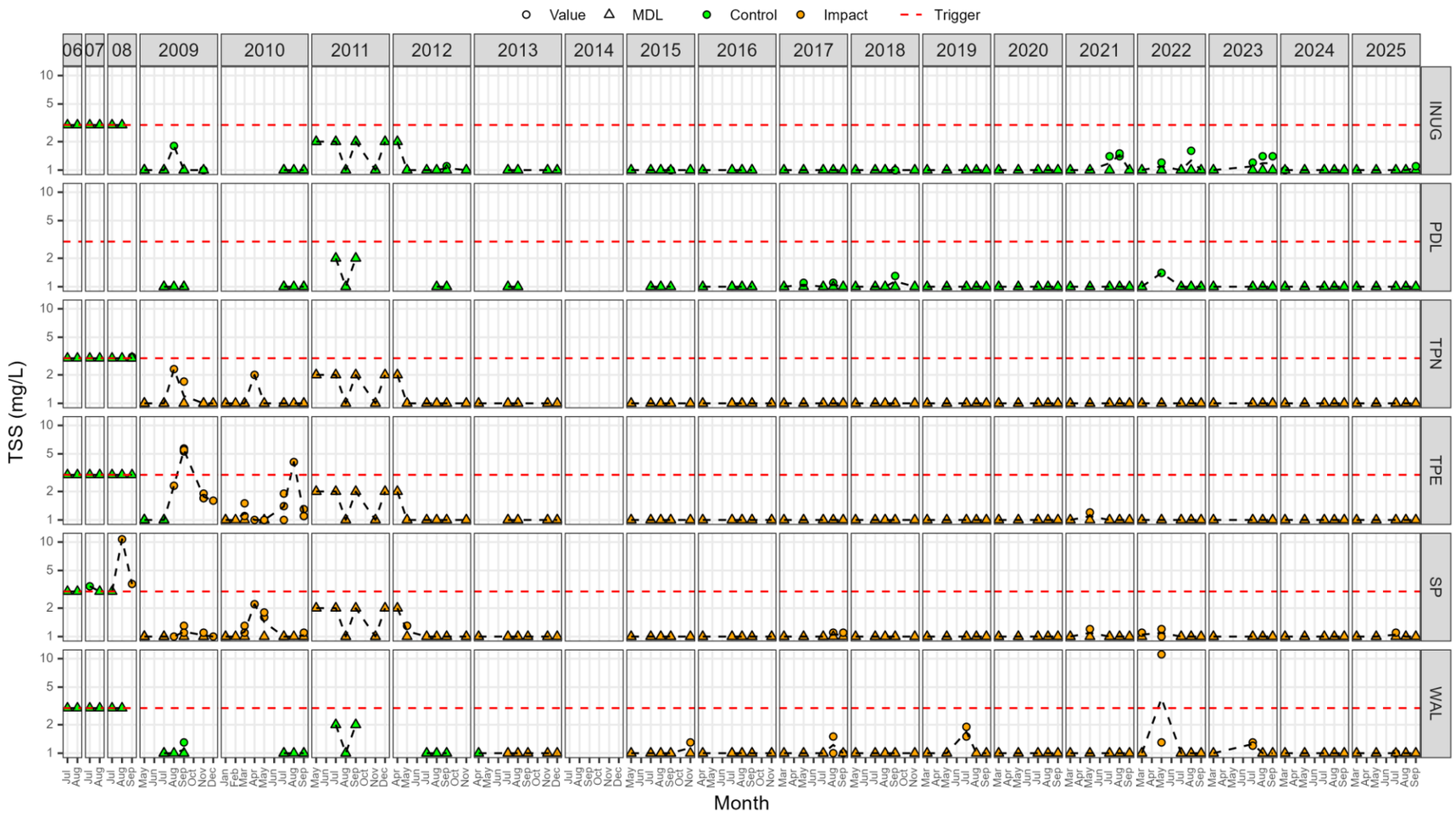


Figure C1-7. Carbonate alkalinity (mg/L).

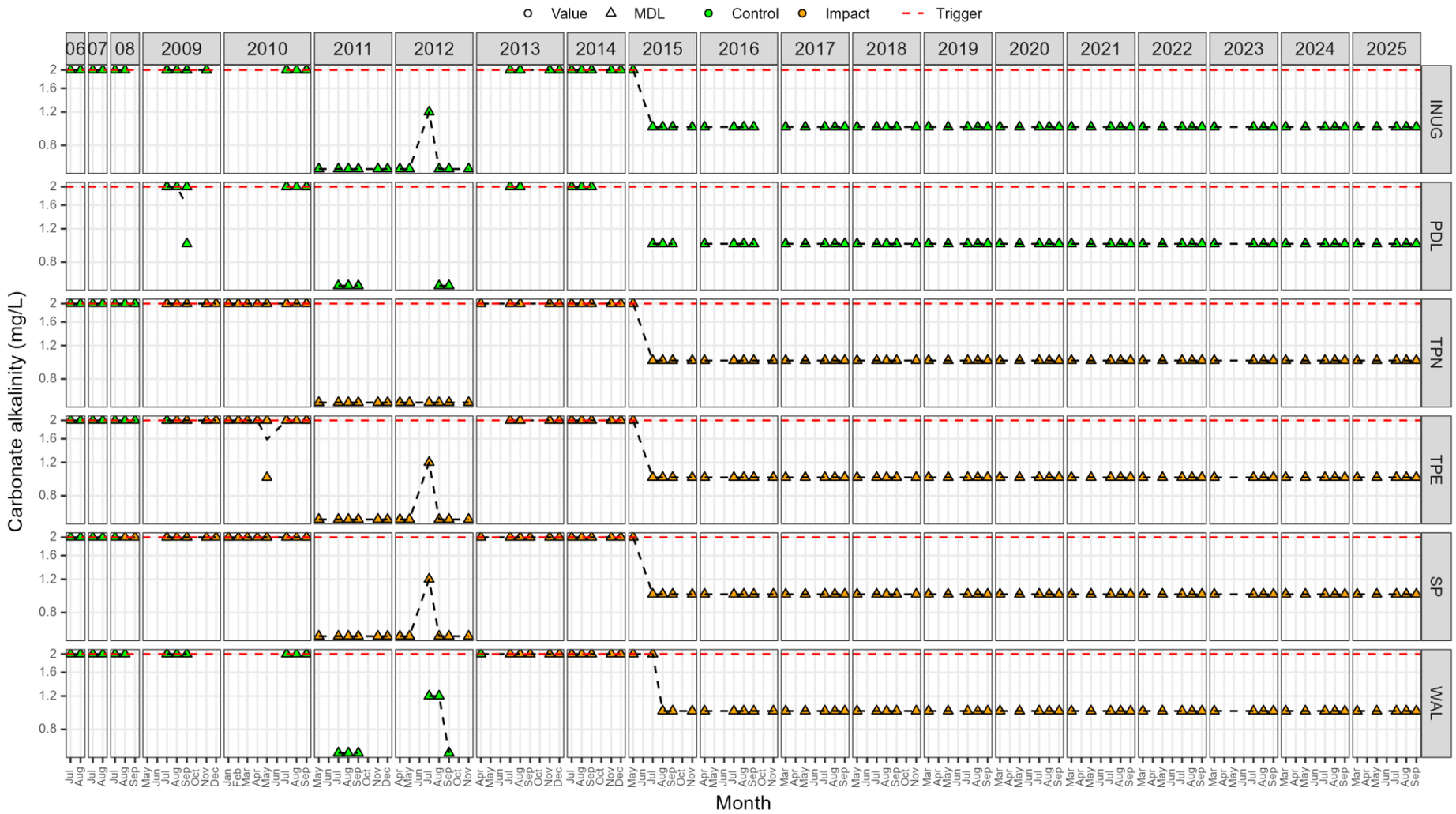


Figure C1-8. Bicarbonate alkalinity (mg/L).

Note: Bicarbonate alkalinity data from 2014 were removed due to data quality concerns. See Azimuth (2015) for more details.

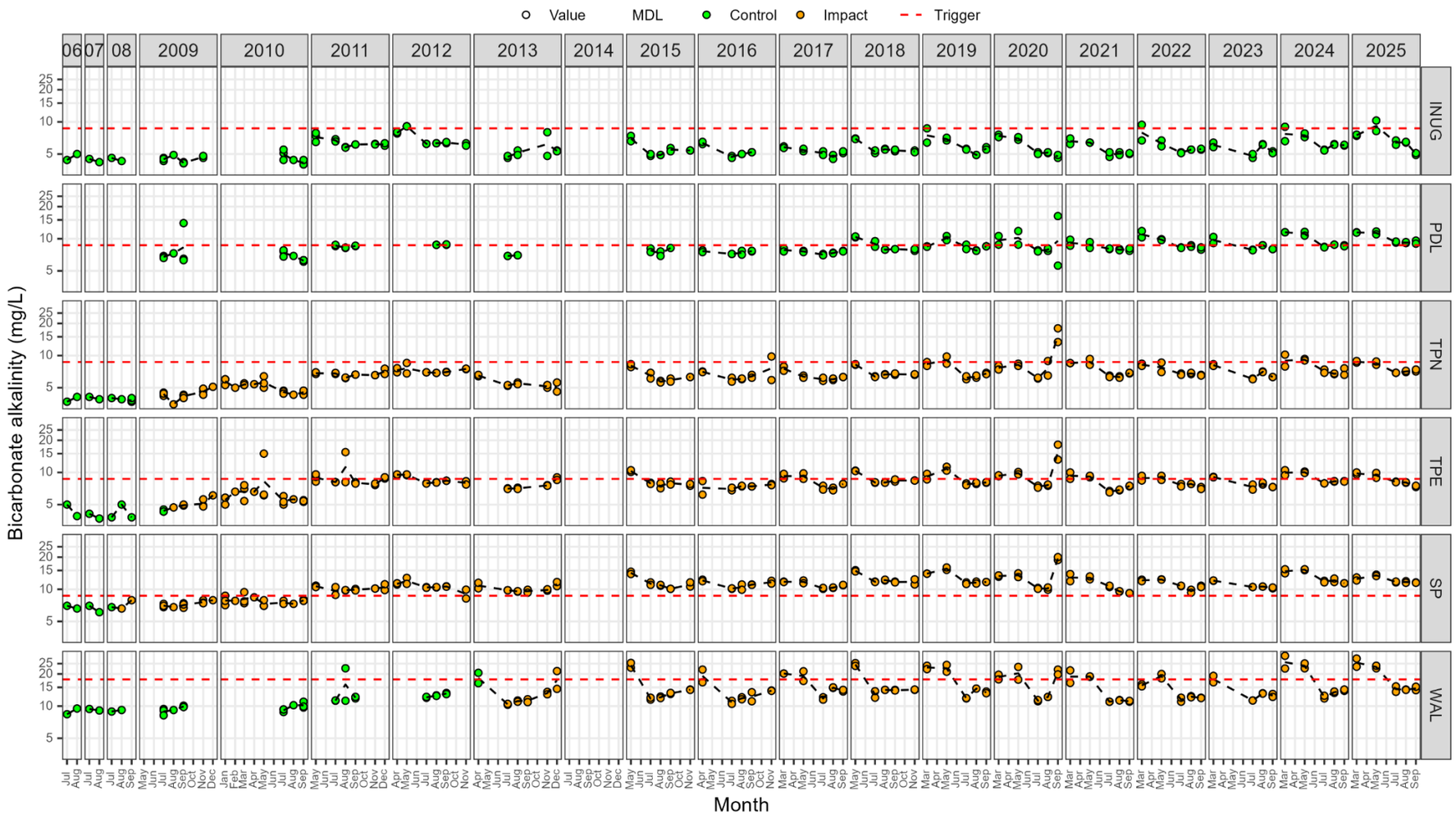


Figure C1-9. Total alkalinity (mg/L).

Note: Total alkalinity data from 2014 were removed due to data quality concerns. See Azimuth (2015) for more details.

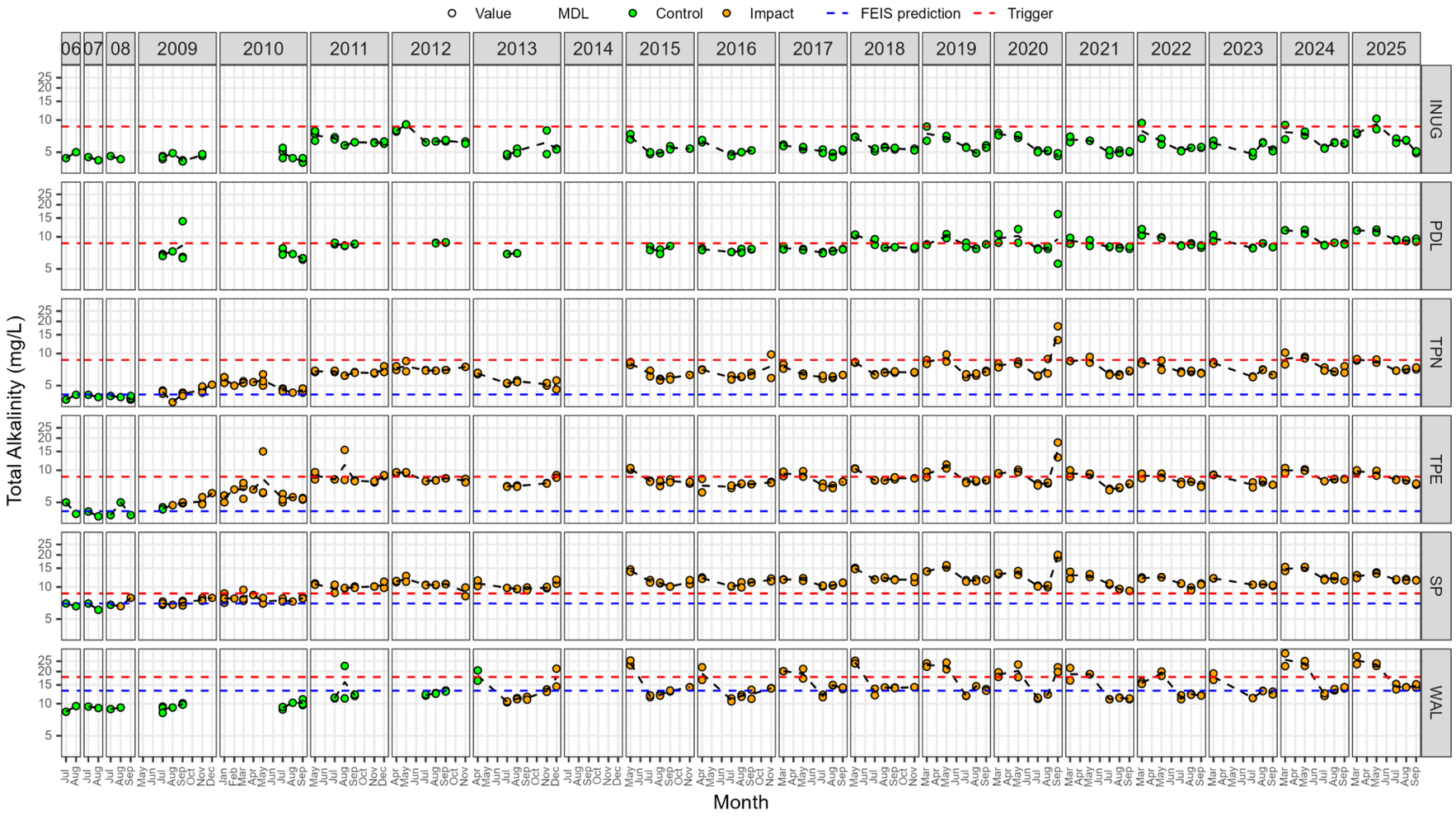


Figure C1-10. Ammonia-N (mg/L).

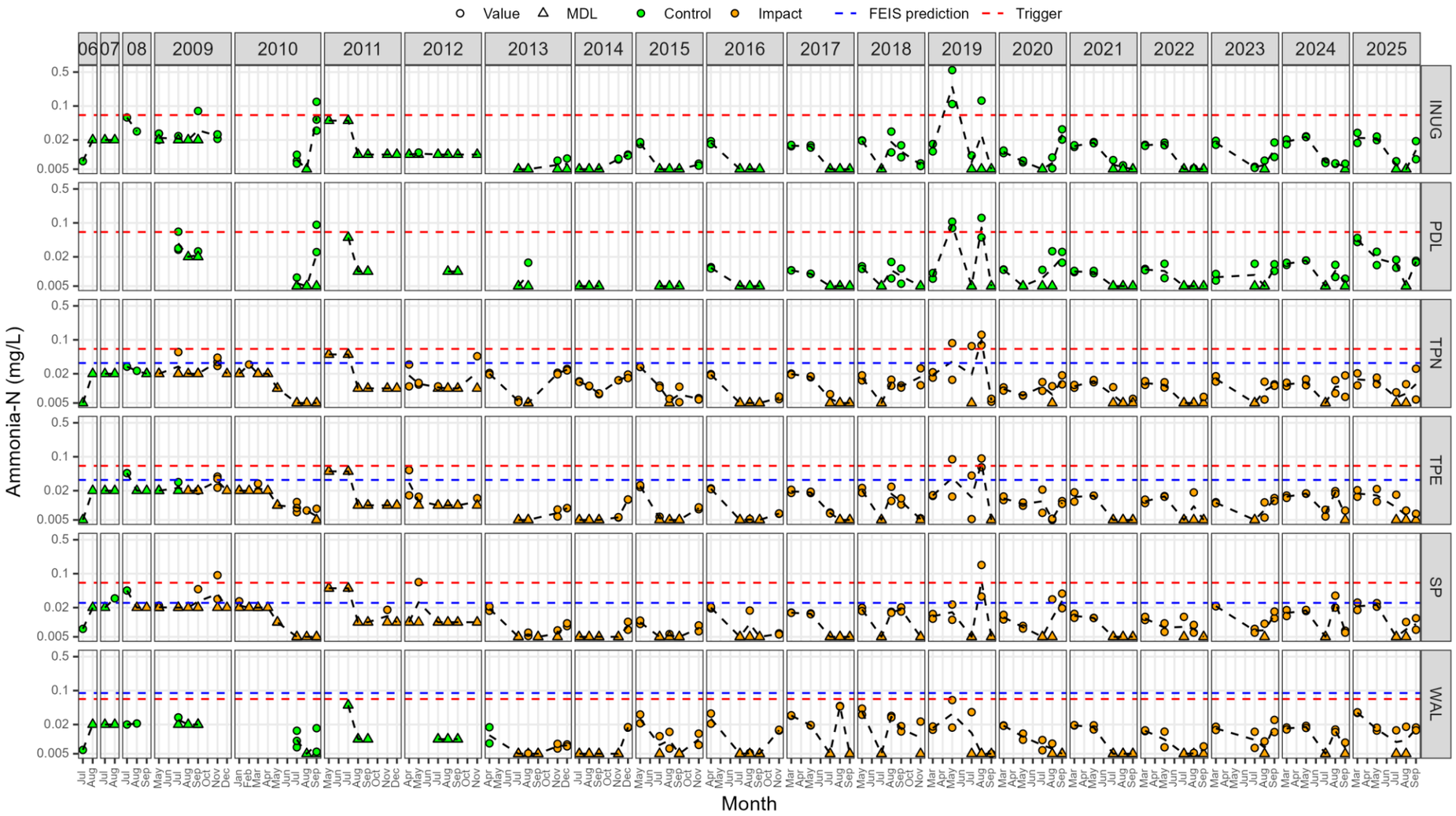


Figure C1-11. Chloride (mg/L).

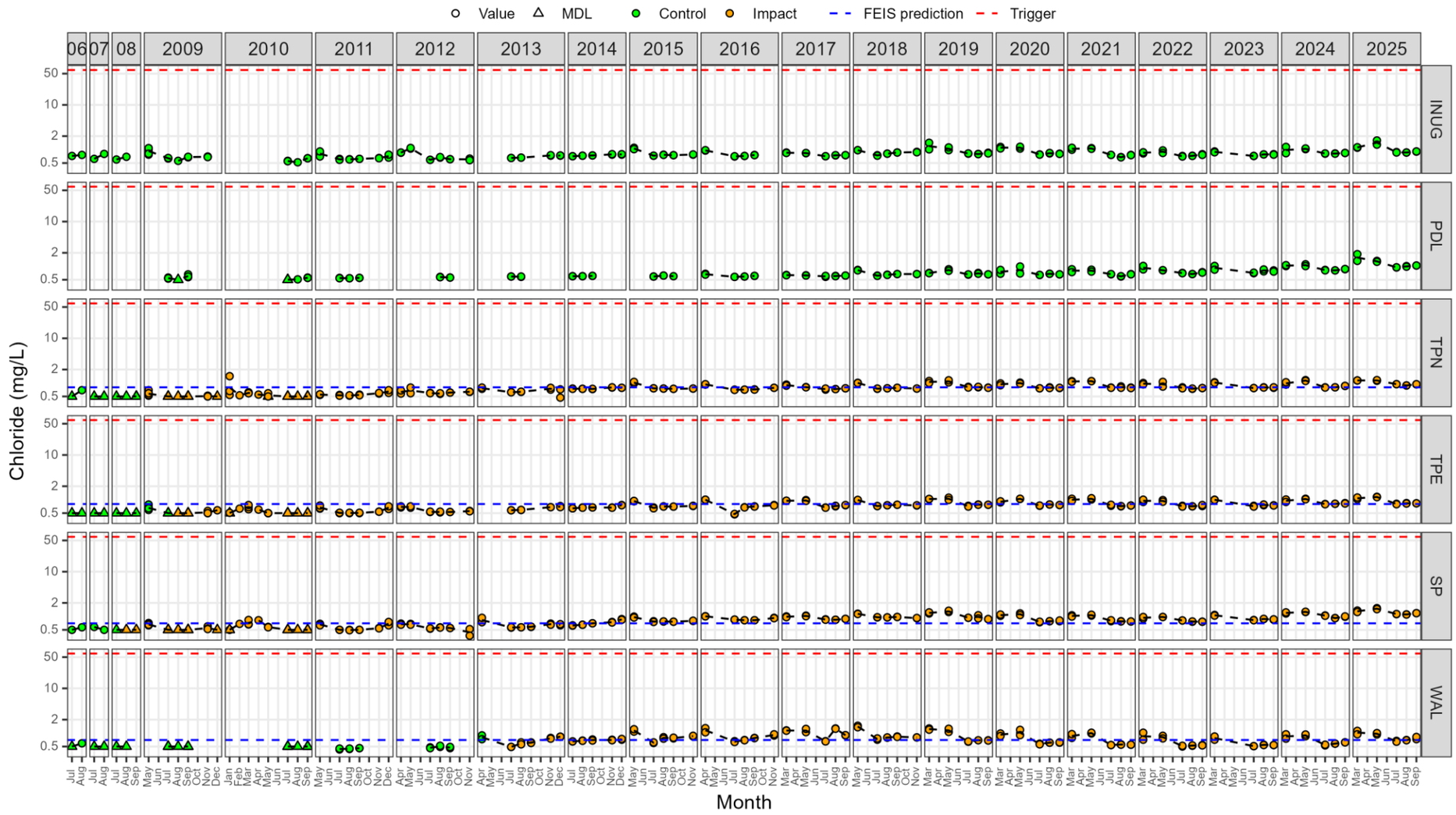


Figure C1-12. Fluoride (mg/L).

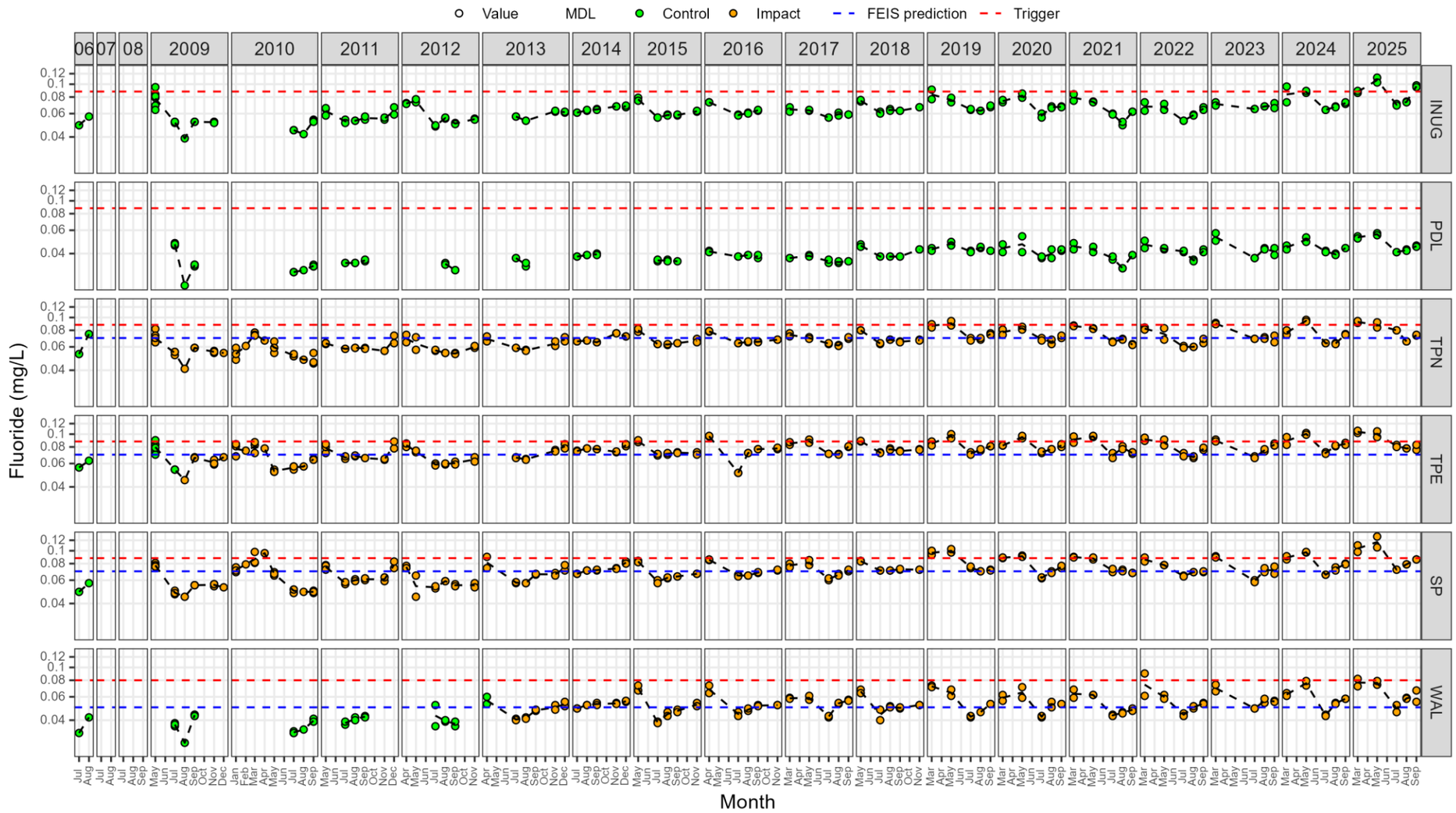


Figure C1-13. Nitrate-N (mg/L).

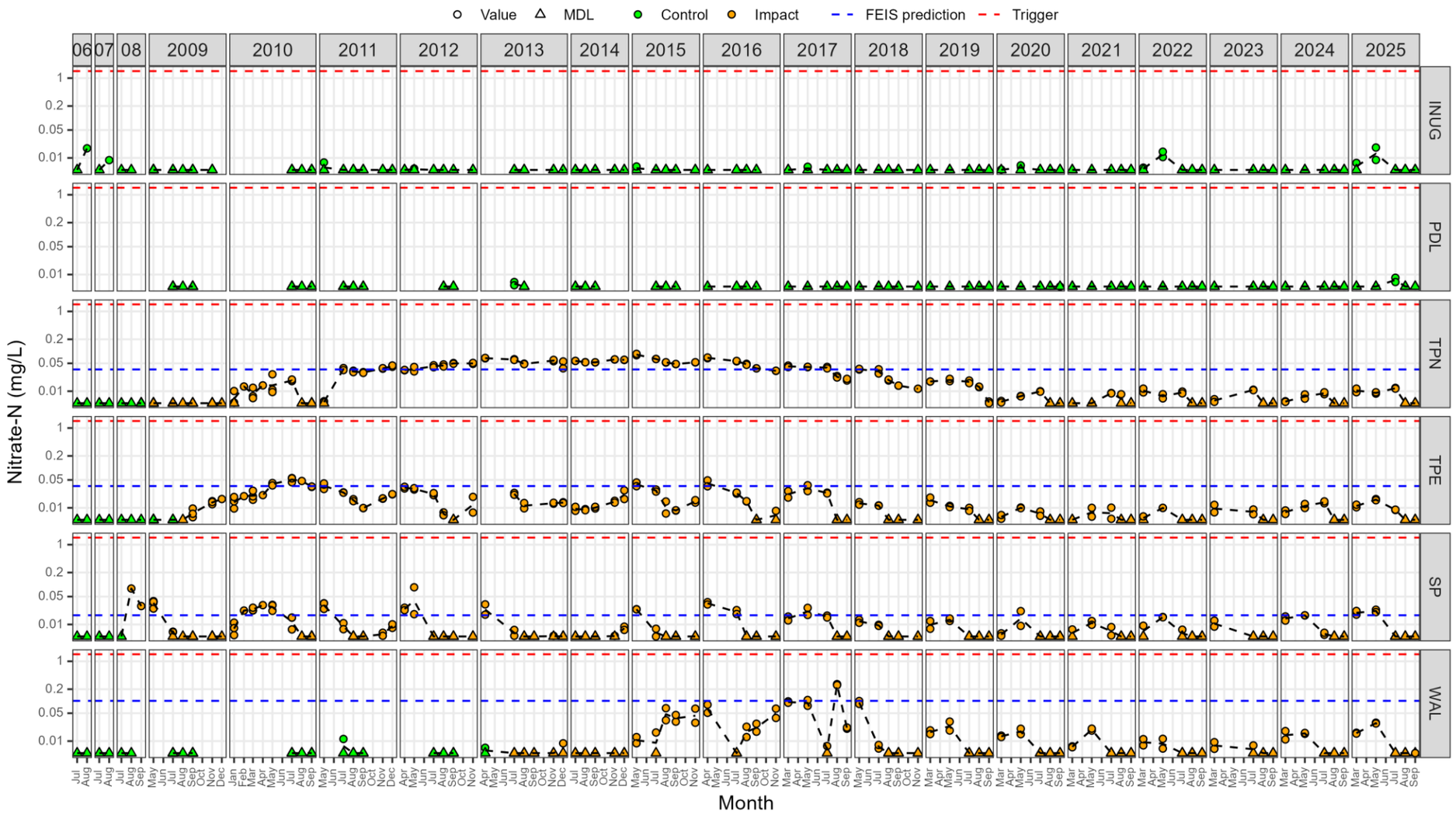


Figure C1-14. Nitrite-N (mg/L).

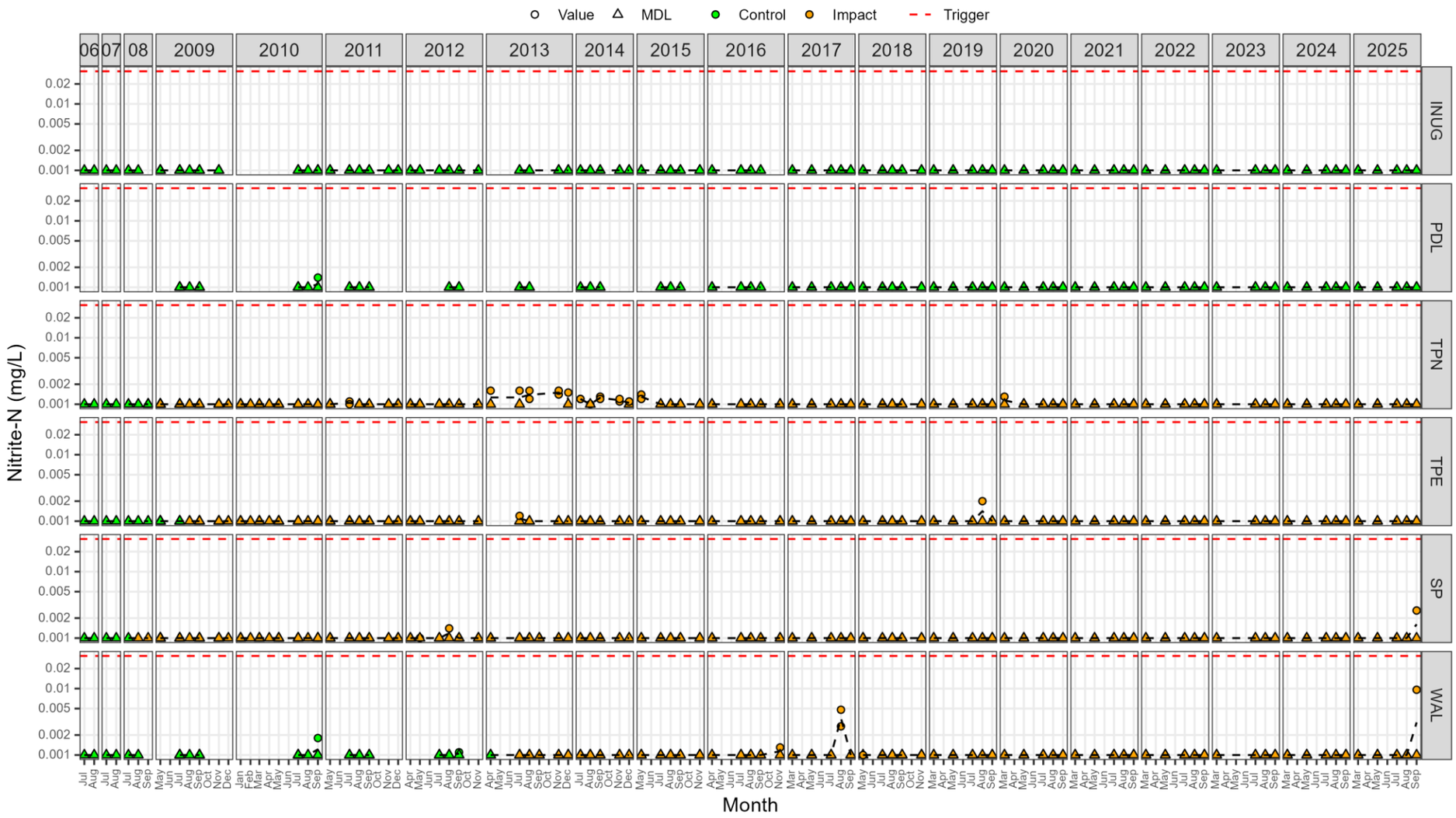


Figure C1-15. Total Kjeldahl Nitrogen (TKN; mg/L).

Note: TKN data from 2014 were removed due to data quality concerns. See Azimuth (2015) for more details.

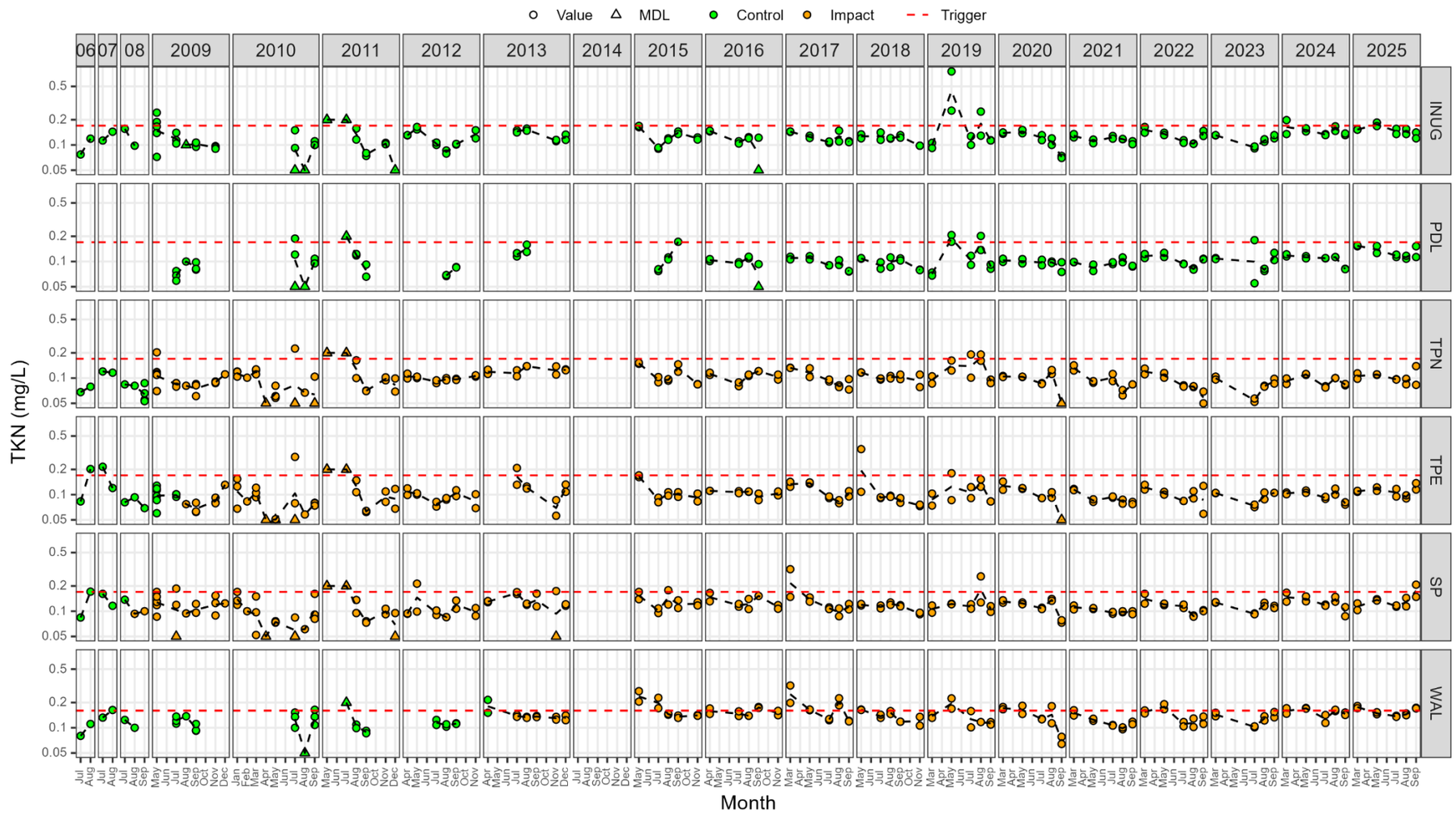


Figure C1-16. Total phosphorus (mg/L).

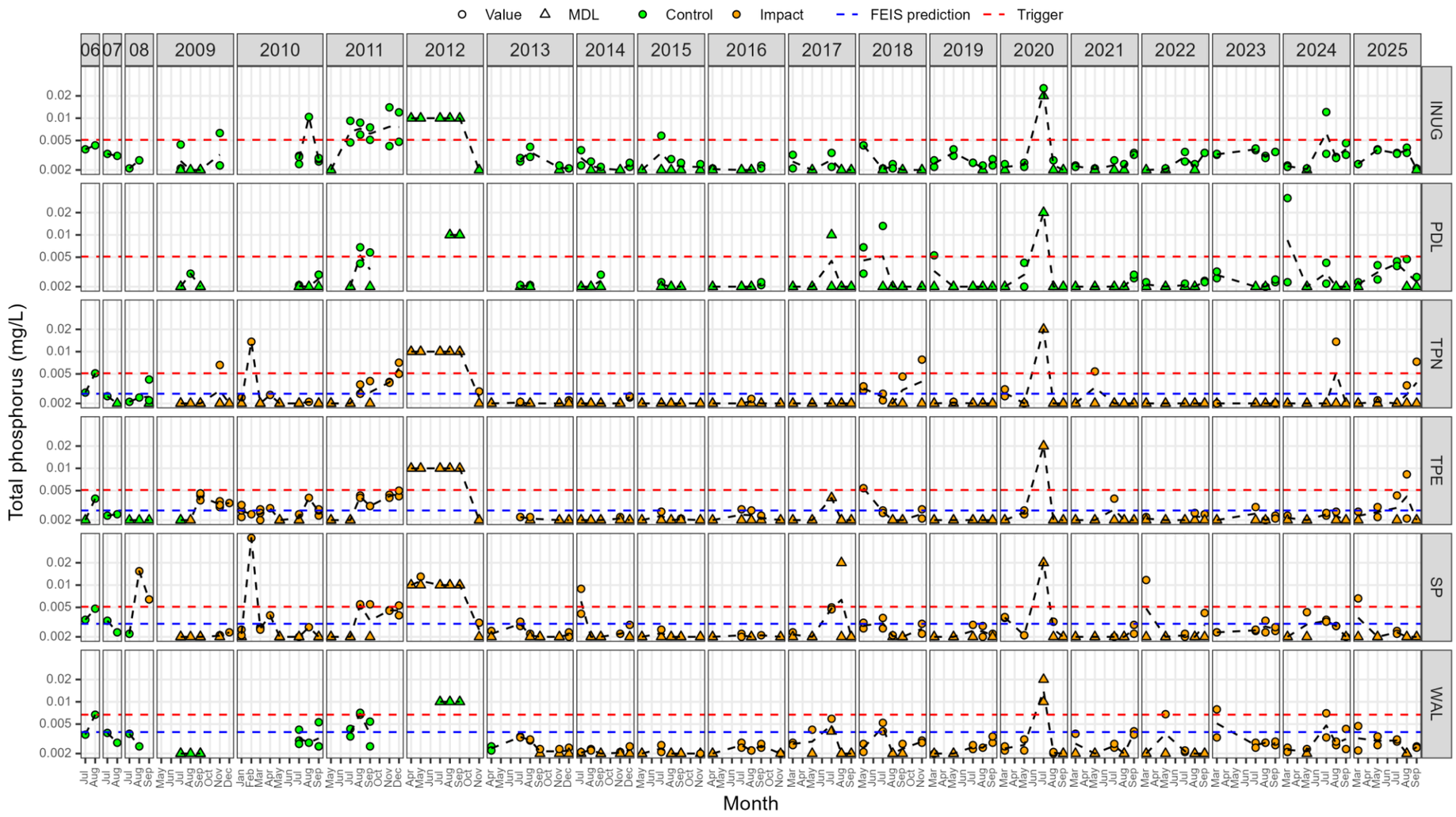


Figure C1-17. Ortho-phosphate (mg/L).

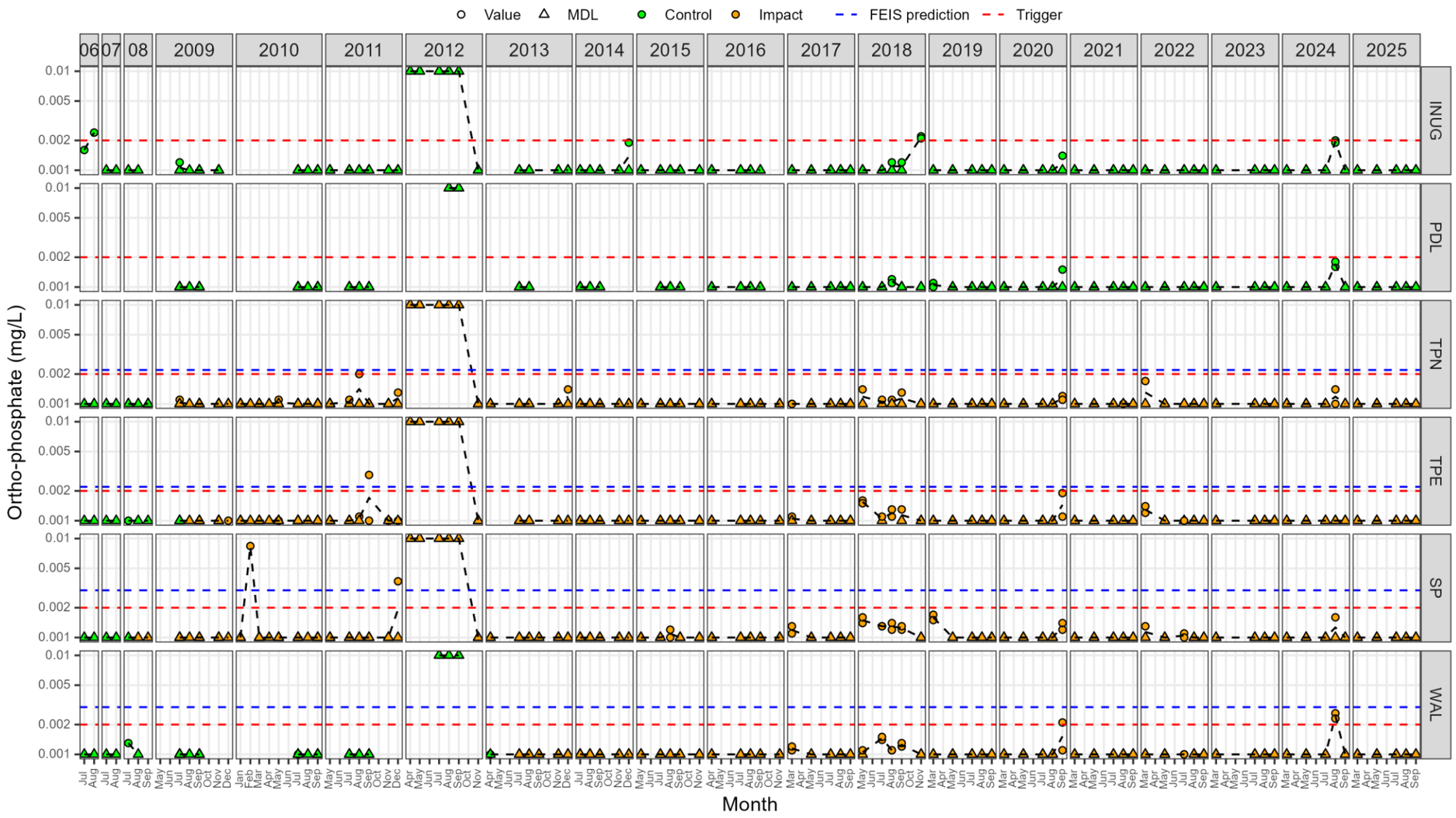


Figure C1-18. Reactive silica (mg/L).

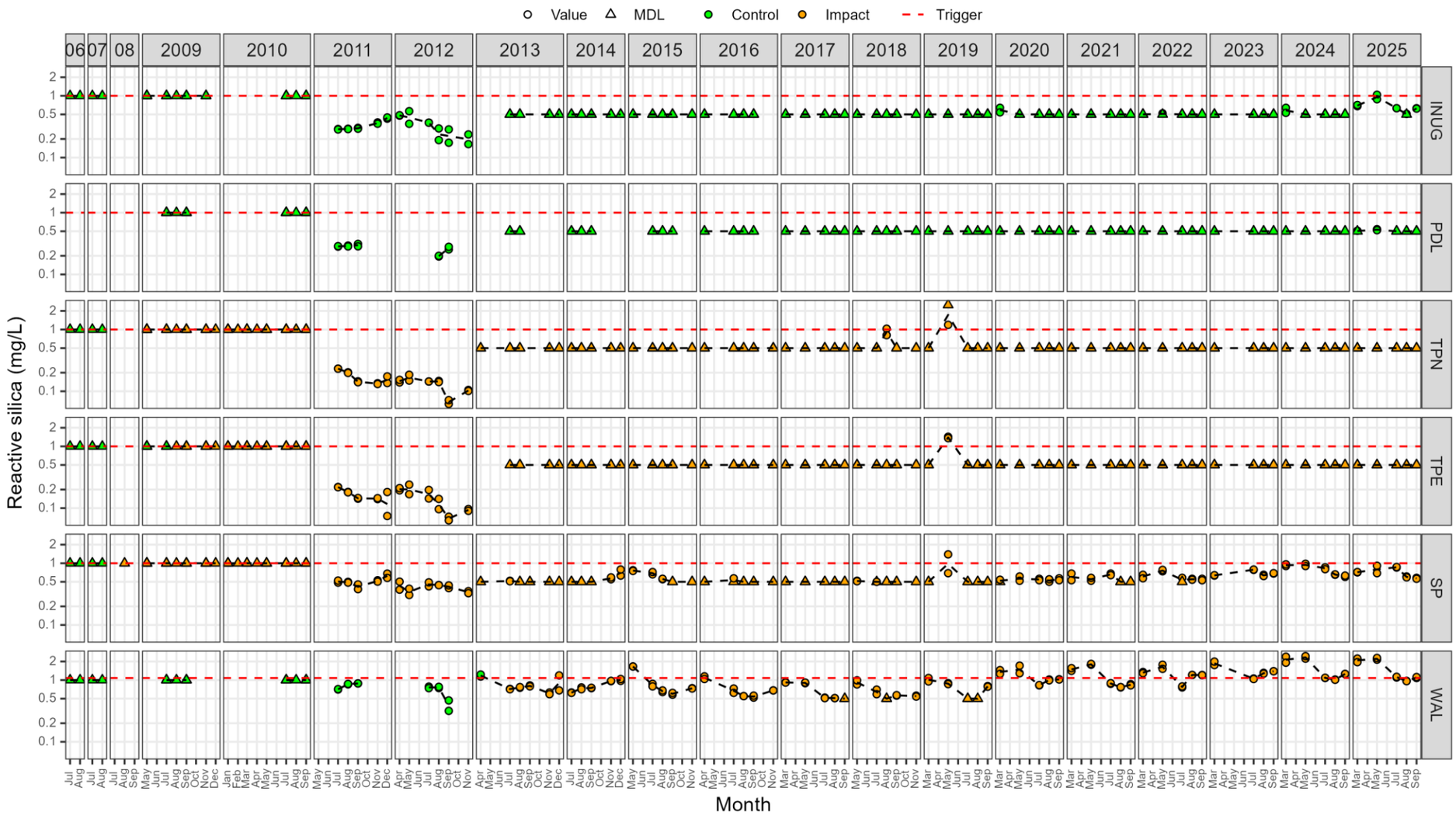


Figure C1-19. Sulphate (mg/L).

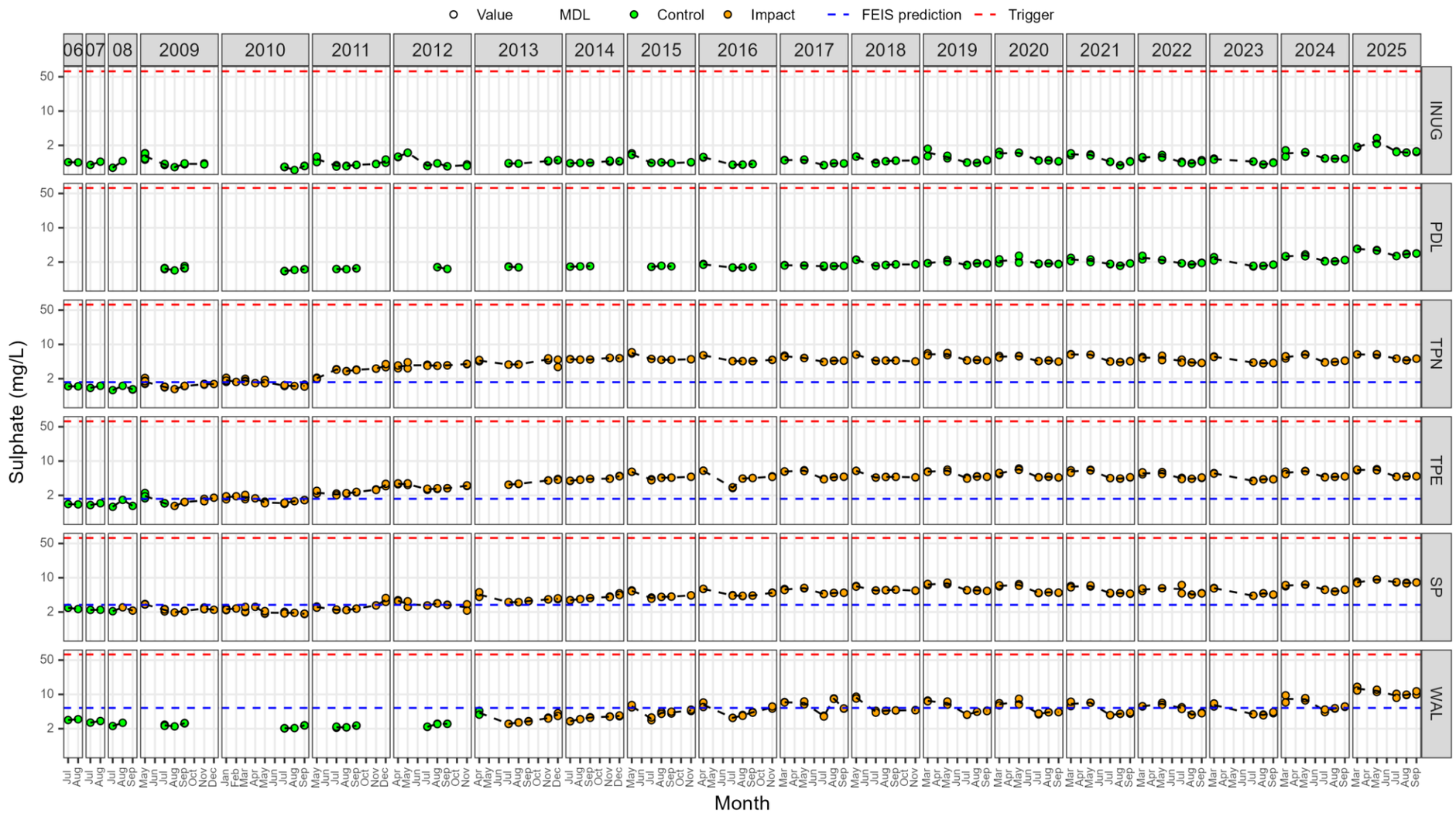


Figure C1-20. Dissolved Organic Carbon (DOC; mg/L).

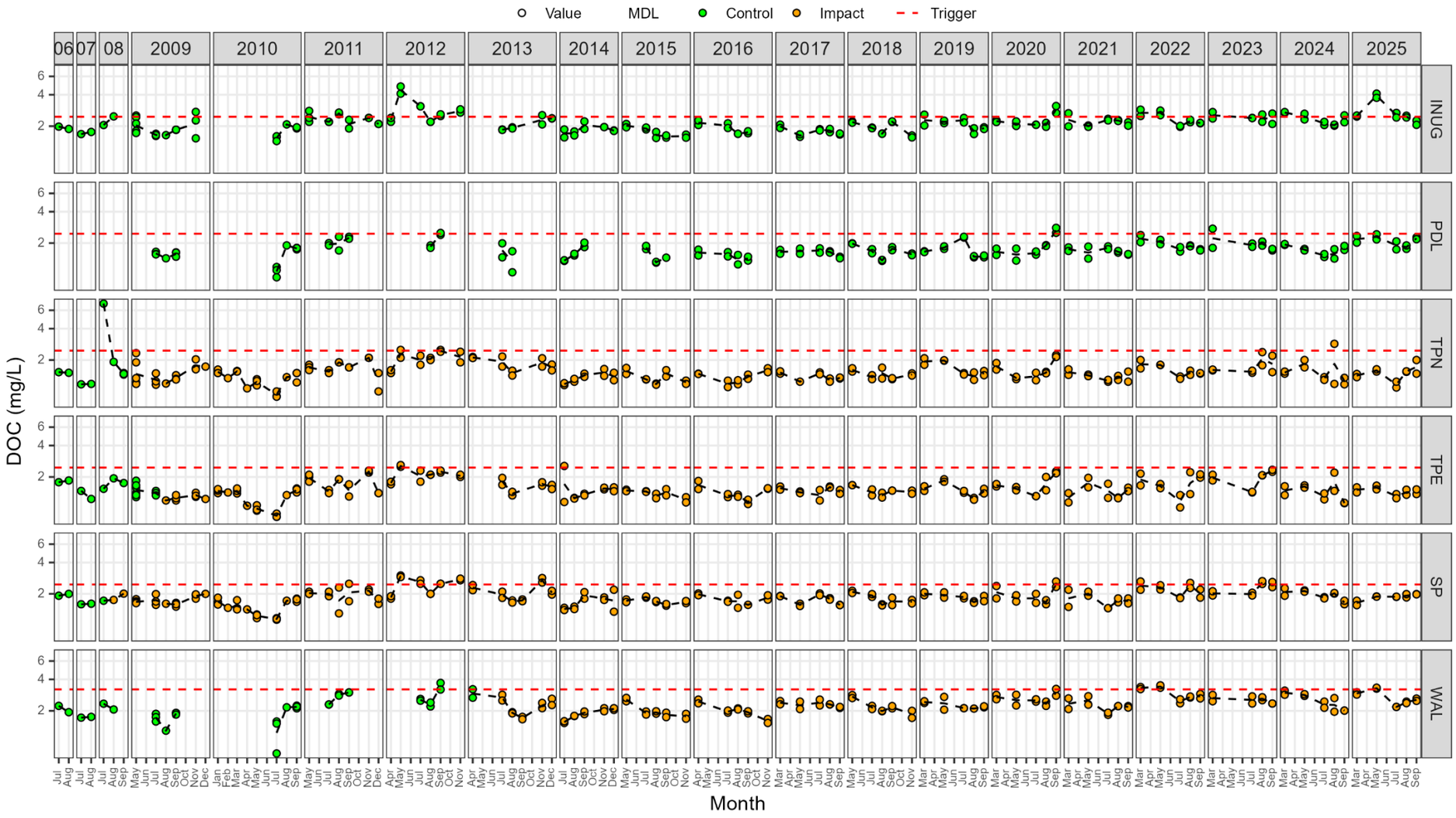


Figure C1-21. Total Organic Carbon (TOC; mg/L).

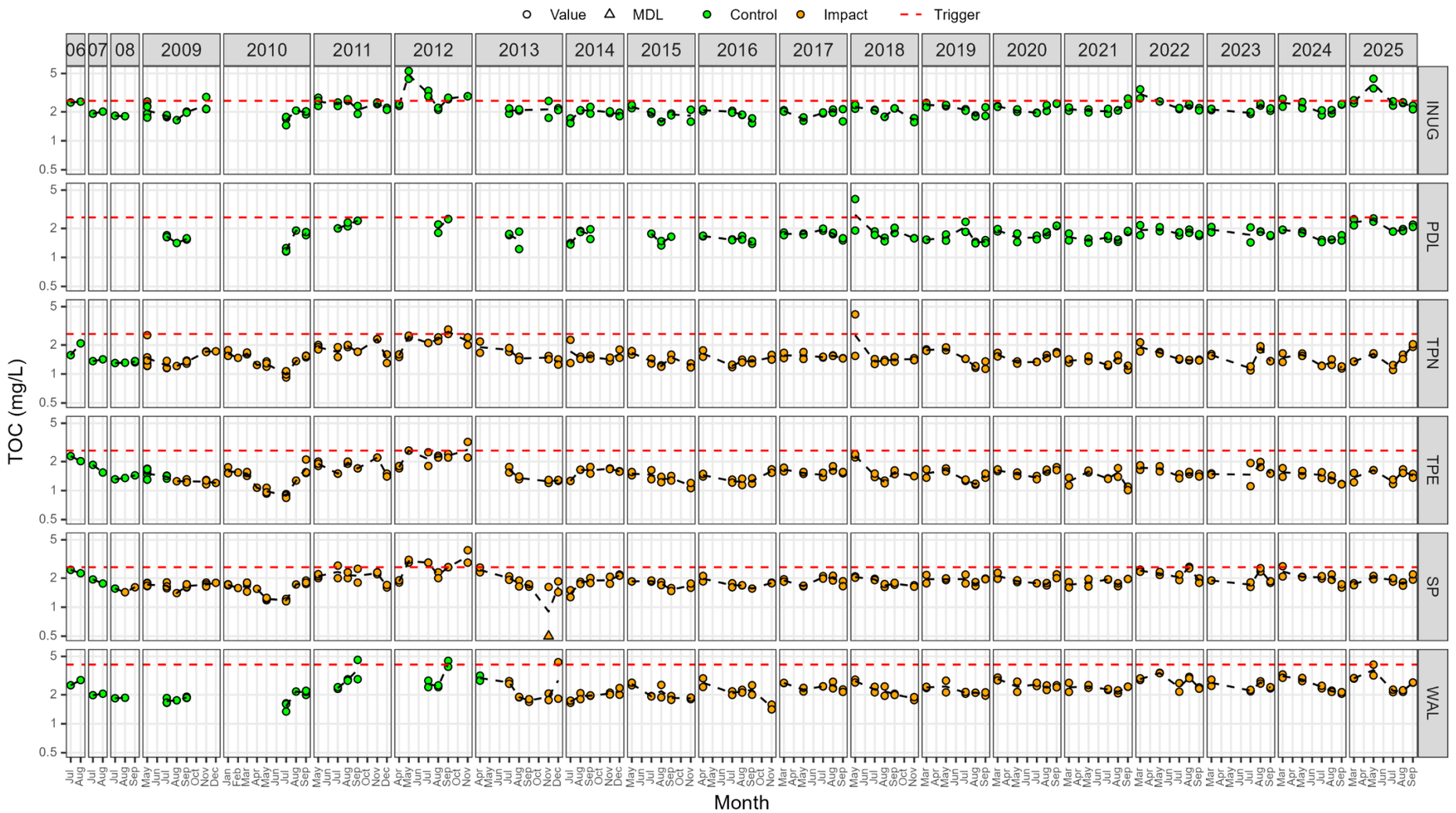


Figure C1-22. Total aluminum (mg/L).

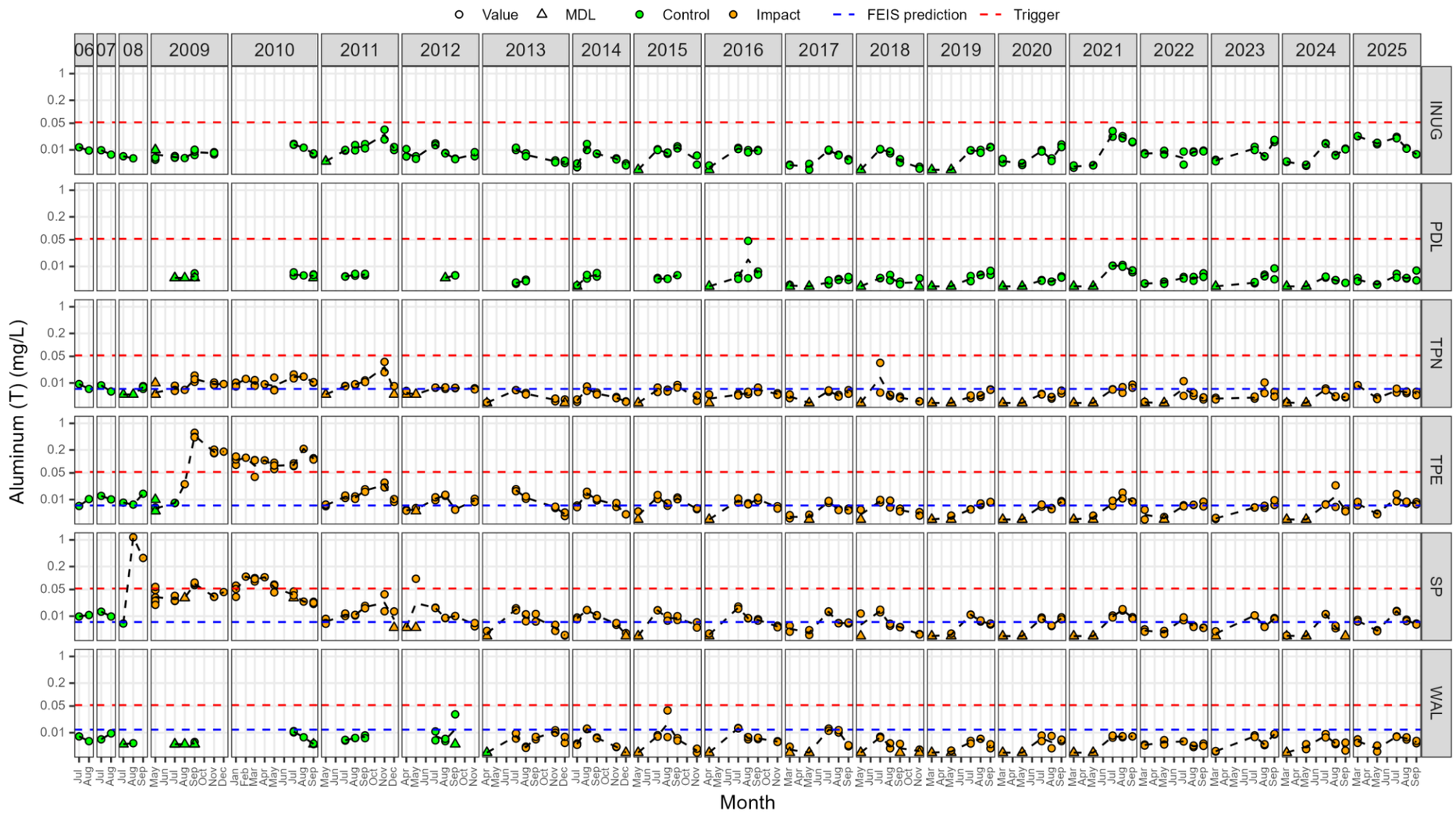


Figure C1-23. Total antimony (mg/L).

Figure C1-24. Total arsenic (mg/L).

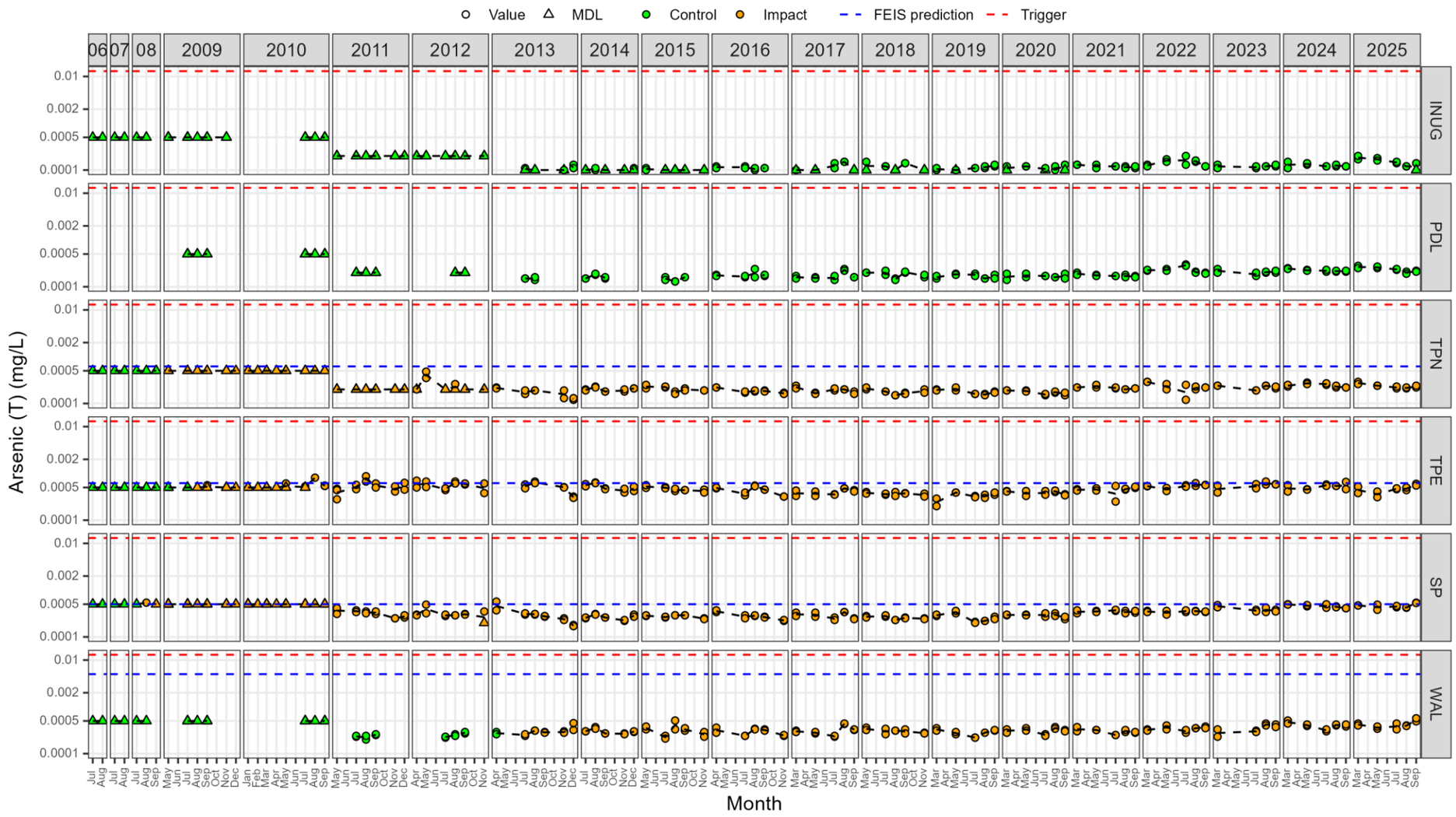


Figure C1-25. Total barium (mg/L).

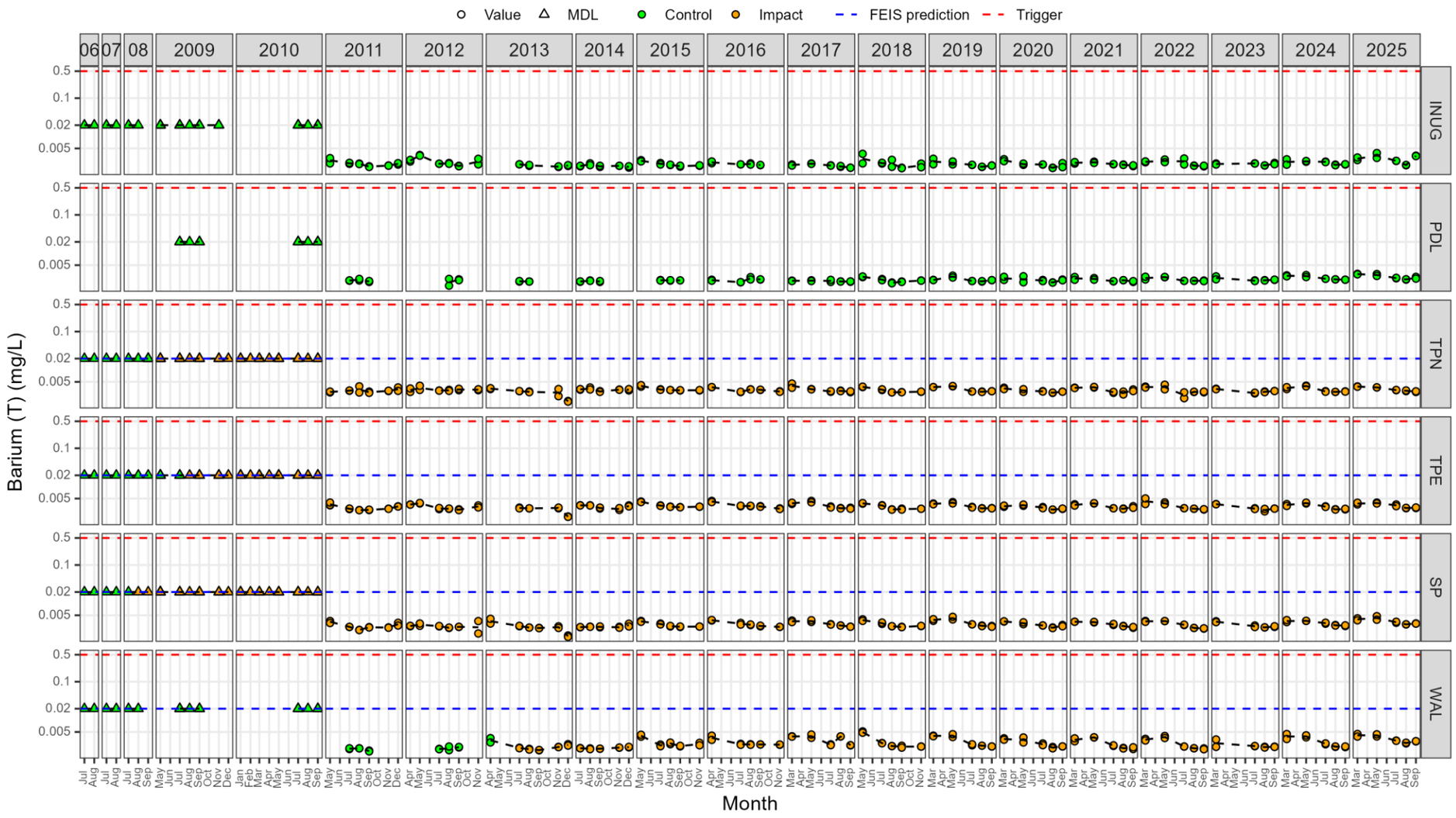


Figure C1-26. Total beryllium (mg/L).

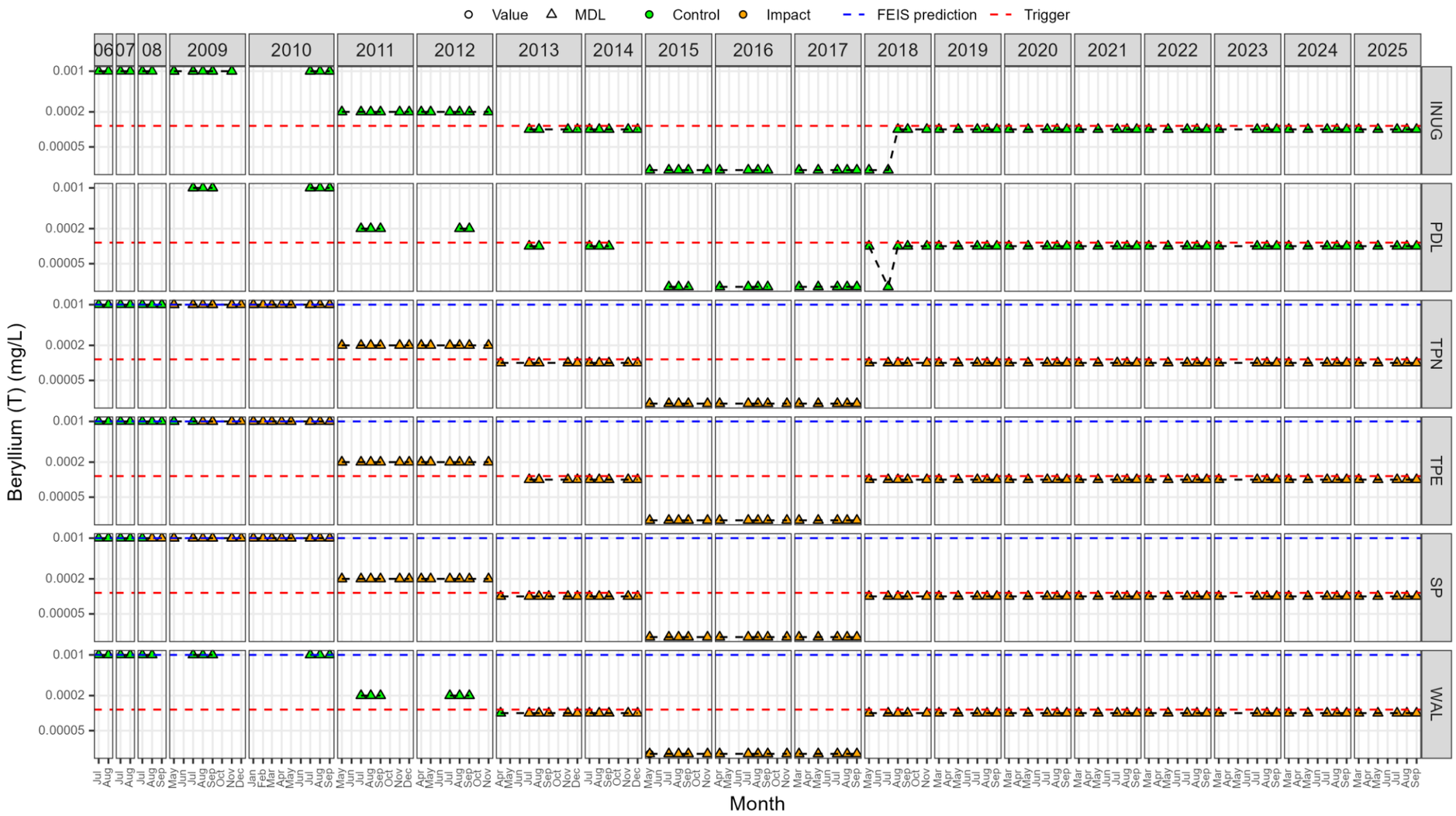


Figure C1-27. Total boron (mg/L).

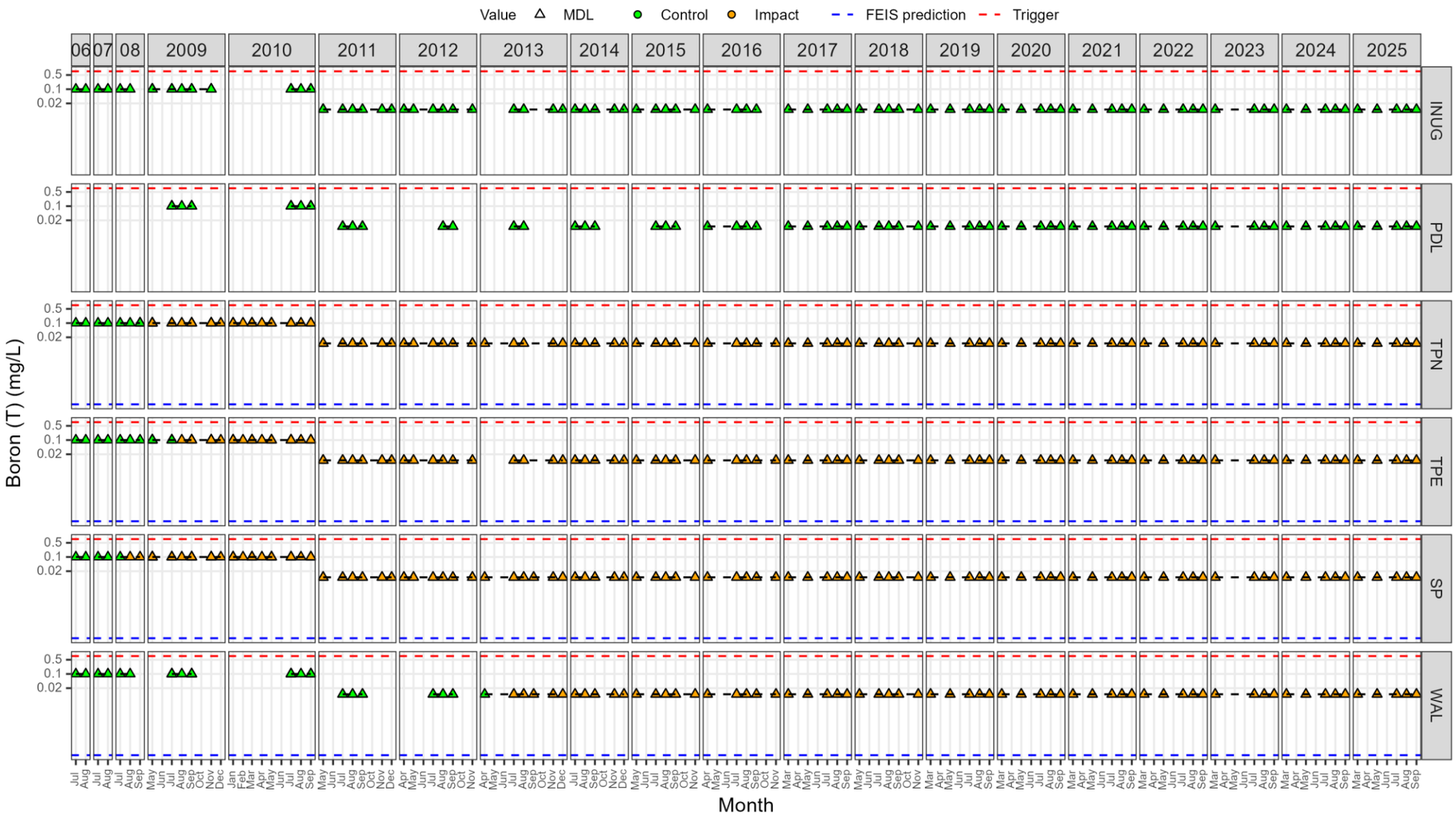


Figure C1-28. Total cadmium (mg/L).

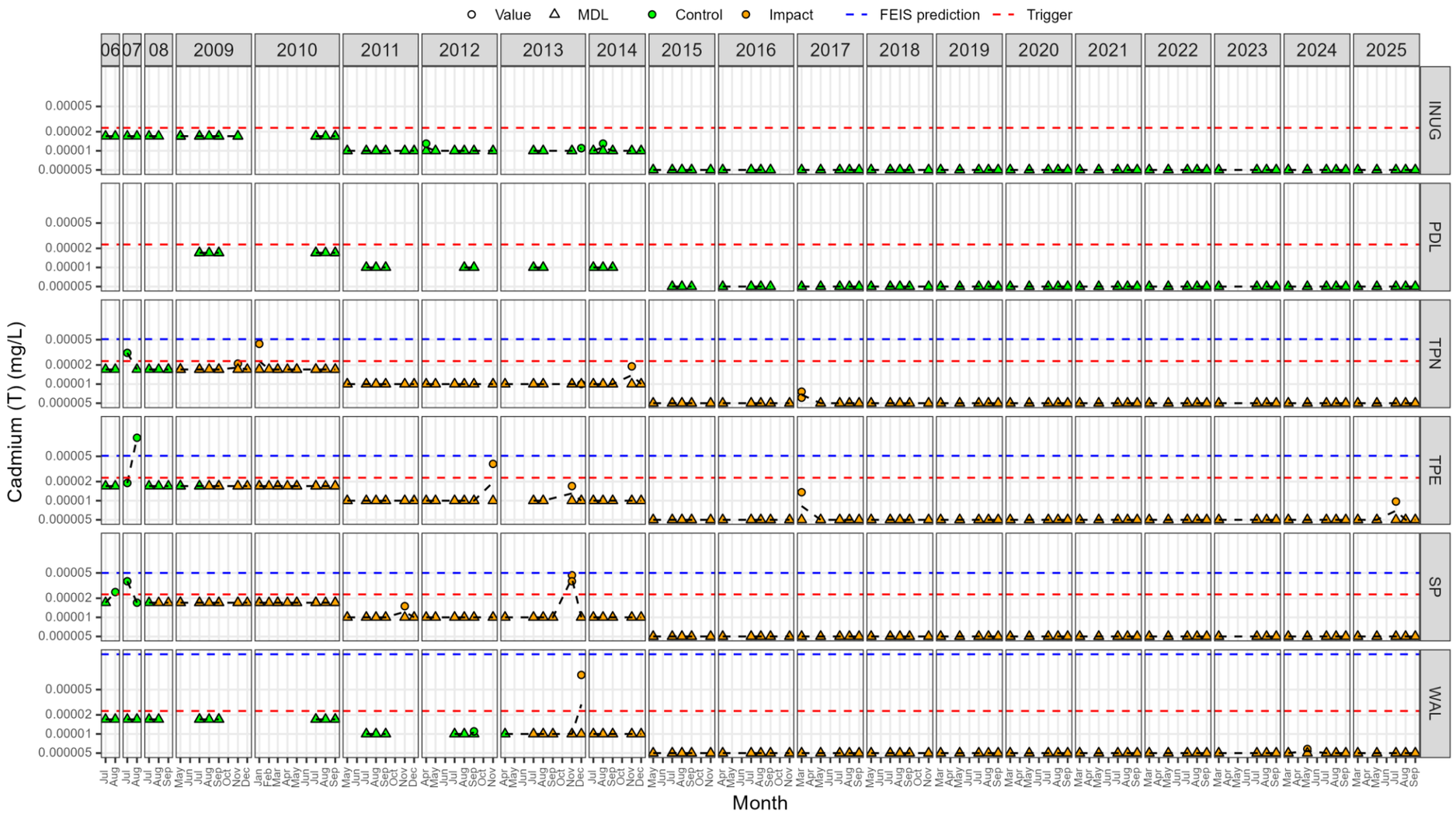


Figure C1-29. Total calcium (mg/L).

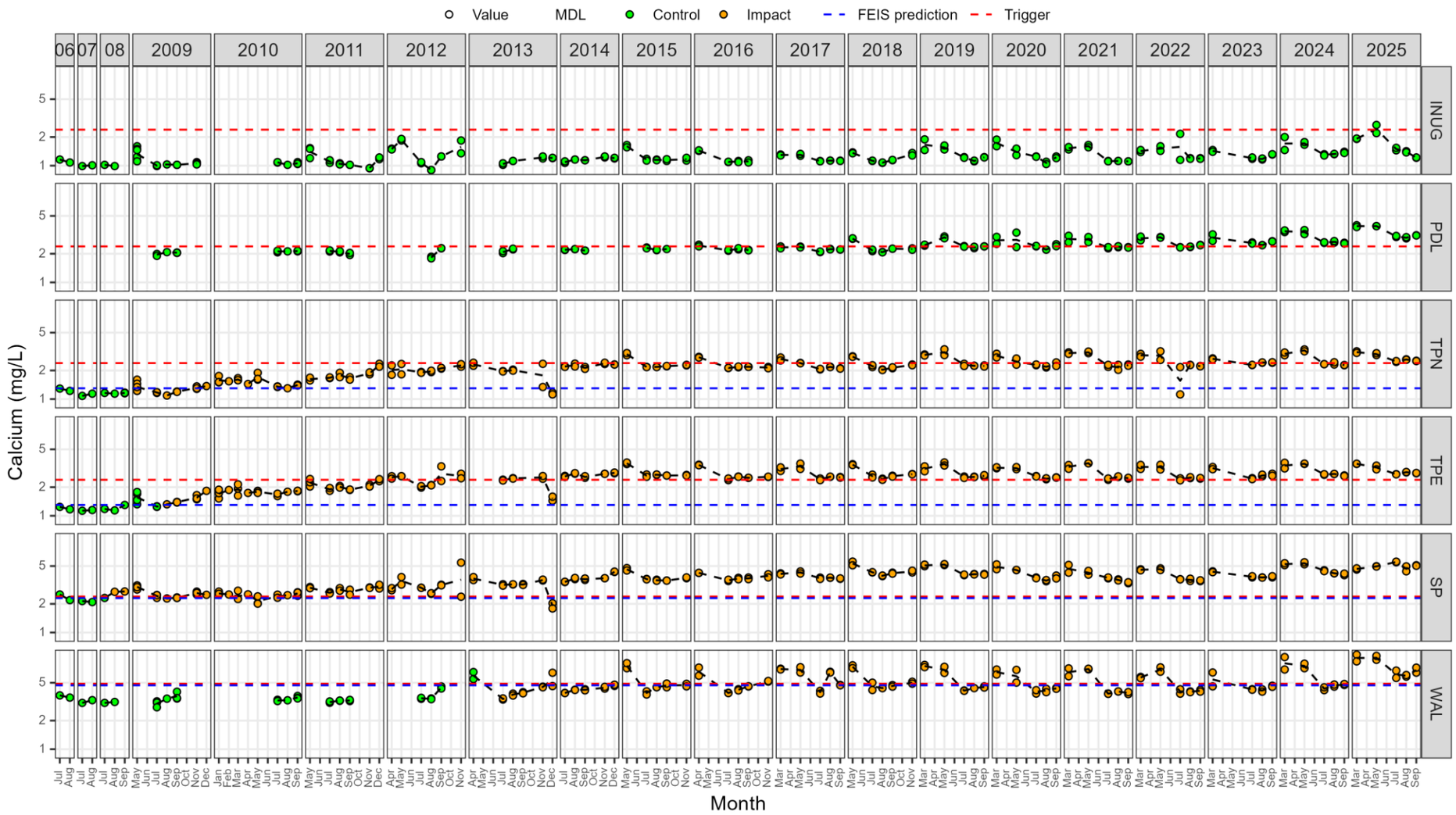


Figure C1-30. Total chromium (mg/L).

Note: The detection limit for total chromium was adjusted from 0.0001 mg/L to 0.0005 mg/L for samples collected in since May 2021.

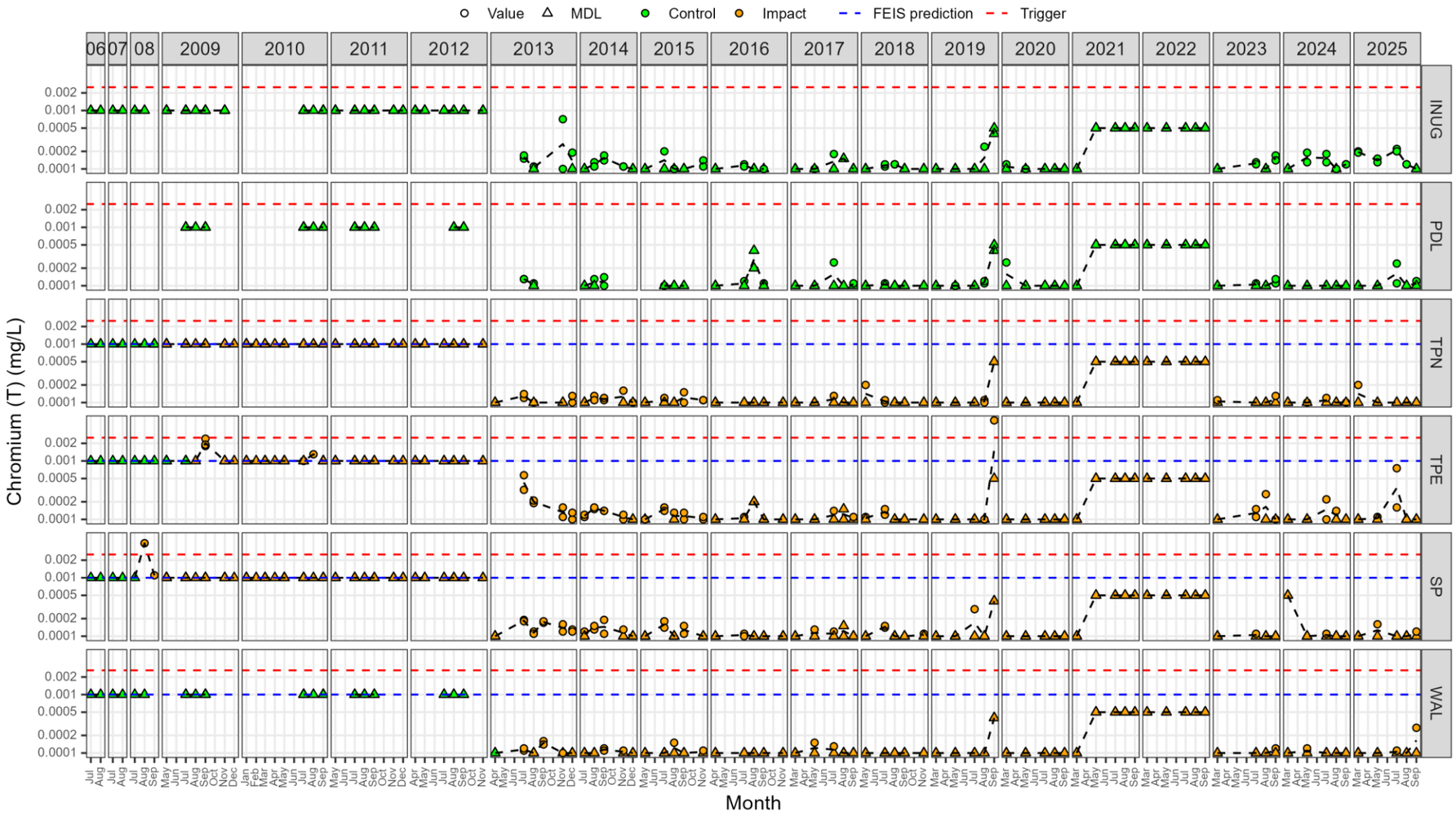


Figure C1-31. Total copper (mg/L).

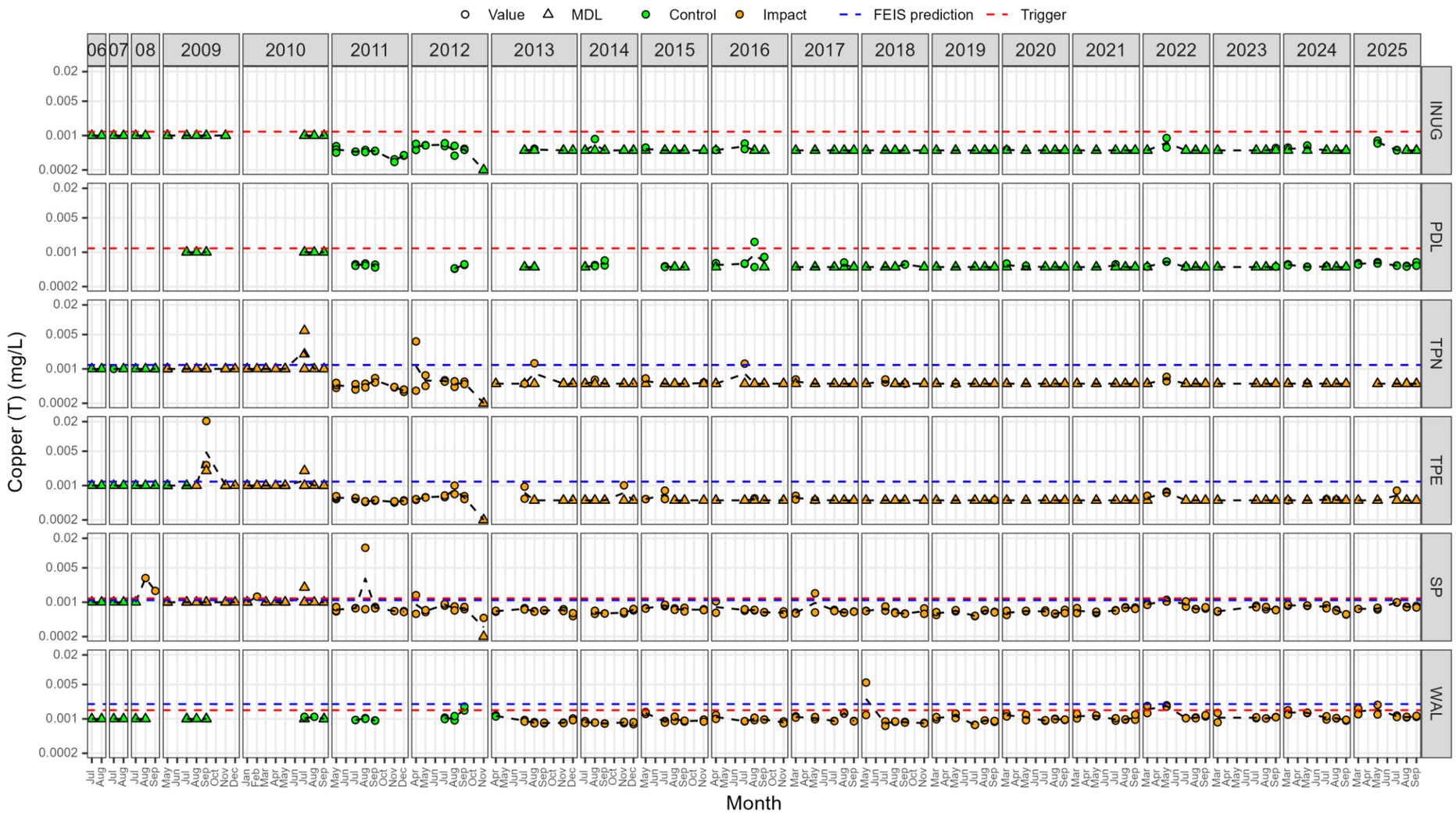


Figure C1-32. Total iron (mg/L).

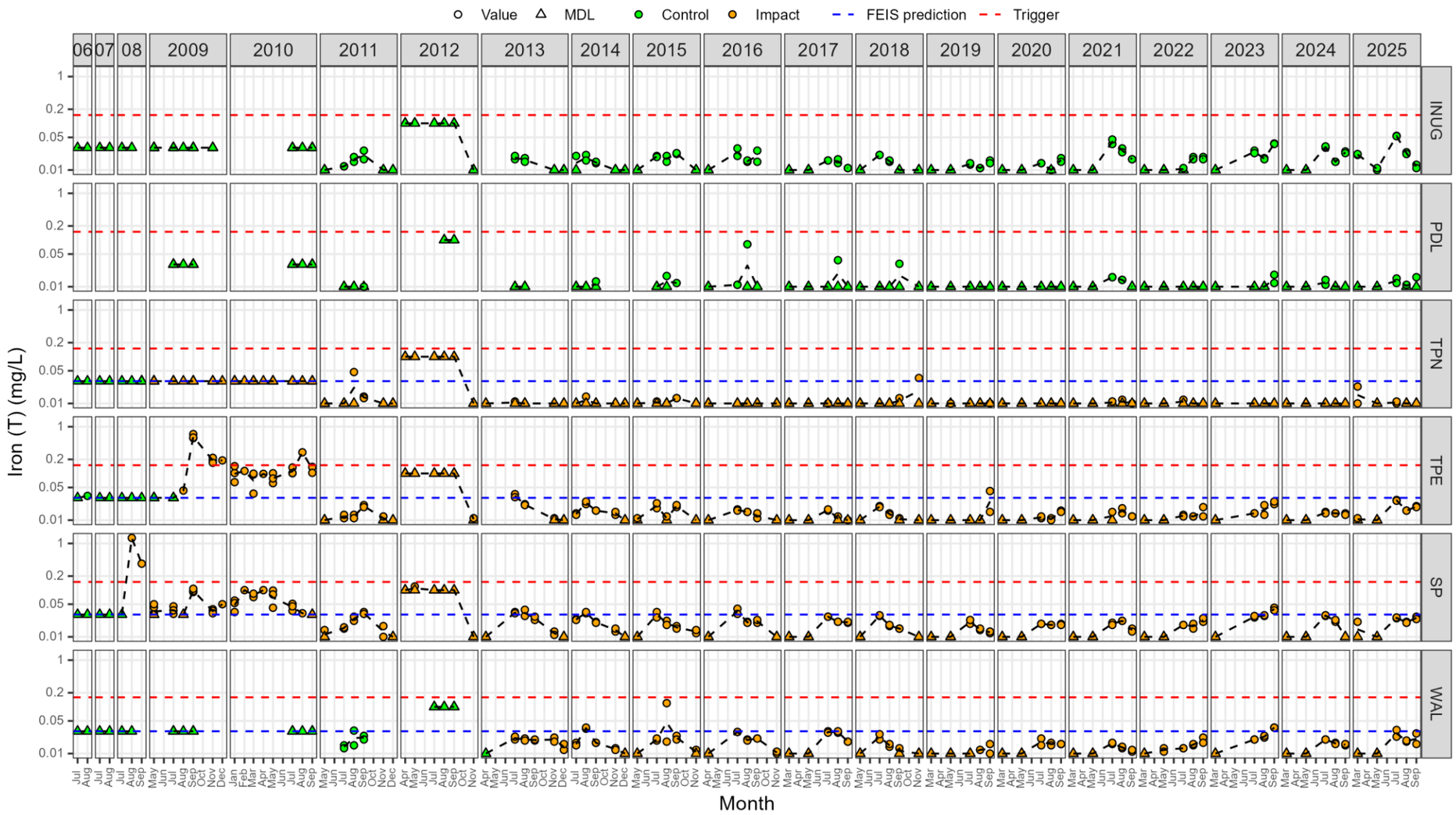


Figure C1-33. Total lead (mg/L).

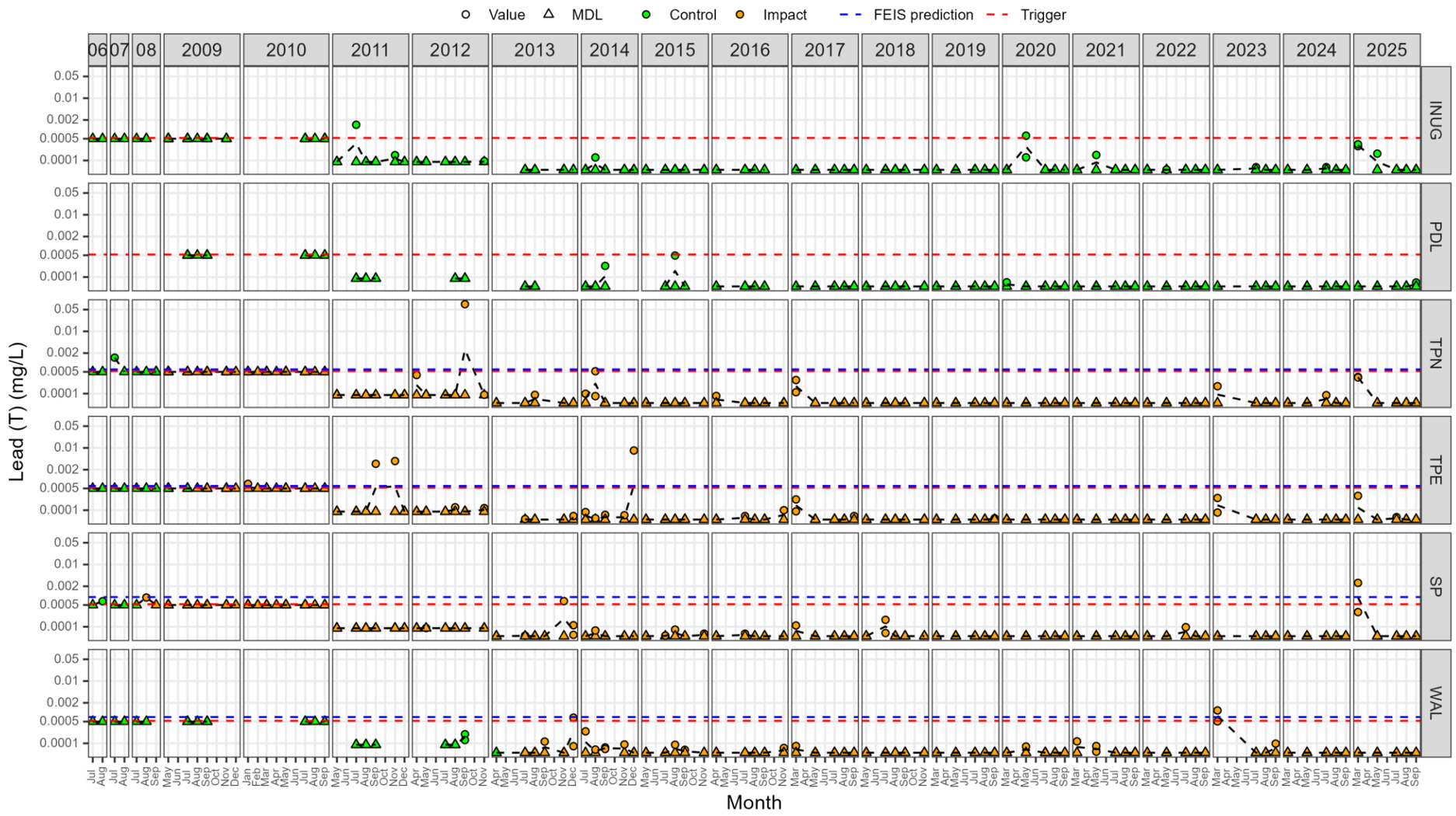


Figure C1-34. Total lithium (mg/L).

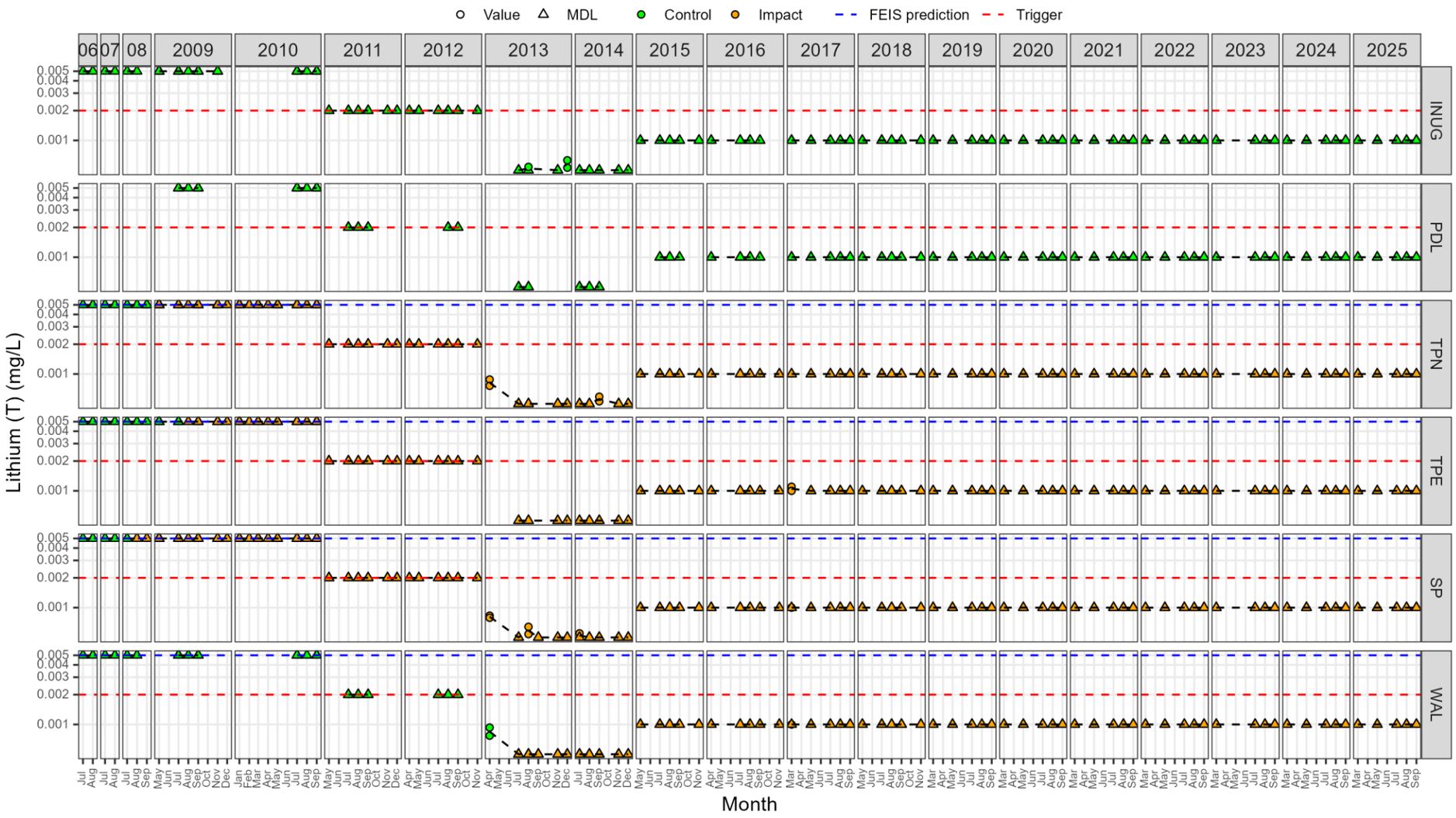


Figure C1-35. Total magnesium (mg/L).

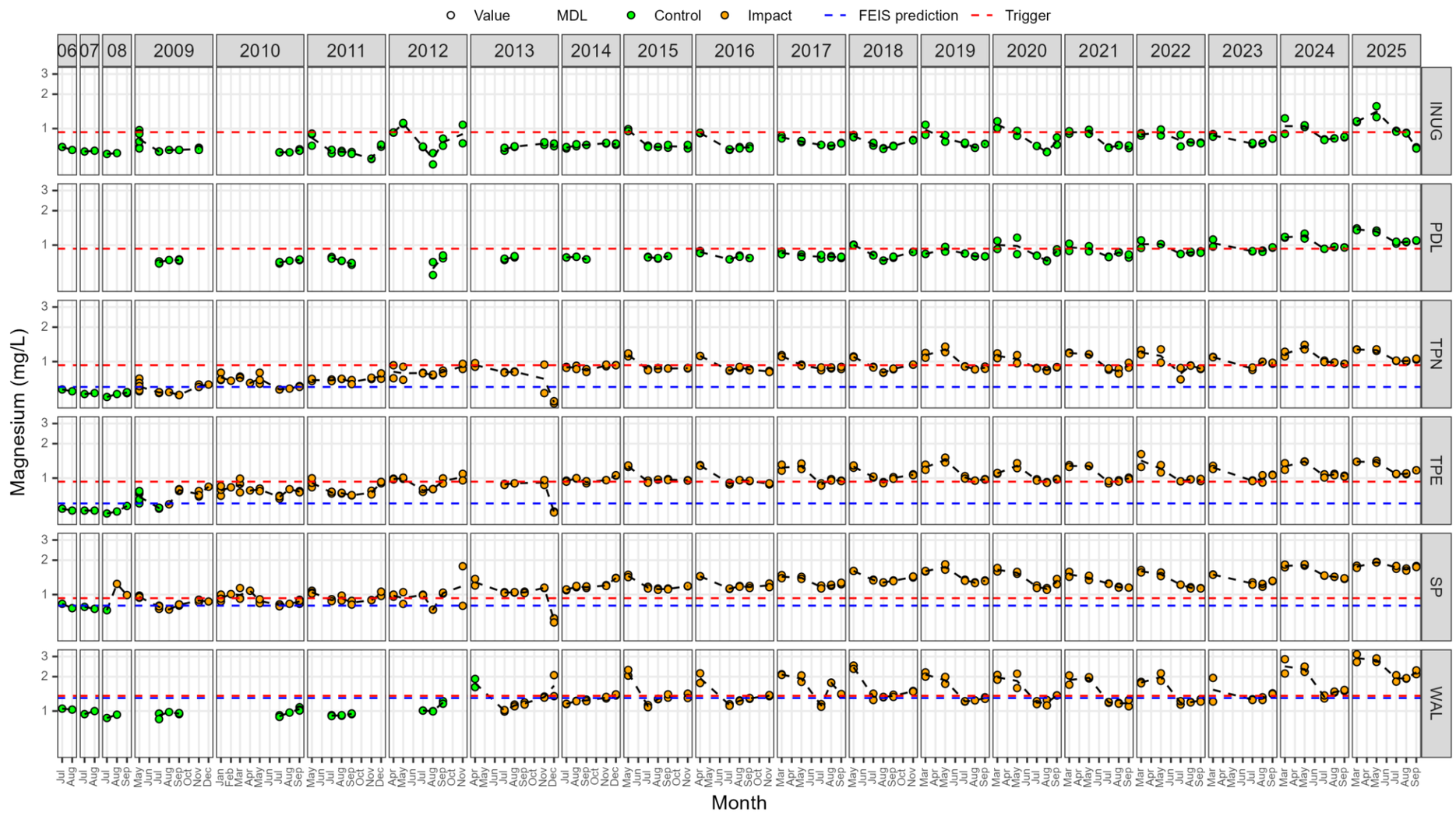


Figure C1-36. Total manganese (mg/L).

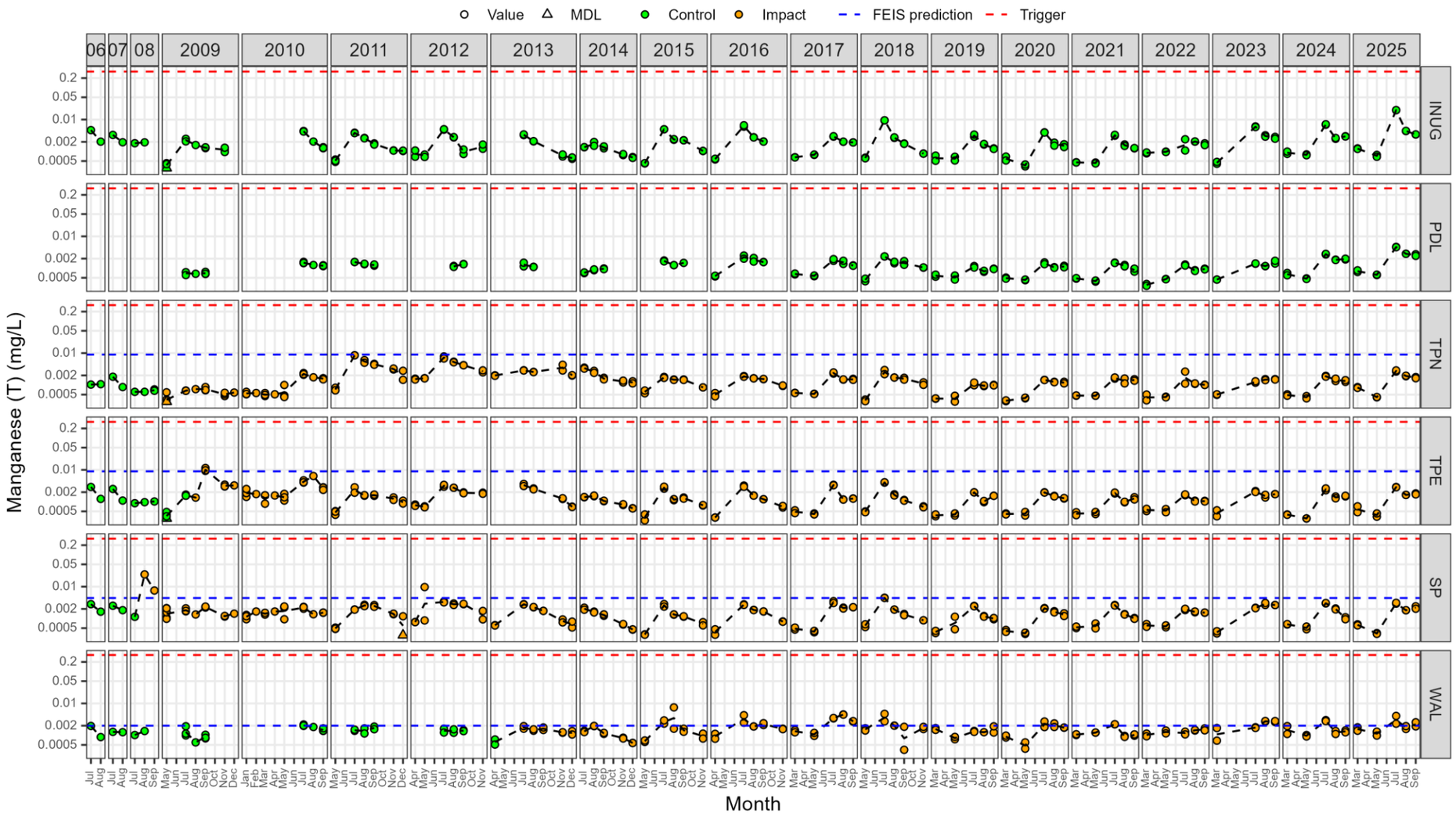


Figure C1-37. Total mercury (mg/L).

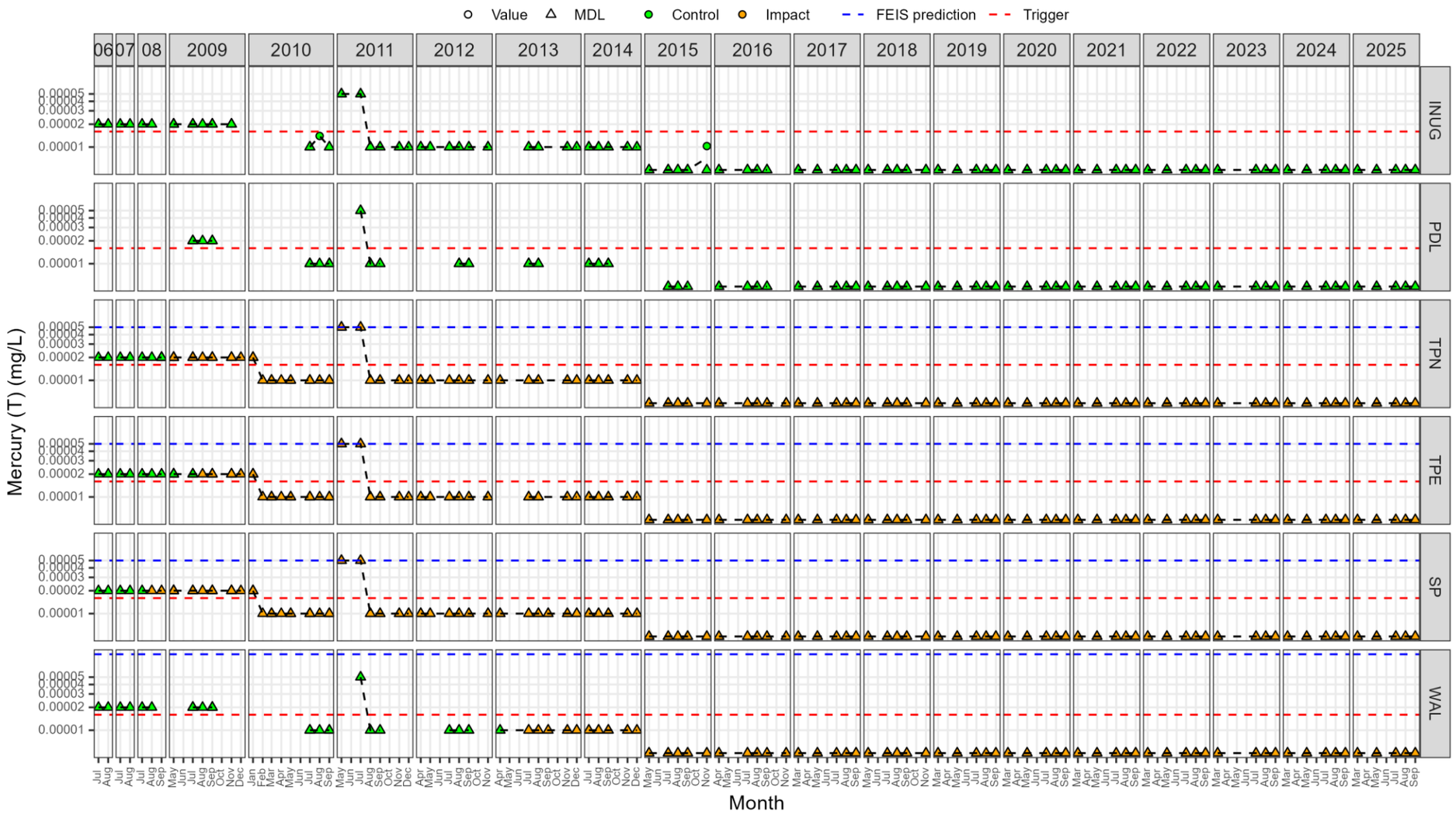


Figure C1-38. Total molybdenum (mg/L).

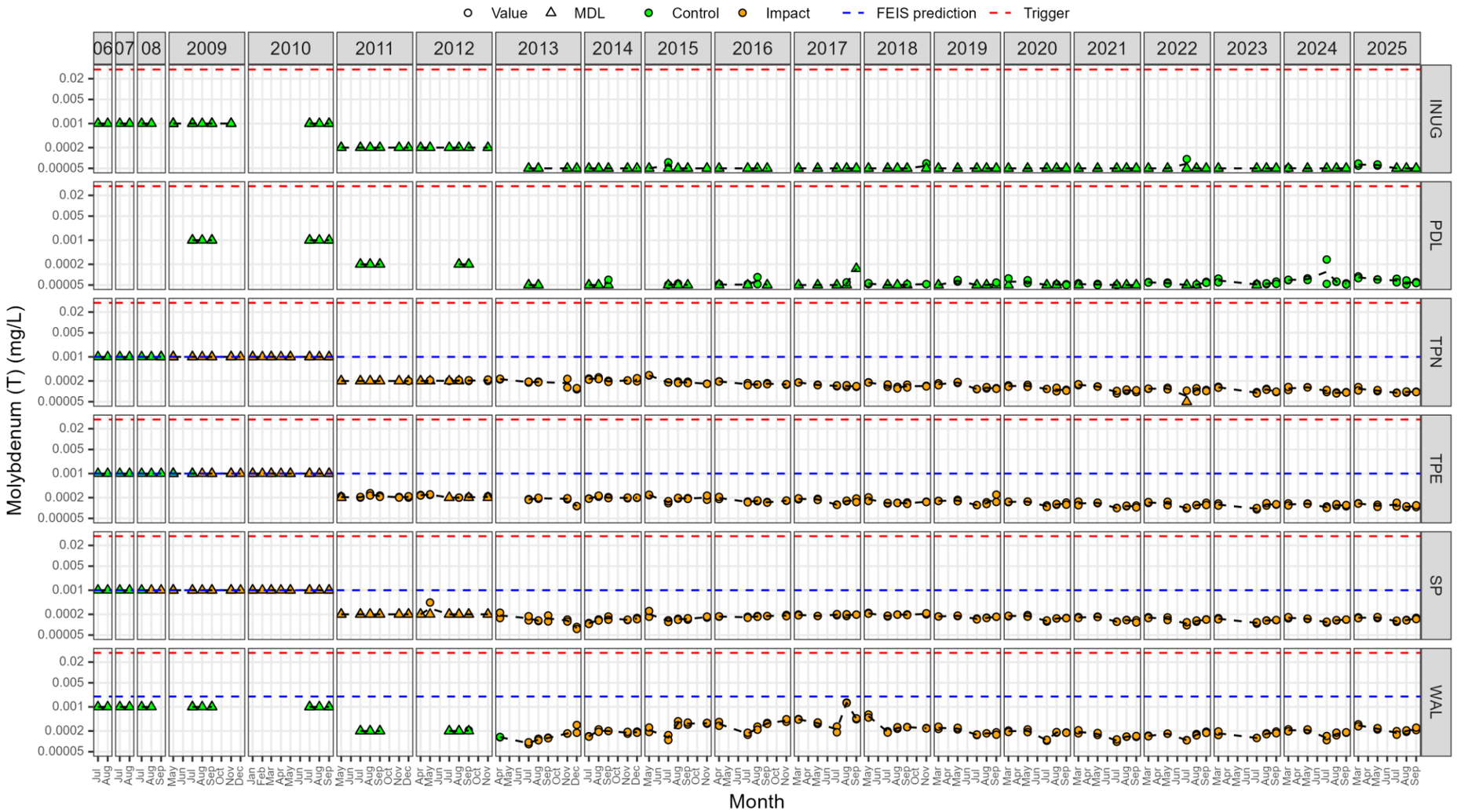


Figure C1-39. Total nickel (mg/L).

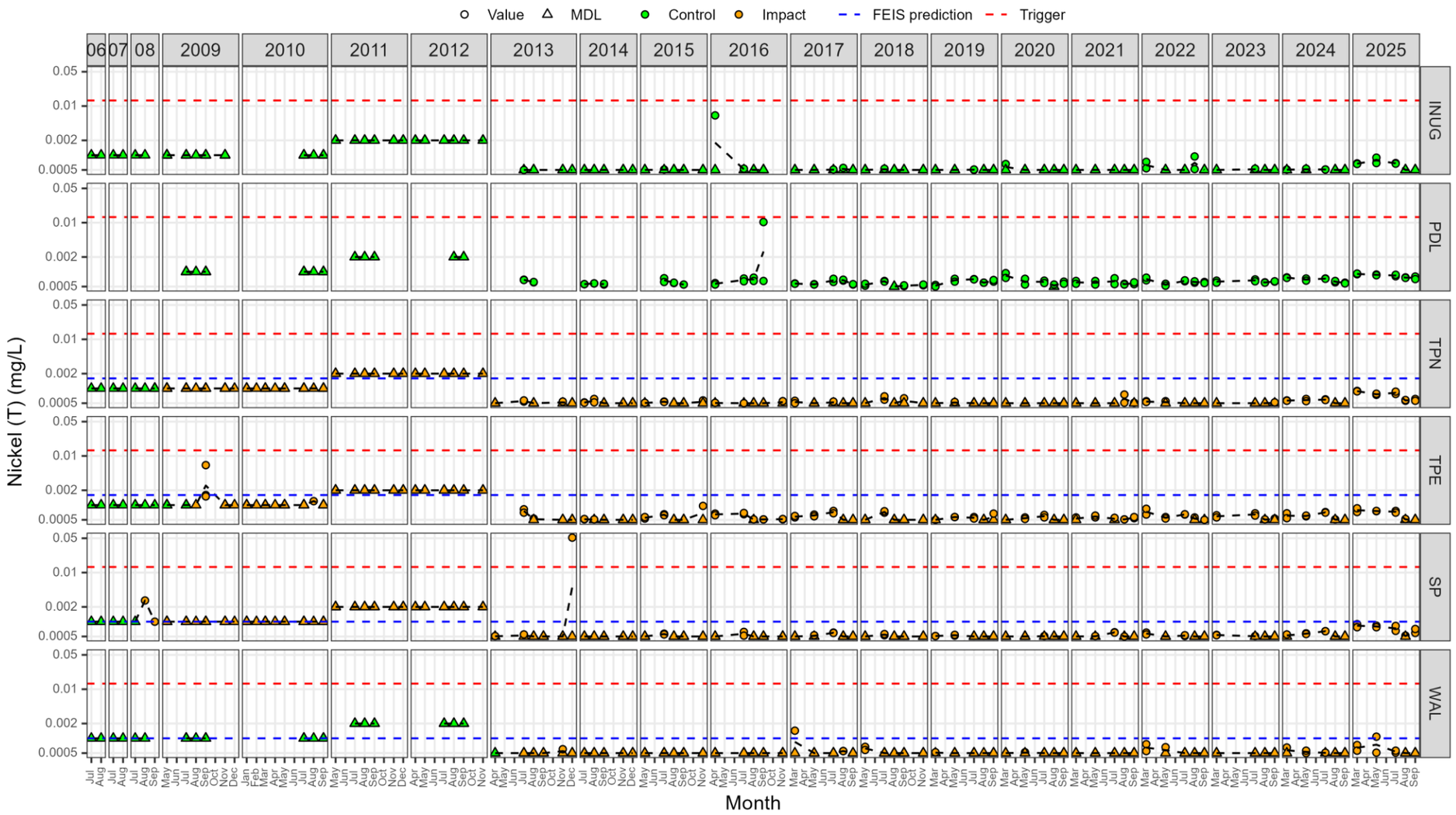


Figure C1-40. Total potassium (mg/L).

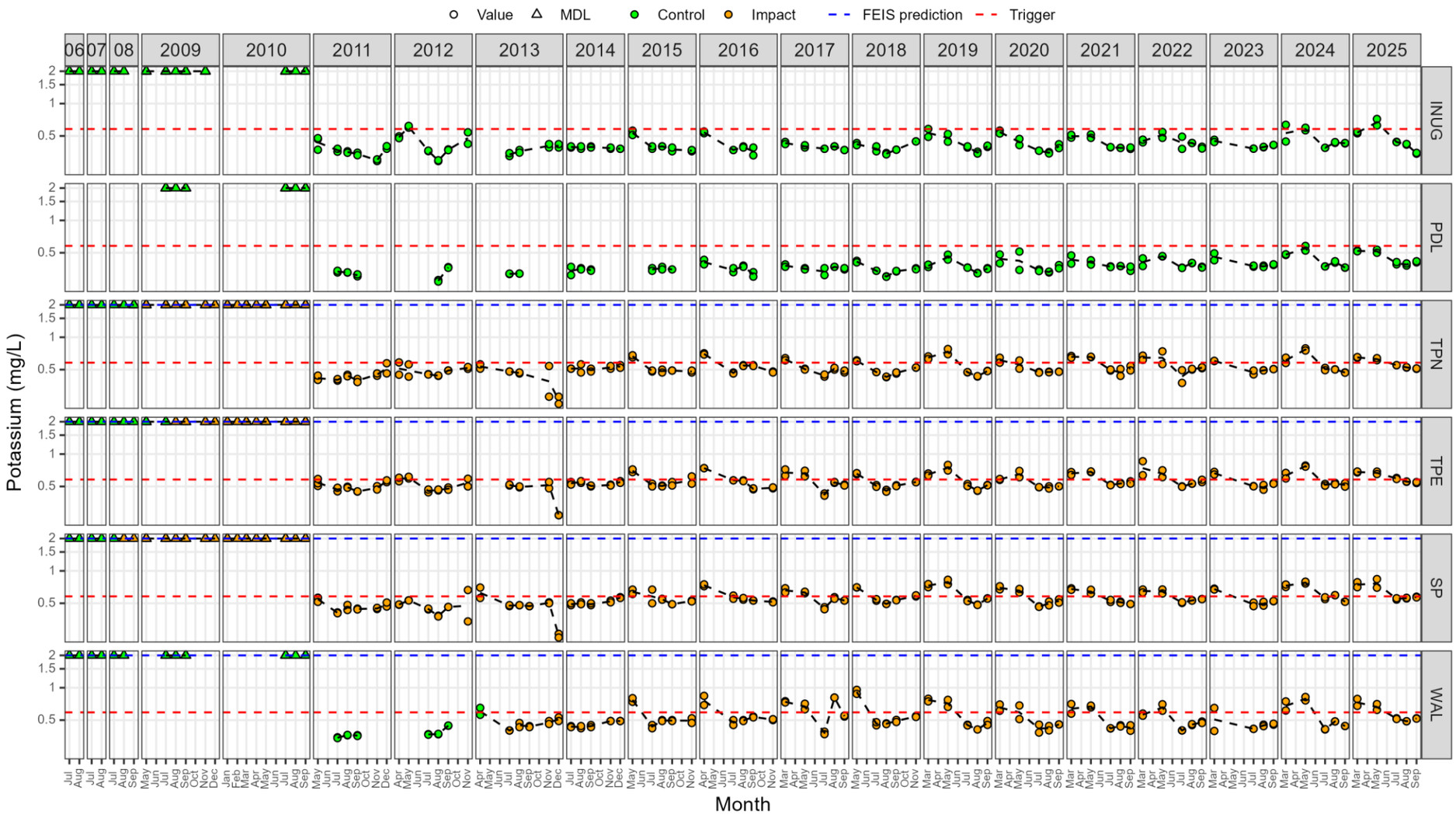


Figure C1-41. Total selenium (mg/L).

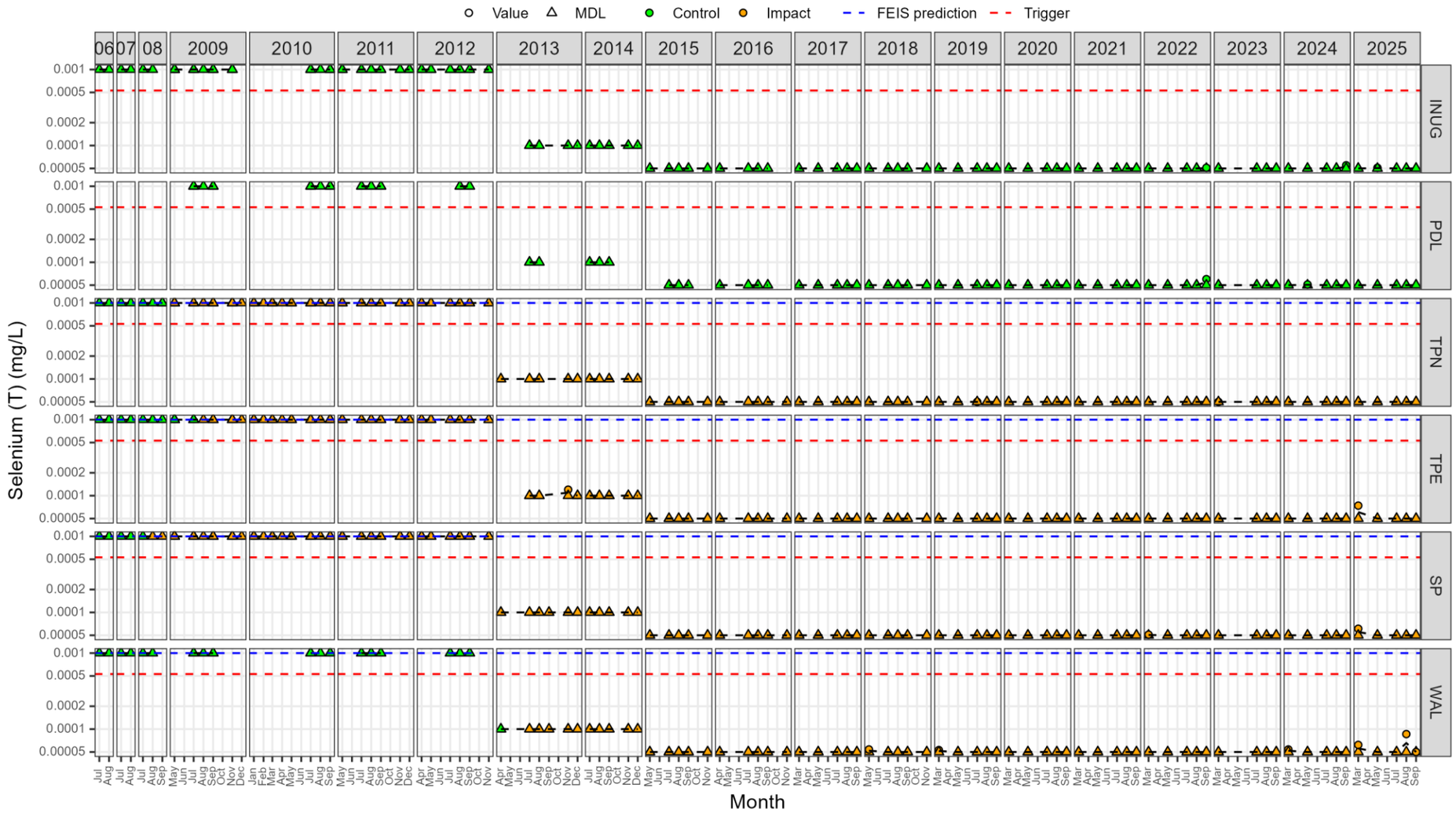


Figure C1-42. Total silicon (mg/L).

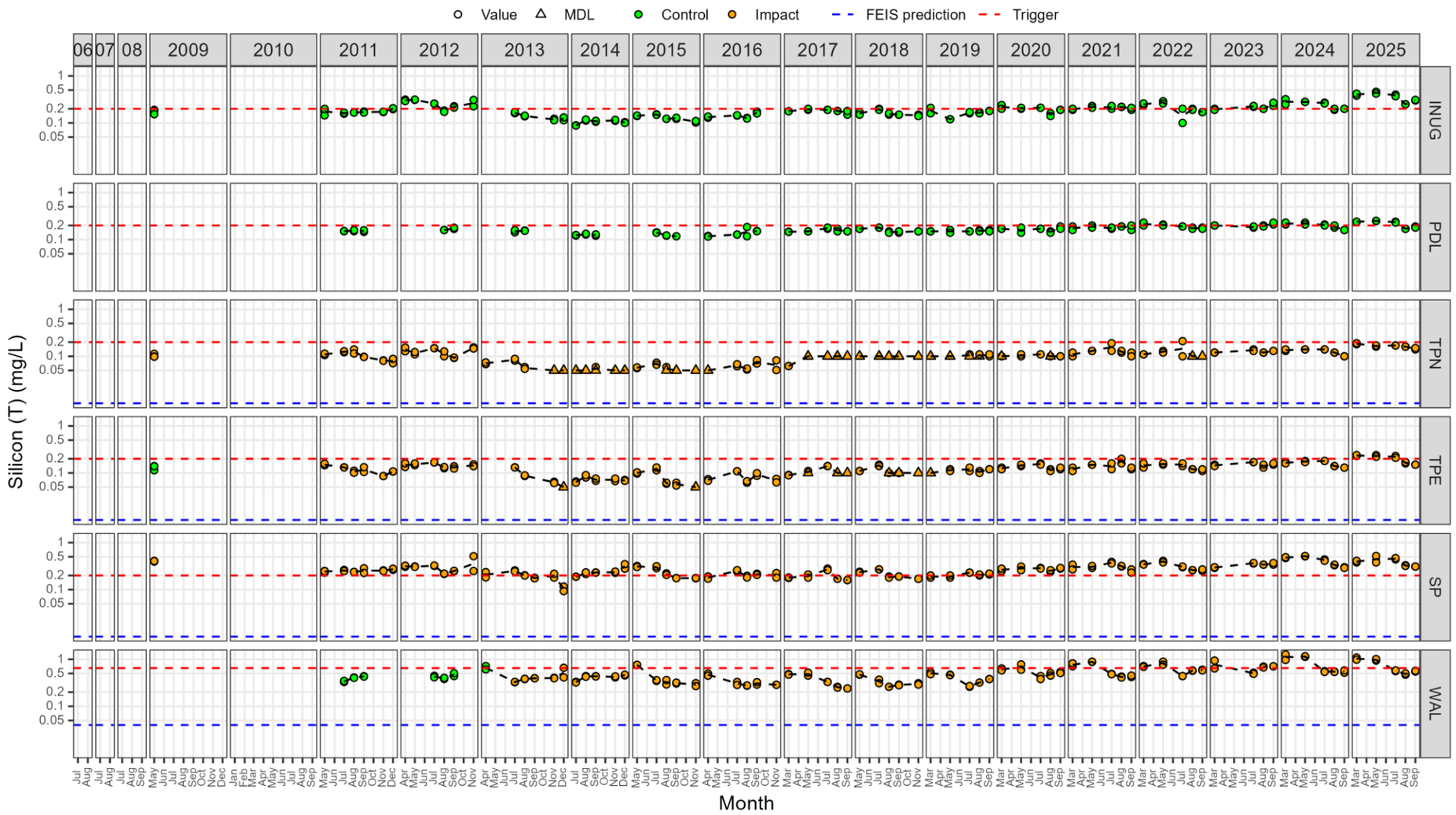


Figure C1-43. Total silver (mg/L).

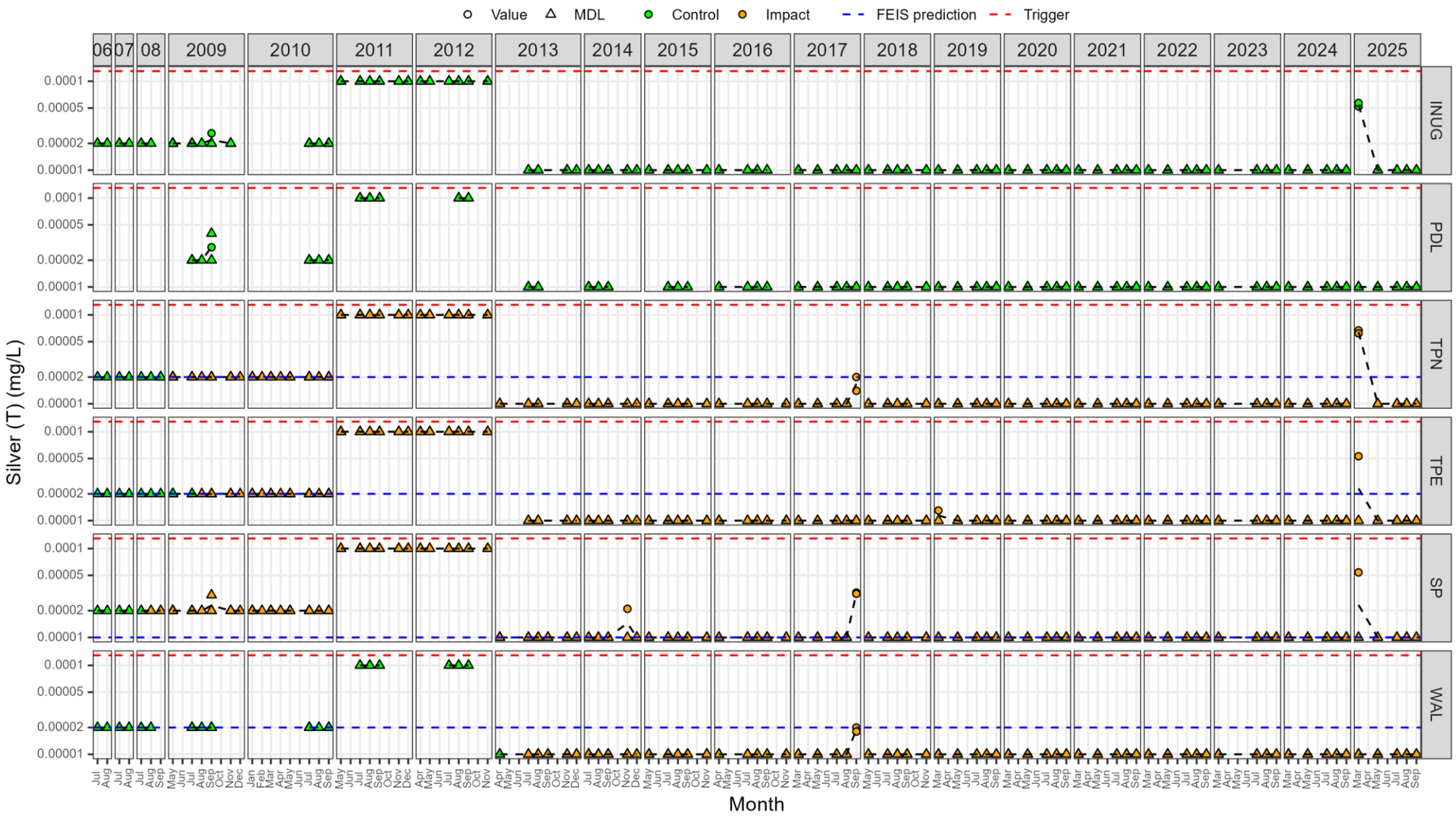


Figure C1-44. Total sodium (mg/L).

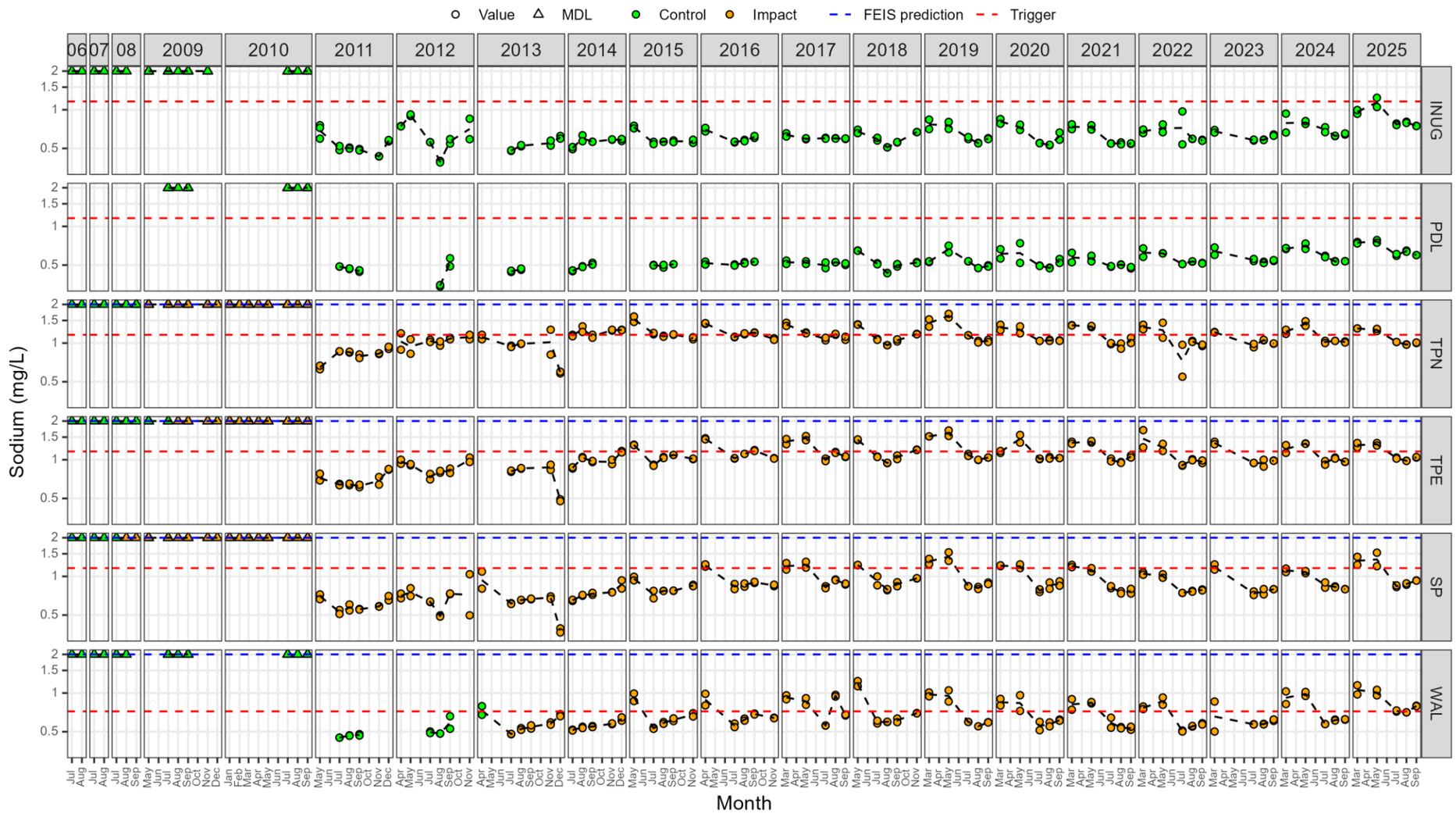


Figure C1-45. Total strontium (mg/L).

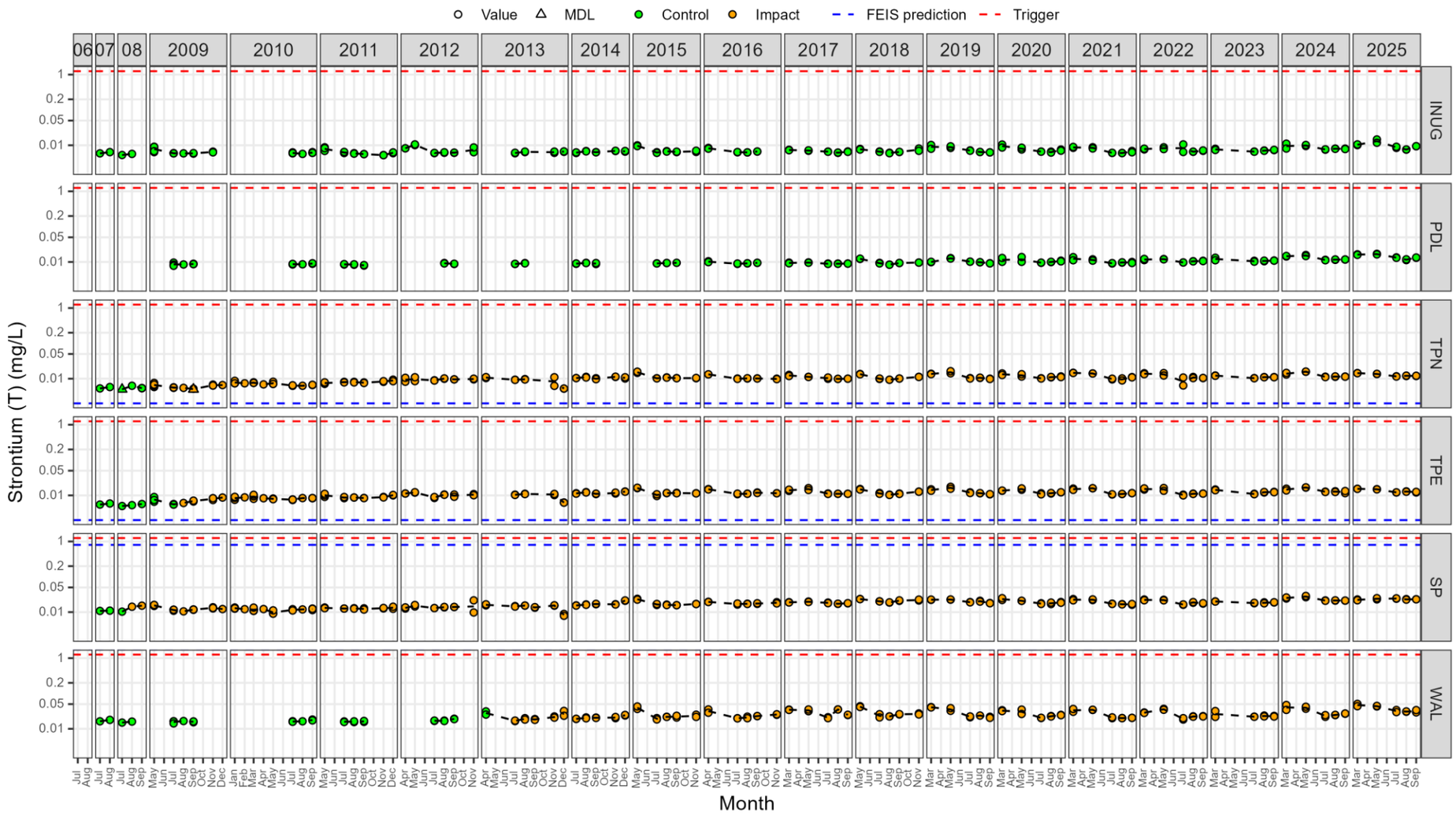


Figure C1-46. Total thallium (mg/L).

Figure C1-47. Total tin (mg/L).

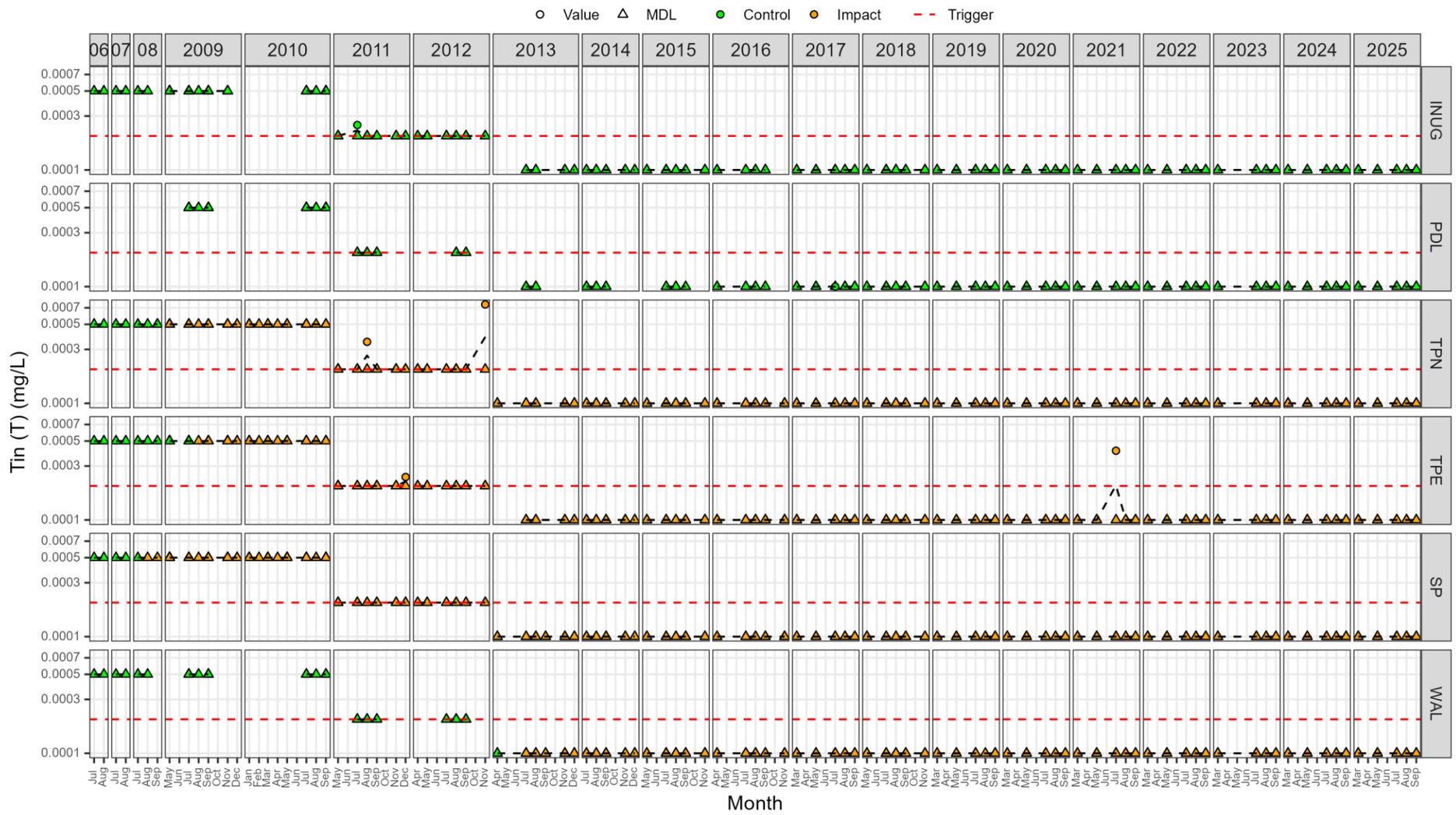


Figure C1-48. Total titanium (mg/L).

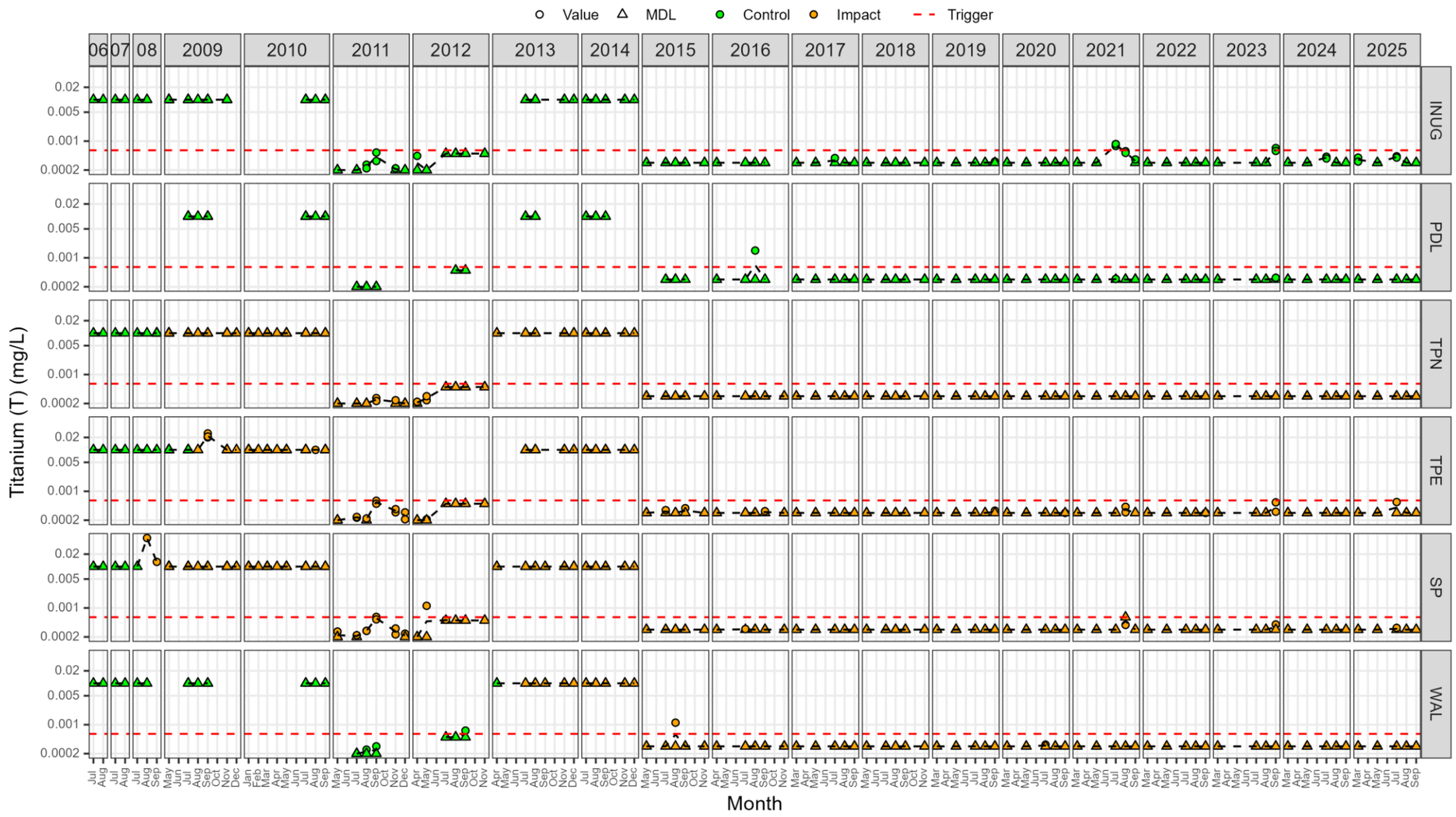


Figure C1-49. Total uranium (mg/L).

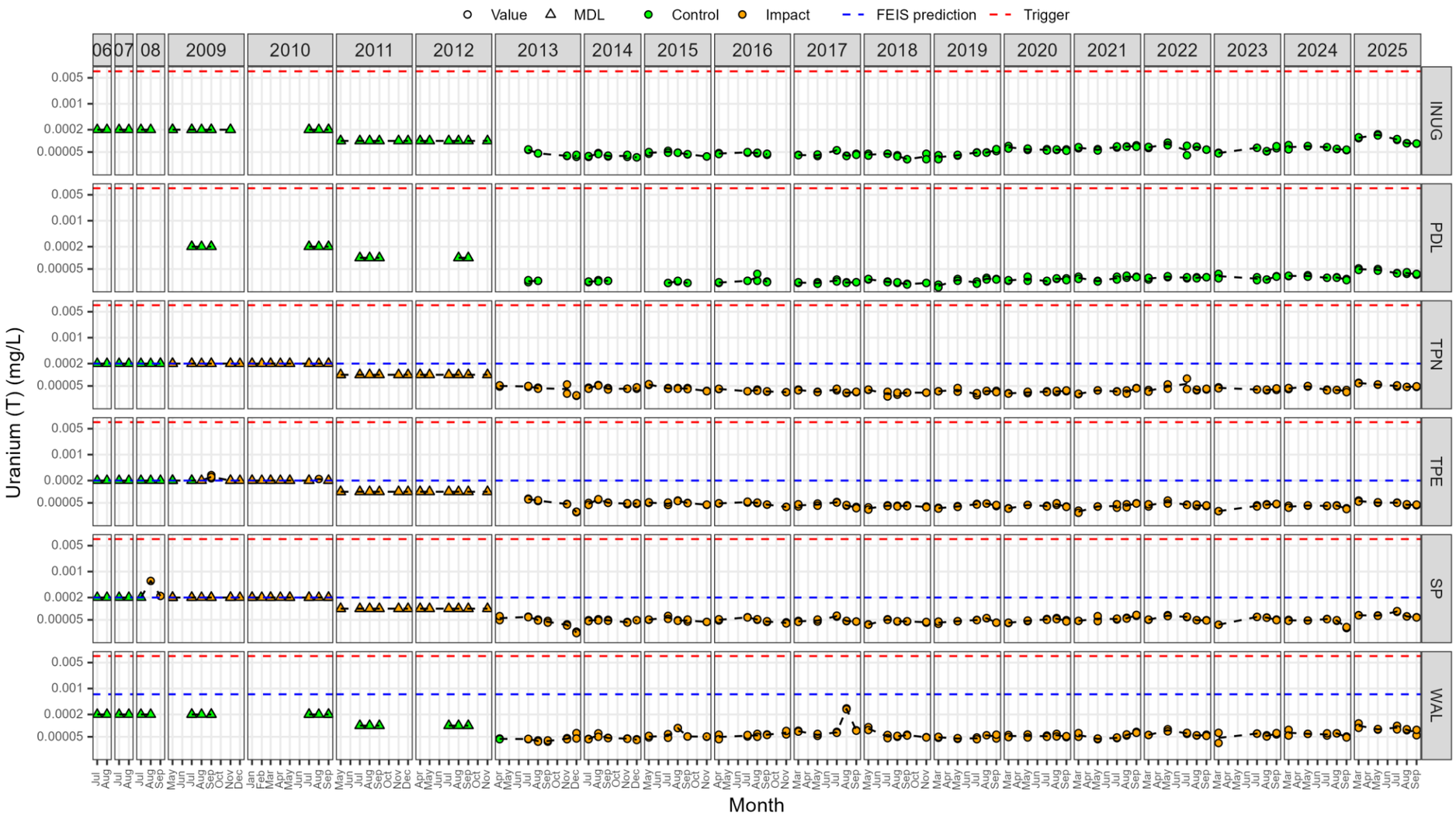


Figure C1-50. Total vanadium (mg/L).

Figure C1-51. Total zinc (mg/L).

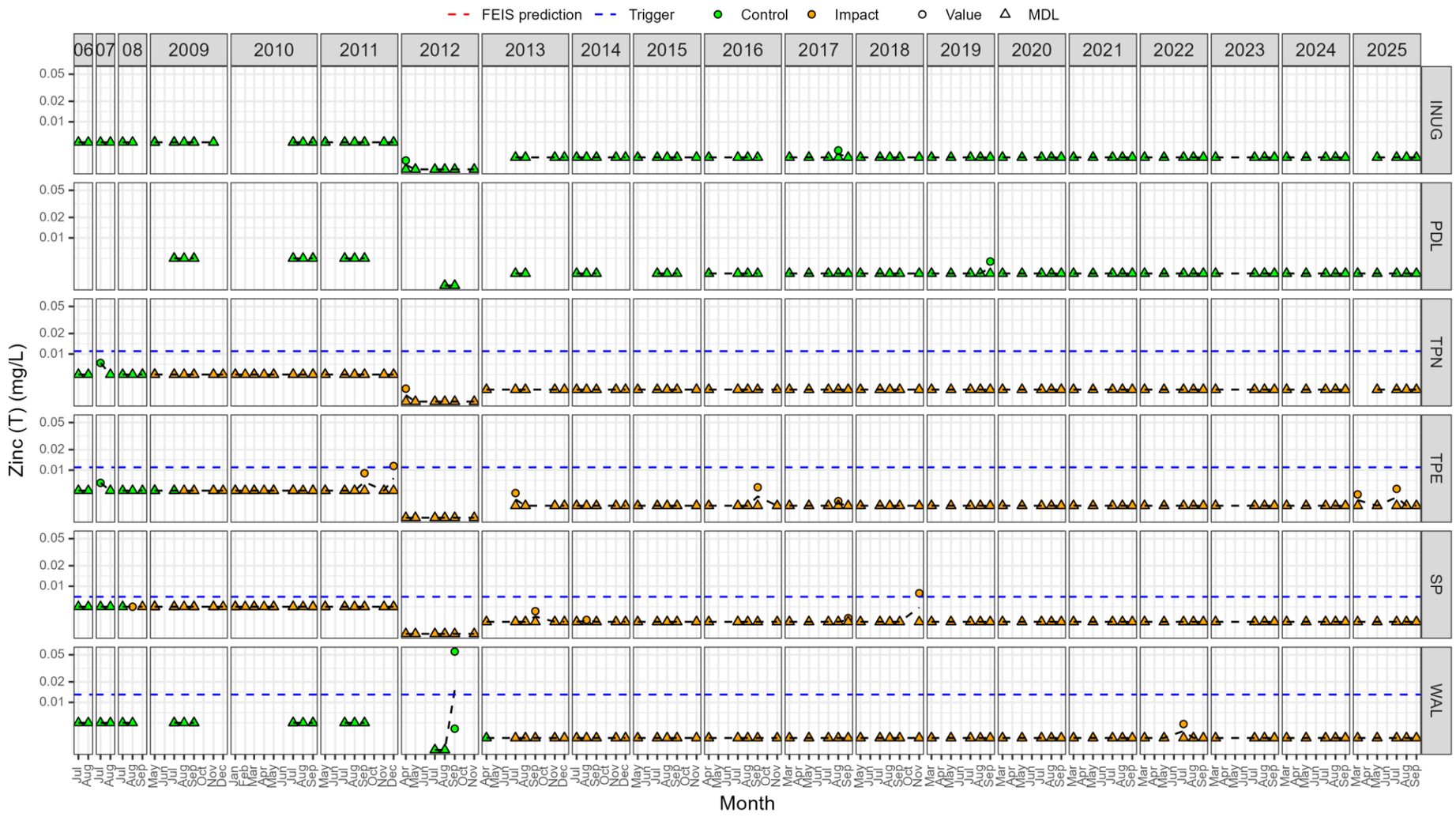


Figure C1-52. Total cyanide (mg/L).

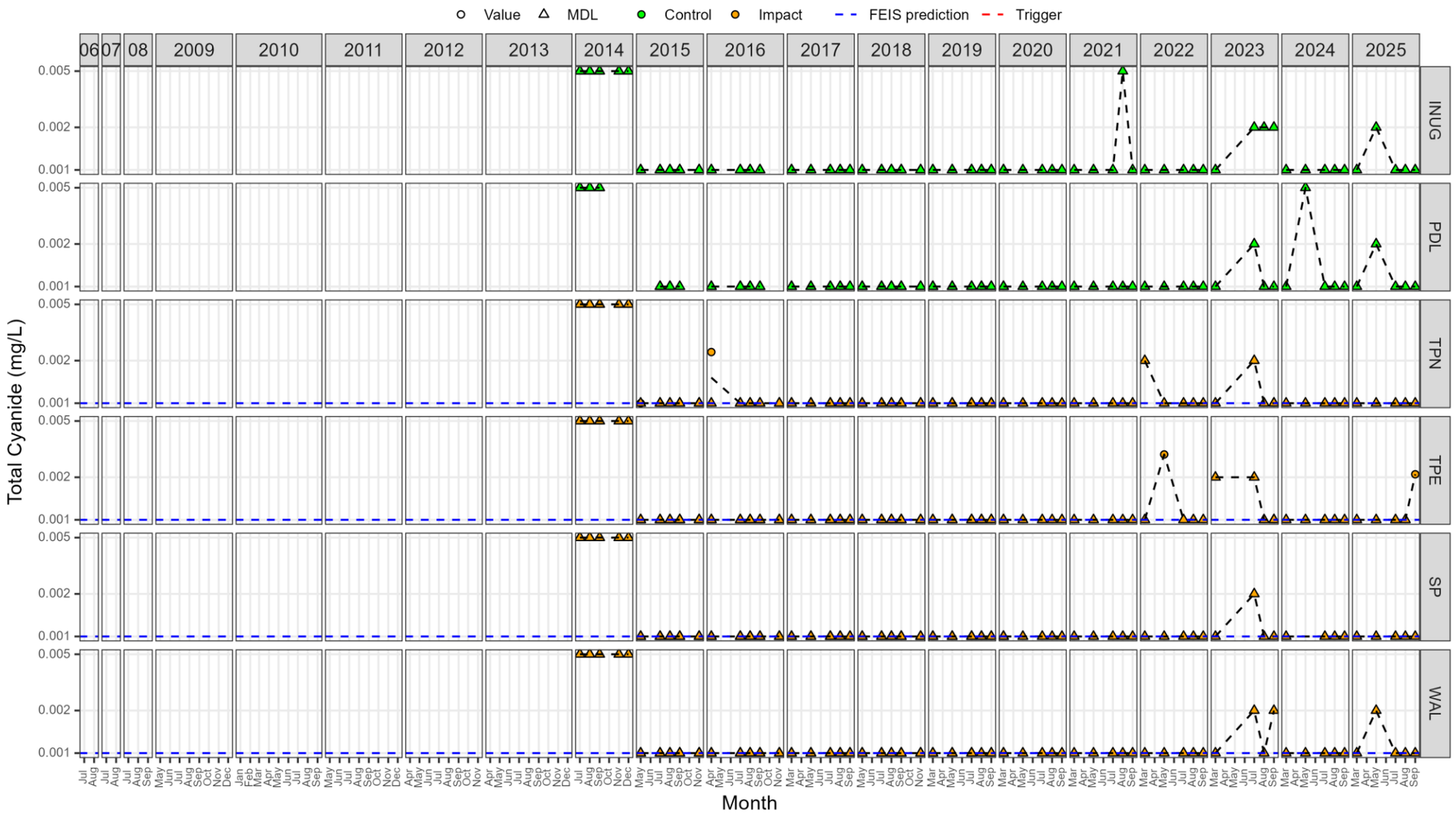


Figure C1-53. Free cyanide (mg/L).

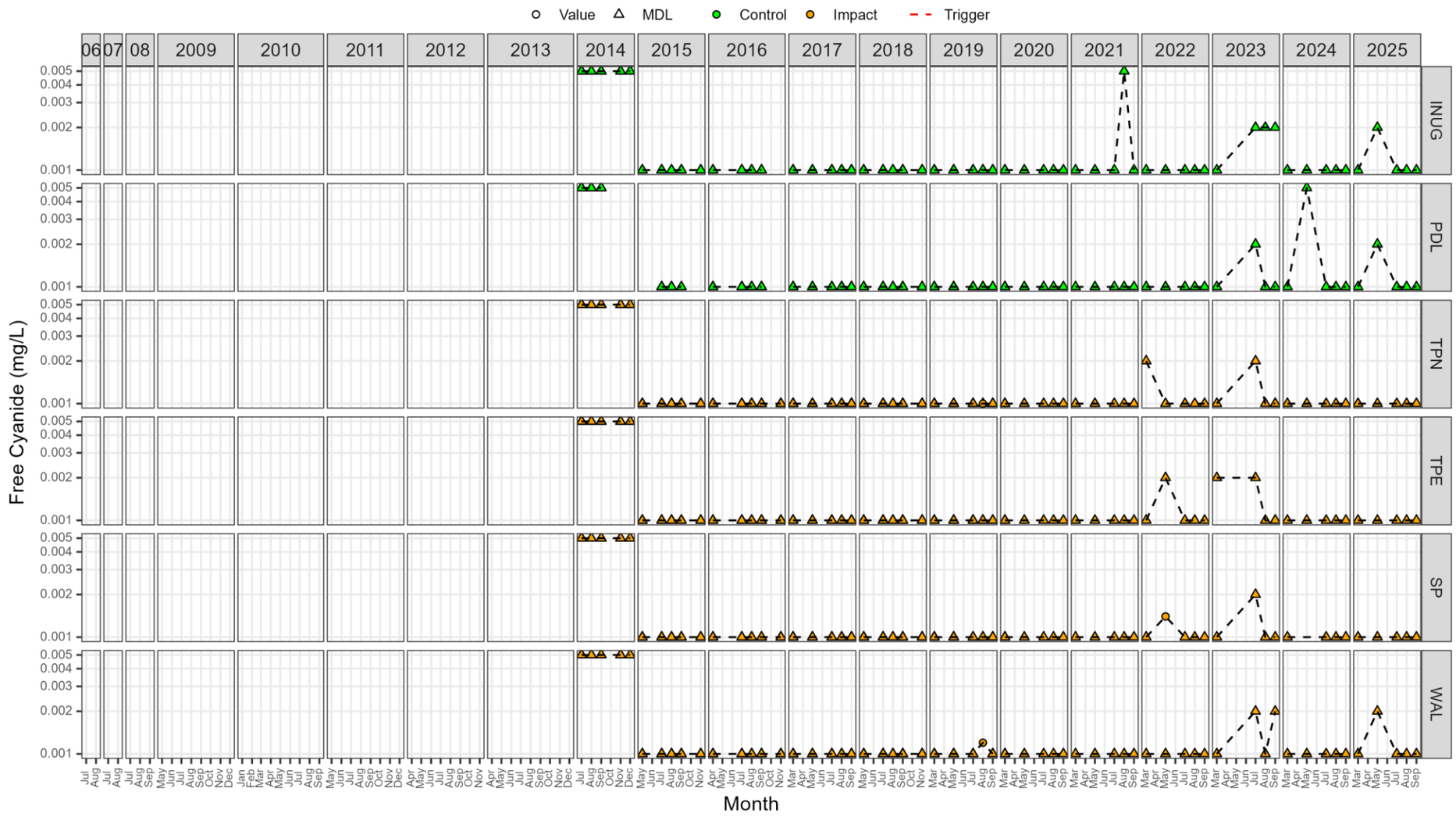


Figure C1-54. Dissolved aluminum (mg/L).

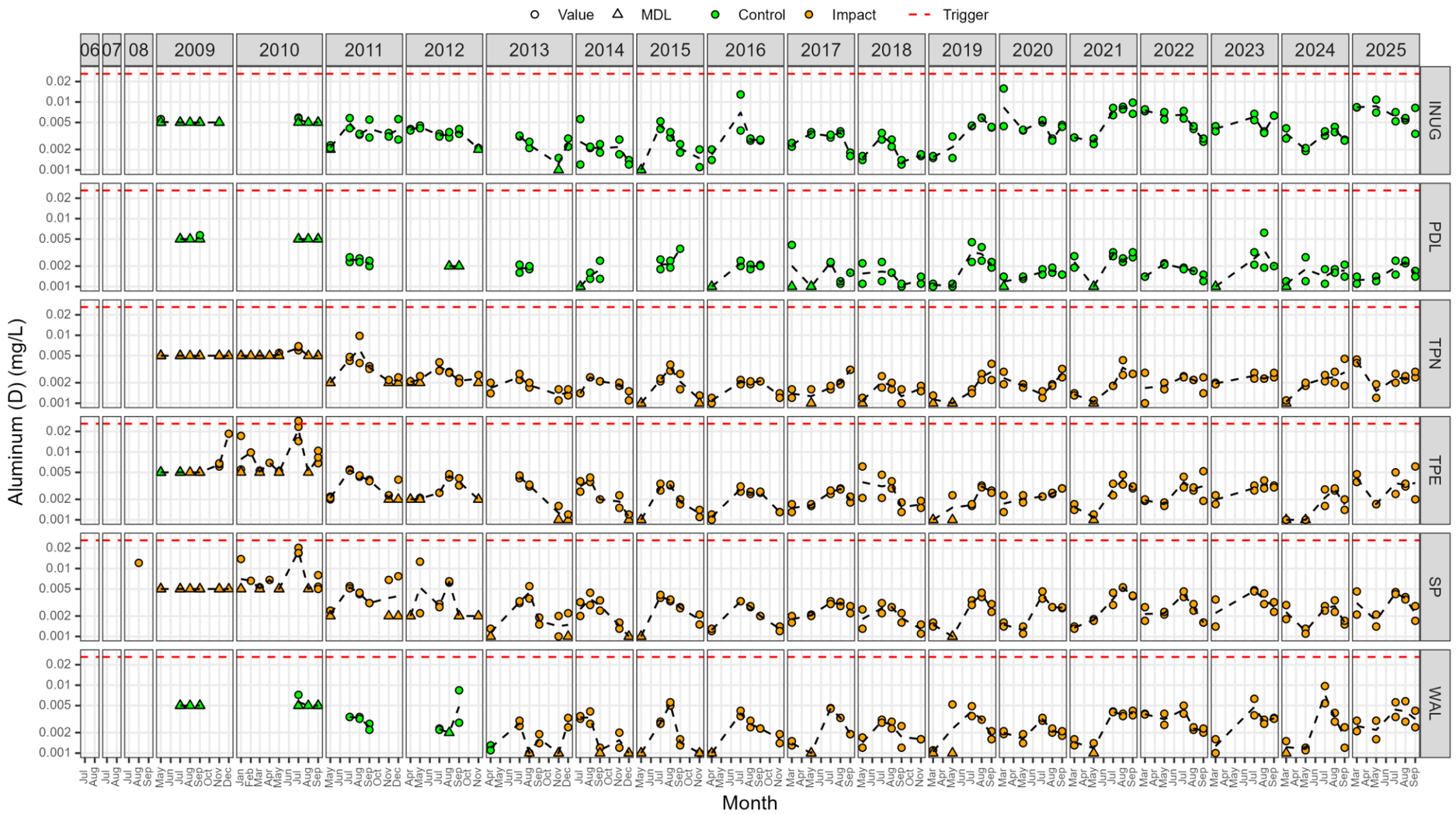


Figure C1-55. Dissolved antimony (mg/L).

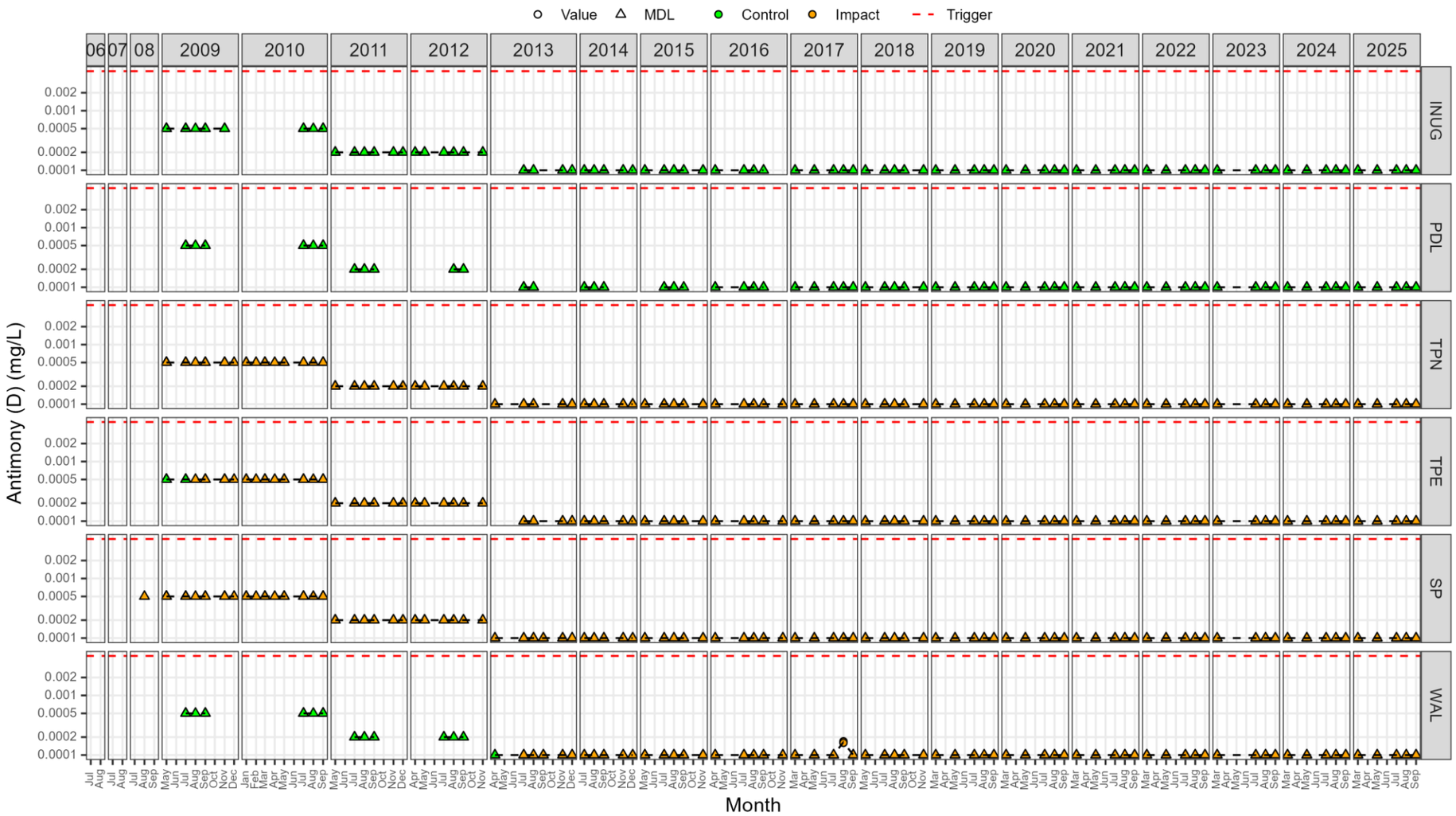


Figure C1-56. Dissolved arsenic (mg/L).

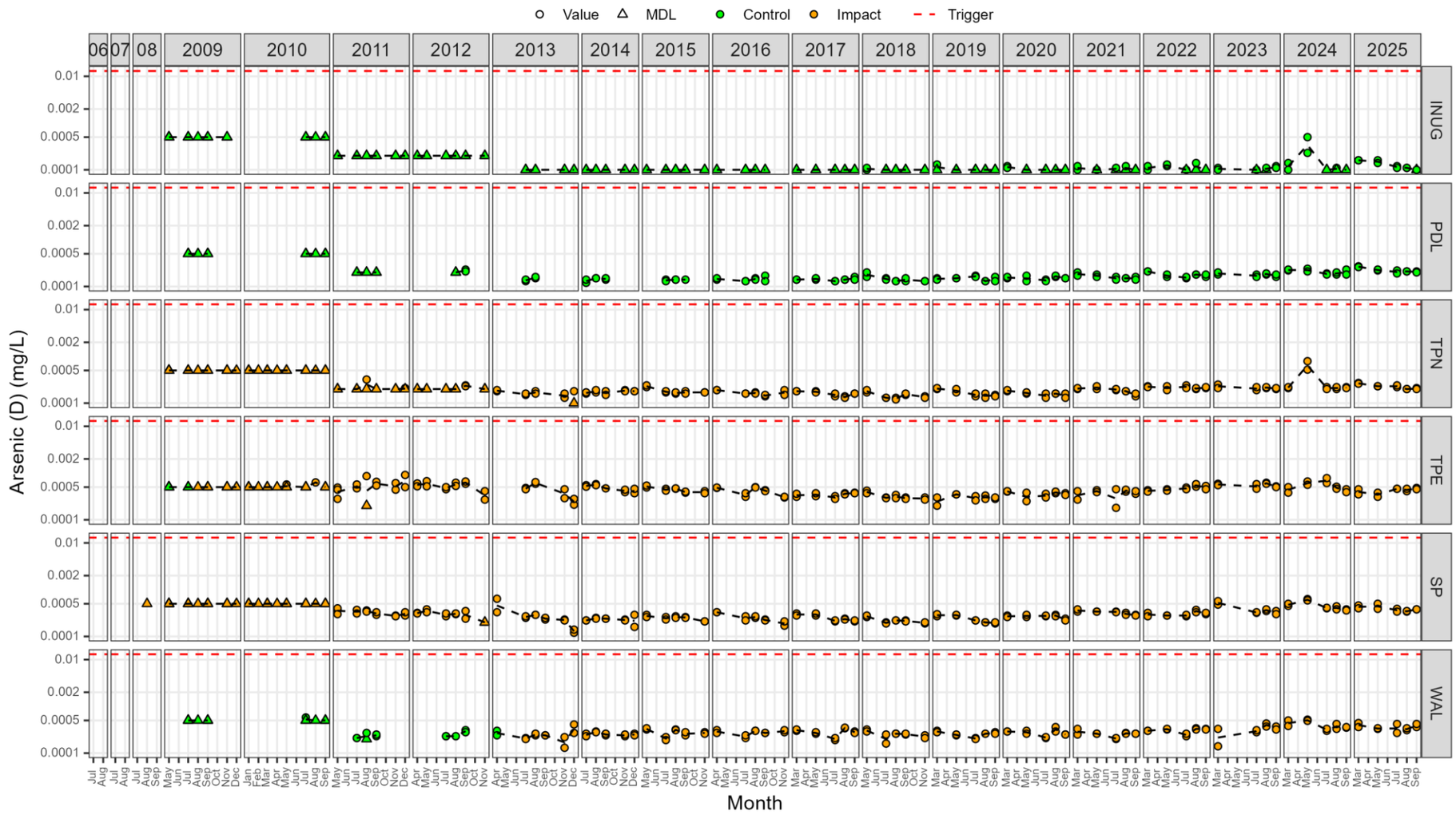


Figure C1-57. Dissolved barium (mg/L).

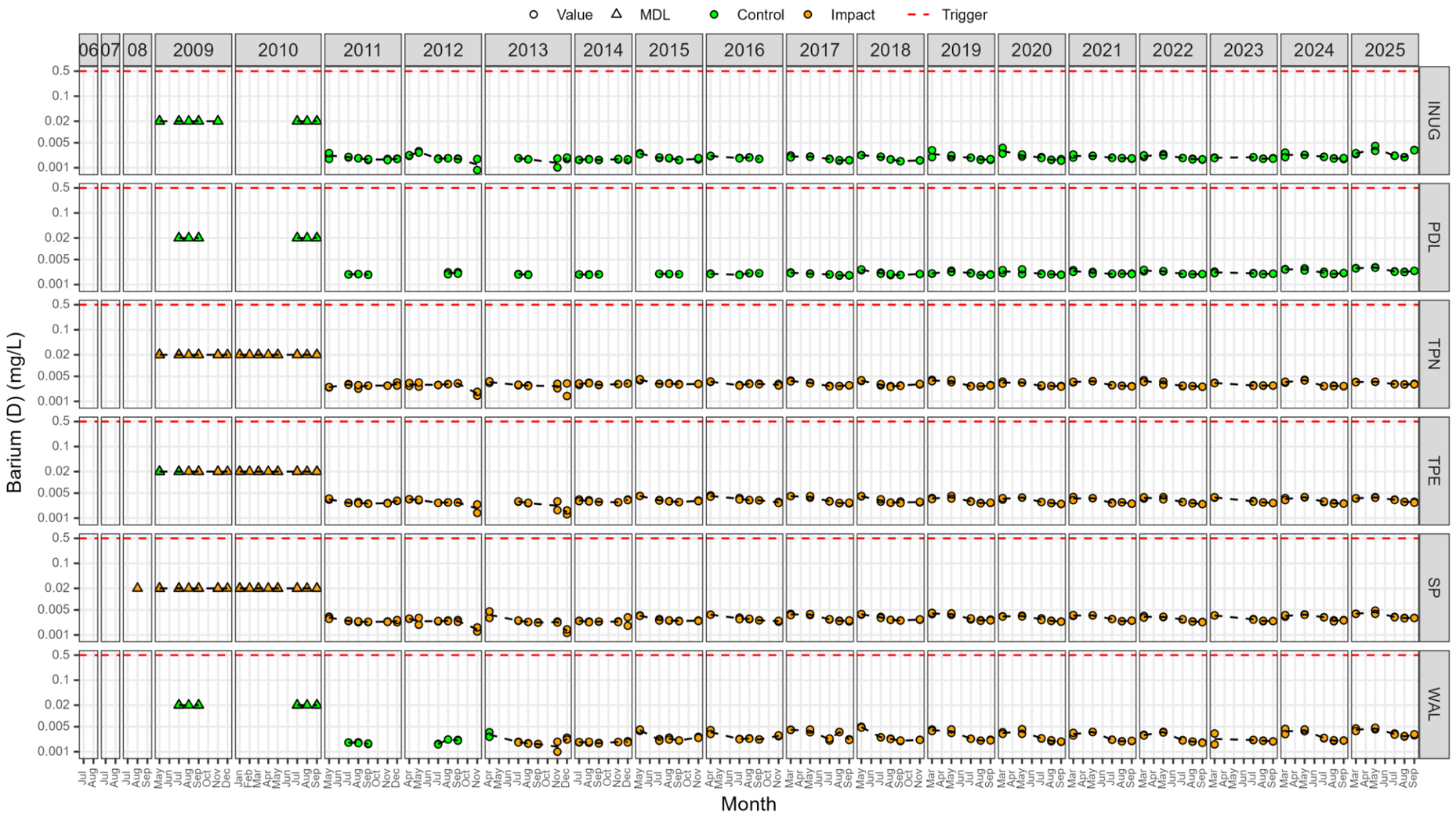


Figure C1-58. Dissolved beryllium (mg/L).

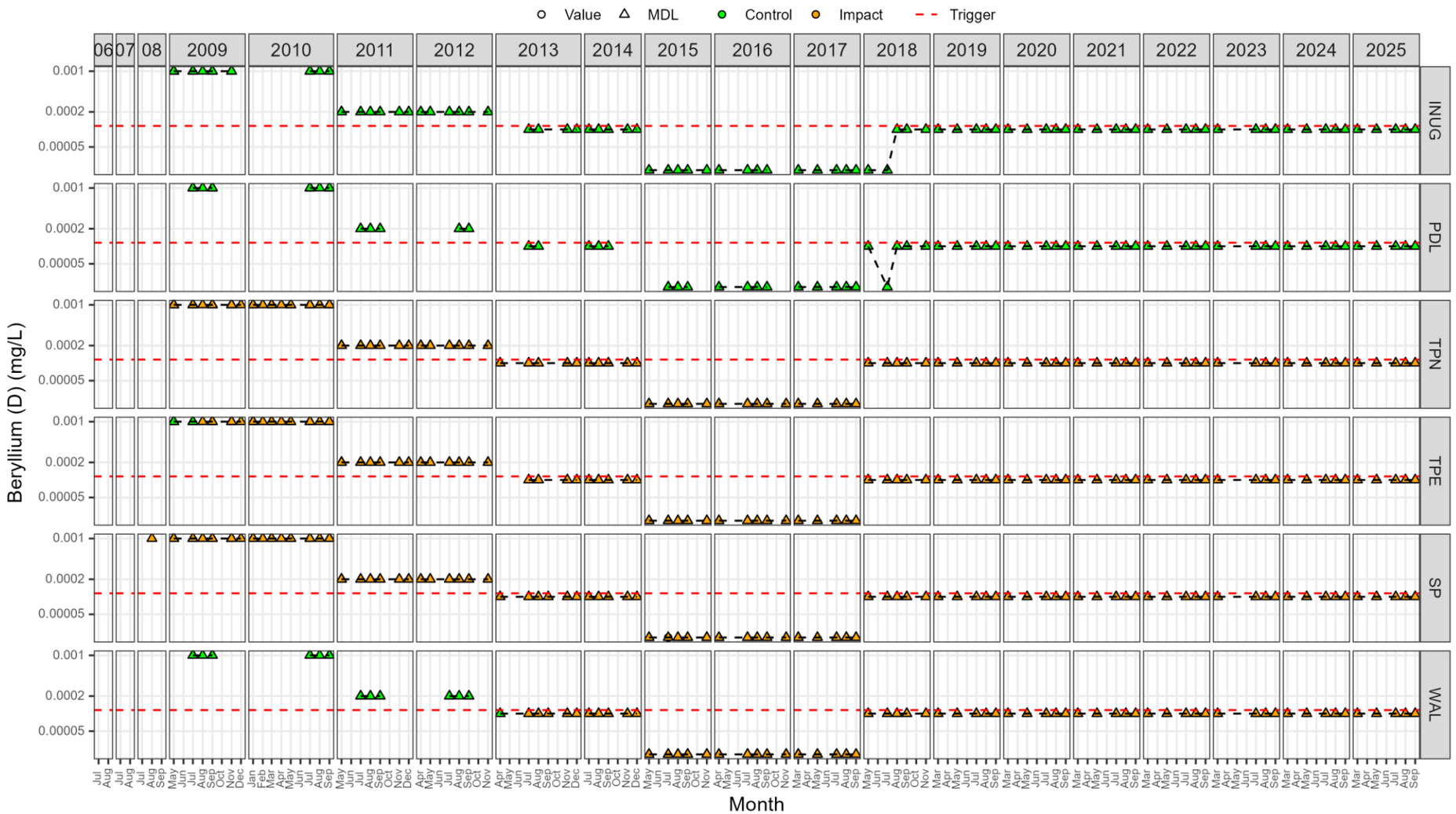


Figure C1-59. Dissolved boron (mg/L).

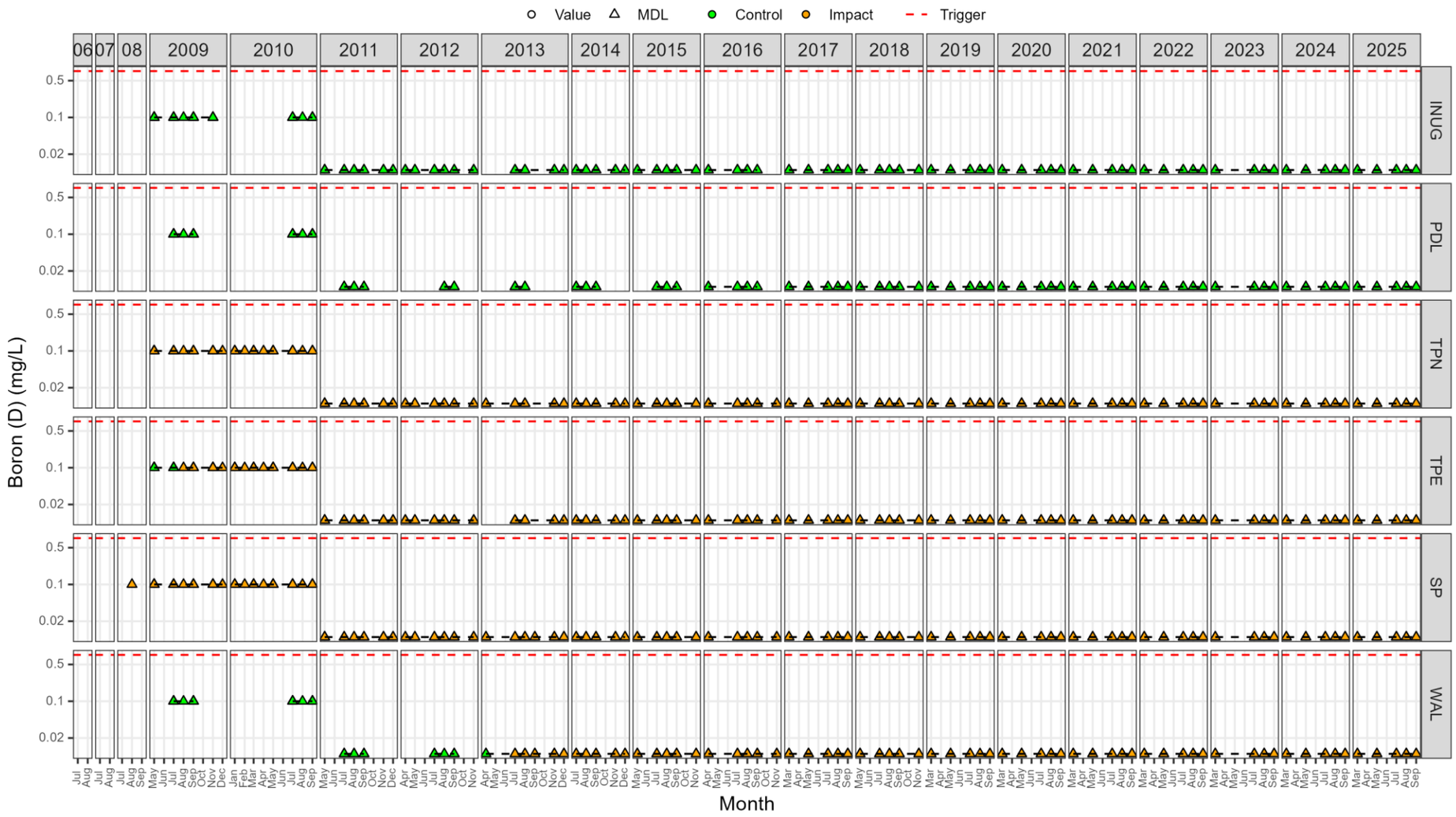


Figure C1-60. Dissolved cadmium (mg/L).

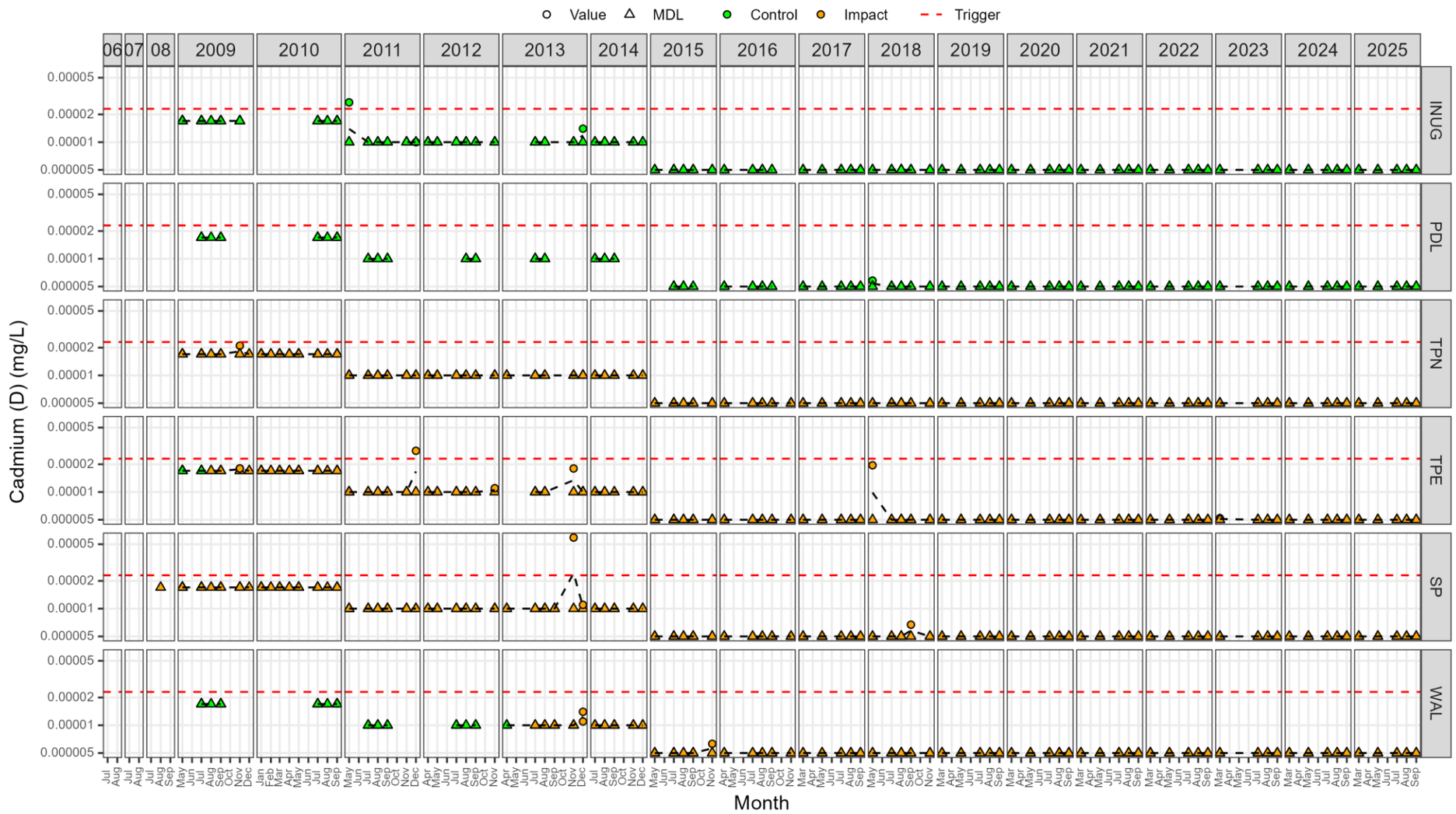


Figure C1-61. Dissolved copper (mg/L).

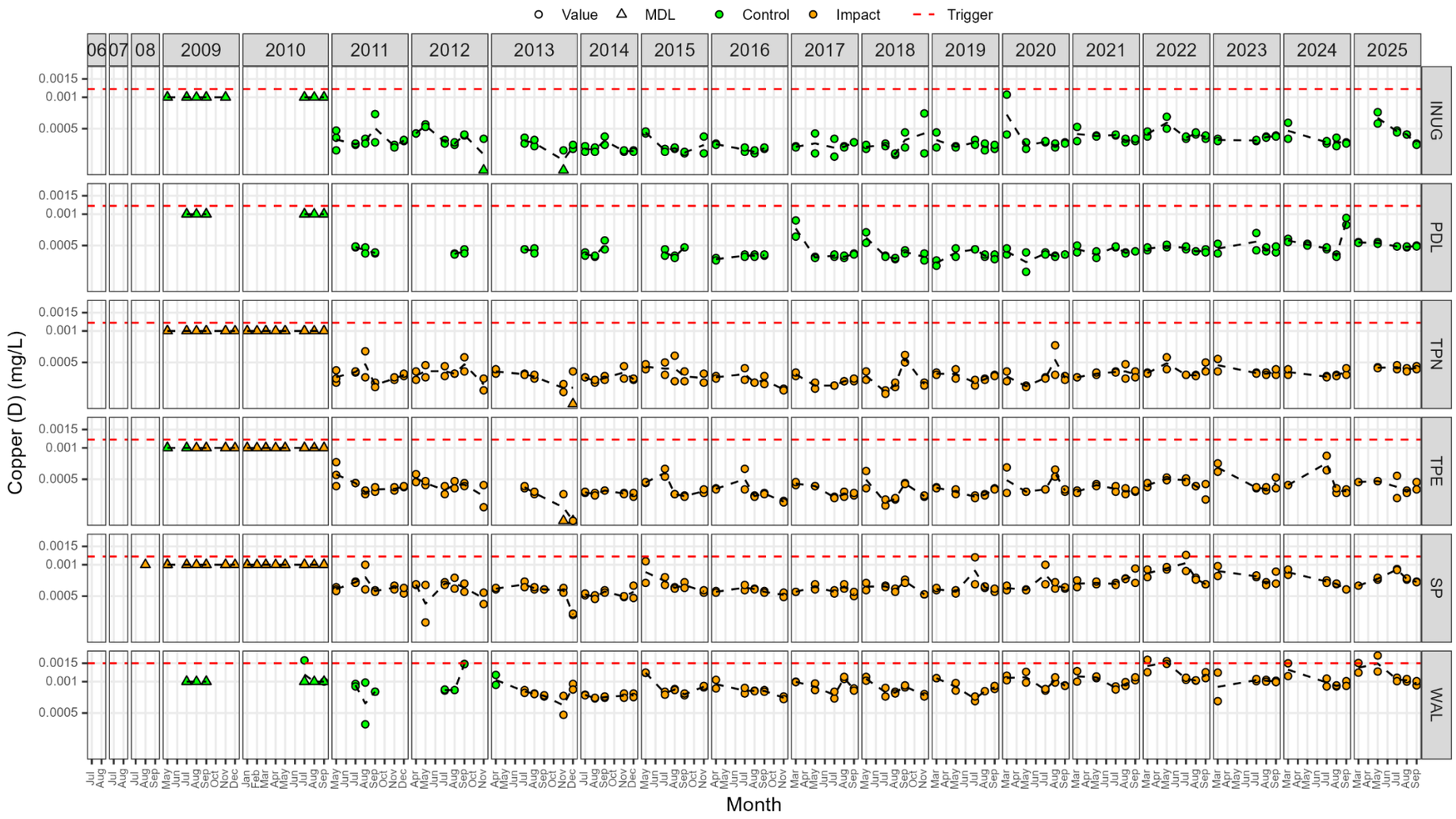


Figure C1-62. Dissolved chromium (mg/L).

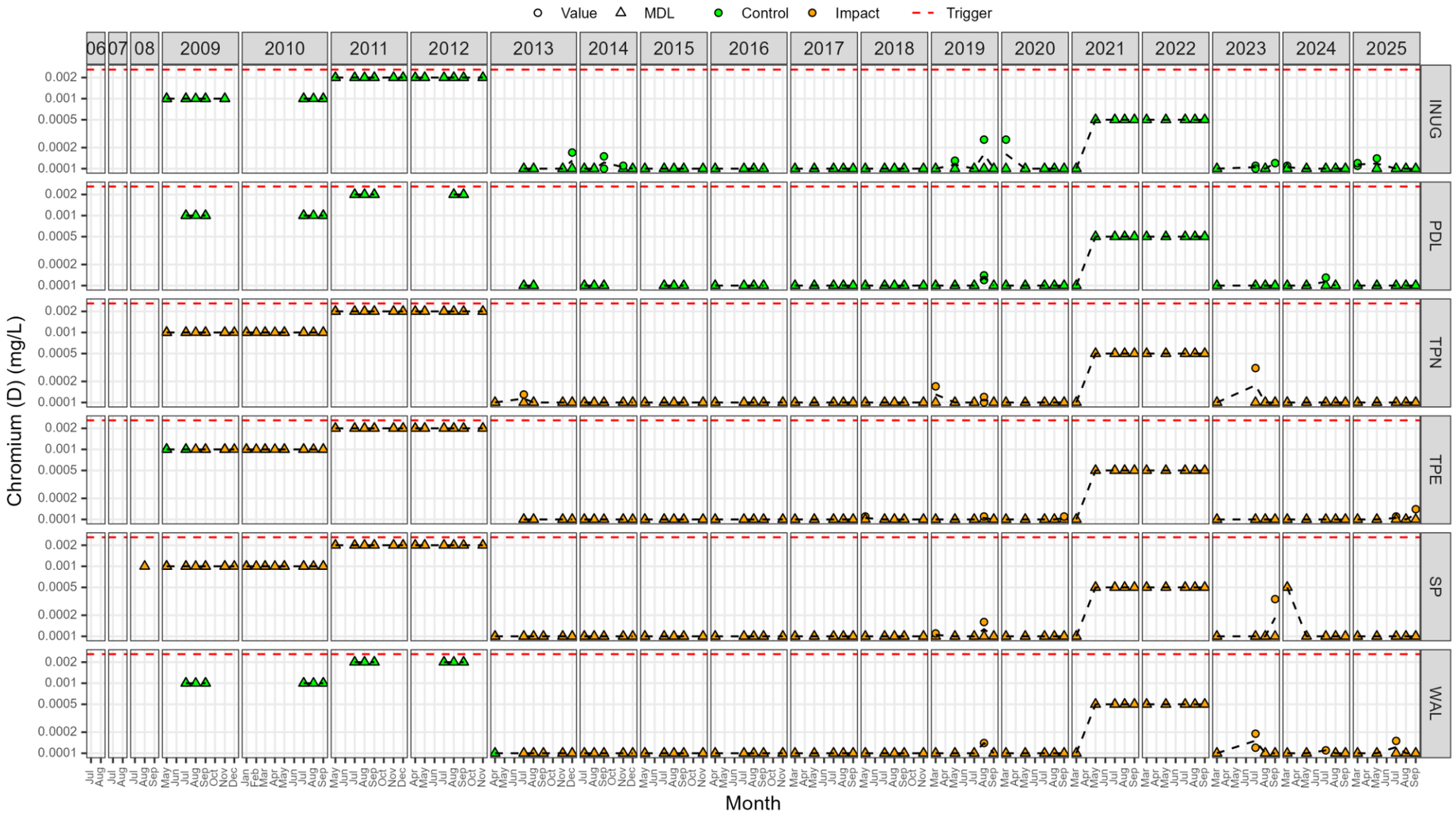


Figure C1-63. Dissolved iron (mg/L).

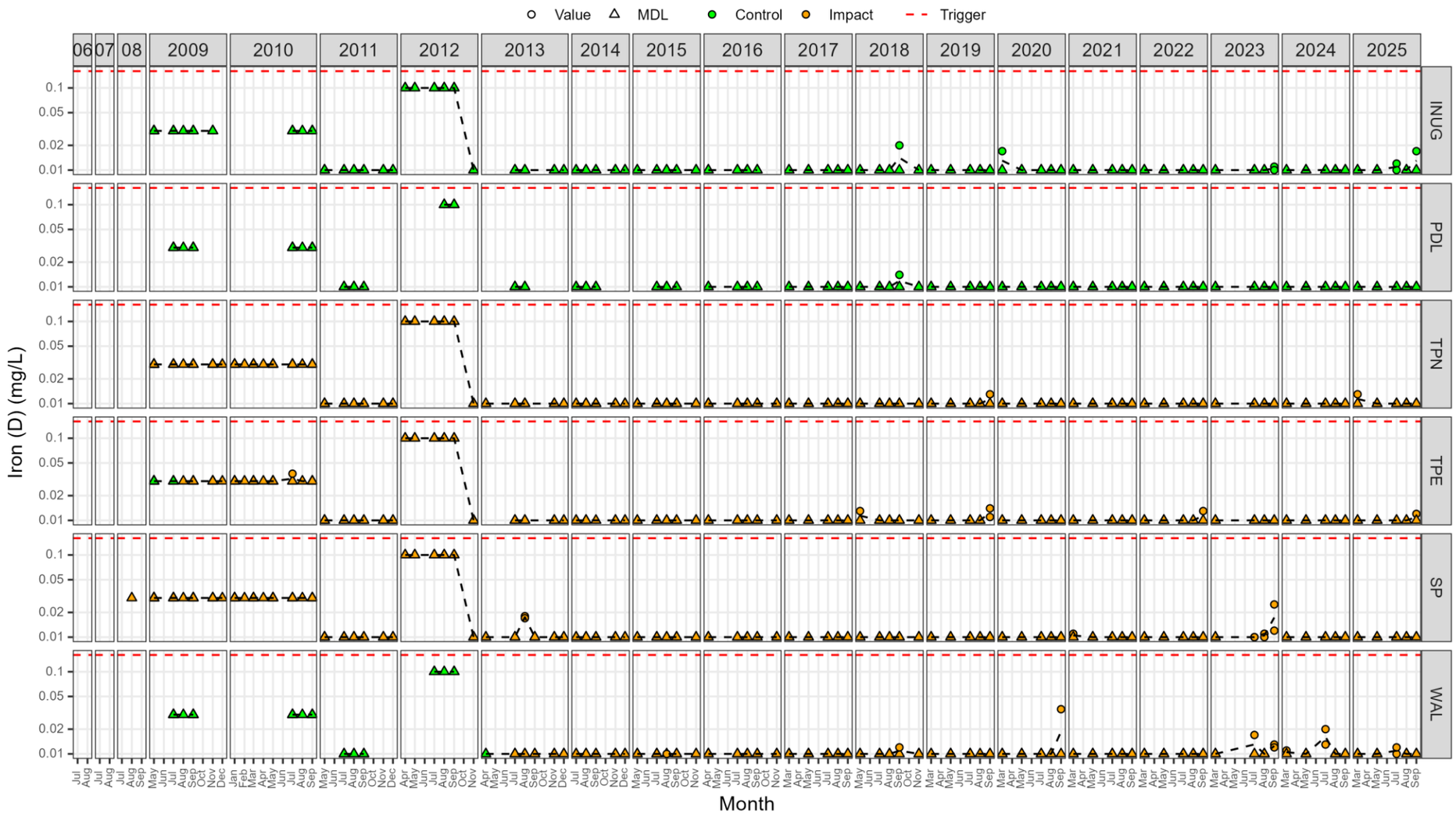


Figure C1-64. Dissolved lead (mg/L).

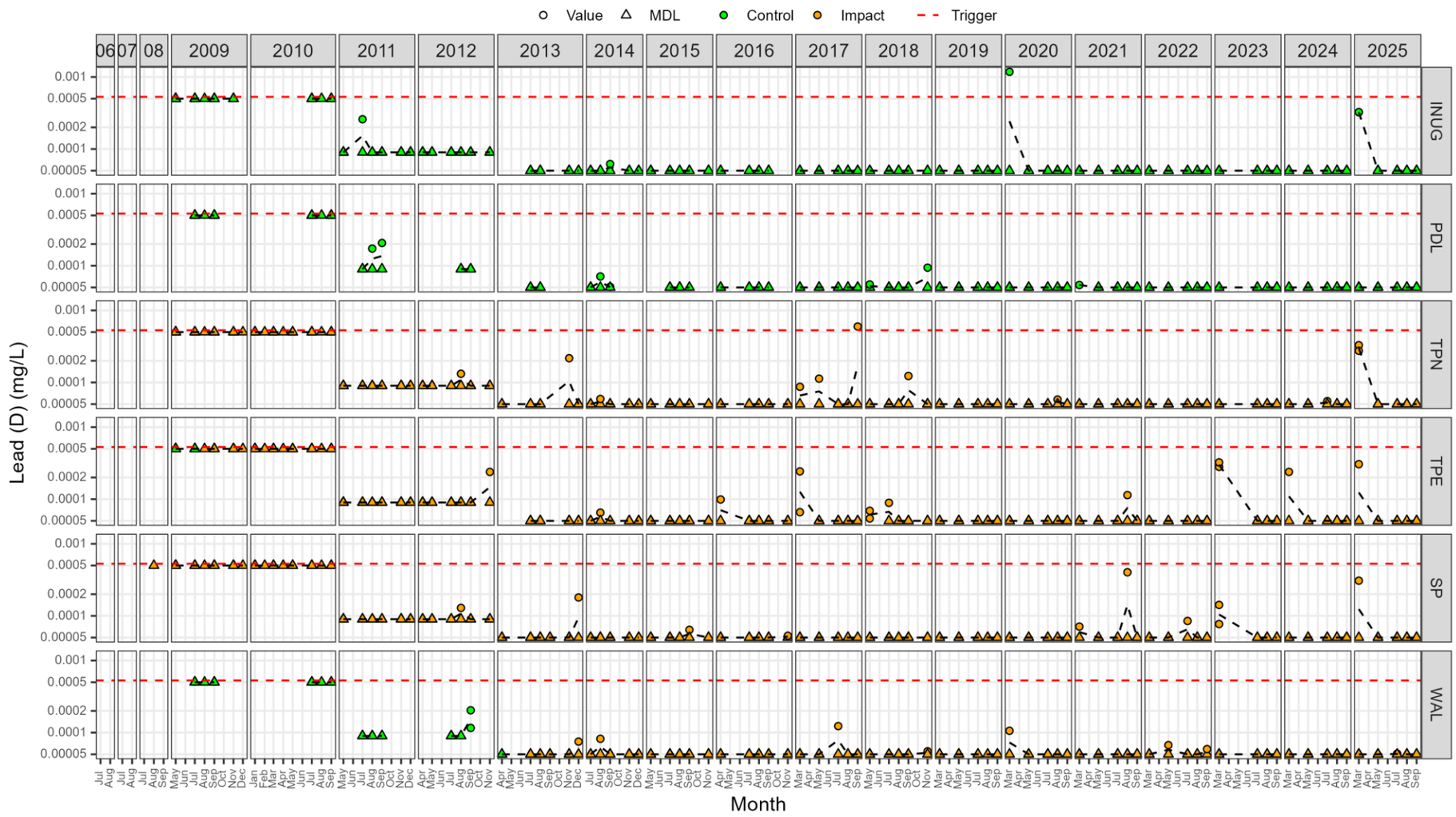


Figure C1-65. Dissolved lithium (mg/L).

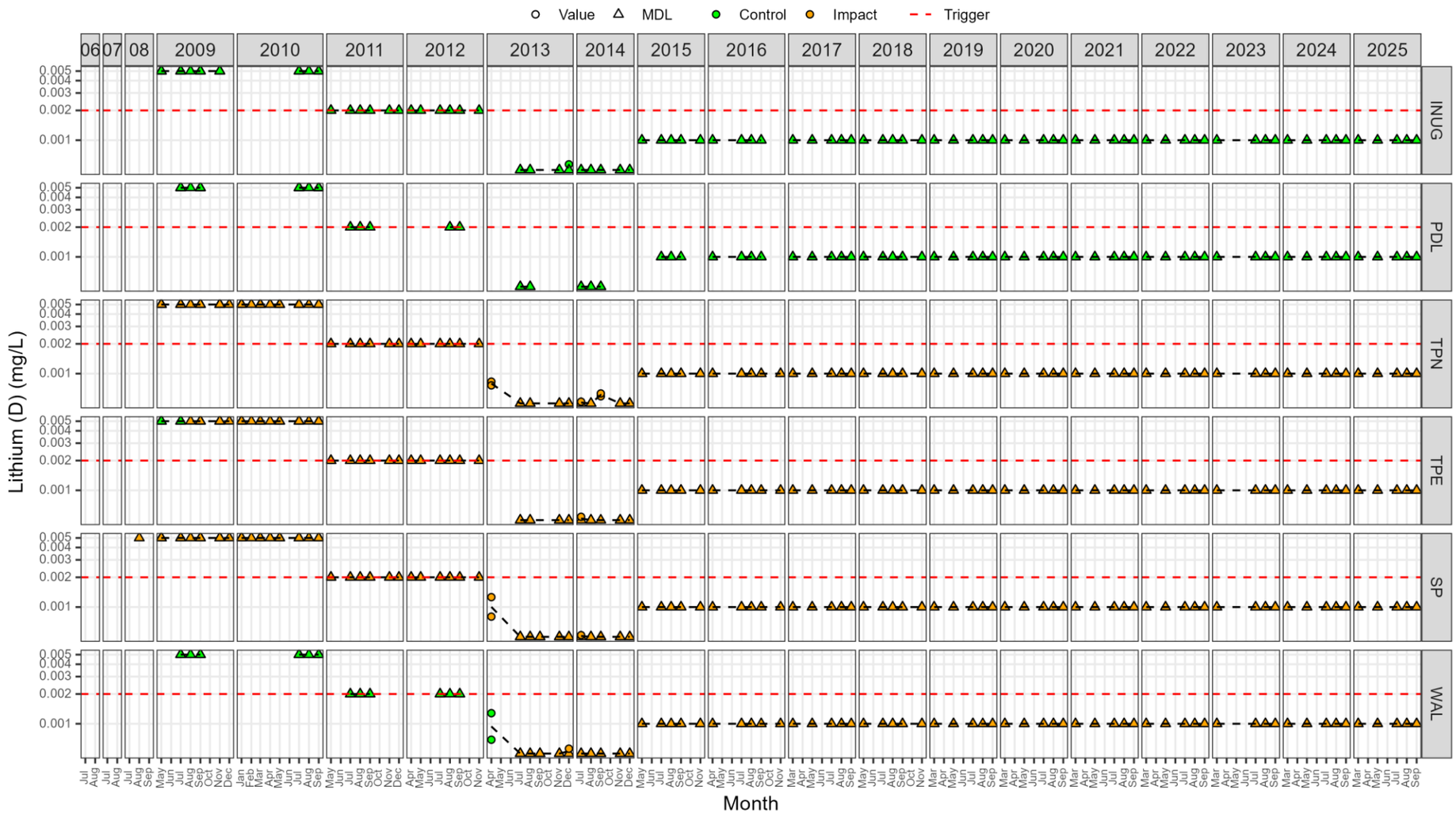


Figure C1-66. Dissolved manganese (mg/L).

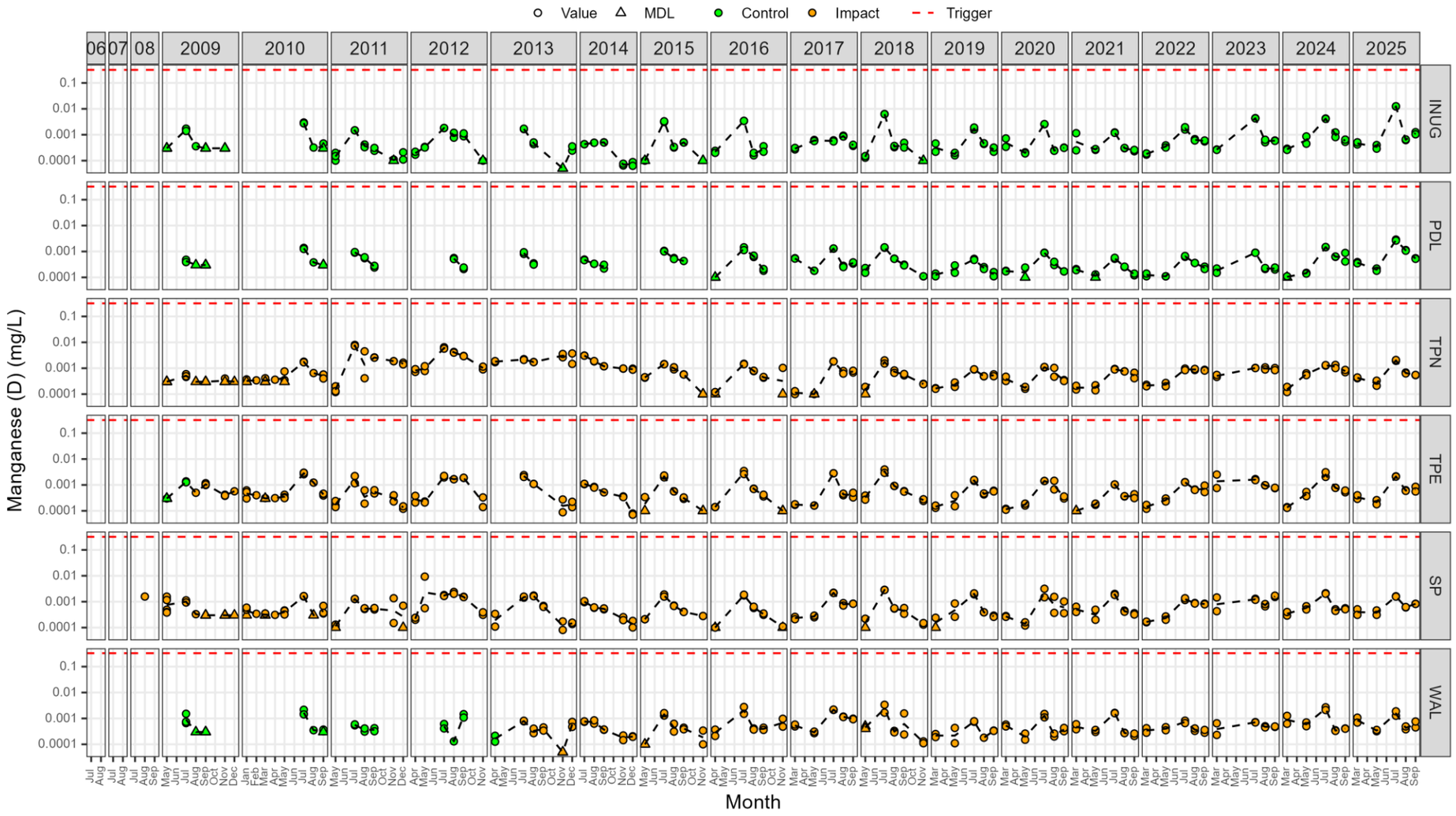


Figure C1-67. Dissolved molybdenum (mg/L).

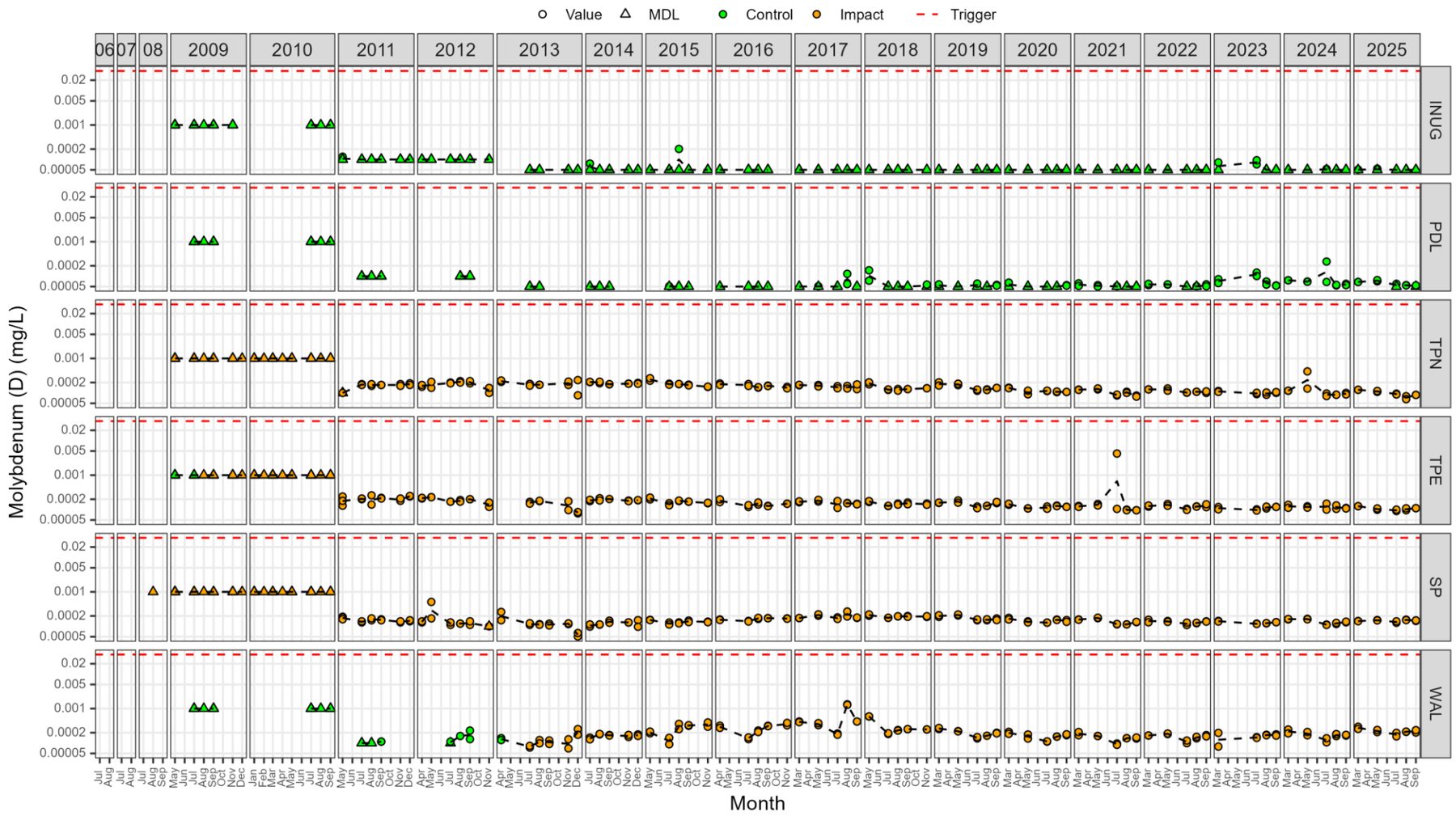


Figure C1-68. Dissolved mercury (mg/L).

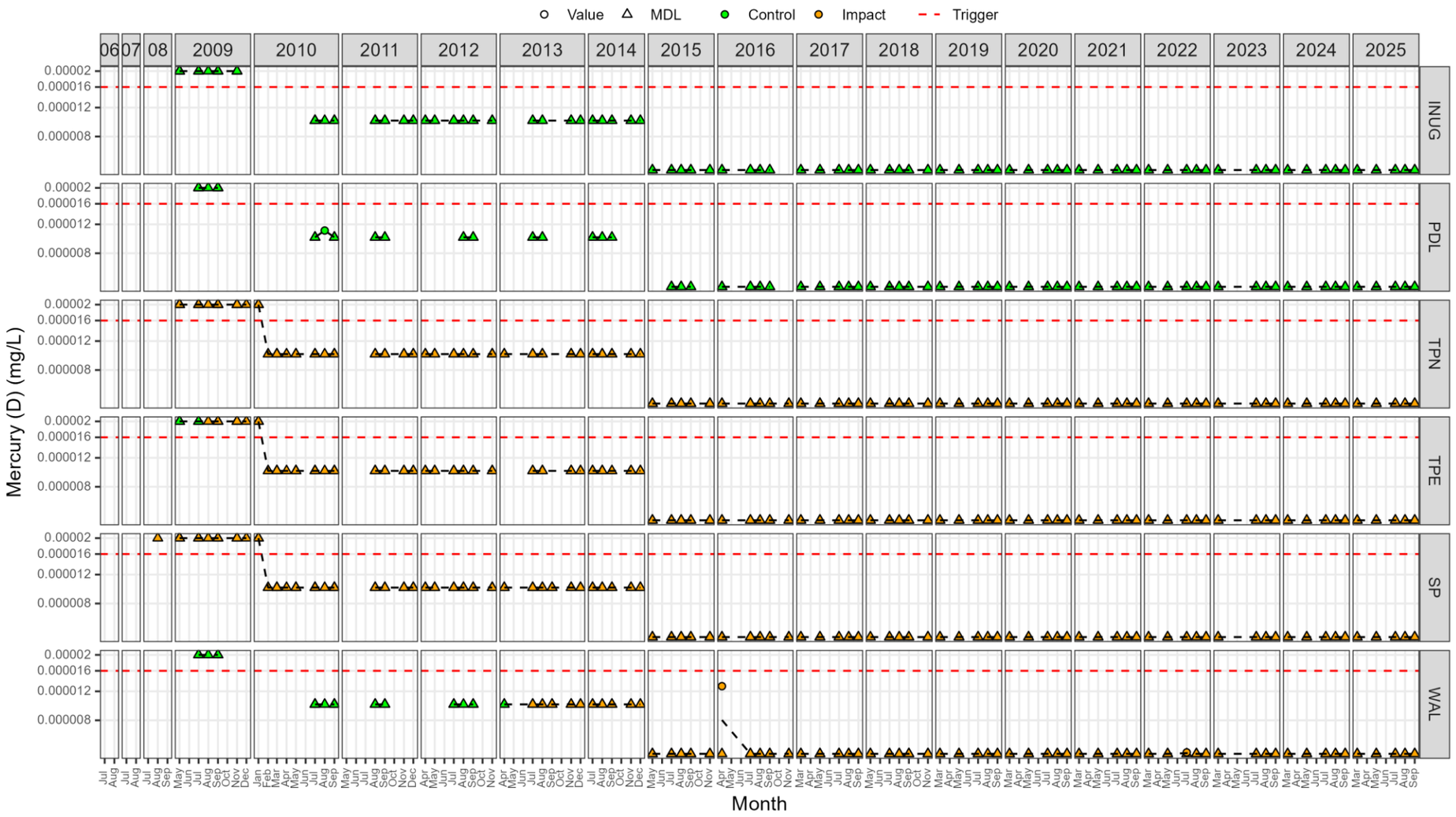


Figure C1-69. Dissolved nickel (mg/L).

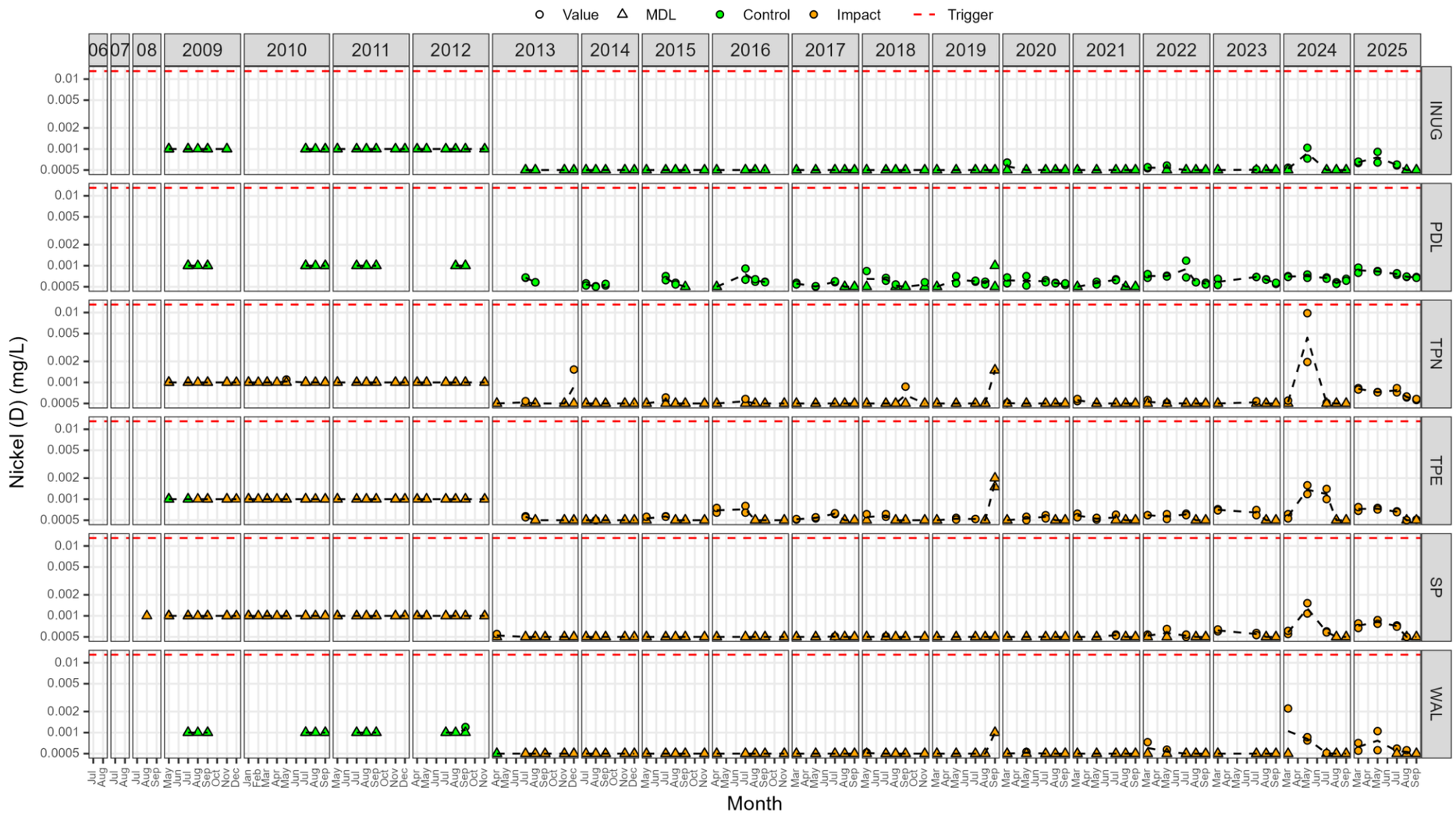


Figure C1-70. Dissolved selenium (mg/L).

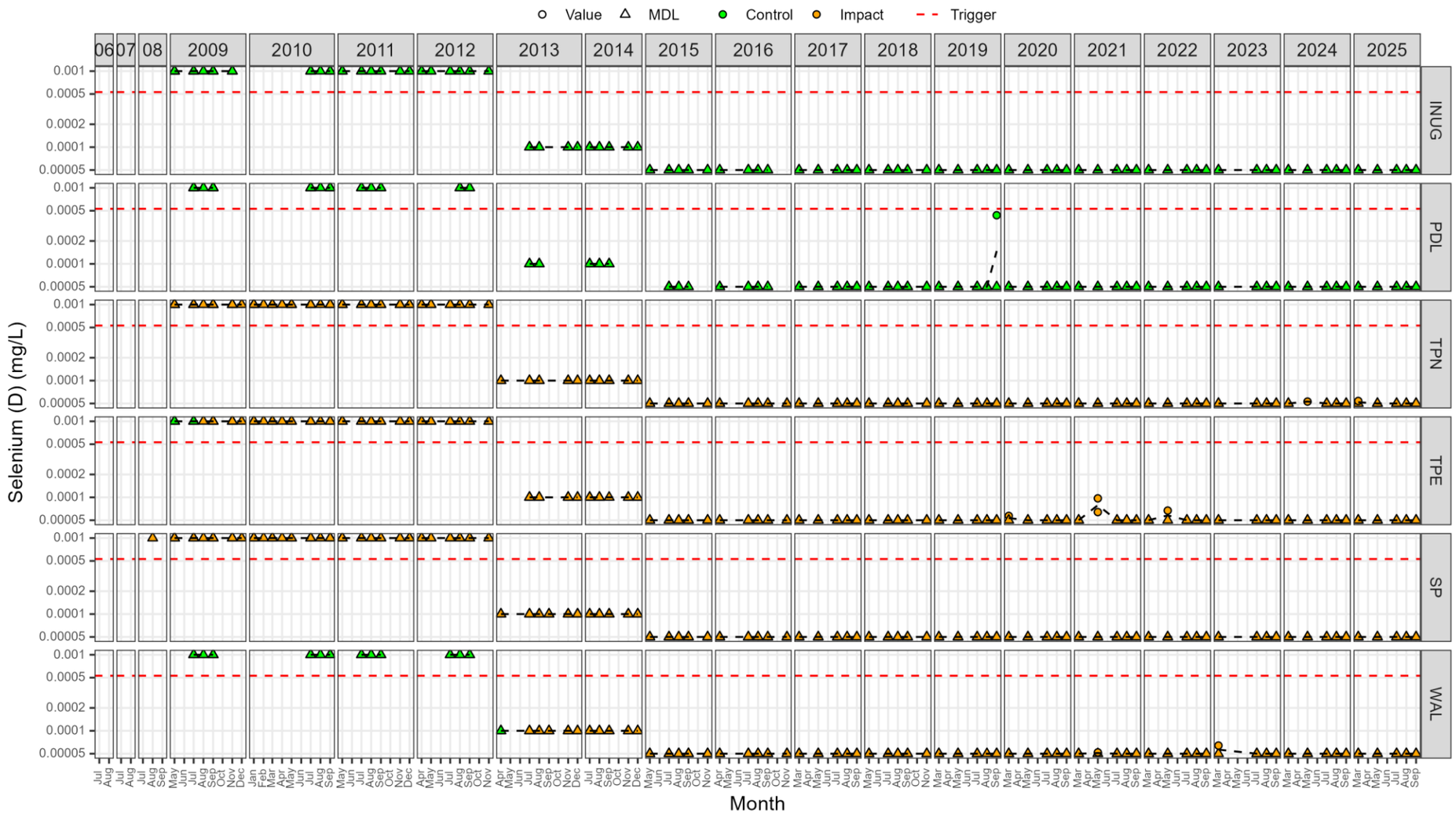


Figure C1-71. Dissolved silicon (mg/L).

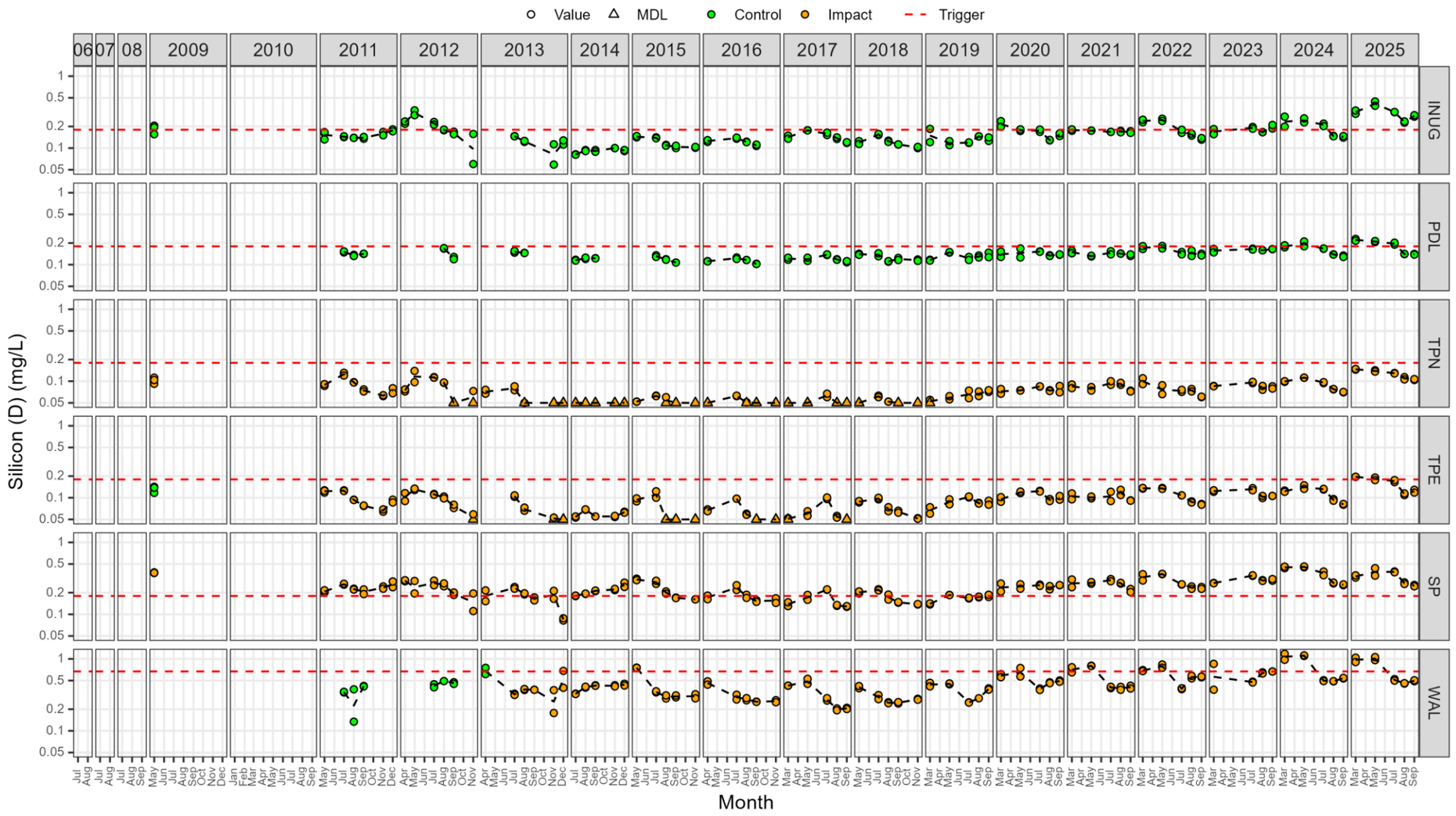


Figure C1-72. Dissolved silver (mg/L).

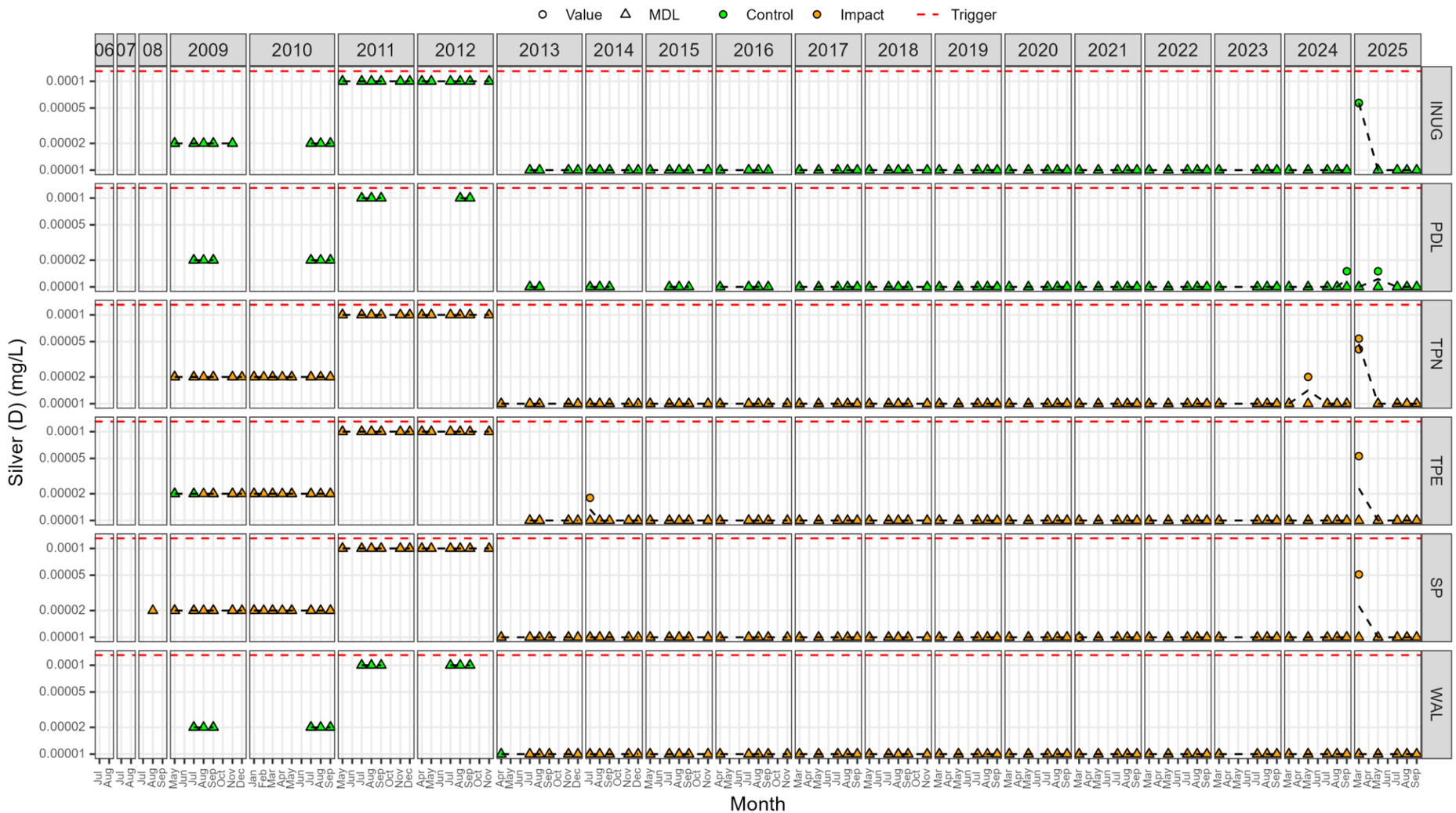


Figure C1-73. Dissolved strontium (mg/L).

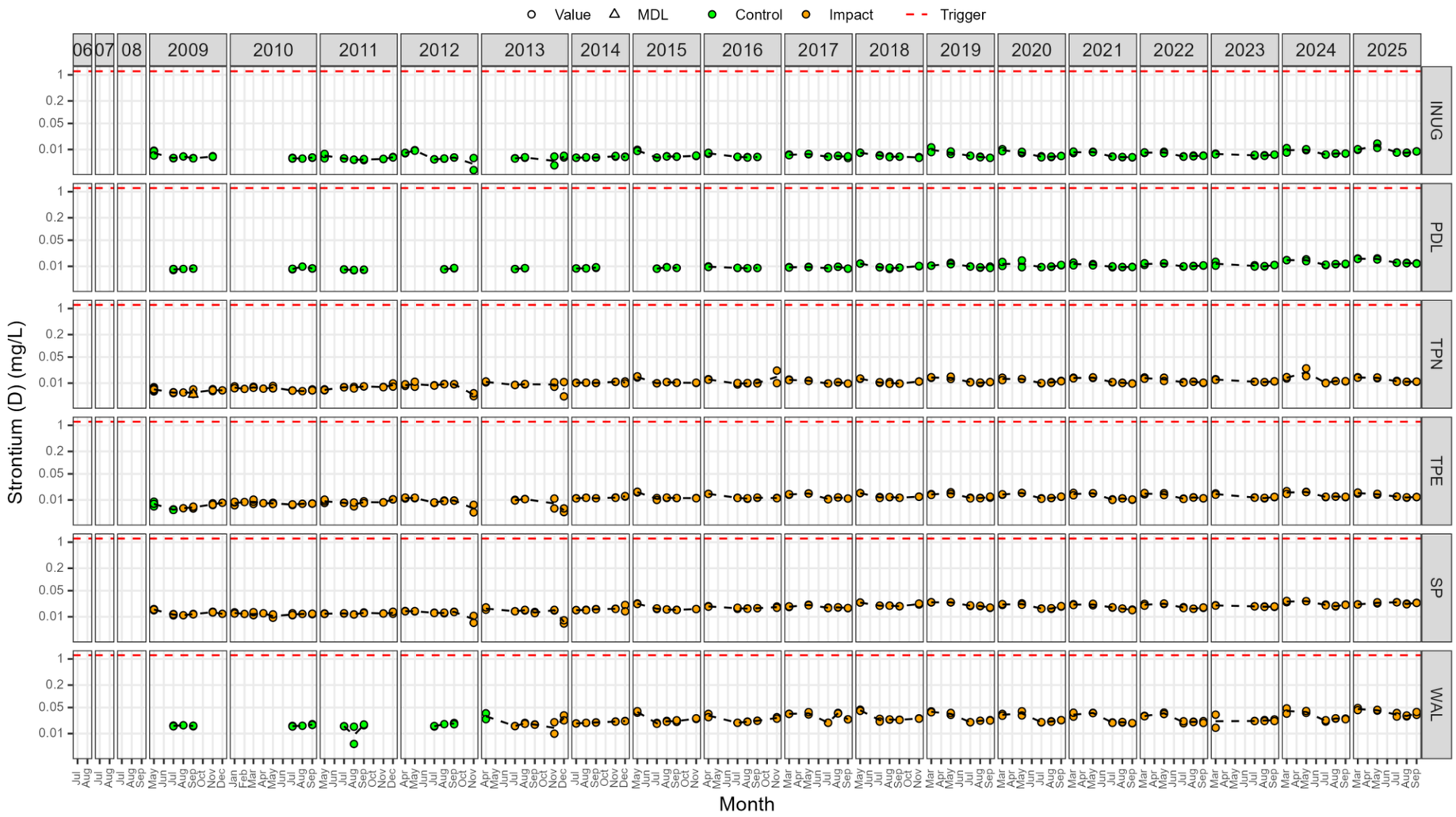


Figure C1-74. Dissolved thallium (mg/L).

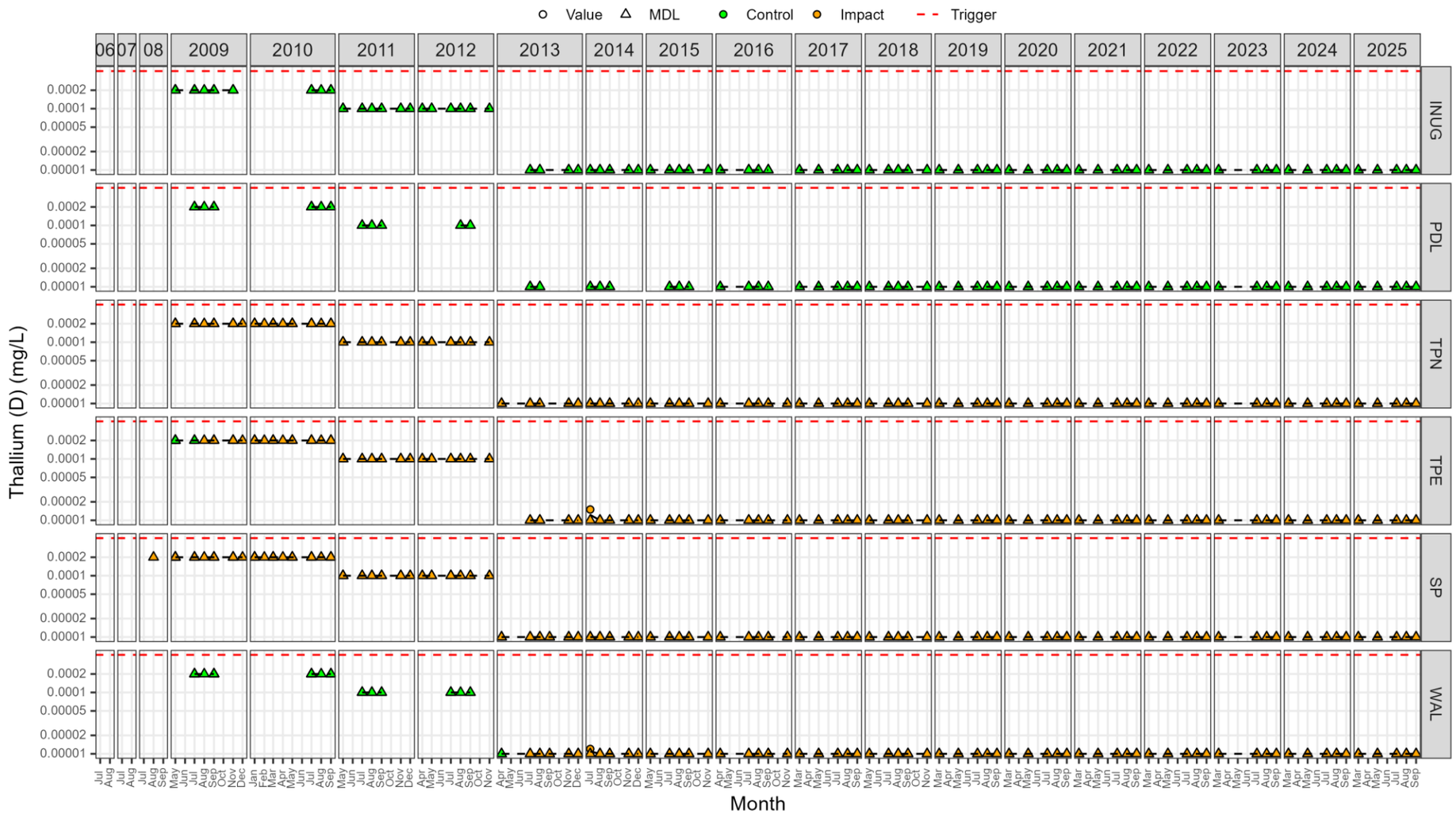


Figure C1-75. Dissolved tin (mg/L).

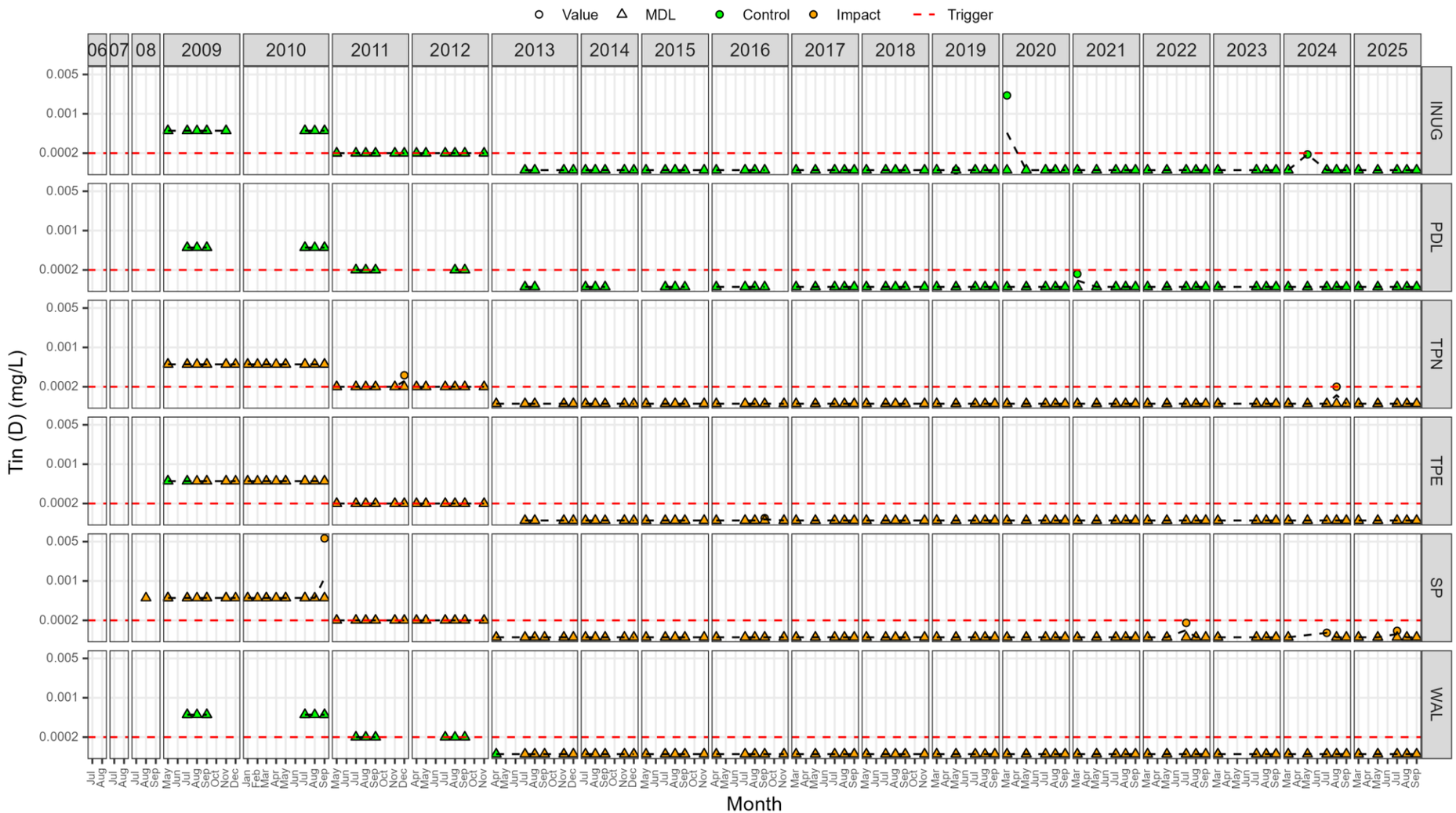


Figure C1-76. Dissolved titanium (mg/L).

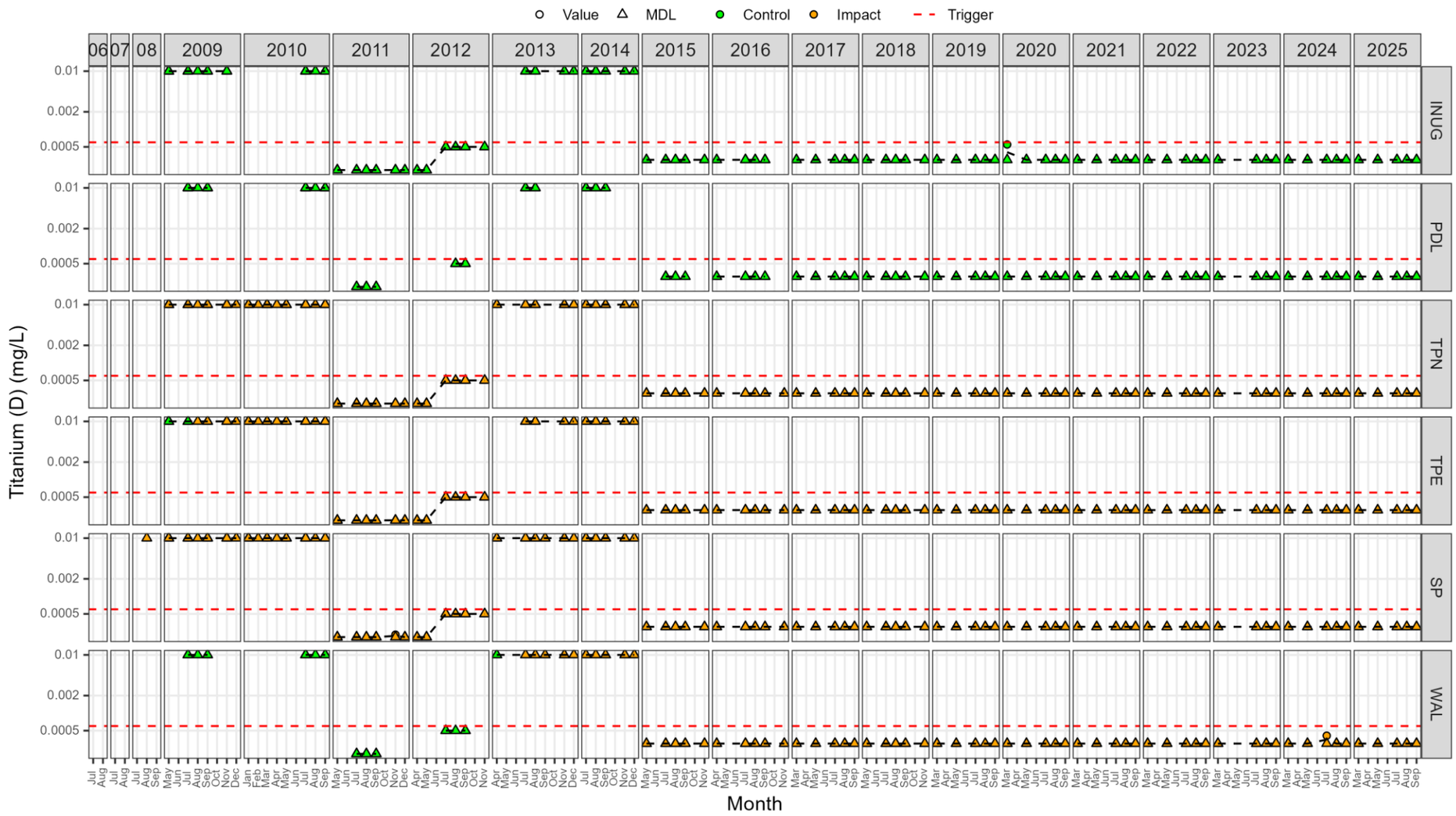


Figure C1-77. Dissolved uranium (mg/L).

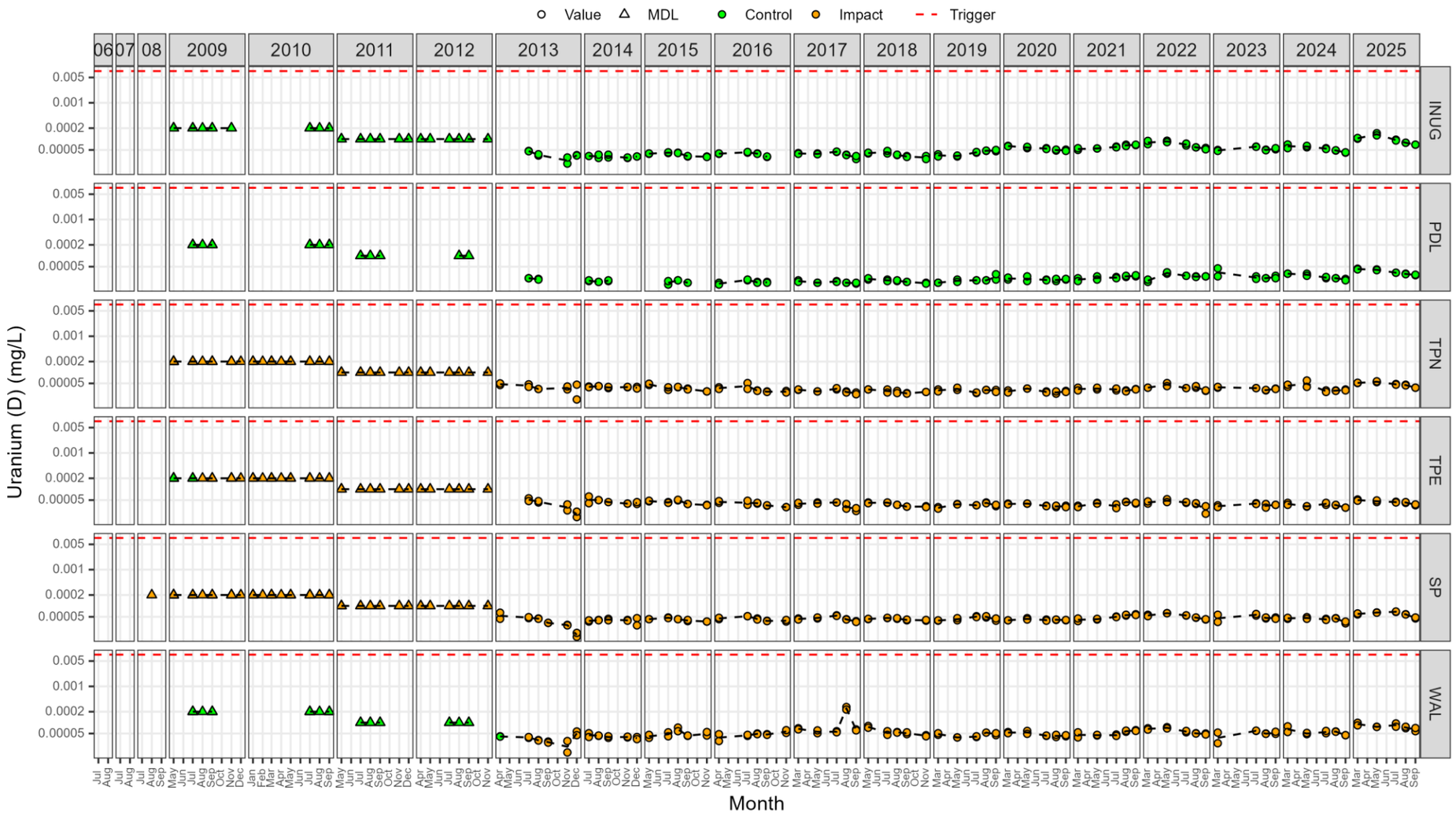


Figure C1-78. Dissolved vanadium (mg/L).

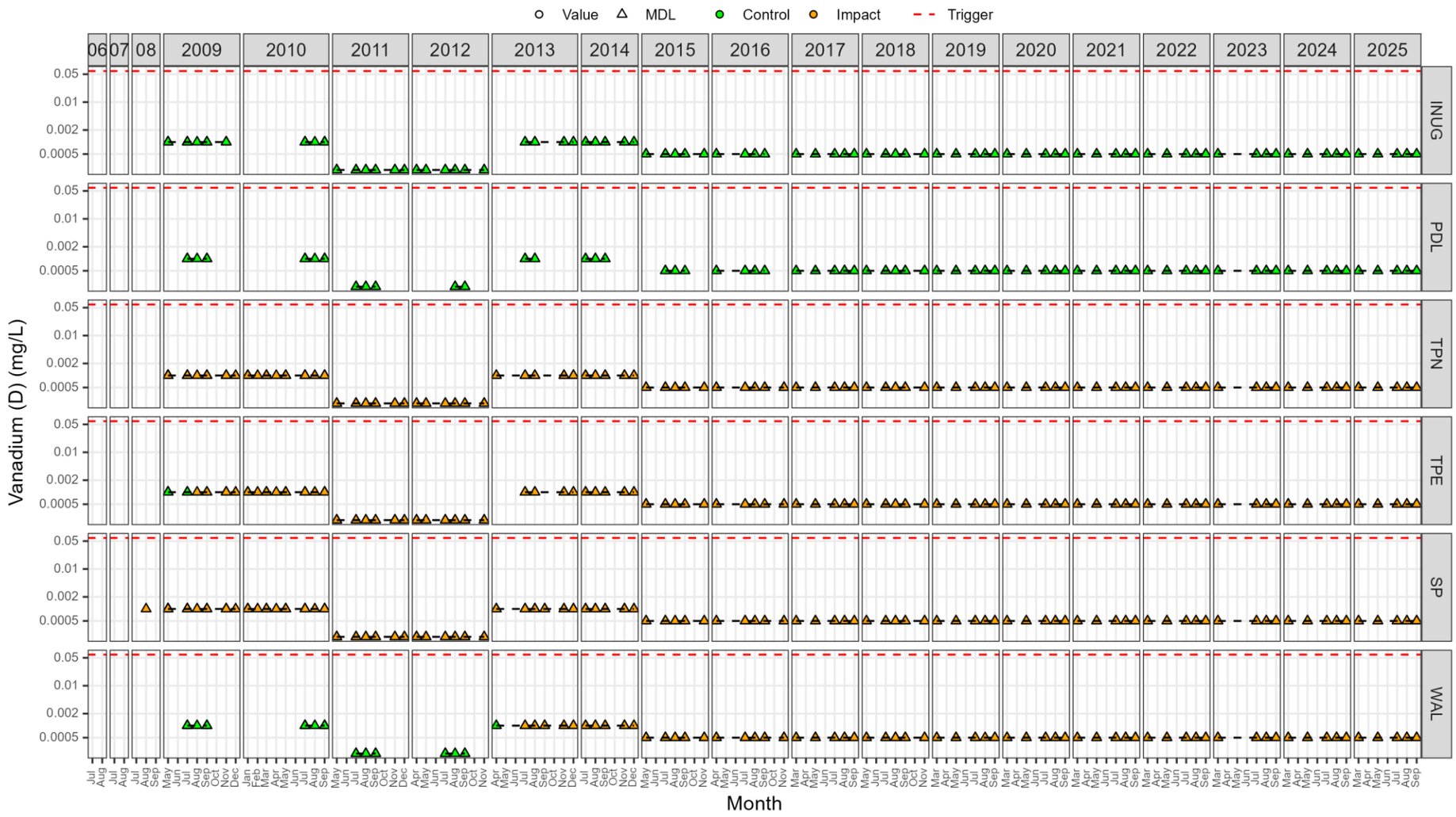
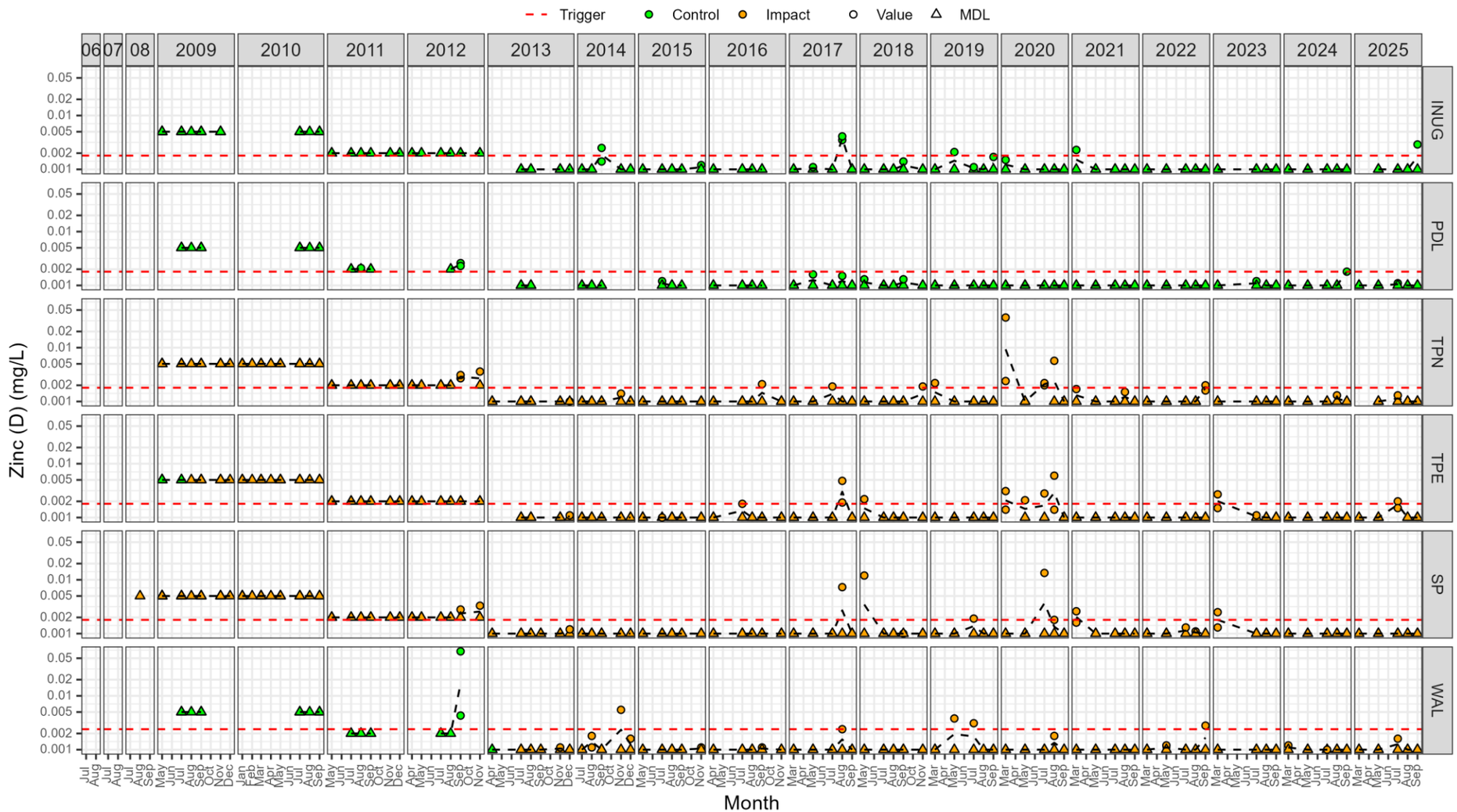


Figure C1-79. Dissolved zinc (mg/L).



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Azimuth. 2015. Core Receiving Environment Monitoring Program (CREMP) 2014, Meadowbank Mine. Report prepared by Azimuth Consulting Group, Vancouver, BC for Agnico Eagle Mines Ltd., Baker Lake, NU. March, 2015.

Appendix C2
Water Chemistry – Whale Tail Study Area Lakes

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Table C2-1. Water quality results from the Whale Tail study area lakes, 2025.

Lake & Area		WTP Screening Values[2]		Whale Tail Lake South Basin (WTS; Impoundment)									
Month				**March**	**March**	**May**	**May**	**July**	**July**	**August**	**August**	**September**	**September**
Area-Replicate ID				WTS-97	WTS-98	WTS-99	WTS-100	WTS-101	WTS-102	WTS-103	WTS-104	WTS-105	WTS-106
Date	**Aquatic Life Guideline[1]**	Triggers	Thresholds	07-Mar-2025	07-Mar-2025	04-May-2025	04-May-2025	07-Jul-2025	07-Jul-2025	16-Aug-2025	16-Aug-2025	04-Sep-2025	04-Sep-2025
Time				13:10	12:40	10:30	12:00	15:32	15:12	09:45	10:30	08:41	09:15
ALS Sample ID				VA25A5659-003	VA25A5659-004	VA25B0623-006 VA25B2006-007	VA25B0623-008 VA25B2006-008	VA25B6987-005 VA25B7586-011	VA25B6987-006 VA25B7586-012	VA25C1585-005 VA25C1599-006	VA25C1585-006 VA25C1599-007	VA25C3661-015 VA25C5633-016	VA25C3661-016 VA25C5633-017
Total Water Depth (m)				8.4	10.8	8.1	16.4	16.6	7.4	9.0	7.8	10.2	11.0
UTM Zone				14W	14W	14W	14W	14W	14W	14W	14W	14W	14W
Easting				607519	607159	607638	607241	607385	607376	607057	607543	607263	607518
Northing				7254193	7253588	7254078	7253710	7254484	7253844	7253562	7254286	7253518	7254258
Field Measurements (Surface 3m)													
Dissolved Oxygen (mg/L)				14.3	14.1	13.9	12.8	11.5	11.4	11.0	11.0	10.9	11.0
Specific Conductivity (µS/cm)				205	196	124	205	169	169	167	166	154	154
pH	6.5 - 9.0			7.2	7.1	6.8	6.8	7.2	7.0	7.6	7.3	6.9	7.0
Temperature (°C)				0.39	0.50	0.74	0.81	10.1	10.9	12.2	11.9	9.8	9.8
Physical Tests (mg/L)													
Conductivity (µS/cm)		48.6		**193**	**199**	**202**	**197**	**165**	**165**	**159**	**159**	**160**	**161**
Alkalinity - Bicarbonate		9.60		**25**	**25**	**28**	**26**	**22**	**22**	**23**	**22**	**24**	**23**
Alkalinity - Carbonate		2.0		*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Alkalinity - Hydroxide				*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Alkalinity - Total (as $CaCO_3$)		9.61		**25**	**25**	**28**	**26**	**22**	**22**	**23**	**22**	**24**	**23**
Hardness (as CaCO3), dissolved		17.4		**69**	**67**	**71**	**69**	**59**	**58**	**59**	**59**	**58**	**58**
Hardness (as CaCO3), from total Ca/Mg				73	72	75	76	63	61	59	59	60	59
Total Dissolved Solids (TDS)		38.5		**115**	**114**	**138**	**132**	**88**	**78**	**126**	**120**	**132**	**132**
Total Suspended Solids (TSS)		3	5	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	1.8	1.4
Turbidity (NTU)				0.32	0.28	0.23	0.15	0.65	0.69	0.34	0.34	0.93	0.85
pH (Laboratory)	6.5 - 9.0	6.57-7.97	6.5-9.0	7.5	7.3	7.4	7.4	7.5	7.5	7.5	7.5	7.6	7.6
Anions and Nutrients (mg/L)													
Ammonia (as N)[3]	***equation***	0.065	0.126	**0.10**	**0.085**	0.0068	*<0.0050*	0.011	0.011	0.022	0.039	0.025	0.022
Bromide				0.25	0.25	0.29	0.27	0.20	0.19	0.18	0.18	0.20	0.21
Chloride	120	60.4	120	22	21	24	24	17.5	17.3	17.2	17.2	17.9	18.0
Fluoride	0.12	0.077	0.12	**0.078**	0.074	**0.081**	**0.082**	0.063	0.062	0.068	0.067	0.070	0.068
Total Kjeldahl Nitrogen		0.17		**0.32**	**0.30**	**0.27**	**0.27**	**0.24**	**0.21**	**0.23**	**0.27**	**0.24**	**0.25**
Nitrate (as N)	3	1.5	3	1.1	1.0	1.2	1.2	0.83	0.82	0.60	0.60	0.57	0.57
Nitrite (as N)	0.06	0.031	0.06	0.010	0.0034	*<0.0010*	*<0.0010*	0.0037	0.0034	0.0023	0.0023	0.0018	0.0017
Ortho Phosphate (as P)		0.0022		*<0.0010*	*<0.0010*	*<0.0010*	0.0013	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Phosphorus (P)-Total	0.01	0.0045	0.01	0.0036	0.0036	**0.0048**	**0.0046**	0.0041	0.0043	0.0038	0.0039	**0.0052**	0.0039
Phosphorus (P)-Total Diss.				0.0030	0.0025	*<0.0020*	0.0030	0.0034	0.0041	*<0.0020*	0.0030	*<0.0020*	*<0.0020*
Reactive Silica (as SiO_2)		1.33		**1.6**	**1.5**	**1.7**	**1.6**	**1.5**	**1.4**	*<0.50*	*<0.50*	*<0.50*	*<0.50*
Sulphate (SO_4)		64.8	128	29	27	31	30	24	24	23	23	24	24
Organic / Inorganic Carbon (mg/L)													
Dissolved Organic Carbon		2.43		**3.7**	**3.5**	**3.8**	**3.9**	**2.5**	**3.0**	**2.9**	**2.9**	**3.3**	**3.4**
Total Organic Carbon		2.42		**3.8**	**3.8**	**3.9**	**3.9**	**3.1**	**3.2**	**3.1**	**3.4**	**3.3**	**3.6**
Total Metals (mg/L)													
Aluminum[3]	***equation***	0.052	0.1	0.0098	0.011	0.0067	0.0068	0.017	0.016	0.0086	0.0079	0.023	0.028
Antimony		0.0046	0.009	0.0020	0.0019	0.0018	0.0017	0.0020	0.0020	0.0016	0.0016	0.0016	0.0015
Arsenic	0.005	0.013	0.025	0.0014	0.0012	0.0011	0.0011	0.0020	0.0019	0.0011	0.0011	0.0010	0.0011
Barium		0.5	1	0.027	0.025	0.028	0.028	0.023	0.022	0.021	0.021	0.020	0.020
Beryllium		0.000115	0.00013	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*
Bismuth				*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Boron	1.5	0.76	1.5	0.011	0.012	0.011	0.011	0.012	0.011	*<0.010*	*<0.010*	*<0.010*	0.010
Cadmium[3]	***equation***	0.000023	0.00004	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	0.00001	*<0.0000050*	*<0.0000050*	*<0.0000050*
Calcium		4.6		**18.4**	**18.9**	**20**	**20**	**17.0**	**16.2**	**15.5**	**15.6**	**15.6**	**15.2**
Cesium				0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002
Chromium[4]	0.001	0.0025	0.005	0.00015	0.00014	0.00011	0.00015	0.00084	0.00029	0.00020	0.00016	0.00023	0.00021
Cobalt				*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	0.00012	0.00012	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Copper[3]	***equation***	0.0013	0.002	0.00062	0.00059	0.00061	0.00060	0.00051	0.00052	0.00053	*<0.00050*	0.00051	0.00051
Iron	0.3	0.16	0.3	0.016	0.017	0.017	0.014	0.070	0.066	0.028	0.026	0.058	0.060
Lead[3]	***equation***	0.00053	0.001	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	0.00005	*<0.000050*
Lithium		0.002		**0.0029**	**0.0030**	**0.0032**	**0.0031**	**0.0026**	**0.0026**	**0.0024**	**0.0024**	**0.0025**	**0.0025**
Magnesium		1.41		**6.5**	**6.1**	**6.0**	**6.2**	**4.9**	**5.0**	**4.9**	**4.9**	**5.0**	**5.2**
Manganese[3]		0.32	***See note 3***	0.00092	0.00082	0.0032	0.0015	0.015	0.015	0.0052	0.0049	0.0086	0.0084
Mercury	0.000026	0.000016	0.000026	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Molybdenum	0.073	0.037	0.073	0.0014	0.0014	0.0012	0.0012	0.0015	0.0013	0.0011	0.0011	0.0011	0.0011
Nickel[3]	***equation***	0.013	0.025	0.0045	0.0041	0.0040	0.0039	0.0040	0.0037	0.0021	0.0020	0.0019	0.0018
Phosphorus		0.0045	0.004	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*
Potassium		0.84		**4.7**	**4.3**	**4.7**	**4.8**	**3.9**	**3.9**	**4.0**	**4.0**	**3.8**	**3.8**
Rubidium				0.0065	0.0060	0.0060	0.0062	0.0056	0.0052	0.0056	0.0055	0.0054	0.0053
Selenium	0.001	0.00053	0.001	0.00009	0.00007	0.00008	0.00009	0.00008	0.00009	*<0.000050*	0.00008	*<0.000050*	*<0.000050*
Silicon		0.61		**0.83**	**0.74**	**0.85**	**0.80**	**0.79**	**0.74**	0.17	0.17	0.14	0.13
Silver	0.00025	0.00013	0.00025	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Sodium		1		**4.6**	**4.1**	**4.3**	**4.3**	**3.9**	**3.7**	**3.8**	**3.8**	**3.8**	**3.6**
Strontium		1.26	2.5	0.17	0.16	0.16	0.15	0.14	0.14	0.13	0.13	0.14	0.13
Sulfur				9.7	8.6	10.1	9.4	8.4	8.1	7.8	7.8	7.5	7.3
Tellurium				*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*
Thallium	0.0008	0.00013	0.0008	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	0.00001	*<0.000010*	*<0.000010*	*<0.000010*
Thorium				*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Tin		0.033		*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Titanium		0.00041		*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	**0.00055**	**0.00055**	*<0.00030*	*<0.00030*	**0.00078**	**0.00083**
Tungsten				*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Uranium	0.015	0.0002	0.015	**0.00029**	**0.00027**	**0.00025**	**0.00025**	**0.00023**	**0.00023**	0.00016	0.00016	0.00014	0.00013
Vanadium		0.0006	0.12	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Zinc	0.03	0.0075	***See note 3***	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*
Zirconium				*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*
Dissolved Metals (mg/L)													
Aluminum[3]		0.026	0.05	0.0028	0.0037	0.0030	0.0034	0.0048	0.0041	0.0036	0.0036	0.0042	0.0081
Antimony		0.005	0.009	0.0019	0.0017	0.0018	0.0017	0.0018	0.0019	0.0016	0.0016	0.0014	0.0014
Arsenic		0.013	0.025	0.0013	0.0011	0.0011	0.0011	0.0016	0.0016	0.0011	0.0010	0.0010	0.0010
Barium		0.5	1	0.025	0.024	0.027	0.027	0.022	0.023	0.021	0.020	0.022	0.023
Beryllium		0.000115	0.00013	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*
Bismuth				*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Boron		0.76	1.5	0.010	0.010	0.011	0.011	0.011	0.010	0.010	0.010	*<0.010*	*<0.010*
Cadmium		0.000023	0.00004	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Calcium		4.6		**18.0**	**17.6**	**19.6**	**18.7**	**16.2**	**15.9**	**15.9**	**16.0**	**15.2**	**15.1**
Cesium				0.00002	0.00001	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00001	0.00002
Chromium		0.0026	0.005	*<0.00010*	0.00012	0.00010	0.00010	*<0.00010*	0.00013	*<0.00010*	*<0.00010*	*<0.00010*	0.00012
Cobalt				*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Copper		0.0012	0.002	0.00056	0.00059	0.00058	0.00056	0.00046	0.00043	0.00042	0.00042	0.00047	0.00048
Iron		0.16	0.3	*<0.010*	*<0.010*	*<0.010*	*<0.010*	0.030	0.029	*<0.010*	*<0.010*	*<0.010*	0.013
Lead		0.00053	0.001	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	0.00008	*<0.000050*
Lithium		0.002		**0.0029**	**0.0028**	**0.0032**	**0.0030**	**0.0028**	**0.0028**	**0.0025**	**0.0024**	**0.0023**	**0.0023**
Magnesium		1.41		**5.8**	**5.5**	**5.4**	**5.4**	**4.5**	**4.5**	**4.7**	**4.7**	**5.0**	**5.0**
Manganese[3]		0.32	***See note 3***	0.00046	0.00049	0.0025	0.0011	0.0099	0.0099	0.00063	0.00038	0.00058	0.00059
Mercury		0.000016	0.000026	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Molybdenum		0.037	0.073	0.0013	0.0013	0.0012	0.0012	0.0012	0.0012	0.0011	0.0011	0.00099	0.0010
Nickel		0.013	0.025	0.0042	0.0040	0.0039	0.0037	0.0036	0.0035	0.0018	0.0018	0.0018	0.0018
Phosphorus				*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*
Potassium		0.84		**4.6**	**4.4**	**4.6**	**4.6**	**4.2**	**4.2**	**4.1**	**4.2**	**4.2**	**4.1**
Rubidium				0.0062	0.0058	0.0065	0.0062	0.0054	0.0053	0.0053	0.0054	0.0054	0.0054
Selenium		0.00053	0.001	0.00008	0.00006	0.00008	0.00006	0.00006	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	0.00005
Silicon		0.57		**0.71**	**0.67**	**0.77**	**0.70**	**0.73**	**0.70**	0.14	0.13	0.067	0.070
Silver		0.00013	0.00025	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Sodium		1		**4.4**	**4.2**	**4.2**	**4.2**	**3.7**	**3.7**	**3.6**	**3.6**	**3.8**	**3.8**
Strontium		1.26	2.5	0.15	0.15	0.16	0.15	0.13	0.14	0.13	0.12	0.12	0.12
Sulfur				8.8	8.2	9.2	8.7	7.9	8.1	8.0	7.7	7.2	7.3
Tellurium				*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*
Thallium		0.00041	0.0008	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Thorium				*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Tin		0.0002		*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Titanium		0.0006		*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*
Tungsten				*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Uranium		0.0075	0.015	0.00028	0.00026	0.00024	0.00023	0.00021	0.00020	0.00015	0.00014	0.00012	0.00012
Vanadium		0.06	0.12	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Zinc	***equation***	0.0023	***See note 3***	0.0019	0.0018	~~0.0341~~	~~0.0118~~	~~0.0658~~	**0.0072**	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Zirconium				*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*
Plant Pigments (µg/L)													
Chlorophyll-a				0.68	0.33	1.1	0.41	0.22	1.1	1.0	1.0	1.1	1.0

Notes:

1. CCME (Canadian Council of Ministers of the Environment) Canadian Water Quality Guidelines for the Protection of Aquatic Life, 1999, updated up to 2018.

2. Trigger and threshold values are presented in *CREMP 2015 Plan Update* (Azimuth, 2015b). A number of thresholds were derived from methods (or sources) other than CCME guidelines - see Azimuth (2015b) for details.

3. "***equation***" means that CCME guidelines (or thresholds) are calculated based on an equation which is either pH or hardness dependent. The ammonia and aluminum guidelines vary with pH; the cadmium, copper, lead, manganese, nickel and zinc guidelines vary with hardness.

4. Chromium CCME guideline is for Cr VI.

123 Bolded values exceed the trigger.

123 Bold and shaded values exceed the threshold.

Italicized numbers are below detection limits.

underline = results were given a cautionary flag in the QC assessment (refer to **Appendix B** for details).

~~strikethrough~~ = results flagged as unreliable in the QC assessment (refer to **Appendix B** for details).

* Kangislulik Lake (KAN) previously referred to as Mammoth Lake (MAM). Acronym MAM still being used in tables and figures.

Table C2-1. Water quality results from the Whale Tail study area lakes, 2025.

Lake & Area		WTP Screening Values[2]		Kangislulik Lake (KAN/MAM)*									
Month				**March**	**March**	**May**	**May**	**July**	**July**	**August**	**August**	**September**	**September**
Area-Replicate ID				MAM-97	MAM-98	MAM-99	MAM-100	MAM-101	MAM-102	MAM-103	MAM-104	MAM-105	MAM-106
Date	**Aquatic Life Guideline[1]**	Triggers	Thresholds	07-Mar-2025	07-Mar-2025	26-Apr-2025	01-May-2025	08-Jul-2025	08-Jul-2025	17-Aug-2025	17-Aug-2025	02-Sep-2025	02-Sep-2025
Time				10:40	11:00	09:15	10:00	10:46	11:37	13:30	14:04	13:59	14:22
ALS Sample ID				VA25A5659-001	VA25A5659-002	VA25B2006-009	VA25B0623-007 VA25B2006-010	VA25B7115-001 VA25B7585-001	VA25B7115-002 VA25B7585-002	VA25C1585-007 VA25C1599-008	VA25C1585-008 VA25C1599-009	VA25C3221-001 VA25C5633-001	VA25C3221-002 VA25C5633-002
Total Water Depth (m)				7.7	7.2	8.6	6.4	9.1	5.7	5.2	9.6	6.6	12.3
UTM Zone				14W	14W	14W	14W	14W	14W	14W	14W	14W	14W
Easting				604998	604211	605382	604228	605354	604110	604209	604356	604145	604074
Northing				7254792	7253845	7255097	7253834	7255109	7254238	7253801	7254307	7253925	7254478
Field Measurements (Surface 3m)													
Dissolved Oxygen (mg/L)				12.5	12.2	12.4	13.1	11.3	11.3	10.8	10.8	11.2	11.1
Specific Conductivity (µS/cm)				237	217	239	213	131	126	139	140	147	147
pH	6.5 - 9.0			7.4	7.3	7.1	7.3	7.4	7.3	6.9	7.3	7.2	7.3
Temperature (°C)				1.1	1.1	1.3	1.3	12.6	11.8	12.3	12.3	9.1	9.6
Physical Tests (mg/L)													
Conductivity (µS/cm)		48.6		**222**	**206**	**261**	**225**	**130**	**126**	**139**	**140**	**155**	**154**
Alkalinity - Bicarbonate		9.60		**31**	**28**	**35**	**31**	**17.6**	**17.5**	**19.1**	**19.1**	**20**	**19.9**
Alkalinity - Carbonate		2.0		*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Alkalinity - Hydroxide				*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Alkalinity - Total (as $CaCO_3$)		9.61		**31**	**28**	**35**	**31**	**17.6**	**17.5**	**19.1**	**19.1**	**20**	**19.9**
Hardness (as CaCO3), dissolved		17.4		**83**	**77**	**98**	**84**	**48**	**46**	**52**	**52**	**57**	**57**
Hardness (as CaCO3), from total Ca/Mg				92	81	96	87	51	48	52	54	58	58
Total Dissolved Solids (TDS)		38.5		**128**	**126**	**175**	**218**	**97**	**94**	**110**	**103**	**104**	**90**
Total Suspended Solids (TSS)		3	5	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Turbidity (NTU)				0.29	0.26	0.22	0.15	0.42	0.50	0.27	0.33	0.28	0.29
pH (Laboratory)	6.5 - 9.0	6.57-7.97	6.5-9.0	7.5	7.5	7.5	7.4	7.4	7.4	7.4	7.4	7.5	7.5
Anions and Nutrients (mg/L)													
Ammonia (as N)[3]	***equation***	0.065	0.126	0.061	**0.071**	0.047	0.047	0.012	0.0069	**0.11**	0.021	0.0098	0.0092
Bromide				0.29	0.27	0.33	0.32	0.15	0.15	0.15	0.15	0.19	0.19
Chloride	120	60.4	120	25	23	28	26	13.1	12.7	14.7	14.7	16.0	15.9
Fluoride	0.12	0.077	0.12	0.076	0.073	**0.083**	0.077	0.045	0.046	0.058	0.060	0.064	0.062
Total Kjeldahl Nitrogen		0.17		**0.28**	**0.27**	**0.33**	**0.31**	**0.17**	**0.20**	**0.31**	**0.24**	**0.21**	**0.22**
Nitrate (as N)	3	1.5	3	0.96	0.86	1.1	0.99	0.41	0.36	0.39	0.40	0.43	0.43
Nitrite (as N)	0.06	0.031	0.06	0.0015	0.0015	0.0068	0.0048	0.0018	0.0012	0.0030	0.0026	0.0031	0.0082
Ortho Phosphate (as P)		0.0022		*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Phosphorus (P)-Total	0.01	0.0045	0.01	0.0028	0.0037	0.0038	**0.0053**	0.0039	0.0036	0.0038	**0.0046**	0.0032	0.0031
Phosphorus (P)-Total Diss.				*<0.0020*	*<0.0020*	0.0025	*<0.0020*	*<0.0020*	0.0020	*<0.0020*	*<0.0020*	*<0.0020*	0.0049
Reactive Silica (as SiO_2)		1.33		**1.9**	**1.5**	**2.1**	**1.8**	0.66	0.70	*<0.50*	*<0.50*	*<0.50*	*<0.50*
Sulphate (SO_4)		64.8	128	35	32	39	35	18.1	17.2	21	21	22	22
Organic / Inorganic Carbon (mg/L)													
Dissolved Organic Carbon		2.43		**3.4**	**2.9**	**3.8**	**3.4**	**2.7**	**2.9**	**2.6**	**2.8**	**2.7**	**2.8**
Total Organic Carbon		2.42		**3.0**	**2.9**	**3.7**	**3.3**	**2.5**	2.4	**2.9**	**2.9**	**2.8**	**2.9**
Total Metals (mg/L)													
Aluminum[3]	***equation***	0.052	0.1	0.0033	0.0034	0.0031	0.0034	0.0080	0.0078	0.0050	0.0050	0.0038	0.0046
Antimony		0.0046	0.009	0.0015	0.0014	0.0016	0.0014	0.00079	0.00068	0.0010	0.0010	0.0012	0.0012
Arsenic	0.005	0.013	0.025	0.0021	0.0018	0.0022	0.0016	0.0016	0.0012	0.0014	0.0015	0.0015	0.0014
Barium		0.5	1	0.034	0.030	0.037	0.032	0.018	0.018	0.018	0.017	0.019	0.019
Beryllium		0.000115	0.00013	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*
Bismuth				*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Boron	1.5	0.76	1.5	0.012	0.010	0.013	0.011	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*
Cadmium[3]	***equation***	0.000023	0.00004	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Calcium		4.6		**25**	**22**	**27**	**24**	**14.4**	**13.3**	**14.1**	**14.6**	**15.9**	**16.2**
Cesium				0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.00002	0.00002	0.00002	0.00002
Chromium[4]	0.001	0.0025	0.005	*<0.00010*	*<0.00010*	0.00010	*<0.00010*	*<0.00010*	0.0011	*<0.00010*	0.00013	*<0.00010*	0.00019
Cobalt				*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Copper[3]	***equation***	0.0013	0.002	0.00059	0.00055	0.00066	0.00057	0.00052	*<0.00050*	0.00051	0.00051	0.00059	0.00057
Iron	0.3	0.16	0.3	*<0.010*	*<0.010*	0.014	*<0.010*	0.022	0.038	0.013	0.013	0.015	0.017
Lead[3]	***equation***	0.00053	0.001	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Lithium		0.002		**0.0031**	**0.0028**	**0.0038**	**0.0032**	0.0019	0.0018	0.0020	0.0020	**0.0021**	**0.0022**
Magnesium		1.41		**6.8**	**6.4**	**7.2**	**6.5**	**3.8**	**3.6**	**4.1**	**4.2**	**4.5**	**4.3**
Manganese[3]		0.32	***See note 3***	0.022	0.013	0.012	0.0065	0.0072	0.0062	0.0048	0.0048	0.0095	0.0098
Mercury	0.000026	0.000016	0.000026	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Molybdenum	0.073	0.037	0.073	0.00099	0.0010	0.0012	0.00090	0.00055	0.00071	0.00074	0.00078	0.00084	0.00086
Nickel[3]	***equation***	0.013	0.025	0.0023	0.0019	0.0027	0.0019	0.0013	0.0011	0.0010	0.0010	0.0011	0.0011
Phosphorus		0.0045	0.004	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*
Potassium		0.84		**5.1**	**4.6**	**6.1**	**5.2**	**2.9**	**2.9**	**3.4**	**3.4**	**3.7**	**3.6**
Rubidium				0.0065	0.0061	0.0070	0.0058	0.0039	0.0037	0.0045	0.0044	0.0049	0.0049
Selenium	0.001	0.00053	0.001	0.00010	0.00008	0.00011	0.00009	*<0.000050*	*<0.000050*	0.00005	*<0.000050*	0.00008	0.00005
Silicon		0.61		**0.96**	**0.79**	**1.1**	**0.92**	0.37	0.36	0.16	0.14	0.20	0.17
Silver	0.00025	0.00013	0.00025	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Sodium		1		**4.5**	**4.2**	**5.0**	**4.4**	**2.6**	**2.6**	**3.3**	**3.2**	**3.4**	**3.3**
Strontium		1.26	2.5	0.18	0.17	0.20	0.18	0.099	0.096	0.11	0.11	0.11	0.11
Sulfur				11.4	10.3	12.8	10.8	6.1	5.8	7.0	7.2	7.7	7.6
Tellurium				*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*
Thallium	0.0008	0.00013	0.0008	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Thorium				*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00020*
Tin		0.033		*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Titanium		0.00041		*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*
Tungsten				*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Uranium	0.015	0.0002	0.015	0.00019	0.00018	**0.00021**	0.00017	0.00015	0.00013	0.00019	0.00020	0.00019	0.00020
Vanadium		0.0006	0.12	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Zinc	0.03	0.0075	***See note 3***	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*
Zirconium				*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*
Dissolved Metals (mg/L)													
Aluminum[3]		0.026	0.05	*<0.0010*	0.0012	0.0017	0.0026	0.0029	0.0024	0.0024	0.0022	0.0028	0.0018
Antimony		0.005	0.009	0.0014	0.0013	0.0016	0.0013	0.00075	0.00066	0.0011	0.0011	0.0012	0.0012
Arsenic		0.013	0.025	0.0021	0.0017	0.0020	0.0016	0.0014	0.0010	0.0013	0.0013	0.0013	0.0013
Barium		0.5	1	0.031	0.031	0.039	0.031	0.018	0.017	0.017	0.018	0.019	0.019
Beryllium		0.000115	0.00013	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*
Bismuth				*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Boron		0.76	1.5	*<0.010*	*<0.010*	0.013	0.011	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*
Cadmium		0.000023	0.00004	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Calcium		4.6		**22**	**21**	**27**	**24**	**13.4**	**12.9**	**14.3**	**14.4**	**15.9**	**16.0**
Cesium				0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.00002	0.00002	0.00002	0.00002
Chromium		0.0026	0.005	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Cobalt				*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Copper		0.0012	0.002	0.00056	0.00060	0.00065	0.00054	0.00046	0.00040	0.00048	0.00050	0.00054	0.00053
Iron		0.16	0.3	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*
Lead		0.00053	0.001	*<0.000050*	*<0.000050*	*<0.000050*	0.00017	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Lithium		0.002		**0.0030**	**0.0028**	**0.0038**	**0.0032**	0.0017	0.0016	0.0019	0.0020	**0.0022**	**0.0022**
Magnesium		1.41		**6.5**	**6.1**	**7.3**	**5.8**	**3.5**	**3.2**	**4.0**	**3.9**	**4.2**	**4.3**
Manganese[3]		0.32	***See note 3***	0.0070	0.0038	0.0027	0.0021	0.0017	0.0011	0.00064	0.00045	0.0025	0.0025
Mercury		0.000016	0.000026	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Molybdenum		0.037	0.073	0.00094	0.00088	0.0010	0.00089	0.00053	0.00047	0.00079	0.00080	0.00089	0.00092
Nickel		0.013	0.025	0.0023	0.0018	0.0027	0.0018	0.0013	0.0010	0.00088	0.00091	0.00098	0.0010
Phosphorus				*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*
Potassium		0.84		**5.5**	**5.0**	**6.2**	**5.1**	**3.1**	**2.9**	**3.6**	**3.5**	**3.6**	**3.6**
Rubidium				0.0064	0.0062	0.0073	0.0062	0.0038	0.0036	0.0044	0.0045	0.0047	0.0045
Selenium		0.00053	0.001	0.00008	0.00007	0.00009	0.00007	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	0.00007	*<0.000050*
Silicon		0.57		**0.84**	**0.69**	**1.1**	**0.81**	0.31	0.31	0.12	0.11	0.14	0.12
Silver		0.00013	0.00025	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Sodium		1		**4.6**	**4.3**	**5.0**	**4.2**	**2.6**	**2.5**	**2.9**	**2.9**	**3.1**	**3.1**
Strontium		1.26	2.5	0.18	0.16	0.21	0.17	0.097	0.094	0.11	0.11	0.12	0.12
Sulfur				10.2	9.6	13.4	10.7	5.9	5.6	6.9	6.7	7.3	7.3
Tellurium				*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*
Thallium		0.00041	0.0008	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Thorium				*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Tin		0.0002		*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	~~0.00049~~	*<0.00010*	*<0.00010*	*<0.00010*
Titanium		0.0006		*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*
Tungsten				*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Uranium		0.0075	0.015	0.00019	0.00018	0.00020	0.00016	0.00013	0.00010	0.00017	0.00018	0.00020	0.00020
Vanadium		0.06	0.12	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Zinc	***equation***	0.0023	***See note 3***	0.0015	0.0011	~~0.019~~	~~0.060~~	~~0.027~~	~~0.011~~	*<0.0010*	*<0.0010*	~~0.0764~~	~~0.0283~~
Zirconium				*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*
Plant Pigments (µg/L)													
Chlorophyll-a				0.41	0.61	0.45	2.0	0.95	0.77	0.73	0.67	0.67	0.71

Notes:

1. CCME (Canadian Council of Ministers of the Environment) Canadian Water Quality Guidelines for the Protection of Aquatic Life, 1999, updated up to 2018.

2. Trigger and threshold values are presented in *CREMP 2015 Plan Update* (Azimuth, 2015b). A number of thresholds were derived from methods (or sources) other than CCME guidelines - see Azimuth (2015b) for details.

3. "***equation***" means that CCME guidelines (or thresholds) are calculated based on an equation which is either pH or hardness dependent. The ammonia and aluminum guidelines vary with pH; the cadmium, copper, lead, manganese, nickel and zinc guidelines vary with hardness.

4. Chromium CCME guideline is for Cr VI.

123 Bolded values exceed the trigger.

123 Bold and shaded values exceed the threshold.

Italicized numbers are below detection limits.

underline = results were given a cautionary flag in the QC assessment (refer to **Appendix B** for details).

~~strikethrough~~ = results flagged as unreliable in the QC assessment (refer to **Appendix B** for details).

* Kangislulik Lake (KAN) previously referred to as Mammoth Lake (MAM). Acronym MAM still being used in tables and figures.

Table C2-1. Water quality results from the Whale Tail study area lakes, 2025.

Lake & Area		WTP Screening Values[2]		Lake A20 (A20; Impoundment)									
Month				**March**	**March**	**May**	**May**	**July**	**July**	**August**	**August**	**September**	**September**
Area-Replicate ID				A20-89	A20-90	A20-91	A20-92	A20-93	A20-94	A20-95	A20-96	A20-97	A20-98
Date	**Aquatic Life Guideline[1]**			07-Mar-2025	07-Mar-2025	01-May-2025	01-May-2025	08-Jul-2025	08-Jul-2025	16-Aug-2025	16-Aug-2025	04-Sep-2025	04-Sep-2025
Time		Triggers	Thresholds	11:30	12:00	12:30	13:50	13:15	12:53	14:50	14:00	10:40	10:26
ALS Sample ID				VA25A5659-007	VA25A5659-008	VA25B0623-005 VA25B2006-006	VA25B0623-004 VA25B2006-005	VA25B7115-003 VA25B7586-009	VA25B7115-004 VA25B7586-010	VA25C1585-003 VA25C1599-004	VA25C1585-004 VA25C1599-005	VA25C3661-017 VA25C5633-018	VA25C3661-018 VA25C5633-019
Total Water Depth (m)				>20.0	5.9	6.8	5.1	6.3	5.9	6.4	6.1	5.4	17.6
UTM Zone				14W	14W	14W	14W	14W	14W	14W	14W	14W	14W
Easting				604376	605219	604541	605205	604687	605210	604697	605212	605227	604376
Northing				7252621	7252782	7252533	7252748	7252485	7252762	7252484	7252748	7252754	7252620
Field Measurements (Surface 3m)													
Dissolved Oxygen (mg/L)				13.0	12.1	14.8	11.4	11.5	11.3	10.8	11.1	11.8	11.2
Specific Conductivity (µS/cm)				119	161	113	90	94	109	92	107	101	94
pH	6.5 - 9.0			7.4	6.9	7.2	7.2	7.6	7.6	7.2	6.8	7.2	7.2
Temperature (°C)				0.56	1.5	0.59	1.2	11.7	12.9	12.2	11.8	8.0	9.4
Physical Tests (mg/L)													
Conductivity (µS/cm)		48.6		**121**	**166**	**120**	**168**	**94**	**109**	**94**	**108**	**105**	**98**
Alkalinity - Bicarbonate		9.60		**17.7**	**27**	**18.6**	**28**	**14.0**	**15.7**	**14.9**	**16.5**	**16.2**	**14.9**
Alkalinity - Carbonate		2.0		*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Alkalinity - Hydroxide				*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Alkalinity - Total (as $CaCO_3$)		9.61		**17.7**	**27**	**18.6**	**28**	**14.0**	**15.7**	**14.9**	**16.5**	**16.2**	**14.9**
Hardness (as CaCO3), dissolved		17.4		**41**	**57**	**43**	**60**	**34**	**38**	**34**	**40**	**38**	**35**
Hardness (as CaCO3), from total Ca/Mg				43	59	44	62	35	40	34	41	39	35
Total Dissolved Solids (TDS)		38.5		**70**	**94**	**79**	**111**	**69**	**75**	**73**	**80**	**80**	**69**
Total Suspended Solids (TSS)		3	5	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	1.2	1.1
Turbidity (NTU)				0.30	0.47	0.25	0.50	0.48	0.52	0.28	0.36	0.34	0.38
pH (Laboratory)	6.5 - 9.0	6.57-7.97	6.5-9.0	7.2	7.3	7.2	7.2	7.3	7.4	7.3	7.3	7.5	7.5
Anions and Nutrients (mg/L)													
Ammonia (as N)[3]	***equation***	0.065	0.126	0.040	0.035	0.016	0.024	0.0060	0.0056	0.011	0.047	0.057	0.012
Bromide				0.13	0.19	0.14	0.20	0.10	0.12	0.099	0.11	0.12	0.11
Chloride	120	60.4	120	12.4	17.2	12.6	17.8	9.6	11.2	10.0	11.7	11.4	10.4
Fluoride	0.12	0.077	0.12	0.060	0.070	0.061	0.069	0.046	0.049	0.057	0.062	0.060	0.054
Total Kjeldahl Nitrogen		0.17		**0.23**	**0.28**	**0.23**	**0.29**	**0.20**	**0.21**	**0.20**	**0.25**	**0.26**	**0.20**
Nitrate (as N)	3	1.5	3	0.27	0.48	0.31	0.50	0.21	0.24	0.11	0.12	0.083	0.097
Nitrite (as N)	0.06	0.031	0.06	~~0.011~~	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	0.0012	0.0010	0.0012	*<0.0010*	*<0.0010*
Ortho Phosphate (as P)		0.0022		*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Phosphorus (P)-Total	0.01	0.0045	0.01	0.0042	0.0039	**0.0046**	**0.0047**	**0.0060**	**0.0056**	0.0030	0.0034	0.0036	0.0038
Phosphorus (P)-Total Diss.				0.0026	0.0023	*<0.0020*	*<0.0020*	0.0020	0.0036	*<0.0020*	*<0.0020*	*<0.0020*	*<0.0020*
Reactive Silica (as SiO_2)		1.33		1.2	**1.7**	1.2	**1.9**	0.71	0.55	*<0.50*	*<0.50*	*<0.50*	*<0.50*
Sulphate (SO_4)		64.8	128	13.8	19.2	14.4	20	11.7	14.0	12.5	14.7	14.1	12.9
Organic / Inorganic Carbon (mg/L)													
Dissolved Organic Carbon		2.43		**3.5**	**4.4**	**3.6**	**4.7**	**3.1**	**3.4**	**3.1**	**2.9**	**3.1**	**2.9**
Total Organic Carbon		2.42		**3.5**	**4.4**	**3.6**	**4.6**	**2.9**	**3.1**	**3.1**	**3.4**	**3.4**	**3.1**
Total Metals (mg/L)													
Aluminum[3]	***equation***	0.052	0.1	0.0086	0.011	0.013	0.014	0.0093	0.0083	0.0048	0.0070	0.0053	0.0036
Antimony		0.0046	0.009	0.00032	0.00042	0.00031	0.00037	0.00044	0.00062	0.00036	0.00049	0.00042	0.00039
Arsenic	0.005	0.013	0.025	0.00031	0.00041	0.00033	0.00036	0.00042	0.00048	0.00032	0.00034	0.00036	0.00034
Barium		0.5	1	0.016	0.026	0.016	0.027	0.013	0.014	0.011	0.013	0.011	0.011
Beryllium		0.000115	0.00013	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*
Bismuth				*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Boron	1.5	0.76	1.5	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*
Cadmium[3]	***equation***	0.000023	0.00004	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Calcium		4.6		**11.3**	**15.4**	**11.8**	**16.3**	**9.6**	**10.9**	**8.7**	**10.5**	**10.1**	**9.0**
Cesium				*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Chromium[4]	0.001	0.0025	0.005	*<0.00010*	0.00012	0.00010	0.00020	*<0.00010*	*<0.00010*	*<0.00010*	0.00012	*<0.00010*	*<0.00010*
Cobalt				*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Copper[3]	***equation***	0.0013	0.002	*<0.00050*	0.00053	*<0.00050*	0.00056	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Iron	0.3	0.16	0.3	0.014	0.022	0.026	0.025	0.040	0.048	0.017	0.036	0.040	0.023
Lead[3]	***equation***	0.00053	0.001	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Lithium		0.002		0.0015	0.0020	0.0015	0.0020	0.0013	0.0016	0.0012	0.0014	0.0013	0.0012
Magnesium		1.41		**3.7**	**5.1**	**3.4**	**5.1**	**2.7**	**3.1**	**3.0**	**3.5**	**3.3**	**3.0**
Manganese[3]		0.32	***See note 3***	~~0.00085~~	~~0.033~~	~~0.0014~~	~~0.039~~	0.0078	0.0086	0.0038	0.0053	0.0073	0.0067
Mercury	0.000026	0.000016	0.000026	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Molybdenum	0.073	0.037	0.073	0.00033	0.00030	0.00028	0.00027	0.00029	0.00037	0.00026	0.00034	0.00031	0.00026
Nickel[3]	***equation***	0.013	0.025	0.00068	0.00093	0.00073	0.00094	0.00060	0.00059	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Phosphorus		0.0045	0.004	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*
Potassium		0.84		**2.5**	**3.4**	**2.7**	**3.7**	**2.1**	**2.5**	**2.1**	**2.6**	**2.4**	**2.2**
Rubidium				0.0035	0.0048	0.0035	0.0047	0.0029	0.0034	0.0028	0.0035	0.0032	0.0029
Selenium	0.001	0.00053	0.001	*<0.000050*	*<0.000050*	*<0.000050*	0.00005	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Silicon		0.61		**0.62**	**0.93**	**0.63**	**0.97**	0.38	0.31	0.12	0.13	0.20	0.19
Silver	0.00025	0.00013	0.00025	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Sodium		1		**2.6**	**3.8**	**2.8**	**3.6**	**2.2**	**2.6**	**2.4**	**2.8**	**2.5**	**2.3**
Strontium		1.26	2.5	0.083	0.12	0.079	0.11	0.068	0.080	0.063	0.079	0.077	0.070
Sulfur				4.7	6.7	4.5	6.6	4.0	4.9	3.9	5.0	4.4	4.1
Tellurium				*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*
Thallium	0.0008	0.00013	0.0008	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Thorium				*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Tin		0.033		*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Titanium		0.00041		*<0.00030*	*<0.00030*	0.00033	**0.00042**	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*
Tungsten				*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Uranium	0.015	0.0002	0.015	0.00006	0.00007	0.00006	0.00007	0.00007	0.00008	0.00007	0.00008	0.00007	0.00006
Vanadium		0.0006	0.12	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Zinc	0.03	0.0075	***See note 3***	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*
Zirconium				*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*
Dissolved Metals (mg/L)													
Aluminum[3]		0.026	0.05	0.0038	0.0038	0.0072	0.0025	0.0034	0.0034	0.0018	0.0023	0.0029	0.0018
Antimony		0.005	0.009	0.00030	0.00038	0.00032	0.00037	0.00042	0.00059	0.00038	0.00049	0.00038	0.00034
Arsenic		0.013	0.025	0.00033	0.00037	0.00036	0.00036	0.00034	0.00041	0.00029	0.00029	0.00034	0.00030
Barium		0.5	1	0.015	0.025	0.016	0.027	0.012	0.014	0.011	0.012	0.013	0.012
Beryllium		0.000115	0.00013	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*
Bismuth				*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Boron		0.76	1.5	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*
Cadmium		0.000023	0.00004	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Calcium		4.6		**10.6**	**14.6**	**11.6**	**16.5**	**9.1**	**10.4**	**9.2**	**10.5**	**9.8**	**9.1**
Cesium				*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Chromium		0.0026	0.005	*<0.00010*	*<0.00010*	0.00024	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Cobalt				*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Copper		0.0012	0.002	0.00041	0.00052	~~0.0015~~	0.00048	0.00033	0.00033	0.00030	0.00035	0.00034	0.00037
Iron		0.16	0.3	*<0.010*	*<0.010*	0.015	*<0.010*	0.014	0.021	*<0.010*	*<0.010*	0.011	*<0.010*
Lead		0.00053	0.001	*<0.000050*	*<0.000050*	0.00009	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Lithium		0.002		0.0014	0.0019	0.0015	0.0020	0.0012	0.0014	0.0012	0.0014	0.0012	0.0011
Magnesium		1.41		**3.4**	**4.9**	**3.3**	**4.6**	**2.7**	**3.0**	**2.8**	**3.4**	**3.3**	**3.1**
Manganese[3]		0.32	***See note 3***	~~0.00037~~	~~0.024~~	~~0.00076~~	~~0.027~~	0.0010	0.00081	0.00050	0.00068	0.00071	0.00031
Mercury		0.000016	0.000026	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Molybdenum		0.037	0.073	0.00029	0.00027	0.00035	0.00023	0.00030	0.00039	0.00026	0.00031	0.00028	0.00023
Nickel		0.013	0.025	0.00062	0.00086	0.00075	0.00086	0.00057	0.00058	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Phosphorus				*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*
Potassium		0.84		**2.6**	**3.6**	**2.7**	**3.6**	**2.2**	**2.5**	**2.2**	**2.6**	**2.6**	**2.3**
Rubidium				0.0034	0.0048	0.0034	0.0046	0.0028	0.0033	0.0029	0.0033	0.0034	0.0029
Selenium		0.00053	0.001	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Silicon		0.57		0.53	**0.76**	0.55	**0.83**	0.33	0.25	0.095	0.096	0.11	0.14
Silver		0.00013	0.00025	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Sodium		1		**2.7**	**3.7**	**2.7**	**3.8**	**2.2**	**2.5**	**2.2**	**2.7**	**2.7**	**2.5**
Strontium		1.26	2.5	0.077	0.12	0.080	0.11	0.069	0.080	0.065	0.076	0.072	0.064
Sulfur				4.3	6.1	4.4	6.6	3.9	4.6	3.9	4.7	3.9	3.7
Tellurium				*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*
Thallium		0.00041	0.0008	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Thorium				*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Tin		0.0002		*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	~~0.00046~~	*<0.00010*	*<0.00010*	*<0.00010*
Titanium		0.0006		*<0.00030*	*<0.00030*	0.00031	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*
Tungsten				*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Uranium		0.0075	0.015	0.00006	0.00007	0.00006	0.00006	0.00005	0.00007	0.00006	0.00007	0.00005	0.00005
Vanadium		0.06	0.12	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Zinc	***equation***	0.0023	***See note 3***	0.0021	*<0.0010*	~~0.065~~	~~0.03~~	~~0.022~~	~~0.026~~	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Zirconium				*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*
Plant Pigments (µg/L)													
Chlorophyll-a				1.2	0.39	2.1	1.3	1.1	1.9	0.95	1.1	1.1	1.5

Notes:

1. CCME (Canadian Council of Ministers of the Environment) Canadian Water Quality Guidelines for the Protection of Aquatic Life, 1999, updated up to 2018.

2. Trigger and threshold values are presented in *CREMP 2015 Plan Update* (Azimuth, 2015b). A number of thresholds were derived from methods (or sources) other than CCME guidelines - see Azimuth (2015b) for details.

3. "***equation***" means that CCME guidelines (or thresholds) are calculated based on an equation which is either pH or hardness dependent. The ammonia and aluminum guidelines vary with pH; the cadmium, copper, lead, manganese, nickel and zinc guidelines vary with hardness.

4. Chromium CCME guideline is for Cr VI.

123 Bolded values exceed the trigger.

123 Bold and shaded values exceed the threshold.

Italicized numbers are below detection limits.

underline = results were given a cautionary flag in the QC assessment (refer to **Appendix B** for details).

~~strikethrough~~ = results flagged as unreliable in the QC assessment (refer to **Appendix B** for details).

* Kangislulik Lake (KAN) previously referred to as Mammoth Lake (MAM). Acronym MAM still being used in tables and figures.

Table C2-1. Water quality results from the Whale Tail study area lakes, 2025.

Lake & Area	Aquatic Life Guideline[1]	WTP Screening Values[2]		Lake A76 (A76)							
Month				March	March	May	May	July	July	August	August
Area-Replicate ID				A76-87	A76-88	A76-89	A76-90	A76-91	A76-92	A76-93	A76-94
Date		Triggers	Thresholds	05-Mar-2025	05-Mar-2025	18-May-2025	18-May-2025	03-Jul-2025	03-Jul-2025	15-Aug-2025	15-Aug-2025
Time				11:04	11:25	11:05	10:30	13:15	12:53	11:20	13:26
ALS Sample ID				VA25A5659-009	VA25A5659-010	VA25B2005-003	VA25B2005-004	VA25B6882-004 VA25B7586-007	VA25B6882-005 VA25B7586-008	VA25C1585-001 VA25C1599-002	VA25C1585-002 VA25C1599-003
Total Water Depth (m)				12.4	13.5	9.5	13.8	12.7	8.2	14.0	10.4
UTM Zone				14W	14W	14W	14W	14W	14W	14W	14W
Easting				601738	602555	601682	602572	601737	602423	601744	602411
Northing				7256860	7257139	7256840	7257236	725872	7257124	7256835	7257149
Field Measurements (Surface 3m)											
Dissolved Oxygen (mg/L)				15.3	19.9	15.5	15.1	12.3	12.3	10.2	10.7
Specific Conductivity (µS/cm)				161	170	159	158	110	110	117	117
pH	6.5 - 9.0			6.9	6.9	6.8	6.8	6.8	6.5	7.7	7.6
Temperature (°C)				0.68	0.70	0.65	0.70	8.8	8.6	11.9	11.9
Physical Tests (mg/L)											
Conductivity (µS/cm)		48.6		**162**	**167**	**177**	**173**	**106**	**106**	**114**	**114**
Alkalinity - Bicarbonate		9.60		**24**	**24**	**26**	**25**	**15.0**	**15.1**	**17.3**	**17.2**
Alkalinity - Carbonate		2.0		*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Alkalinity - Hydroxide				*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Alkalinity - Total (as $CaCO_3$)		9.61		**24**	**24**	**26**	**25**	**15.0**	**15.1**	**17.3**	**17.2**
Hardness (as CaCO3), dissolved		17.4		**57**	**61**	**61**	**60**	**39**	**42**	**42**	**43**
Hardness (as CaCO3), from total Ca/Mg				58	63	67	67	40	40	42	44
Total Dissolved Solids (TDS)		38.5		**85**	**88**	**102**	**99**	**66**	**63**	**81**	**88**
Total Suspended Solids (TSS)		3	5	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Turbidity (NTU)				0.14	0.15	*<0.10*	0.10	0.24	0.31	0.24	0.32
pH (Laboratory)	6.5 - 9.0	6.57-7.97	6.5-9.0	7.4	7.3	7.6	7.6	7.5	7.5	7.3	7.4
Anions and Nutrients (mg/L)											
Ammonia (as N)[3]	***equation***	0.065	0.126	0.029	0.025	0.027	0.023	0.016	0.043	0.031	0.033
Bromide				0.17	0.18	0.20	0.20	0.10	0.11	0.11	0.11
Chloride	120	60.4	120	15.8	16.3	17.3	17.1	10.9	11.0	11.3	11.3
Fluoride	0.12	0.077	0.12	0.058	0.056	0.056	0.054	0.040	0.040	0.052	0.051
Total Kjeldahl Nitrogen		0.17		**0.19**	**0.19**	**0.19**	**0.18**	0.15	**0.18**	**0.18**	**0.19**
Nitrate (as N)	3	1.5	3	0.24	0.31	0.27	0.32	0.15	0.15	0.064	0.069
Nitrite (as N)	0.06	0.031	0.06	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	0.0011	0.0011
Ortho Phosphate (as P)		0.0022		*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Phosphorus (P)-Total	0.01	0.0045	0.01	0.0021	0.0022	0.0041	**0.010**	0.0040	**0.0054**	0.0026	0.0026
Phosphorus (P)-Total Diss.				*<0.0020*	*<0.0020*	0.0022	0.0037	0.0024	0.0024	*<0.0020*	*<0.0020*
Reactive Silica (as SiO_2)		1.33		**1.4**	**1.4**	**1.6**	**1.7**	1.0	1.0	0.64	0.65
Sulphate (SO_4)		64.8	128	23	24	25	25	16.0	16.1	17.0	17.2
Organic / Inorganic Carbon (mg/L)											
Dissolved Organic Carbon		2.43		2.4	**2.5**	**2.8**	**2.5**	**2.5**	2.3	2.2	2.3
Total Organic Carbon		2.42		2.4	**2.5**	**2.8**	**2.6**	2.3	2.2	**2.5**	**2.5**
Total Metals (mg/L)											
Aluminum[3]	***equation***	0.052	0.1	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	0.0059	0.0068	0.0044	0.0038
Antimony		0.0046	0.009	0.00044	0.00049	0.00047	0.00050	0.00032	0.00032	0.00033	0.00037
Arsenic	0.005	0.013	0.025	0.00040	0.00042	0.00039	0.00039	0.00036	0.00039	0.00044	0.00040
Barium		0.5	1	0.024	0.024	0.025	0.024	0.017	0.017	0.016	0.015
Beryllium		0.000115	0.00013	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*
Bismuth				*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Boron	1.5	0.76	1.5	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*
Cadmium[3]	***equation***	0.000023	0.00004	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Calcium		4.6		**15.4**	**16.5**	**18.4**	**18.1**	**11.1**	**11.1**	**11.0**	**12.0**
Cesium				*<0.000010*	*<0.000010*	0.00001	0.00001	*<0.000010*	*<0.000010*	*<0.000010*	0.00001
Chromium[4]	0.001	0.0025	0.005	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	0.00010	*<0.00010*	*<0.00010*
Cobalt				*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Copper[3]	***equation***	0.0013	0.002	0.00051	*<0.00050*	0.00052	0.00052	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Iron	0.3	0.16	0.3	*<0.010*	*<0.010*	*<0.010*	*<0.010*	0.017	0.017	0.014	0.013
Lead[3]	***equation***	0.00053	0.001	0.00014	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Lithium		0.002		0.0012	0.0013	0.0015	0.0015	0.0010	0.0010	0.0010	0.0010
Magnesium		1.41		**4.8**	**5.3**	**5.2**	**5.2**	**3.1**	**3.1**	**3.6**	**3.3**
Manganese[3]		0.32	***See note 3***	0.0011	0.0010	0.0012	0.0011	0.0048	0.0048	0.0086	0.0076
Mercury	0.000026	0.000016	0.000026	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Molybdenum	0.073	0.037	0.073	0.00033	0.00038	0.00032	0.00035	0.00022	0.00021	0.00024	0.00026
Nickel[3]	***equation***	0.013	0.025	0.0012	0.0011	0.0012	0.0012	0.00096	0.00095	0.00082	0.00058
Phosphorus		0.0045	0.004	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*
Potassium		0.84		**3.2**	**3.4**	**3.5**	**3.5**	**2.3**	**2.3**	**2.4**	**2.4**
Rubidium				0.0034	0.0036	0.0037	0.0037	0.0025	0.0024	0.0026	0.0025
Selenium	0.001	0.00053	0.001	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Silicon		0.61		**0.68**	**0.76**	**0.82**	**0.81**	0.56	0.56	0.32	0.30
Silver	0.00025	0.00013	0.00025	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Sodium		1		**2.9**	**3.2**	**3.1**	**3.1**	**2.1**	**2.2**	**2.4**	**2.3**
Strontium		1.26	2.5	0.10	0.11	0.11	0.11	0.071	0.072	0.072	0.075
Sulfur				7.7	8.5	9.0	8.9	5.8	6.1	5.7	5.0
Tellurium				*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*
Thallium	0.0008	0.00013	0.0008	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Thorium				*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Tin		0.033		*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Titanium		0.00041		*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*
Tungsten				*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Uranium	0.015	0.0002	0.015	0.00007	0.00007	0.00007	0.00007	0.00006	0.00007	0.00007	0.00007
Vanadium		0.0006	0.12	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Zinc	0.03	0.0075	***See note 3***	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*
Zirconium				*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*
Dissolved Metals (mg/L)											
Aluminum[3]		0.026	0.05	0.0016	0.0010	*<0.0010*	*<0.0010*	0.0022	0.0012	0.0018	0.0016
Antimony		0.005	0.009	0.00040	0.00046	0.00043	0.00047	0.00032	0.00032	0.00034	0.00035
Arsenic		0.013	0.025	0.00039	0.00039	0.00036	0.00035	0.00032	0.00030	0.00038	0.00036
Barium		0.5	1	0.024	0.023	0.025	0.024	0.016	0.016	0.018	0.015
Beryllium		0.000115	0.00013	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*
Bismuth				*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Boron		0.76	1.5	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*
Cadmium		0.000023	0.00004	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Calcium		4.6		**15.0**	**16.6**	**16.6**	**16.5**	**10.8**	**11.8**	**11.4**	**11.7**
Cesium				*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Chromium		0.0026	0.005	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Cobalt				*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Copper		0.0012	0.002	0.00050	0.00050	0.00051	0.00048	0.00042	0.00048	0.00044	0.00044
Iron		0.16	0.3	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*
Lead		0.00053	0.001	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Lithium		0.002		0.0012	0.0013	0.0013	0.0013	*<0.0010*	0.0011	0.0010	0.0010
Magnesium		1.41		**4.6**	**4.7**	**4.8**	**4.5**	**3.0**	**3.0**	**3.4**	**3.3**
Manganese[3]		0.32	***See note 3***	0.00031	0.00035	0.00029	0.00026	0.0020	0.0020	0.0020	0.0012
Mercury		0.000016	0.000026	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Molybdenum		0.037	0.073	0.00029	0.00035	0.00030	0.00031	0.00023	0.00023	0.00026	0.00025
Nickel		0.013	0.025	0.0010	0.0011	0.0011	0.0011	0.00088	0.00094	0.00072	0.00071
Phosphorus				*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*
Potassium		0.84		**3.6**	**3.4**	**3.9**	**3.8**	**2.2**	**2.2**	**2.4**	**2.4**
Rubidium				0.0036	0.0036	0.0039	0.0035	0.0023	0.0024	0.0027	0.0028
Selenium		0.00053	0.001	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Silicon		0.57		**0.61**	**0.62**	**0.80**	**0.81**	0.48	0.46	0.31	0.31
Silver		0.00013	0.00025	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Sodium		1		**3.1**	**3.1**	**3.3**	**3.2**	**2.0**	**2.5**	**2.2**	**2.1**
Strontium		1.26	2.5	0.094	0.10	0.11	0.11	0.072	0.084	0.072	0.072
Sulfur				7.0	7.4	8.4	8.5	5.3	5.4	5.7	5.5
Tellurium				*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*
Thallium		0.00041	0.0008	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Thorium				*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Tin		0.0002		*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Titanium		0.0006		*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*
Tungsten				*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Uranium		0.0075	0.015	0.00007	0.00007	0.00007	0.00007	0.00006	0.00006	0.00006	0.00007
Vanadium		0.06	0.12	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Zinc	***equation***	0.0023	***See note 3***	0.0031	**0.0016**	~~0.031~~	~~0.031~~	~~0.028~~	~~0.044~~	*<0.0010*	*<0.0010*
Zirconium				*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*
Plant Pigments (µg/L)											
Chlorophyll-a				0.77	1.1	1.8	1.4	0.55	0.54	0.65	0.65

Notes:

1. CCME (Canadian Council of Ministers of the Environment) Canadian Water Quality Guidelines for the Protection of Aquatic Life, 1999, updated up to 2018.
2. Trigger and threshold values are presented in *CREMP 2015 Plan Update* (Azimuth, 2015b). A number of thresholds were derived from methods (or sources) other than CCME guidelines - see Azimuth (2015b) for details.
3. "***equation***" means that CCME guidelines (or thresholds) are calculated based on an equation which is either pH or hardness dependent. The ammonia and aluminum guidelines vary with pH; the cadmium, copper, lead, manganese, nickel and zinc guidelines vary with hardness.
4. Chromium CCME guideline is for Cr VI.

123 Bolded values exceed the trigger.
123 Bold and shaded values exceed the threshold.
Italicized numbers are below detection limits.
underline = results were given a cautionary flag in the QC assessment (refer to **Appendix B** for details).
~~strikethrough~~ = results flagged as unreliable in the QC assessment (refer to **Appendix B** for details).
* Kangislulik Lake (KAN) previously referred to as Mammoth Lake (MAM). Acronym MAM still being used in tables and figures.

Table C2-1. Water quality results from the Whale Tail study area lakes, 2025.

Lake & Area		WTP Screening Values[2]		Lake DS1							
Month				**March**	**March**	**May**	**May**	**July**	**July**	**August**	**August**
Area-Replicate ID				DS1-85	DS1-86	DS1-87	DS1-88	DS1-89	DS1-90	DS1-91	DS1-92
Date	**Aquatic Life Guideline[1]**			05-Mar-2025	05-Mar-2025	18-May-2025	18-May-2025	03-Jul-2025	03-Jul-2025	15-Aug-2025	15-Aug-2025
Time		Triggers	Thresholds	10:05	09:37	08:40	09:25	10:46	11:37	09:30	11:00
ALS Sample ID				VA25A5659-011	VA25A5659-012	VA25B2005-001	VA25B2005-002	VA25B6882-001 VA25B7586-005	VA25B6882-002 VA25B7586-006	VA25C1553-007	VA25C1553-008
Total Water Depth (m)				>20	9.8	8.8	10.2	7.6	18.5	8.0	9.2
UTM Zone				14W	14W	14W	14W	14W	14W	14W	14W
Easting				597632	597221	598080	597622	598041	597632	598029	597517
Northing				7260881	7262096	7258187	7261052	7258318	7260881	7258289	7261570
Field Measurements (Surface 3m)											
Dissolved Oxygen (mg/L)				15.7	15.8	15.9	14.1	10.5	11.0	11.4	11.0
Specific Conductivity (µS/cm)				62	48	82	54	40	24	54	36
pH	6.5 - 9.0			7.0	7.3	6.8	6.7	6.6	6.5	7.0	7.1
Temperature (°C)				0.17	0.32	0.64	0.67	12.1	11.7	11.1	12.3
Physical Tests (mg/L)											
Conductivity (µS/cm)		48.6		**62**	**54**	**91**	**59**	39	24	**50**	33
Alkalinity - Bicarbonate		9.60		**9.7**	**10.4**	**16.0**	**9.7**	7.2	4.8	**9.9**	7.6
Alkalinity - Carbonate		2.0		*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Alkalinity - Hydroxide				*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Alkalinity - Total (as $CaCO_3$)		9.61		**9.7**	**10.4**	**16.0**	**9.7**	7.2	4.8	**9.9**	7.6
Hardness (as CaCO3), dissolved		17.4		**20**	16.5	**29**	**19.7**	13.1	8.1	**17.6**	11.9
Hardness (as CaCO3), from total Ca/Mg				22	17.4	32	21	13.7	8.0	17.6	11.8
Total Dissolved Solids (TDS)		38.5		**47**	31	**55**	**41**	25	16.0	**40**	25
Total Suspended Solids (TSS)		3	5	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Turbidity (NTU)				0.20	0.34	0.28	0.26	0.81	0.50	0.27	0.35
pH (Laboratory)	6.5 - 9.0	6.57-7.97	6.5-9.0	7.0	7.0	7.3	7.2	7.1	7.0	7.1	7.1
Anions and Nutrients (mg/L)											
Ammonia (as N)[3]	***equation***	0.065	0.126	0.018	0.021	0.015	0.014	0.0086	0.0060	0.025	**0.13**
Bromide				*<0.050*	*<0.050*	0.056	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*
Chloride	120	60.4	120	5.1	3.0	8.2	4.8	3.7	1.8	4.5	2.4
Fluoride	0.12	0.077	0.12	0.064	0.069	0.063	0.060	0.034	0.053	0.045	0.062
Total Kjeldahl Nitrogen		0.17		0.15	**0.20**	**0.19**	0.17	0.13	0.14	0.16	**0.26**
Nitrate (as N)	3	1.5	3	0.074	0.056	0.11	0.084	0.0082	*<0.0050*	0.0066	*<0.0050*
Nitrite (as N)	0.06	0.031	0.06	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Ortho Phosphate (as P)		0.0022		*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Phosphorus (P)-Total	0.01	0.0045	0.01	0.0023	0.0033	0.0042	0.0025	0.0044	**0.0065**	0.0034	0.0027
Phosphorus (P)-Total Diss.				*<0.0020*	0.0028	0.0026	0.0065	0.0076	0.0046	*<0.0020*	*<0.0020*
Reactive Silica (as SiO_2)		1.33		**1.6**	**1.9**	**3.5**	**1.7**	0.68	0.75	0.78	0.68
Sulphate (SO_4)		64.8	128	8.4	5.3	11.2	7.9	4.6	2.7	5.8	3.5
Organic / Inorganic Carbon (mg/L)											
Dissolved Organic Carbon		2.43		**2.9**	**4.0**	**4.1**	**2.8**	**2.5**	**2.6**	**2.6**	**2.6**
Total Organic Carbon		2.42		**2.8**	**3.9**	**4.1**	**3.1**	**2.7**	2.4	**2.9**	**2.9**
Total Metals (mg/L)											
Aluminum[3]	***equation***	0.052	0.1	0.013	0.020	0.011	0.012	0.027	0.020	0.0087	0.0089
Antimony		0.0046	0.009	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Arsenic	0.005	0.013	0.025	0.00016	0.00023	0.00017	0.00015	0.00014	0.00011	0.00015	0.00018
Barium		0.5	1	0.011	0.0074	0.013	0.0092	0.0069	0.0056	0.0073	0.0057
Beryllium		0.000115	0.00013	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*
Bismuth				*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Boron	1.5	0.76	1.5	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*
Cadmium[3]	***equation***	0.000023	0.00004	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Calcium		4.6		**5.6**	4.1	**8.7**	**5.6**	3.7	2.1	**4.9**	3.1
Cesium				*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Chromium[4]	0.001	0.0025	0.005	0.00011	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Cobalt				*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Copper[3]	***equation***	0.0013	0.002	*<0.00050*	0.00064	0.00058	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Iron	0.3	0.16	0.3	0.014	0.041	0.019	0.015	0.12	0.052	0.064	0.045
Lead[3]	***equation***	0.00053	0.001	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Lithium		0.002		*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Magnesium		1.41		**1.9**	**1.7**	**2.4**	**1.7**	1.1	0.67	1.3	1.0
Manganese[3]		0.32	***See note 3***	0.00076	0.00077	0.0026	0.0018	0.0046	0.0040	0.0028	0.0029
Mercury	0.000026	0.000016	0.000026	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Molybdenum	0.073	0.037	0.073	0.00012	0.00010	0.00012	0.00011	0.00008	*<0.000050*	0.00011	0.00008
Nickel[3]	***equation***	0.013	0.025	*<0.00050*	0.00054	*<0.00050*	0.00050	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Phosphorus		0.0045	0.004	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*
Potassium		0.84		**1.0**	0.60	**1.4**	**0.93**	0.72	0.43	**0.85**	0.53
Rubidium				0.0011	0.00081	0.0014	0.00098	0.00086	0.00060	0.0010	0.00079
Selenium	0.001	0.00053	0.001	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Silicon		0.61		**0.86**	**0.99**	**1.7**	**0.86**	0.37	0.40	0.37	0.34
Silver	0.00025	0.00013	0.00025	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Sodium		1		**2.0**	**1.7**	**3.5**	**1.9**	**1.4**	0.88	**1.6**	**1.1**
Strontium		1.26	2.5	0.032	0.018	0.040	0.029	0.022	0.013	0.025	0.015
Sulfur				2.4	1.6	3.9	2.9	1.7	1.0	1.8	0.92
Tellurium				*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*
Thallium	0.0008	0.00013	0.0008	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Thorium				*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Tin		0.033		*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Titanium		0.00041		*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	**0.00065**	0.00040	*<0.00030*	*<0.00030*
Tungsten				*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Uranium	0.015	0.0002	0.015	0.00006	0.00010	0.00007	0.00006	0.00005	0.00005	0.00004	0.00005
Vanadium		0.0006	0.12	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Zinc	0.03	0.0075	***See note 3***	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*
Zirconium				*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*
Dissolved Metals (mg/L)											
Aluminum[3]		0.026	0.05	0.0088	0.015	0.011	0.011	0.0096	0.0088	0.0057	0.0040
Antimony		0.005	0.009	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Arsenic		0.013	0.025	0.00016	0.00022	0.00017	0.00015	0.00012	*<0.00010*	0.00014	0.00016
Barium		0.5	1	0.0099	0.0073	0.014	0.0094	0.0064	0.0054	0.0076	0.0056
Beryllium		0.000115	0.00013	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*
Bismuth				*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Boron		0.76	1.5	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*
Cadmium		0.000023	0.00004	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Calcium		4.6		**5.3**	3.8	**7.9**	**5.1**	3.6	2.1	**4.7**	3.0
Cesium				*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Chromium		0.0026	0.005	*<0.00010*	0.00016	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Cobalt				*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Copper		0.0012	0.002	0.00037	0.00060	0.00055	0.00044	0.00033	0.00028	0.00032	0.00031
Iron		0.16	0.3	*<0.010*	0.036	0.017	0.012	0.058	0.020	0.036	0.017
Lead		0.00053	0.001	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	0.00018	*<0.000050*	*<0.000050*
Lithium		0.002		*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Magnesium		1.41		**1.7**	**1.7**	**2.4**	**1.7**	1.0	0.67	**1.5**	1.1
Manganese[3]		0.32	***See note 3***	0.00045	0.00059	0.0018	0.00094	0.0036	0.0024	0.0015	0.00059
Mercury		0.000016	0.000026	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Molybdenum		0.037	0.073	0.00009	0.00009	0.00013	0.00009	0.00007	0.00005	0.00009	0.00007
Nickel		0.013	0.025	*<0.00050*	0.00056	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Phosphorus				*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*
Potassium		0.84		**0.98**	0.63	**1.5**	**1.0**	0.69	0.44	**0.92**	0.55
Rubidium				0.0010	0.00085	0.0014	0.0011	0.00085	0.00058	0.0011	0.00073
Selenium		0.00053	0.001	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Silicon		0.57		**0.73**	**0.89**	**1.7**	**0.88**	0.32	0.34	0.35	0.32
Silver		0.00013	0.00025	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Sodium		1		**1.8**	**1.7**	**3.6**	**2.0**	**1.3**	0.88	**1.8**	**1.2**
Strontium		1.26	2.5	0.030	0.018	0.043	0.028	0.020	0.013	0.026	0.015
Sulfur				2.4	1.4	3.7	2.6	1.5	0.87	1.7	0.88
Tellurium				*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*
Thallium		0.00041	0.0008	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Thorium				*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Tin		0.0002		*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	~~0.00018~~	*<0.00010*	*<0.00010*
Titanium		0.0006		*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*
Tungsten				*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Uranium		0.0075	0.015	0.00006	0.00010	0.00007	0.00006	0.00004	0.00005	0.00004	0.00004
Vanadium		0.06	0.12	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Zinc[3]	***equation***	0.0023	***See note 3***	0.0018	~~0.068~~	~~0.009~~	~~0.023~~	*<0.0010*	~~0.058~~	*<0.0010*	*<0.0010*
Zirconium				*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*
Plant Pigments (µg/L)											
Chlorophyll-a				0.48	0.34	2.4	0.59	0.71	0.59	0.77	0.49

Notes:

1. CCME (Canadian Council of Ministers of the Environment) Canadian Water Quality Guidelines for the Protection of Aquatic Life, 1999, updated up to 2018.
2. Trigger and threshold values are presented in *CREMP 2015 Plan Update* (Azimuth, 2015b). A number of thresholds were derived from methods (or sources) other than CCME guidelines - see Azimuth (2015b) for details.
3. "***equation***" means that CCME guidelines (or thresholds) are calculated based on an equation which is either pH or hardness dependent. The ammonia and aluminum guidelines vary with pH; the cadmium, copper, lead, manganese, nickel and zinc guidelines vary with hardness.
4. Chromium CCME guideline is for Cr VI.

123 Bolded values exceed the trigger.
123 Bold and shaded values exceed the threshold.
Italicized numbers are below detection limits.
underline = results were given a cautionary flag in the QC assessment (refer to **Appendix B** for details).
~~strikethrough~~ = results flagged as unreliable in the QC assessment (refer to **Appendix B** for details).
* Kangislulik Lake (KAN) previously referred to as Mammoth Lake (MAM). Acronym MAM still being used in tables and figures.

Table C2-1. Water quality results from the Whale Tail study area lakes, 2025.

Lake & Area		WTP Screening Values[2]		Nemo Lake (NEM)									
Month	Aquatic Life Guideline[1]			March	March	May	May	July	July	August	August	September	September
Area-Replicate ID				NEM-95	NEM-96	NEM-97	NEM-98	NEM-99	NEM-100	NEM-101	NEM-102	NEM-103	NEM-104
Date		Triggers	Thresholds	07-Mar-2025	07-Mar-2025	04-May-2025	04-May-2025	08-Jul-2025	08-Jul-2025	18-Aug-2025	18-Aug-2025	03-Sep-2025	03-Sep-2025
Time				09:45	09:15	15:00	13:30	14:55	15:25	12:30	13:28	14:22	13:59
ALS Sample ID				VA25A5659-005	VA25A5659-006	VA25B0623-001 VA25B2006-003	VA25B0623-002 VA25B2006-004	VA25B7115-006 VA25B7585-003	VA25B7115-007 VA25B7585-004	VA25C1599-010	VA25C1599-011	VA25C3361-002 VA25C5633-008	VA25C3361-001 VA25C5633-007
Total Water Depth (m)				6.7	14.1	11.6	14.5	14.6	12.9	15.4	14.0	14.6	16.3
UTM Zone				14W	14W	14W	14W	14W	14W	14W	14W	14W	14W
Easting				606127	607018	606310	606611	606152	606992	606988	606168	606131	606611
Northing				7257361	7257843	7257355	7257938	7257527	7257819	7257867	7257519	7257409	7257938
Field Measurements (Surface 3m)													
Dissolved Oxygen (mg/L)				15.9	15.0	16.5	15.6	11.4	11.3	10.5	10.6	11.2	11.0
Specific Conductivity (µS/cm)				112	109	105	99	86	87	84	85	86	86
pH	6.5 - 9.0			7.6	7.9	6.8	6.9	7.5	7.7	6.5	7.0	7.3	7.4
Temperature (°C)				0.58	0.65	0.85	0.29	11.4	12.4	12.6	12.7	9.7	10.1
Physical Tests (mg/L)													
Conductivity (µS/cm)		48.6		**113**	**110**	**113**	**105**	**86**	**85**	**85**	**85**	**86**	**85**
Alkalinity - Bicarbonate		9.60		**17.0**	**16.3**	**17.8**	**17.8**	**14.1**	**14.2**	**14.3**	**14.2**	**14.3**	**14.0**
Alkalinity - Carbonate		2.0		*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Alkalinity - Hydroxide				*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Alkalinity - Total (as $CaCO_3$)		9.61		**17.0**	**16.3**	**17.8**	**17.8**	**14.1**	**14.2**	**14.3**	**14.2**	**14.3**	**14.0**
Hardness (as CaCO3), dissolved		17.4		**41**	**38**	**45**	**42**	**34**	**32**	**34**	**34**	**35**	**35**
Hardness (as CaCO3), from total Ca/Mg				44	42	43	42	35	34	34	34	35	35
Total Dissolved Solids (TDS)		38.5		**95**	**67**	**82**	**74**	**66**	**70**	**69**	**60**	**60**	**51**
Total Suspended Solids (TSS)		3	5	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	1.2	1.0	*<1.0*	*<1.0*
Turbidity (NTU)				0.10	0.13	*<0.10*	*<0.10*	0.52	0.45	0.26	0.23	0.24	0.22
pH (Laboratory)	6.5 - 9.0	6.57-7.97	6.5-9.0	7.3	7.3	7.3	7.3	7.4	7.4	7.4	7.4	7.4	7.4
Anions and Nutrients (mg/L)													
Ammonia (as N)[3]	***equation***	0.065	0.126	0.026	0.029	0.038	0.039	*<0.0050*	*<0.0050*	0.015	0.055	*<0.0050*	0.0092
Bromide				0.096	0.095	0.10	0.10	0.068	0.072	0.074	0.072	0.069	0.069
Chloride	120	60.4	120	14.6	14.2	15.0	14.8	10.7	10.7	10.3	10.3	11.1	10.9
Fluoride	0.12	0.077	0.12	0.035	0.034	0.036	0.034	0.027	0.027	0.025	0.026	0.028	0.029
Total Kjeldahl Nitrogen		0.17		0.16	0.17	**0.19**	**0.18**	0.14	0.14	0.16	**0.20**	0.16	**0.19**
Nitrate (as N)	3	1.5	3	0.021	0.021	0.025	0.034	0.0057	0.0061	*<0.0050*	*<0.0050*	*<0.0050*	*<0.0050*
Nitrite (as N)	0.06	0.031	0.06	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Ortho Phosphate (as P)		0.0022		*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Phosphorus (P)-Total	0.01	0.0045	0.01	*<0.0020*	*<0.0020*	0.0036	0.0029	0.0029	**0.0062**	0.0026	0.0025	0.0030	0.0026
Phosphorus (P)-Total Diss.				*<0.0020*	*<0.0020*	*<0.0020*	*<0.0020*	*<0.0020*	*<0.0020*	*<0.0020*	*<0.0020*	*<0.0020*	*<0.0020*
Reactive Silica (as SiO_2)		1.33		0.63	0.62	0.63	0.64	*<0.50*	*<0.50*	*<0.50*	*<0.50*	*<0.50*	*<0.50*
Sulphate (SO_4)		64.8	128	9.1	8.8	9.6	9.1	7.1	7.1	7.2	7.2	7.7	7.6
Organic / Inorganic Carbon (mg/L)													
Dissolved Organic Carbon		2.43		2.2	2.4	2.4	**2.5**	2.4	**2.5**	2.3	**2.5**	2.2	2.4
Total Organic Carbon		2.42		2.3	2.2	2.4	2.4	2.2	2.2	**2.4**	2.4	2.2	2.1
Total Metals (mg/L)													
Aluminum[3]	***equation***	0.052	0.1	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	0.0098	0.010	0.0042	0.0041	0.0048	0.0055
Antimony		0.0046	0.009	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Arsenic	0.005	0.013	0.025	0.00082	0.00081	0.00077	0.00075	0.00098	0.0010	0.00089	0.00089	0.0010	0.0010
Barium		0.5	1	0.019	0.019	0.020	0.019	0.016	0.016	0.015	0.015	0.015	0.016
Beryllium		0.000115	0.00013	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*
Bismuth				*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Boron	1.5	0.76	1.5	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*
Cadmium[3]	***equation***	0.000023	0.00004	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Calcium		4.6		**12.1**	**11.2**	**12.3**	**11.9**	**9.9**	**9.7**	**9.4**	**9.4**	**9.7**	**9.5**
Cesium				0.00001	0.00001	0.00001	0.00001	0.00002	0.00001	0.00001	0.00001	0.00001	0.00002
Chromium[4]	0.001	0.0025	0.005	*<0.00010*	0.00011	0.00014	0.00028	*<0.00010*	*<0.00010*	*<0.00010*	0.00019	0.00013	0.00012
Cobalt				*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Copper[3]	***equation***	0.0013	0.002	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Iron	0.3	0.16	0.3	*<0.010*	*<0.010*	*<0.010*	*<0.010*	0.033	0.032	0.011	0.011	0.018	0.019
Lead[3]	***equation***	0.00053	0.001	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Lithium		0.002		0.0012	0.0012	0.0012	0.0013	0.0011	0.0010	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Magnesium		1.41		**3.3**	**3.4**	**3.0**	**3.0**	**2.5**	**2.5**	**2.5**	**2.6**	**2.7**	**2.7**
Manganese[3]		0.32	***See note 3***	0.00066	0.00073	0.00054	0.00080	0.014	0.014	0.0048	0.0042	0.0048	0.0049
Mercury	0.000026	0.000016	0.000026	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Molybdenum	0.073	0.037	0.073	0.00010	0.00009	0.00009	0.00010	0.00007	0.00006	0.00008	0.00010	0.00008	0.00009
Nickel[3]	***equation***	0.013	0.025	0.0015	0.0015	0.0016	0.0016	0.0017	0.0017	0.0013	0.0013	0.0013	0.0013
Phosphorus		0.0045	0.004	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*
Potassium		0.84		**2.0**	**2.0**	**2.1**	**2.1**	**1.7**	**1.7**	**1.7**	**1.7**	**1.7**	**1.7**
Rubidium				0.0032	0.0033	0.0032	0.0032	0.0028	0.0028	0.0029	0.0028	0.0029	0.0029
Selenium	0.001	0.00053	0.001	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Silicon		0.61		0.33	0.33	0.33	0.33	0.19	0.21	0.11	0.13	0.13	0.15
Silver	0.00025	0.00013	0.00025	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Sodium		1		**1.2**	**1.2**	**1.2**	**1.1**	0.89	0.90	0.95	0.93	0.94	0.96
Strontium		1.26	2.5	0.068	0.068	0.066	0.066	0.053	0.053	0.054	0.052	0.049	0.050
Sulfur				2.8	2.9	3.2	3.2	2.6	2.4	2.4	2.4	2.6	2.8
Tellurium				*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*
Thallium	0.0008	0.00013	0.0008	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Thorium				*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Tin		0.033		*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Titanium		0.00041		*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	0.00032	0.00031	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*
Tungsten				*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Uranium	0.015	0.0002	0.015	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002
Vanadium		0.0006	0.12	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Zinc	0.03	0.0075	***See note 3***	0.0097	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*
Zirconium				*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*
Dissolved Metals (mg/L)													
Aluminum[3]		0.026	0.05	0.0011	0.0013	*<0.0010*	*<0.0010*	0.0027	0.0030	0.0018	0.0022	0.0021	0.0021
Antimony		0.005	0.009	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Arsenic		0.013	0.025	0.00080	0.00075	0.00074	0.00074	0.00080	0.00085	0.00081	0.00081	0.00087	0.00082
Barium		0.5	1	0.018	0.019	0.019	0.019	0.015	0.015	0.015	0.015	0.014	0.015
Beryllium		0.000115	0.00013	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*
Bismuth				*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Boron		0.76	1.5	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*
Cadmium		0.000023	0.00004	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Calcium		4.6		**11.4**	**10.6**	**12.7**	**12.0**	**9.5**	**9.1**	**9.1**	**8.9**	**9.8**	**9.7**
Cesium				0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002
Chromium		0.0026	0.005	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	0.00010	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Cobalt				*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Copper		0.0012	0.002	0.00035	0.00034	0.00032	0.00030	0.00034	0.00031	0.00031	0.00032	0.00032	0.00034
Iron		0.16	0.3	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*
Lead		0.00053	0.001	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Lithium		0.002		0.0012	0.0011	0.0013	0.0012	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	0.0010	0.0010
Magnesium		1.41		**3.2**	**2.9**	**3.1**	**2.9**	**2.4**	**2.4**	**2.8**	**2.9**	**2.6**	**2.6**
Manganese[3]		0.32	***See note 3***	0.00021	0.00038	0.00020	0.00030	0.0081	0.0079	0.00042	0.00052	0.00068	0.00074
Mercury		0.000016	0.000026	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Molybdenum		0.037	0.073	0.00008	0.00008	0.00011	0.00011	0.00008	0.00010	0.00008	0.00008	0.00008	0.00008
Nickel		0.013	0.025	0.0014	0.0013	0.0015	0.0014	0.0016	0.0015	0.0013	0.0012	0.0012	0.0012
Phosphorus				*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*
Potassium		0.84		**2.0**	**2.0**	**2.2**	**2.0**	**1.7**	**1.7**	**1.7**	**1.7**	**1.7**	**1.8**
Rubidium				0.0033	0.0030	0.0033	0.0031	0.0027	0.0028	0.0027	0.0029	0.0029	0.0029
Selenium		0.00053	0.001	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Silicon		0.57		0.27	0.27	0.27	0.28	0.14	0.13	0.081	0.078	0.11	0.10
Silver		0.00013	0.00025	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Sodium		1		**1.1**	**1.1**	**1.2**	**1.1**	0.91	0.90	1.00	0.98	0.92	0.92
Strontium		1.26	2.5	0.065	0.064	0.068	0.064	0.052	0.052	0.053	0.051	0.053	0.053
Sulfur				2.8	2.8	2.6	2.7	2.3	2.1	2.8	2.5	2.4	2.5
Tellurium				*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*
Thallium		0.00041	0.0008	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Thorium				*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Tin		0.0002		*<0.00010*	0.00013	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Titanium		0.0006		*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*
Tungsten				*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Uranium		0.0075	0.015	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002
Vanadium		0.06	0.12	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Zinc	***equation***	0.0023	***See note 3***	0.0018	~~0.012~~	~~0.042~~	~~0.176~~	~~0.022~~	~~0.031~~	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Zirconium				*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*
Plant Pigments (µg/L)													
Chlorophyll-a				0.33	0.34	0.38	0.60	0.72	0.57	0.59	0.59	0.82	0.75

Notes:

1. CCME (Canadian Council of Ministers of the Environment) Canadian Water Quality Guidelines for the Protection of Aquatic Life, 1999, updated up to 2018.

2. Trigger and threshold values are presented in *CREMP 2015 Plan Update* (Azimuth, 2015b). A number of thresholds were derived from methods (or sources) other than CCME guidelines - see Azimuth (2015b) for details.

3. "***equation***" means that CCME guidelines (or thresholds) are calculated based on an equation which is either pH or hardness dependent. The ammonia and aluminum guidelines vary with pH; the cadmium, copper, lead, manganese, nickel and zinc guidelines vary with hardness.

4. Chromium CCME guideline is for Cr VI.

123 Bolded values exceed the trigger.

123 Bold and shaded values exceed the threshold.

Italicized numbers are below detection limits.

underline = results were given a cautionary flag in the QC assessment (refer to **Appendix B** for details).

~~strikethrough~~ = results flagged as unreliable in the QC assessment (refer to **Appendix B** for details).

* Kangislulik Lake (KAN) previously referred to as Mammoth Lake (MAM). Acronym MAM still being used in tables and figures.

Table C2-2. Water quality results screened against FEIS predicted concentrations for Whale Tail Lake – South Basin, 2025.

Lake & Area	WTS FEIS Predictions					Whale Tail Lake South Basin (Impoundment)							
Month						March	March	July	July	August	August	September	September
Area-Replicate ID						WTS-97	WTS-98	WTS-101	WTS-102	WTS-103	WTS-104	WTS-105	WTS-106
Date						07-Mar-2025	07-Mar-2025	07-Jul-2025	07-Jul-2025	16-Aug-2025	16-Aug-2025	04-Sep-2025	04-Sep-2025
Time	March	May	July	August	September	13:10	12:40	15:32	15:12	09:45	10:30	08:41	09:15
ALS Sample ID						VA25A5659-003	VA25A5659-004	VA25B6987-005 VA25B7586-011	VA25B6987-006 VA25B7586-012	VA25C1585-005 VA25C1599-006	VA25C1585-006 VA25C1599-007	VA25C3661-015 VA25C5633-016	VA25C3661-016 VA25C5633-017
Physical Tests (mg/L)													
Alkalinity - Total (as CaCO3)	11.0	11.0	10.0	11.0	11.0	**25**	**25**	**22**	**22**	**23**	**22**	**24**	**23**
Total Dissolved Solids (TDS)	43	43	43	46	48	**115**	**114**	**88**	**78**	**126**	**120**	**132**	**132**
Anions and Nutrients (mg/L)													
Ammonia (as N)	0.26	0.26	0.26	0.29	0.31	0.10	0.085	0.011	0.011	0.022	0.039	0.025	0.022
Chloride	9.4	9.4	9.3	10.0	10.0	**22**	**21**	**17.5**	**17.3**	**17.2**	**17.2**	**17.9**	**18.0**
Fluoride	0.056	0.056	0.053	0.057	0.059	**0.078**	**0.074**	**0.063**	**0.062**	**0.068**	**0.067**	**0.070**	**0.068**
Nitrate (as N)	2.1	2.1	2.4	2.5	2.5	1.1	1.0	0.83	0.82	0.60	0.60	0.57	0.57
Phosphorus (P)-Total	0.012	0.012	0.013	0.013	0.013	0.0036	0.0036	0.0041	0.0043	0.0038	0.0039	0.0052	0.0039
Sulphate (SO_4)	5.8	5.8	5.5	6.0	6.3	**29**	**27**	**24**	**24**	**23**	**23**	**24**	**24**
Total Metals (mg/L)													
Aluminum	0.0041	0.0041	0.0039	0.0040	0.0040	**0.0098**	**0.011**	**0.017**	**0.016**	**0.0086**	**0.0079**	**0.023**	**0.028**
Antimony	0.00068	0.00068	0.00064	0.00071	0.00075	**0.0020**	**0.0019**	**0.0020**	**0.0020**	**0.0016**	**0.0016**	**0.0016**	**0.0015**
Arsenic	0.016	0.016	0.016	0.017	0.018	0.0014	0.0012	0.0020	0.0019	0.0011	0.0011	0.0010	0.0011
Barium	0.0091	0.0091	0.0087	0.0092	0.0095	**0.027**	**0.025**	**0.023**	**0.022**	**0.021**	**0.021**	**0.020**	**0.020**
Beryllium	0.00003	0.00003	0.00002	0.00003	0.00003	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*
Bismuth	0.00005	0.00005	0.00005	0.00005	0.00005	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Boron	0.052	0.052	0.049	0.054	0.057	0.011	0.012	0.012	0.011	*<0.010*	*<0.010*	*<0.010*	0.010
Cadmium	0.00001	0.00001	0.00001	0.00001	0.00001	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	0.00001	*<0.0000050*	*<0.0000050*	*<0.0000050*
Calcium	5.7	5.7	5.6	6.0	6.3	**18.4**	**18.9**	**17.0**	**16.2**	**15.5**	**15.6**	**15.6**	**15.2**
Chromium	0.00055	0.00055	0.00052	0.00057	0.00060	0.00015	0.00014	**0.00084**	0.00029	0.00020	0.00016	0.00023	0.00021
Cobalt	0.00040	0.00040	0.00038	0.00042	0.00044	*<0.00010*	*<0.00010*	0.00012	0.00012	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Copper	0.0011	0.0012	0.0011	0.0012	0.0012	0.00062	0.00059	0.00051	0.00052	0.00053	*<0.00050*	0.00051	0.00051
Iron	0.064	0.064	0.063	0.066	0.068	0.016	0.017	**0.070**	**0.066**	0.028	0.026	0.058	0.060
Lead	0.00020	0.00020	0.00019	0.00021	0.00022	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	0.00005	*<0.000050*
Lithium	0.0019	0.0019	0.0018	0.0019	0.0020	**0.0029**	**0.0030**	**0.0026**	**0.0026**	**0.0024**	**0.0024**	**0.0025**	**0.0025**
Magnesium	1.4	1.4	1.3	1.4	1.4	**6.5**	**6.1**	**4.9**	**5.0**	**4.9**	**4.9**	**5.0**	**5.2**
Manganese	0.045	0.045	0.042	0.047	0.050	0.00092	0.00082	0.015	0.015	0.0052	0.0049	0.0086	0.0084
Mercury	0.00001	0.00001	0.00001	0.00001	0.00001	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Molybdenum	0.00080	0.00080	0.00076	0.00082	0.00085	**0.0014**	**0.0014**	**0.0015**	**0.0013**	**0.0011**	**0.0011**	**0.0011**	**0.0011**
Nickel	0.0045	0.0045	0.0044	0.0050	0.0053	**0.0045**	0.0041	0.0040	0.0037	0.0021	0.0020	0.0019	0.0018
Potassium	1.5	1.5	1.5	1.6	1.7	**4.7**	**4.3**	**3.9**	**3.9**	**4.0**	**4.0**	**3.8**	**3.8**
Selenium	0.00028	0.00028	0.00027	0.00030	0.00032	0.00009	0.00007	0.00008	0.00009	*<0.000050*	0.00008	*<0.000050*	*<0.000050*
Silver	0.00002	0.00002	0.00002	0.00002	0.00002	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Sodium	3.4	3.4	3.2	3.5	3.6	**4.6**	**4.1**	**3.9**	**3.7**	**3.8**	**3.8**	**3.8**	**3.6**
Strontium	0.037	0.037	0.036	0.038	0.040	**0.17**	**0.16**	**0.14**	**0.14**	**0.13**	**0.13**	**0.14**	**0.13**
Thallium	0.00002	0.00002	0.00001	0.00002	0.00002	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	0.00001	*<0.000010*	*<0.000010*	*<0.000010*
Tin	0.00013	0.00013	0.00012	0.00013	0.00013	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Uranium	0.00030	0.00030	0.00029	0.00031	0.00032	0.00029	0.00027	0.00023	0.00023	0.00016	0.00016	0.00014	0.00013
Vanadium	0.00085	0.00085	0.00081	0.00086	0.00089	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Zinc	0.0025	0.0025	0.0024	0.0026	0.0027	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*

Notes:

Formatting for indicating the parameters that exceed the model predictions in the FEIS:

123 Bolded values exce· Bolded values exceed FEIS by < 10X.

123 Bold and shaded va Bold and shaded values exceed the FEIS by ≥ 10X.

Italicized numbers are below detection limits.

"-" not analyzed/not sampled.

Table C2-3. Water quality results screened against FEIS predicted concentrations for Kangislulik Lake, 2025.

Lake & Area	KAN FEIS Predictions					Kangislulik Lake*									
Month						March	March	May	May	July	July	August	August	September	September
Area-Replicate ID						MAM-97	MAM-98	MAM-99	MAM-100	MAM-101	MAM-102	MAM-103	MAM-104	MAM-105	MAM-106
Date						07-Mar-2025	07-Mar-2025	26-Apr-2025	01-May-2025	08-Jul-2025	08-Jul-2025	17-Aug-2025	17-Aug-2025	02-Sep-2025	02-Sep-2025
Time	March	May	July	August	September	10:40	11:00	09:15	10:00	10:46	11:37	13:30	14:04	13:59	14:22
ALS Sample ID						VA25A5659-001	VA25A5659-002	VA25B2006-009	VA25B0623-007 VA25B2006-010	VA25B7115-001 VA25B7585-001	VA25B7115-002 VA25B7585-002	VA25C1585-007 VA25C1599-008	VA25C1585-008 VA25C1599-009	VA25C3221-001 VA25C5633-001	VA25C3221-002 VA25C5633-002
Physical Tests (mg/L)															
Alkalinity - Total (as $CaCO_3$)	8.8	8.8	9.0	9.1	9.2	**31**	**28**	**35**	**31**	**17.6**	**17.5**	**19.1**	**19.1**	**20**	**19.9**
Total Dissolved Solids	33	33	35	35	35	**128**	**126**	**175**	**218**	**97**	**94**	**110**	**103**	**104**	**90**
Anions and Nutrients (mg/L)															
Ammonia (as N)	0.11	0.11	0.15	0.15	0.16	0.061	0.071	0.047	0.047	0.012	0.0069	0.11	0.021	0.0098	0.0092
Chloride	8.8	8.8	8.5	8.6	8.6	**25**	**23**	**28**	**26**	**13.1**	**12.7**	**14.7**	**14.7**	**16.0**	**15.9**
Fluoride	0.045	0.045	0.046	0.046	0.047	**0.076**	**0.073**	**0.083**	**0.077**	0.045	0.046	**0.058**	**0.060**	**0.064**	**0.062**
Nitrate (as N)	1.2	1.2	1.4	1.4	1.5	0.96	0.86	1.1	0.99	0.41	0.36	0.39	0.40	0.43	0.43
Phosphorus (P)-Total	0.0086	0.0086	0.0094	0.0094	0.0095	0.0028	0.0037	0.0038	0.0053	0.0039	0.0036	0.0038	0.0046	0.0032	0.0031
Sulphate (SO_4)	4.2	4.2	4.4	4.5	4.6	**35**	**32**	**39**	**35**	**18.1**	**17.2**	**21**	**21**	**22**	**22**
Total Metals (mg/L)															
Aluminum	0.0038	0.0038	0.0038	0.0039	0.0039	0.0033	0.0034	0.0031	0.0034	**0.0080**	**0.0078**	**0.0050**	**0.0050**	0.0038	**0.0046**
Antimony	0.00041	0.00041	0.00046	0.00046	0.00047	**0.0015**	**0.0014**	**0.0016**	**0.0014**	**0.00079**	**0.00068**	**0.0010**	**0.0010**	**0.0012**	**0.0012**
Arsenic	0.0092	0.0092	0.010	0.010	0.011	0.0021	0.0018	0.0022	0.0016	0.0016	0.0012	0.0014	0.0015	0.0015	0.0014
Barium	0.0080	0.0080	0.0081	0.0082	0.0082	**0.034**	**0.030**	**0.037**	**0.032**	**0.018**	**0.018**	**0.018**	**0.017**	**0.019**	**0.019**
Beryllium	0.00002	0.00002	0.00002	0.00002	0.00002	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*
Bismuth	0.00005	0.00005	0.00005	0.00005	0.00005	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Boron	0.037	0.037	0.038	0.039	0.039	0.012	0.010	0.013	0.011	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*
Cadmium	0.00001	0.00001	0.00001	0.00001	0.00001	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Calcium	5.2	5.2	5.1	5.2	5.2	**25**	**22**	**27**	**24**	**14.4**	**13.3**	**14.1**	**14.6**	**15.9**	**16.2**
Chromium	0.00038	0.00038	0.00040	0.00040	0.00041	*<0.00010*	*<0.00010*	0.00010	*<0.00010*	*<0.00010*	**0.0011**	*<0.00010*	0.00013	*<0.00010*	0.00019
Cobalt	0.00028	0.00028	0.00030	0.00030	0.00030	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Copper	0.00086	0.00086	0.00090	0.00091	0.00092	0.00059	0.00055	0.00066	0.00057	0.00052	*<0.00050*	0.00051	0.00051	0.00059	0.00057
Iron	0.045	0.045	0.048	0.048	0.048	*<0.010*	*<0.010*	0.014	*<0.010*	0.022	0.038	0.013	0.013	0.015	0.017
Lead	0.00015	0.00015	0.00016	0.00016	0.00016	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Lithium	0.0015	0.0015	0.0016	0.0016	0.0016	**0.0031**	**0.0028**	**0.0038**	**0.0032**	**0.0019**	**0.0018**	**0.0020**	**0.0020**	**0.0021**	**0.0022**
Magnesium	1.3	1.3	1.3	1.3	1.3	**6.8**	**6.4**	**7.2**	**6.5**	**3.8**	**3.6**	**4.1**	**4.2**	**4.5**	**4.3**
Manganese	0.027	0.027	0.029	0.030	0.030	0.022	0.013	0.012	0.0065	0.0072	0.0062	0.0048	0.0048	0.0095	0.0098
Mercury	0.00001	0.00001	0.00001	0.00001	0.00001	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Molybdenum	0.00058	0.00058	0.00059	0.00059	0.00060	**0.00099**	**0.0010**	**0.0012**	**0.00090**	0.00055	**0.00071**	**0.00074**	**0.00078**	**0.00084**	**0.00086**
Nickel	0.0027	0.0027	0.0031	0.0031	0.0032	0.0023	0.0019	0.0027	0.0019	0.0013	0.0011	0.0010	0.0010	0.0011	0.0011
Potassium	1.1	1.1	1.2	1.2	1.2	**5.1**	**4.6**	**6.1**	**5.2**	**2.9**	**2.9**	**3.4**	**3.4**	**3.7**	**3.6**
Selenium	0.00017	0.00017	0.00019	0.00019	0.00020	0.00010	0.00008	0.00011	0.00009	*<0.000050*	*<0.000050*	0.00005	*<0.000050*	0.00008	0.00005
Silver	0.00002	0.00002	0.00002	0.00002	0.00002	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Sodium	2.4	2.4	2.5	2.5	2.5	**4.5**	**4.2**	**5.0**	**4.4**	**2.6**	**2.6**	**3.3**	**3.2**	**3.4**	**3.3**
Strontium	0.029	0.029	0.031	0.031	0.031	**0.18**	**0.17**	**0.20**	**0.18**	**0.099**	**0.096**	**0.11**	**0.11**	**0.11**	**0.11**
Thallium	0.00001	0.00001	0.00001	0.00001	0.00001	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Tin	0.00012	0.00012	0.00012	0.00012	0.00012	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Uranium	0.00022	0.00022	0.00022	0.00022	0.00022	0.00019	0.00018	0.00021	0.00017	0.00015	0.00013	0.00019	0.00020	0.00019	0.00020
Vanadium	0.00070	0.00070	0.00072	0.00073	0.00074	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Zinc	0.0018	0.0018	0.0019	0.0019	0.0020	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*

Notes:

Formatting for indicating the parameters that exceed the model predictions in the FEIS:

123 Bolded values exceed FEIS by < 10X.

123 Bold and shaded values exceed the FEIS by ≥ 10X.

Italicized numbers are below detection limits.

"-" not analyzed/not sampled.

* Previously referred to as Mammoth Lake (MAM). Acronyms MAM or KAN used interchangeably.

Table C2-4. Water and phytoplankton sampling location coordinates (GPS, UTM, NAD83) for the Whale Tail CREMP, 2025.

Area[1]	Area Type[2]	Area-Replicate	Water & Phytoplankton (Monthly)				
			Month	Depth (m)	Zone	Easting	Northing
WTS	NF	WTS-limno	January	12.8	14W	607445	7254159
		WTS-limno	February	9.9	14W	607460	7254280
		WTS-limno	April	11.4	14W	607473	7254303
		WTS-limno	November	9.2	14W	607480	7254376
		WTS-limno	December	11.7	14W	607333	7254338
		WTS-97	March	8.4	14W	607519	7254193
		WTS-98	March	10.8	14W	607159	7253588
		WTS-99	May	8.1	14W	607638	7254078
		WTS-100	May	16.4	14W	607241	7253710
		WTS-101	July	16.6	14W	607385	7254484
		WTS-102	July	7.4	14W	607376	7253844
		WTS-103	August	9.0	14W	607057	7253562
		WTS-104	August	7.8	14W	607543	7254286
		WTS-105	September	10.2	14W	607263	7253518
		WTS-106	September	11.0	14W	607518	7254258
KAN	NF	MAM-limno	January	5.1	14W	604710	7254677
		MAM-limno	February	9.4	14W	608984	7254609
		MAM-limno	April	5.9	14W	604441	7253773
		MAM-limno	November	5.1	14W	605297	7254856
		MAM-limno	December	6.0	14W	605200	7254577
		MAM-97	March	7.7	14W	604998	7254792
		MAM-98	March	7.2	14W	604211	7253845
		MAM-99	May	8.6	14W	605382	7255097
		MAM-100	May	6.4	14W	604228	7253834
		MAM-101	July	9.1	14W	605354	7255109
		MAM-102	July	5.7	14W	604110	7254238
		MAM-103	August	5.2	14W	604209	7253801
		MAM-104	August	9.6	14W	604356	7254307
		MAM-105	September	6.6	14W	604145	7253925
		MAM-106	September	12.3	14W	604074	7254478
A20	MF	A20-limno	January	5.6	14W	605157	7252516
		A20-limno	February	6.3	14W	605256	7252549
		A20-limno	April	5.4	14W	605142	7252496
		A20-limno	November	5.6	14W	604763	7252493
		A20-limno	December	5.5	14W	604712	7252441
		A20-89	March	>20	14W	604376	7252621
		A20-90	March	5.9	14W	605219	7252782

Area[1]	Area Type[2]	Area-Replicate	Water & Phytoplankton (Monthly)				
			Month	Depth (m)	Zone	Easting	Northing
		A20-91	May	6.8	14W	604541	7252533
		A20-92	May	5.1	14W	605205	7252748
		A20-93	July	6.3	14W	604687	7252485
		A20-94	July	5.9	14W	605210	7252762
		A20-95	August	6.4	14W	604697	7252484
		A20-96	August	6.1	14W	605212	7252748
		A20-97	September	5.4	14W	605227	7252754
		A20-98	September	17.6	14W	604376	7252620
A76	MF	A76-87	March	12.4	14W	601738	7256860
		A76-88	March	13.5	14W	602555	7257139
		A76-89	May	9.5	14W	601682	7256840
		A76-90	May	13.8	14W	602572	7257236
		A76-91	July	12.7	14W	601737	725872
		A76-92	July	8.2	14W	602423	7257124
		A76-93	August	14.0	14W	601744	7256835
		A76-94	August	10.4	14W	602411	7257149
		-	September	-	-	-	-
		-	September	-	-	-	-
DS1	FF	DS1-85	March	>20	14W	597632	7260881
		DS1-86	March	9.8	14W	597221	7262096
		DS1-87	May	8.8	14W	598080	7258187
		DS1-88	May	10.2	14W	597622	7261052
		DS1-89	July	7.6	14W	598041	7258318
		DS1-90	July	18.5	14W	597632	7260881
		DS1-91	August	8.0	14W	598029	7258289
		DS1-92	August	9.2	14W	597517	7261570
		-	September	-	-	-	-
		-	September	-	-	-	-
NEM	NF	NEM-limno	January	7.6	14W	606595	7257134
		NEM-limno	February	5.6	14W	606353	7256806
		NEM-limno	April	9.4	14W	606263	7257518
		NEM-limno	November	8.4	14W	606412	7257000
		NEM-limno	December	8.1	14W	606393	7257093
		NEM-95	March	6.7	14W	606127	7257361
		NEM-96	March	14.1	14W	607018	7257843
		NEM-97	May	11.6	14W	606310	7257355
		NEM-98	May	14.5	14W	606611	7257938
		NEM-99	July	14.6	14W	606152	7257527
		NEM-100	July	12.9	14W	606992	7257819
		NEM-101	August	15.4	14W	606988	7257867
		NEM-102	August	14.0	14W	606168	7257519

Area[1]	Area Type[2]	Area-Replicate	**Water & Phytoplankton** (Monthly)				
			Month	**Depth (m)**	**Zone**	**Easting**	**Northing**
		NEM-103	September	14.6	14W	606131	7257409
		NEM-104	September	16.3	14W	606611	7257938

Notes:

1. Area IDs are as follows: WTS =Whale Tail South; KAN = Kangislulik Lake ([KAN]; formerly Mammoth Lake [MAM]; referred to as KAN); A20 = Lake A20; A76= Lake A76; DS1= Lake DS1, NEM = Nemo Lake

2. Area types: NF=near-field; MF=mid-field; FF=far-field; Ref=reference.

- = Sampling in September cancelled at Lake A76 and Lake DS1 due to accessibility challenges.

FIGURES

Figure C2-1. Laboratory-measured conductivity (µS/cm).

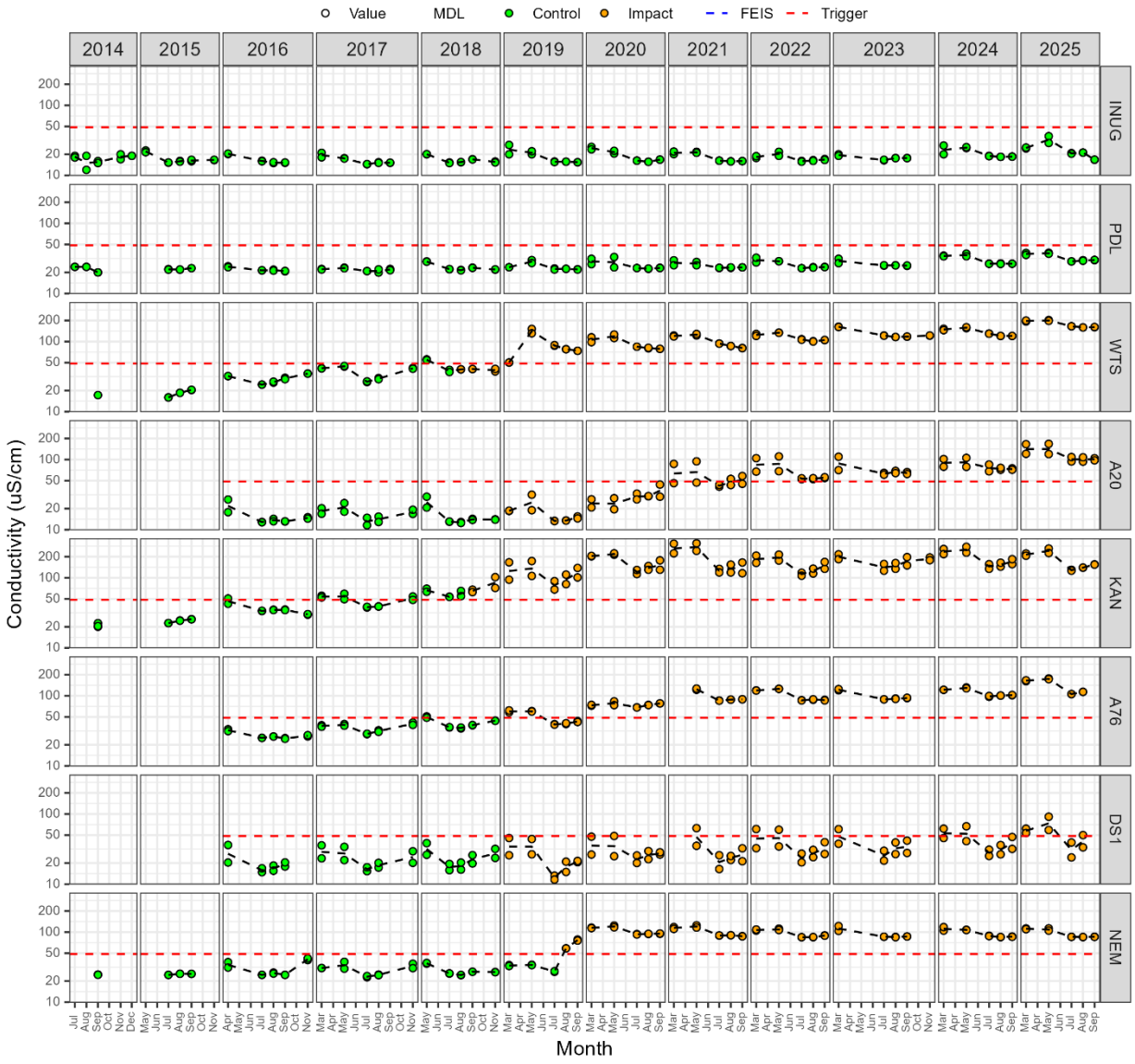


Figure C2-2. Laboratory-measured hardness (mg/L).

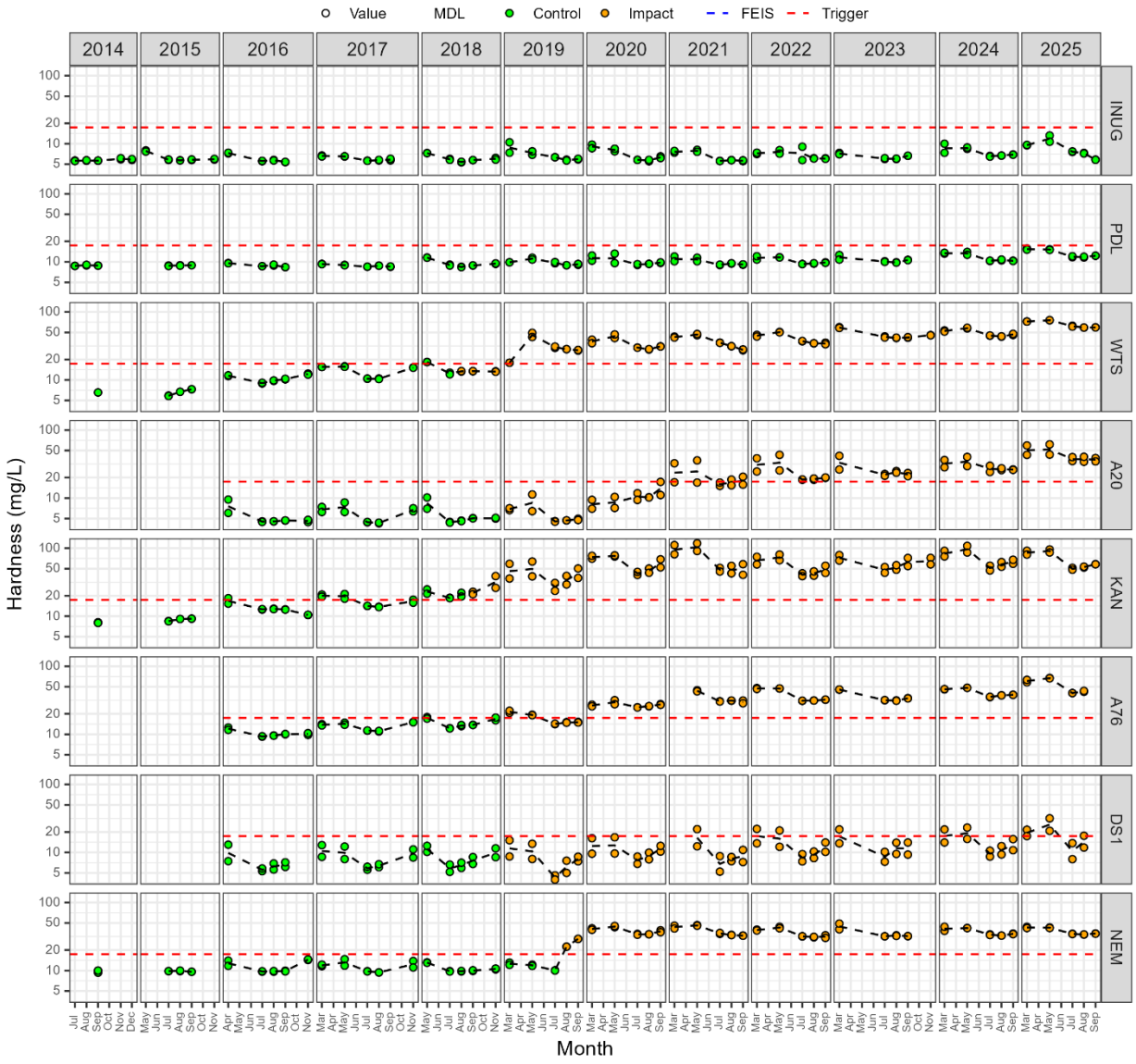


Figure C2-3. Field-measured pH.

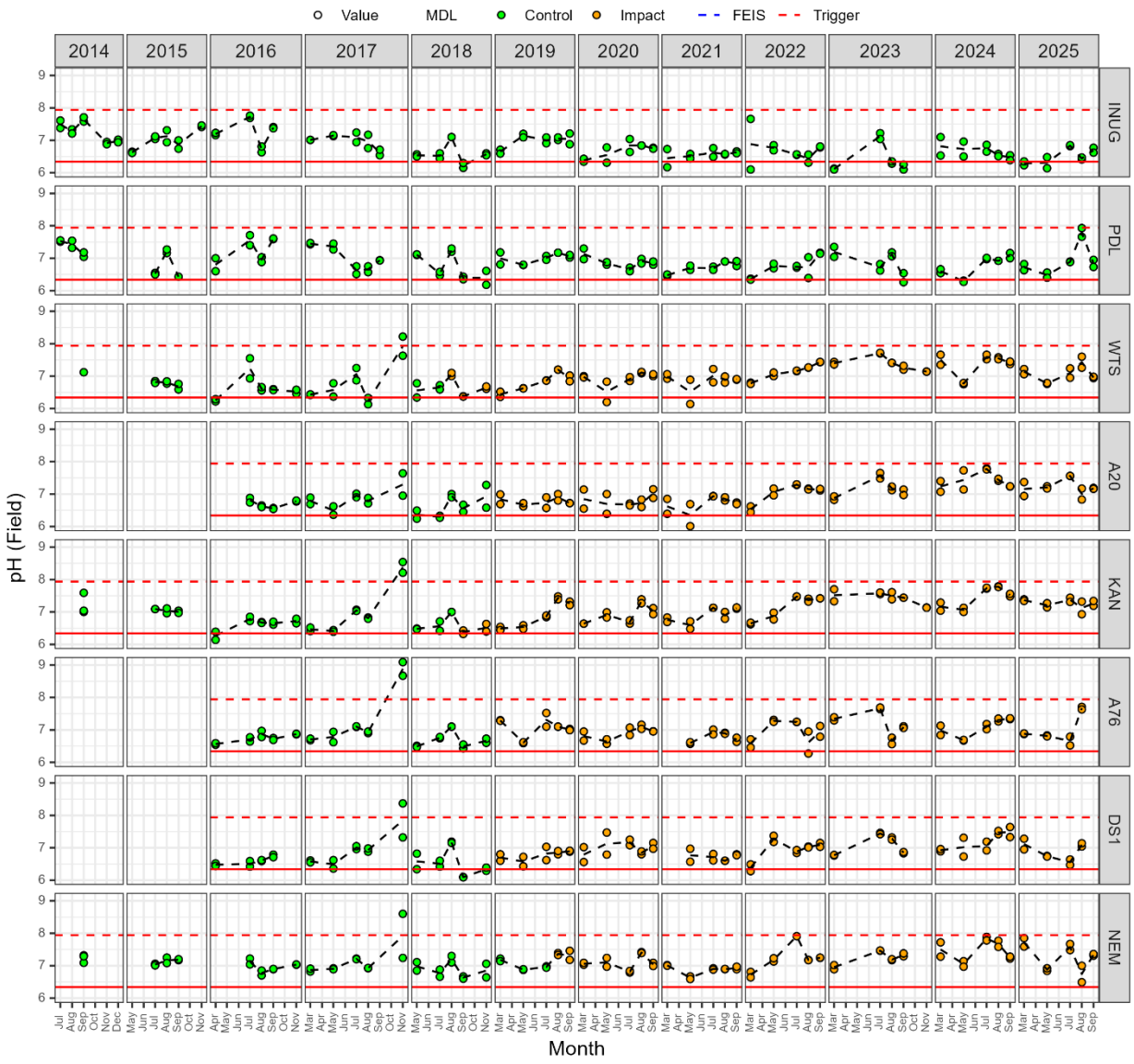


Figure C2-4. Laboratory-measured pH.

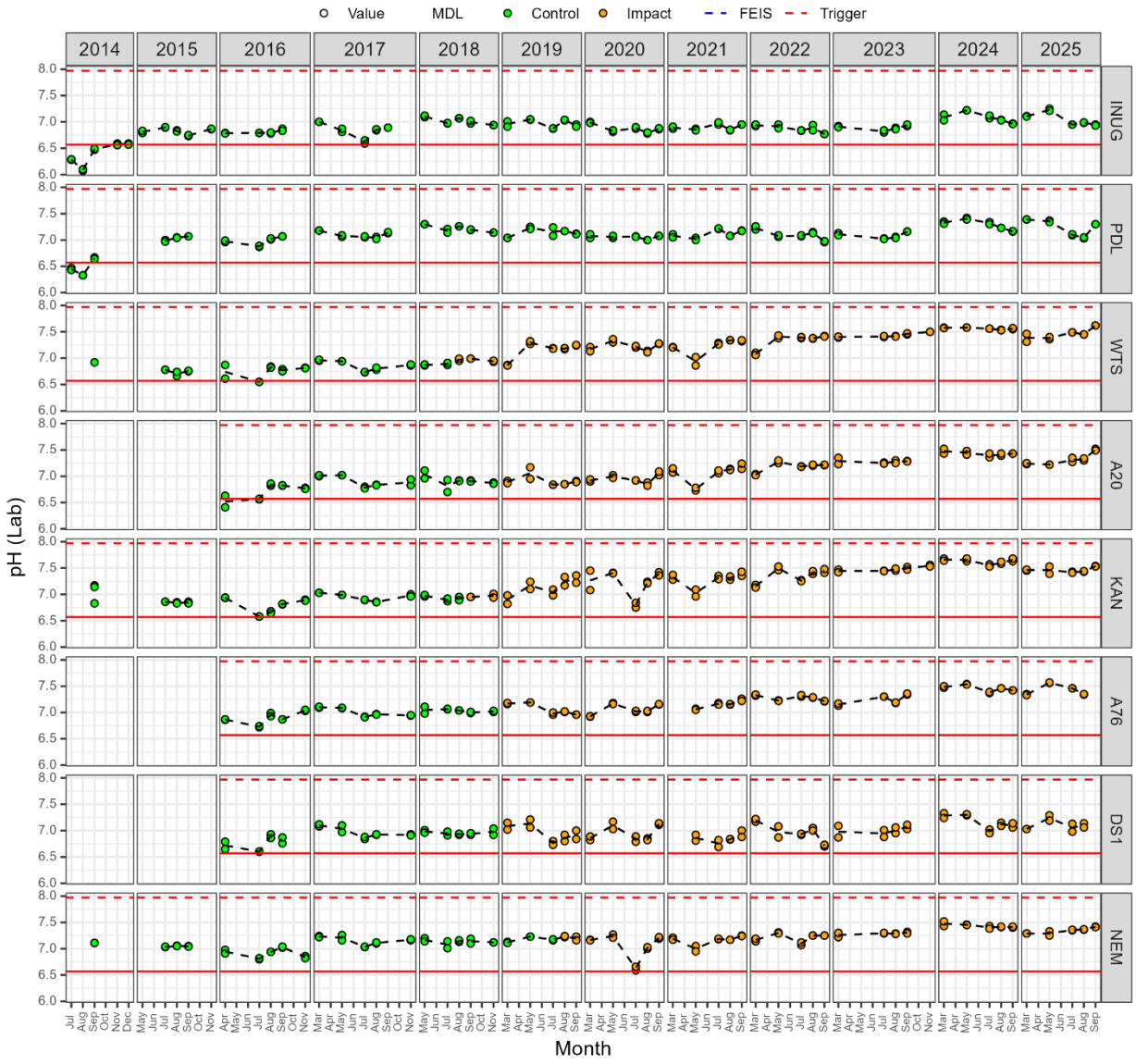


Figure C2-5. Total suspended solids (TSS; mg/L).

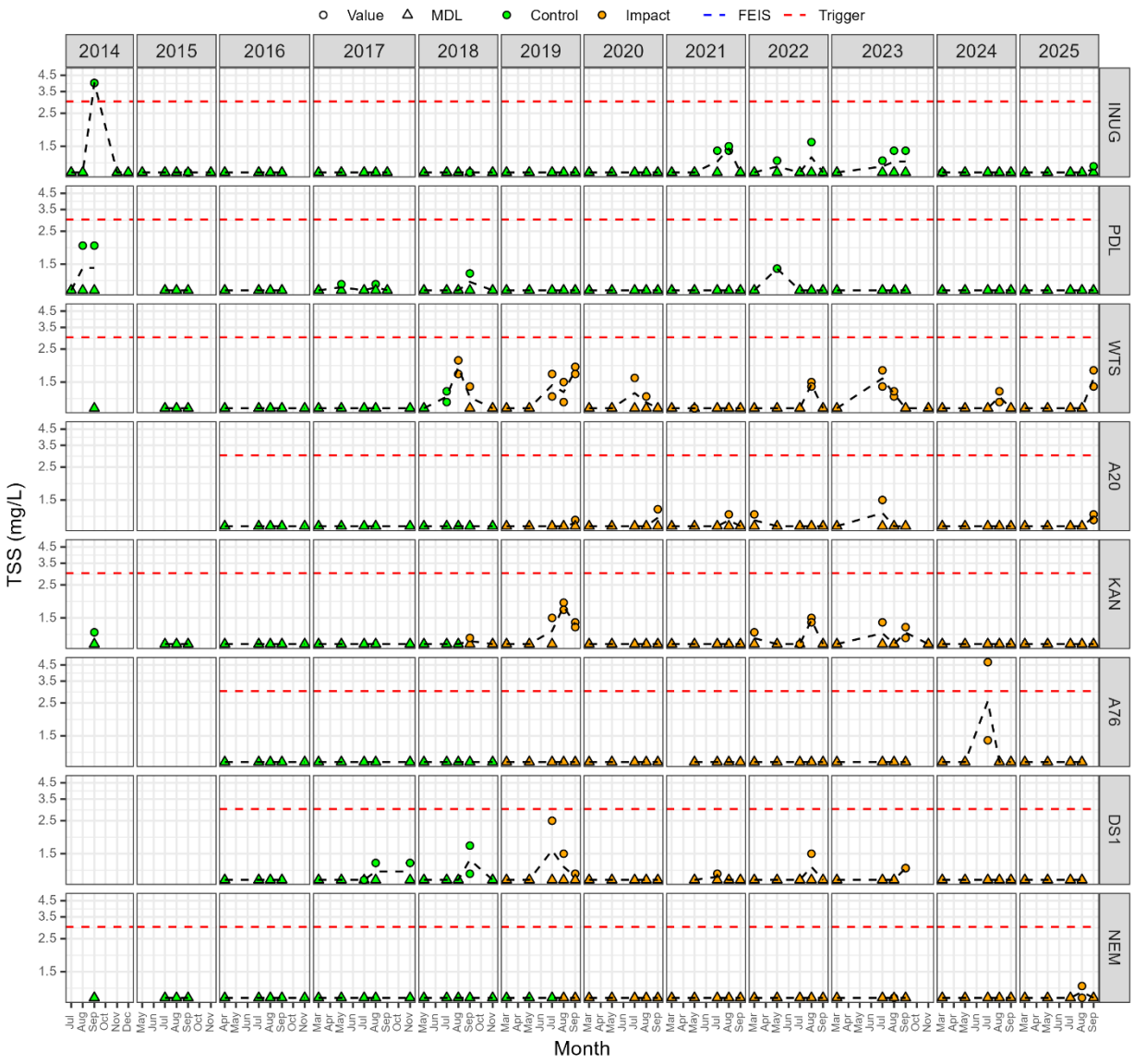


Figure C2-6. Total dissolved solids (TDS; mg/L).

Note: TDS data from 2014 were removed due to data quality concerns. See Azimuth (2015c) for more details.

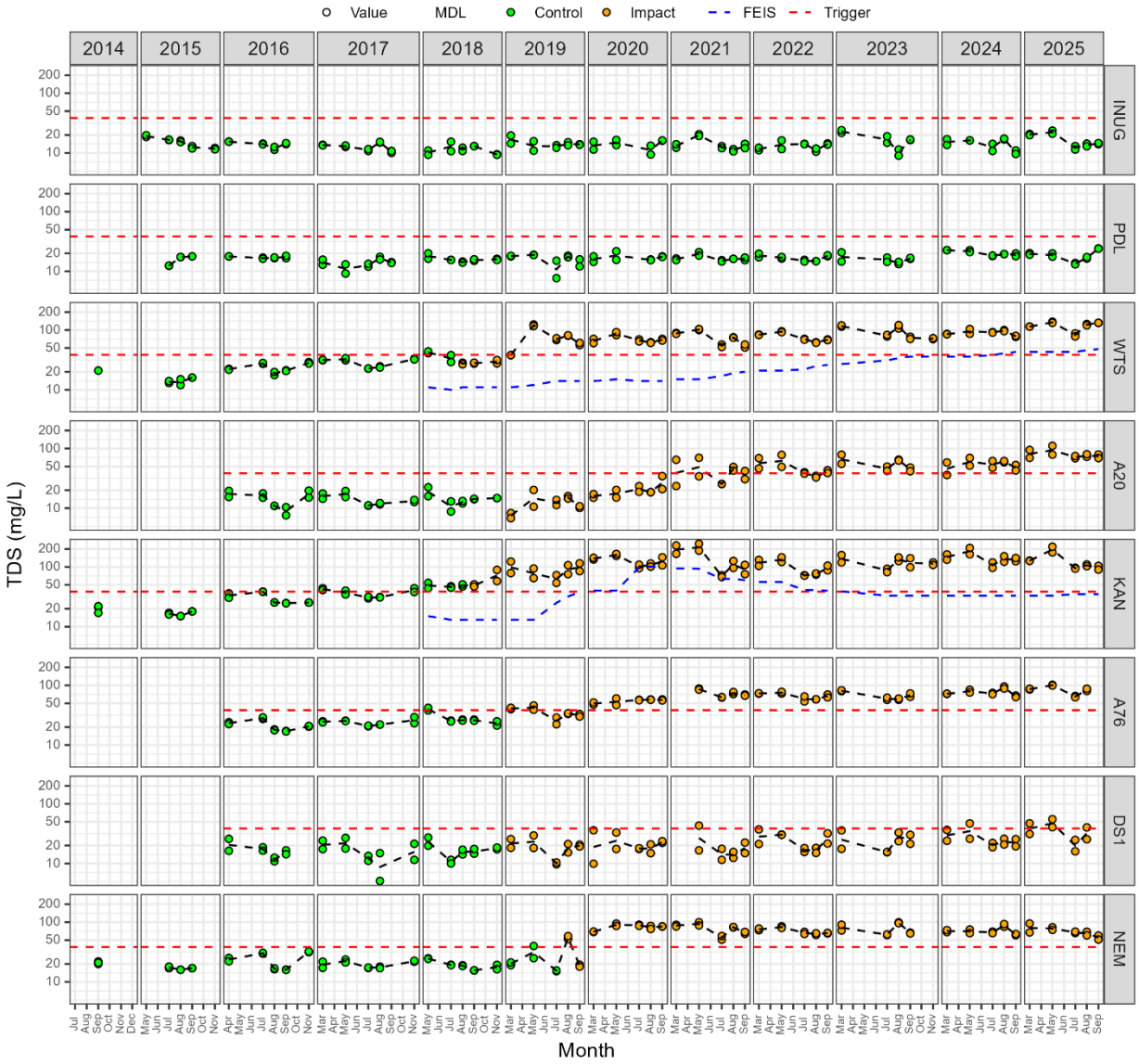


Figure C2-7. Carbonate alkalinity (mg/L).

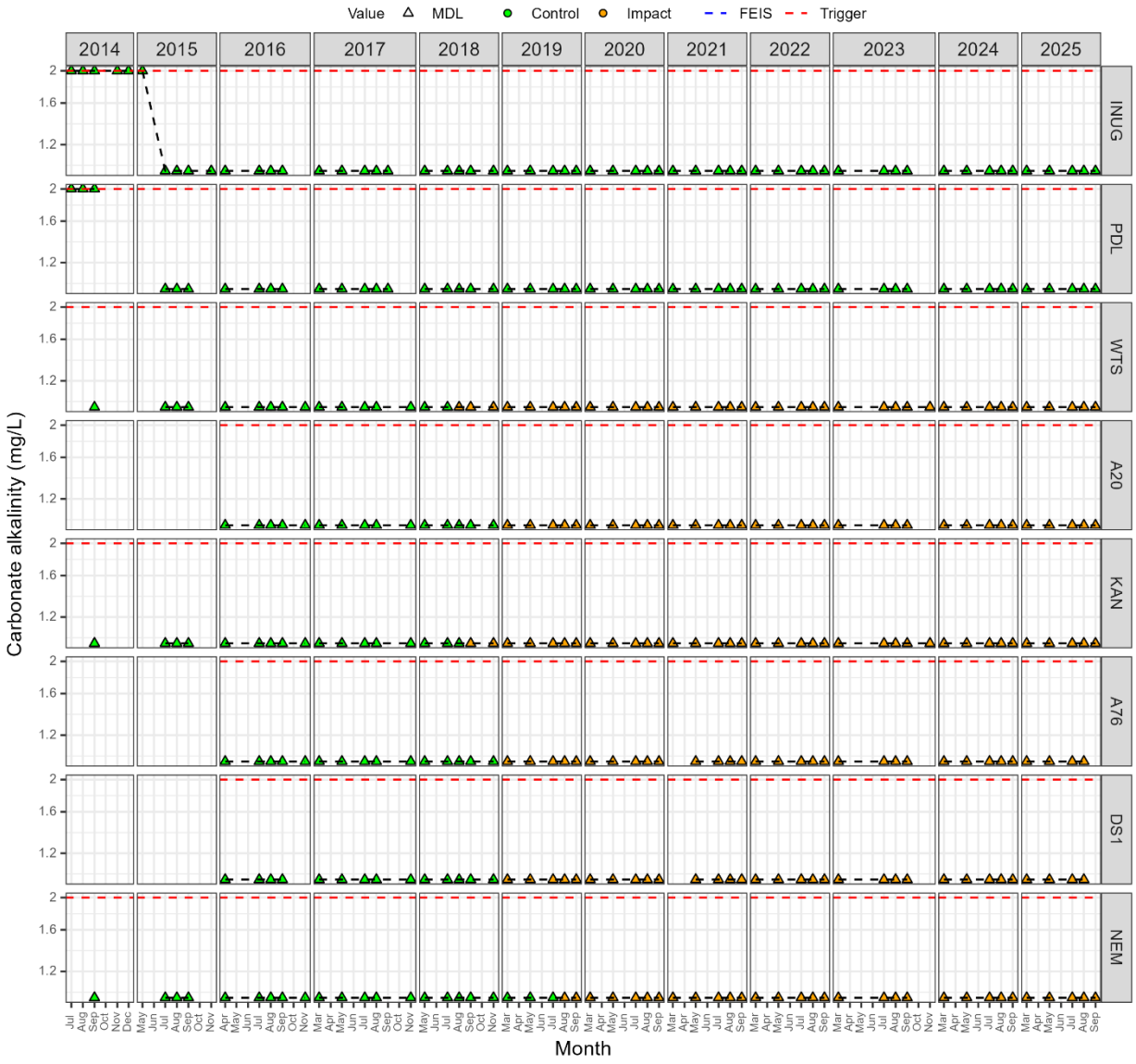


Figure C2-8. Bicarbonate alkalinity (mg/L).

Note: Bicarbonate alkalinity data from 2014 were removed due to data quality concerns. See Azimuth (2015c) for more details.

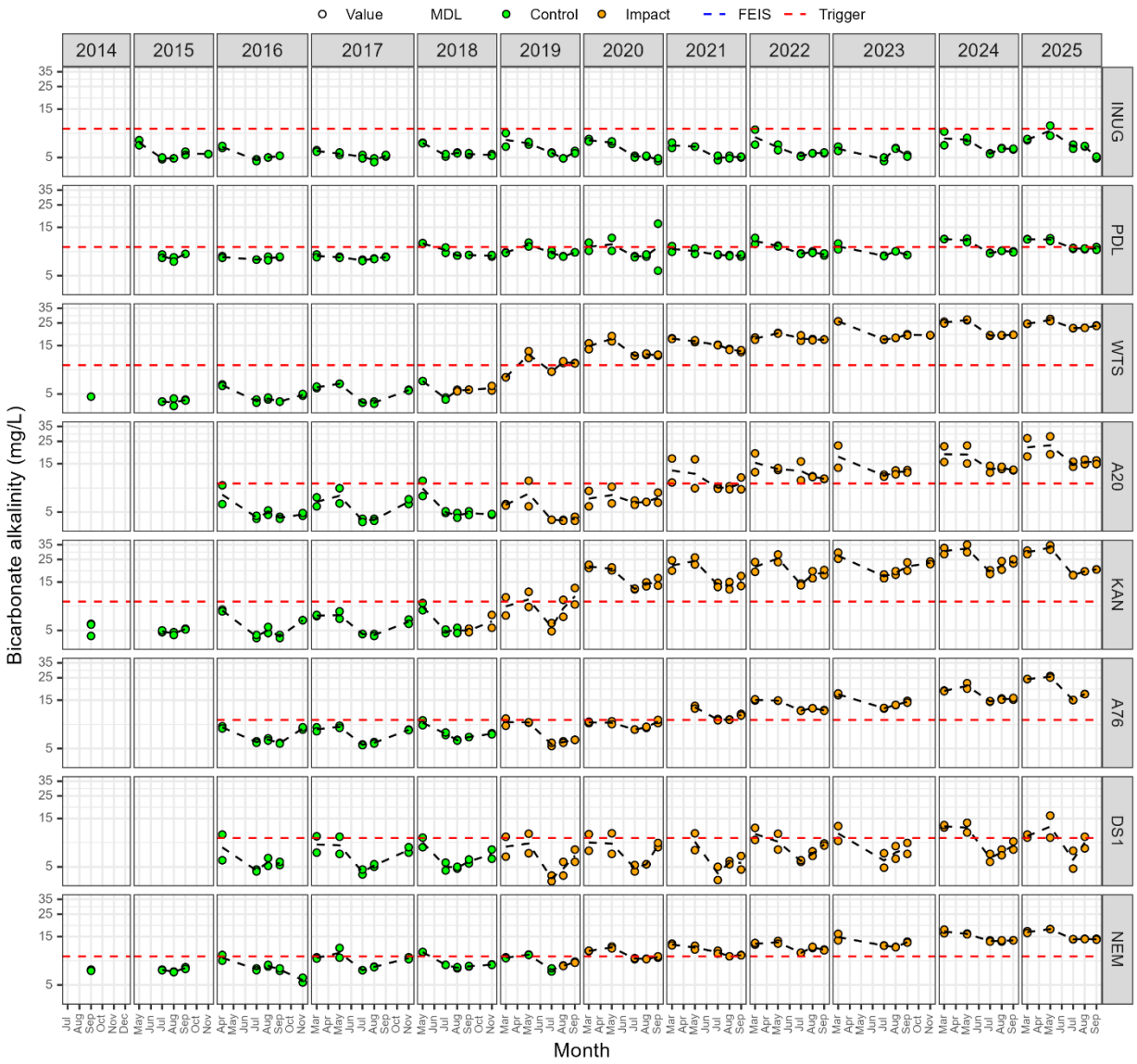


Figure C2-9. Total alkalinity (mg/L).

Note: Total alkalinity data from 2014 were removed due to data quality concerns. See Azimuth (2015c) for more details.

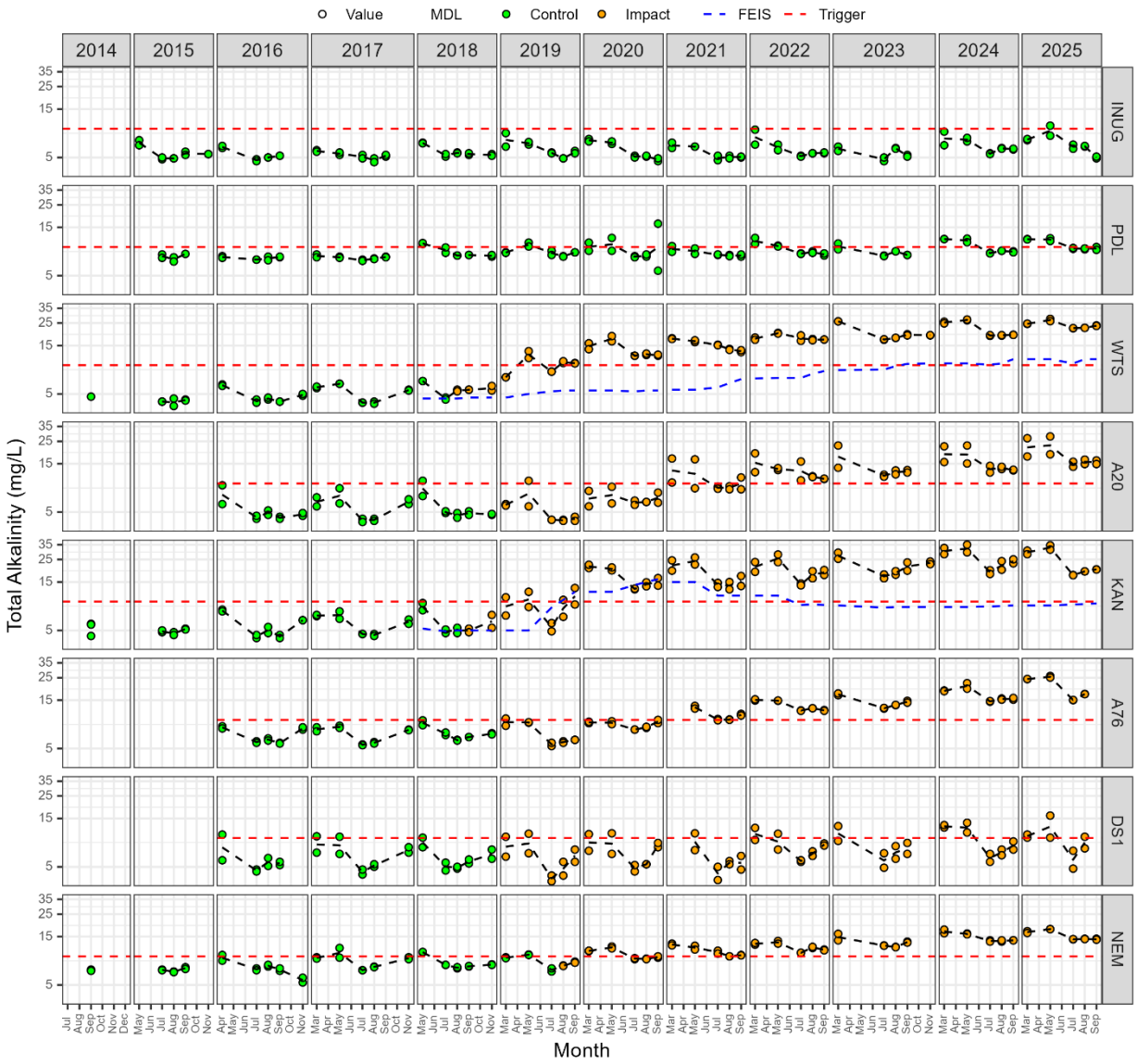


Figure C2-10. Ammonia-N (mg/L).

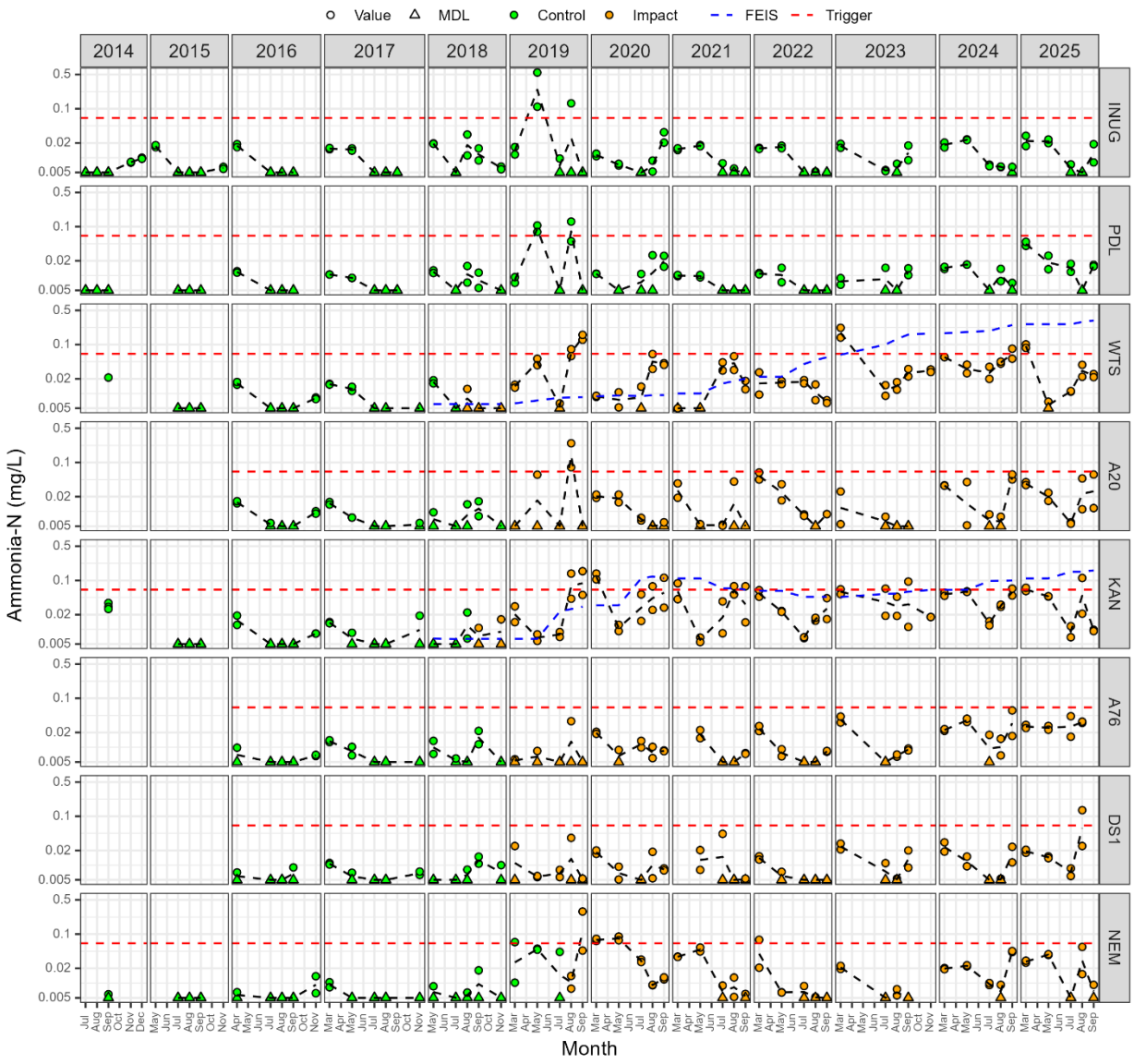


Figure C2-11. Chloride (mg/L).

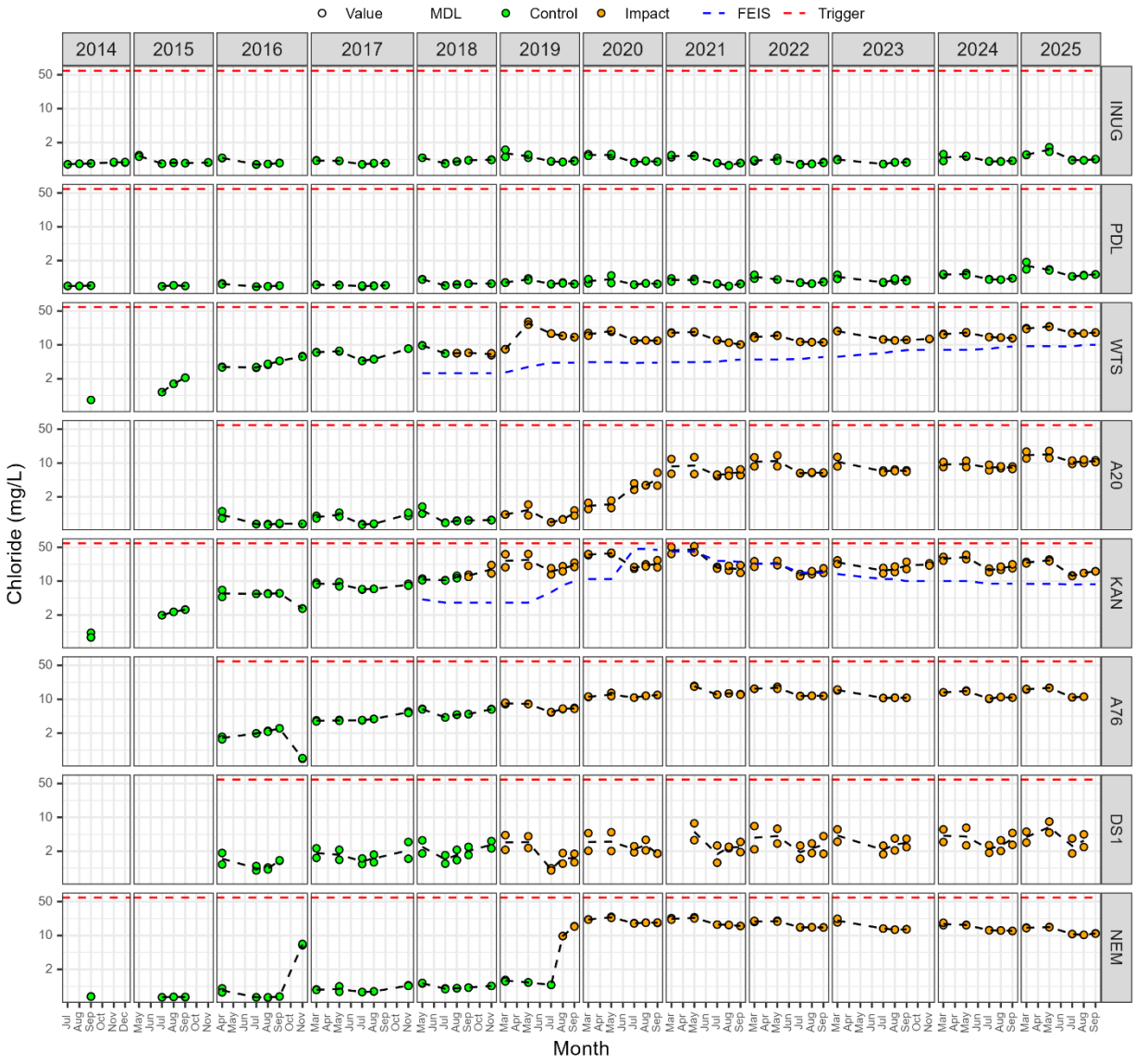


Figure C2-12. Fluoride (mg/L).

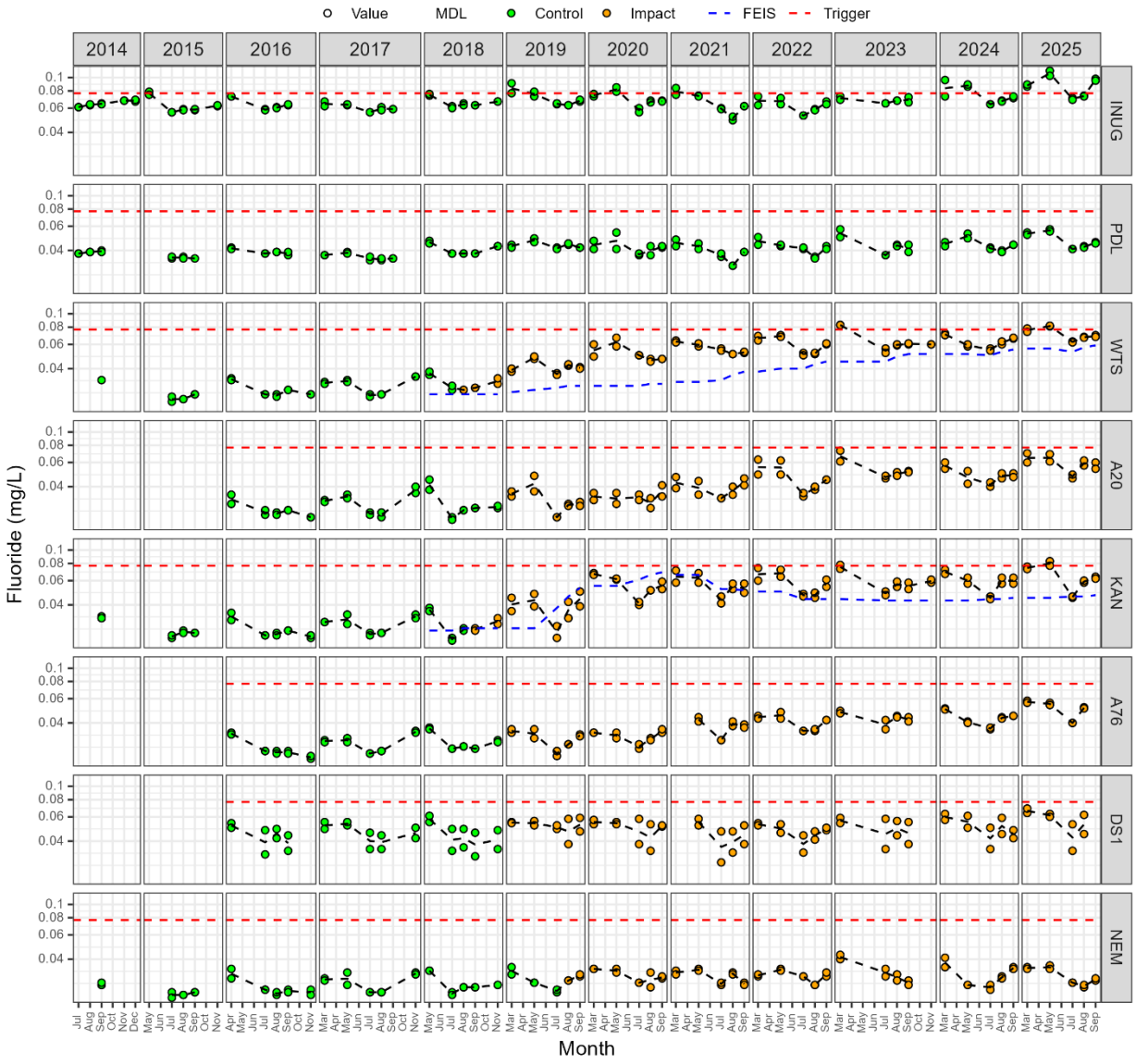


Figure C2-13. Nitrate-N (mg/L).

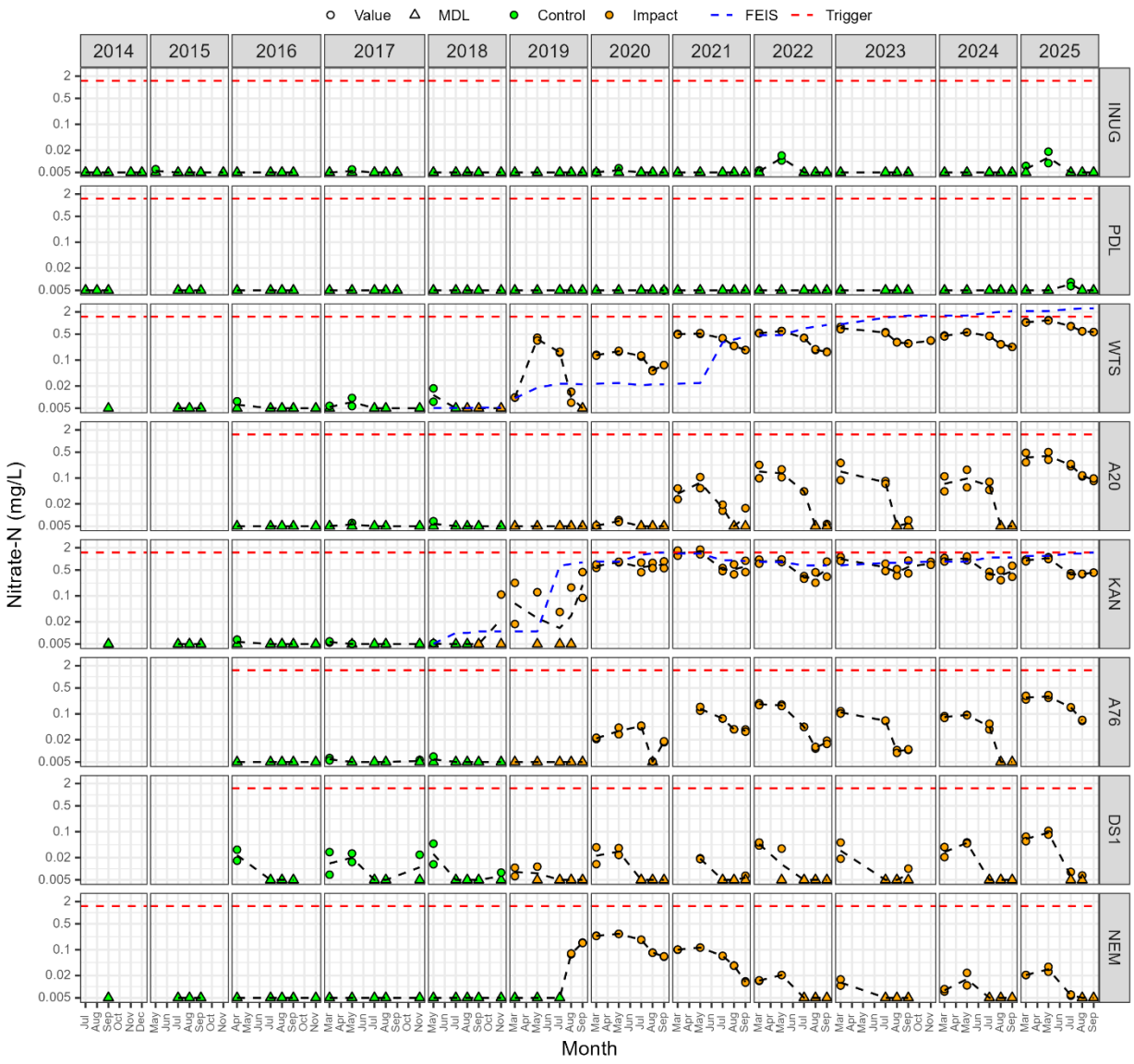


Figure C2-14. Nitrite-N (mg/L).

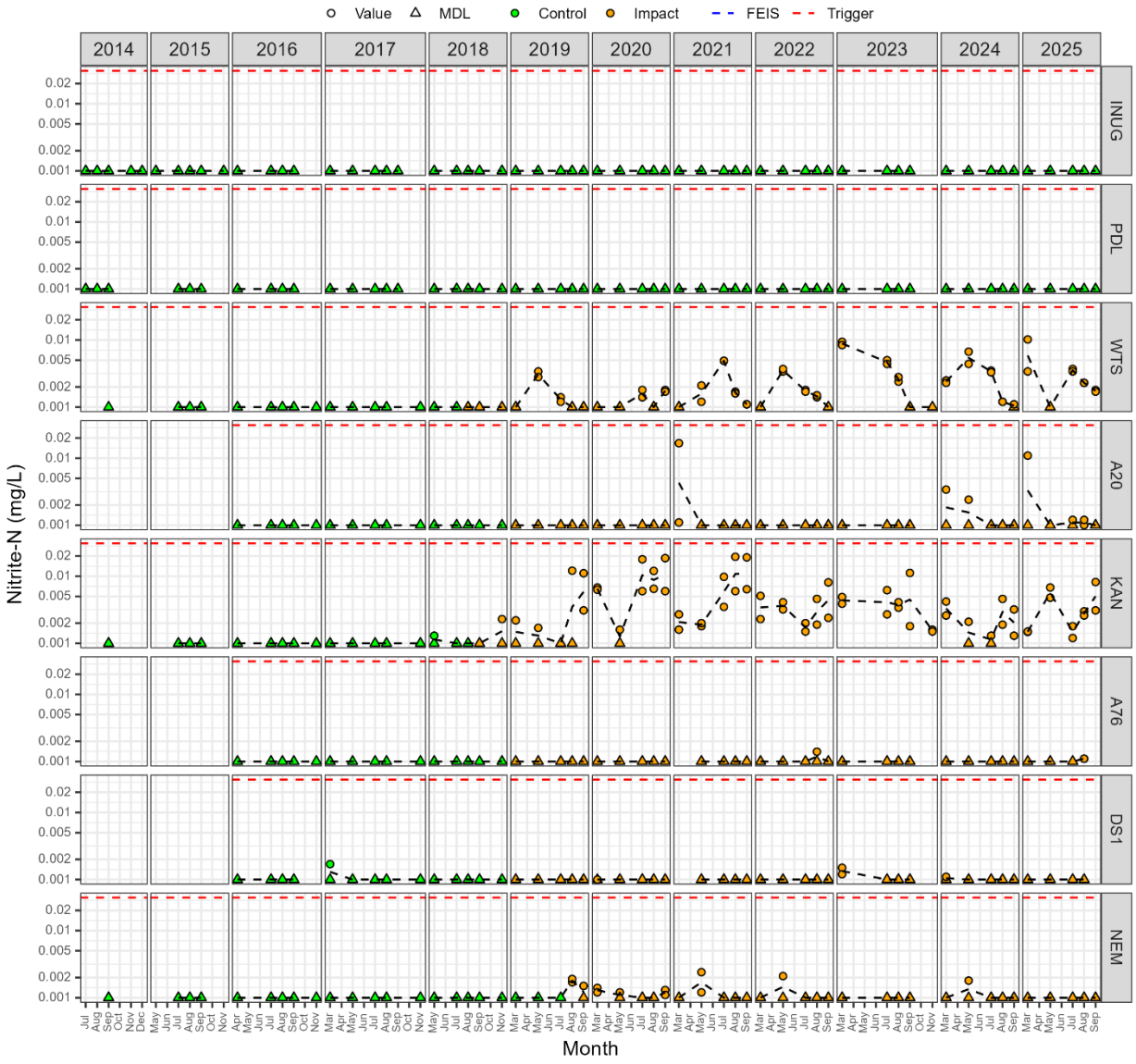


Figure C2-15. Total Kjeldahl Nitrogen (TKN; mg/L).

Note: TKN data from 2014 were removed due to data quality concerns. See Azimuth (2015c) for more details.

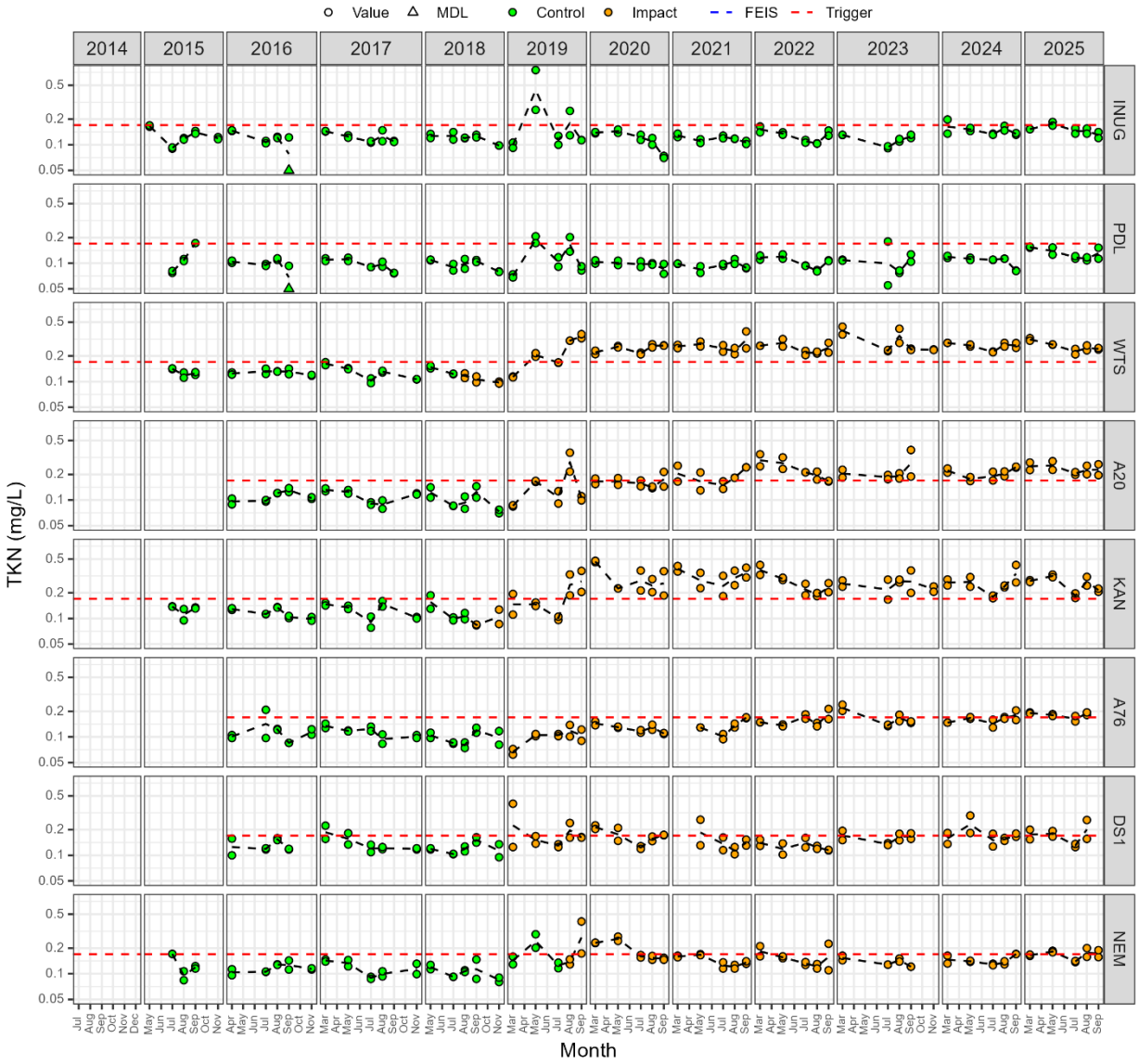


Figure C2-16. Total phosphorous (mg/L).

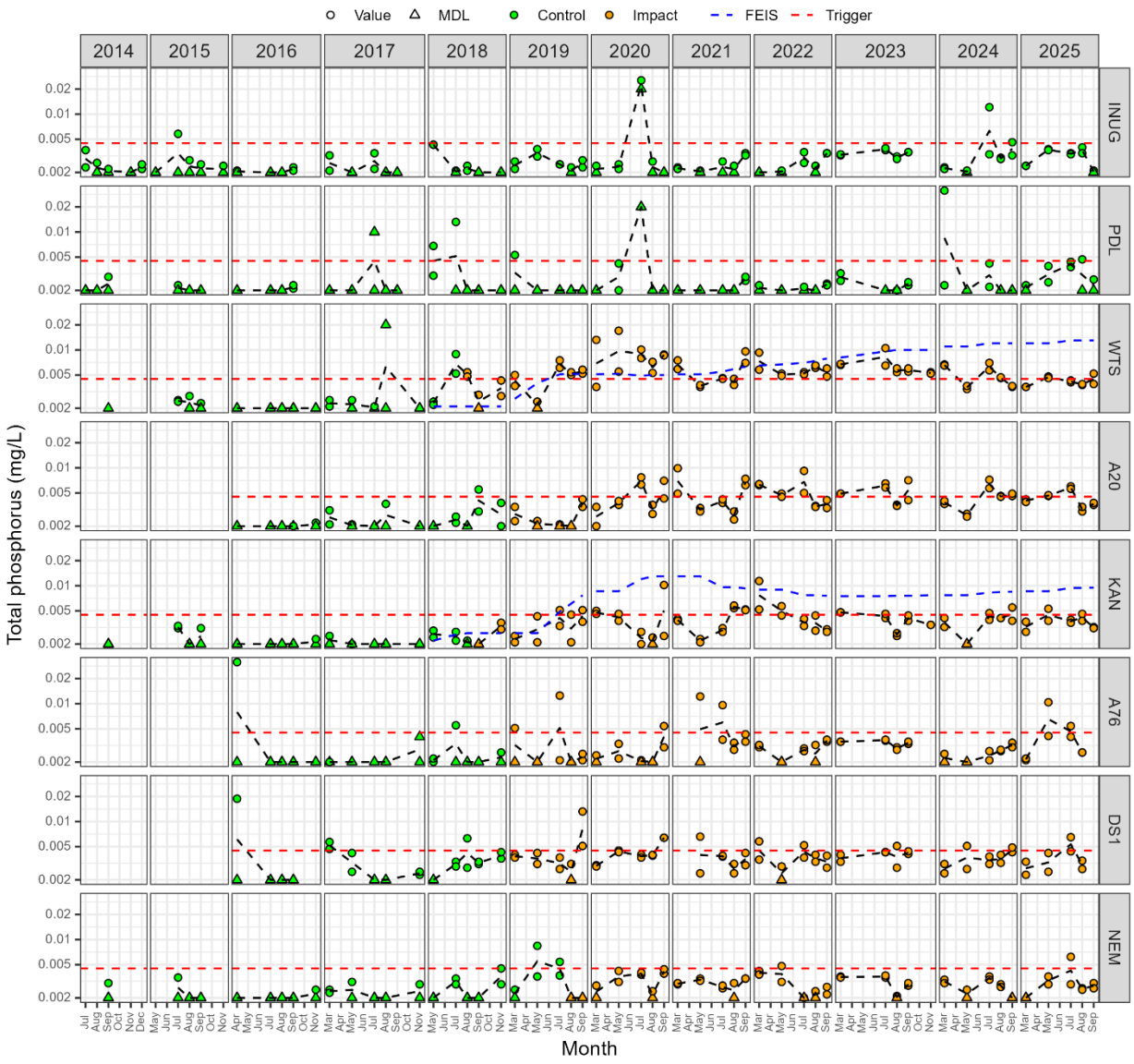


Figure C2-17. Ortho-phosphate (mg/L).

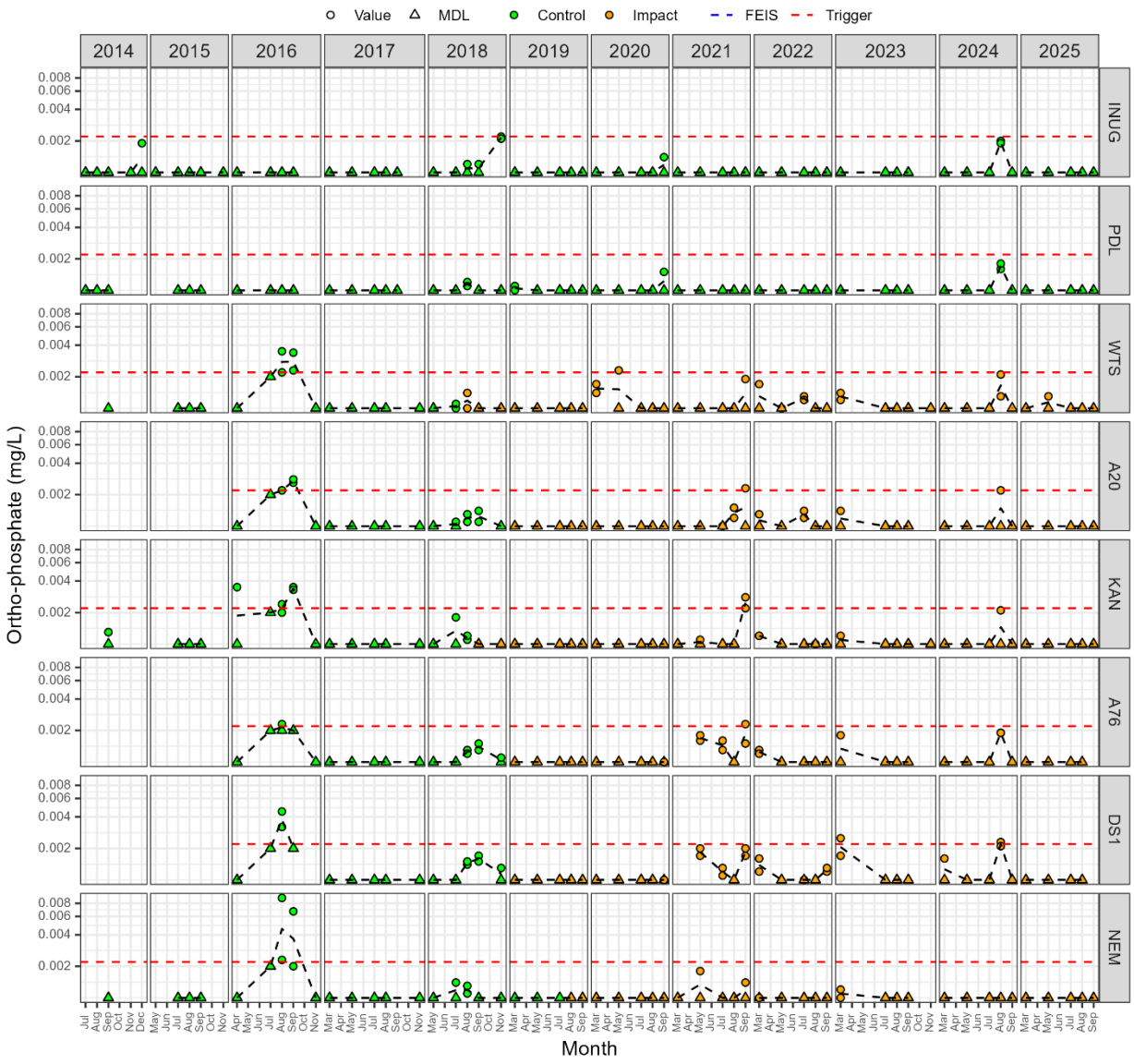


Figure C2-18. Reactive silica (mg/L).

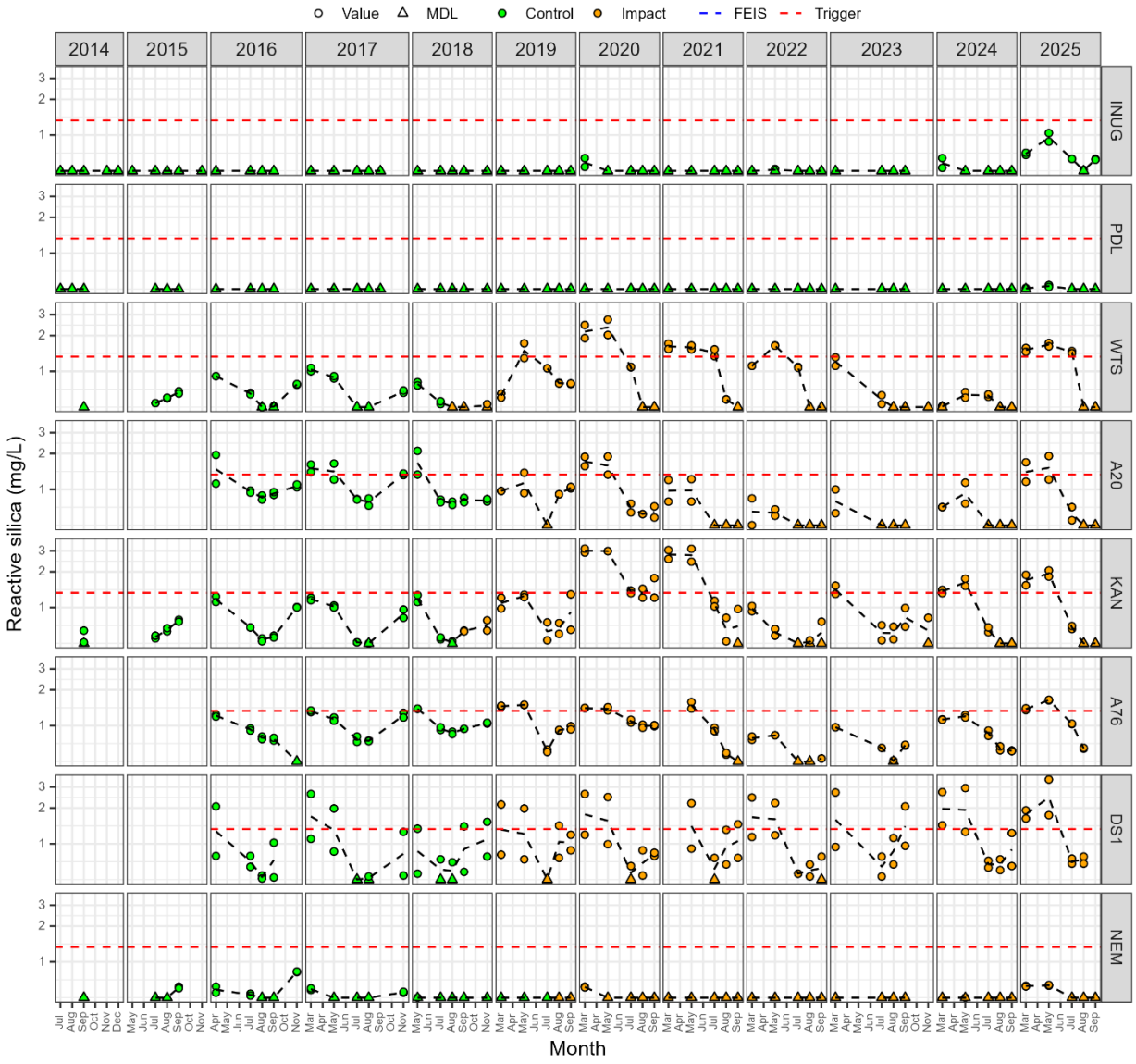


Figure C2-19. Sulphate (mg/L).

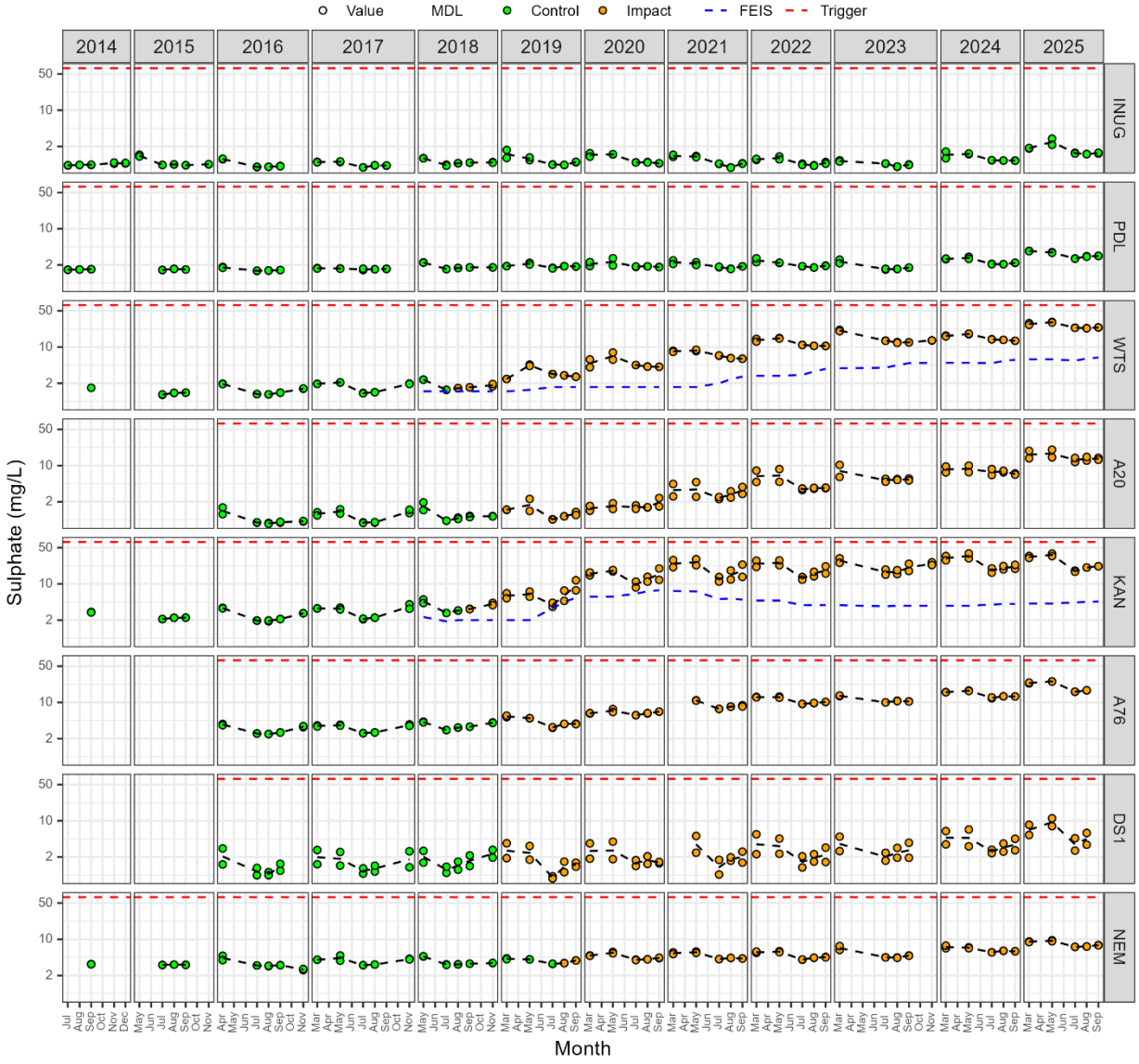


Figure C2-20. Dissolved organic carbon (DOC; mg/L).

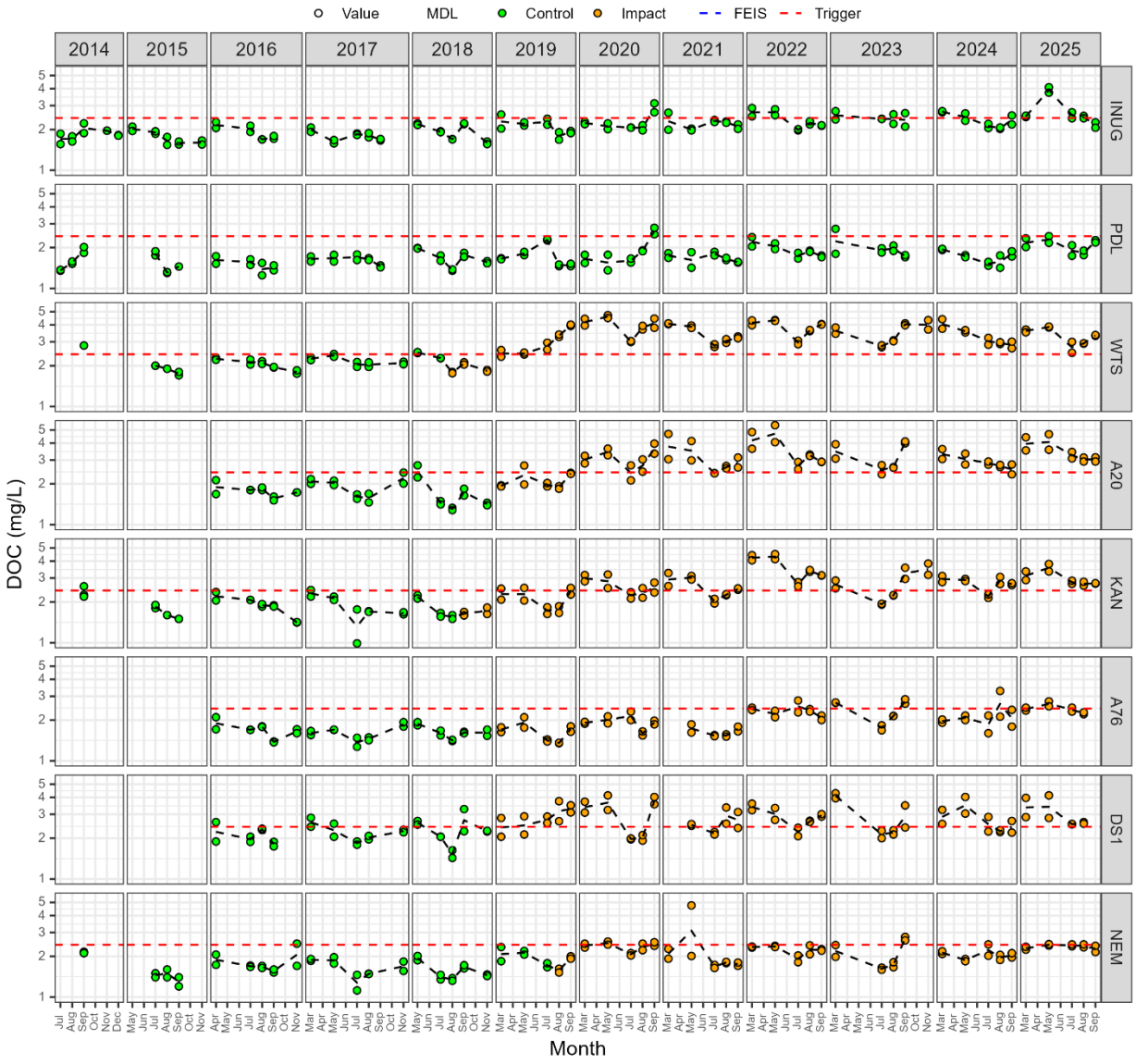


Figure C2-21. Total organic carbon (TOC; mg/L).

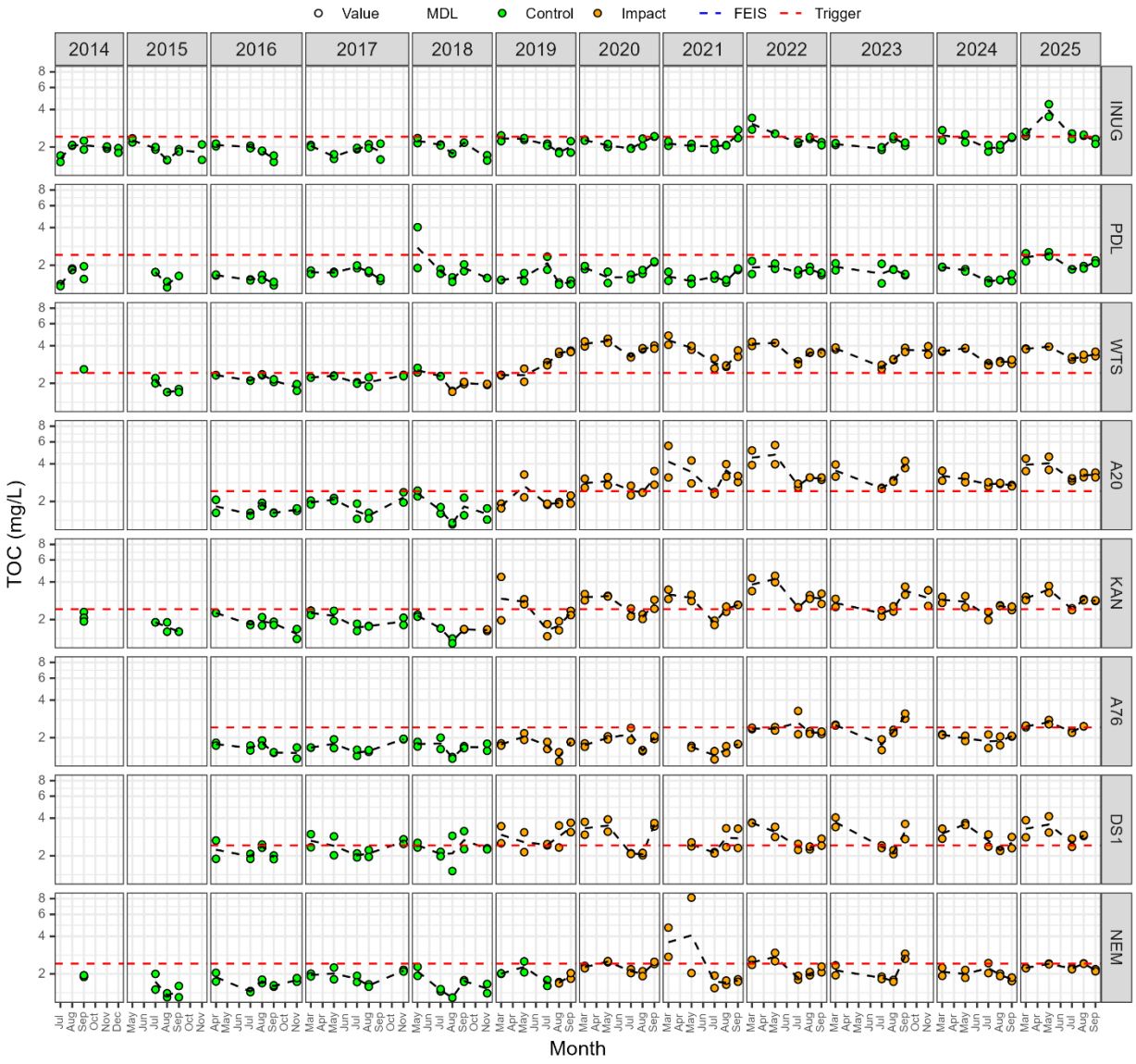


Figure C2-22. Total aluminum (mg/L).

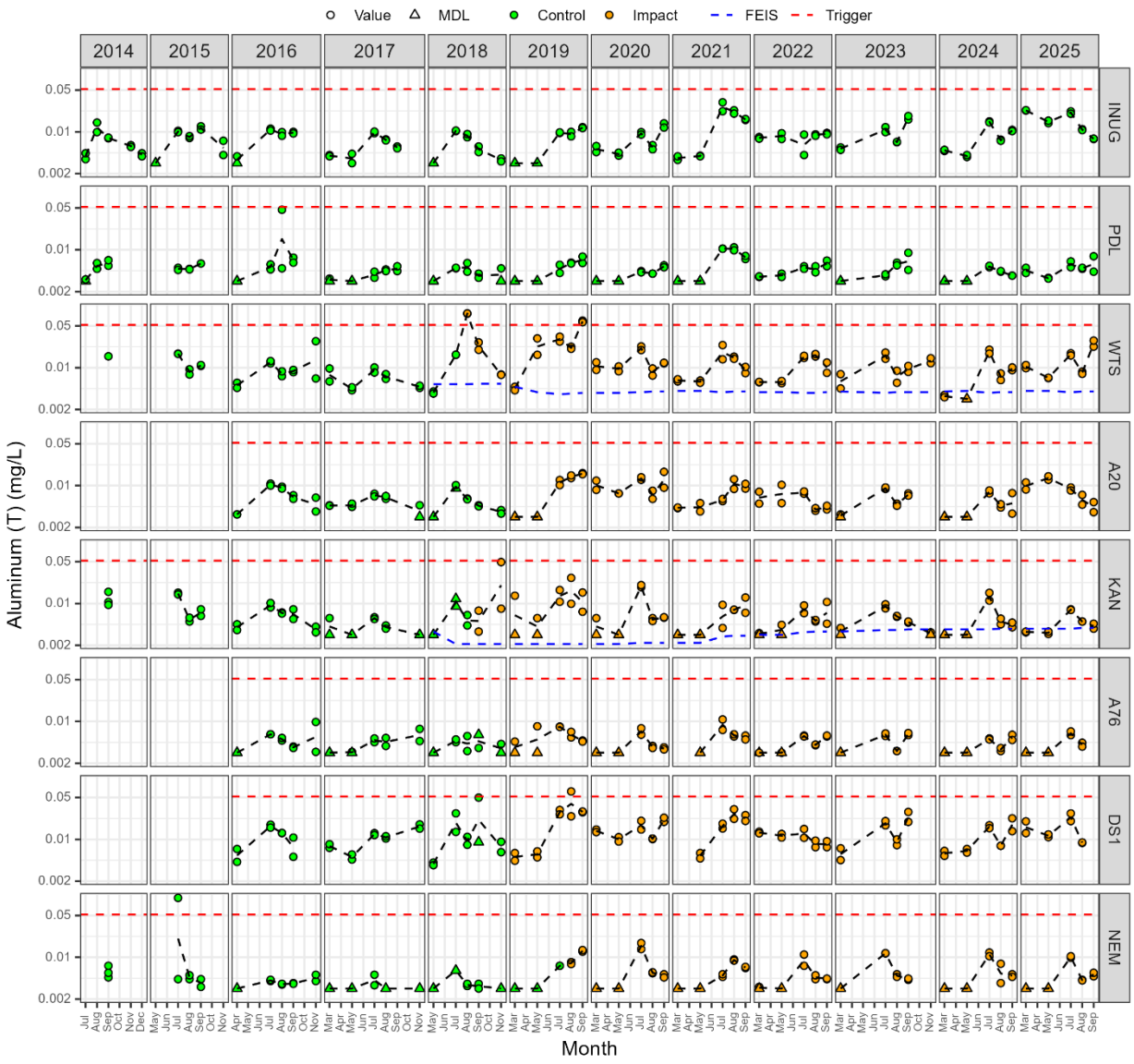


Figure C2-23. Total antimony (mg/L).

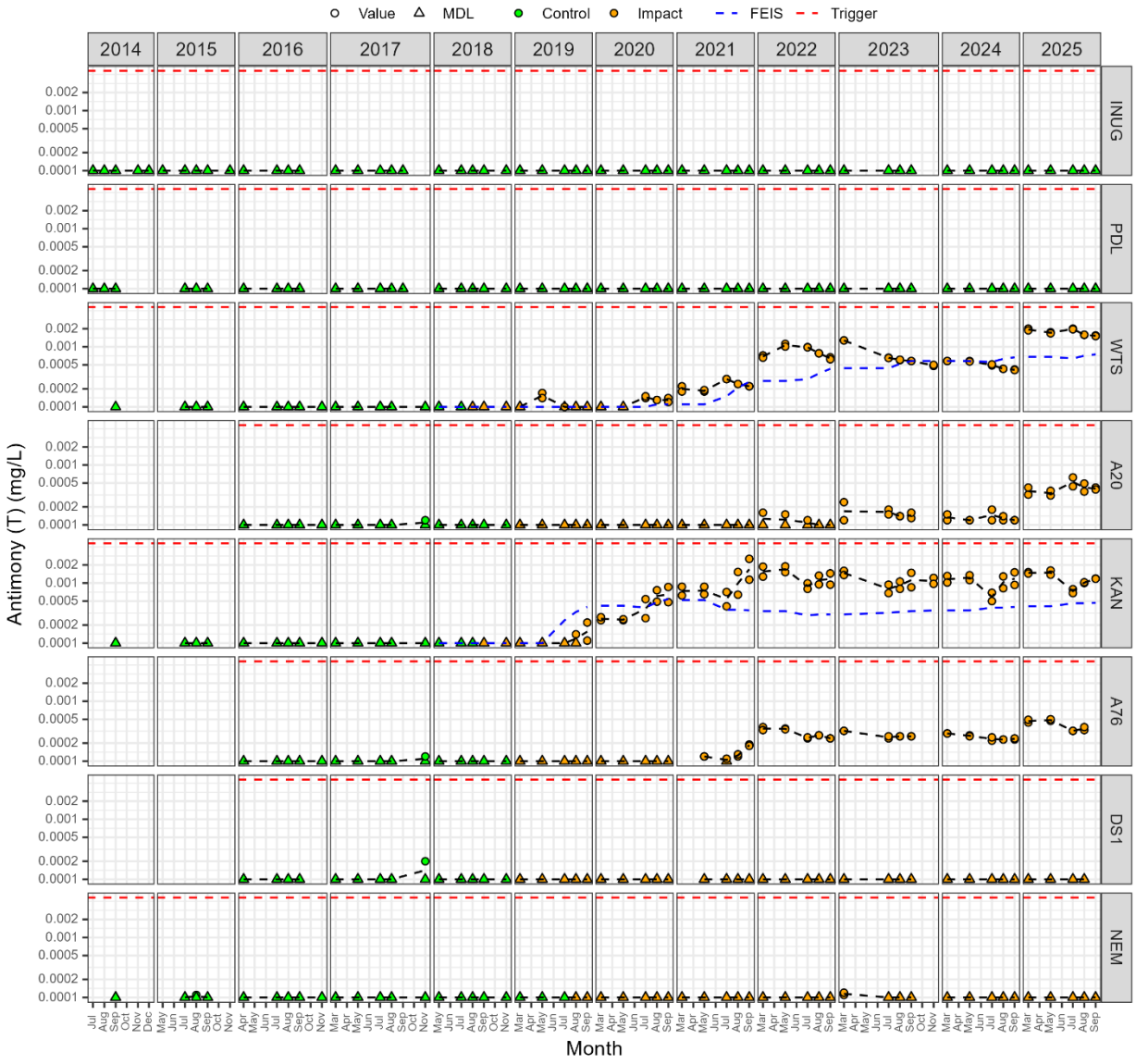


Figure C2-24. Total arsenic (mg/L).

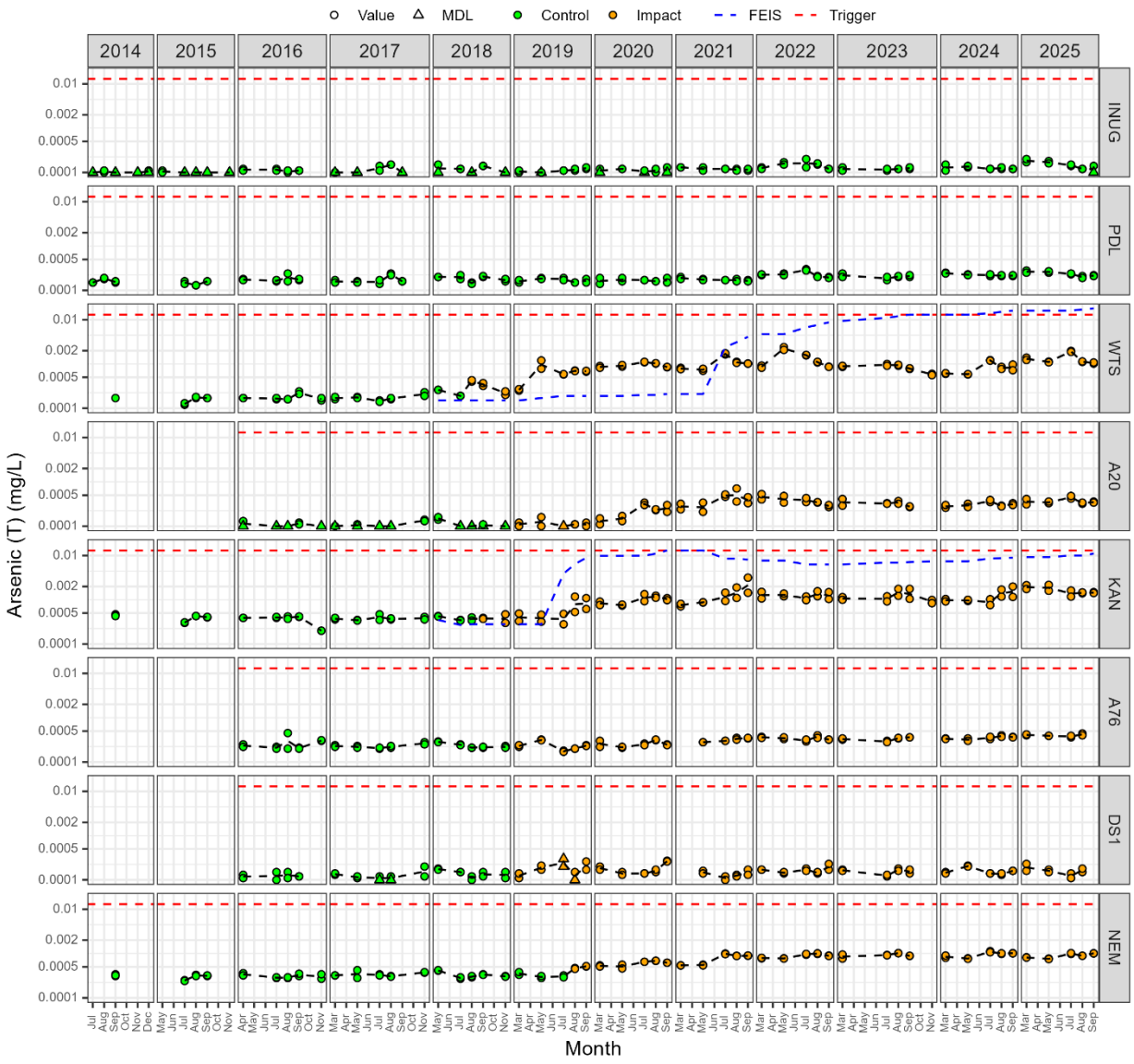


Figure C2-25. Total barium (mg/L).

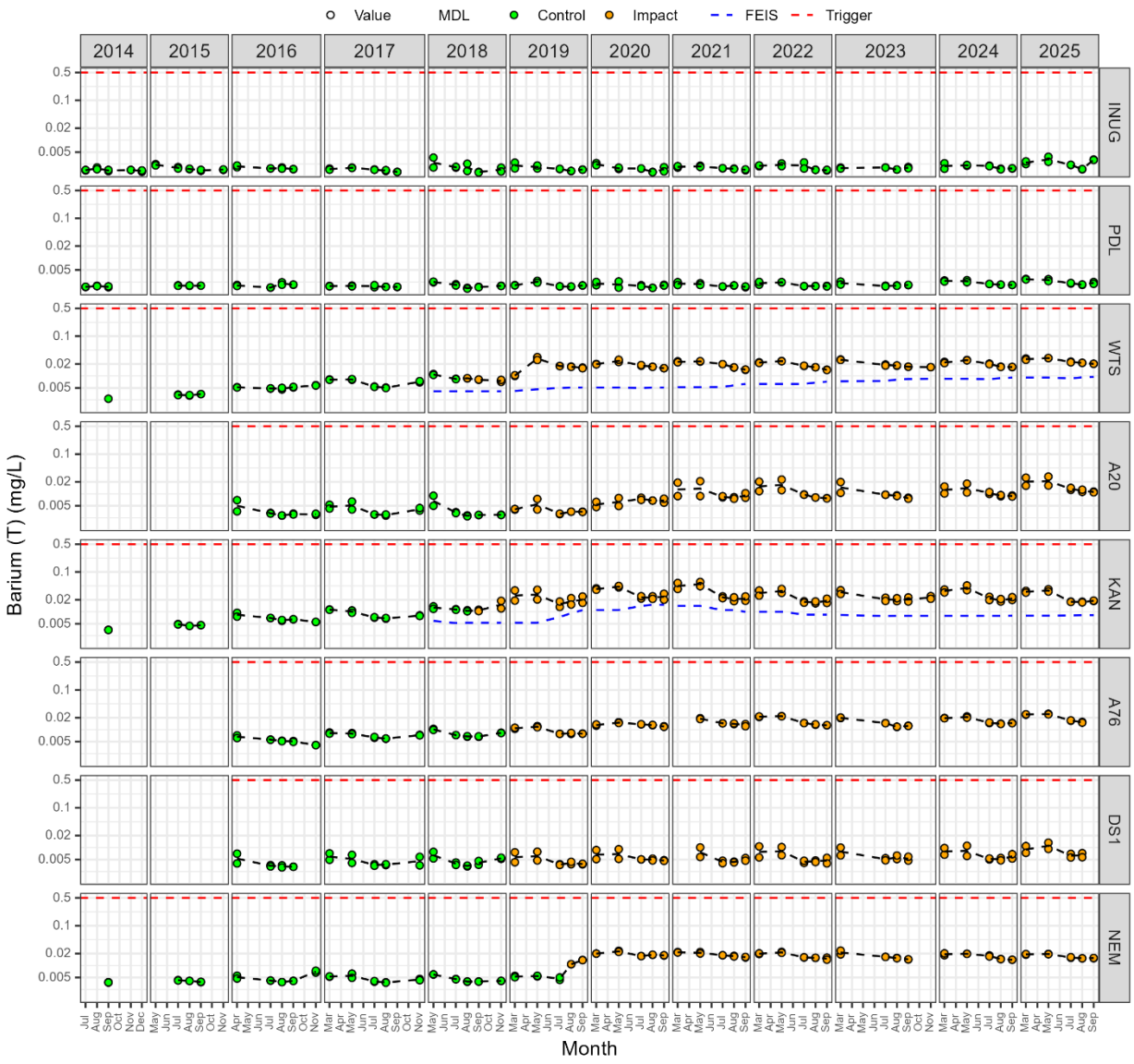


Figure C2-26. Total beryllium (mg/L).

Note: Detection limits for beryllium were revised in 2018 due to method re-validation and analysis at the lower detection limit is no longer available at ALS (Pers. Comm. Brent Mack, ALS November 28, 2022).

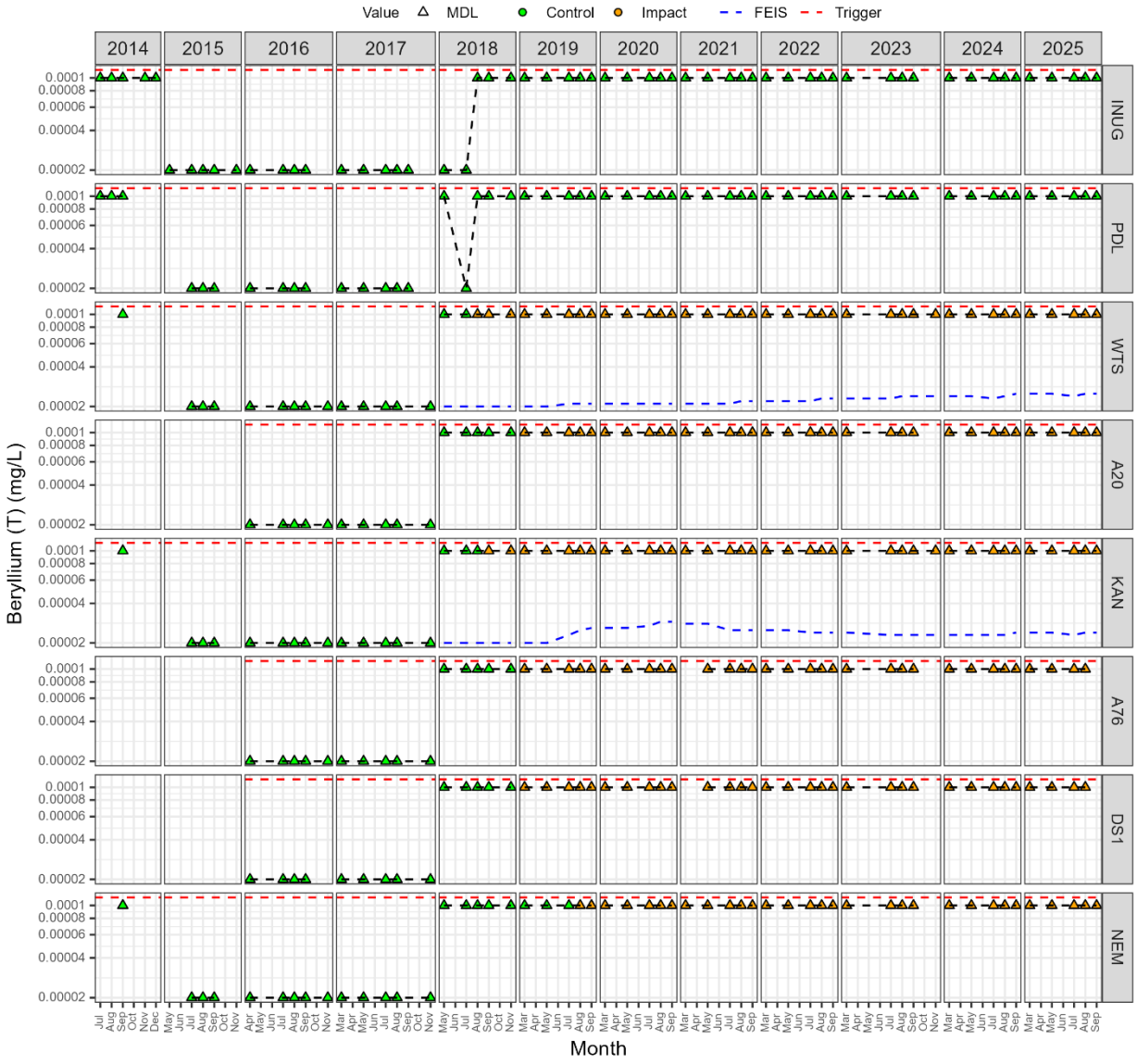


Figure C2-27. Total boron (mg/L).

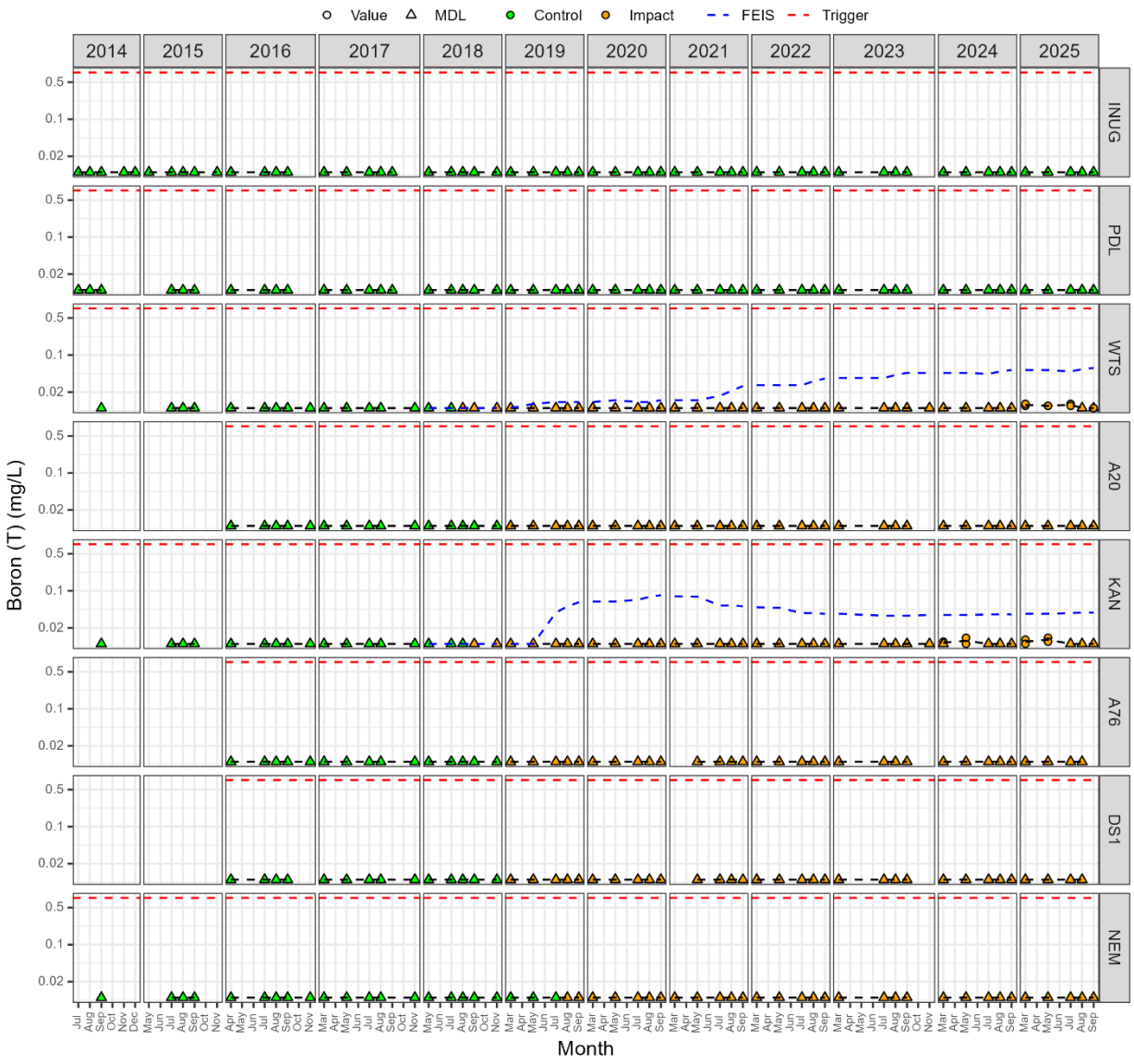


Figure C2-28. Total cadmium (mg/L).

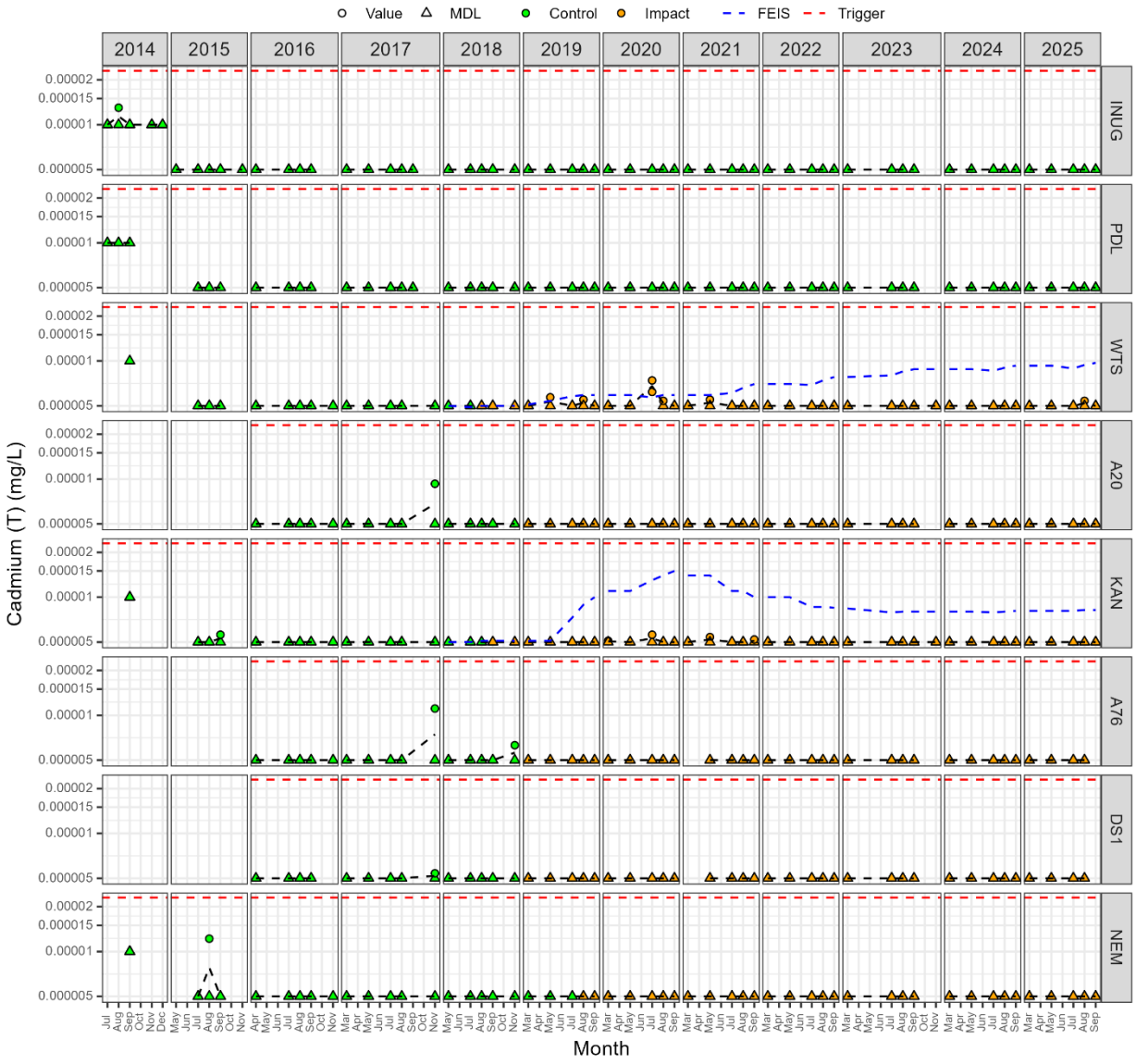


Figure C2-29. Total calcium (mg/L).

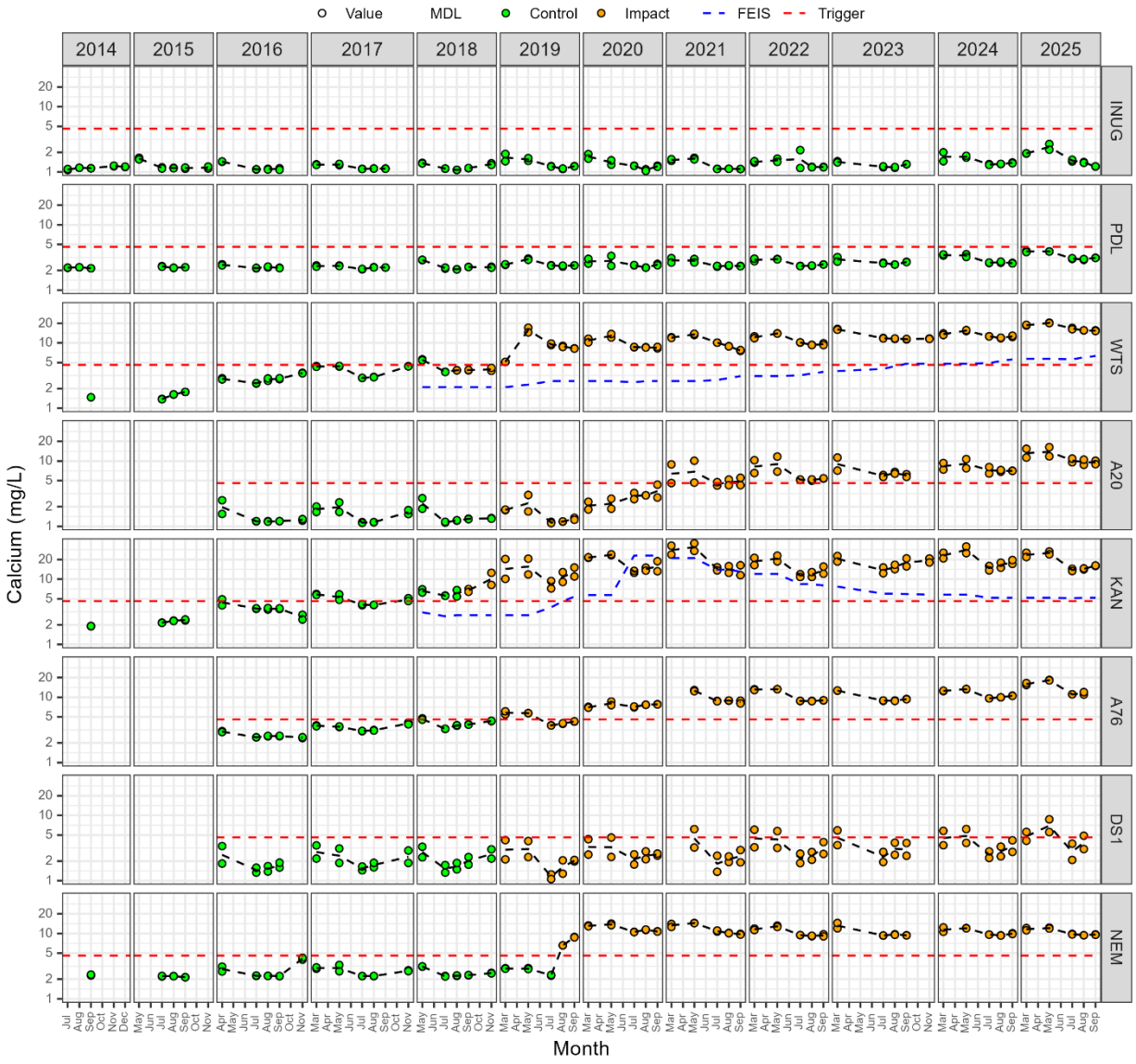


Figure C2-30. Total chromium (mg/L).

Note: The detection limit was revised in 2021 due to method re-validation (Pers. Comm. Brent Mack, ALS November 28, 2022). Low-level chromium analysis is available at a cost and was requested for samples starting in 2024.

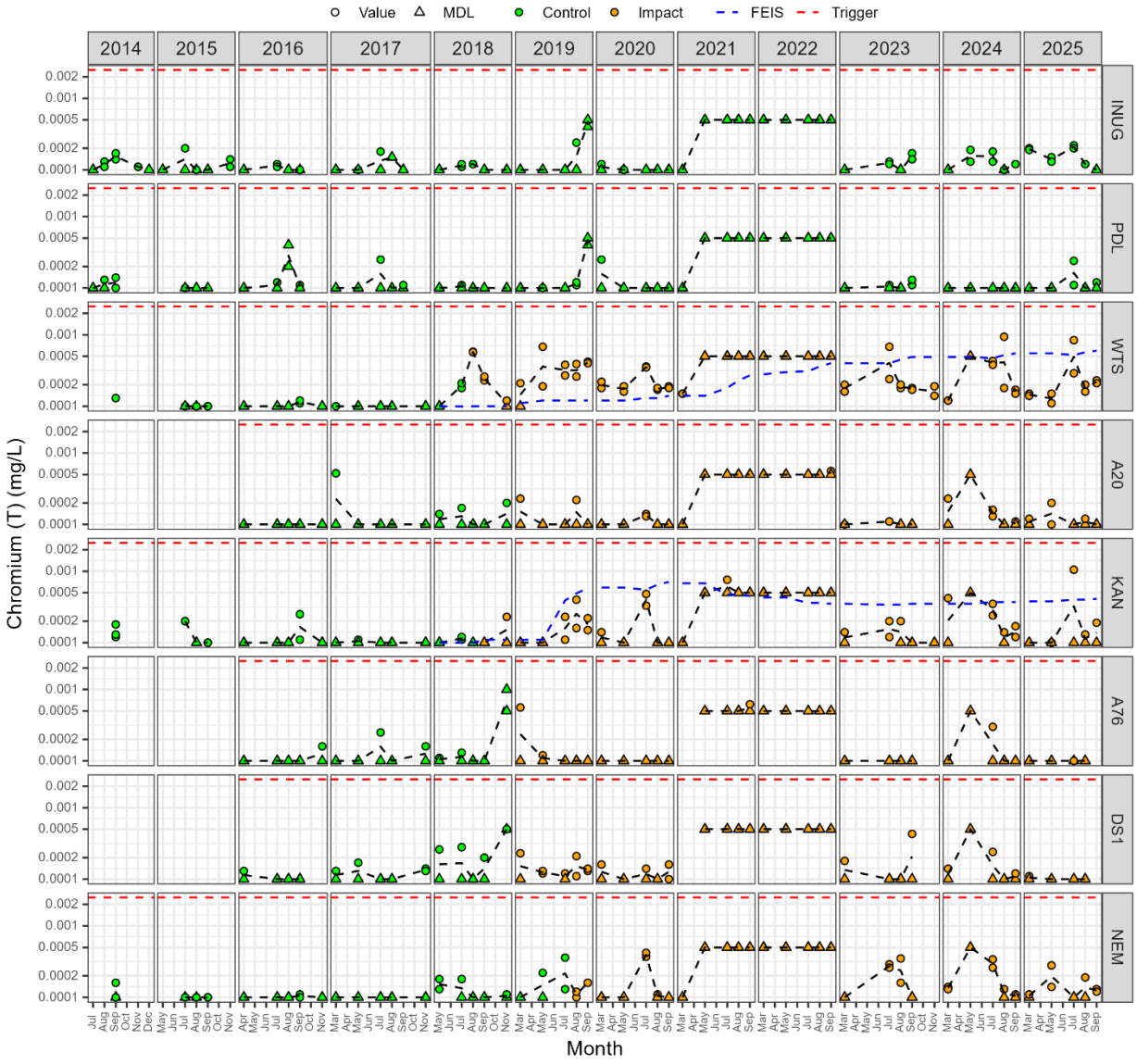


Figure C2-31. Total copper (mg/L).

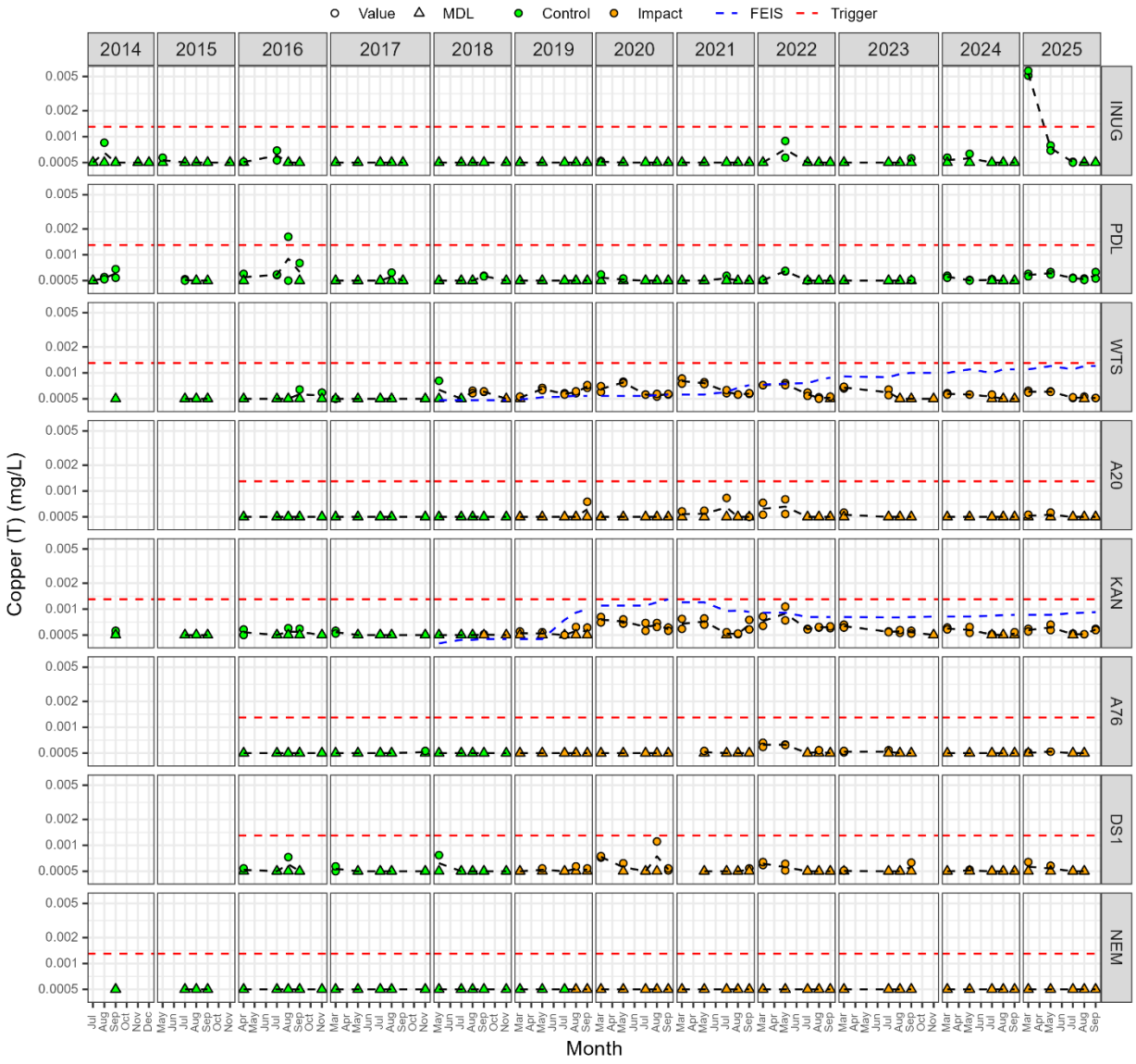


Figure C2-32. Total iron (mg/L).

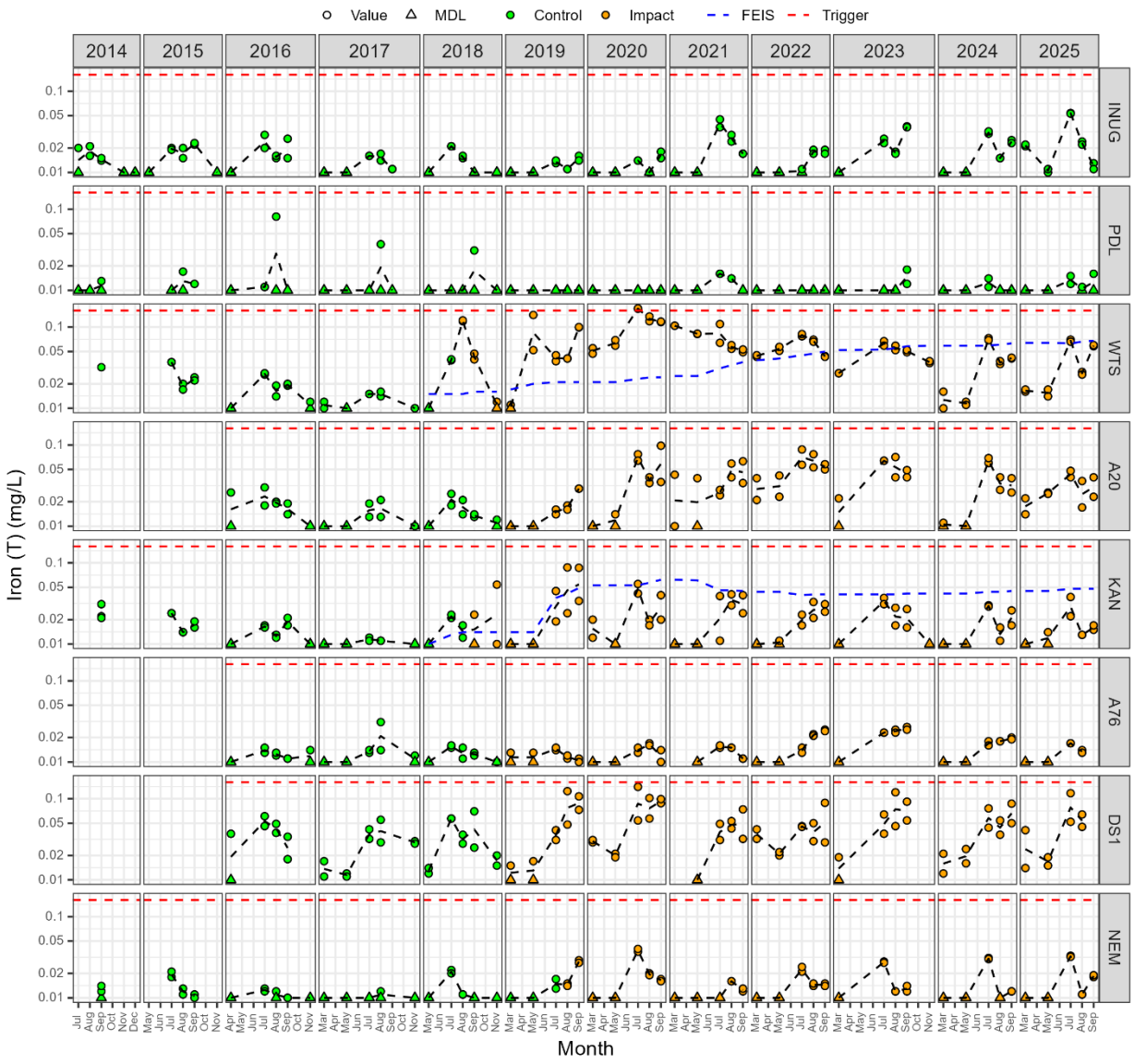


Figure C2-33. Total lead (mg/L).

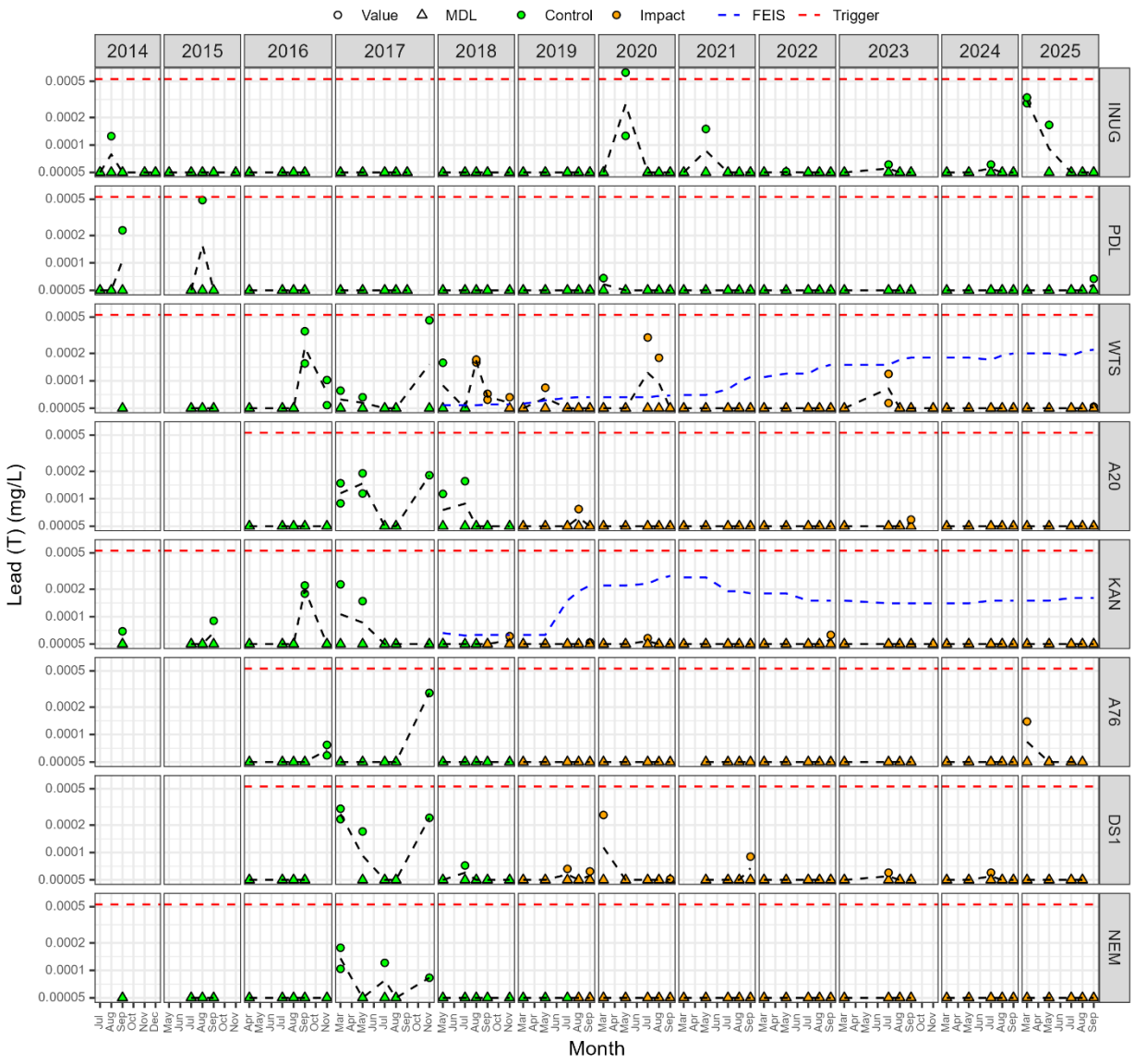


Figure C2-34. Total lithium (mg/L).

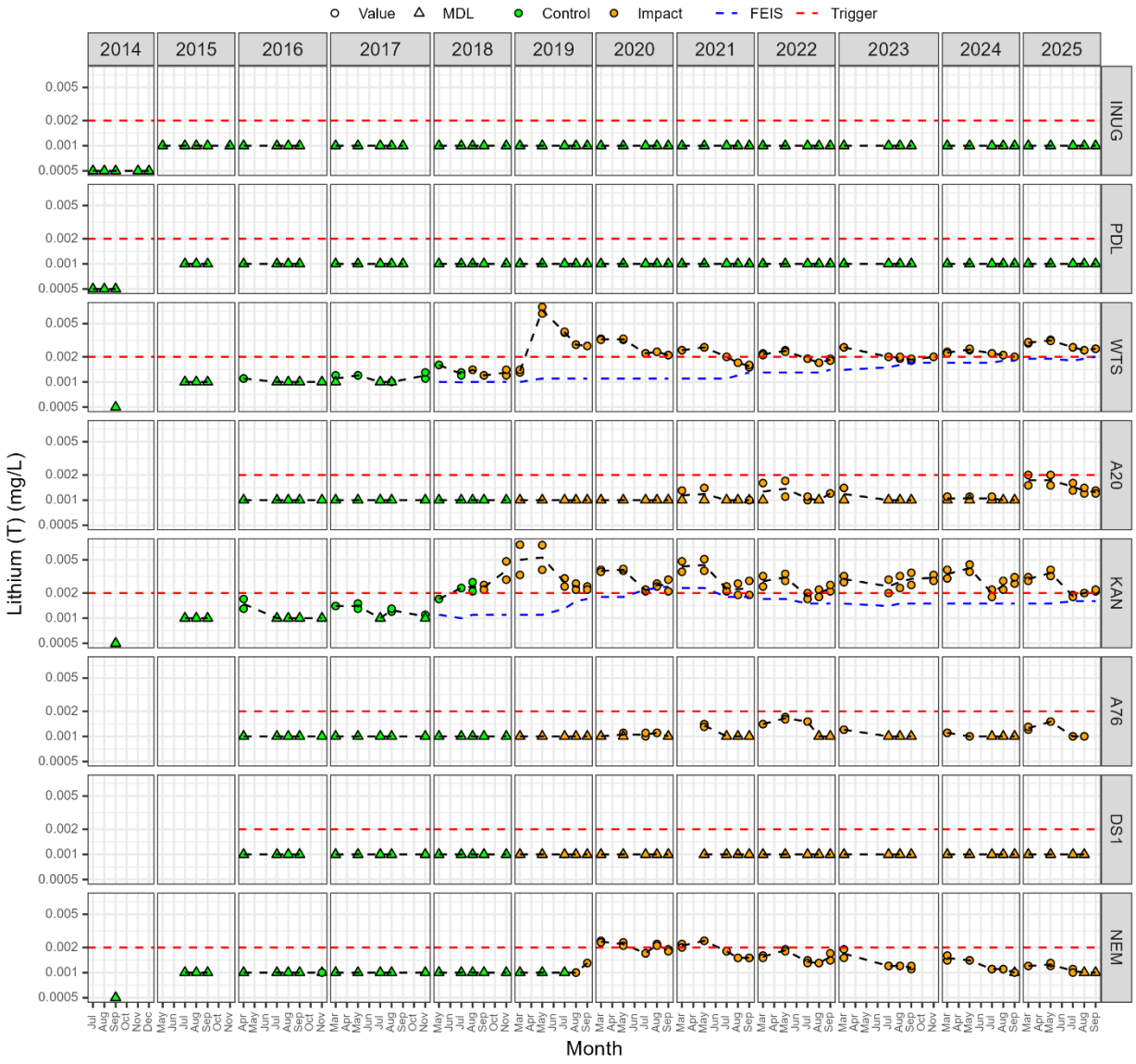


Figure C2-35. Total manganese (mg/L).

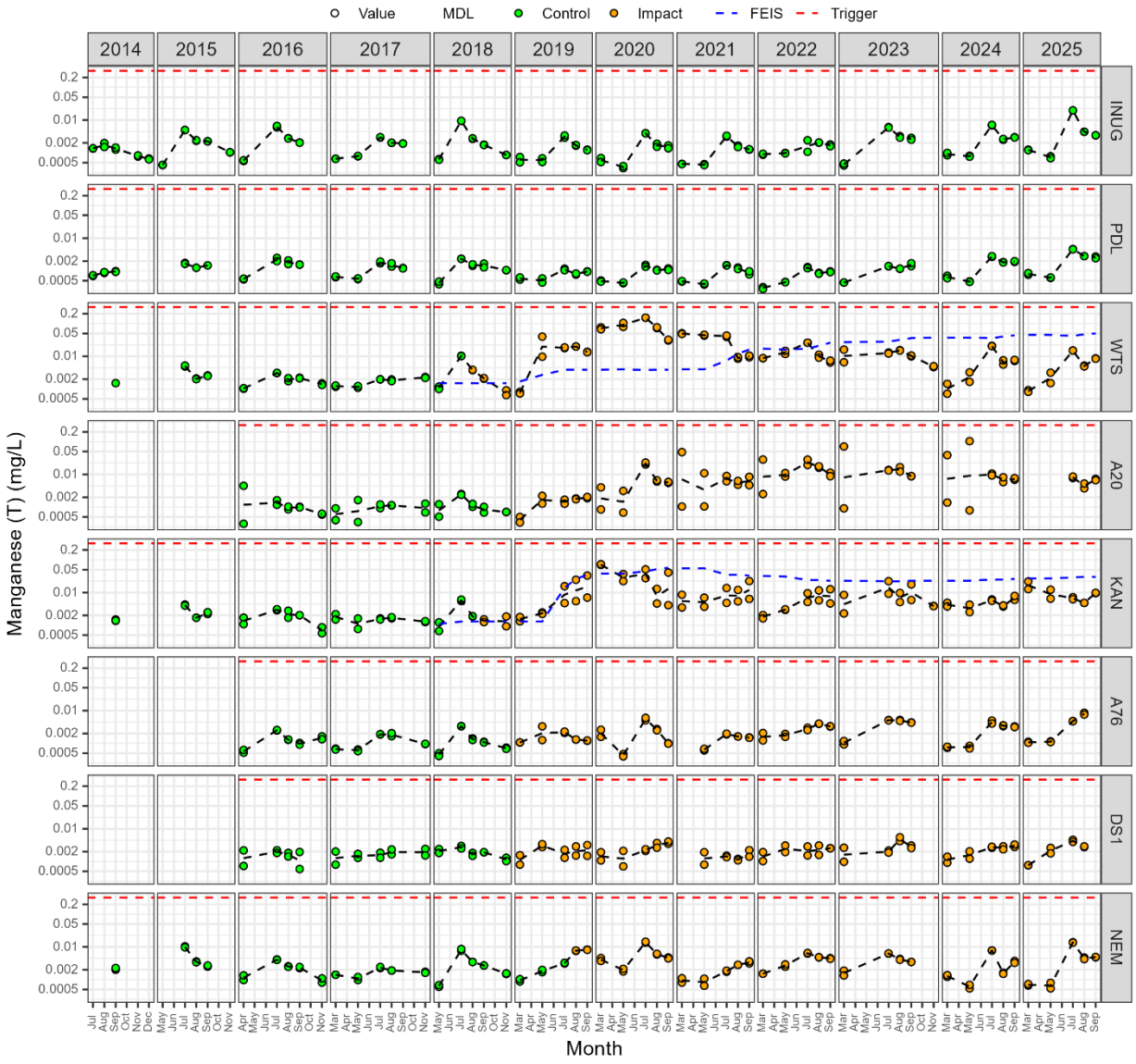


Figure C2-36. Total magnesium (mg/L).

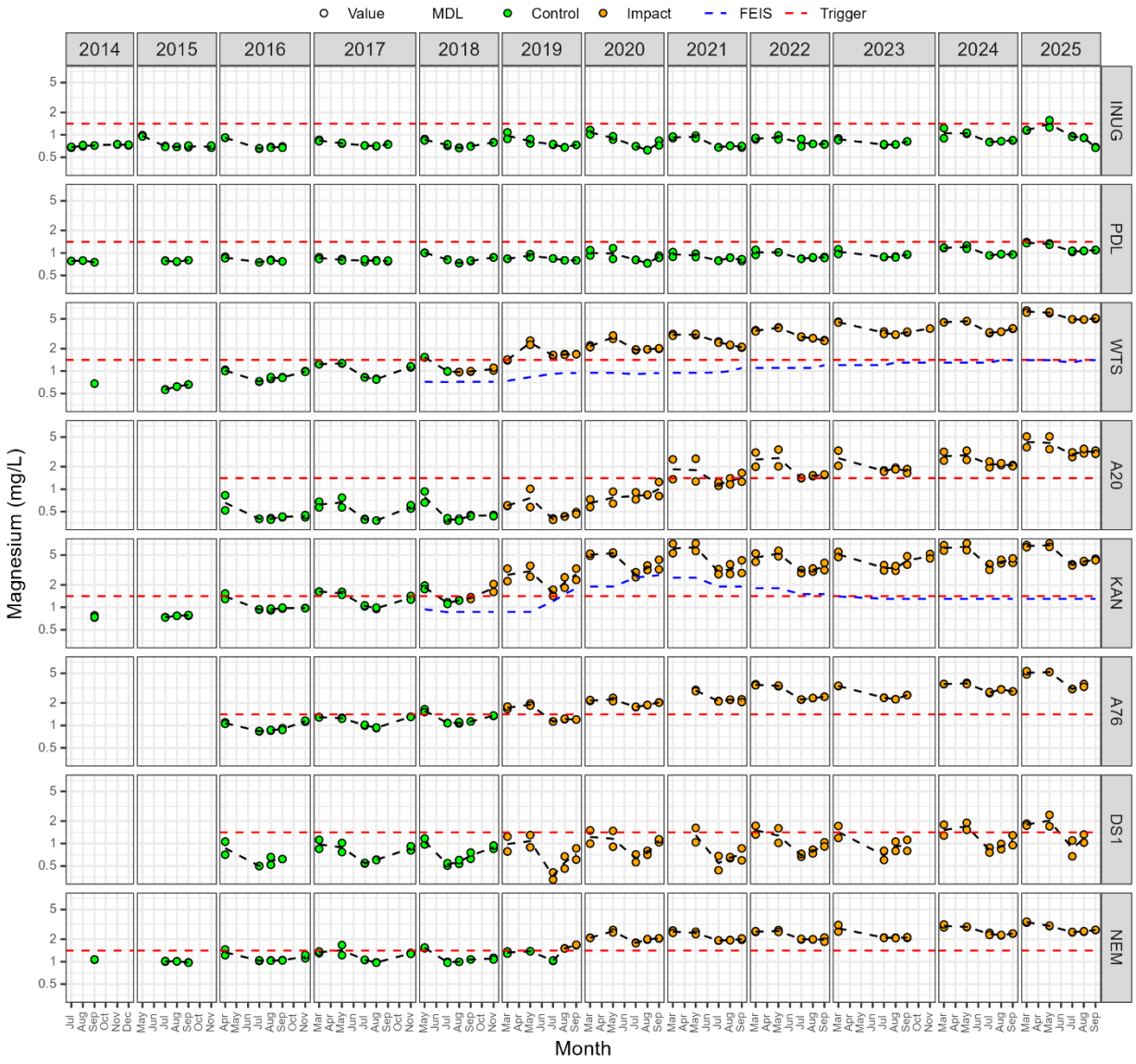


Figure C2-37. Total mercury (mg/L).

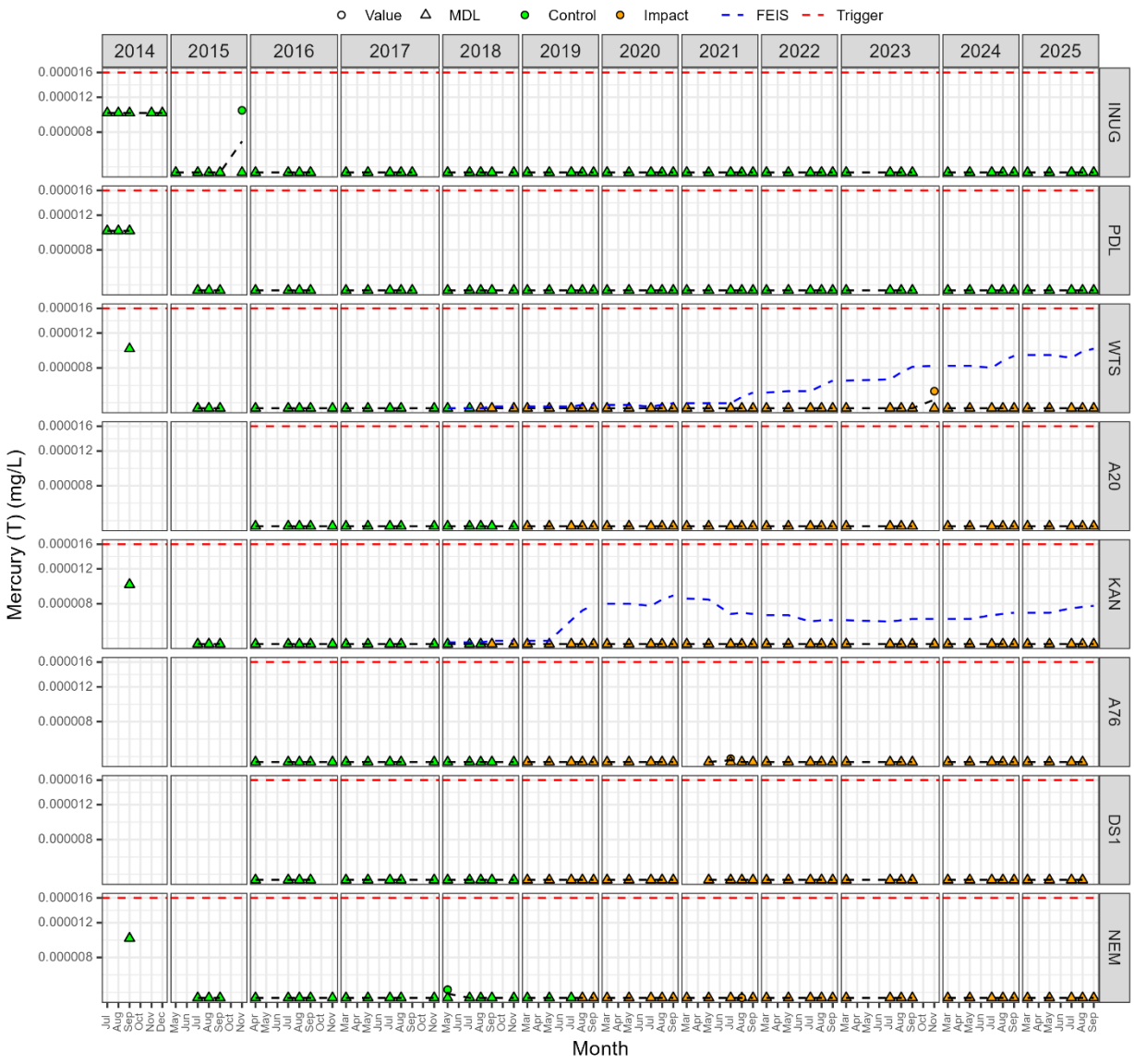


Figure C2-38. Total molybdenum (mg/L).

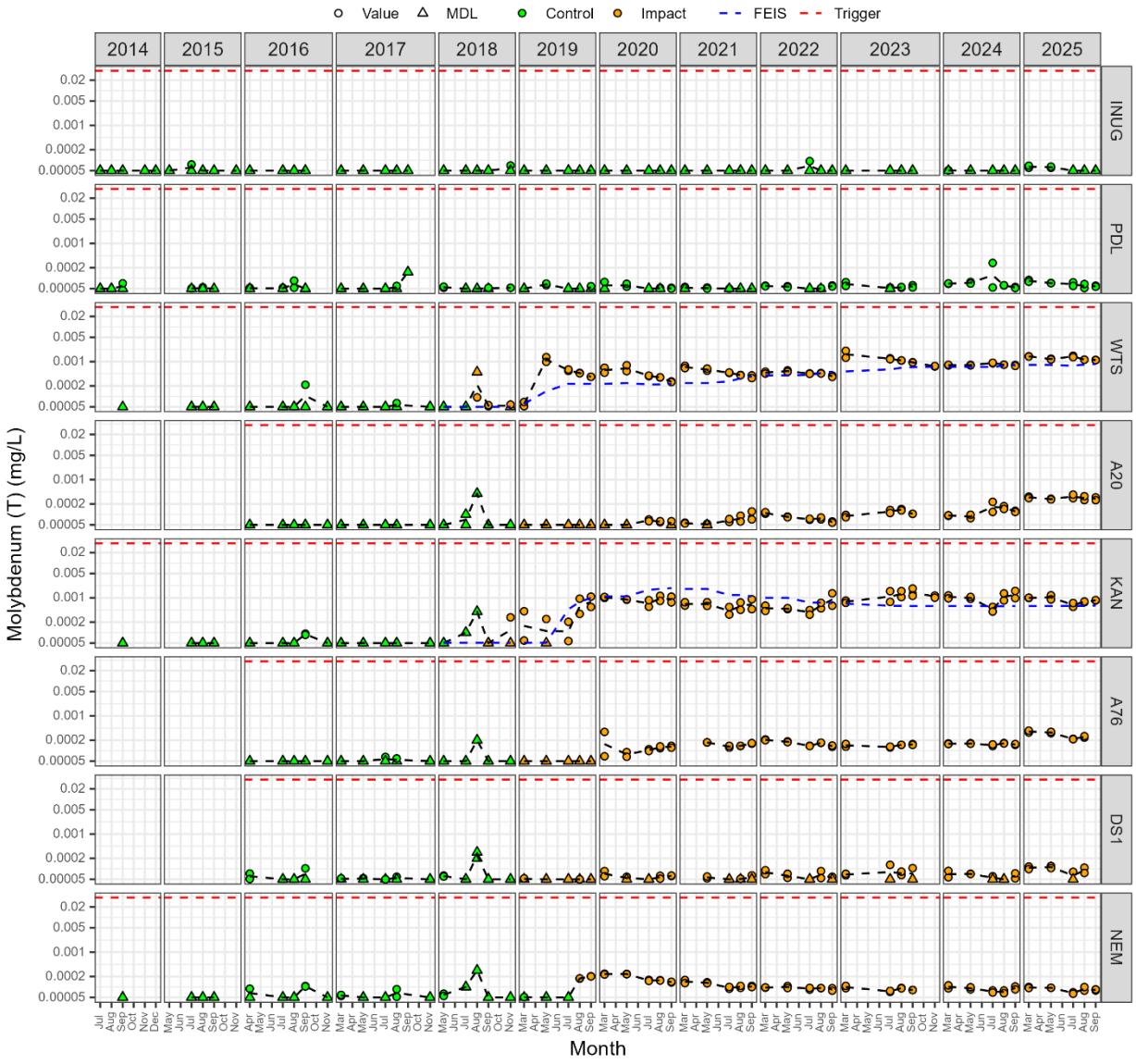


Figure C2-39. Total nickel (mg/L).

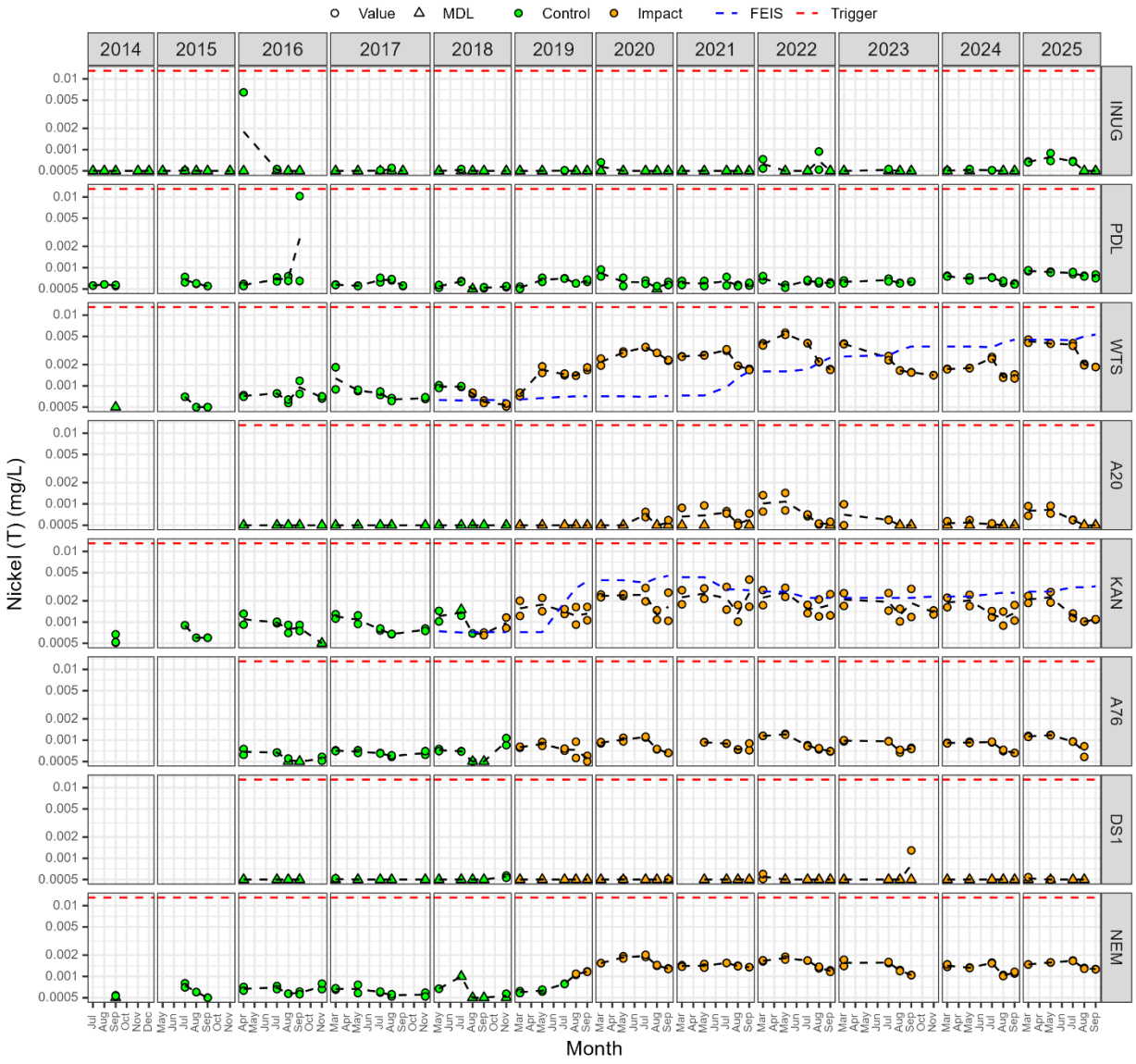


Figure C2-40. Total potassium (mg/L).

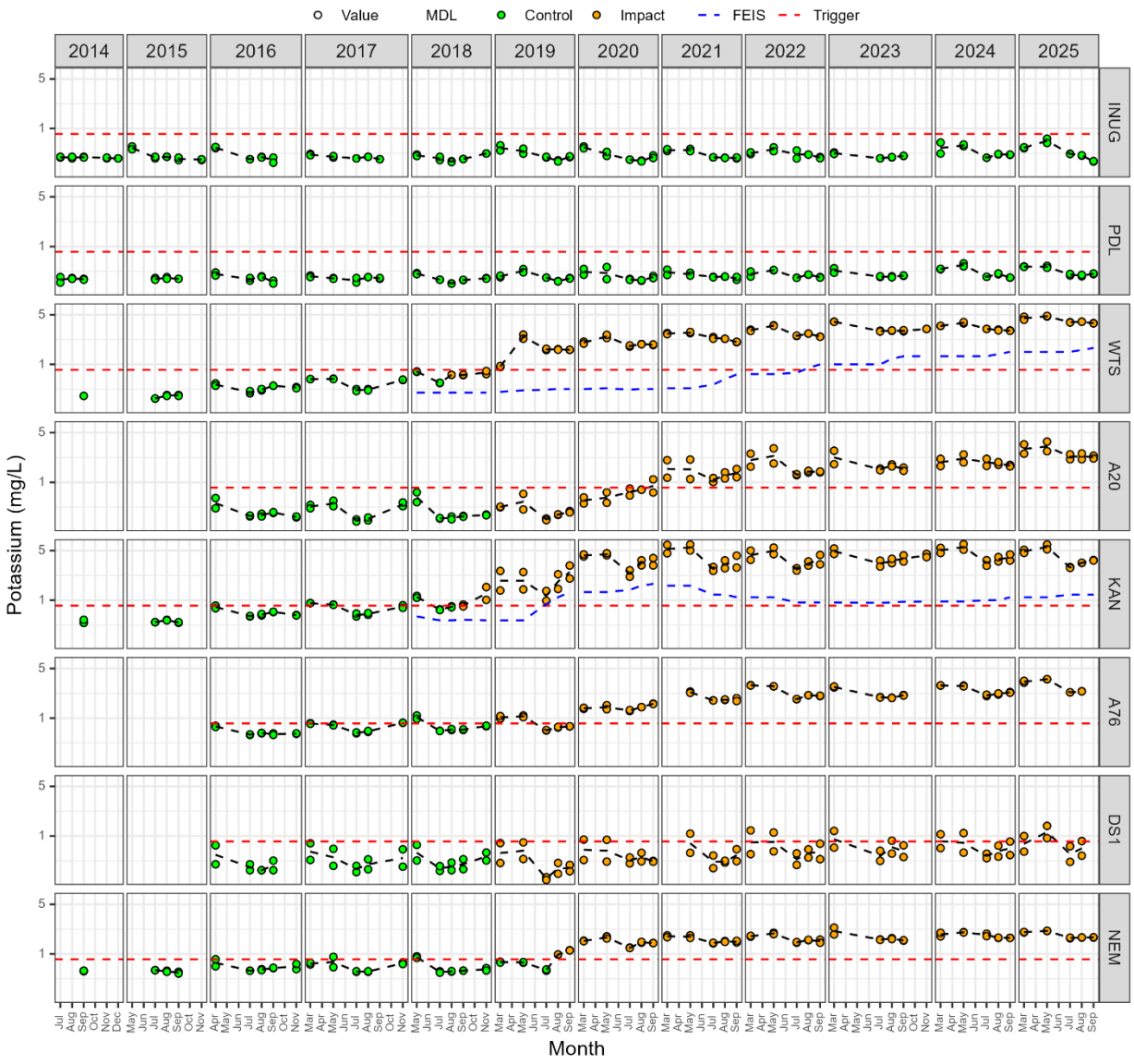


Figure C2-41. Total selenium (mg/L).

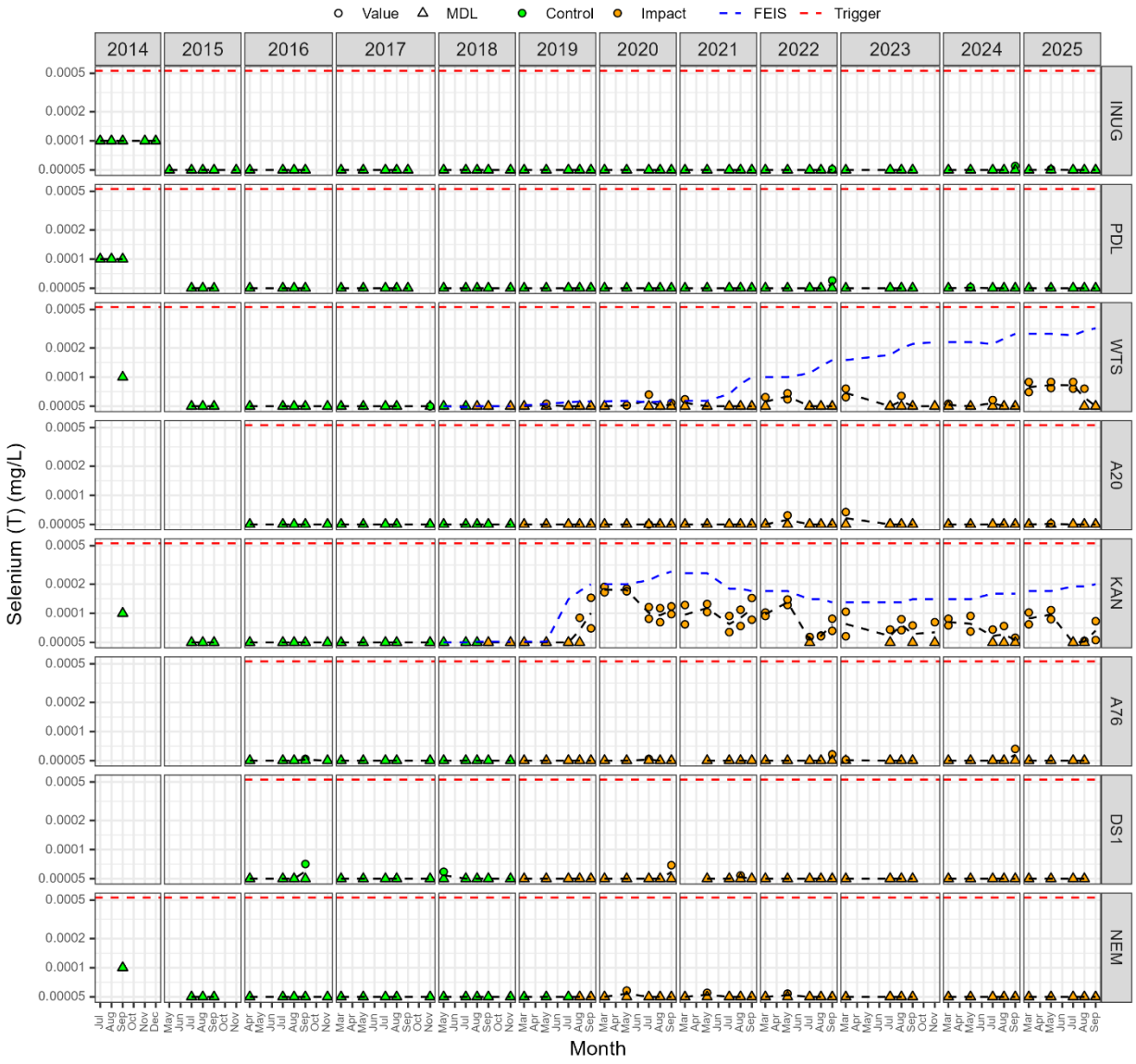


Figure C2-42. Total silicon (mg/L).

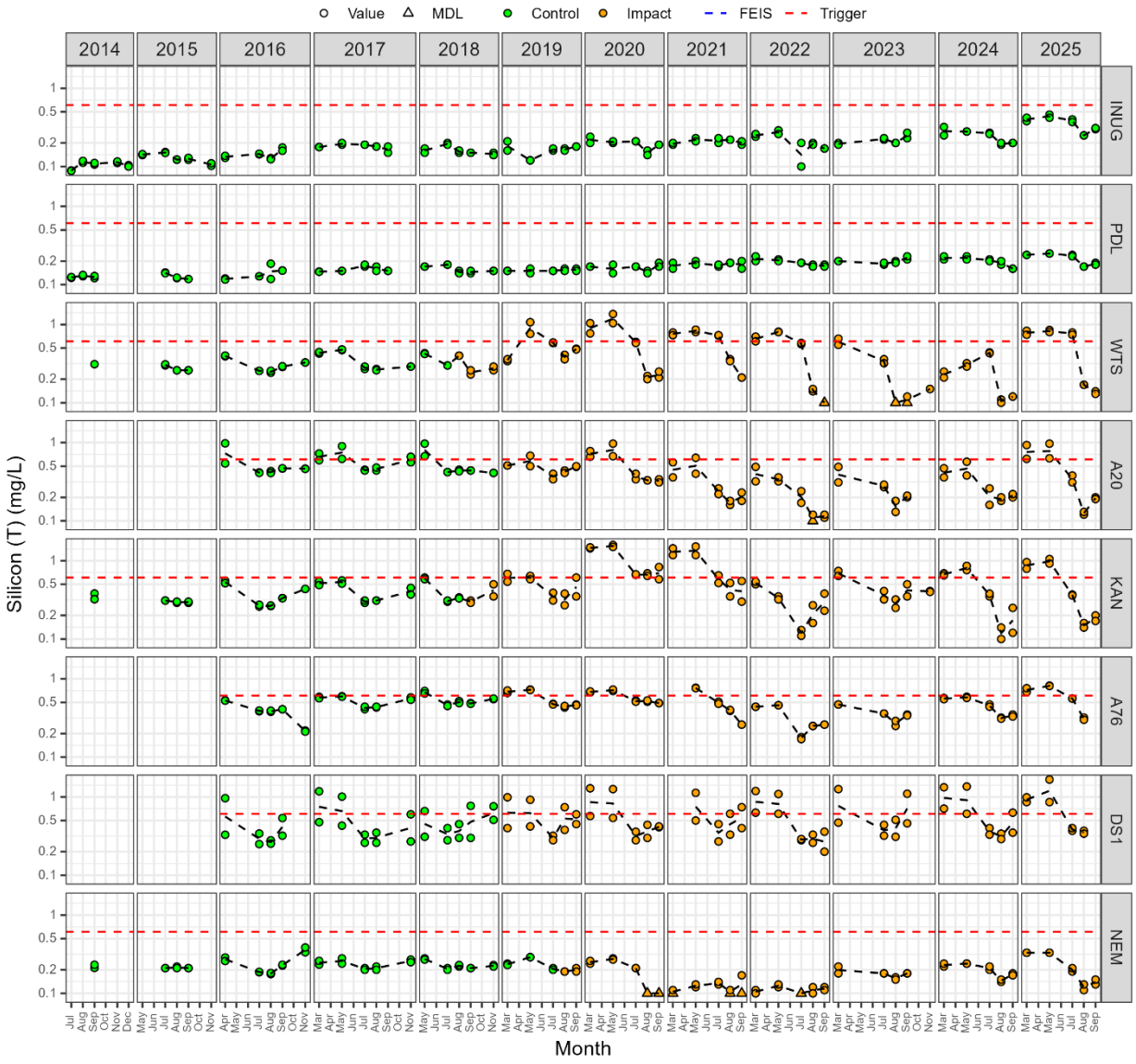


Figure C2-43. Total silver (mg/L).

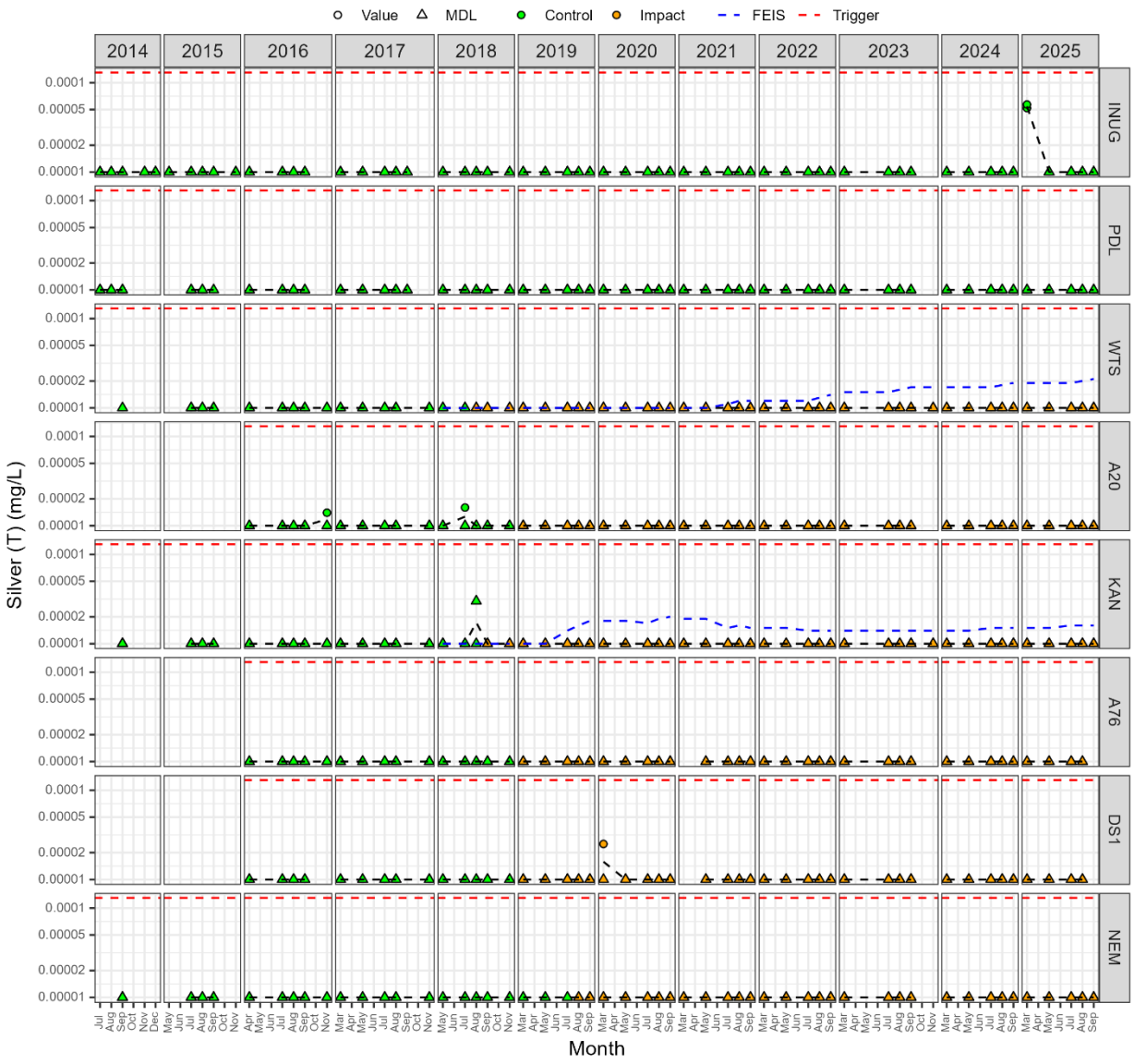


Figure C2-44. Total sodium (mg/L).

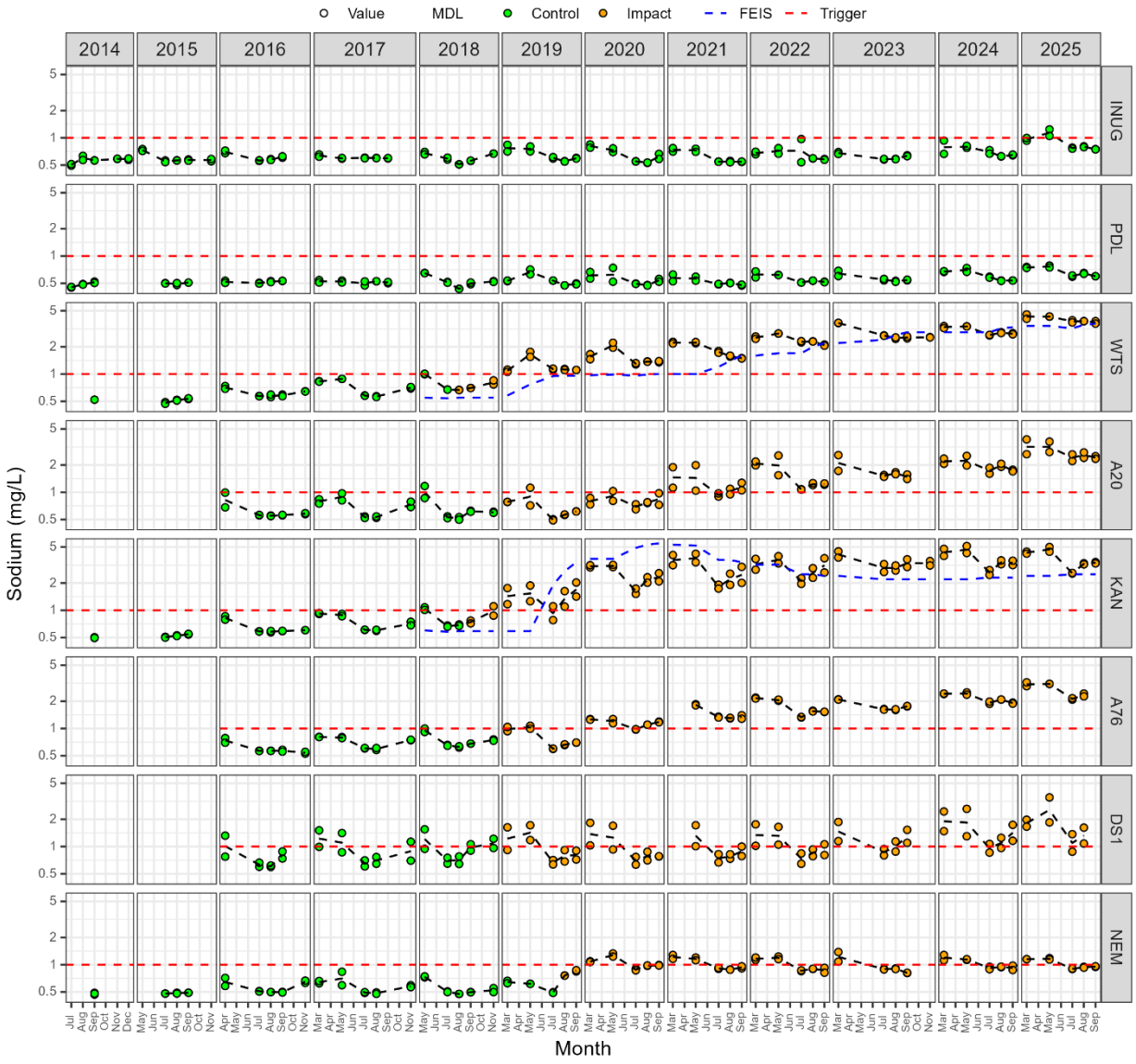


Figure C2-45. Total strontium (mg/L).

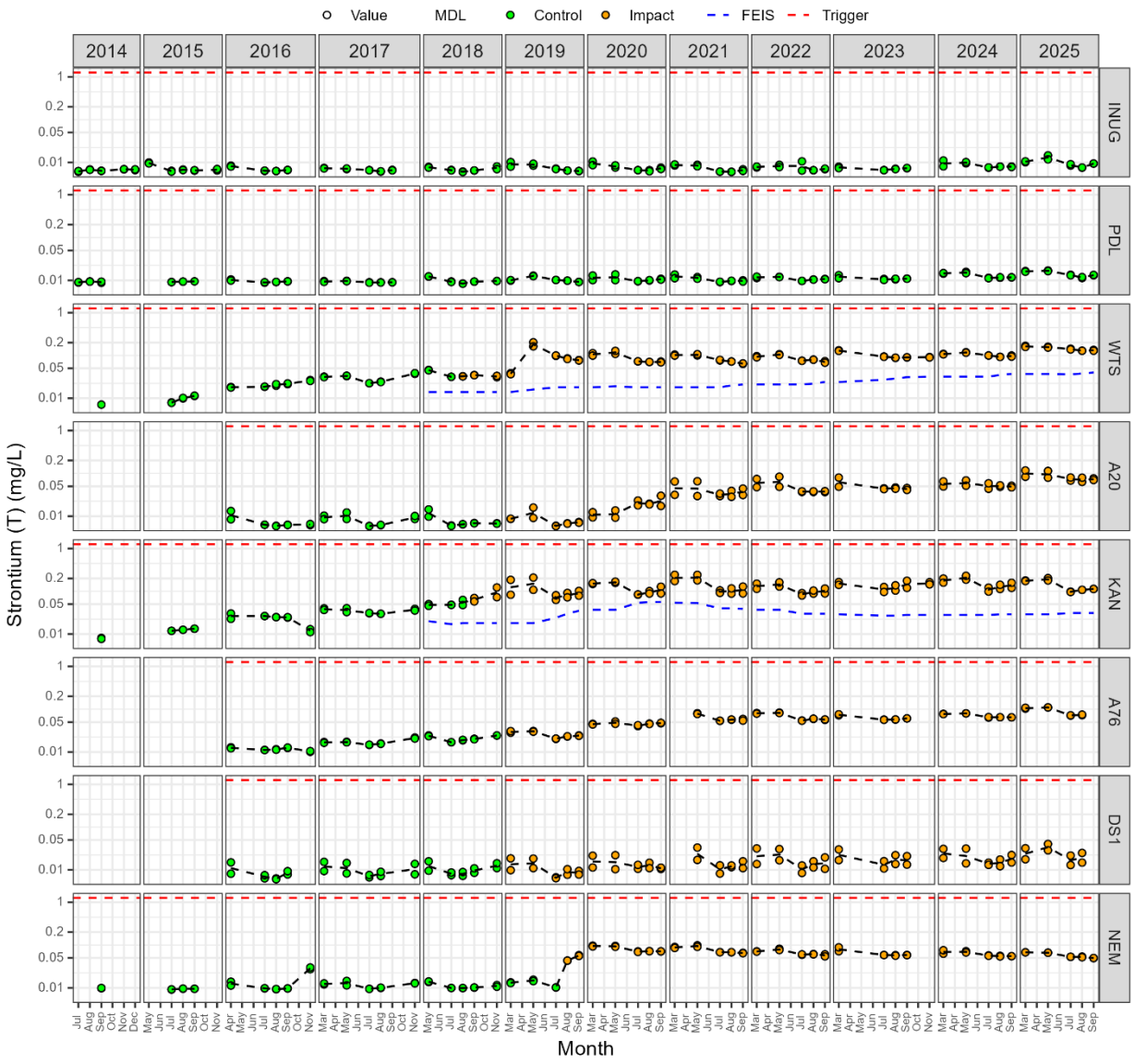


Figure C2-46. Total thallium (mg/L).

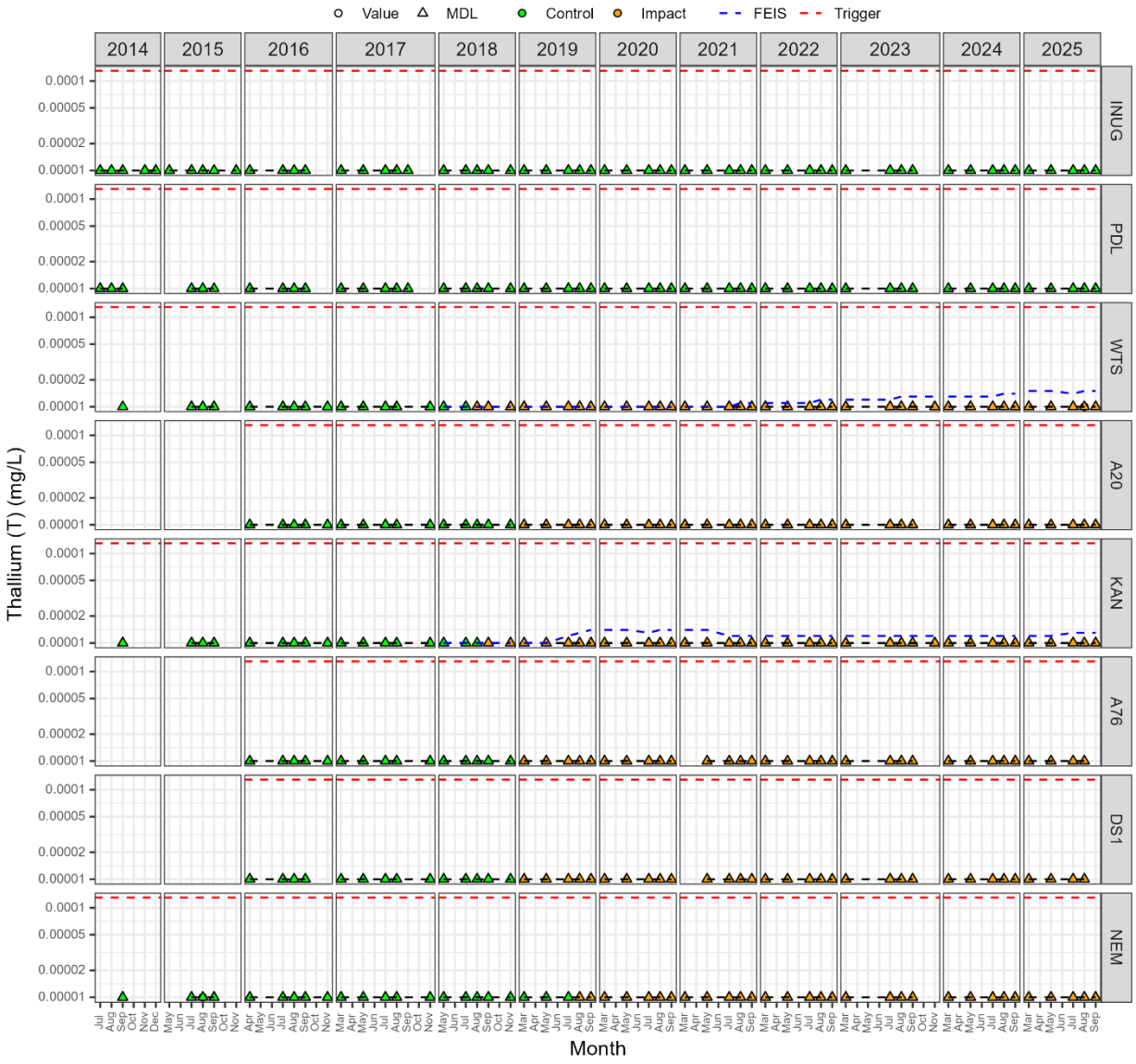


Figure C2-47. Total tin (mg/L).

Note: Trigger value (0.033 mg/L) not shown as it is much higher than reported values.

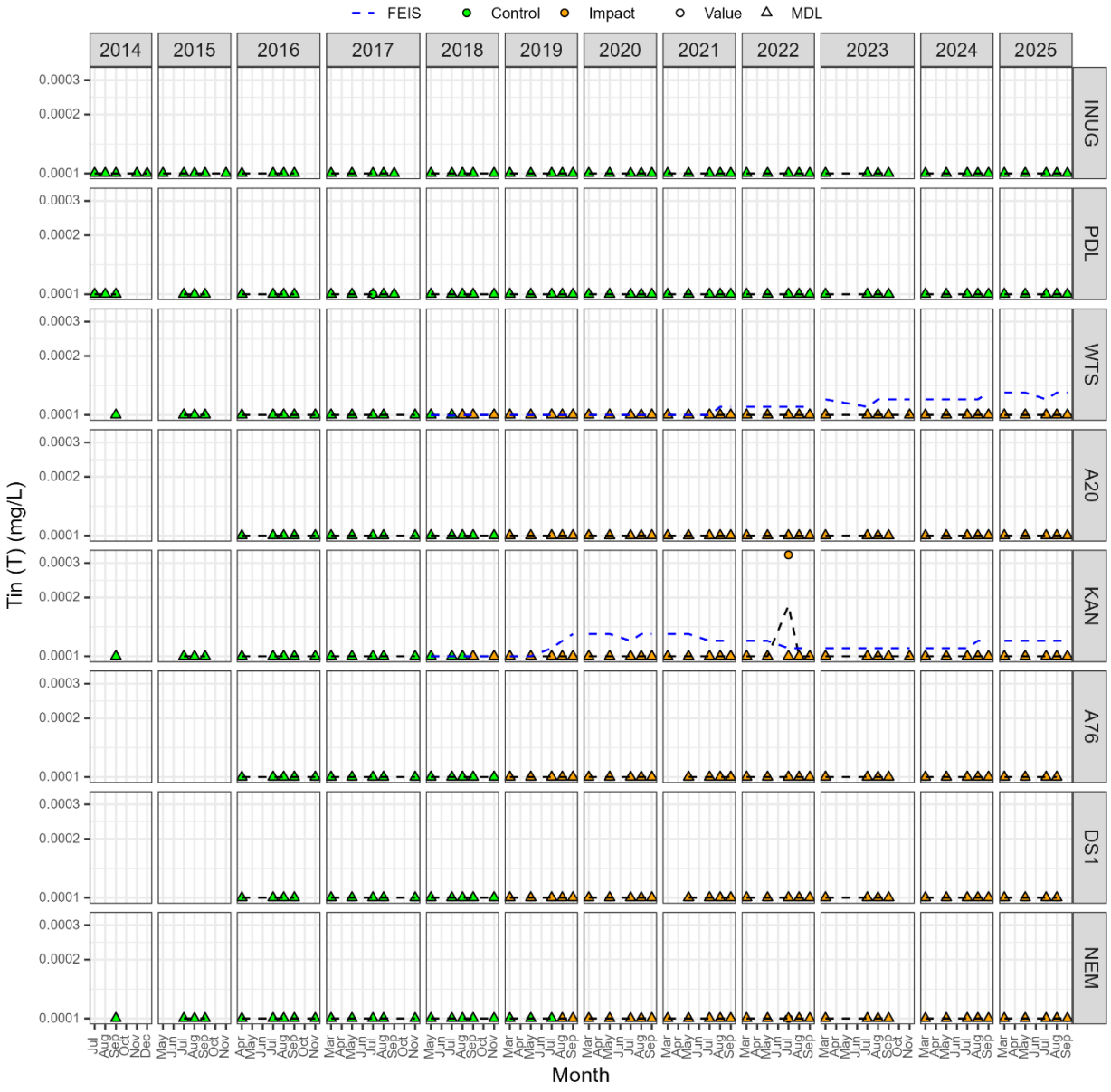


Figure C2-48. Total titanium (mg/L).

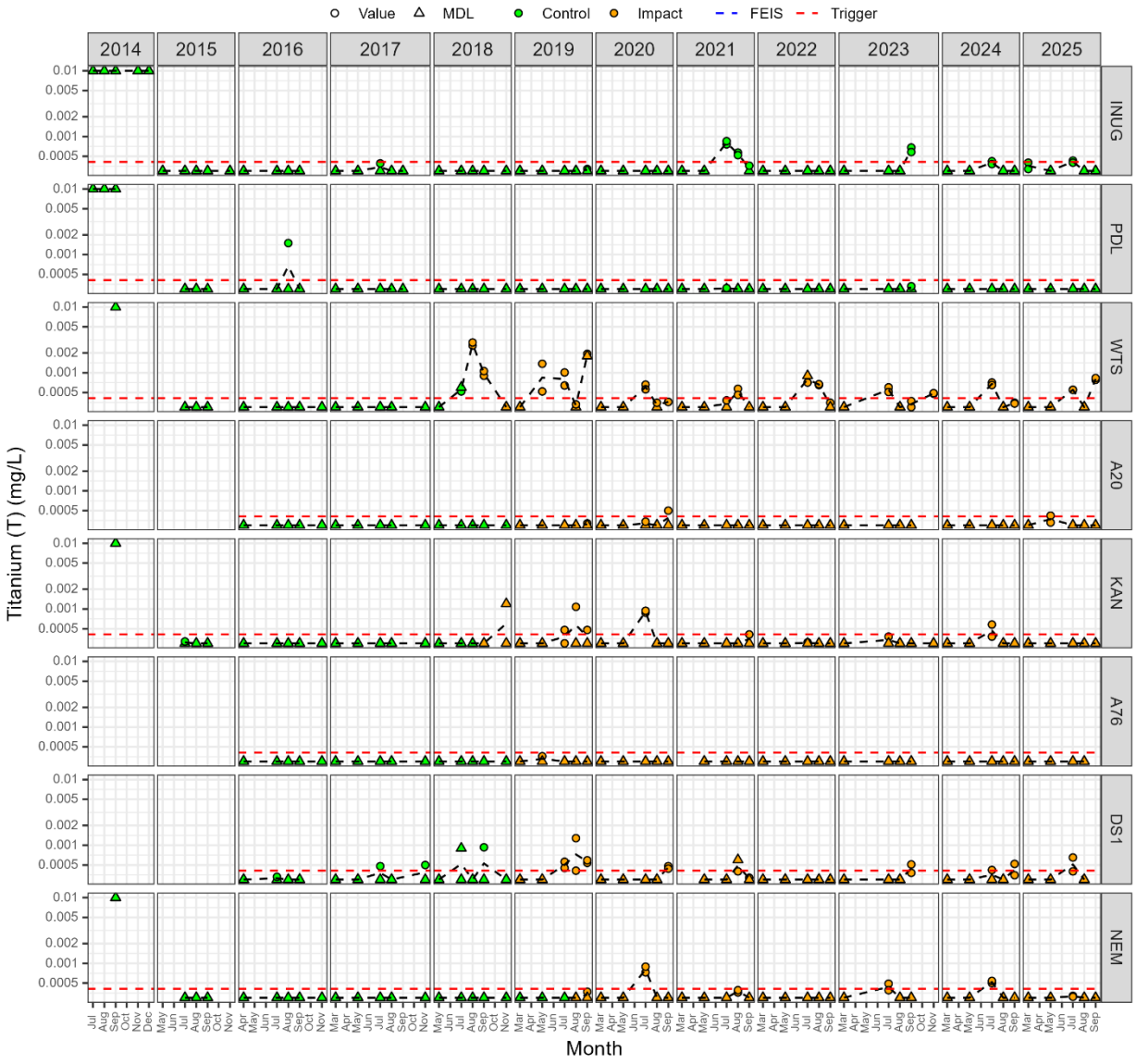


Figure C2-49. Total uranium (mg/L).

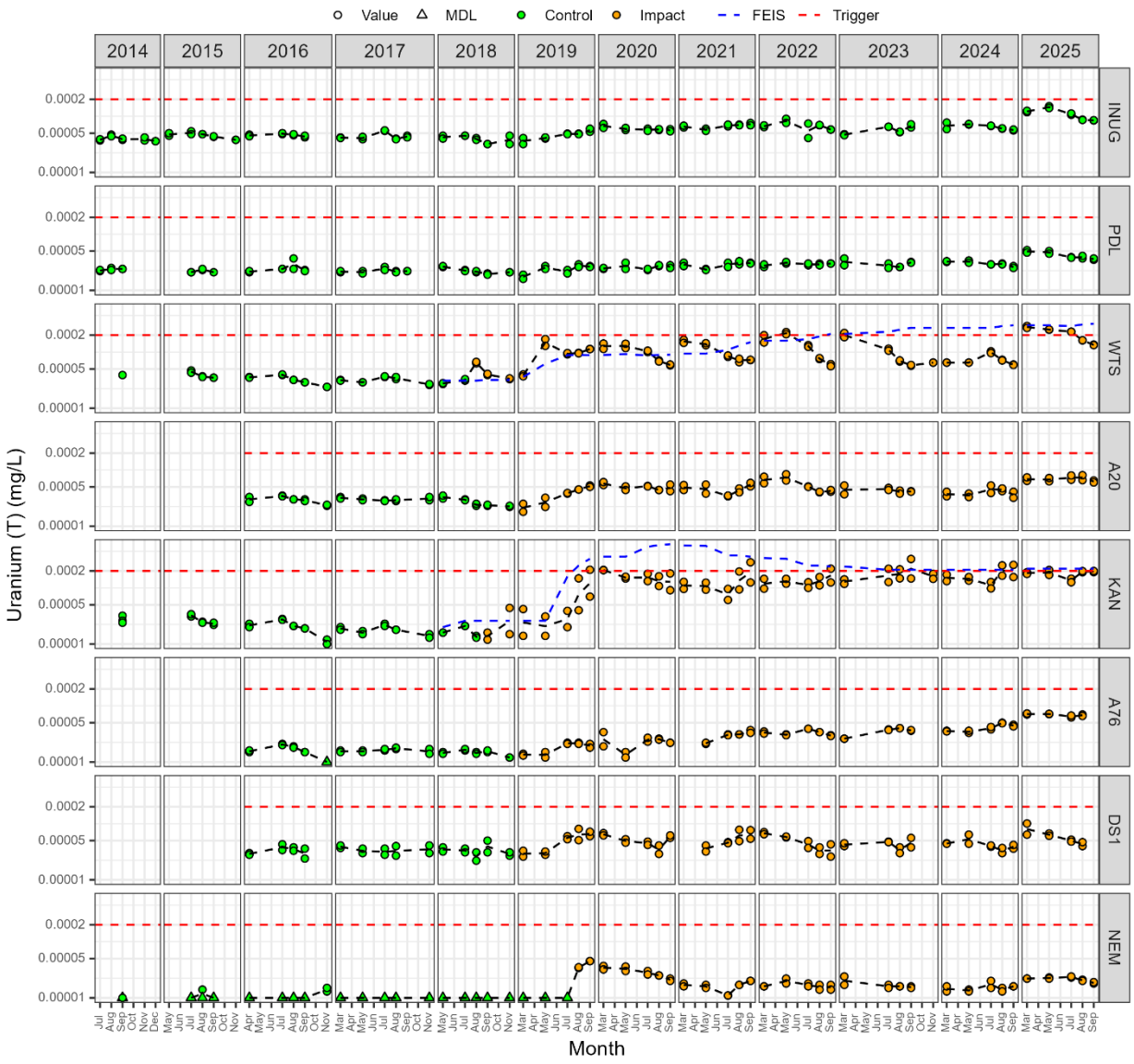


Figure C2-50. Total vanadium (mg/L).

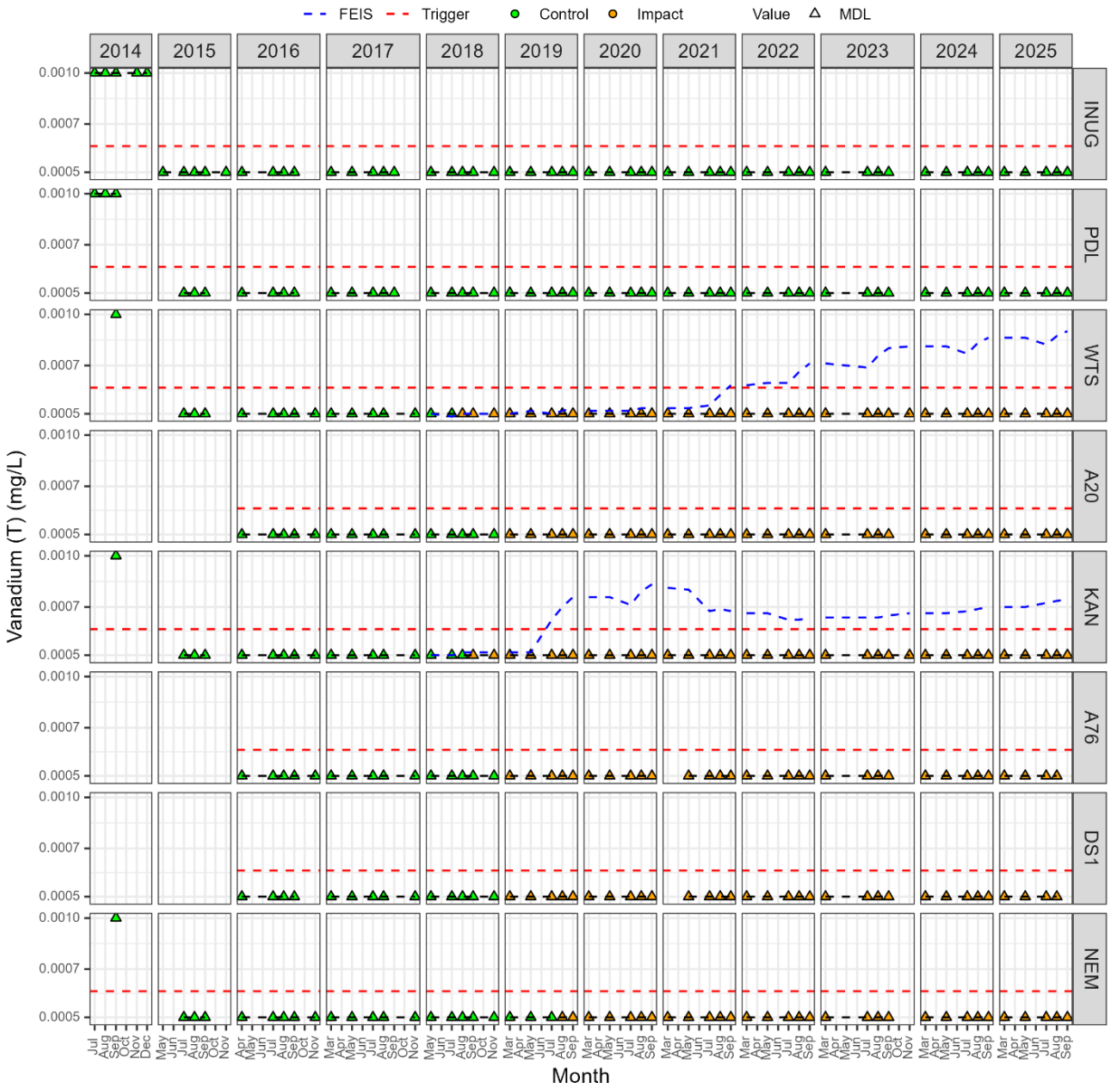


Figure C2-51. Total zinc (mg/L).

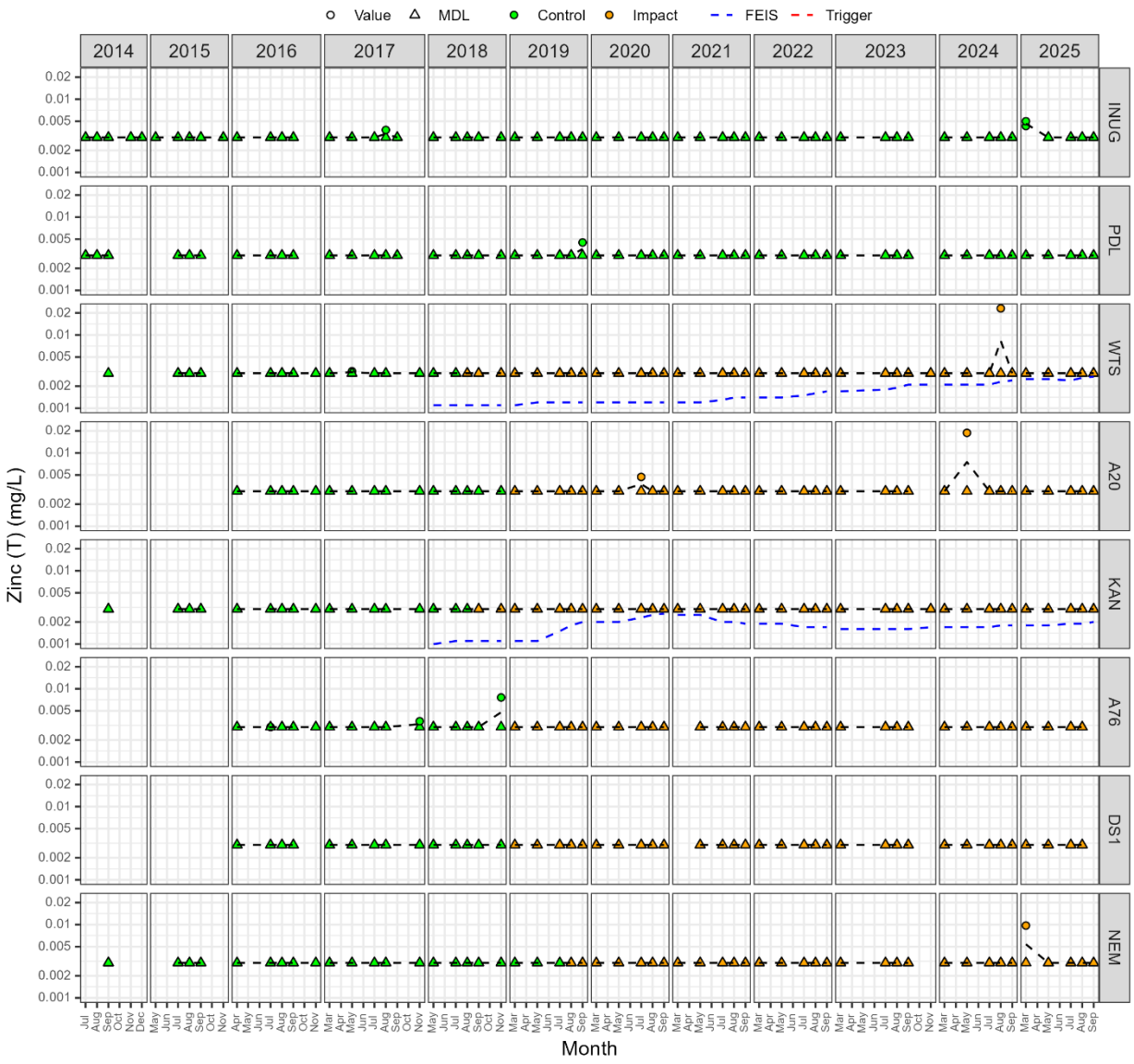


Figure C2-52. Dissolved aluminum (mg/L).

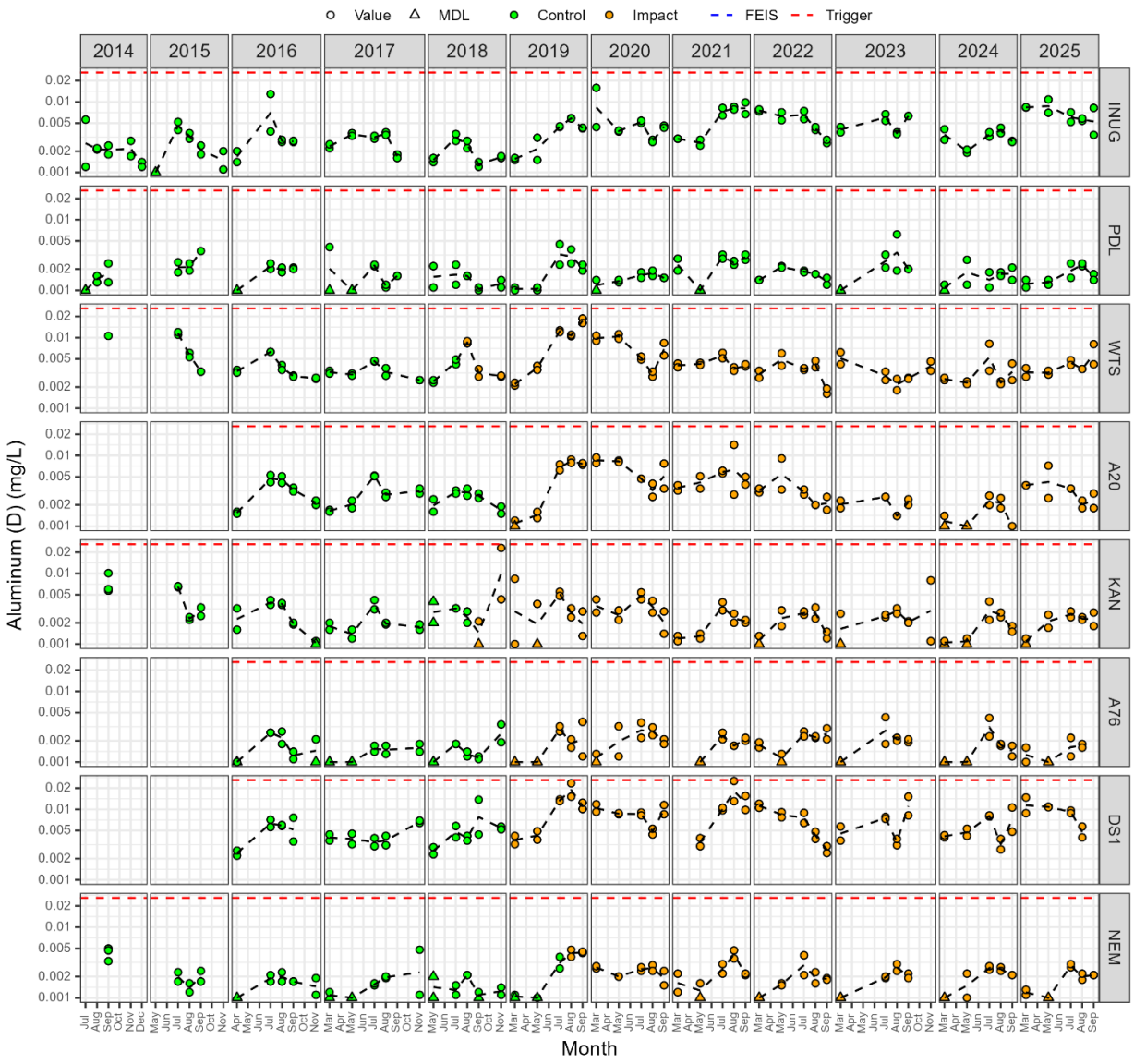


Figure C2-53. Dissolved antimony (mg/L).

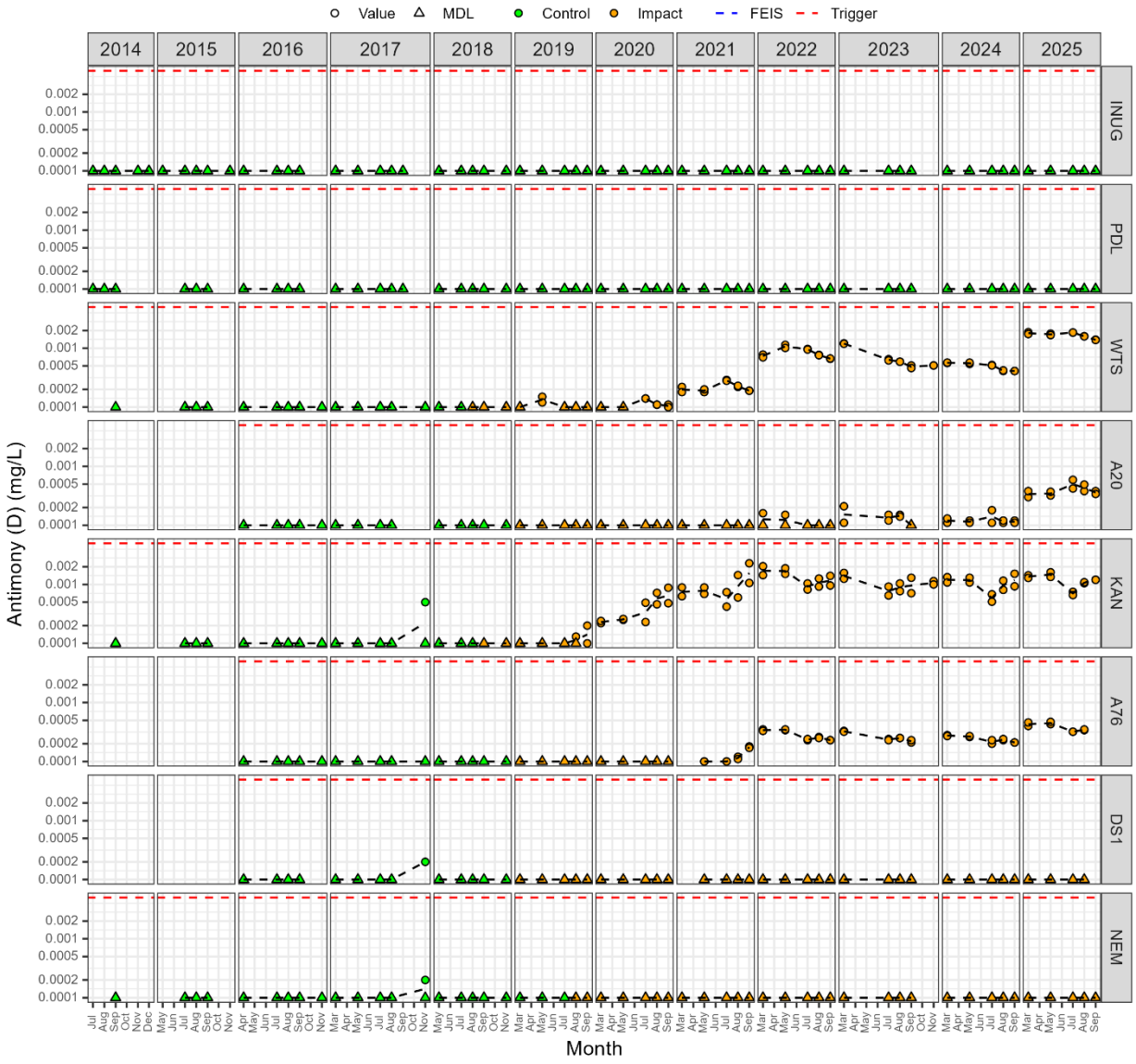


Figure C2-54. Dissolved arsenic (mg/L).

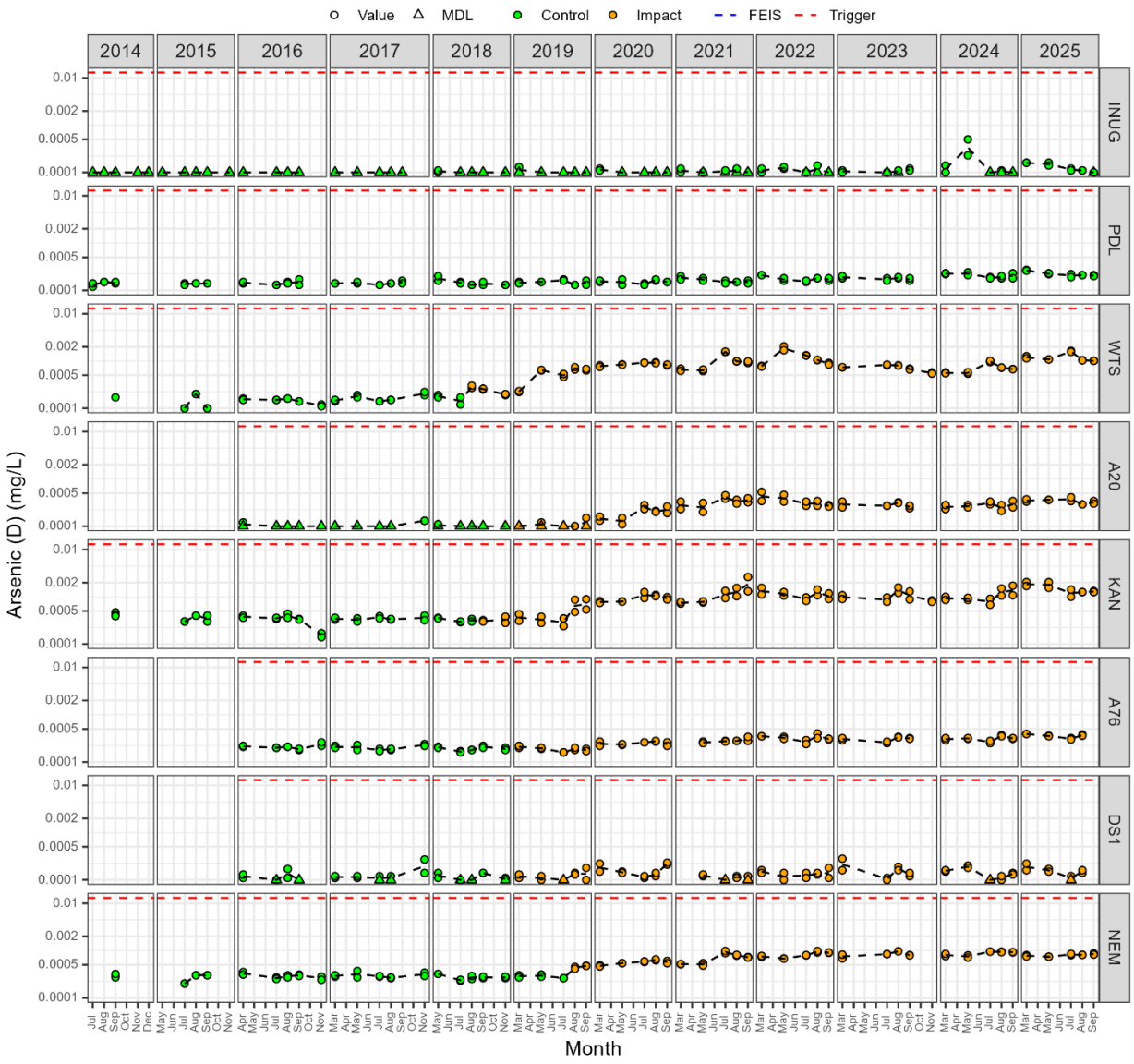


Figure C2-55. Dissolved barium (mg/L).

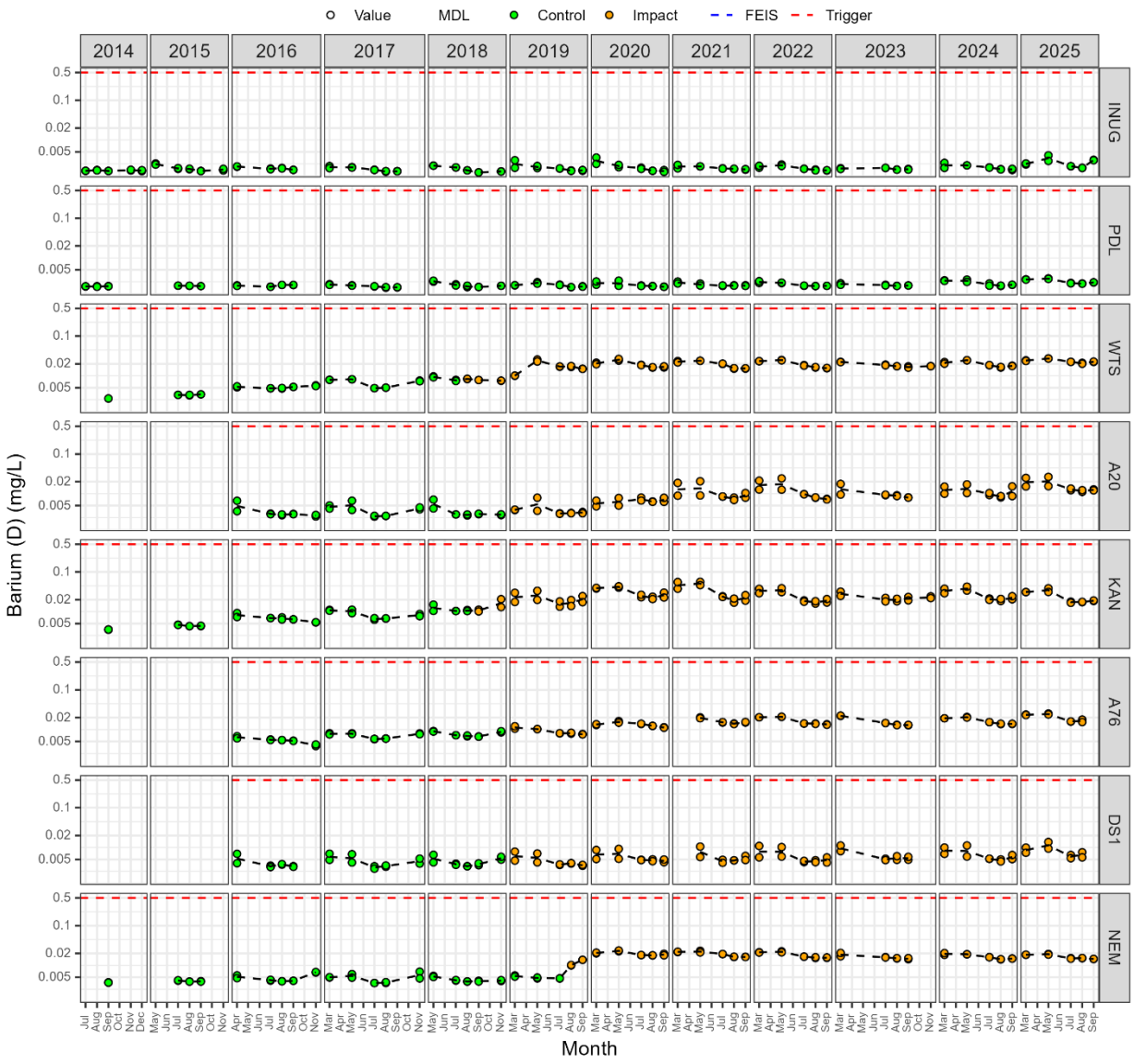


Figure C2-56. Dissolved beryllium (mg/L).

Note: Detection limits for beryllium were revised in 2018 due to method re-validation and analysis at the lower detection limit is no longer available at ALS (Pers. Comm. Brent Mack, ALS November 28, 2022).

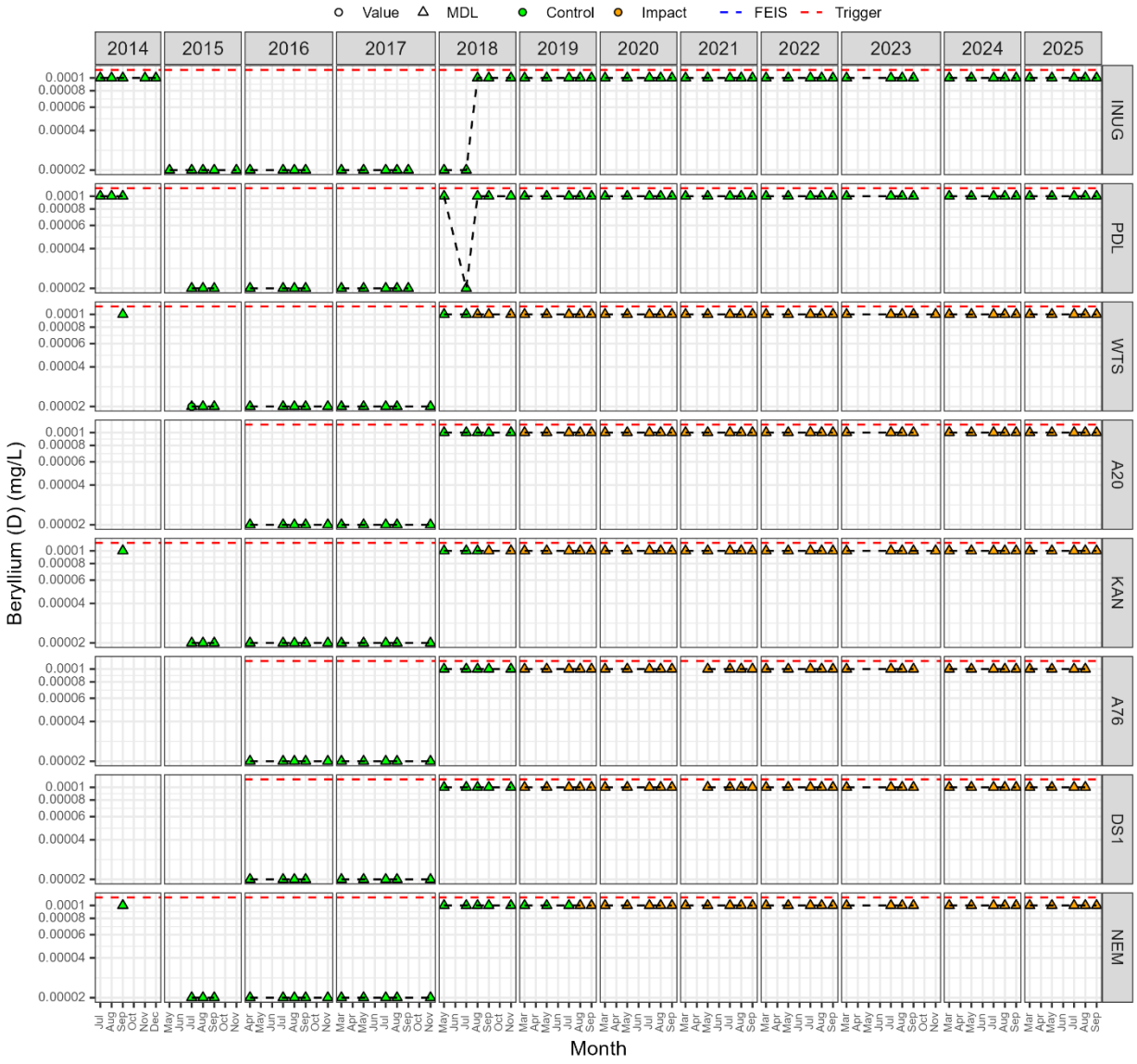


Figure C2-57. Dissolved boron (mg/L).

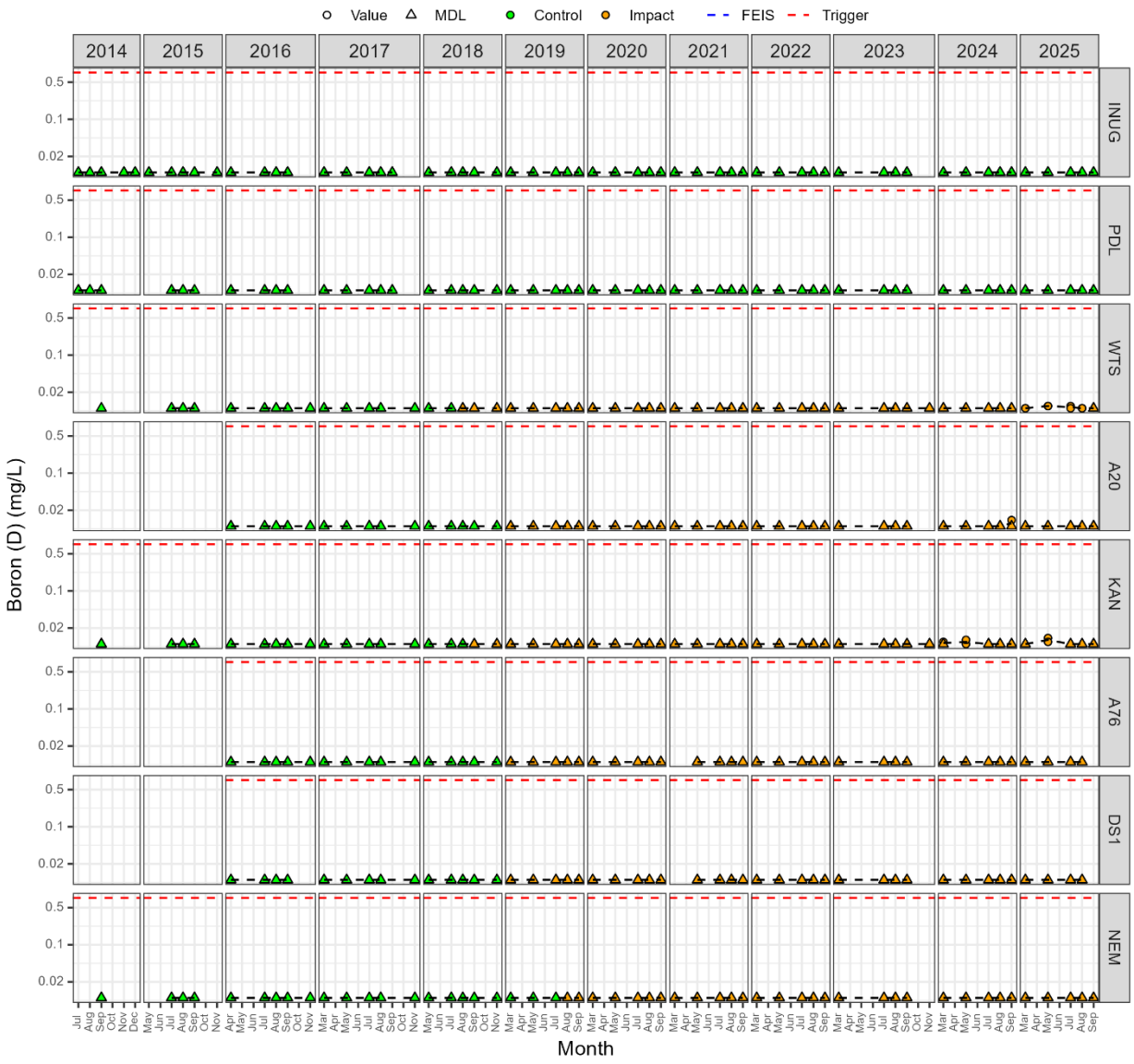


Figure C2-58. Dissolved cadmium (mg/L).

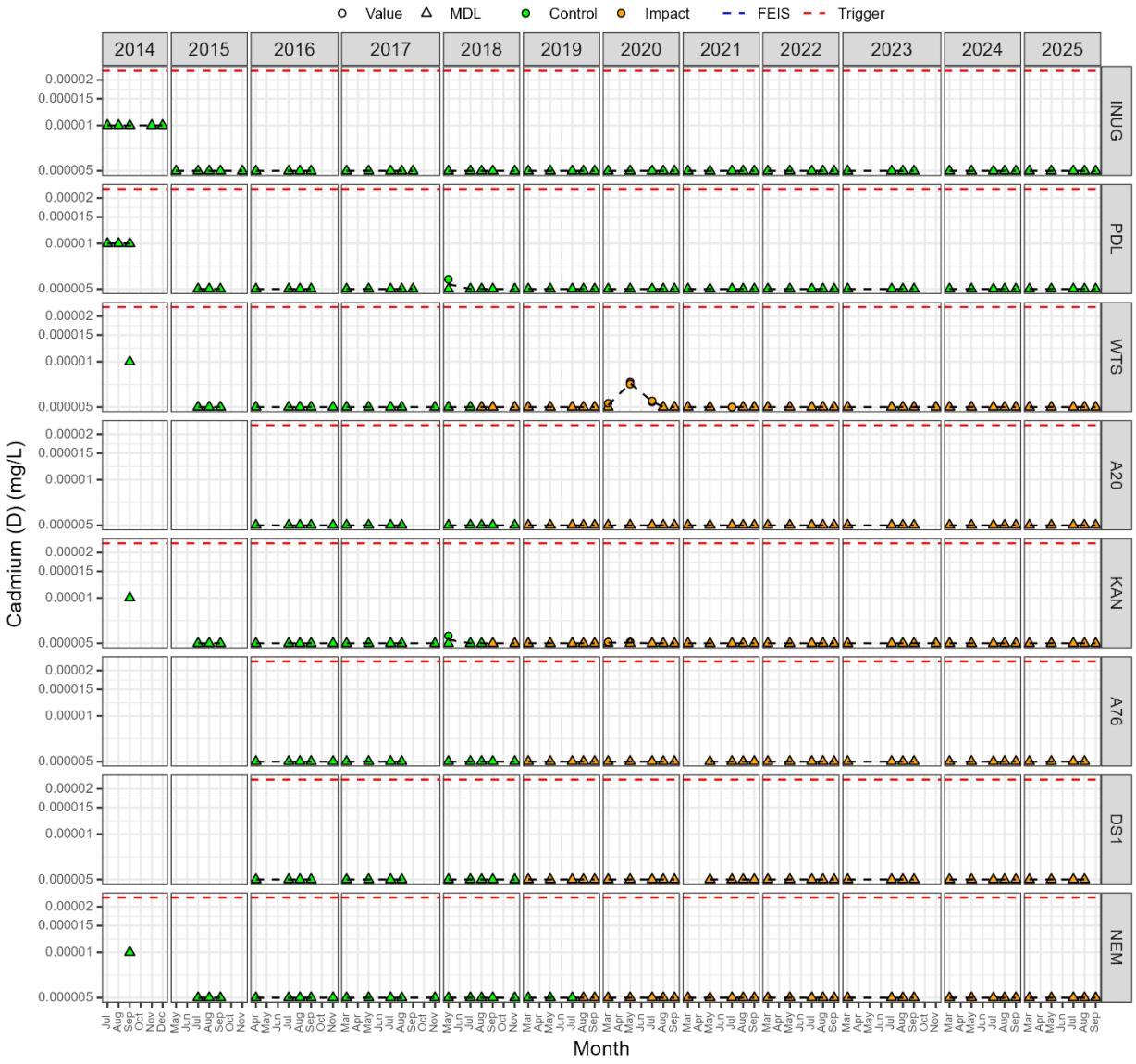


Figure C2-59. Dissolved chromium (mg/L).

Note: The detection limit was revised in 2021 due to method re-validation (Pers. Comm. Brent Mack, ALS November 28, 2022). Low-level chromium analysis is available at a cost and was requested for samples starting in 2023.

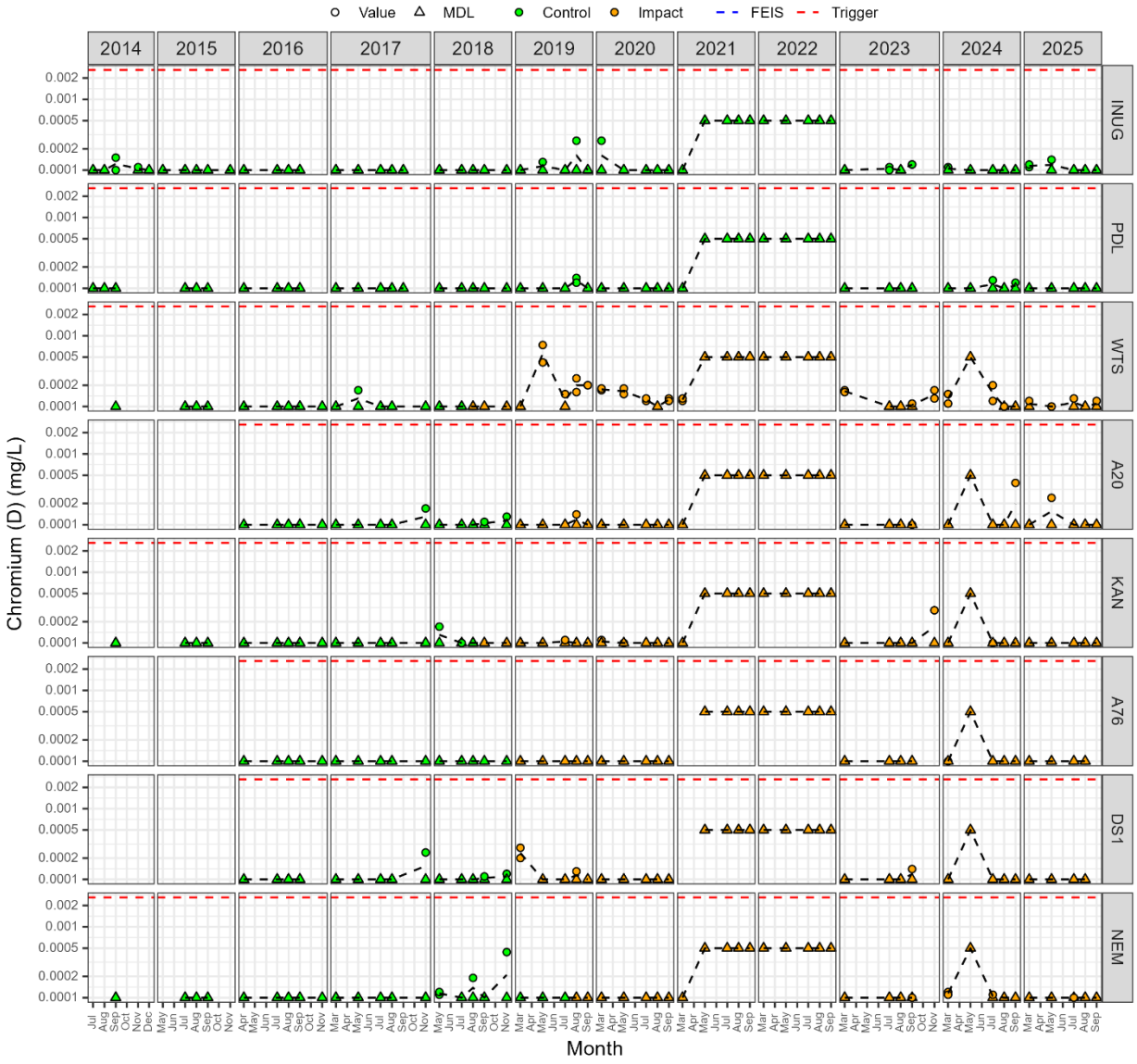


Figure C2-60. Dissolved copper (mg/L).

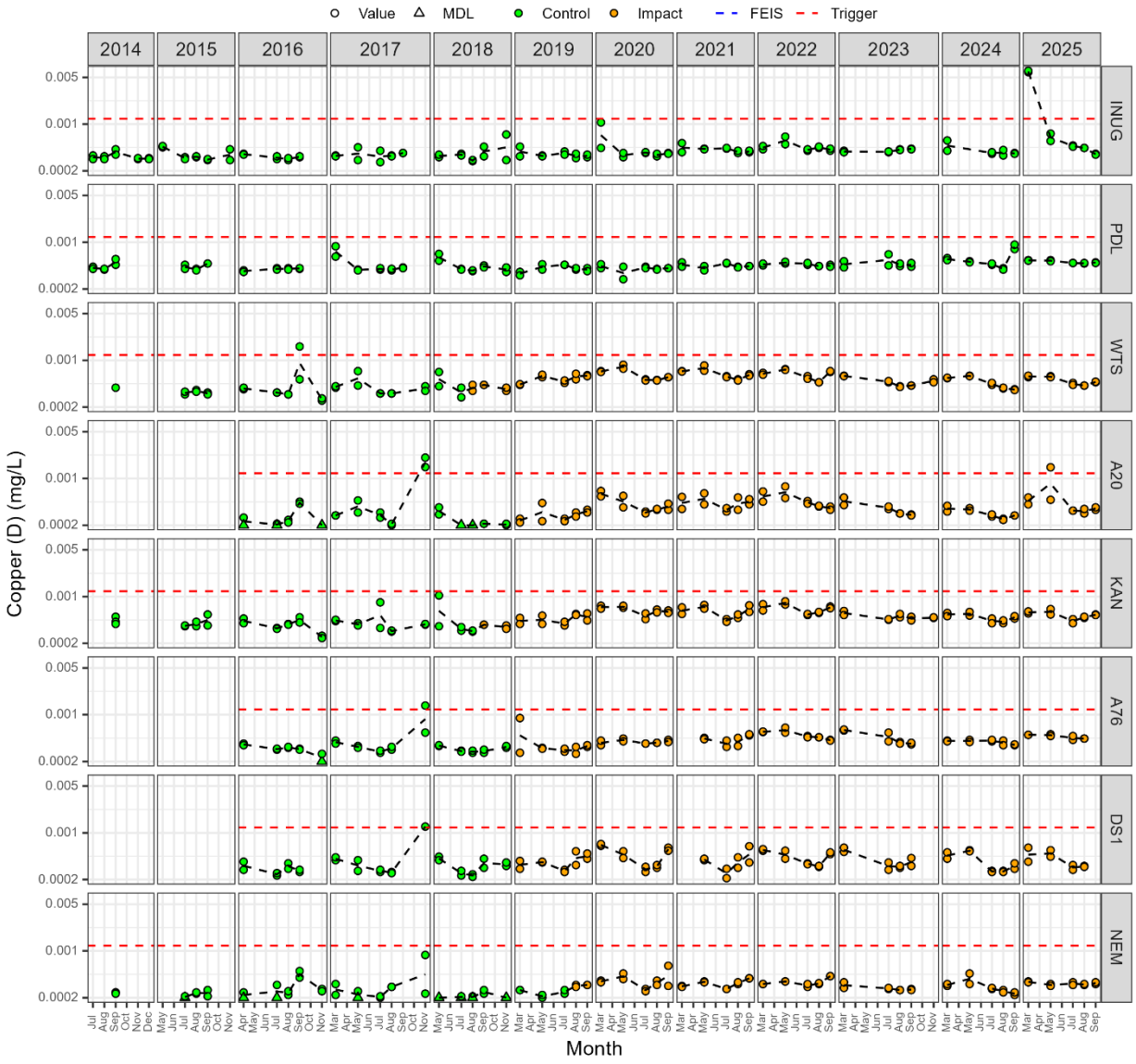


Figure C2-61. Dissolved iron (mg/L).

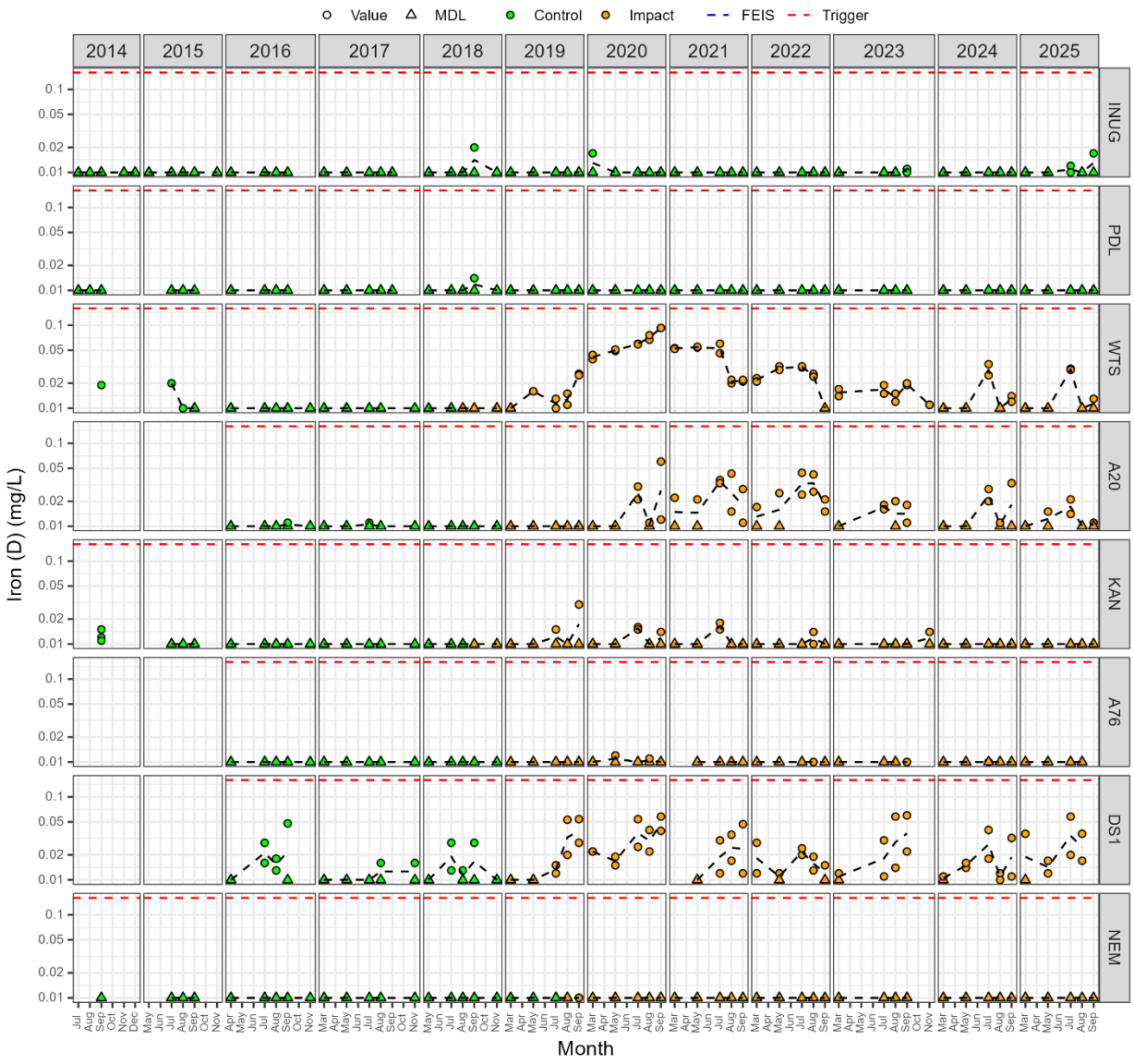


Figure C2-62. Dissolved lead (mg/L).

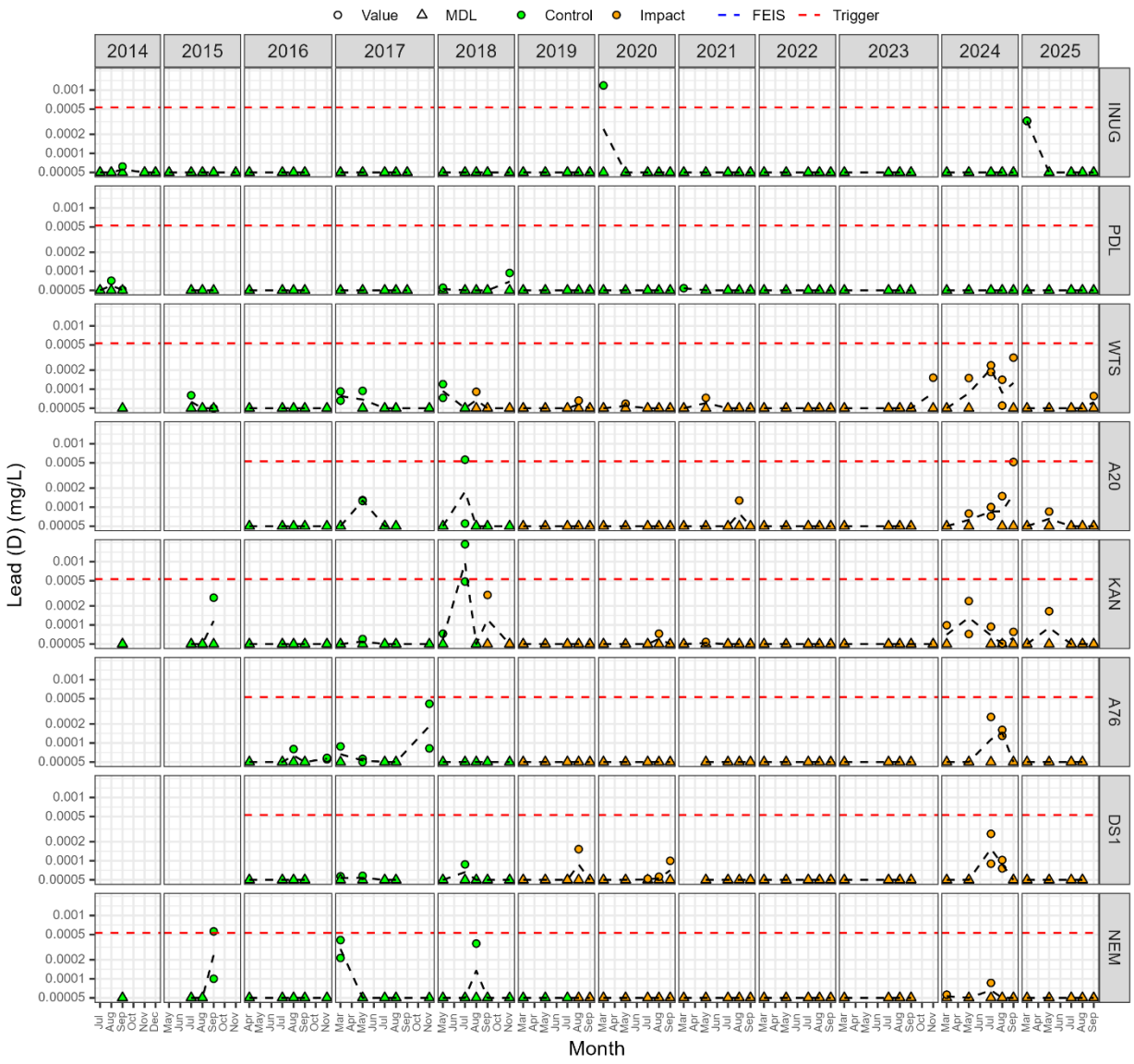


Figure C2-63. Dissolved lithium (mg/L).

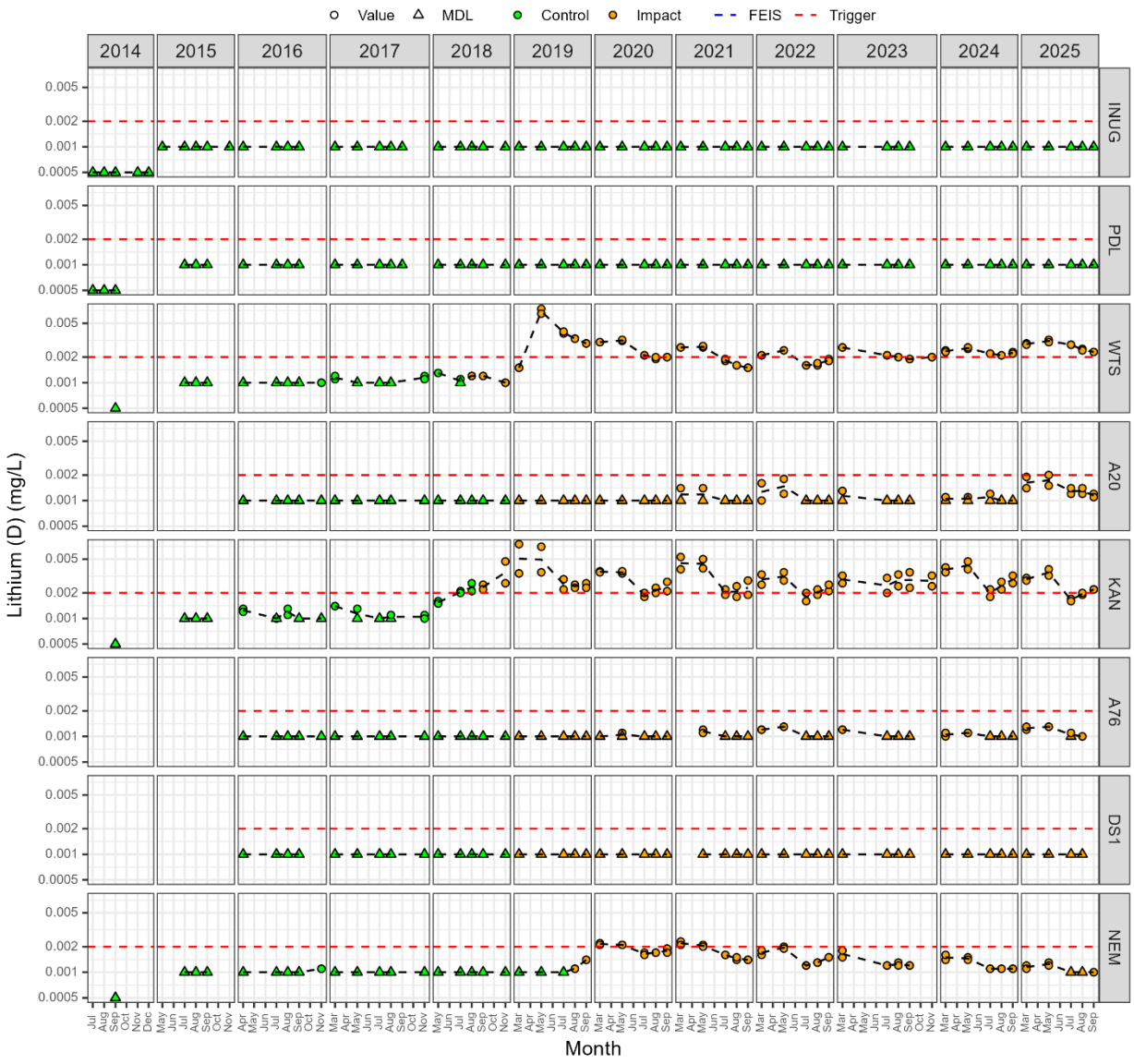


Figure C2-64. Dissolved manganese (mg/L).

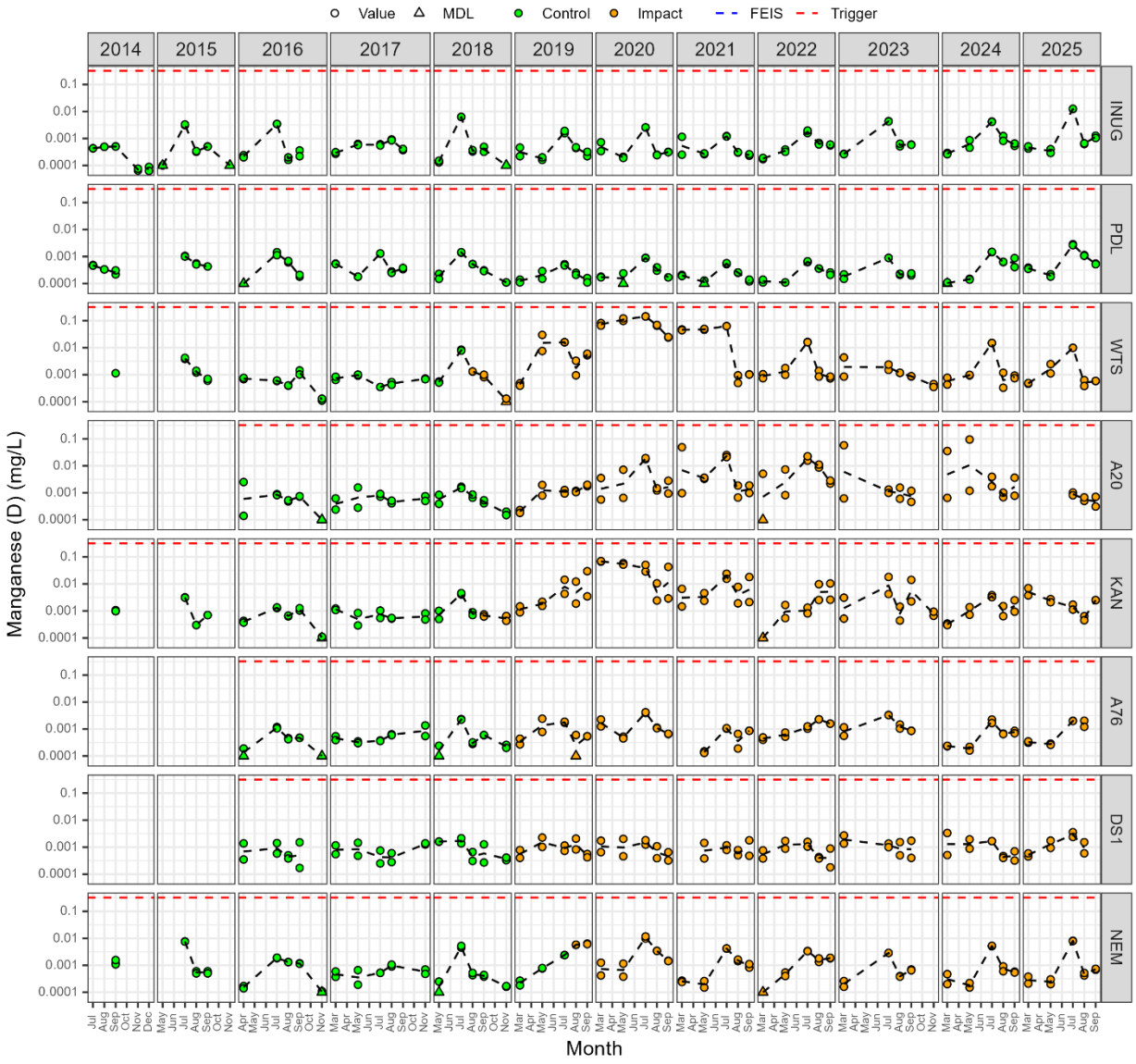


Figure C2-65. Dissolved mercury (mg/L).

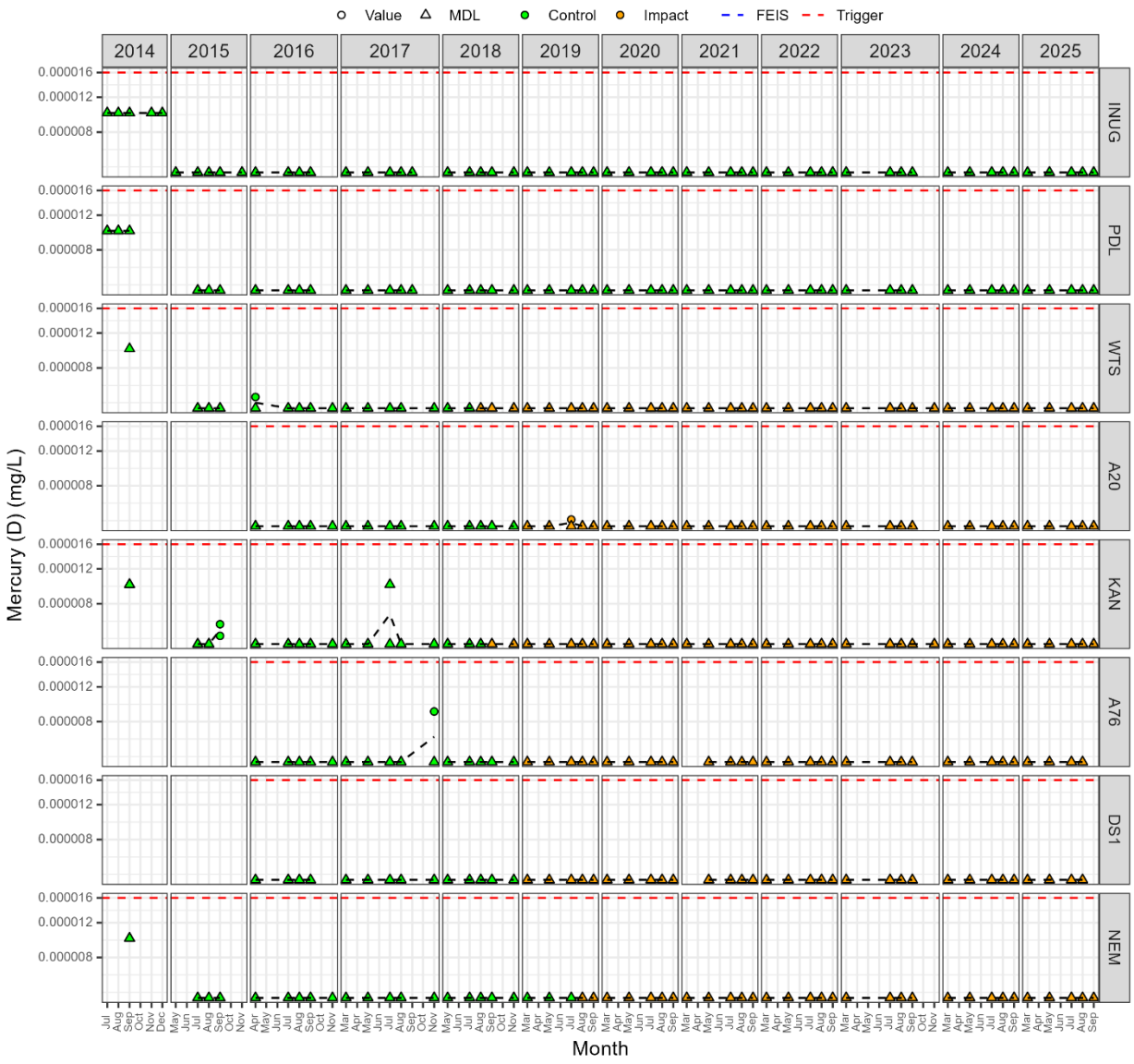


Figure C2-66. Dissolved molybdenum (mg/L).

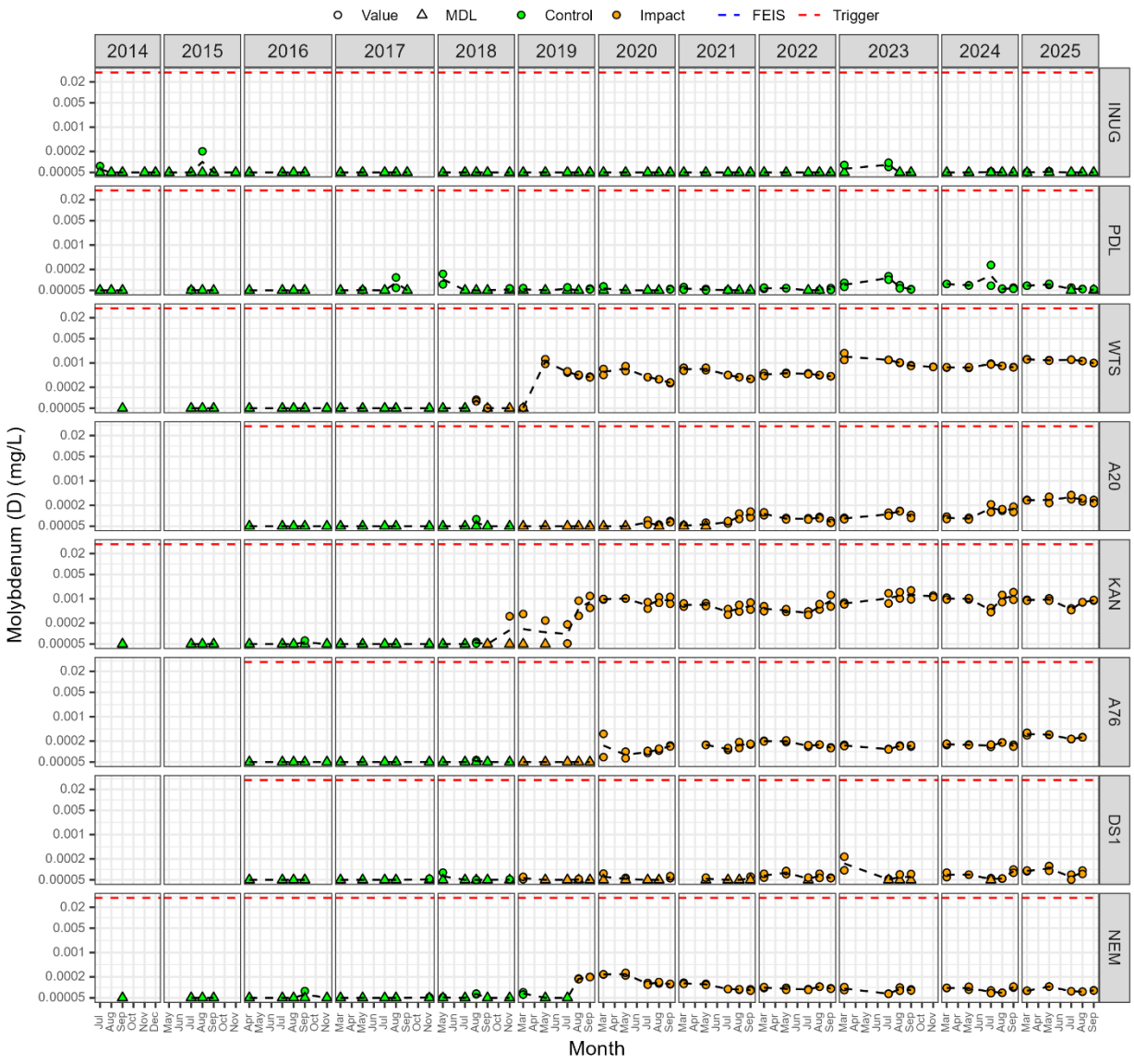


Figure C2-67. Dissolved nickel (mg/L).

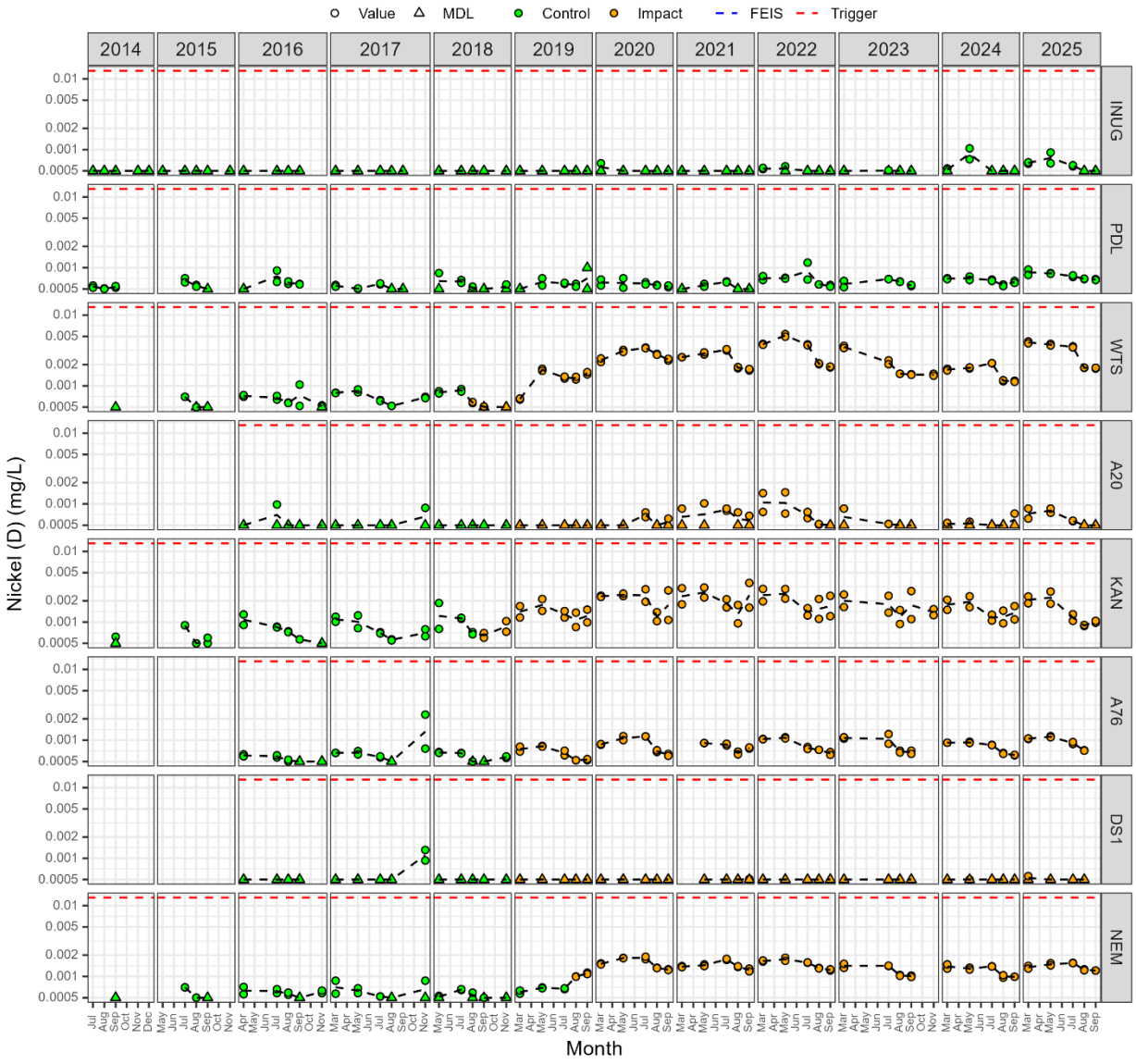


Figure C2-68. Dissolved selenium (mg/L).

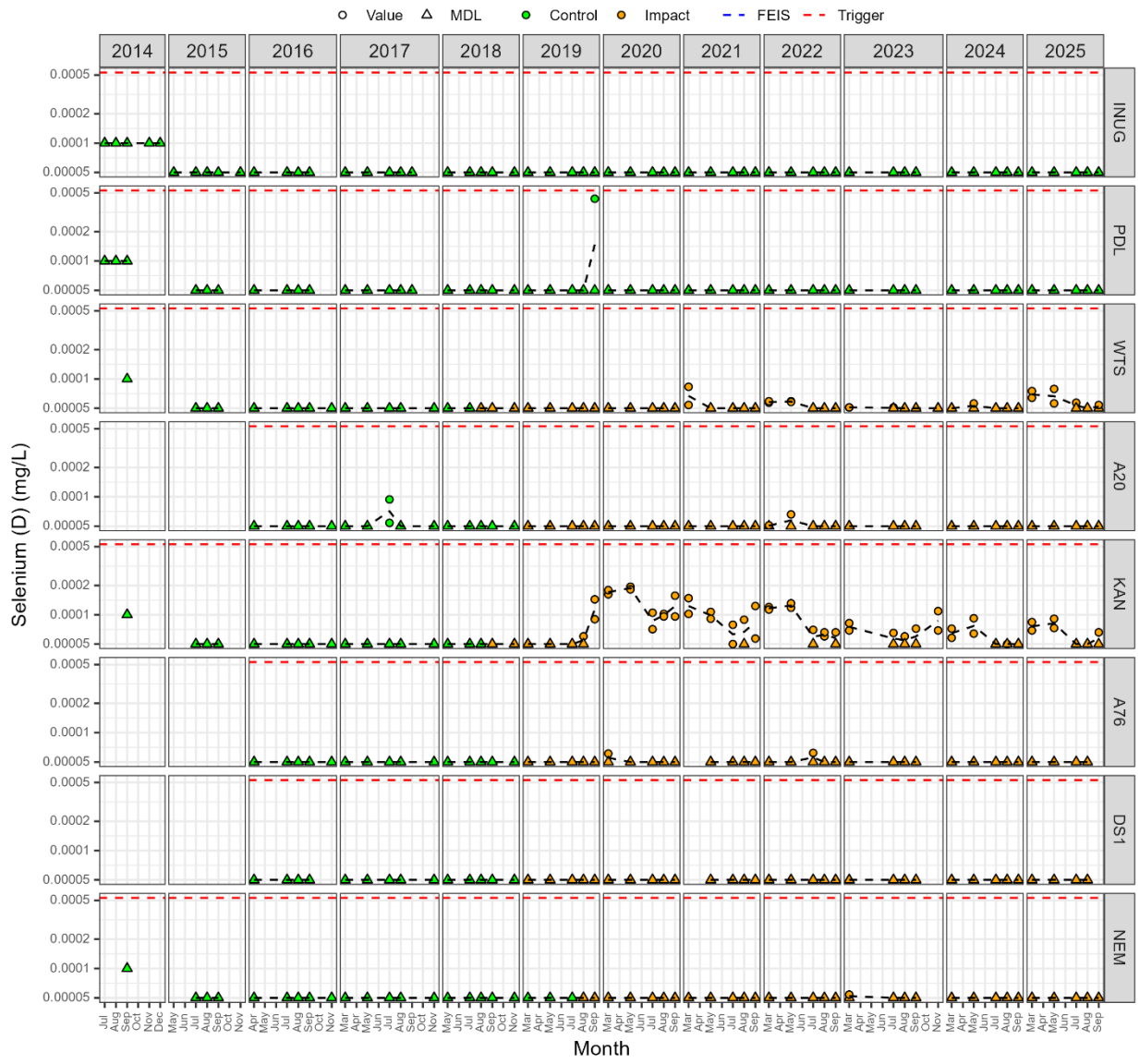


Figure C2-69. Dissolved silicon (mg/L).

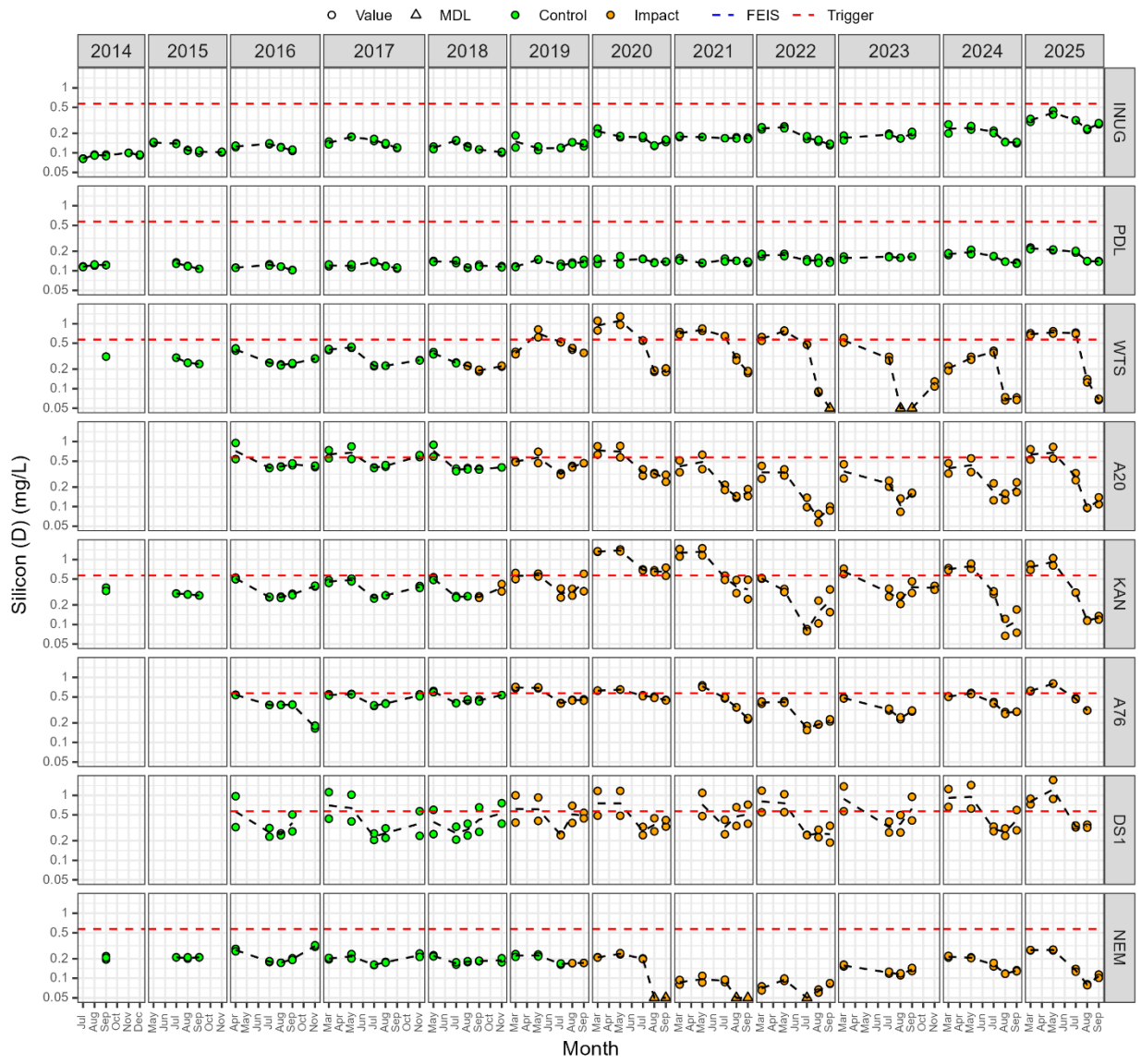


Figure C2-70. Dissolved silver (mg/L).

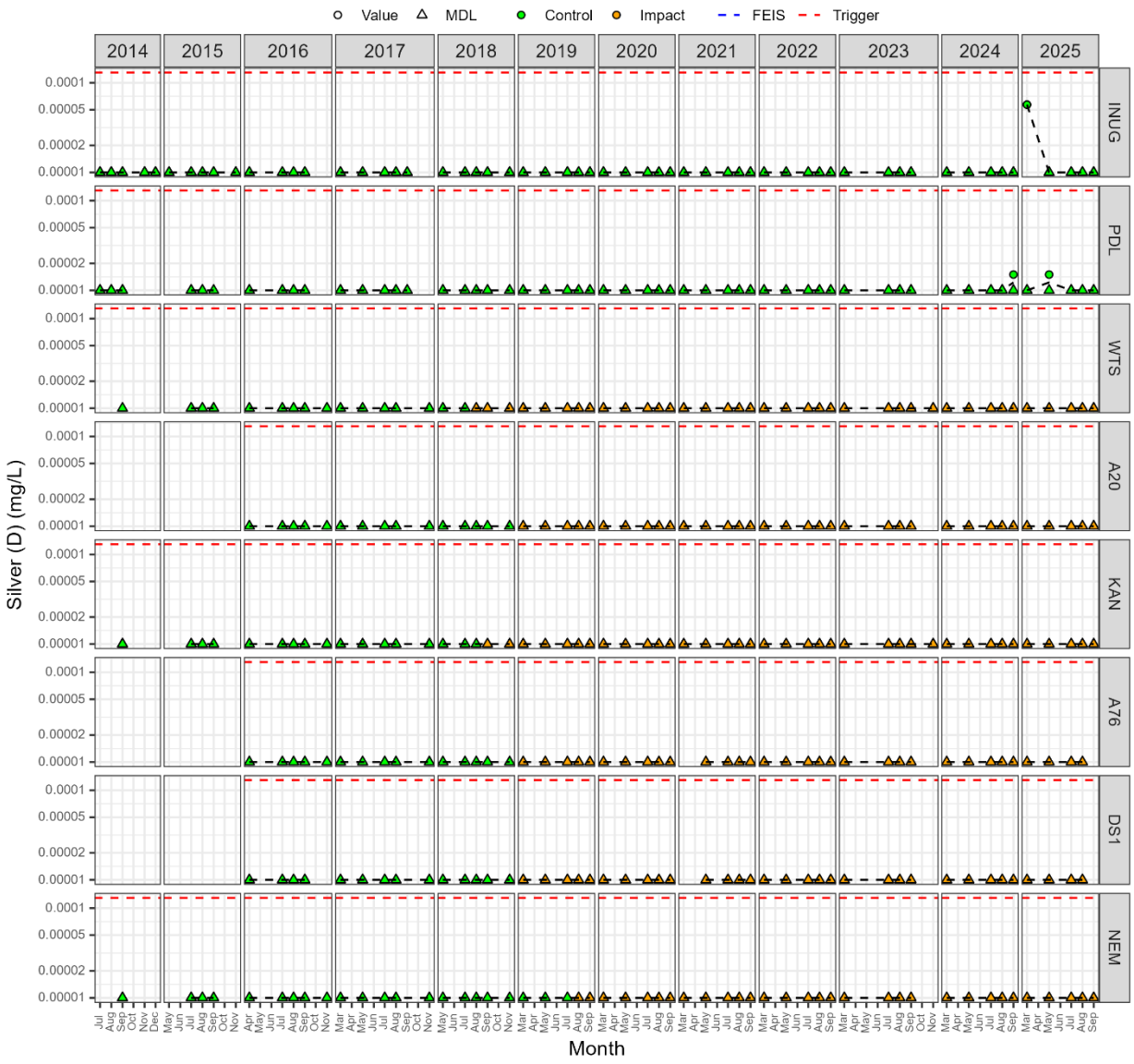


Figure C2-71. Dissolved strontium (mg/L).

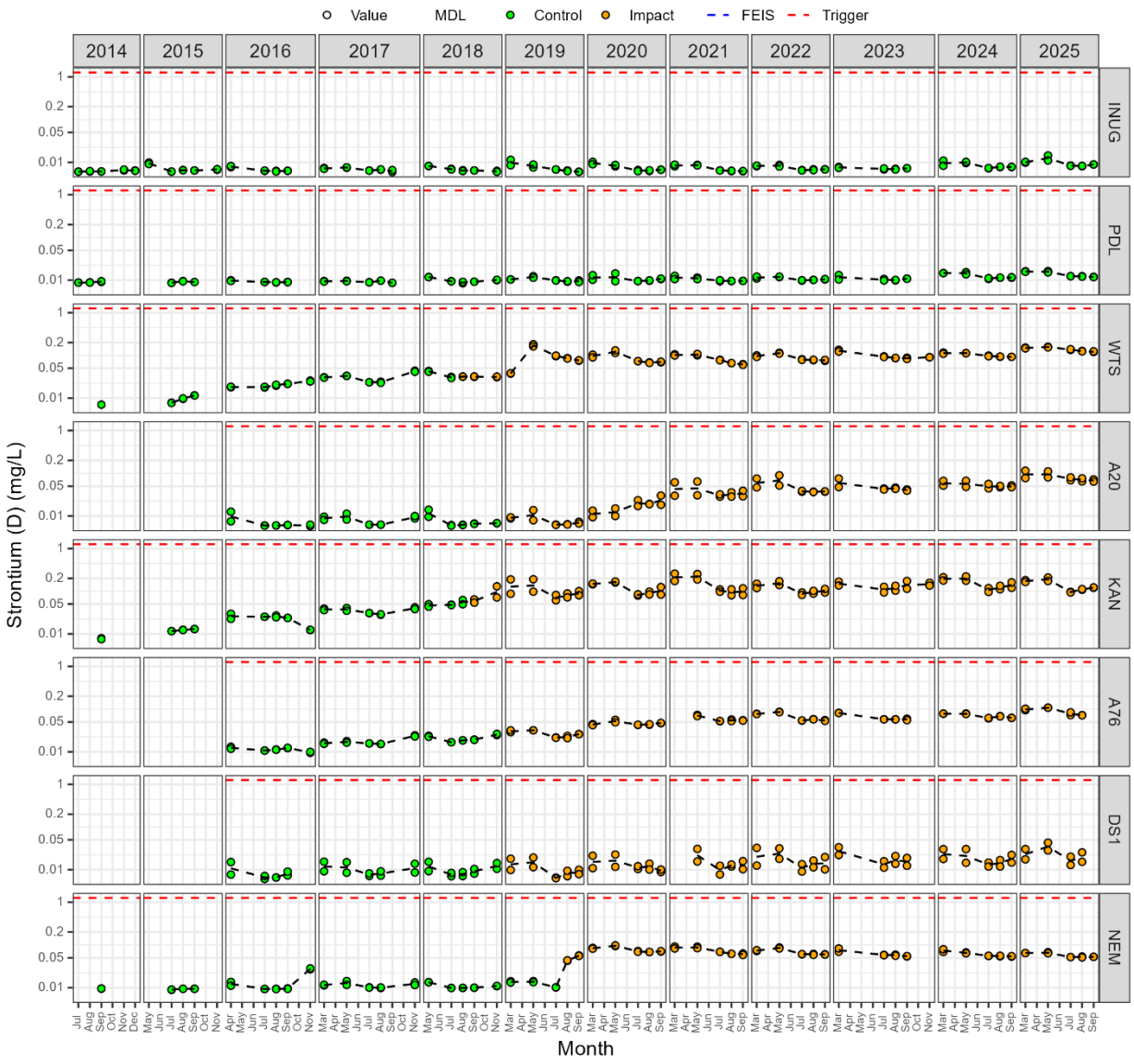


Figure C2-72. Dissolved thallium (mg/L).

Figure C2-73. Dissolved tin (mg/L).

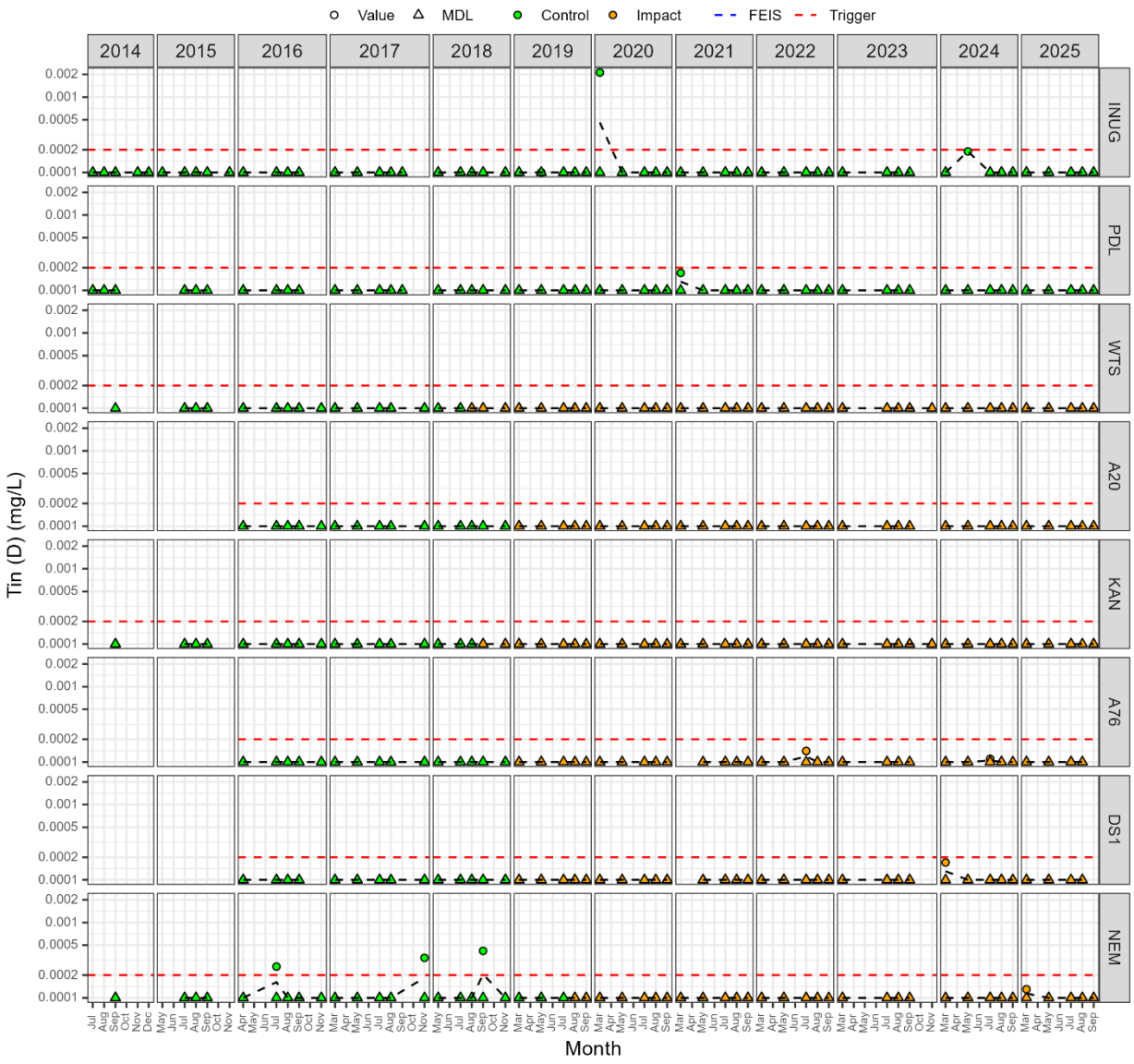


Figure C2-74. Dissolved titanium (mg/L).

Figure C2-75. Dissolved uranium (mg/L).

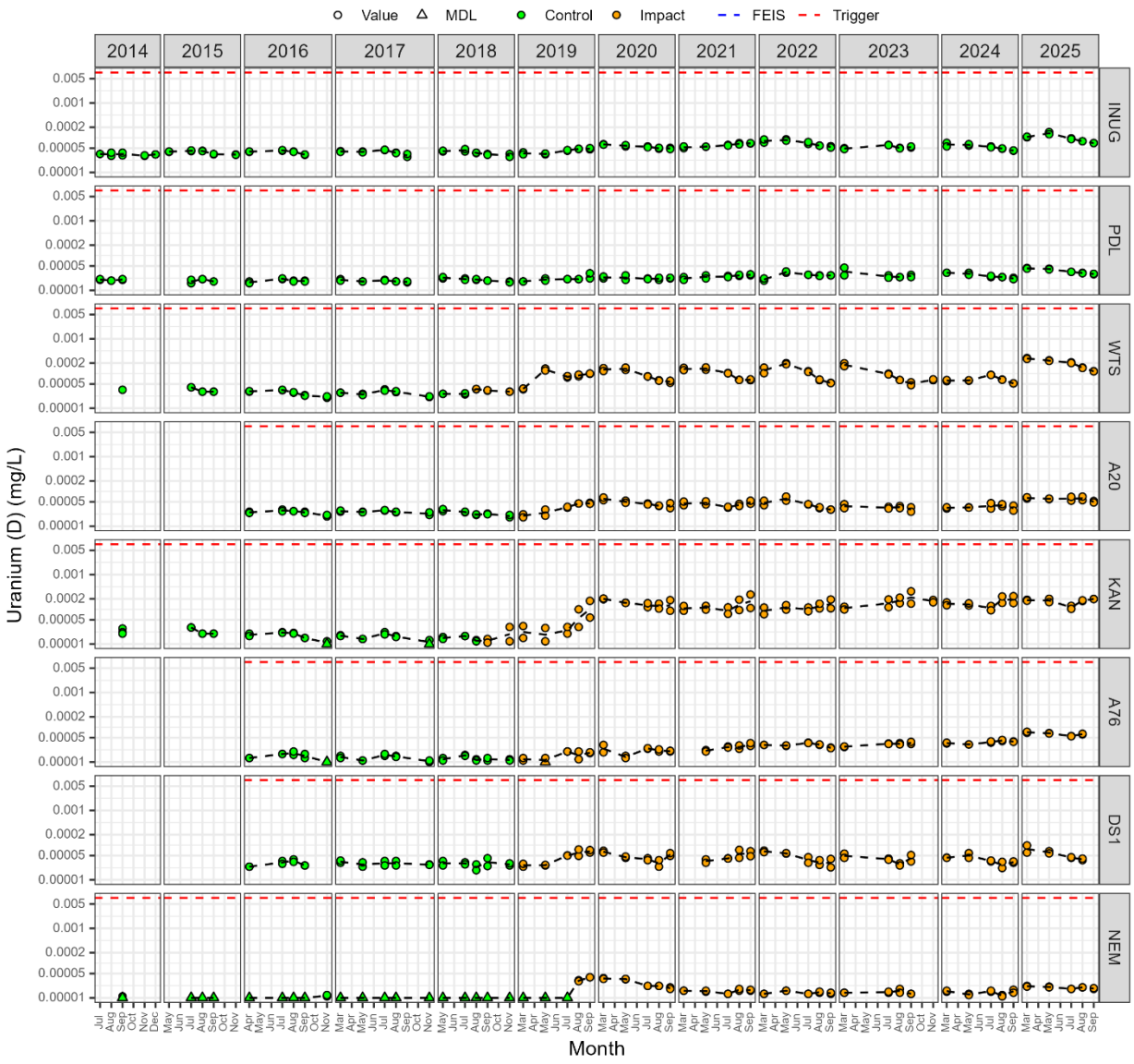


Figure C2-76. Dissolved vanadium (mg/L).

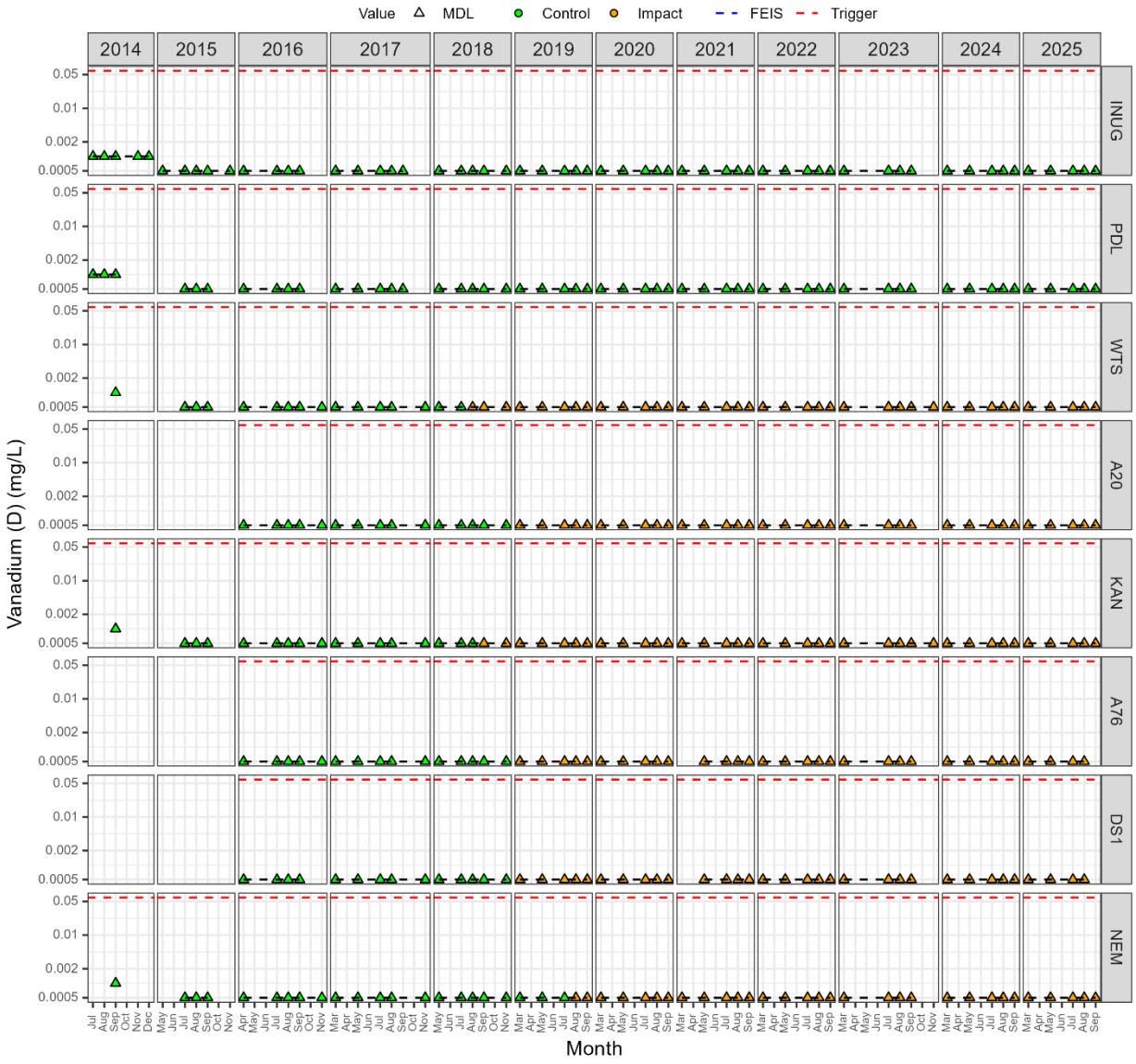
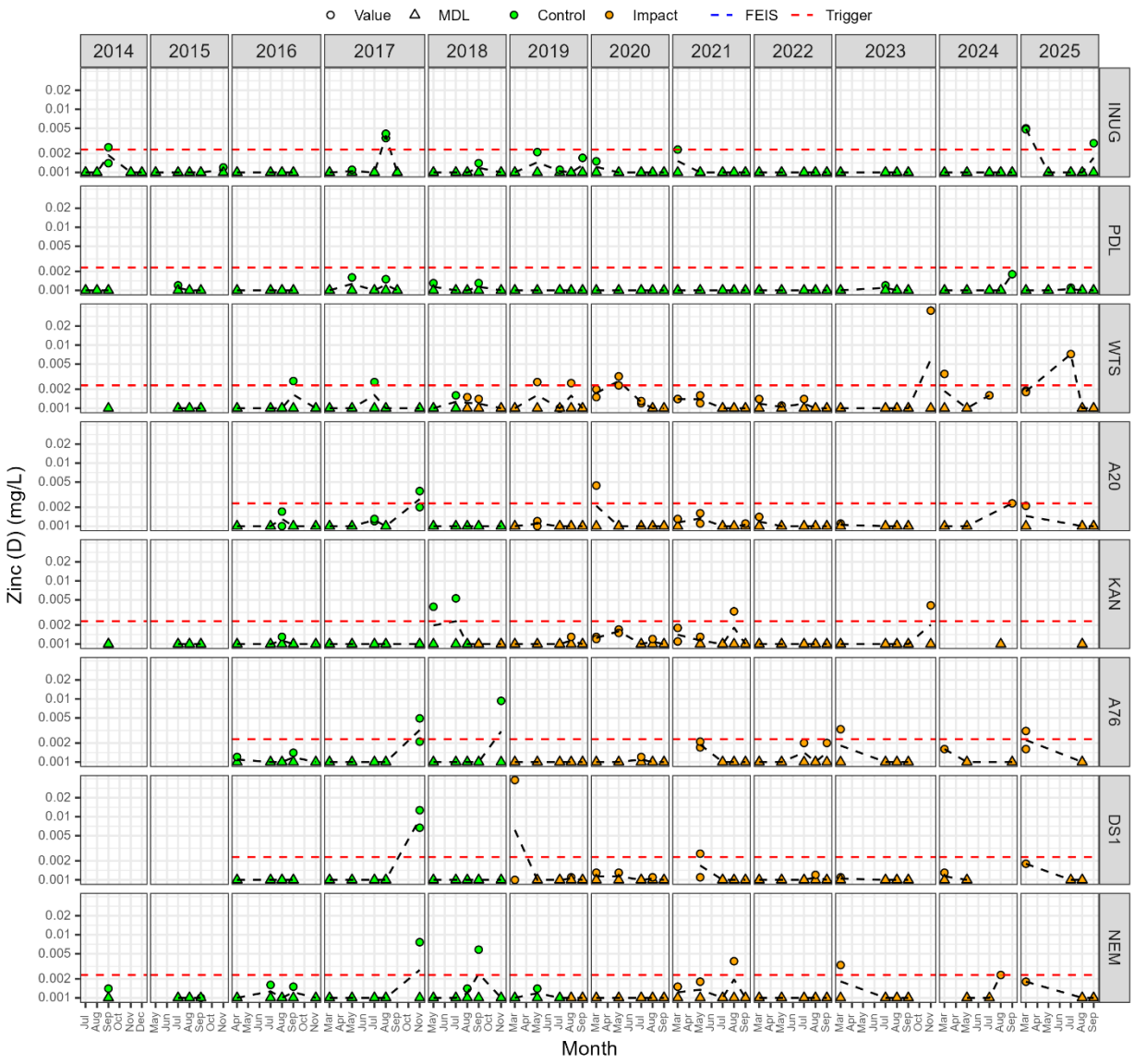


Figure C2-77. Dissolved zinc (mg/L).



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Water Chemistry – Baker Lake

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Table C3–1. Water quality results from Baker Lake, 2025.

Lake & Area	Aquatic Life Guideline[1]	Baker Lake Screening Values[2]		Baker Lake - Akilahaarjuk Point (BAP)						Baker Lake - Barge Dock (BBD)						Baker Lake - Proposed Jetty (BPJ)					
Month				July	July	August	August	September	September	July	July	August	August	September	September	July	July	August	August	September	September
Area-Replicate ID				BAP-97	BAP-98	BAP-99	BAP-100	BAP-101	BAP-102	BBD-97	BBD-98	BBD-99	BBD-100	BBD-101	BBD-102	BPJ-97	BPJ-98	BPJ-99	BPJ-100	BPJ-101	BPJ-102
Date		Triggers	Thresholds	12-Jul-2025	12-Jul-2025	14-Aug-2025	14-Aug-2025	06-Sep-2025	06-Sep-2025	12-Jul-2025	12-Jul-2025	14-Aug-2025	14-Aug-2025	06-Sep-2025	06-Sep-2025	12-Jul-2025	12-Jul-2025	14-Aug-2025	14-Aug-2025	06-Sep-2025	06-Sep-2025
Time				13:00	12:45	13:27	12:40	10:30	10:50	14:00	14:20	15:32	16:04	12:30	12:10	13:35	13:45	14:51	14:17	11:22	11:50
ALS Sample ID				VA25B7591-012	VA25B7586-001	VA25C1553-005	VA25C1553-006	VA25C3661-003 VA25C5633-022	VA25C3661-004 VA25C5633-023	VA25B7591-008	VA25B7591-009	VA25C1553-001	VA25C1553-002	VA25C3661-007 VA25C5633-026	VA25C3661-008 VA25C5633-027	VA25B7591-010	VA25B7591-011	VA25C1553-003	VA25C1553-004	VA25C3661-005 VA25C5633-024	VA25C3661-006 VA25C5633-025
Field Measurements (Surface 3m)																					
Dissolved Oxygen (mg/L)				14.2	14.1	11.6	11.6	12.6	12.6	13.0	13.0	11.5	11.3	12.3	12.3	13.2	13.1	11.4	11.4	12.4	12.2
Specific Conductivity (µS/cm)				108	106	37.8	55	140	139	27.9	27.8	30.9	30.0	118	128	30.4	27.7	29.2	29.7	126	116
pH	6.5 - 9.0	6.50 - 8.32	6.5 - 9.0	6.6	6.8	6.8	6.6	6.8	6.7	6.6	6.6	6.8	6.7	6.5	6.6	6.6	6.6	6.7	6.7	6.6	6.6
Temperature (°C)				4.1	4.1	10.6	10.2	6.7	6.8	7.3	7.4	10.7	10.7	7.5	7.3	6.7	7.0	10.6	10.5	7.4	7.7
Physical Tests (mg/L)																					
Conductivity (µS/cm)		642		109	105	37.1	50	157	155	28.2	28.3	30.1	28.9	131	143	28.4	28.1	28.6	29.2	140	129
Alkalinity - Bicarbonate				10.8	10.6	10.4	10.4	9.7	10.4	10	9.9	11.2	10.4	9.3	10.1	10.3	10.6	10.2	10.3	9.9	10.5
Alkalinity - Carbonate		2.0		*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Alkalinity - Hydroxide		10.6		*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Alkalinity - Total (as $CaCO_3$)		10.6		**10.8**	10.6	10.4	10.4	9.7	10.4	10	9.9	**11.2**	10.4	9.3	10.1	10.3	10.6	10.2	10.3	9.9	10.5
Hardness (as CaCO3), dissolved		65		20.5	19	13.4	14.8	24.4	23.6	12.6	12.5	12.8	12.4	21.8	23.2	12.6	12	12.5	12.3	22.9	22
Hardness (as CaCO3), from total Ca/Mg				19.5	18.6	12.9	14	24.6	24.3	12.3	12.2	12.4	12	22.4	22.5	12.4	12.2	11.9	12.1	23.2	22.4
Total Dissolved Solids (TDS)		245		68	65	31	36.2	104	102	23.2	24.1	27.8	27.2	95	100	26.8	24.2	25.8	26.8	98	90
Total Suspended Solids (TSS)		3.0	5.0	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	1.0	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Turbidity (NTU)				0.71	0.53	0.42	0.37	0.28	0.26	0.88	0.57	0.52	0.40	0.31	0.31	0.82	0.82	0.32	0.33	0.25	0.29
pH (Laboratory)	6.5 - 9.0	6.75-8.05	6.5 - 9.0	7.2	7.2	7.2	7.2	7.3	7.3	7.2	7.2	7.3	7.2	7.3	7.3	7.2	7.2	7.2	7.2	7.3	7.3
Anions and Nutrients (mg/L)																					
Ammonia (as N)[3]	***equation***	0.066	0.13	*<0.0050*	*<0.0050*	0.0059	*<0.0050*	0.022	0.042	0.020	0.014	0.0096	0.0056	0.017	0.041	0.012	0.0084	*<0.0050*	0.0068	0.026	0.035
Bromide				0.081	0.076	*<0.050*	*<0.050*	0.13	0.12	*<0.050*	*<0.050*	*<0.050*	*<0.050*	0.099	0.11	*<0.050*	*<0.050*	*<0.050*	*<0.050*	0.11	0.096
Chloride	120	169	120	23.4	22.6	3.8	7.4	36.7	36.1	1.5	1.5	2.0	1.7	29.8	32.8	1.5	1.4	1.7	1.8	32.2	29.1
Fluoride	0.12	0.088	0.12	0.064	0.074	0.058	0.061	0.073	0.073	0.062	0.062	0.058	0.058	0.069	0.066	0.063	0.063	0.058	0.061	0.067	0.068
Total Kjeldahl Nitrogen		0.22		0.18	0.18	0.19	0.19	0.19	0.19	0.21	0.21	0.21	0.19	0.19	**0.23**	0.21	0.22	0.19	0.19	0.20	0.20
Nitrate (as N)	3.0	1.5	3.0	0.052	0.050	0.031	0.031	0.049	0.048	0.043	0.043	0.032	0.033	0.048	0.050	0.046	0.044	0.035	0.034	0.048	0.047
Nitrite (as N)	0.060	0.031	0.060	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Ortho Phosphate (as P)		0.0020		*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Phosphorus (P) - Total	0.010	0.0075	0.010	0.0040	0.0045	0.0050	0.0052	0.0037	0.0035	0.0054	0.0059	0.0048	0.0044	0.0042	0.0044	0.0056	0.0058	0.0045	0.0045	0.0048	0.0040
Phosphorus (P) - Total Diss.				0.0033	0.0041	0.0022	*<0.0020*	*<0.0020*	*<0.0020*	0.0027	0.0039	*<0.0020*	*<0.0020*	*<0.0020*	*<0.0020*	0.0034	0.0026	*<0.0020*	*<0.0020*	*<0.0020*	0.0029
Reactive Silica (as SiO_2)		1.0		0.68	0.67	0.57	0.57	0.56	0.54	0.69	0.70	0.57	0.54	0.56	0.57	0.69	0.71	0.56	0.58	0.56	0.54
Sulphate (SO_4)		66	128	3.8	3.9	0.86	1.4	6.1	6.1	0.62	0.62	0.68	0.58	5.0	5.5	0.61	0.61	0.60	0.59	5.4	4.9
Organic / Inorganic Carbon (mg/L)																					
Dissolved Organic Carbon		3.9		3.9	**3.9**	**4.3**	**4.2**	**4.4**	**4.2**	**4.0**	**4.1**	**4.2**	**4.3**	**4.3**	**4.2**	**4.1**	**4.0**	**4.3**	**4.3**	**4.2**	**4.2**
Total Organic Carbon		4.0		3.9	3.9	**4.5**	**4.1**	**4.3**	**4.4**	4.0	**4.1**	**4.3**	**4.4**	**4.4**	**4.2**	**4.3**	**4.3**	**4.4**	**4.4**	**4.2**	**4.5**
Total Metals (mg/L)																					
Aluminum[3]	***equation***	0.056	0.10	0.024	0.026	0.013	0.014	0.016	0.017	0.030	0.026	0.014	0.013	0.015	0.015	0.027	0.027	0.012	0.012	0.018	0.015
Antimony		0.0046	0.0090	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Arsenic	0.0050	0.0026	0.0050	0.00014	0.00013	0.00014	0.00014	0.00015	0.00015	0.00014	0.00012	0.00013	0.00013	0.00014	0.00013	0.00013	0.00013	0.00014	0.00013	0.00015	0.00014
Barium		0.51	1.0	0.021	0.020	0.022	0.022	0.020	0.020	0.022	0.021	0.022	0.022	0.020	0.020	0.022	0.021	0.022	0.021	0.020	0.020
Beryllium		0.00012	0.00013	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*
Bismuth				*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Boron	1.5	0.75	1.5	*<0.010*	*<0.010*	*<0.010*	*<0.010*	0.012	0.011	*<0.010*	*<0.010*	*<0.010*	*<0.010*	0.010	0.010	*<0.010*	*<0.010*	*<0.010*	*<0.010*	0.010	*<0.010*
Cadmium[3]	***equation***	0.00002	0.00004	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	0.00001	0.00001	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	0.00001	0.00001	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	0.00001	*<0.0000050*
Calcium		6.2		3.4	3.3	2.9	3.0	3.7	3.6	2.8	2.8	2.9	2.8	3.5	3.5	2.8	2.8	2.7	2.8	3.5	3.4
Cesium				*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Chromium[4]	0.0010	0.0025	0.0050	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	0.00028	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Cobalt				*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Copper[2]	***equation***	0.0012	0.0020	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Iron	0.30	0.16	0.30	0.023	0.033	0.028	0.026	0.017	0.018	0.035	0.031	0.026	0.024	0.021	0.020	0.035	0.037	0.024	0.025	0.016	0.016
Lead[3]	***equation***	0.00053	0.0010	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Lithium		0.0030	0.096	0.0011	0.0011	*<0.0010*	*<0.0010*	0.0013	0.0013	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	0.0012	0.0012	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	0.0012	0.0012
Magnesium		12.44		2.7	2.6	1.4	1.6	3.7	3.8	1.3	1.3	1.3	1.2	3.3	3.4	1.3	1.3	1.2	1.2	3.5	3.4
Manganese[3]		0.34	***equation***	0.0073	0.0084	0.0049	0.0050	0.0042	0.0038	0.0054	0.0052	0.0042	0.0040	0.0054	0.0053	0.0063	0.0070	0.0041	0.0043	0.0043	0.0041
Mercury	0.00003	0.00002	0.00003	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Molybdenum	0.073	0.037	0.073	0.00007	0.00007	0.00006	0.00006	0.00008	0.00008	0.00006	0.00006	0.00006	0.00005	0.00008	0.00008	0.00006	0.00006	0.00006	*<0.000050*	0.00008	0.00007
Nickel[3]	***equation***	0.013	0.025	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	0.00063	0.00061	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	0.00053	0.00056	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	0.00058	0.00052
Phosphorus				*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*
Potassium		3.9		0.92	0.81	0.43	0.50	1.1	1.1	0.45	0.45	0.39	0.38	0.95	1.00	0.46	0.44	0.38	0.39	1.0	0.95
Rubidium				0.00098	0.00087	0.00081	0.00079	0.0011	0.0011	0.00087	0.00090	0.00081	0.00073	0.0010	0.0010	0.00089	0.00085	0.00076	0.00073	0.0011	0.0010
Selenium	0.0010	0.00053	0.0010	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Silicon		0.28		**0.37**	**0.36**	**0.31**	**0.30**	0.28	0.28	**0.40**	**0.40**	**0.29**	**0.30**	0.28	**0.29**	**0.44**	**0.40**	**0.29**	**0.30**	**0.31**	0.28
Silver	0.00025	0.00013	0.00025	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Sodium		89		13.1	12.3	2.1	4.1	18.8	19.1	0.77	0.76	0.92	0.76	15.7	16.9	0.78	0.76	0.78	0.85	17.2	15.2
Strontium		1.3	2.5	0.029	0.026	0.019	0.020	0.034	0.034	0.020	0.020	0.018	0.017	0.031	0.031	0.019	0.019	0.017	0.018	0.032	0.031
Sulfur				1.5	1.2	*<0.50*	*<0.50*	1.9	1.8	*<0.50*	*<0.50*	*<0.50*	*<0.50*	1.6	1.7	*<0.50*	*<0.50*	*<0.50*	*<0.50*	1.7	1.3
Tellurium				*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*
Thallium	0.00080	0.00041	0.00080	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Thorium				*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Tin		0.00020		*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Titanium		0.00060	2.0	*<0.00030*	0.00038	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	0.00037	0.00032	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	0.00042	0.00045	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*
Tungsten				*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Uranium	0.015	0.0075	0.015	0.00006	0.00006	0.00006	0.00007	0.00007	0.00007	0.00006	0.00006	0.00006	0.00006	0.00007	0.00007	0.00006	0.00006	0.00006	0.00006	0.00007	0.00007
Vanadium		0.060	0.12	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Zinc[3]	0.030	***see text***	***equation***	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*
Zirconium				*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*
Dissolved Metals (mg/L)																					
Aluminum[3]		0.027	0.050	0.0099	0.0093	0.0086	0.0091	0.010	0.011	0.014	0.012	0.0092	0.0088	0.011	0.011	0.0082	0.0085	0.0093	0.0094	0.0094	0.0094
Antimony		0.0046	0.0090	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Arsenic		0.0026	0.0050	0.00013	0.00013	0.00013	0.00012	0.00014	0.00010	0.00012	0.00011	0.00011	0.00011	0.00012	0.00015	0.00012	0.00012	0.00012	0.00011	0.00012	0.00014
Barium		0.51	1.0	0.022	0.020	0.023	0.022	0.021	0.020	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.021	0.022	0.022	0.021	0.022
Beryllium		0.00012	0.00013	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*	*<0.000100*
Bismuth				*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Boron		0.75	1.5	*<0.010*	*<0.010*	*<0.010*	*<0.010*	0.010	0.010	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*
Cadmium		0.00002	0.00004	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Calcium		6.2		3.3	3.3	2.9	3.0	3.5	3.5	2.8	2.8	2.9	2.8	3.4	3.4	2.9	2.7	2.8	2.7	3.5	3.4
Cesium				*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Chromium		0.00026	0.0050	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Cobalt				*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Copper		0.0011	0.0020	0.00034	0.00031	0.00031	0.00034	0.00040	0.00043	0.00033	0.00030	0.00032	0.00029	0.00042	0.00043	0.00029	0.00026	0.00028	0.00034	0.00040	0.00041
Iron		0.16	0.30	0.012	0.012	0.013	0.012	*<0.010*	*<0.010*	0.017	0.018	0.013	0.013	*<0.010*	0.011	0.016	0.016	0.013	0.013	*<0.010*	*<0.010*
Lead		0.00053	0.0010	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Lithium		0.0022	0.096	0.0011	0.0011	*<0.0010*	*<0.0010*	0.0011	0.0011	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	0.0010	0.0011	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	0.0011	0.0011
Magnesium		12.44		3.0	2.6	1.5	1.8	3.8	3.6	1.4	1.3	1.4	1.3	3.3	3.6	1.3	1.3	1.3	1.3	3.5	3.3
Manganese[3]		0.34	***equation***	0.0066	0.0055	0.00054	0.00068	0.00042	0.00048	0.0032	0.0032	0.00074	0.00069	0.0017	0.0017	0.0038	0.0044	0.00063	0.00064	0.00044	0.00046
Mercury		0.00002	0.00003	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*	*<0.0000050*
Molybdenum		0.037	0.073	0.00007	0.00007	0.00005	0.00006	0.00007	0.00007	*<0.000050*	0.00005	*<0.000050*	0.00005	0.00007	0.00006	~~0.00012~~	0.00006	0.00006	0.00006	0.00010	0.00007
Nickel		0.013	0.025	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	0.00058	0.00058	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	0.00053	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	0.00075	0.00050
Phosphorus				*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*
Potassium		3.9		0.98	0.89	0.47	0.53	1.2	1.2	0.47	0.45	0.41	0.41	1.0	1.1	0.46	0.44	0.41	0.41	1.1	1.00
Rubidium				0.00094	0.00096	0.00084	0.00077	0.0010	0.0010	0.00079	0.00084	0.00076	0.00080	0.00095	0.0011	0.00081	0.00078	0.00080	0.00076	0.0011	0.00099
Selenium		0.00053	0.0010	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Silicon		0.25		**0.34**	**0.33**	**0.26**	**0.27**	0.23	0.23	**0.35**	**0.34**	**0.27**	**0.27**	0.24	**0.25**	**0.33**	**0.32**	**0.27**	**0.26**	0.24	0.22
Silver		0.00013	0.00025	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Sodium		89		14	12.4	2.2	4.4	20.4	19.5	0.80	0.76	0.97	0.84	16.2	18.3	0.78	0.74	0.82	0.89	18	16
Strontium		1.3	2.5	0.028	0.028	0.019	0.022	0.031	0.032	0.020	0.019	0.019	0.019	0.029	0.030	0.020	0.019	0.019	0.018	0.030	0.028
Sulfur				1.3	1.2	*<0.50*	*<0.50*	1.8	1.7	*<0.50*	*<0.50*	*<0.50*	*<0.50*	1.5	1.7	*<0.50*	*<0.50*	*<0.50*	*<0.50*	1.7	1.4
Tellurium				*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*
Thallium		0.00041	0.00080	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Thorium				*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00020*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Tin		0.00020		*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Titanium		0.00060		*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*
Tungsten				*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Uranium		0.0075	0.015	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006
Vanadium		0.060	0.12	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Zinc[3]		0.0042	***equation***	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	0.0010	0.0012	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Zirconium				*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*
Plant Pigments (µg/L)																					
Chlorophyll-a				0.62	0.62	1.1	0.69	0.50	0.49	0.79	0.99	0.94	0.52	0.59	0.39	0.93	0.74	1.0	0.74	0.41	0.57

Notes:

1. CCME (Canadian Council of Ministers of the Environment) Canadian Water Quality Guidelines for the Protection of Aquatic Life, 1999, updated up to 2018.
2. Trigger and threshold values are presented in *CREMP 2015 Plan Update* (Azimuth, 2015b). A number of thresholds were derived from methods (or sources) other than CCME guidelines - see Azimuth (2015b) for details.
3. "***equation***" means that CCME guidelines (or thresholds) are calculated based on an equation which is either pH or hardness dependent. The ammonia and aluminum guidelines vary with pH; the cadmium, copper, lead, manganese, nickel and zinc guidelines vary with hardness.
4. Chromium CCME guideline is for Cr VI.

123 Bolded values exceed the trigger.

123 Bold and shaded values exceed the threshold.

Italicized numbers are below detection limits.

"-" not analyzed/not sampled

underline = results were given a cautionary flag in the QC assessment (refer to **Appendix B** for details).

~~strikethrough~~ = results flagged as unreliable in the QC assessment (refer to **Appendix B** for details).

Table C3-2. Water and phytoplankton sampling location coordinates (GPS, UTM, NAD83) from Baker Lake, 2025.

Area[1]	Area Type[2]	Area-Replicate	Water & Phytoplankton (Monthly)				
			Month	Depth (m)	Zone	Easting	Northing
BBD	NF	BBD-97	July	9.9	14W	644069	7135303
		BBD-98	July	11.8	14W	644617	7135175
		BBD-99	August	9.5	14W	644205	7135305
		BBD-100	August	14.3	14W	644837	7135108
		BBD-101	September	9.2	14W	644005	7135333
		BBD-102	September	10.1	14W	644731	7135263
BPJ	NF	BPJ-97	July	11.2	15W	357380	7133979
		BPJ-98	July	>20	15W	356533	7134293
		BPJ-99	August	>20	15W	356467	7134224
		BPJ-100	August	11.9	15W	357395	7133969
		BPJ-101	September	6.6	15W	357243	7134158
		BPJ-102	September	>20	15W	356679	7134085
BAP	Ref	BAP-97	July	>20	15W	362944	7131103
		BAP-98	July	12.9	15W	364437	7130901
		BAP-99	August	>20	15W	362986	7131000
		BAP-100	August	15.6	15W	363506	7131185
		BAP-101	September	9.4	15W	364174	7131033
		BAP-102	September	7.2	15W	362944	7131103

Notes:

1. Area IDs are as follows: BAP = Baker Lake – Akilahaarjuk Point; BBD = Baker Lake – barge dock; BPJ = Baker Lake – proposed jetty

2. Area types: NF = near-field; Ref = reference.

FIGURES

Figure C3-1. Laboratory-measured conductivity (µS/cm).

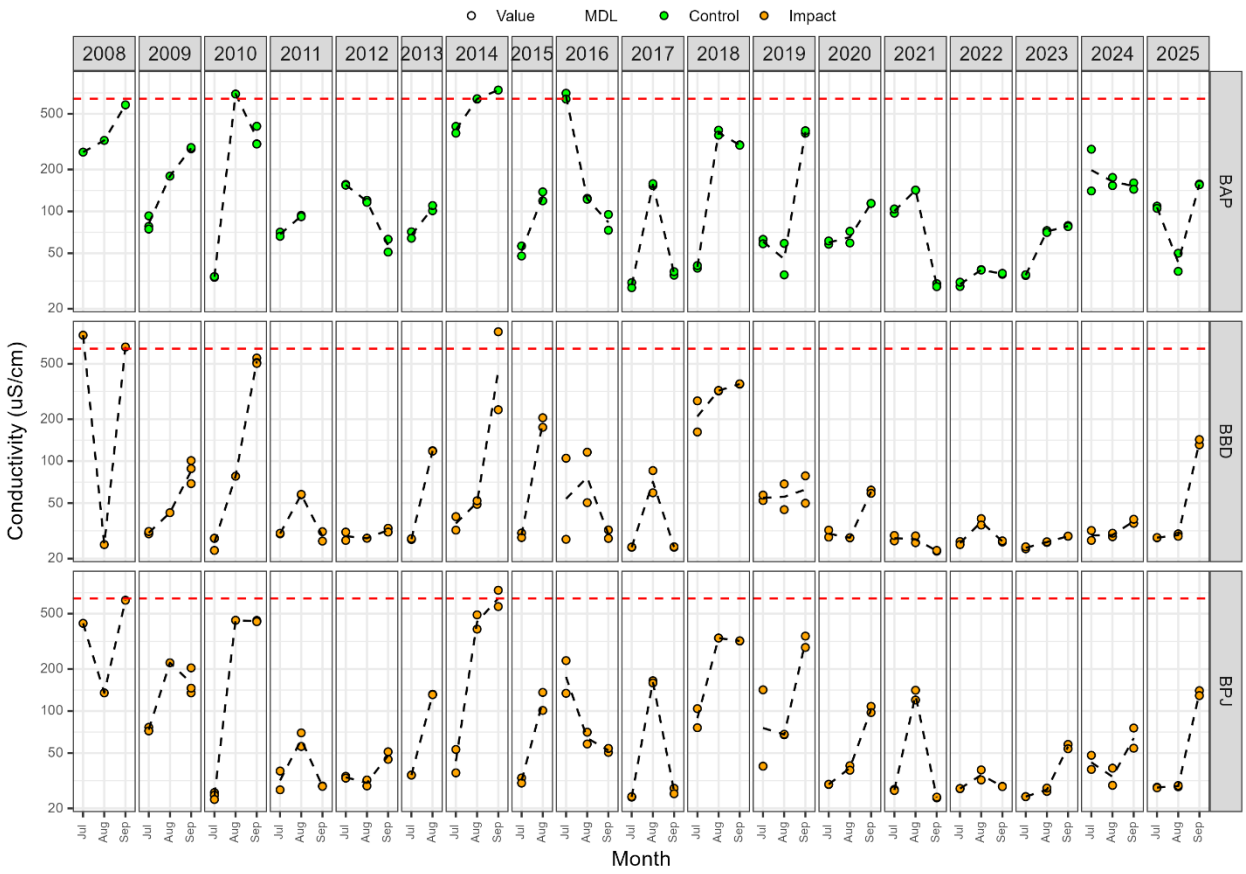


Figure C3-2. Laboratory-measured hardness (mg/L).

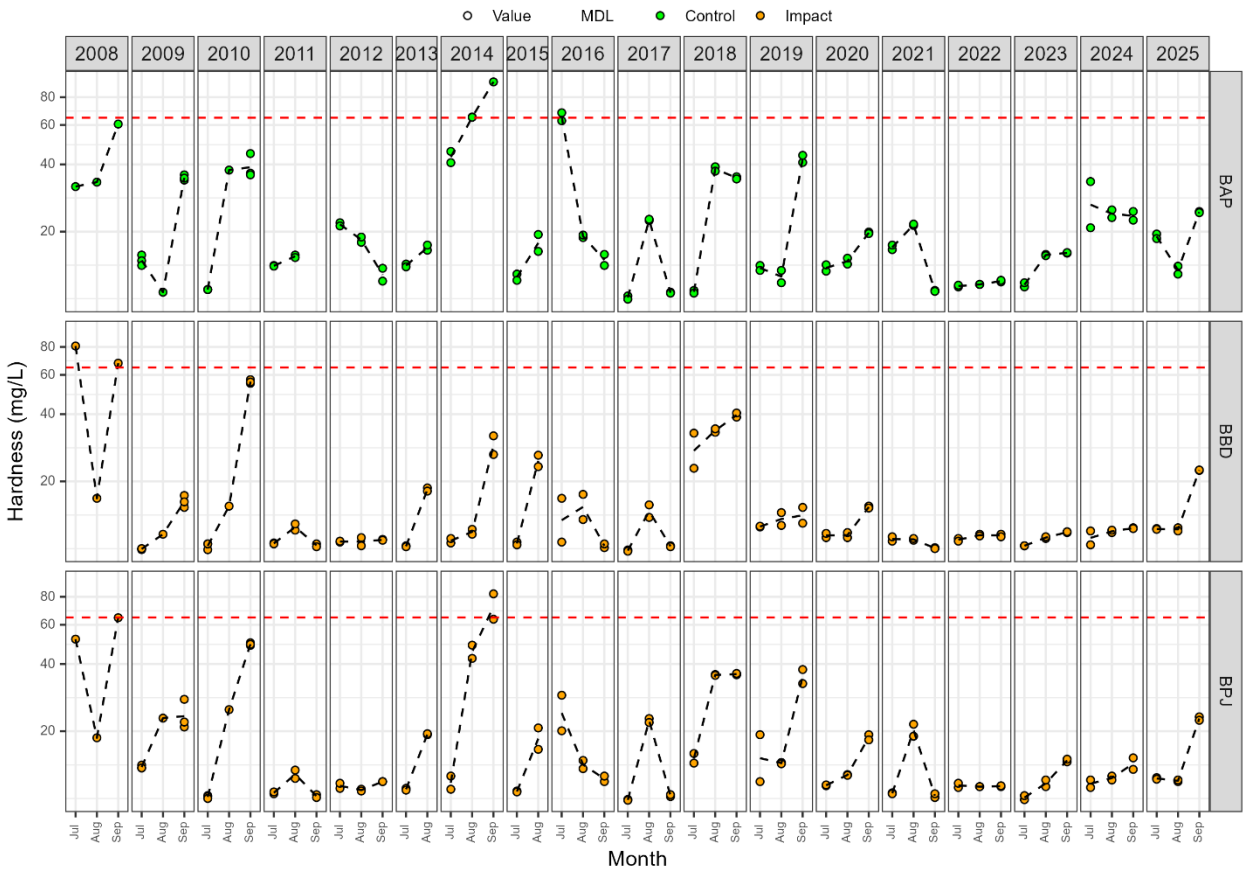


Figure C3-3. Field-measured pH.

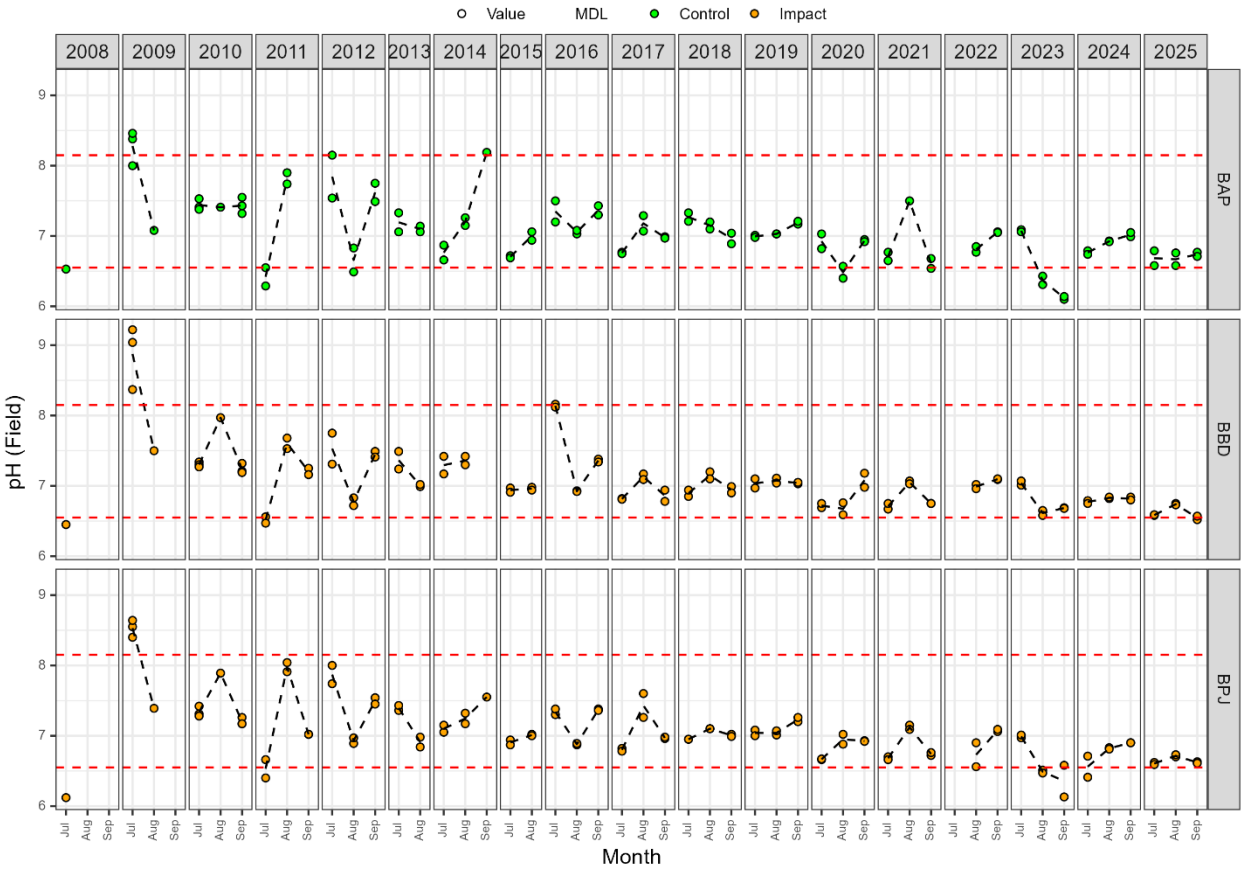


Figure C3-4. Laboratory-measured pH.

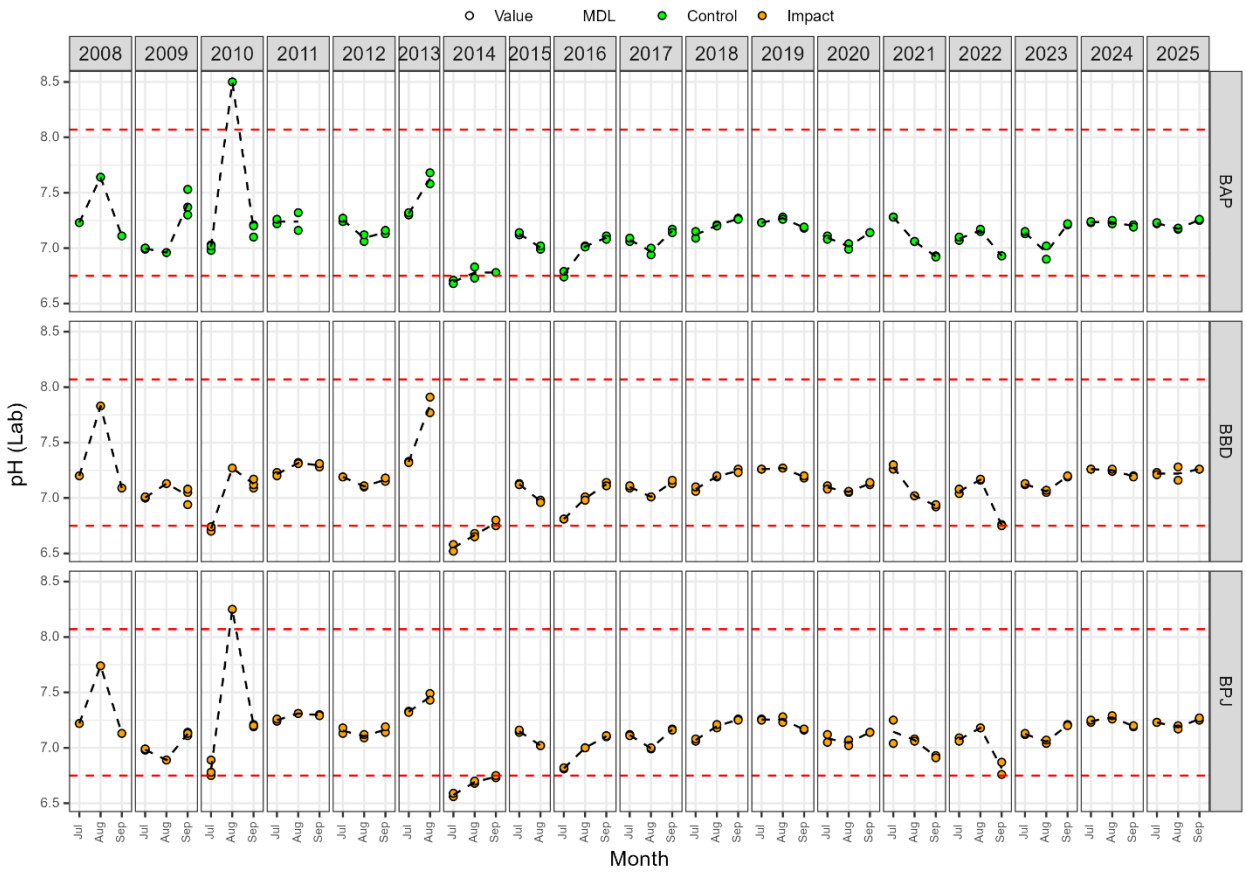


Figure C3-5. Total dissolved solids (TDS; mg/L).

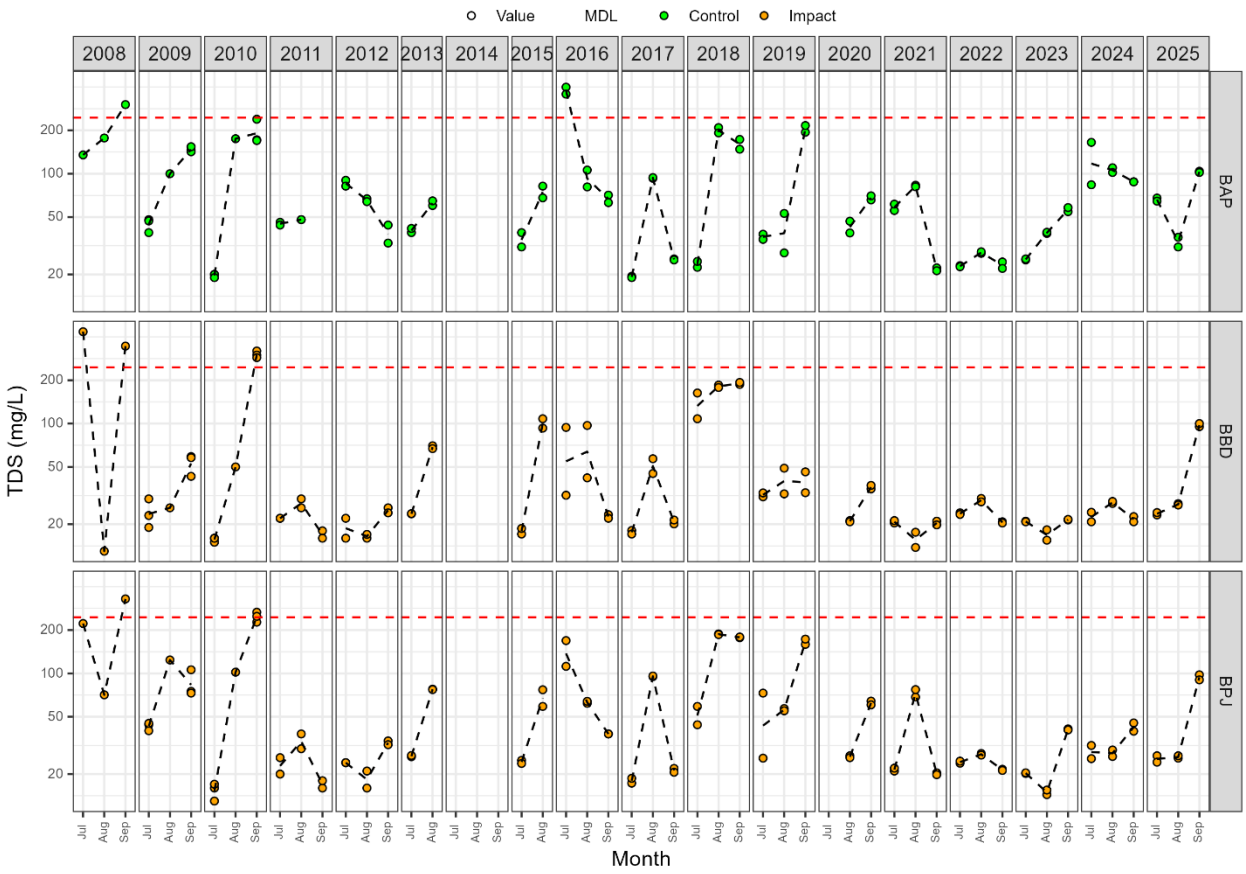


Figure C3-6. Total suspended solids (TSS; mg/L).

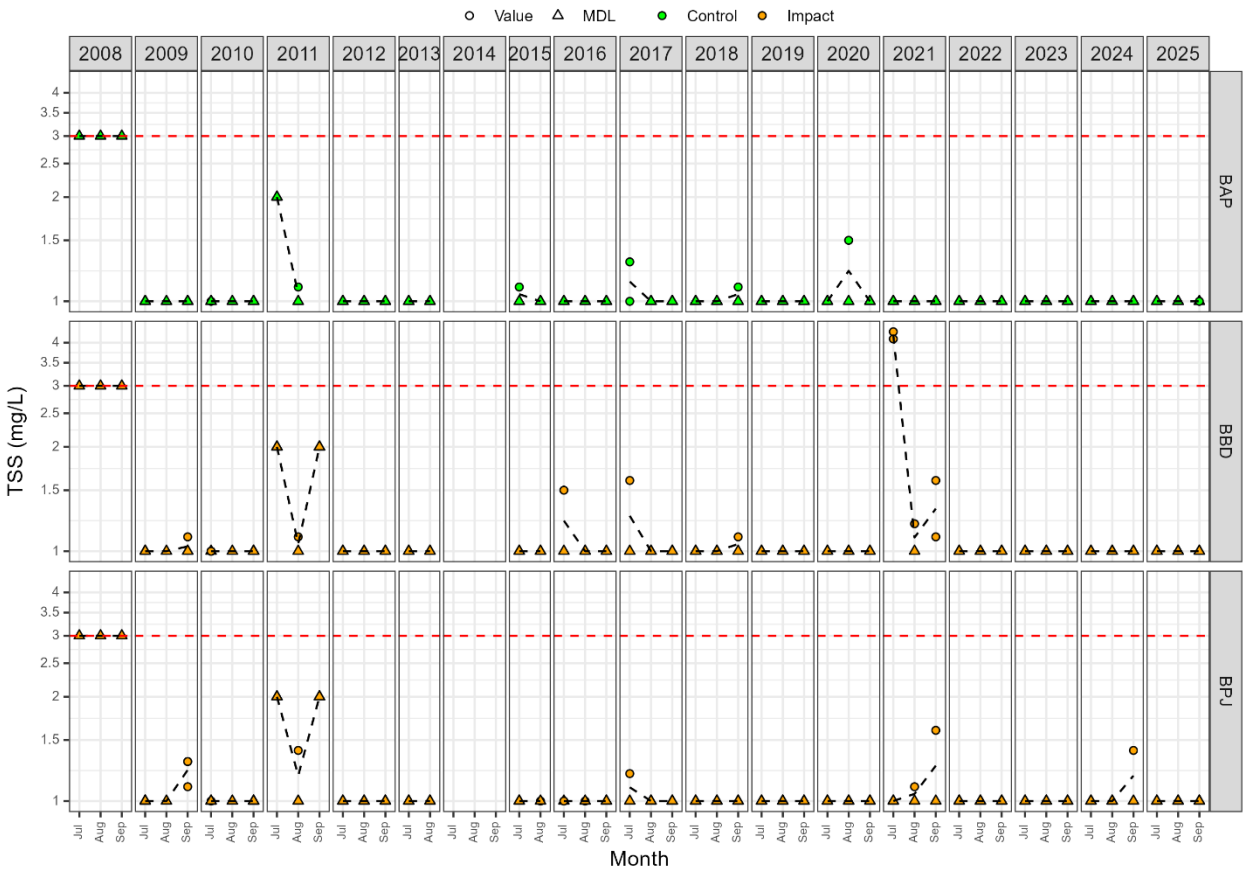


Figure C3-7. Carbonate alkalinity (mg/L).

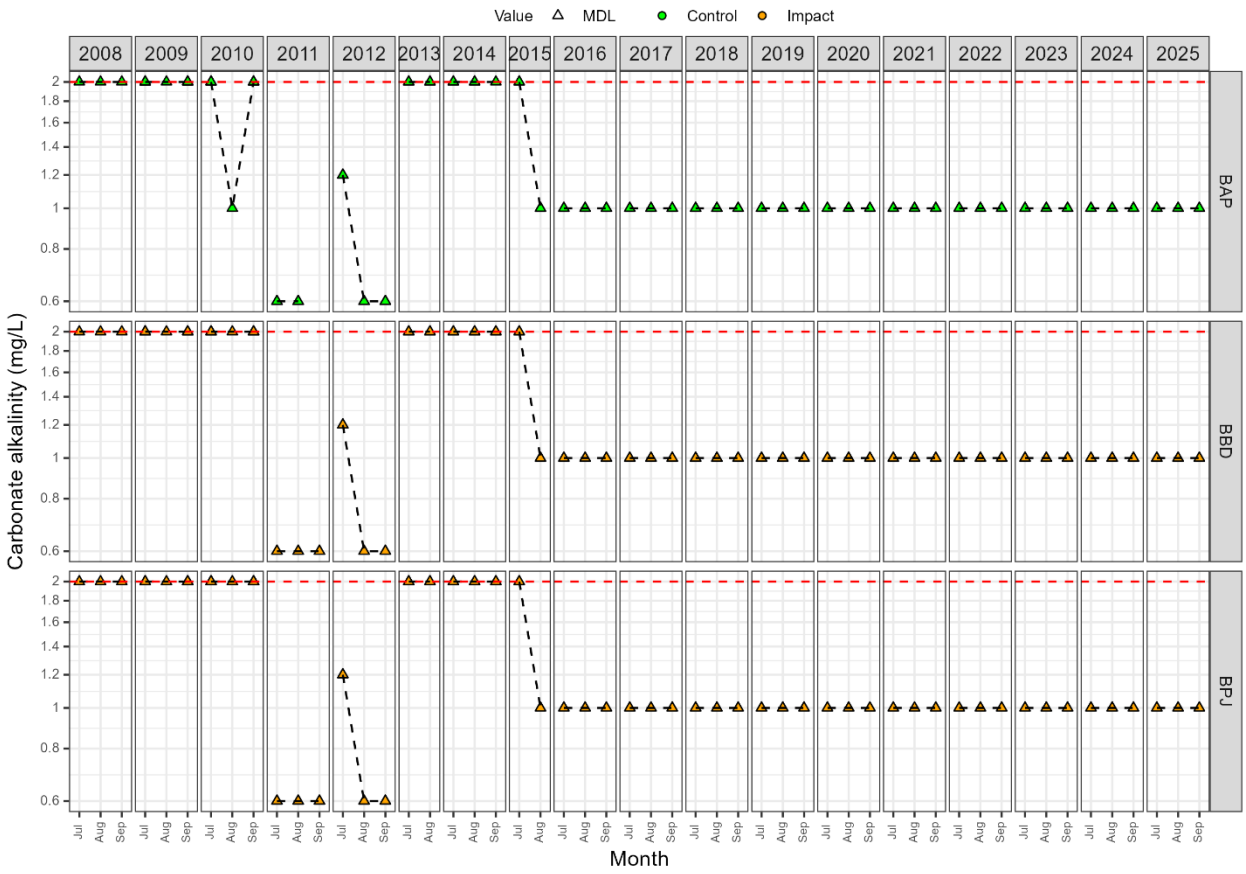


Figure C3-8. Bicarbonate alkalinity (mg/L).

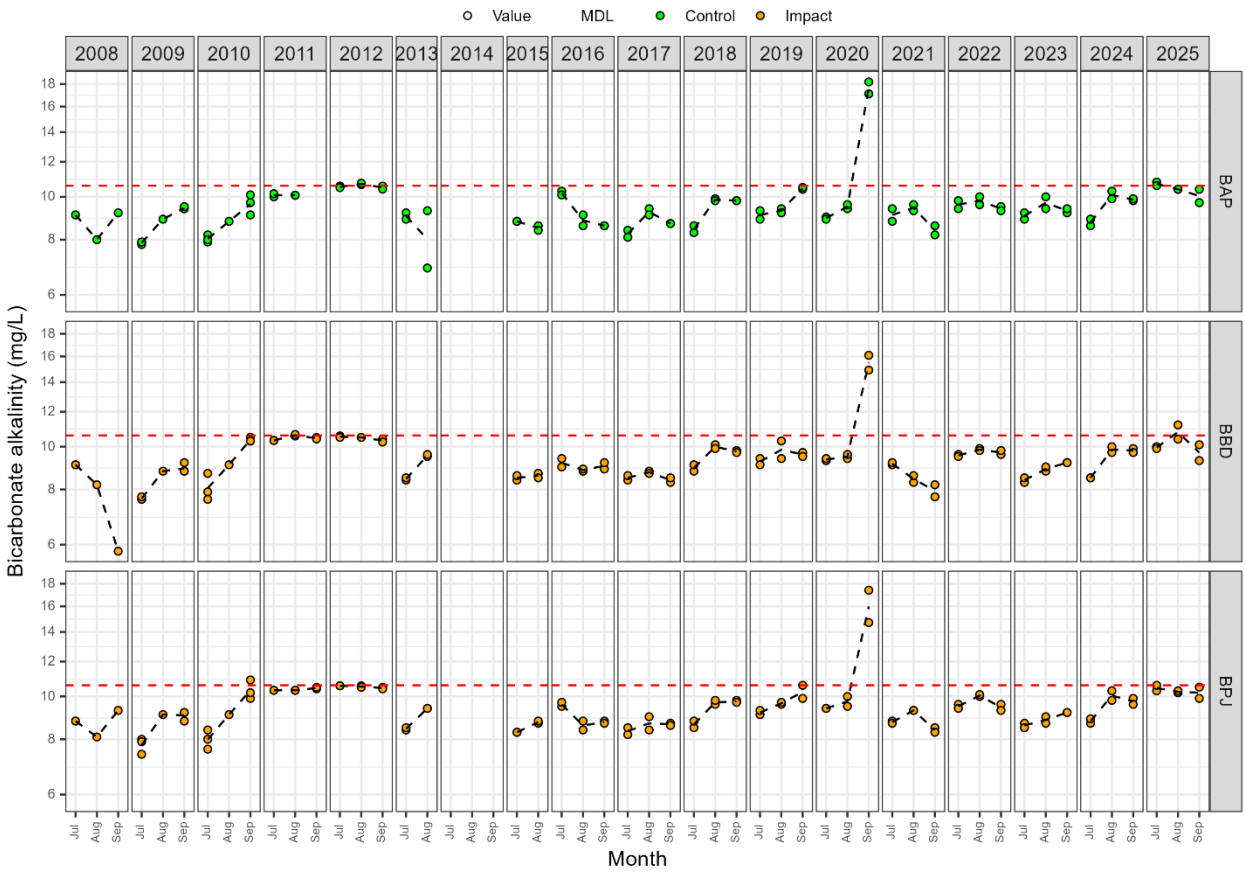


Figure C3-9. Total alkalinity (mg/L).

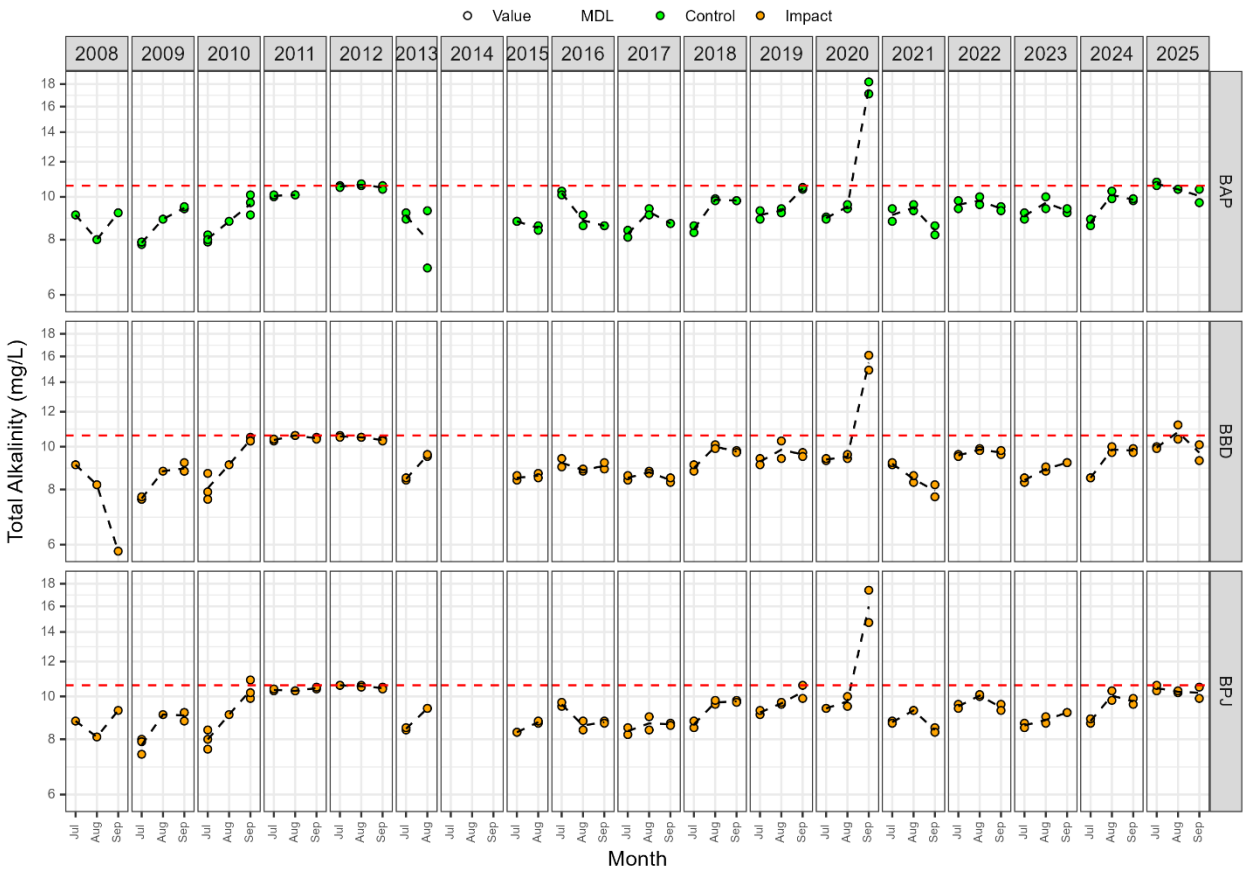


Figure C3-10. Ammonia-N (mg/L).

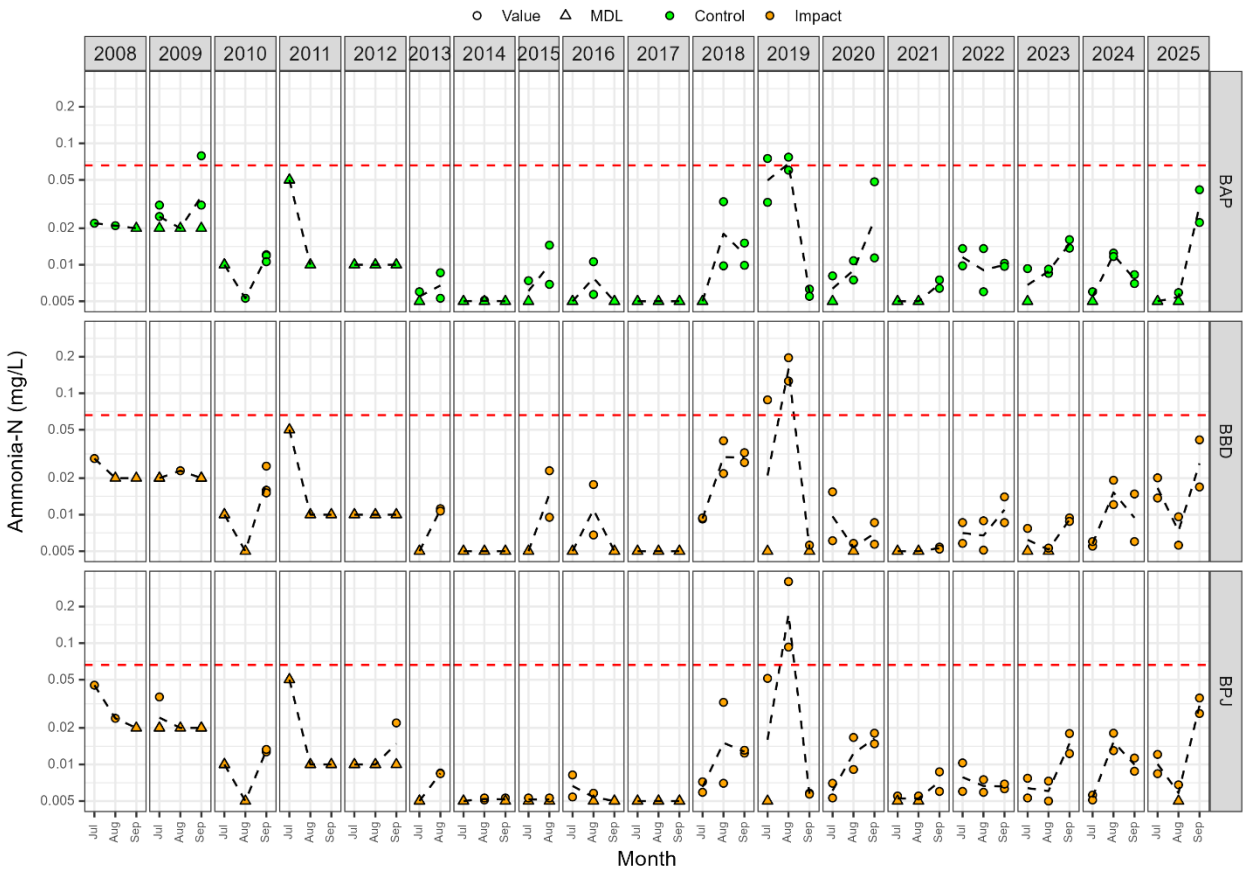


Figure C3-11. Chloride (mg/L).

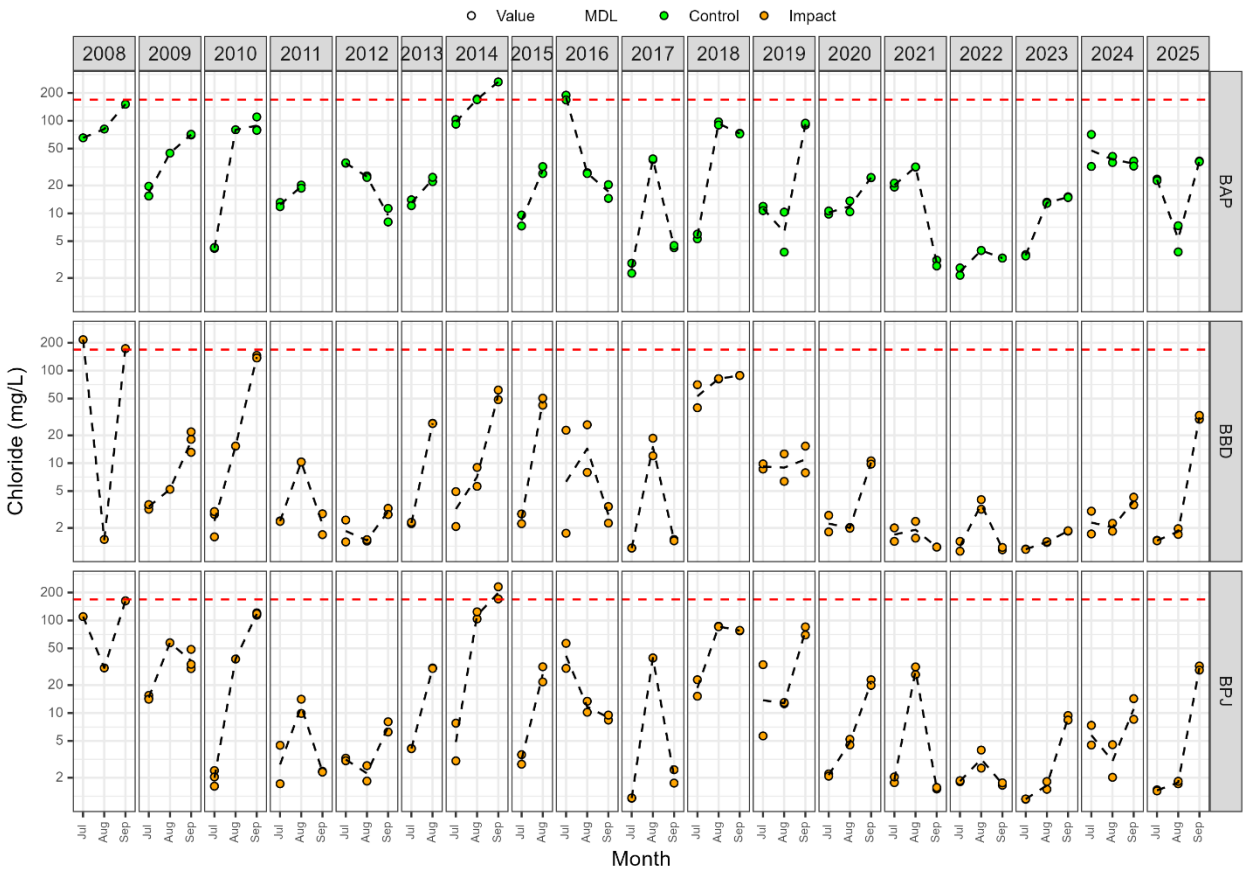


Figure C3-12. Fluoride (mg/L).

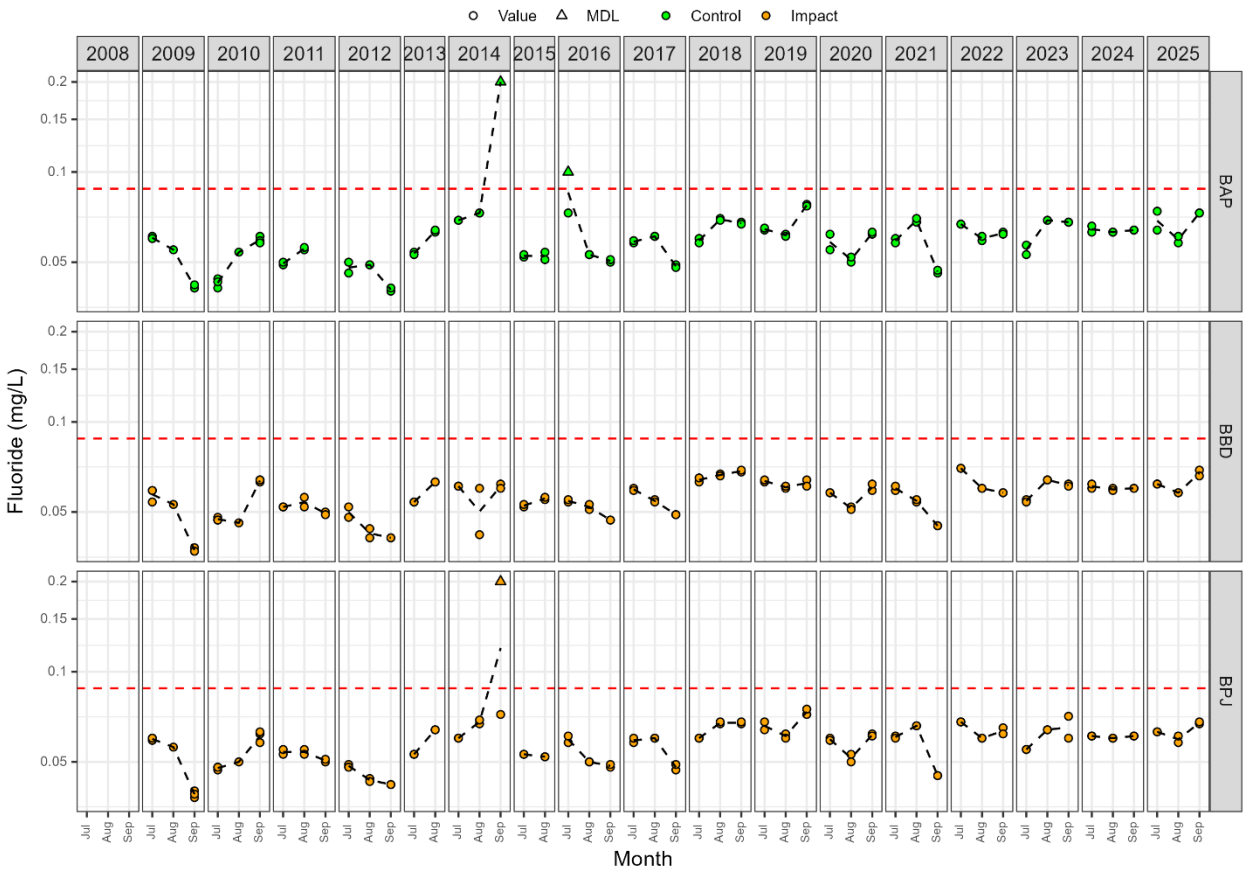


Figure C3-13. Nitrate-N (mg/L).

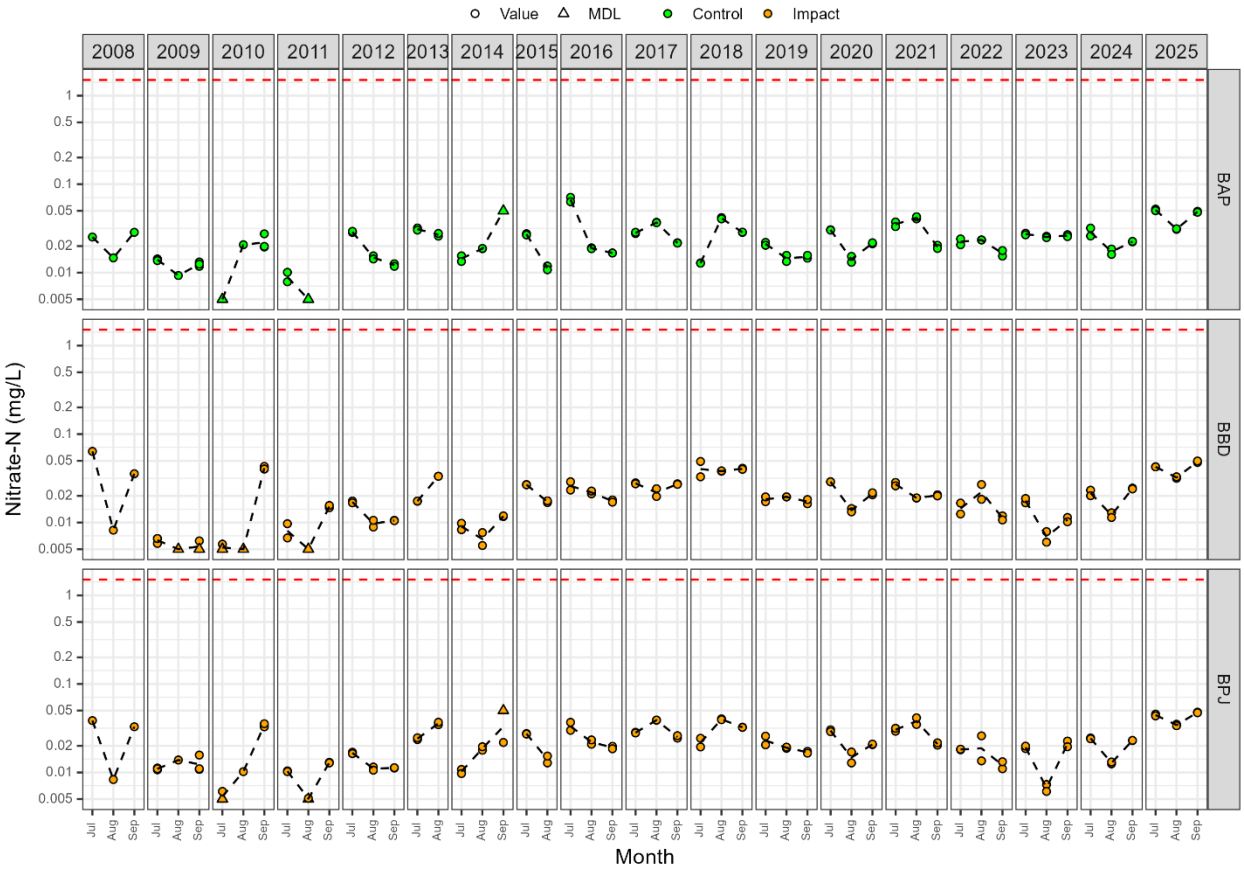


Figure C3-14. Nitrite-N (mg/L).

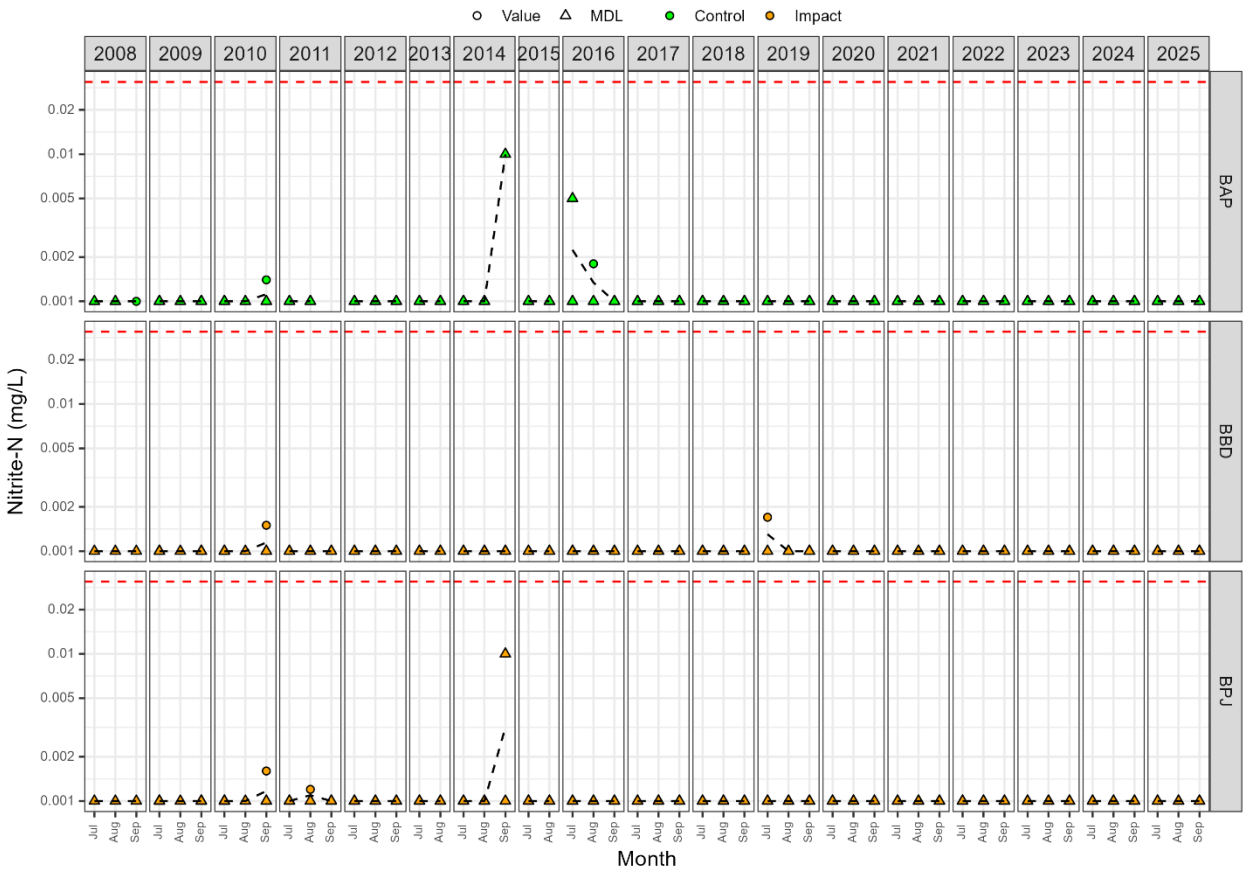


Figure C3-15. Total Kjeldahl Nitrogen (TKN; mg/L).

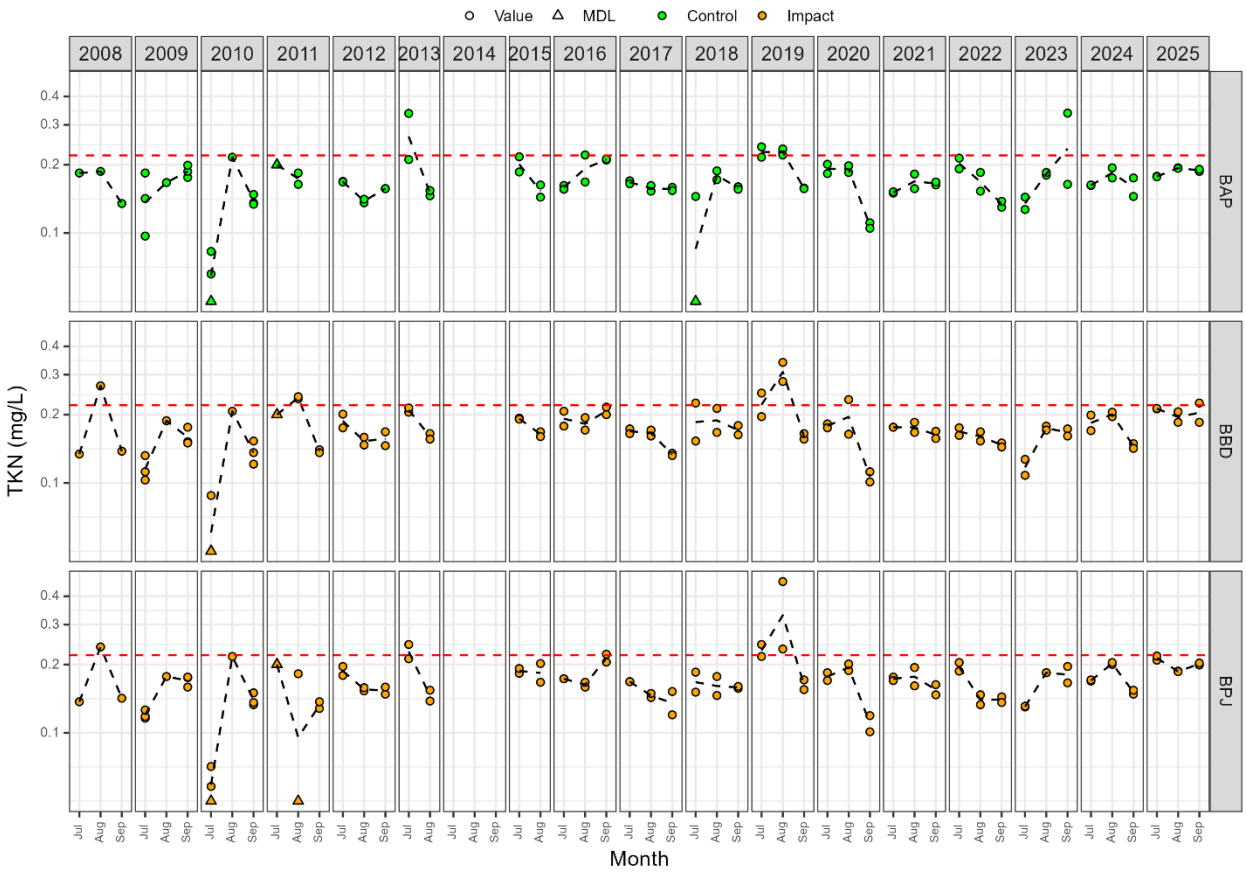


Figure C3-16. Ortho-phosphate (mg/L).

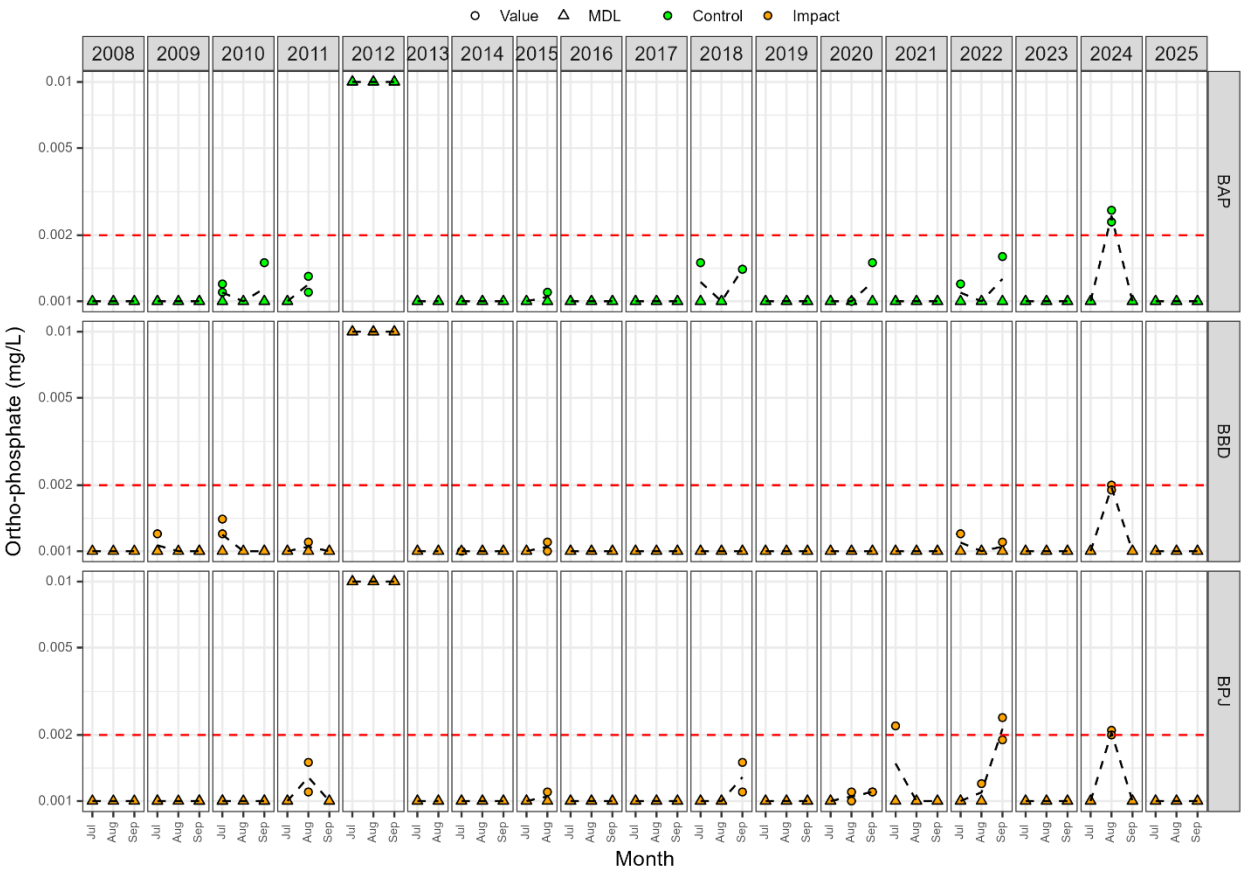


Figure C3-17. Total phosphorous (mg/L).

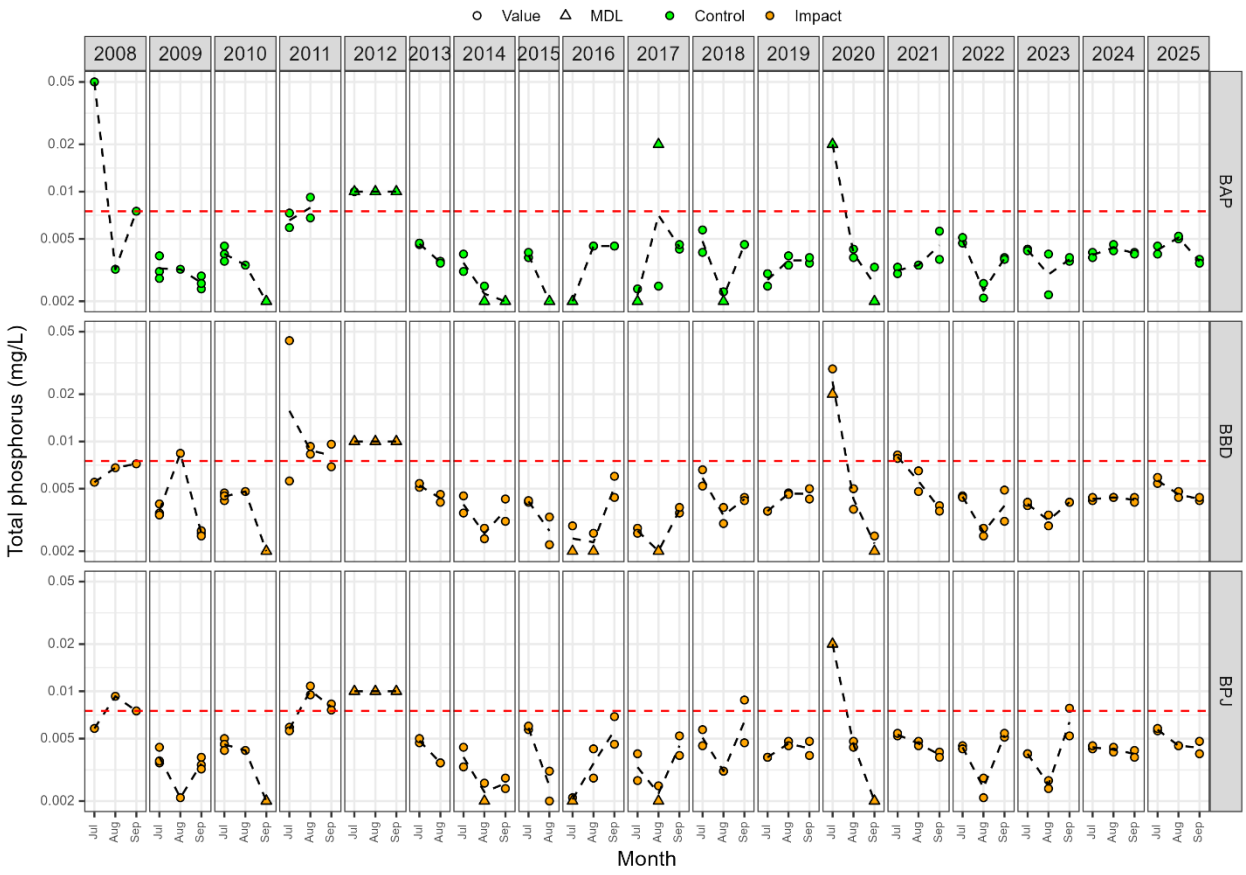


Figure C3-18. Reactive silica (mg/L).

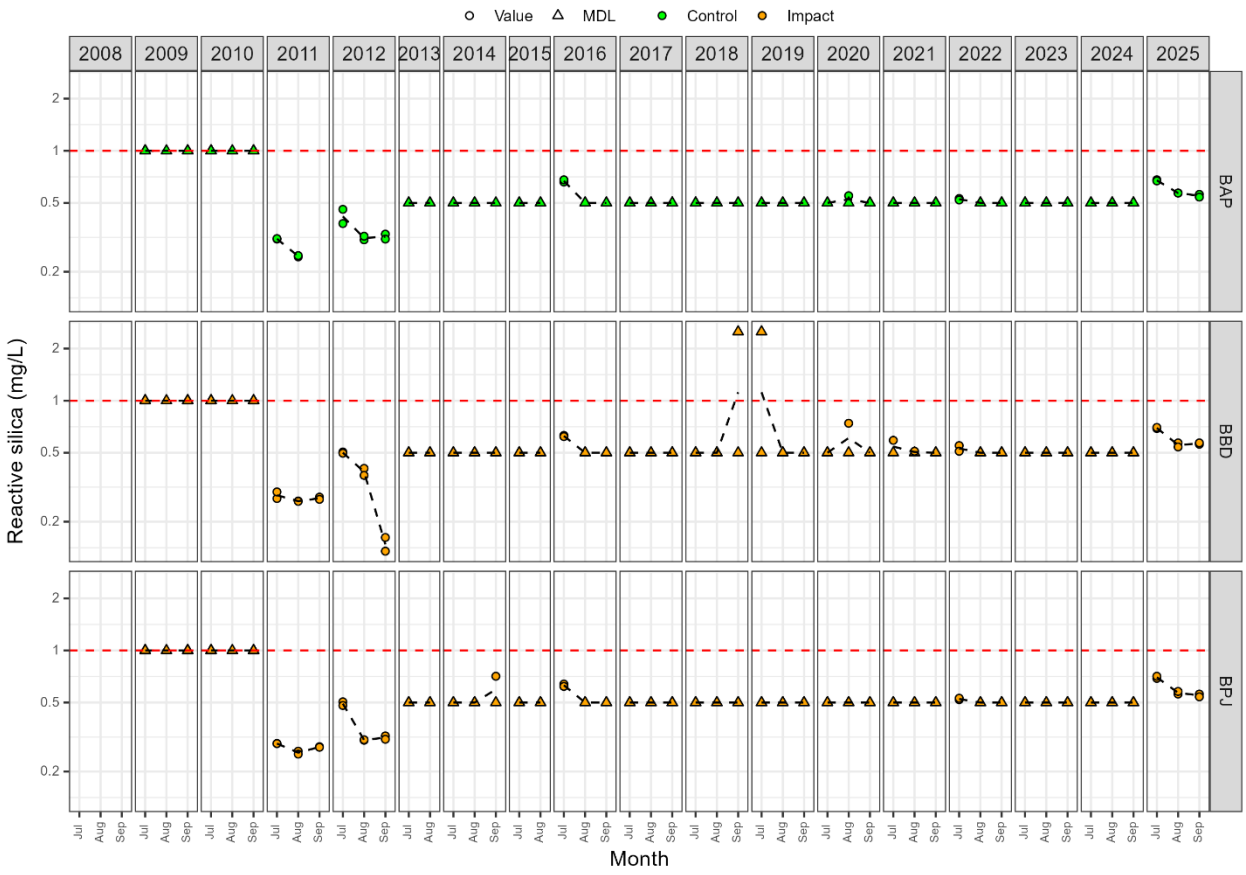


Figure C3-19. Sulphate (mg/L).

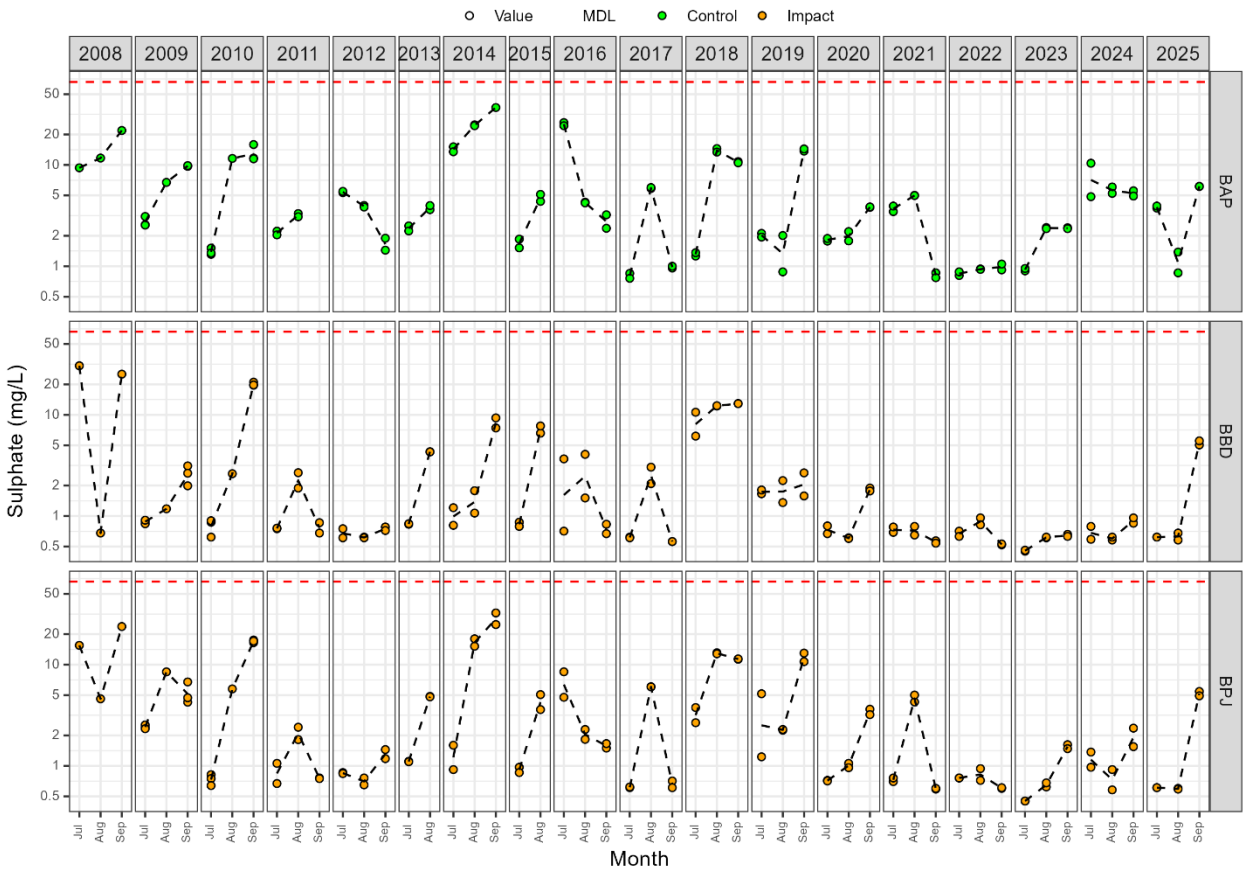


Figure C3-20. Dissolved organic carbon (DOC; mg/L).

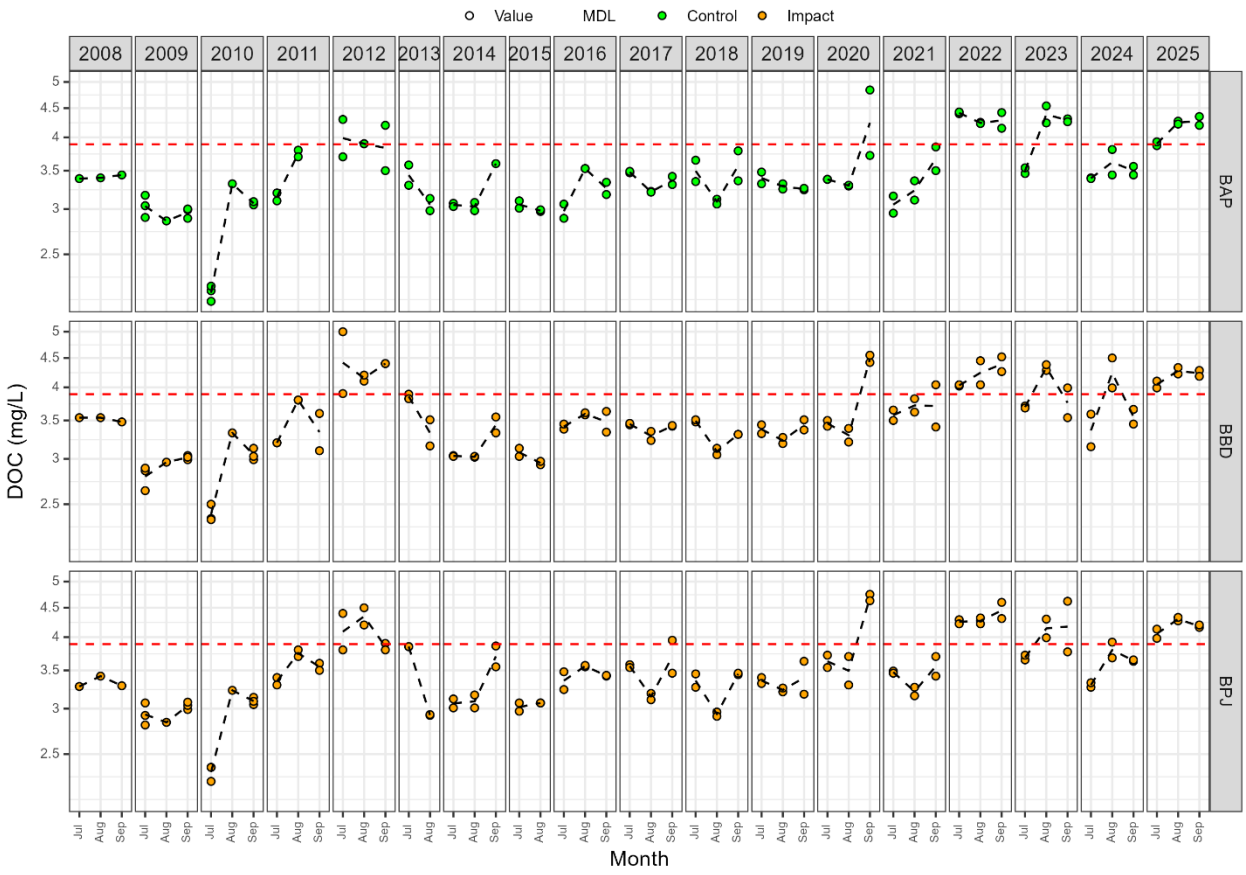


Figure C3-21. Total organic carbon (TOC; mg/L).

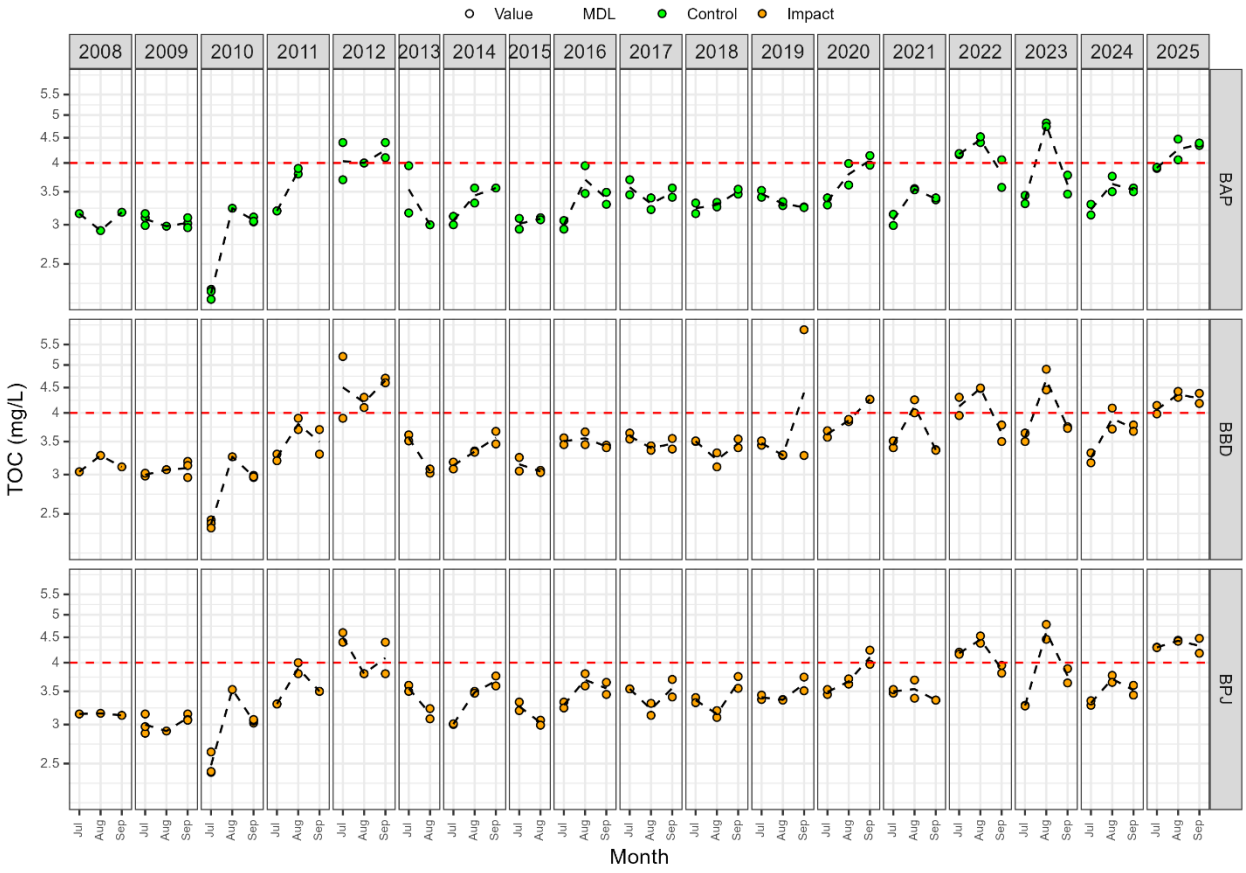


Figure C3-22. Total aluminum (mg/L).

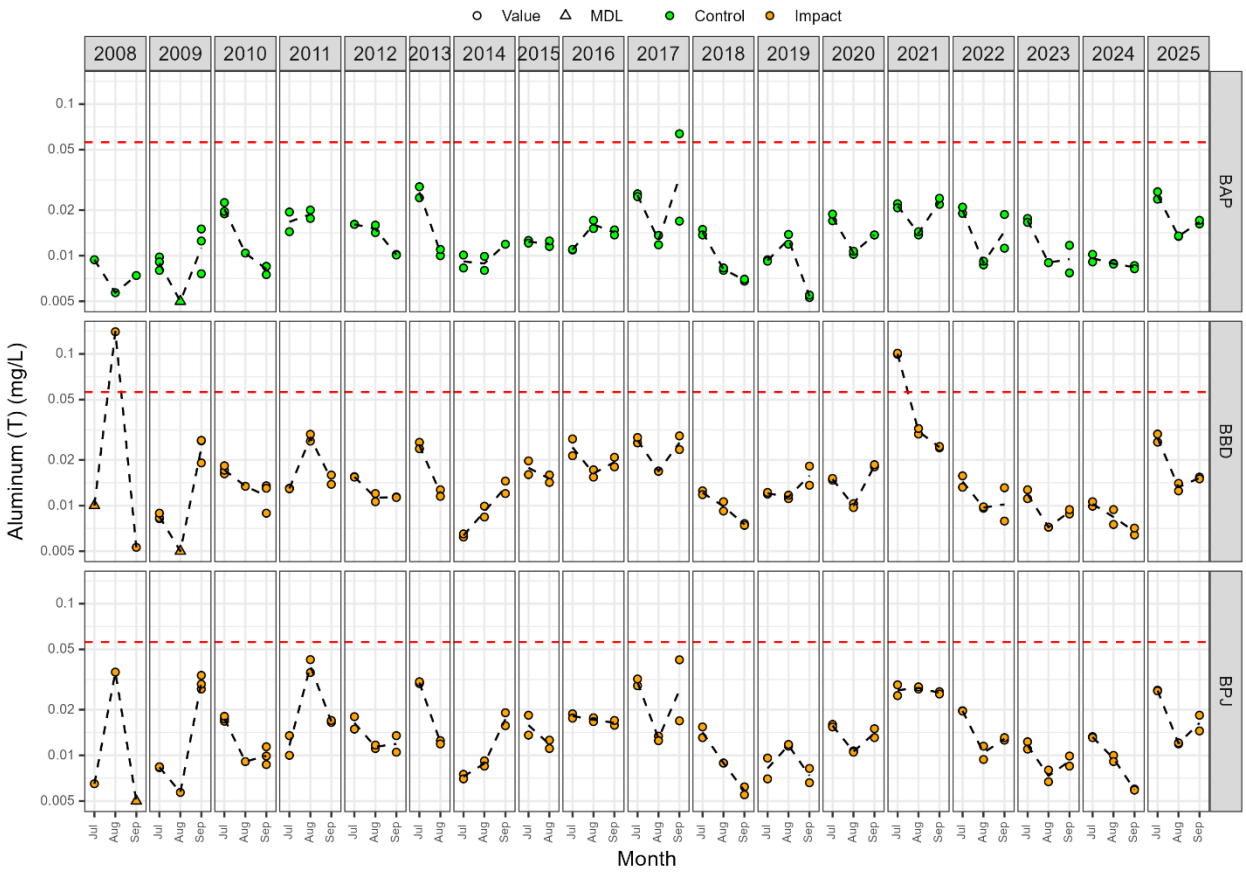


Figure C3-23. Total antimony (mg/L).

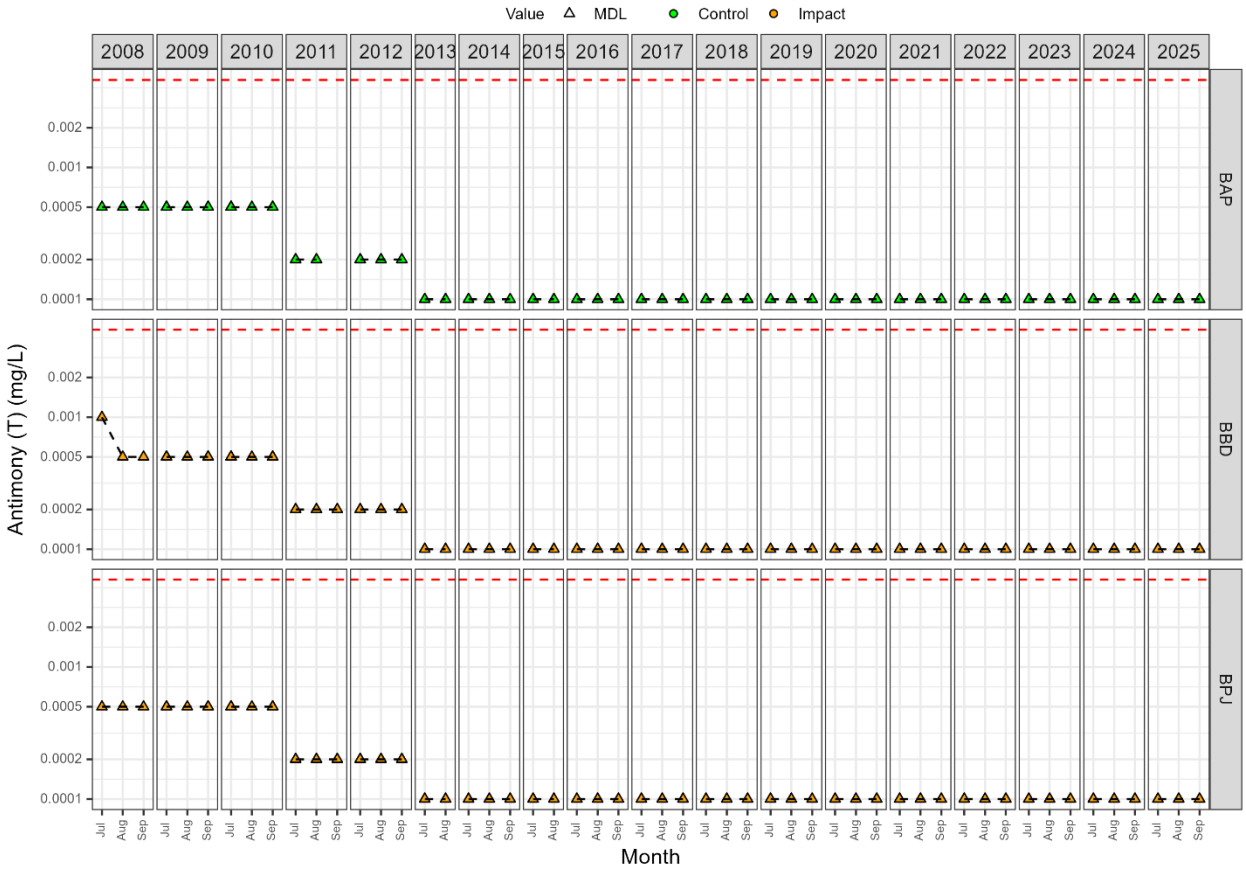


Figure C3-24. Total arsenic (mg/L).

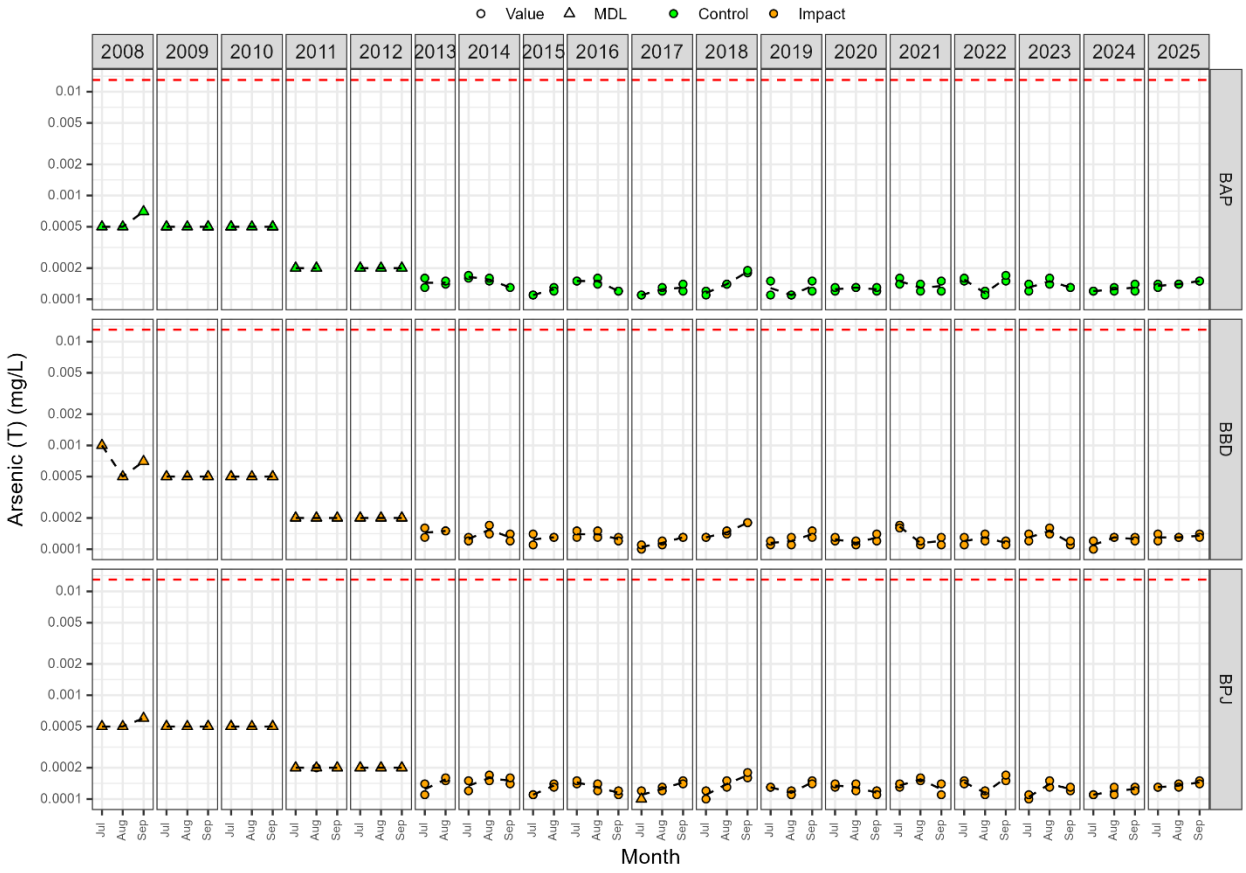


Figure C3-25. Total barium (mg/L).

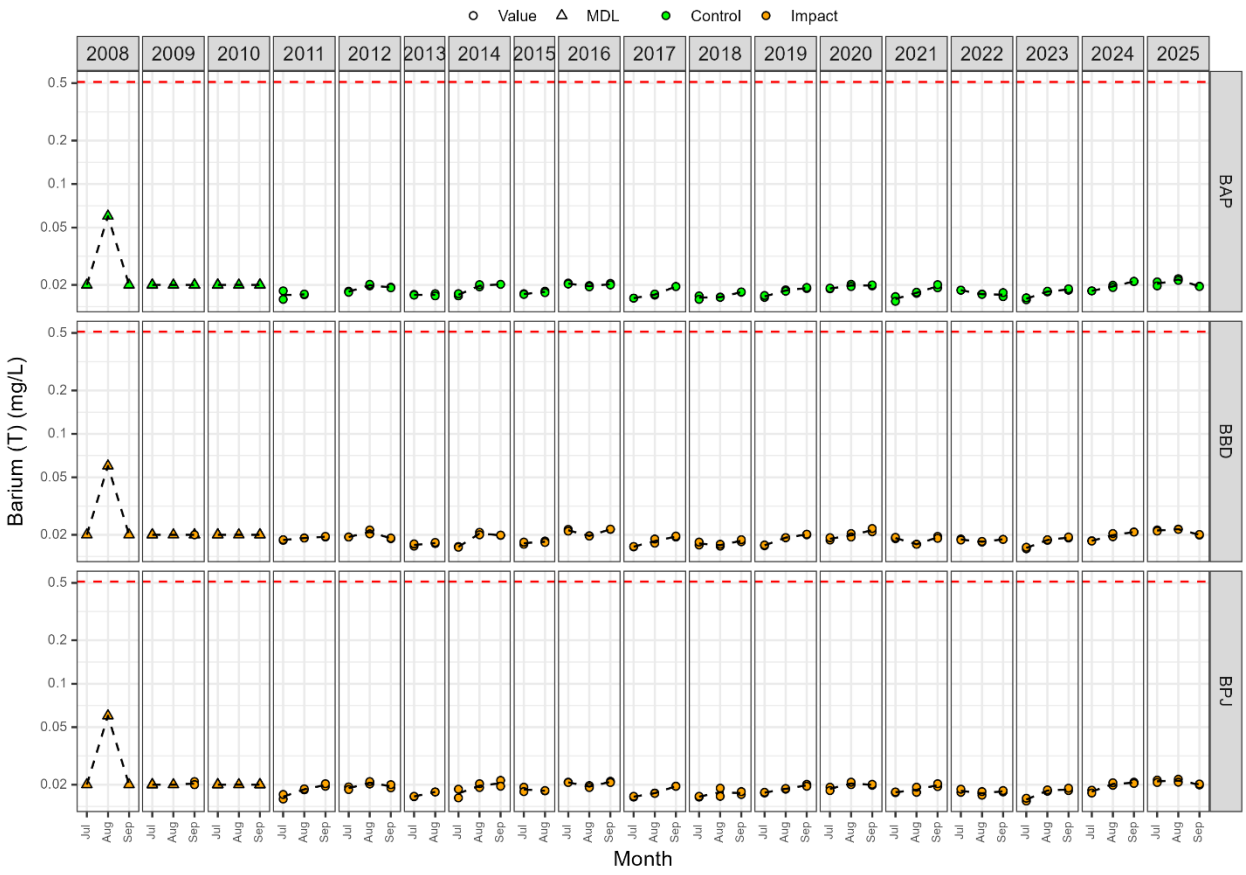


Figure C3-26. Total beryllium (mg/L).

Figure C3-27. Total boron (mg/L).

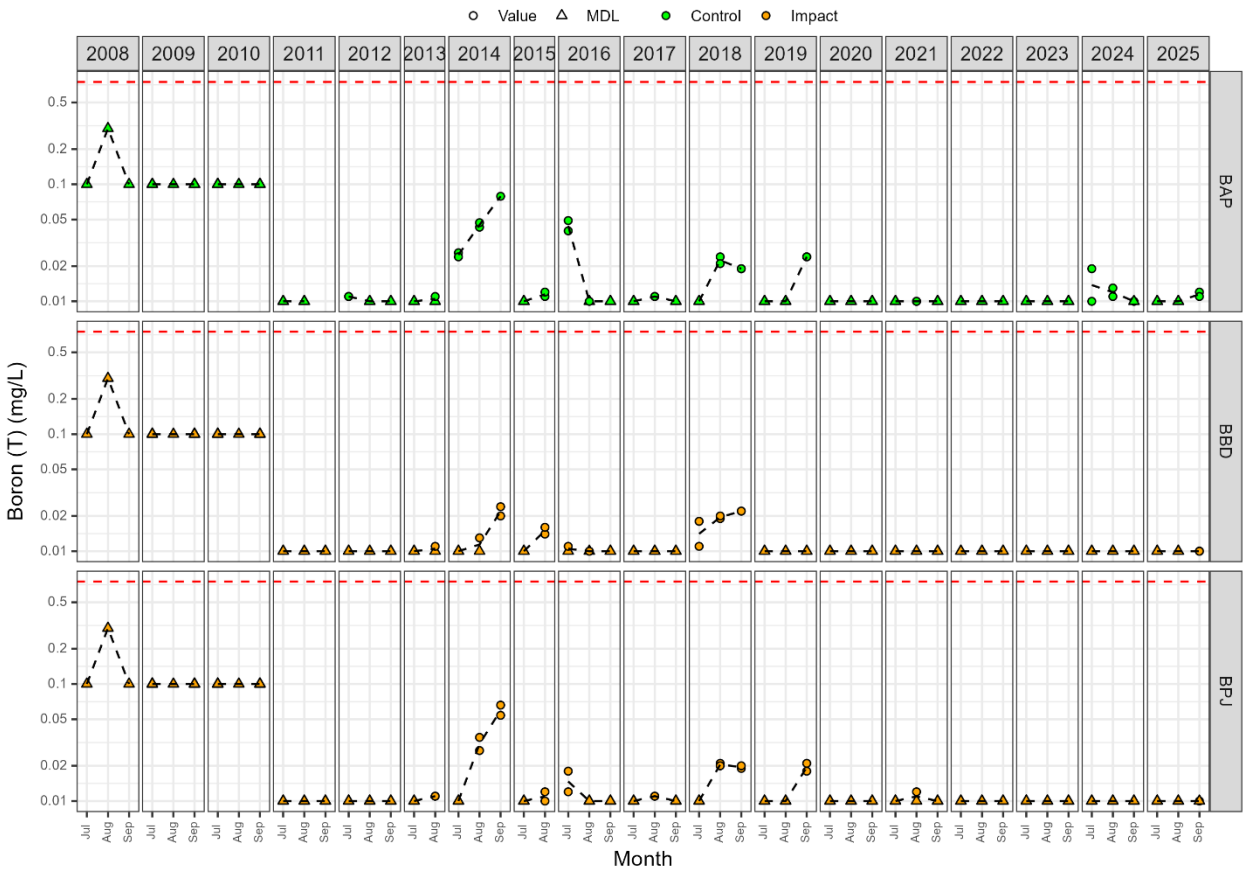


Figure C3-28. Total cadmium (mg/L).

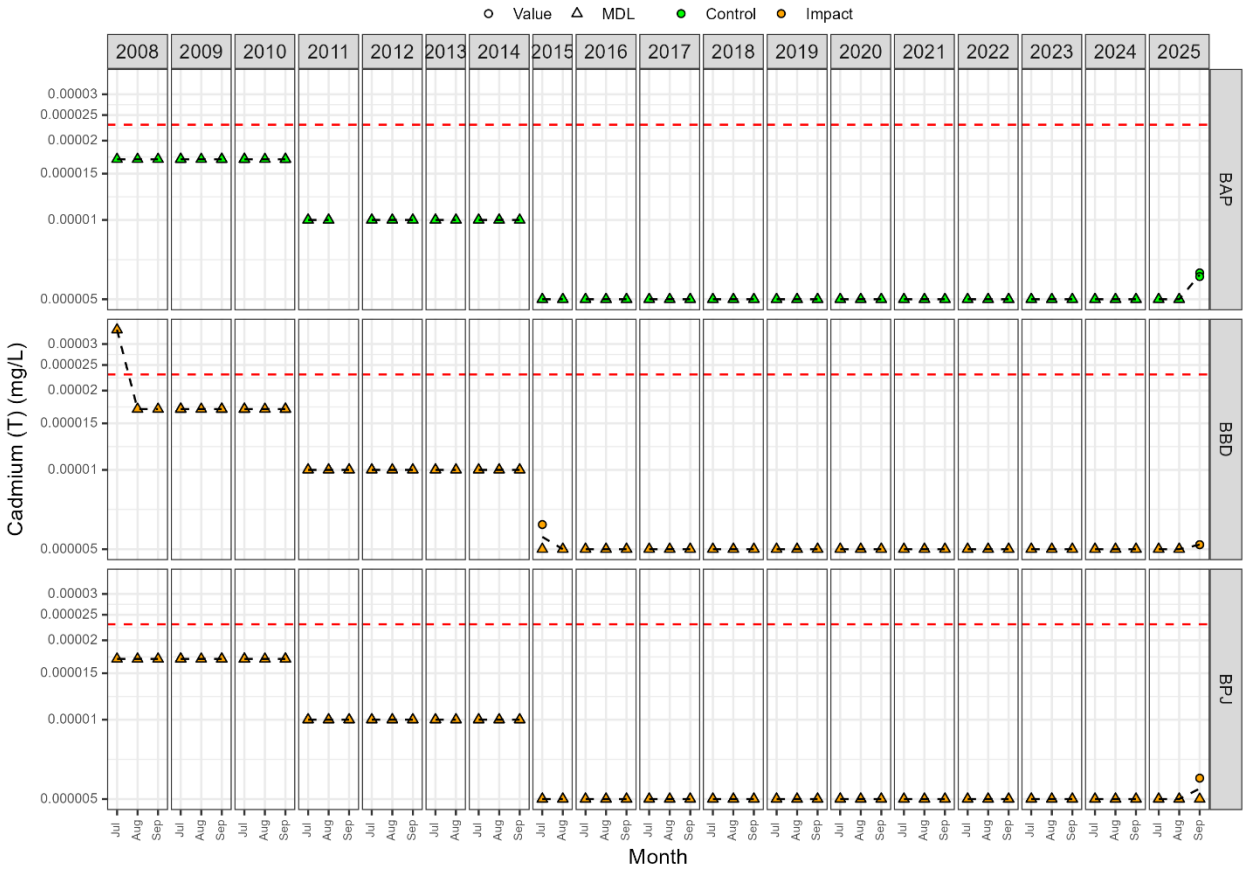


Figure C3-29. Total calcium (mg/L).

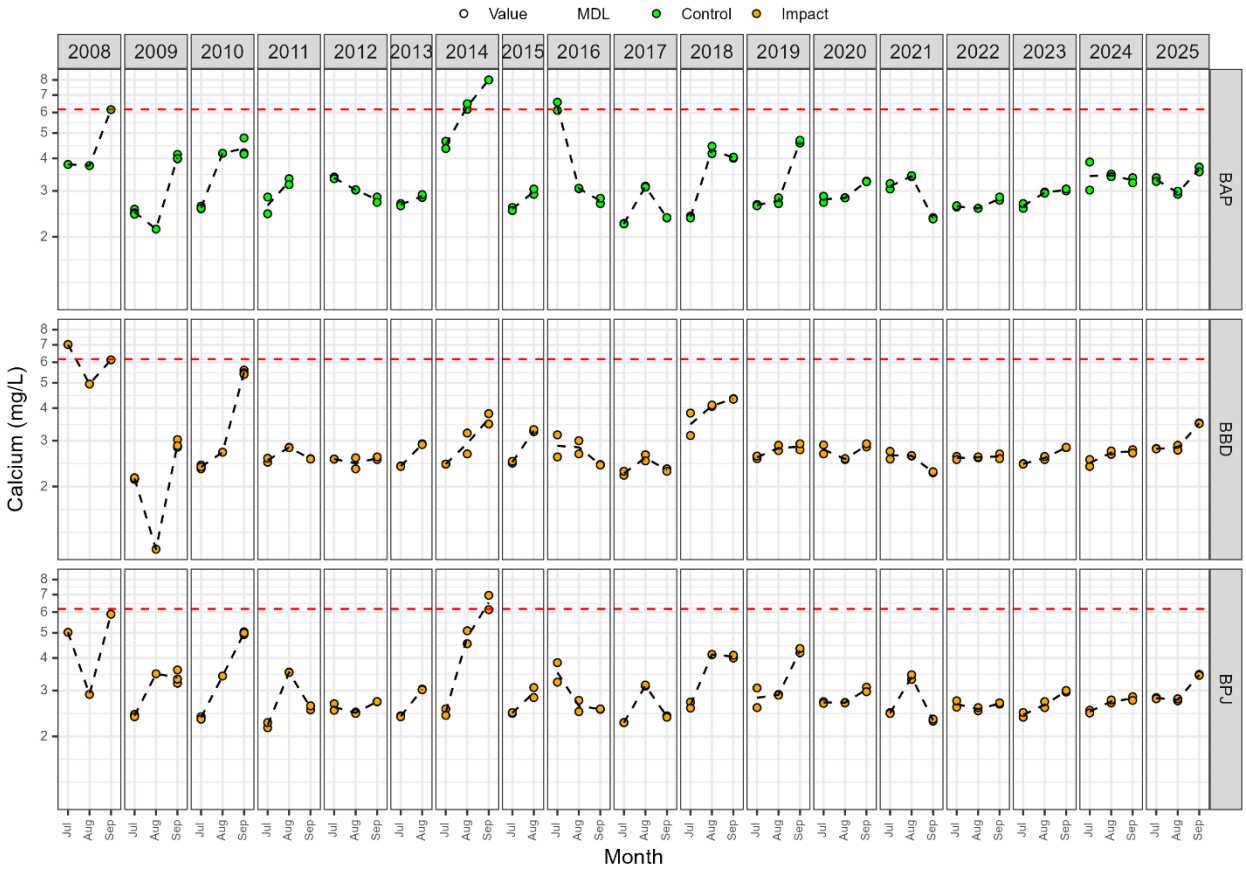


Figure C3-30. Total chromium (mg/L).

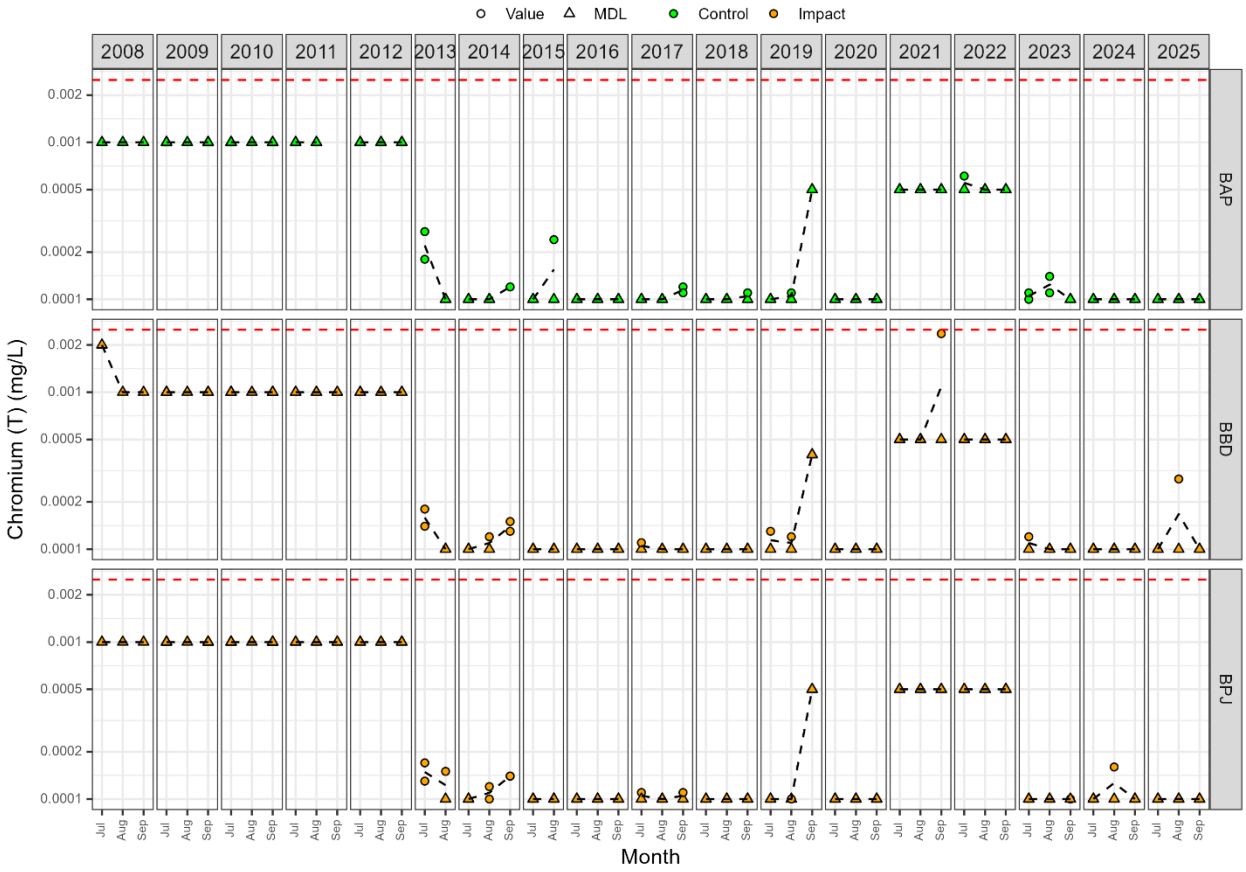


Figure C3-31. Total copper (mg/L).

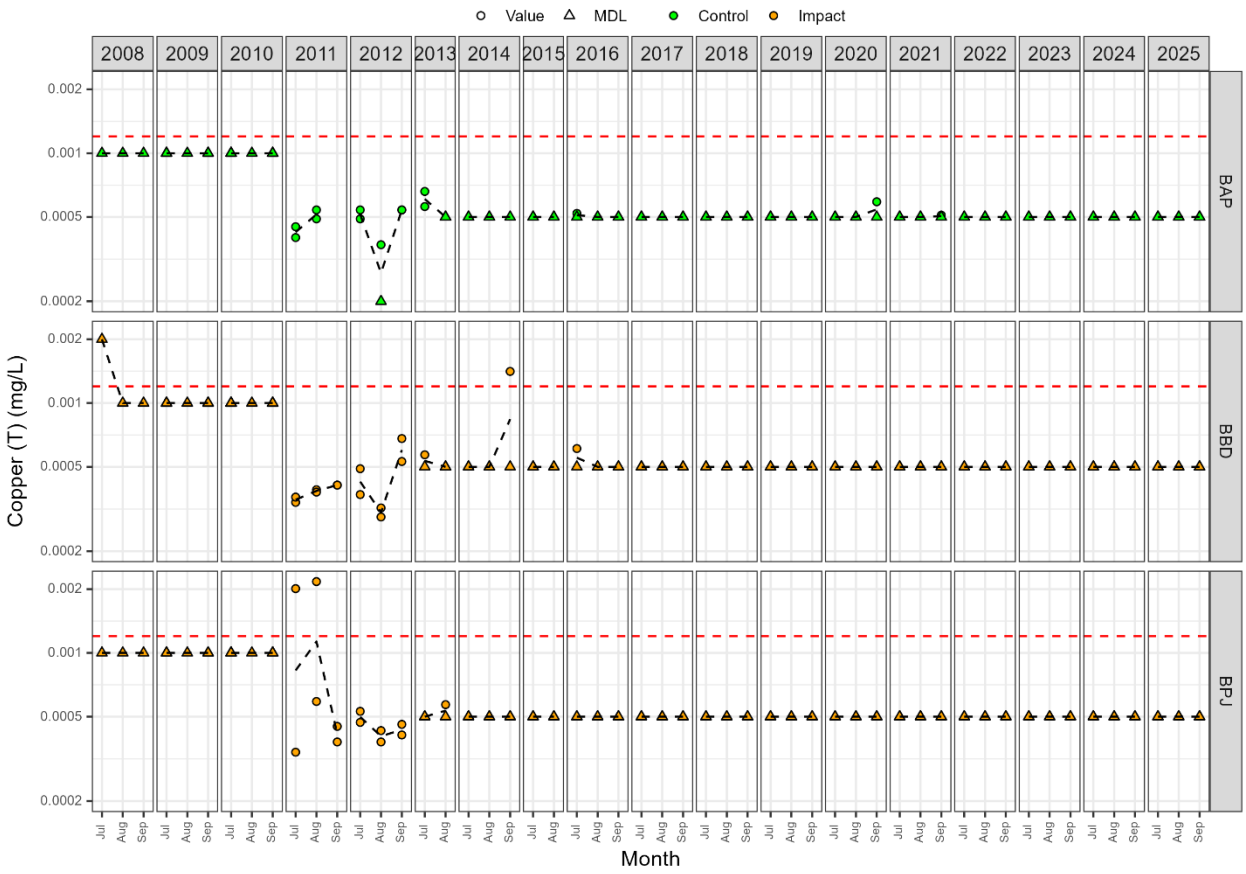


Figure C3-32. Total iron (mg/L).

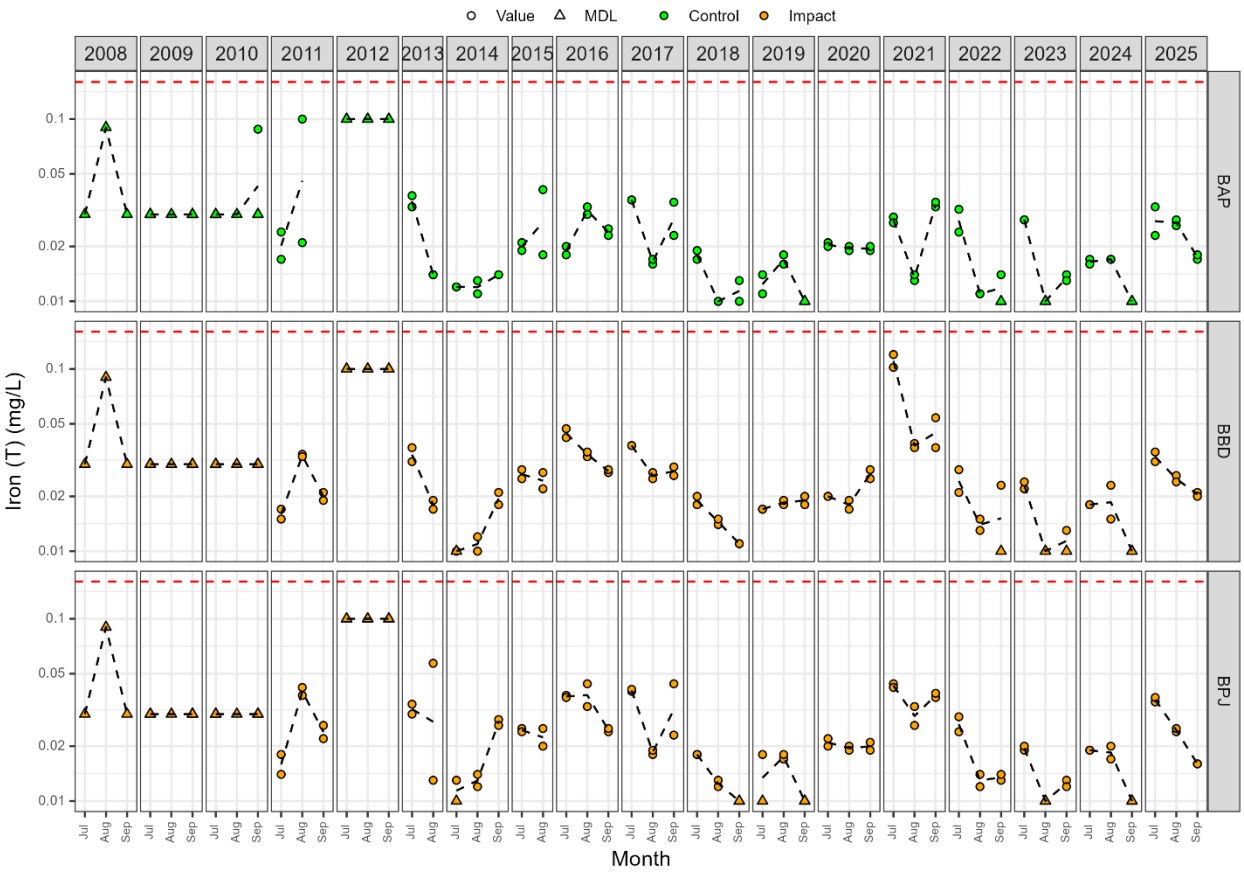


Figure C3-33. Total lead (mg/L).

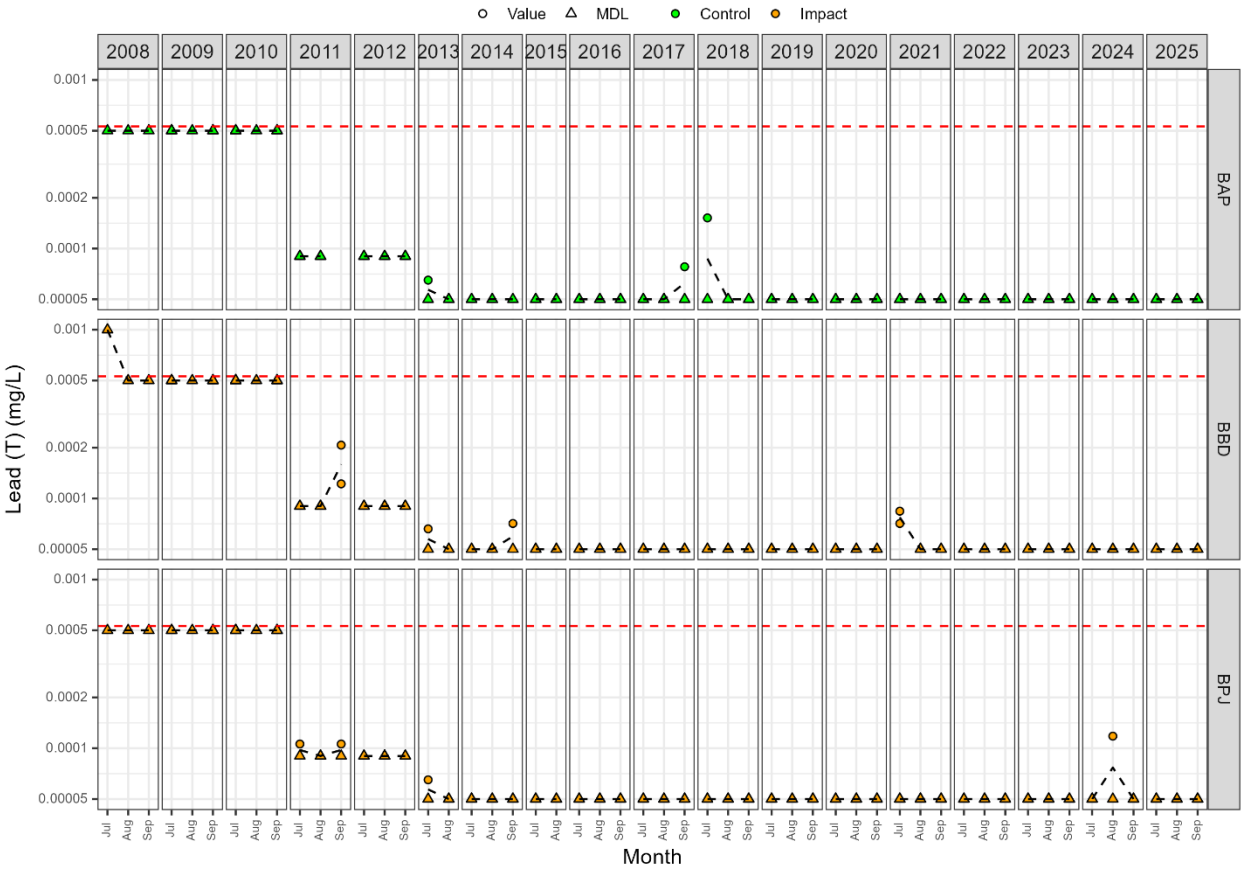


Figure C3-34. Total lithium (mg/L).

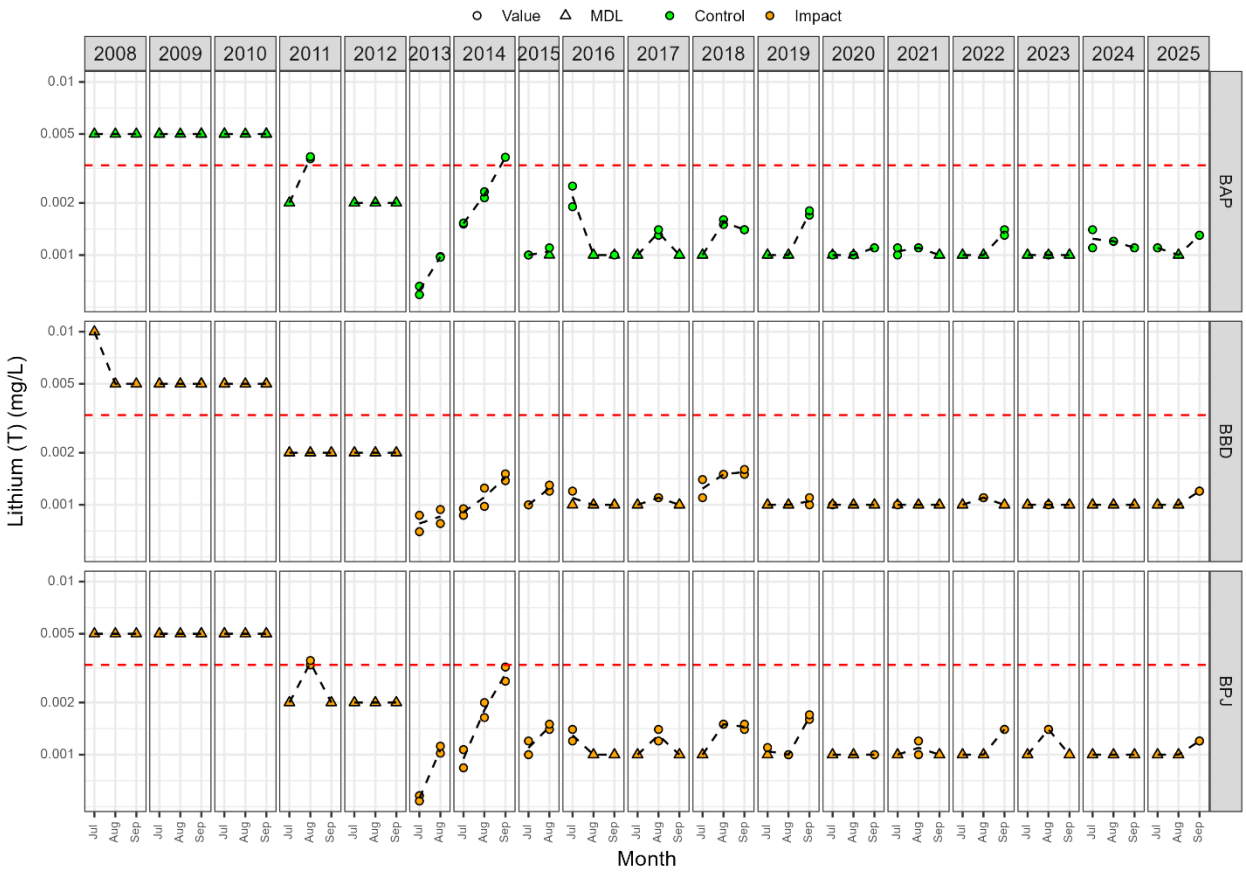


Figure C3-35. Total magnesium (mg/L).

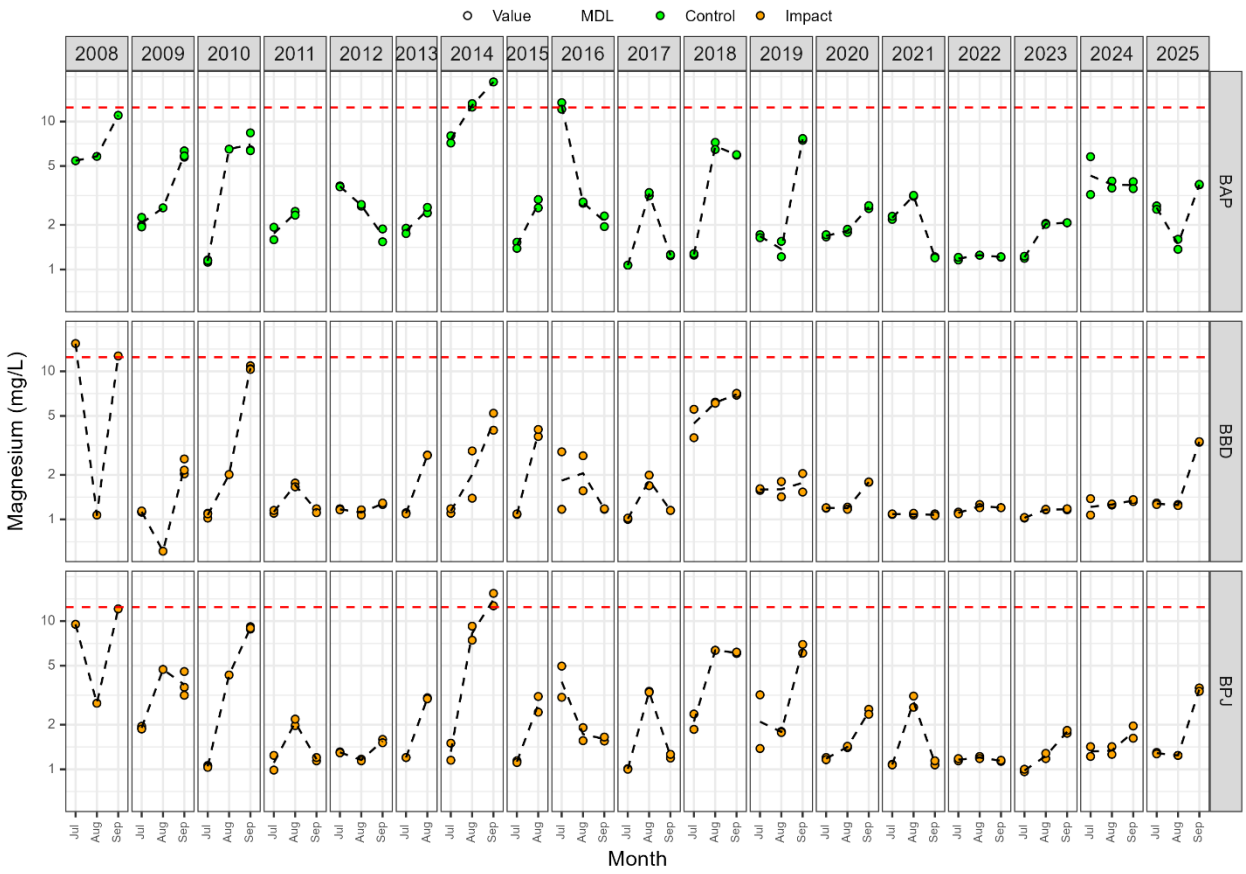


Figure C3-36. Total manganese (mg/L).

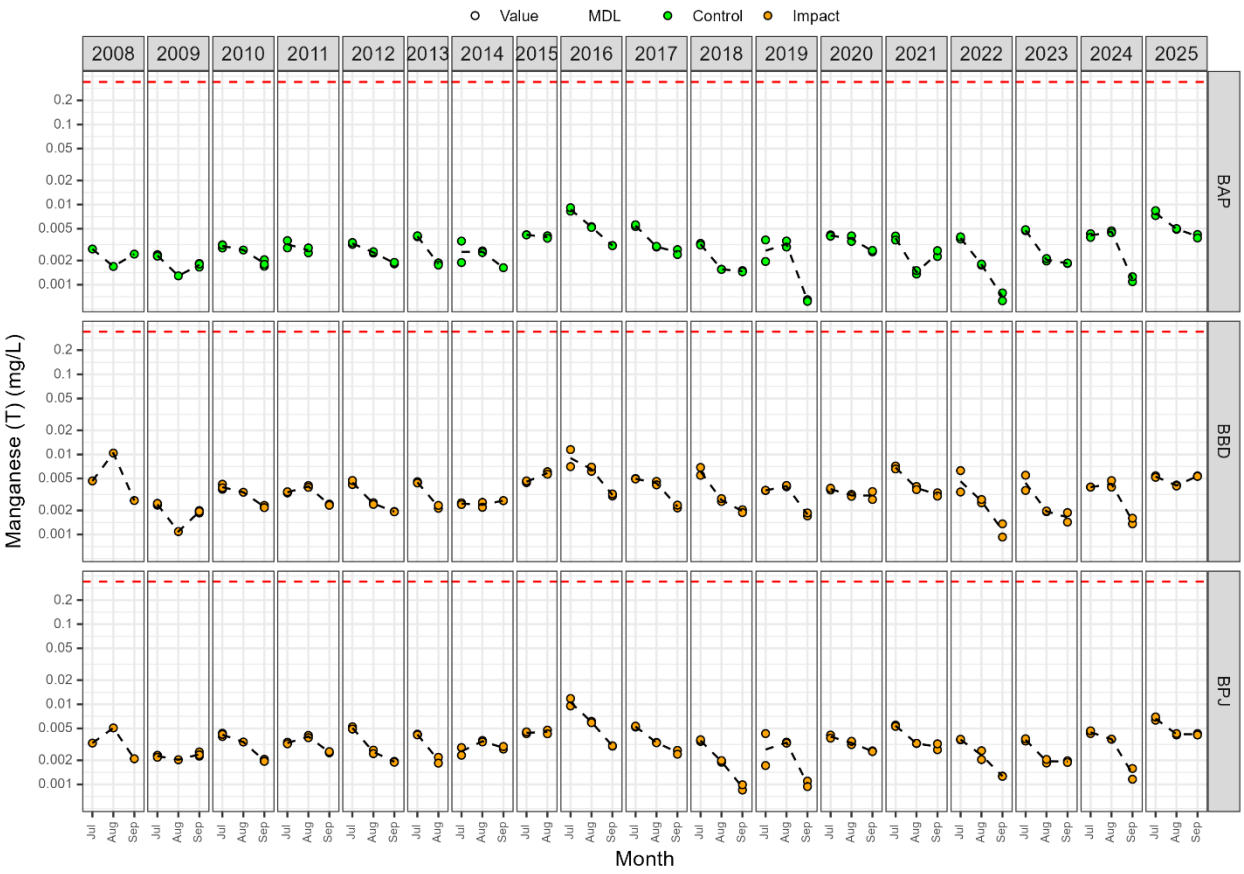


Figure C3-37. Total mercury (mg/L).

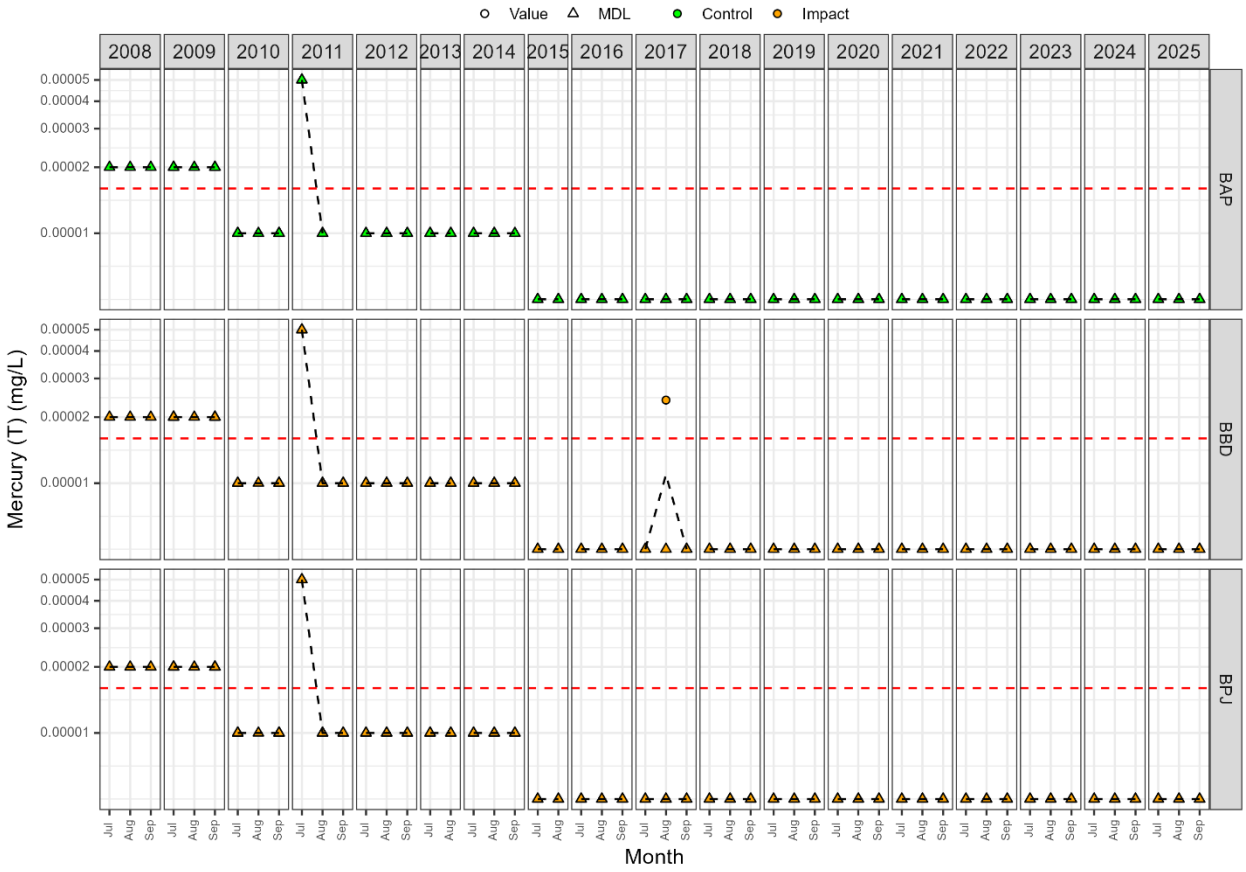


Figure C3-38. Total molybdenum (mg/L).

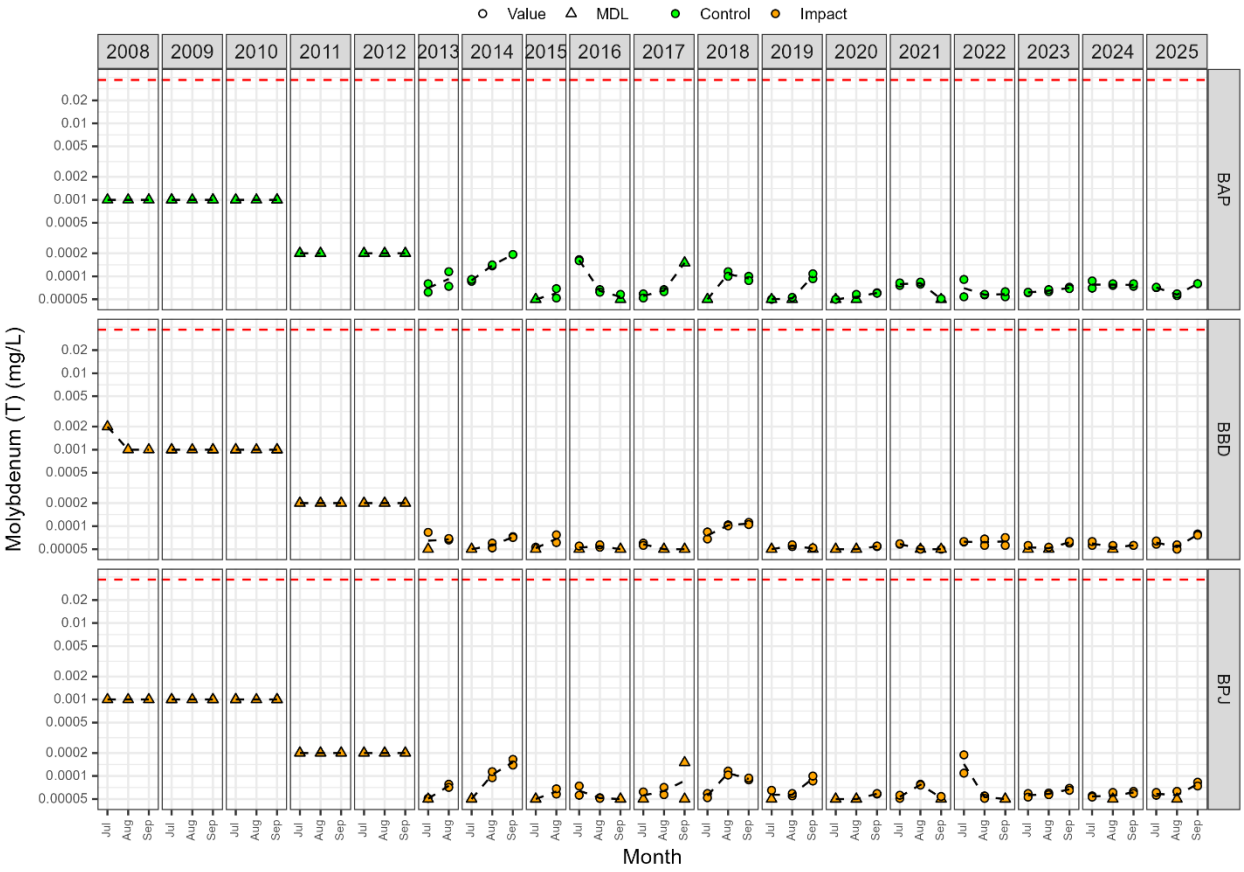


Figure C3-39. Total nickel (mg/L).

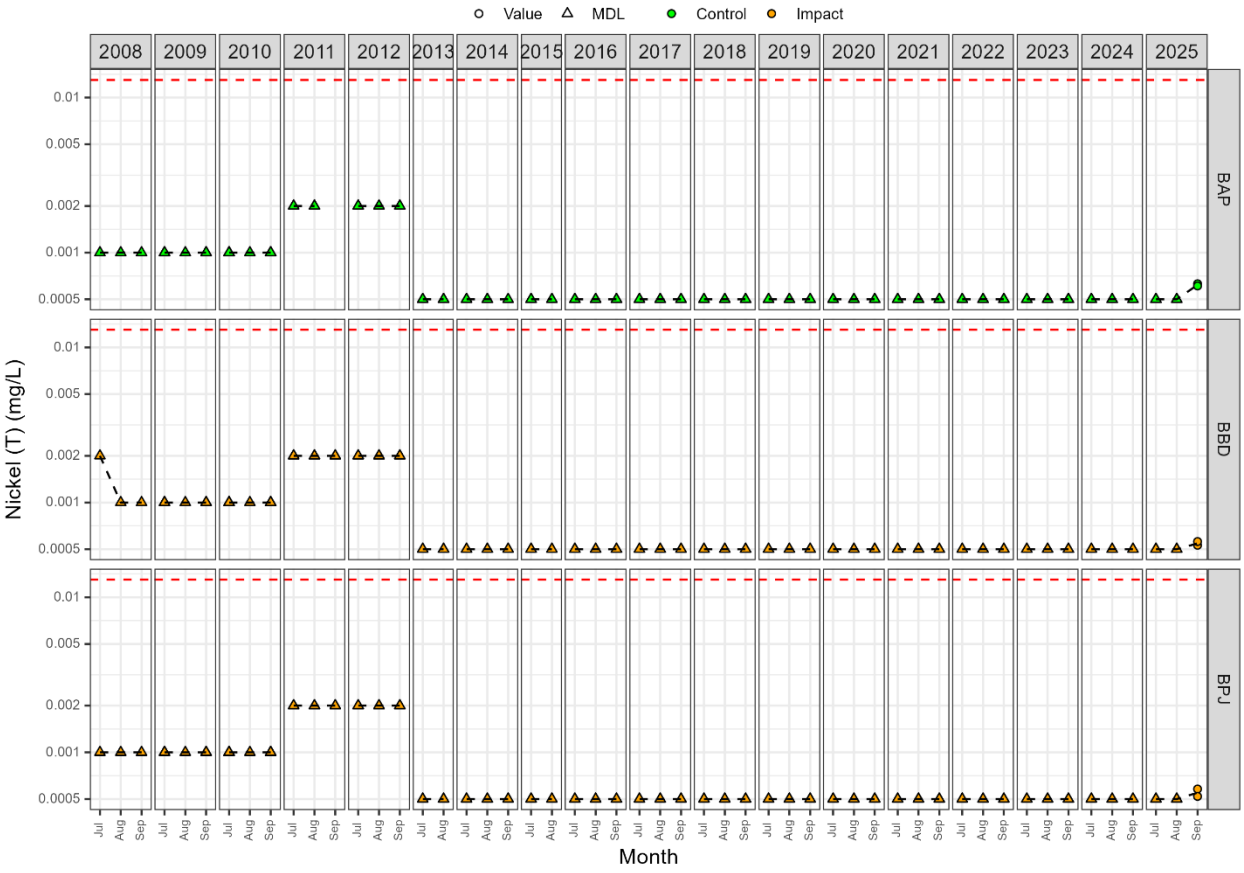


Figure C3-40. Total potassium (mg/L).

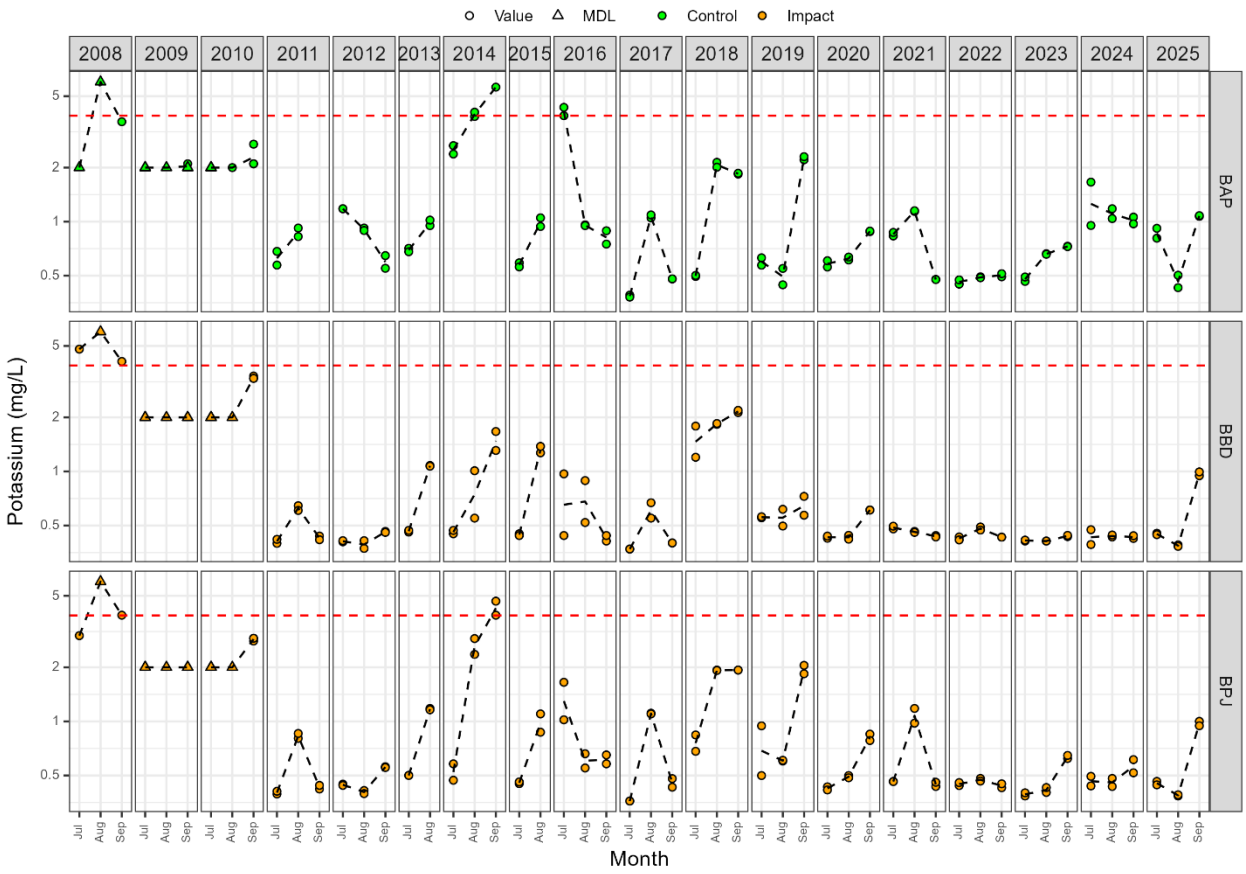


Figure C3-41. Total selenium (mg/L).

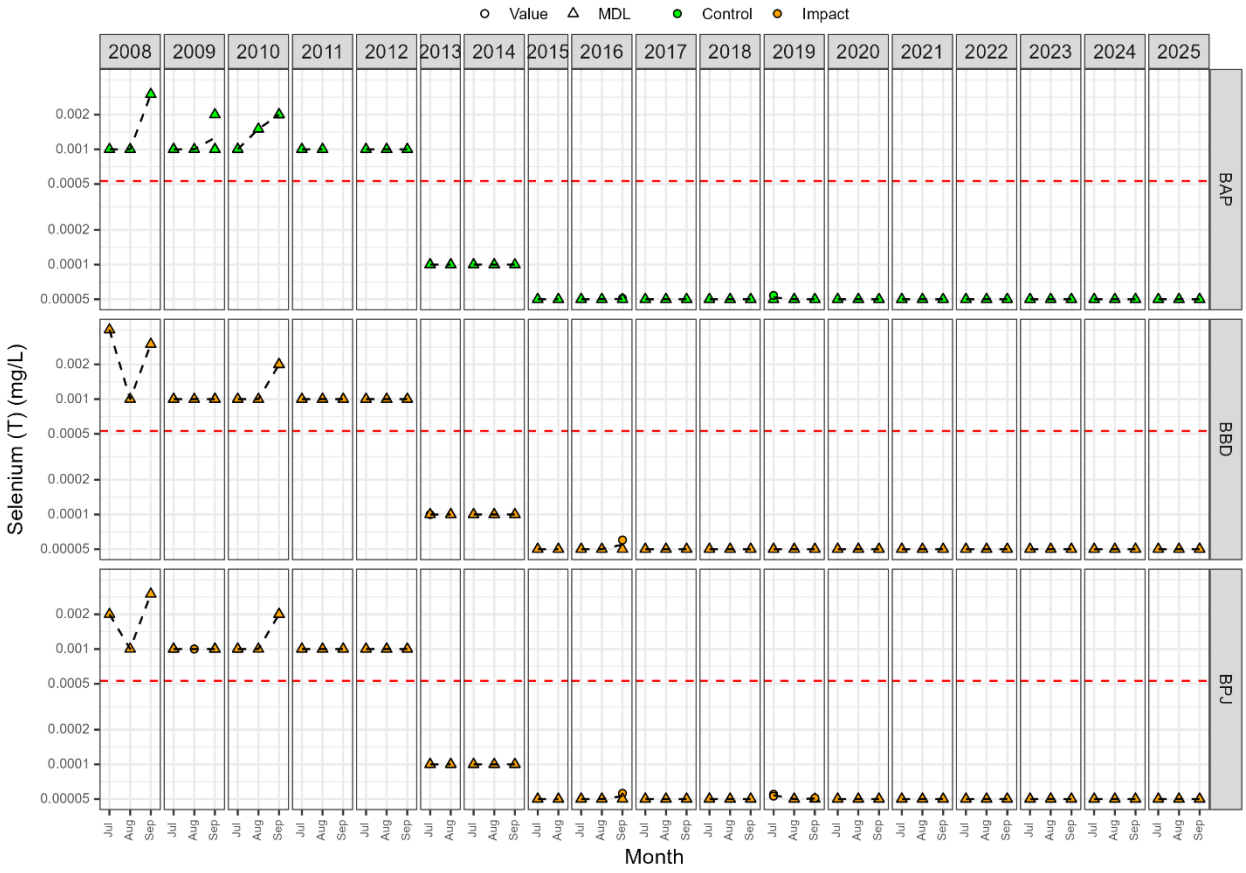


Figure C3-42. Total silicon (mg/L).

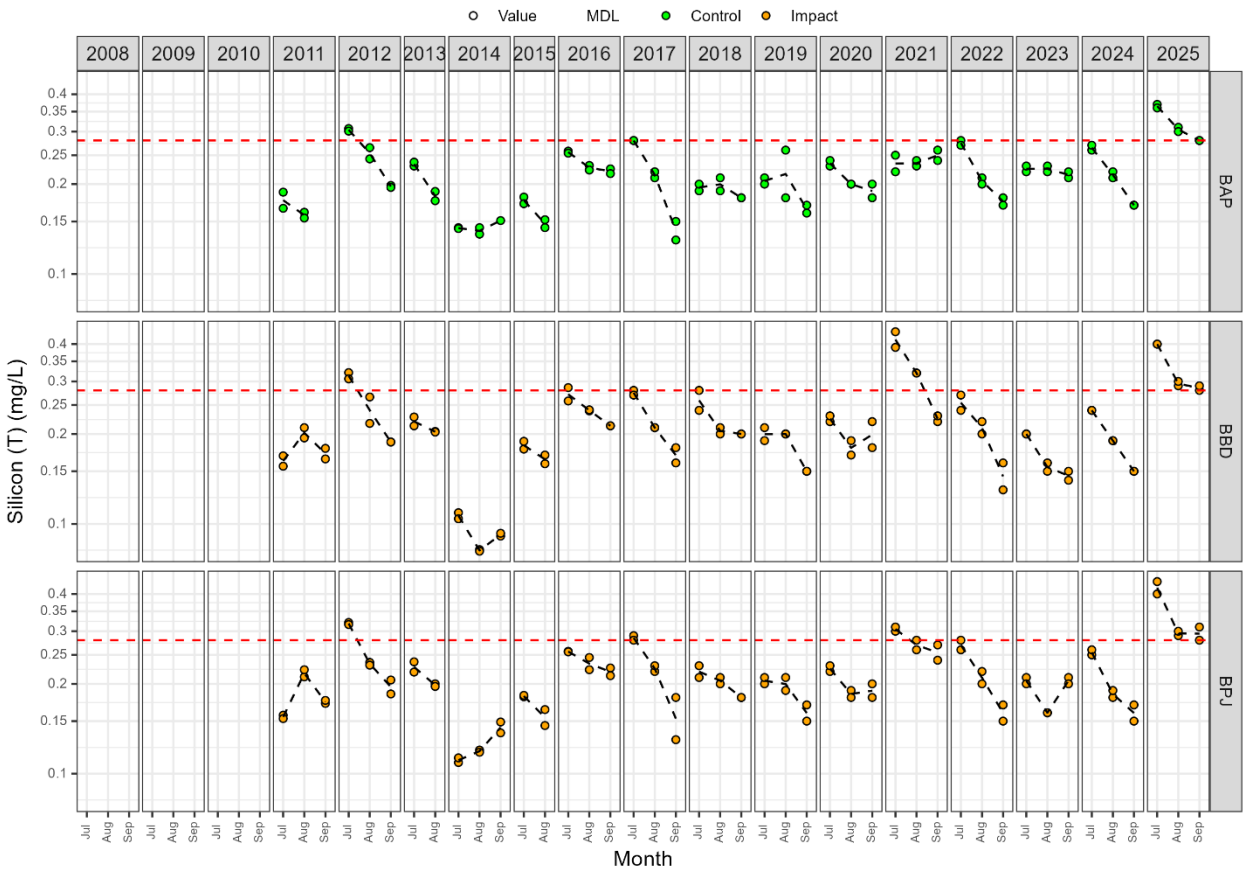


Figure C3-43. Total silver (mg/L).

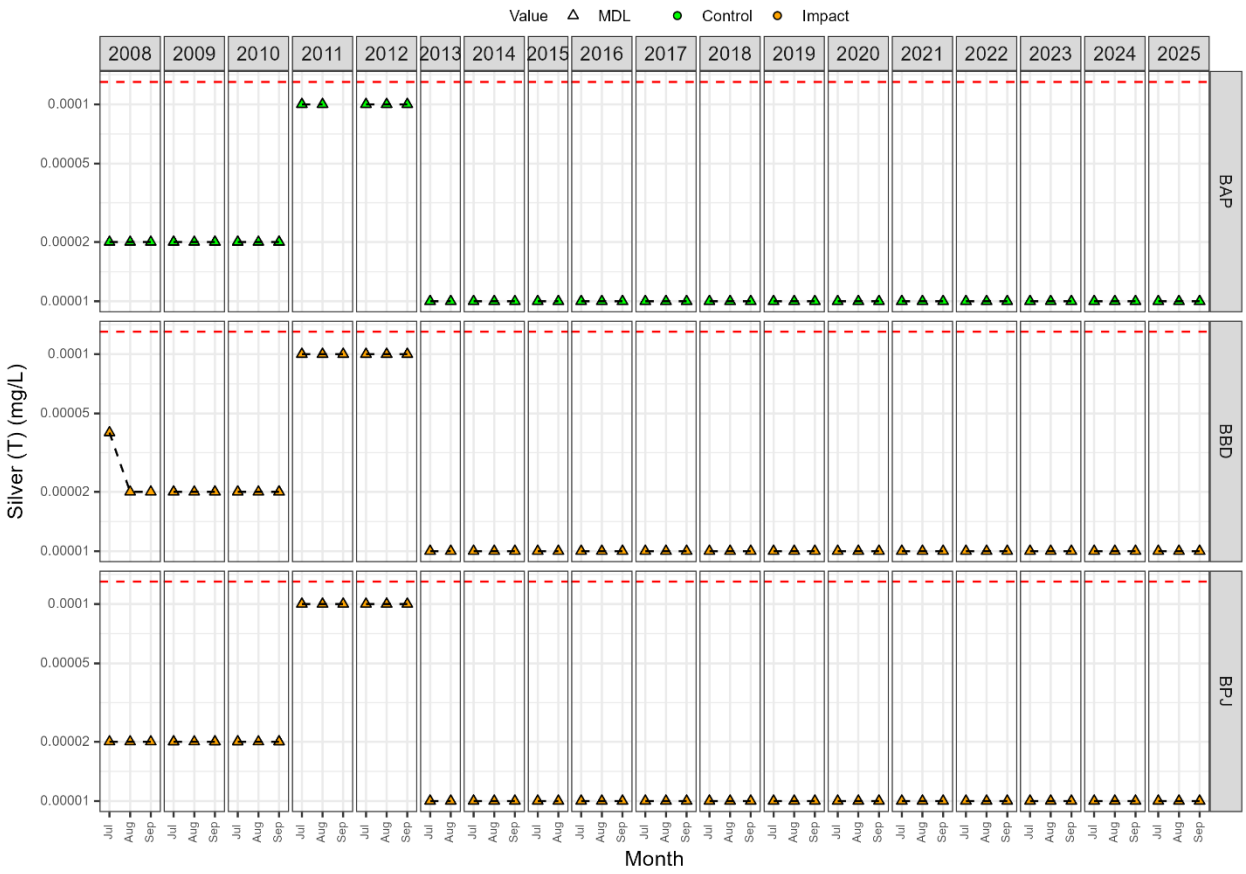


Figure C3-44. Total sodium (mg/L).

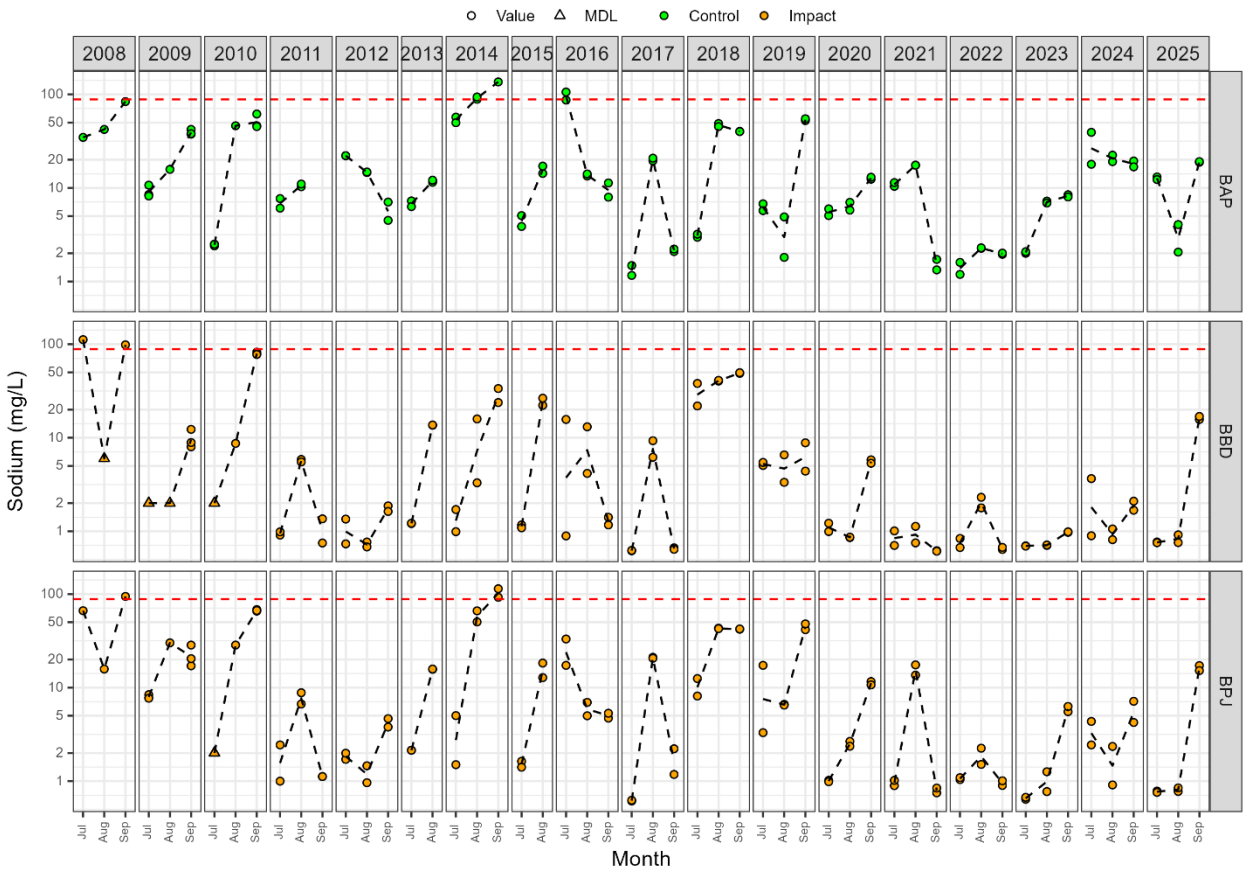


Figure C3-45. Total strontium (mg/L).

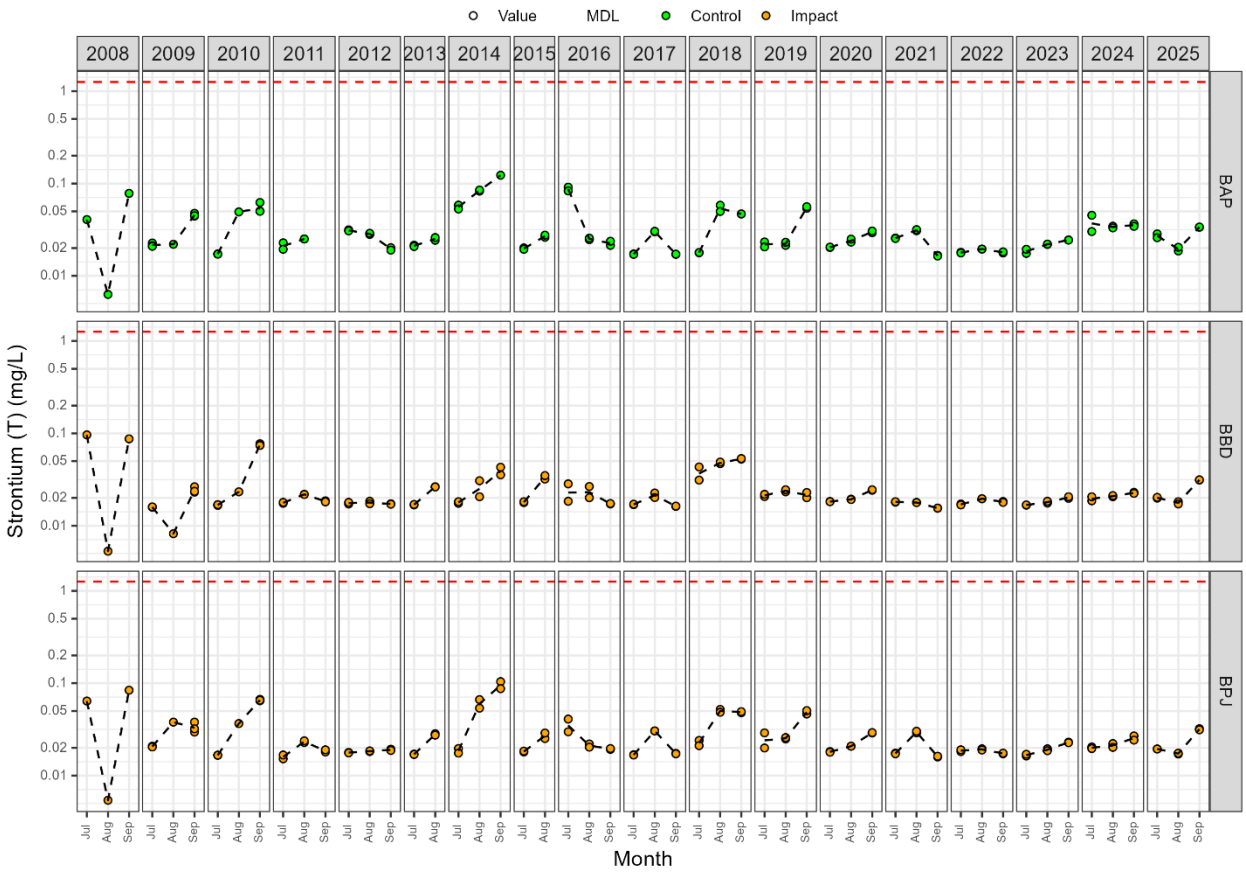


Figure C3-46. Total thallium (mg/L).

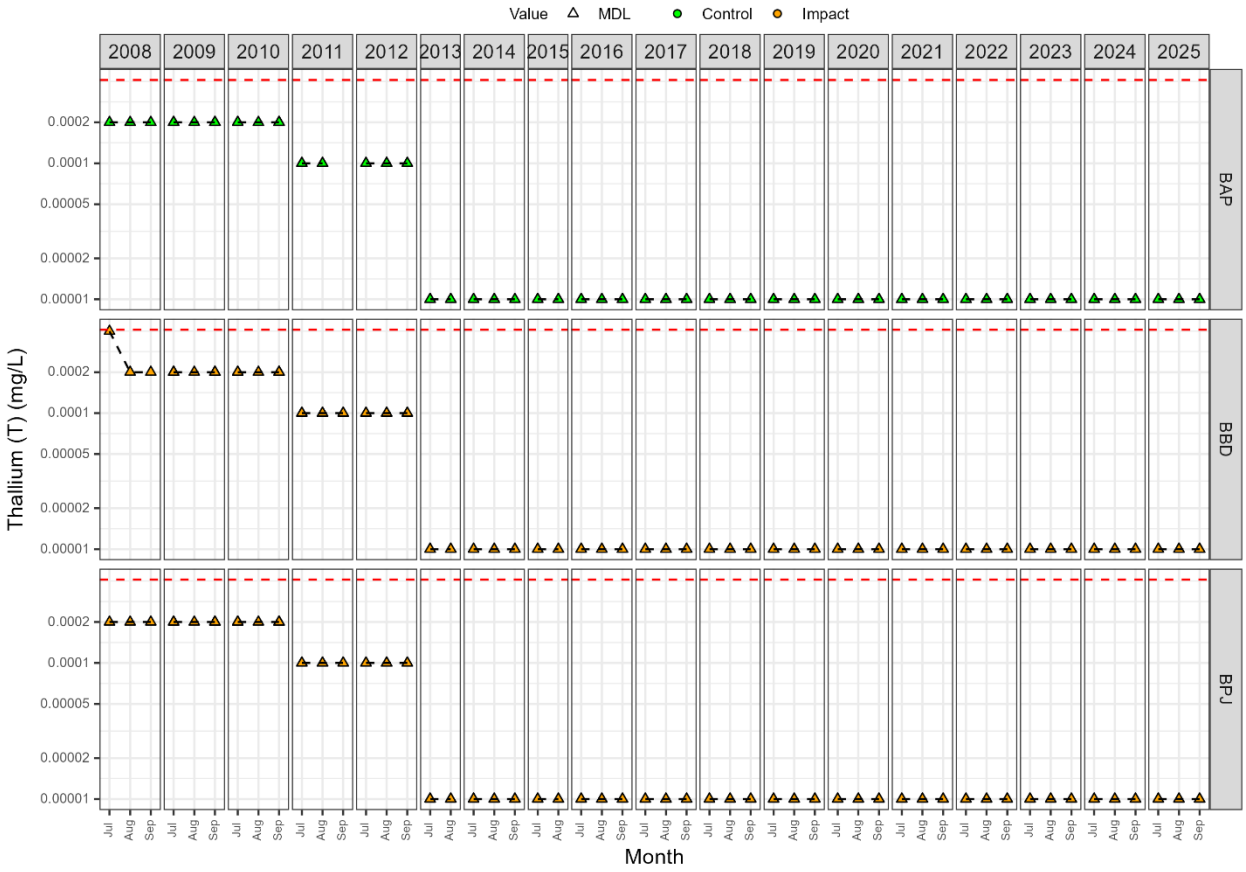


Figure C3-47. Total tin (mg/L).

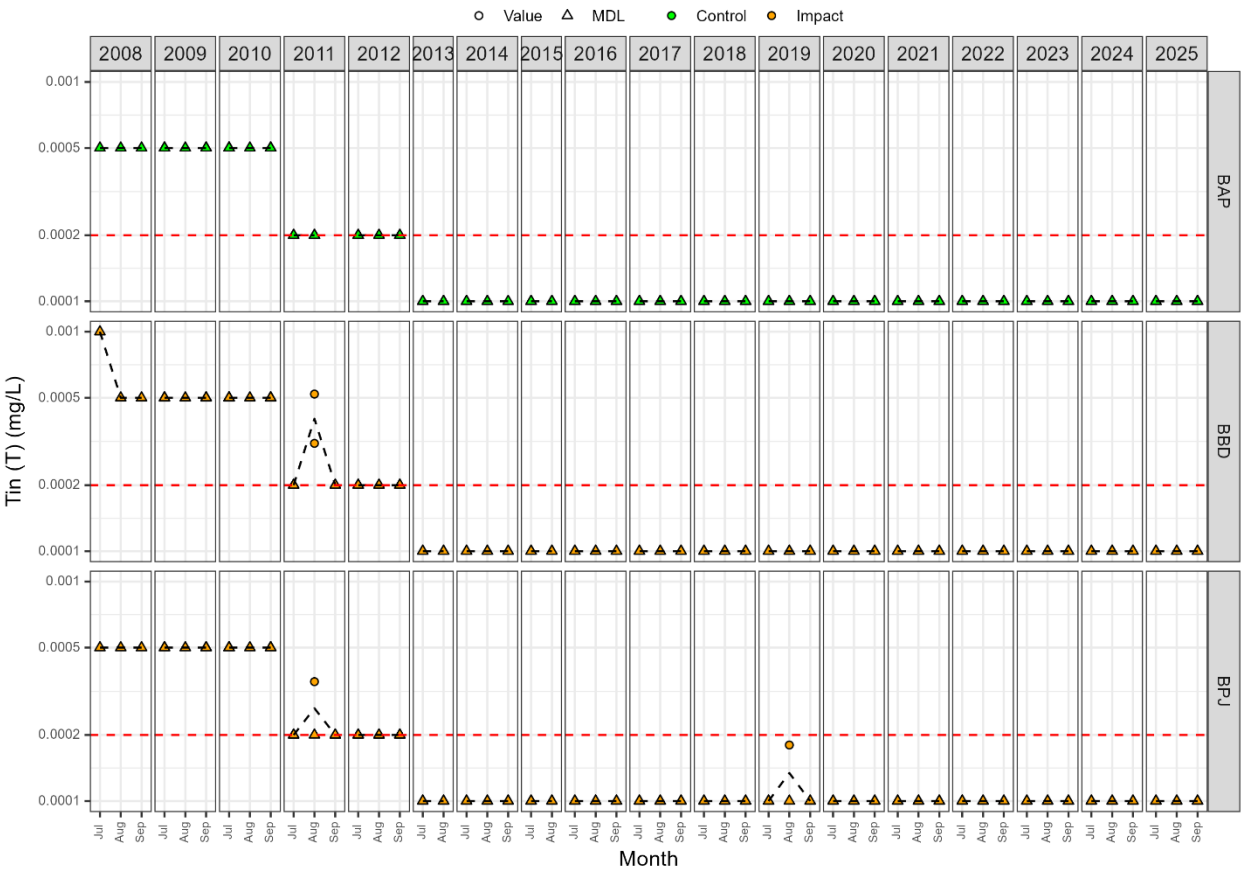


Figure C3-48. Total titanium (mg/L).

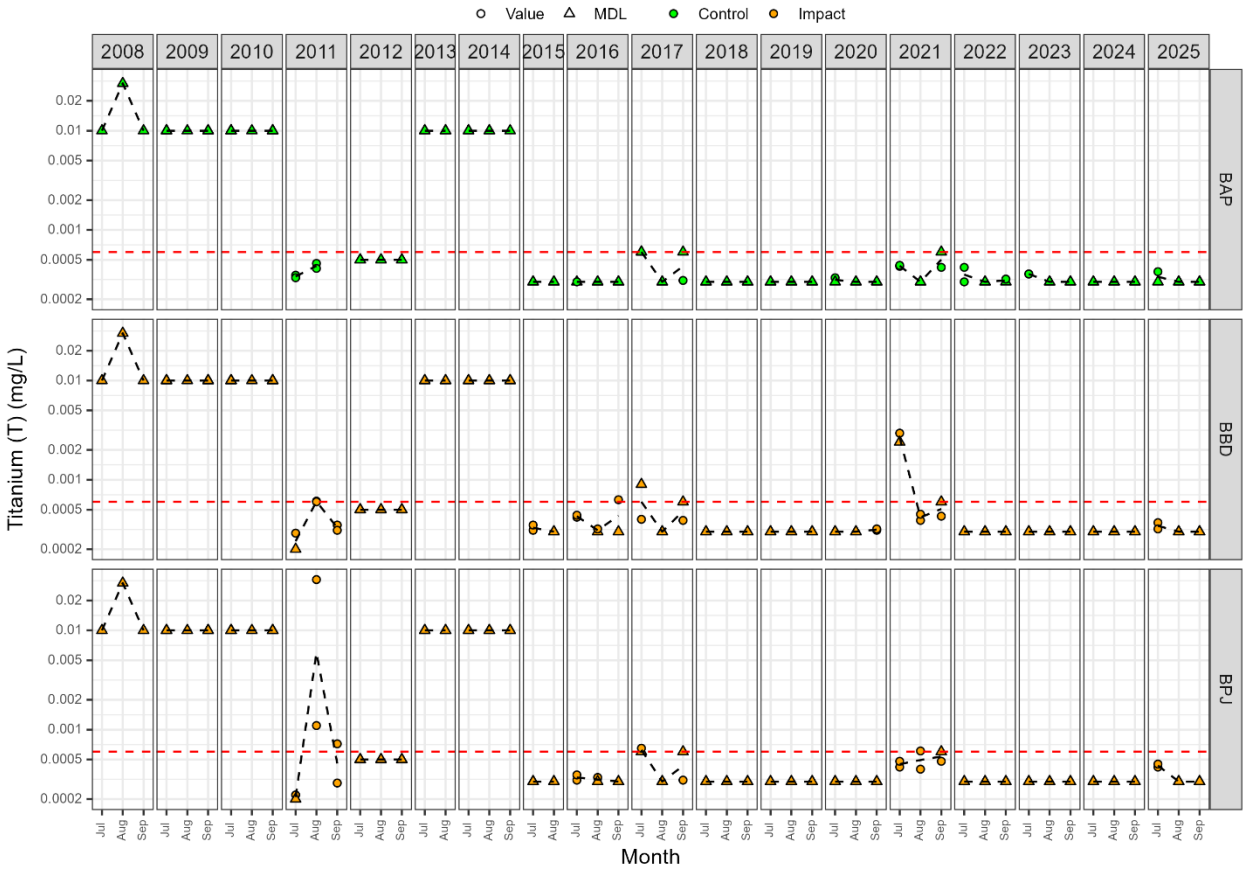


Figure C3-49. Total uranium (mg/L).

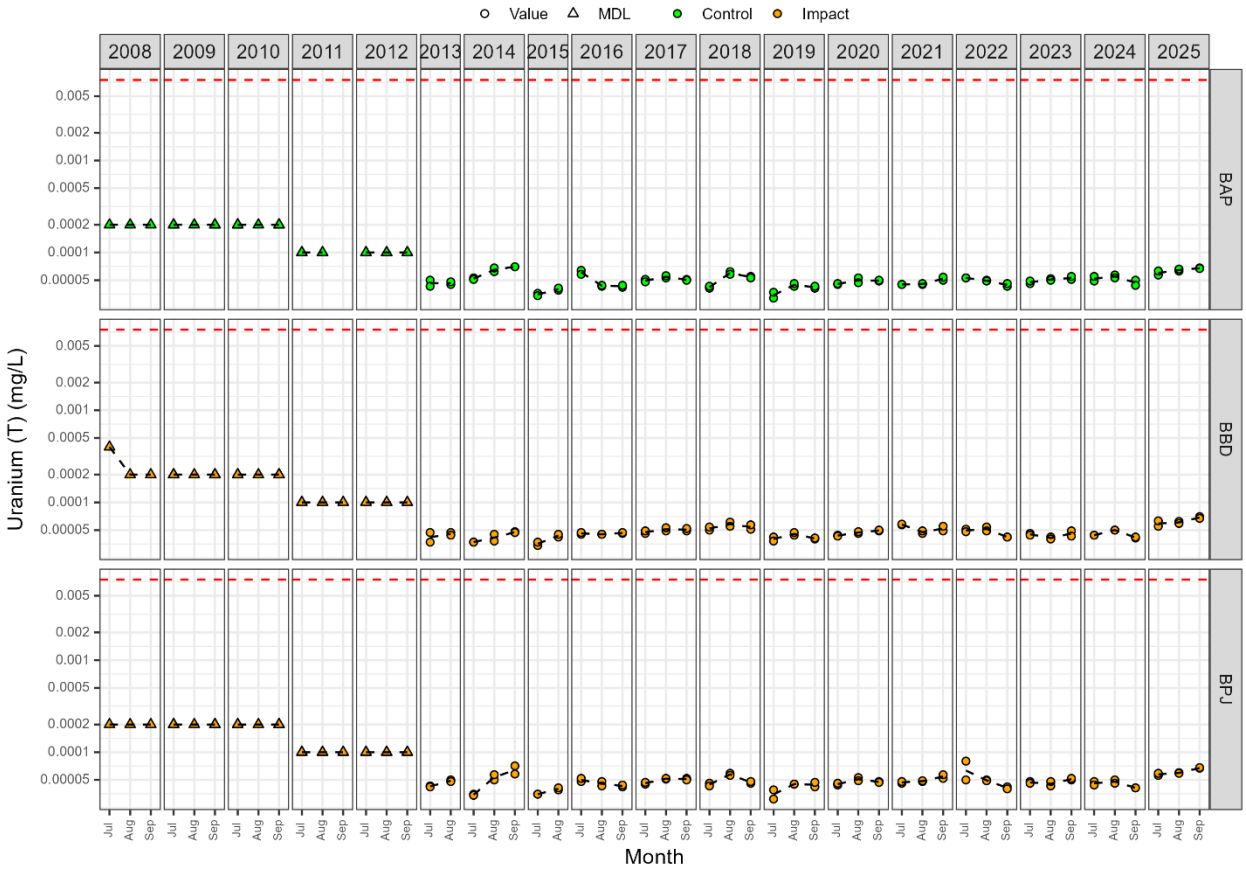


Figure C3-50. Total vanadium (mg/L).

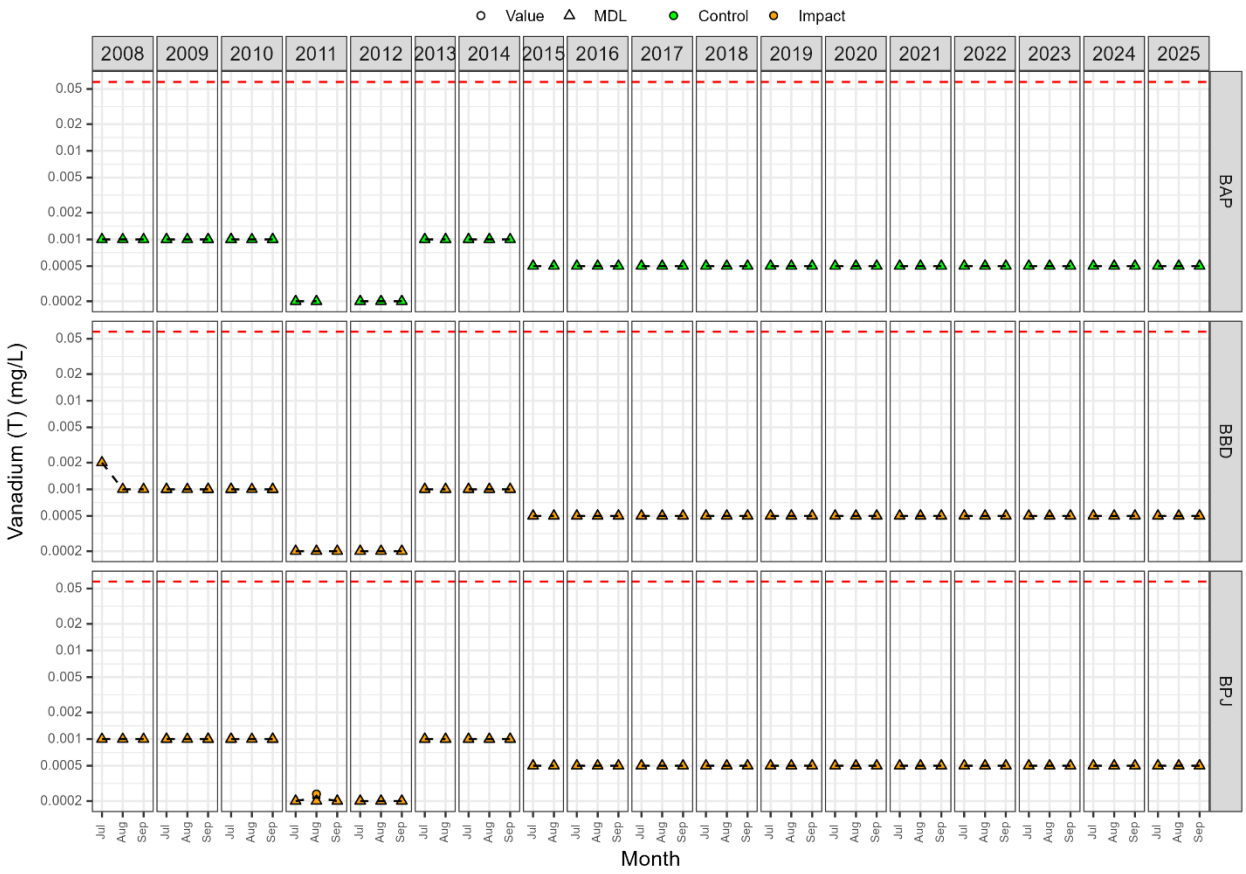


Figure C3-51. Total zinc (mg/L).

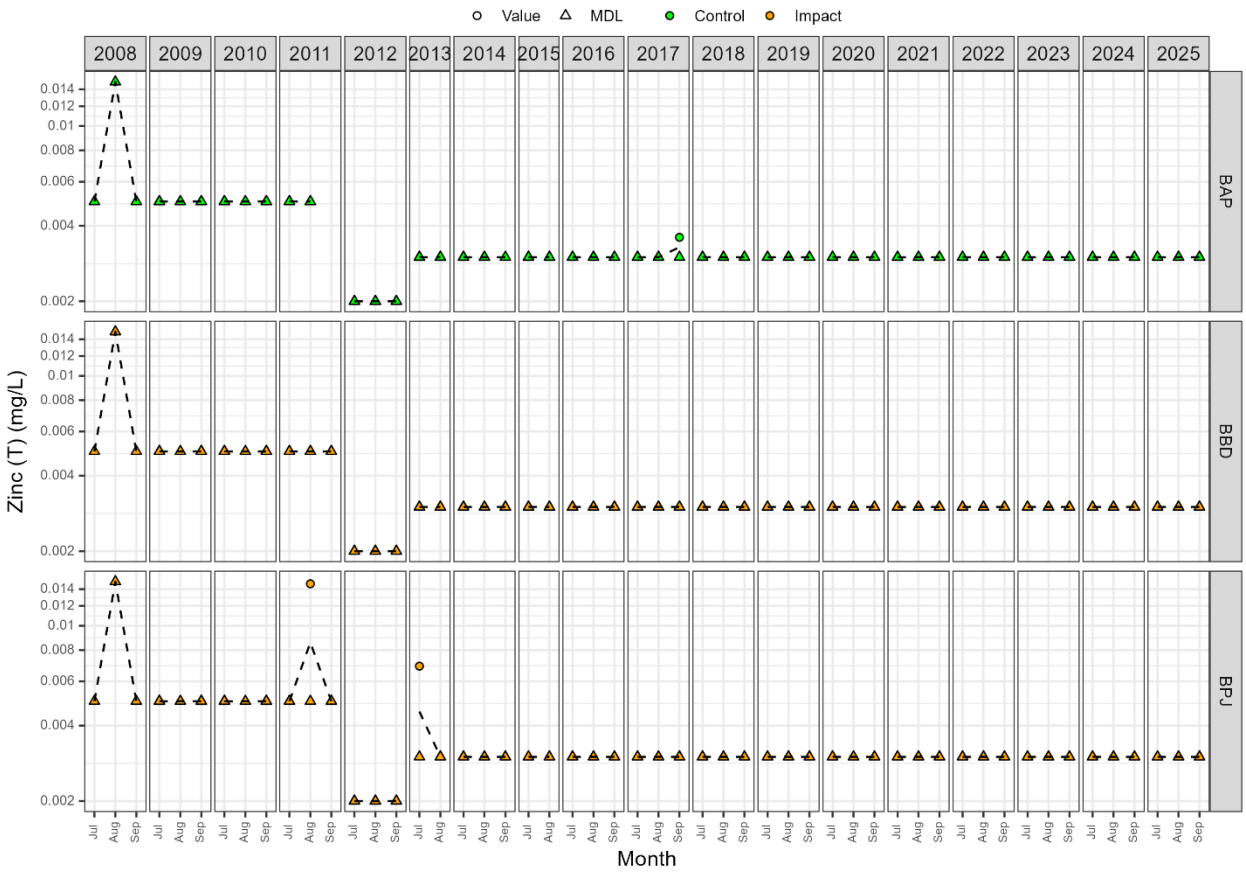


Figure C3-52. Dissolved aluminum (mg/L).

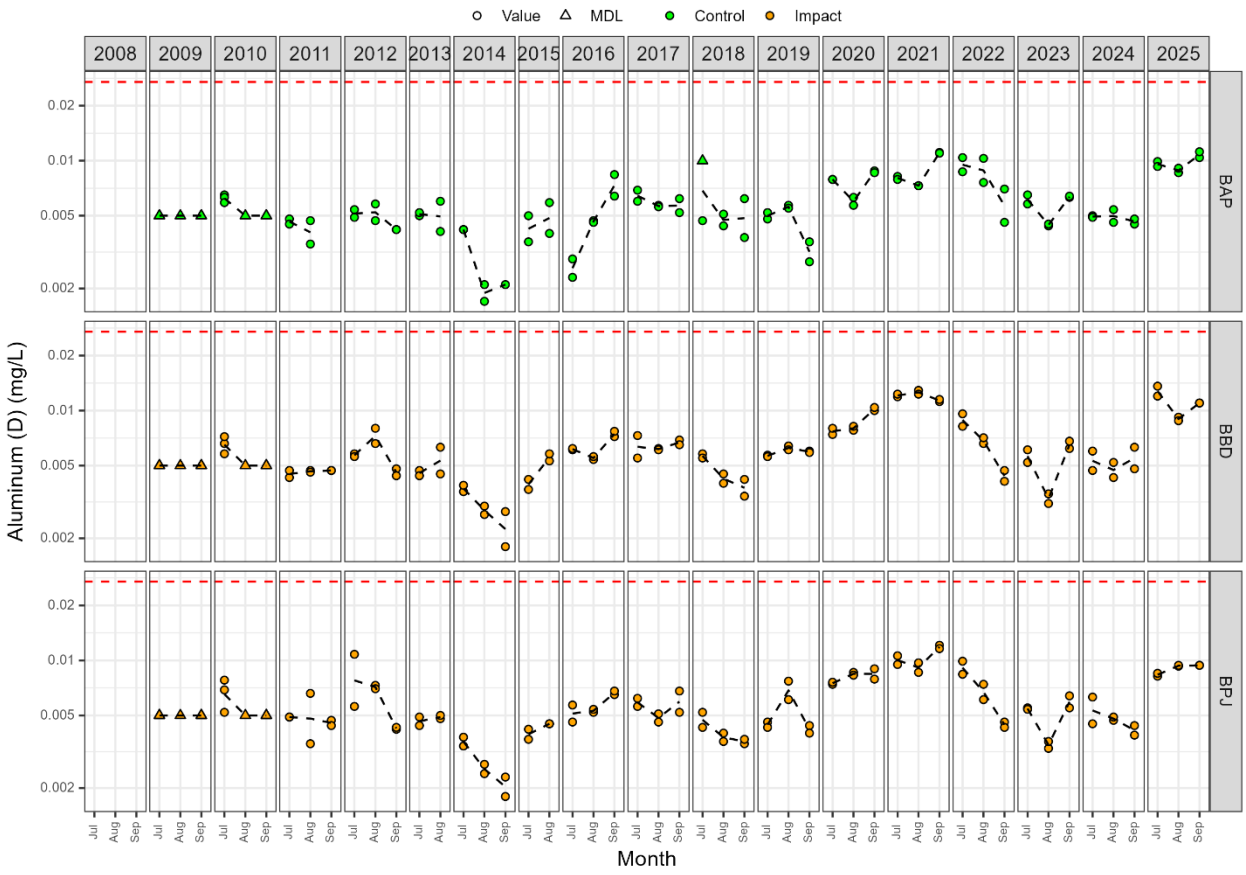


Figure C3-53. Dissolved antimony (mg/L).

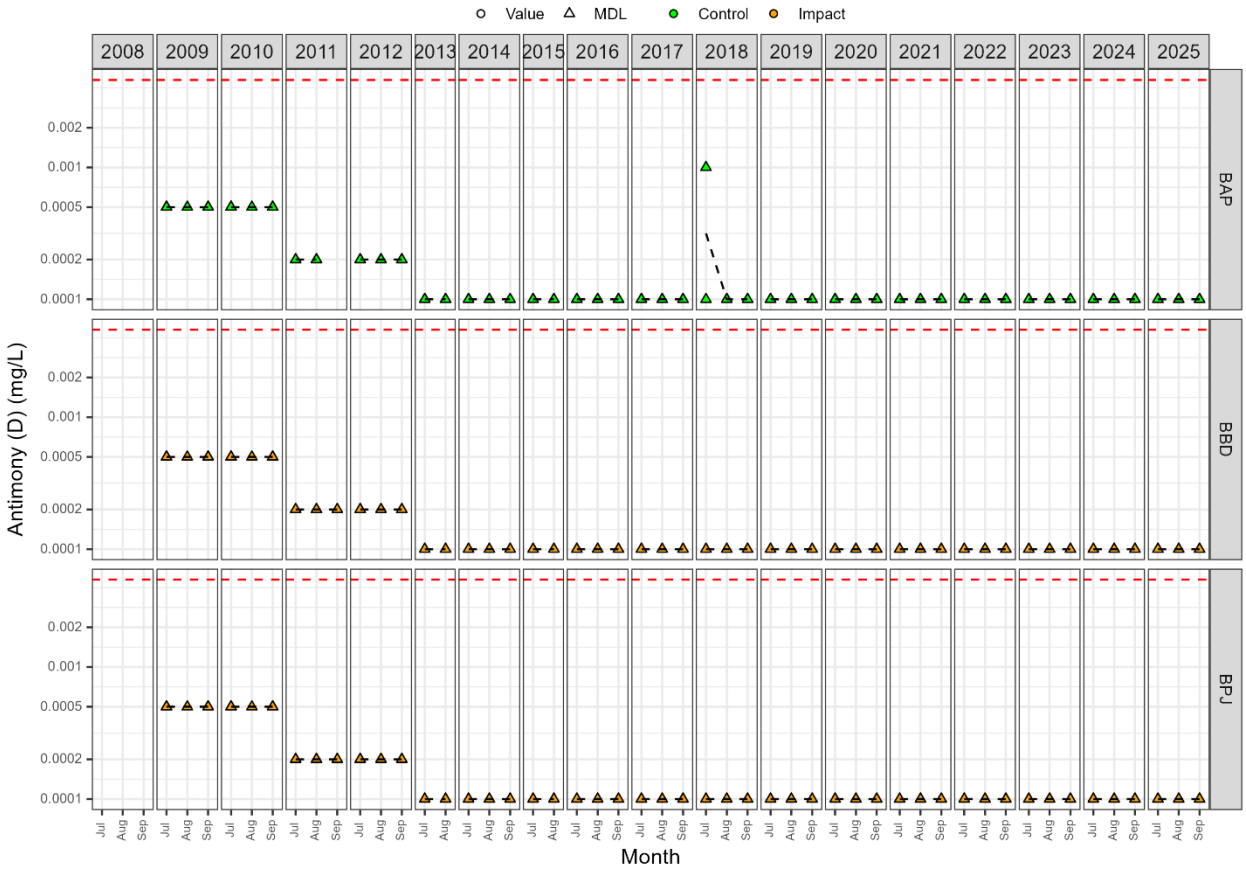


Figure C3-54. Dissolved arsenic (mg/L).

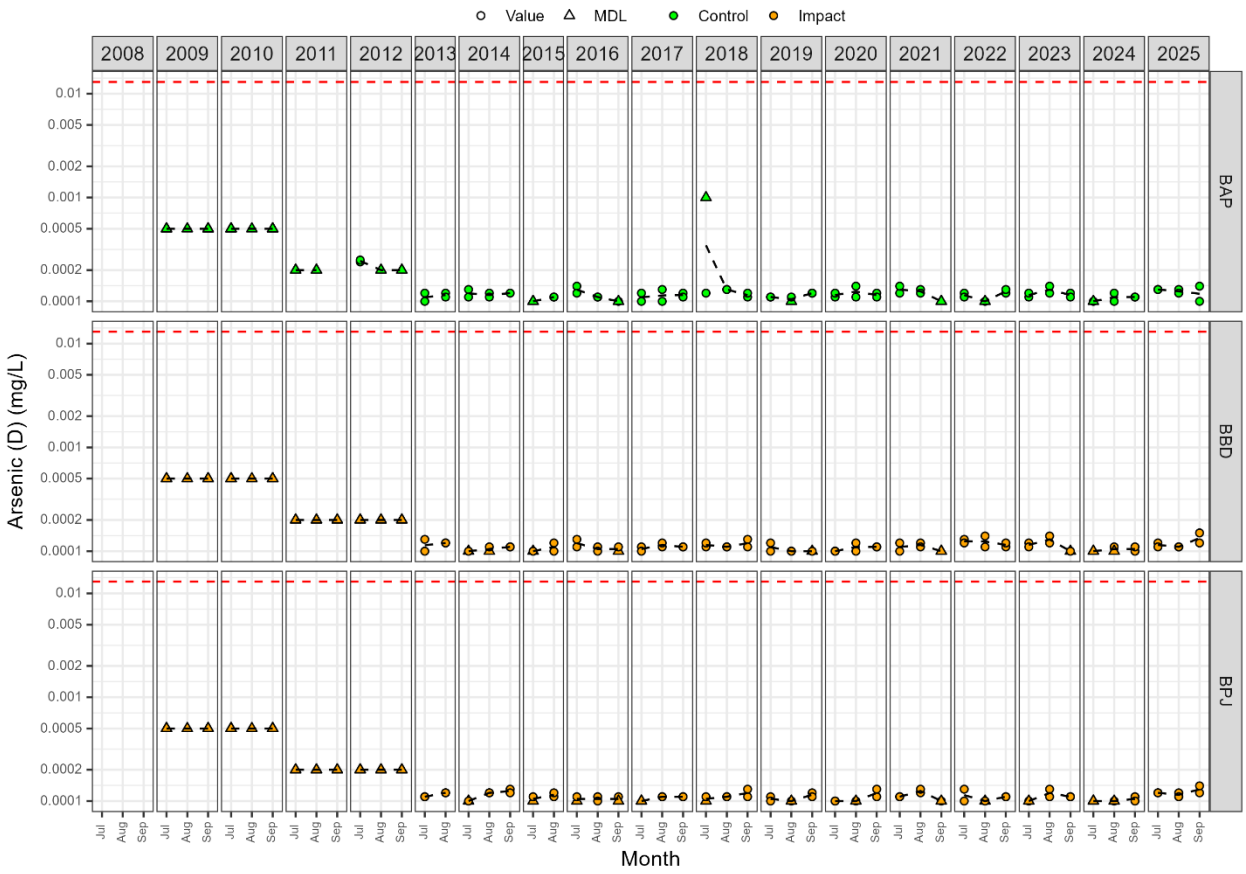


Figure C3-55. Dissolved barium (mg/L).

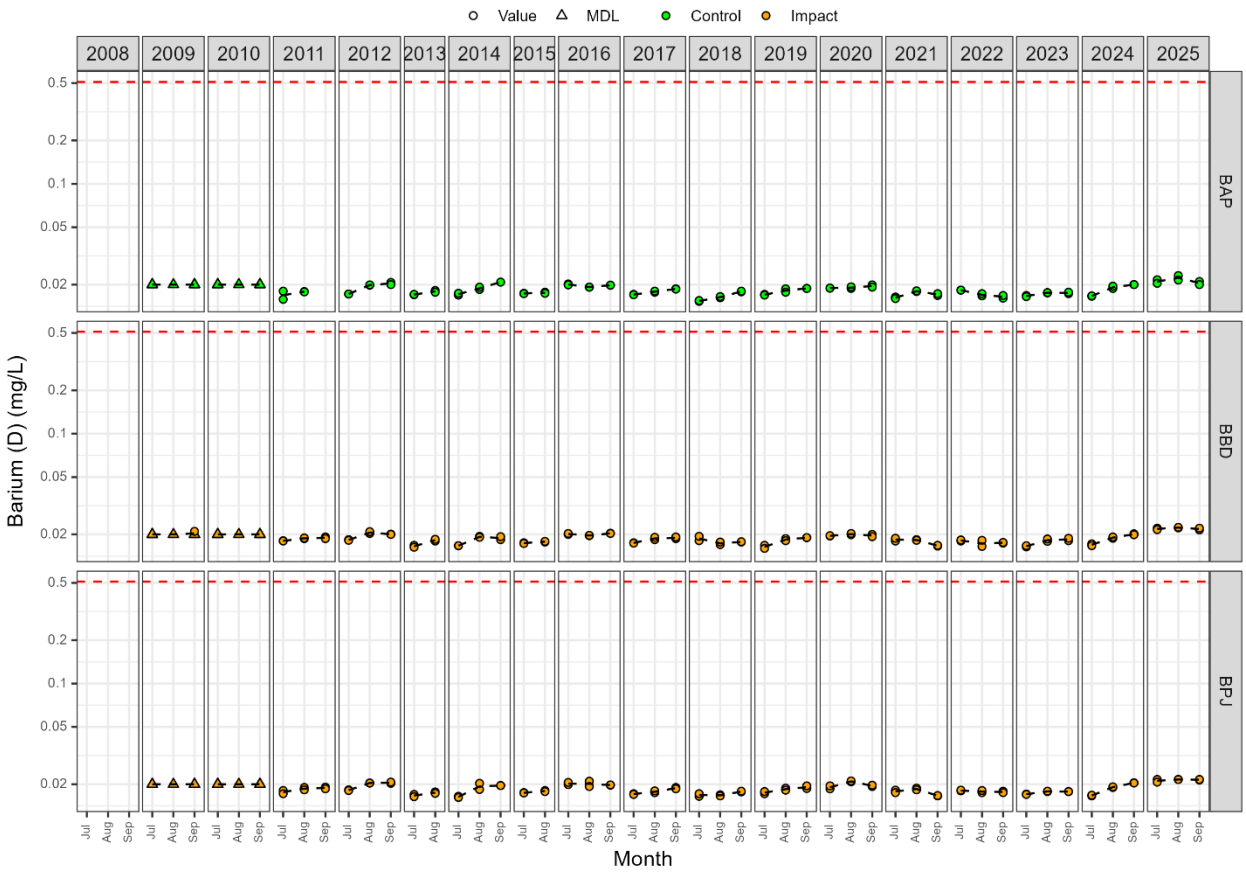


Figure C3-56. Dissolved beryllium (mg/L).

Figure C3-57. Dissolved boron (mg/L).

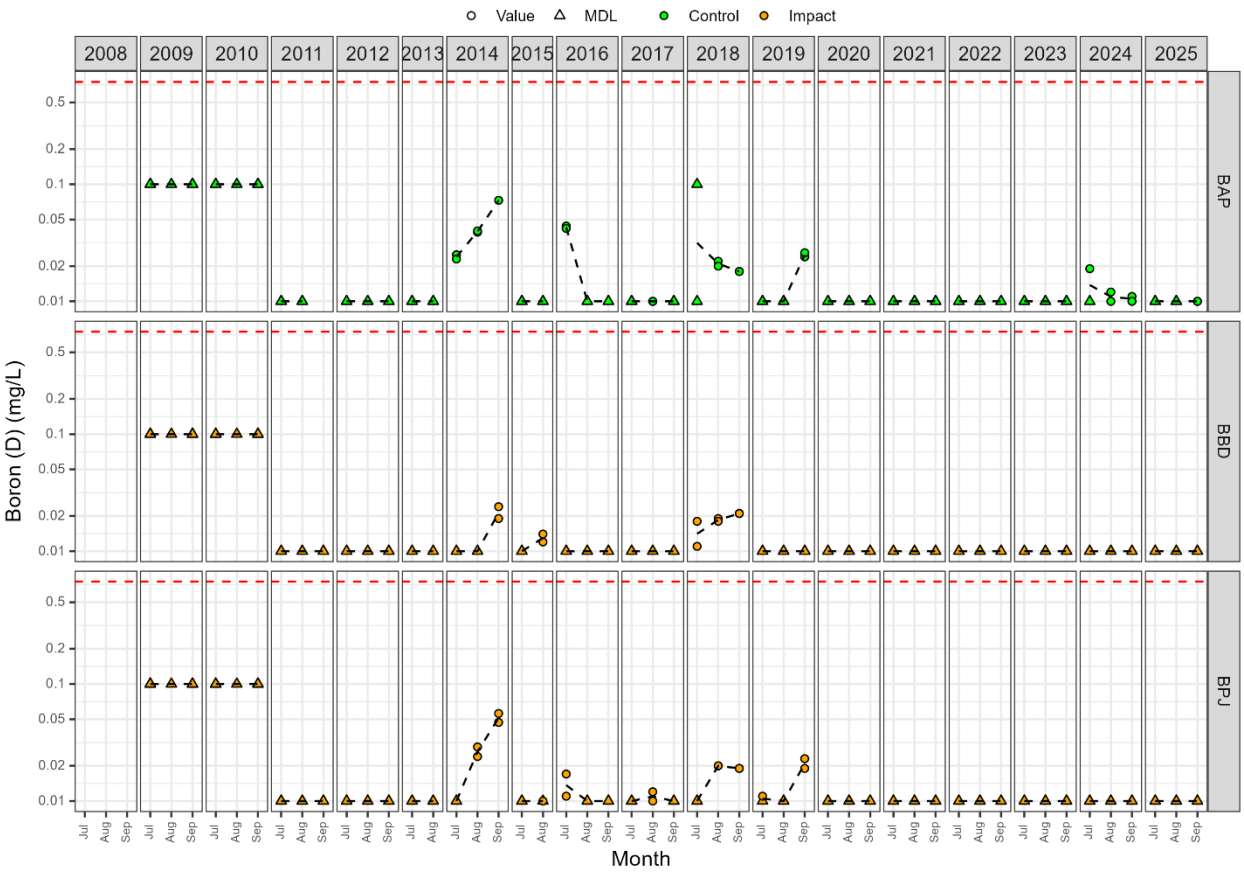


Figure C3-58. Dissolved cadmium (mg/L).

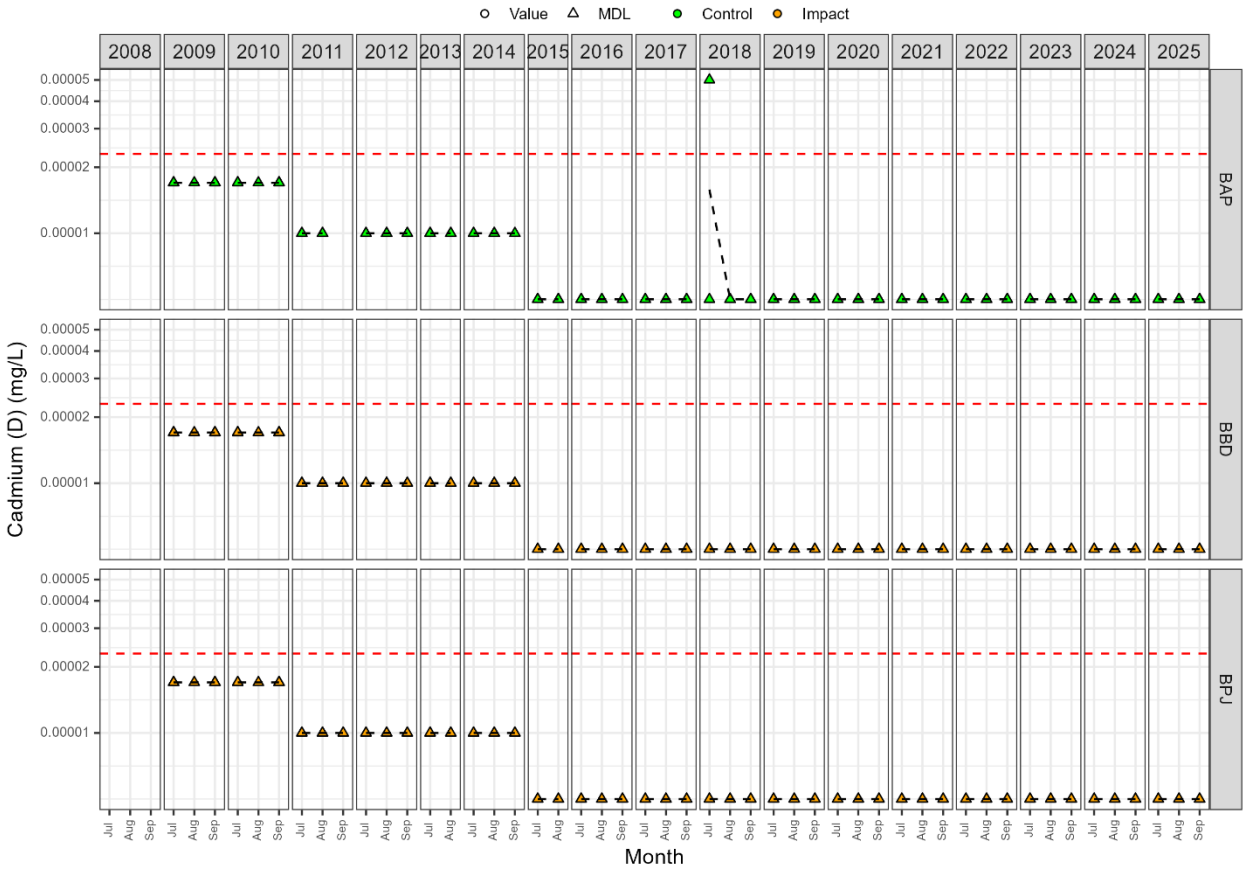


Figure C3-59. Dissolved chromium (mg/L).

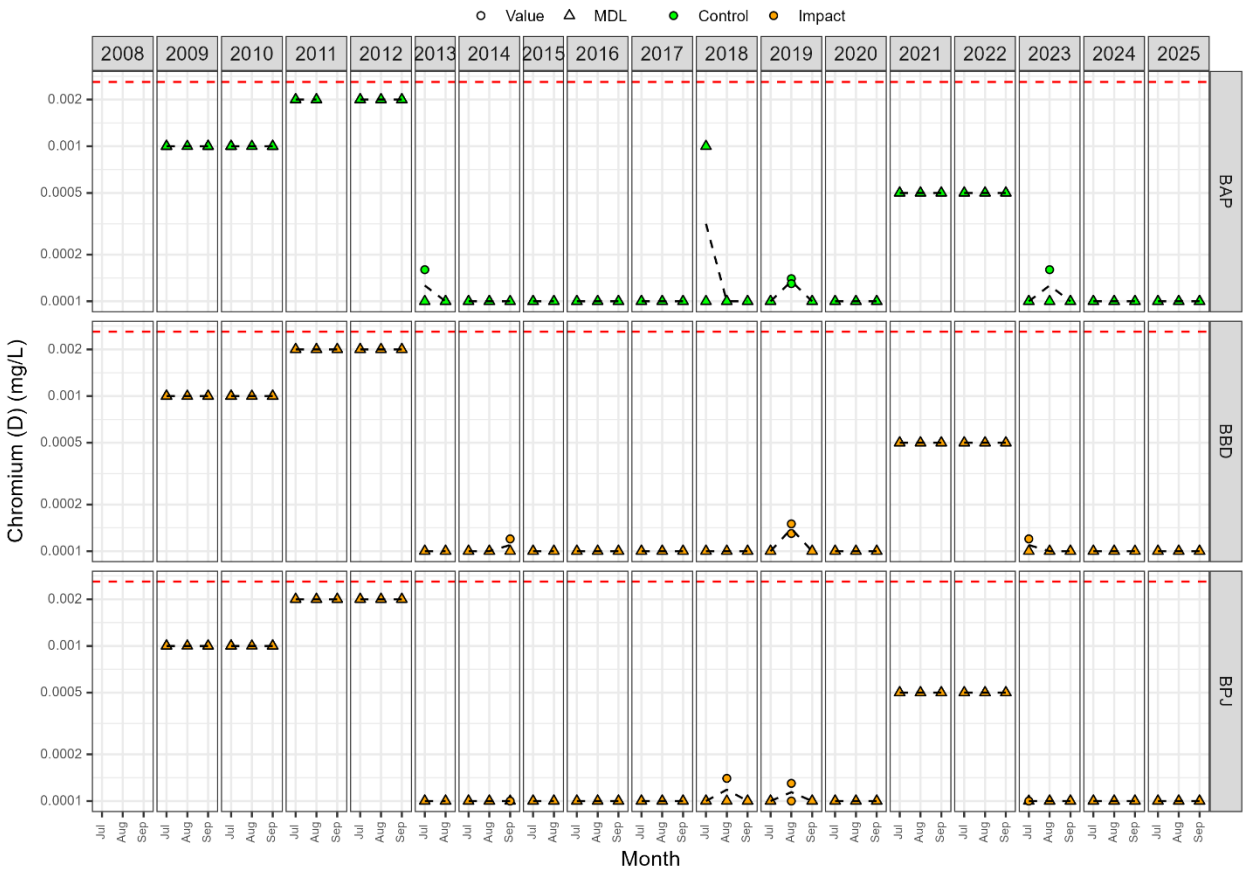


Figure C3-60. Dissolved copper (mg/L).

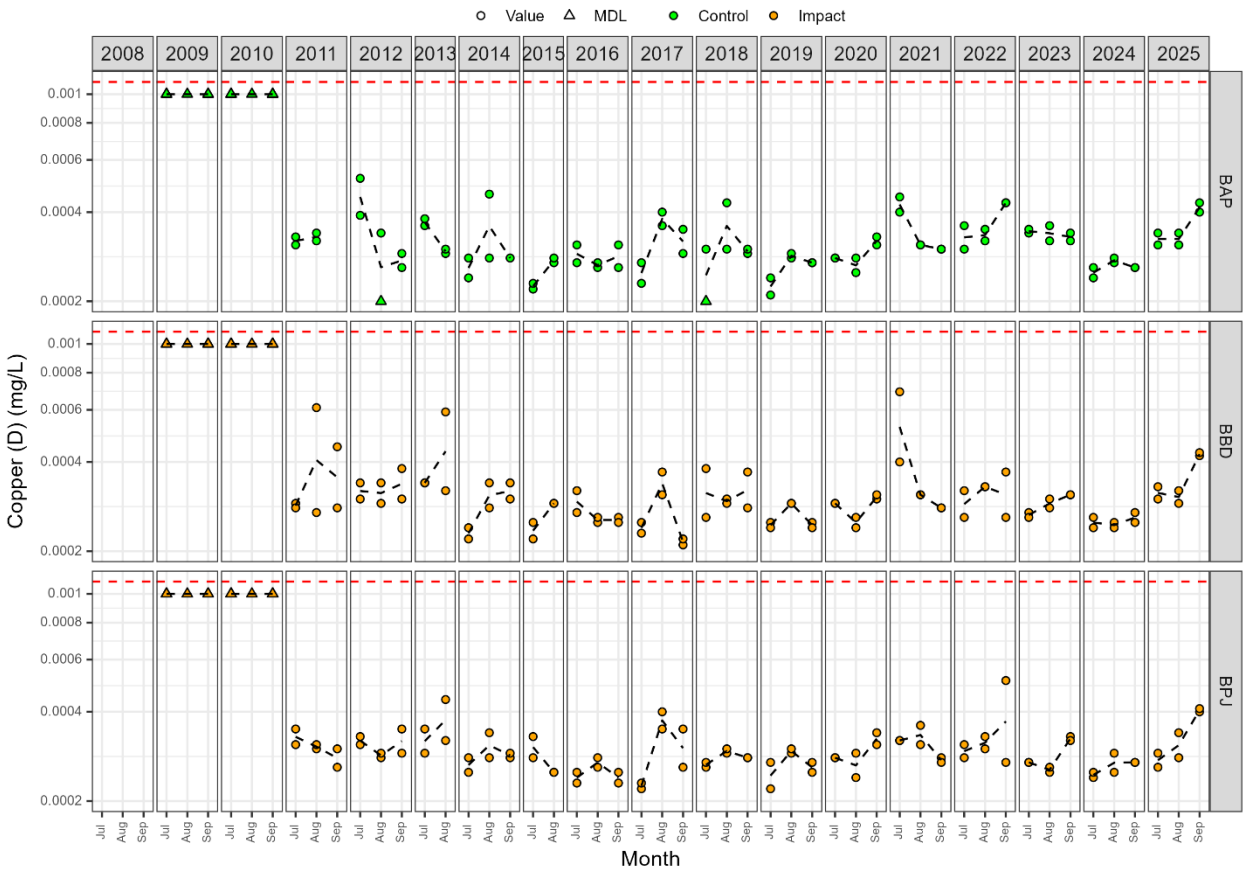


Figure C3-61. Dissolved iron (mg/L).

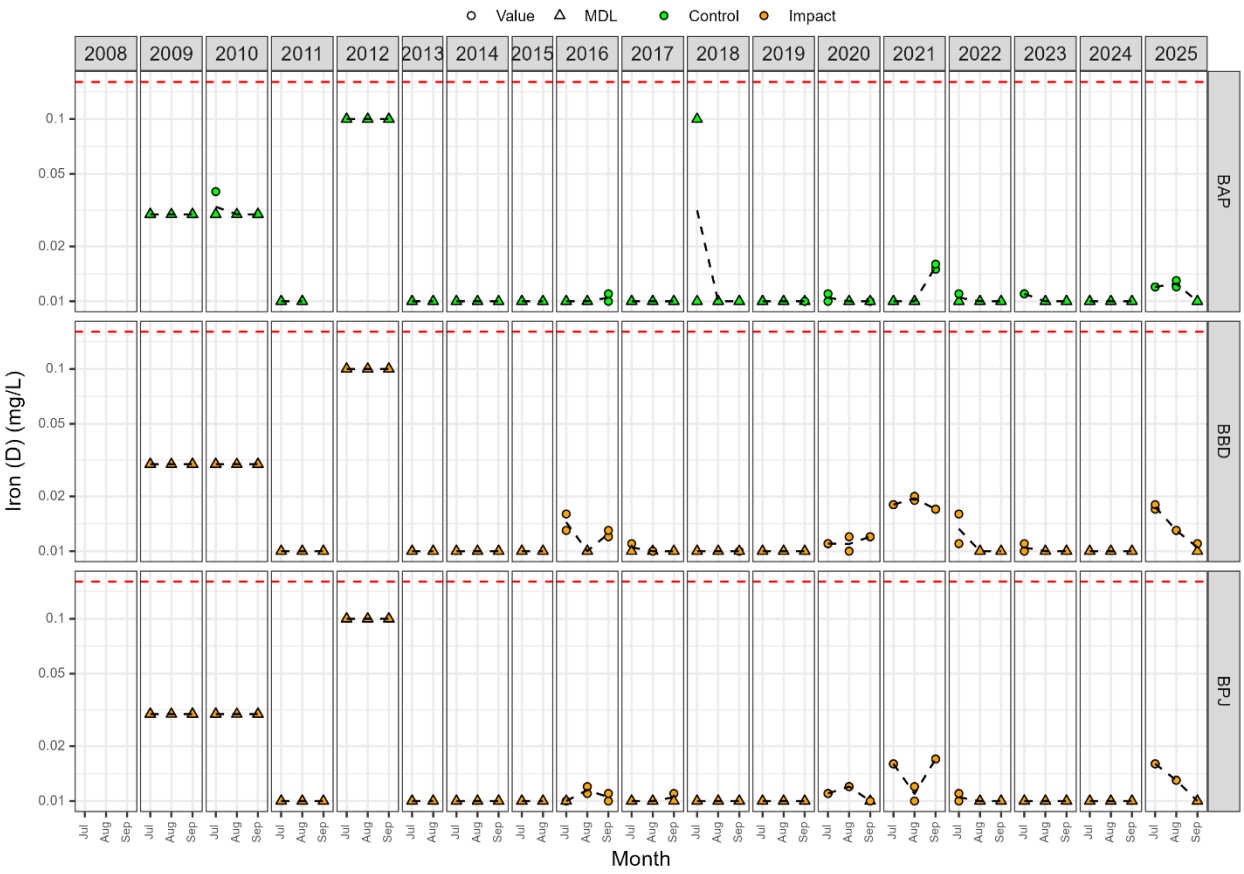


Figure C3-62. Dissolved lead (mg/L).

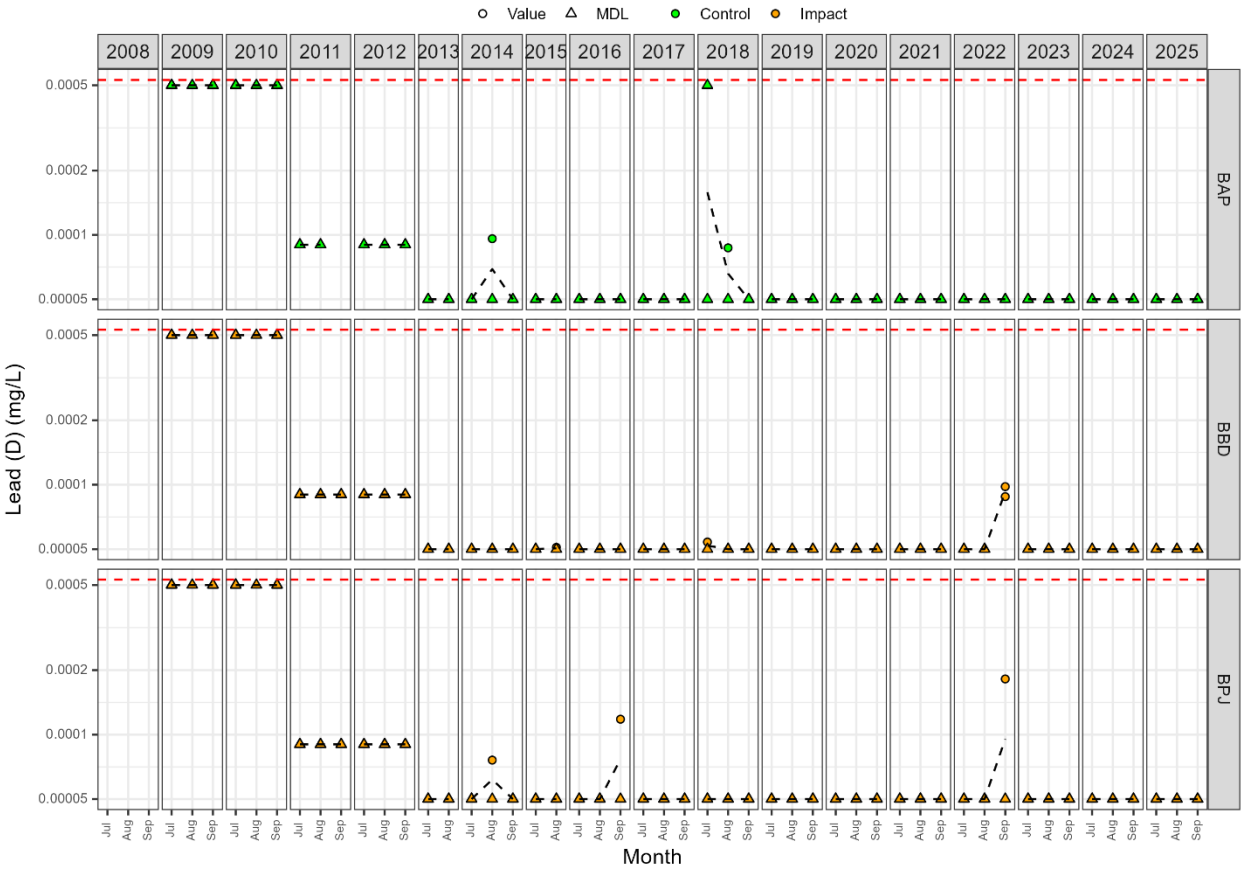


Figure C3-63. Dissolved lithium (mg/L).

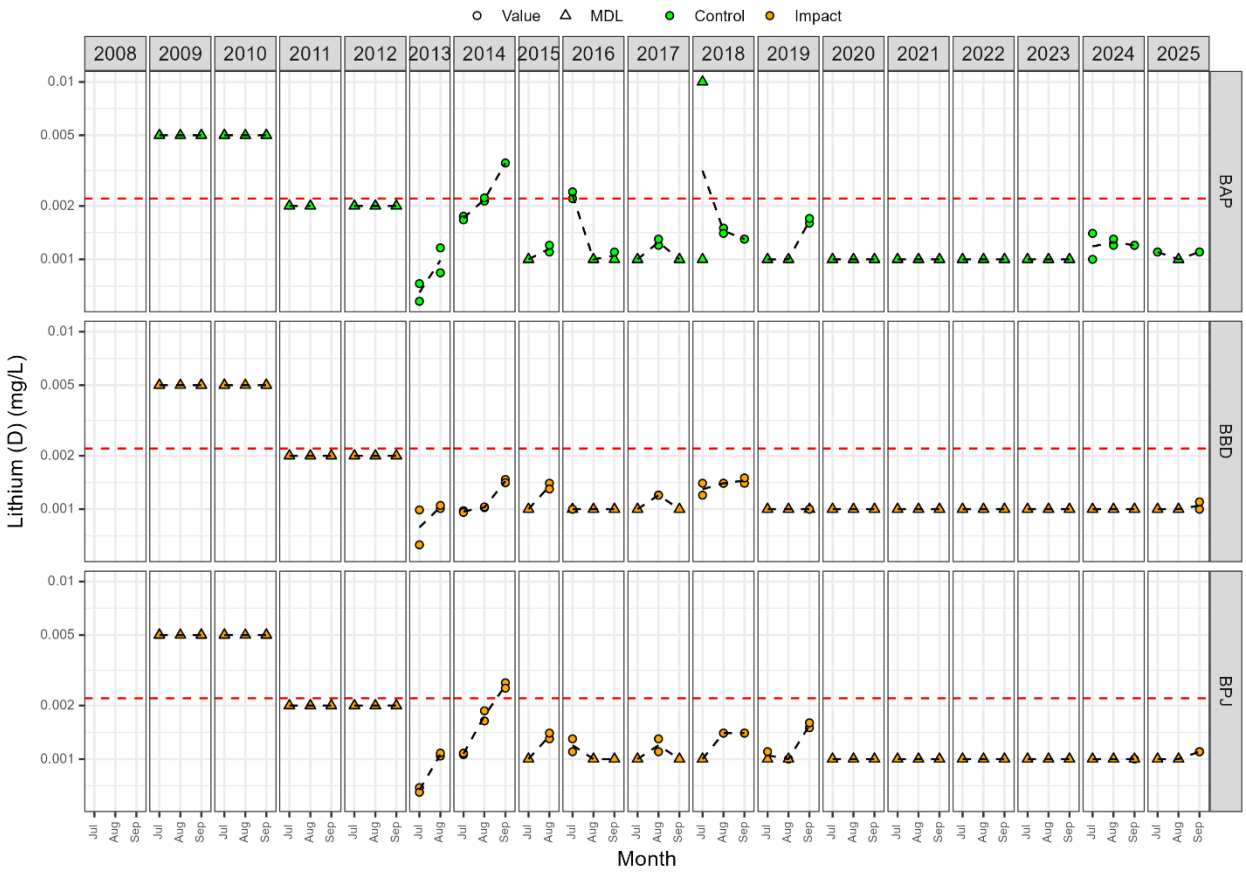


Figure C3-64. Dissolved manganese (mg/L).

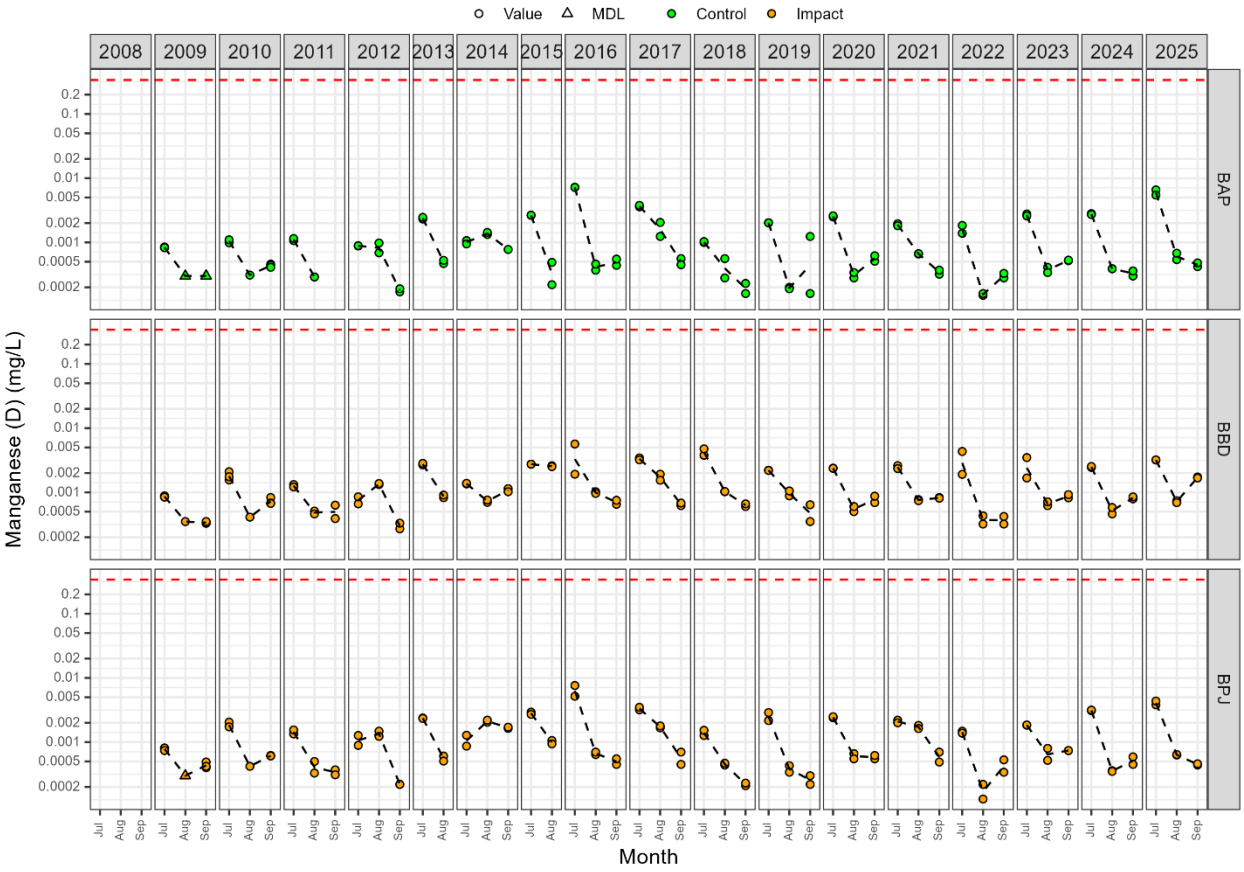


Figure C3-65. Dissolved mercury (mg/L).

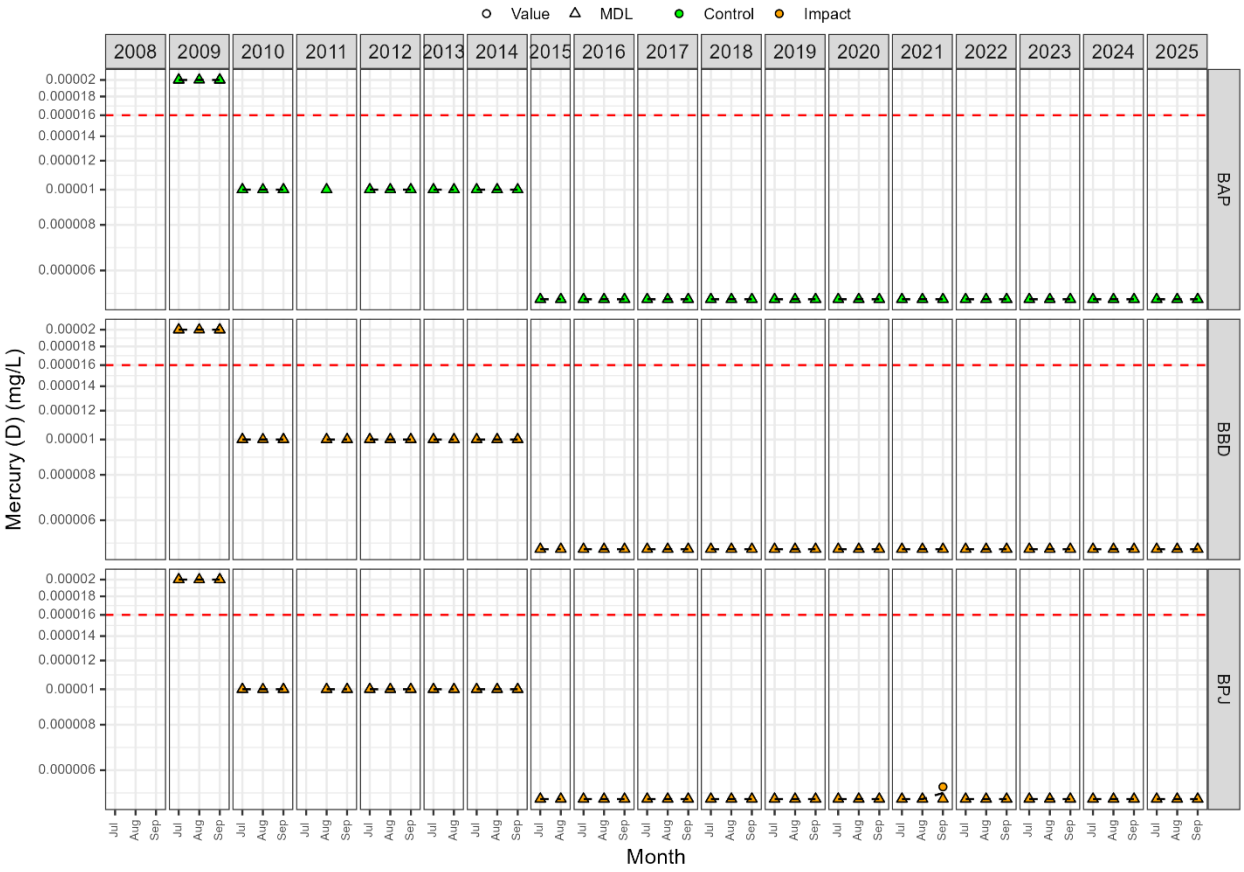


Figure C3-66. Dissolved molybdenum (mg/L).

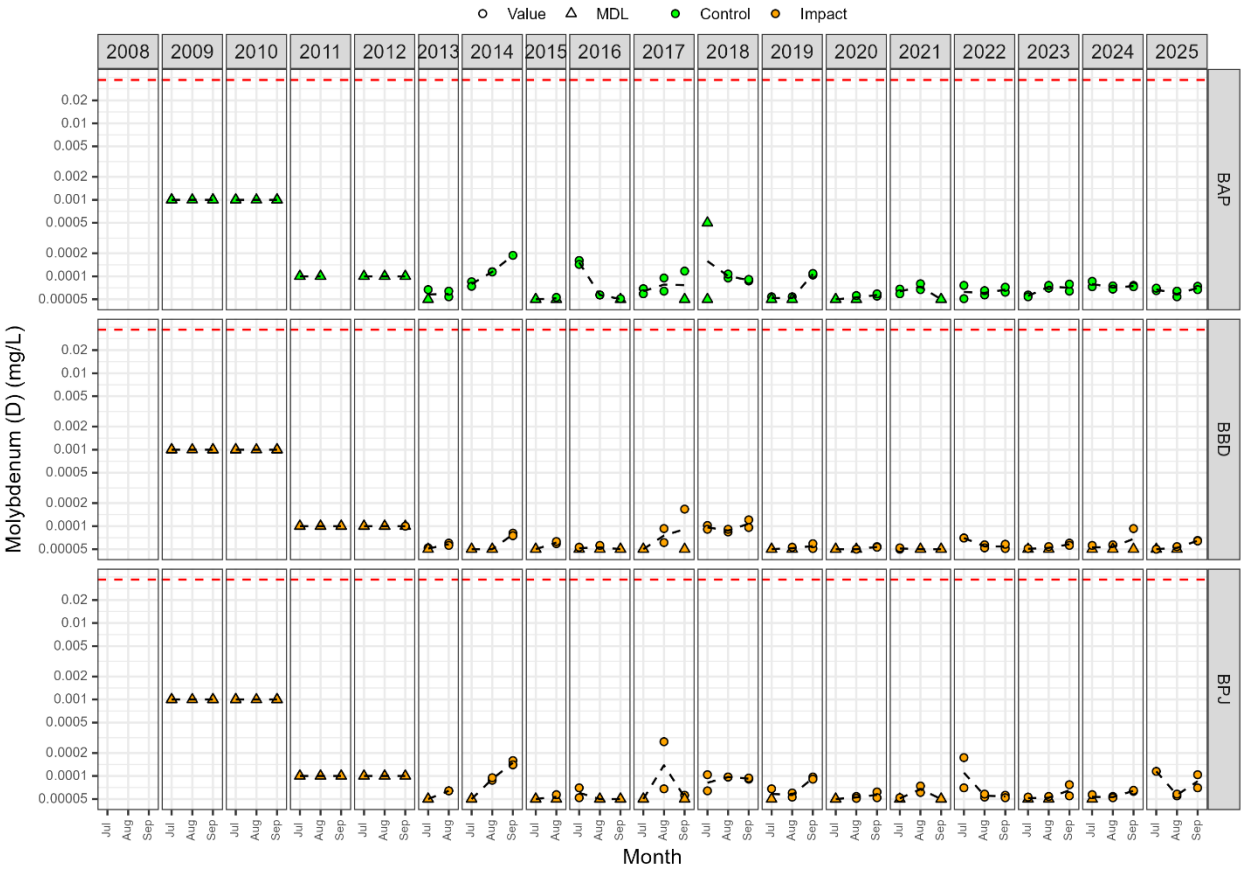


Figure C3-67. Dissolved nickel (mg/L).

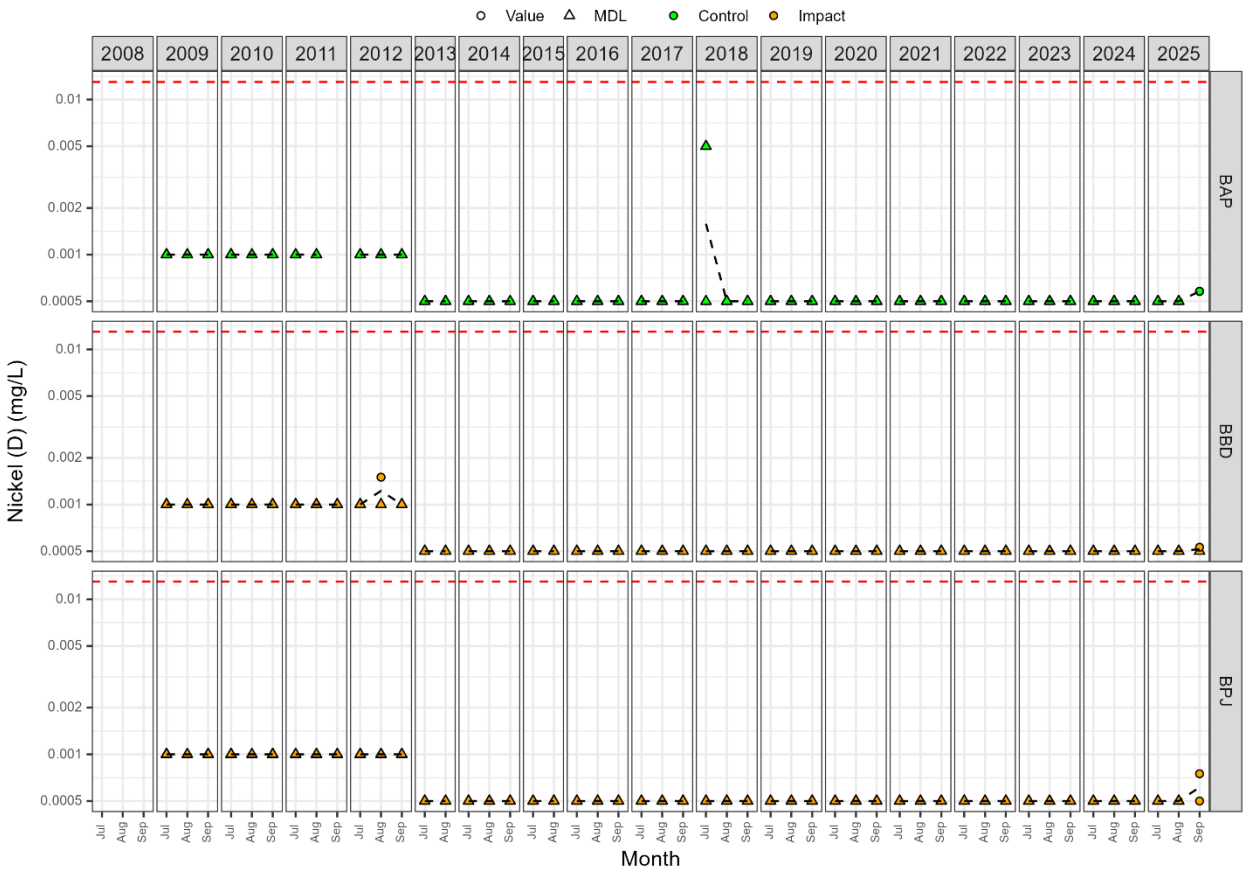


Figure C3-68. Dissolved selenium (mg/L).

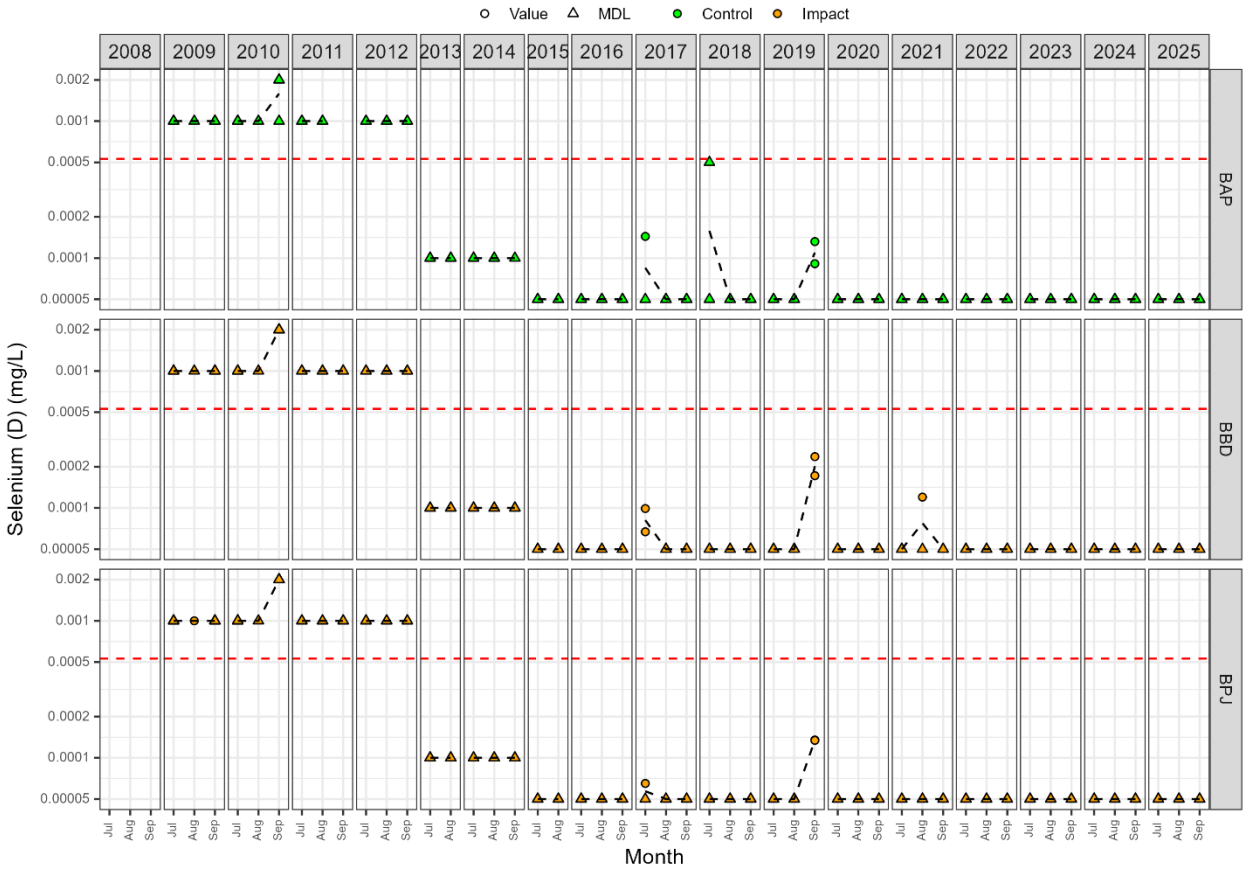


Figure C3-69. Dissolved silicon (mg/L).

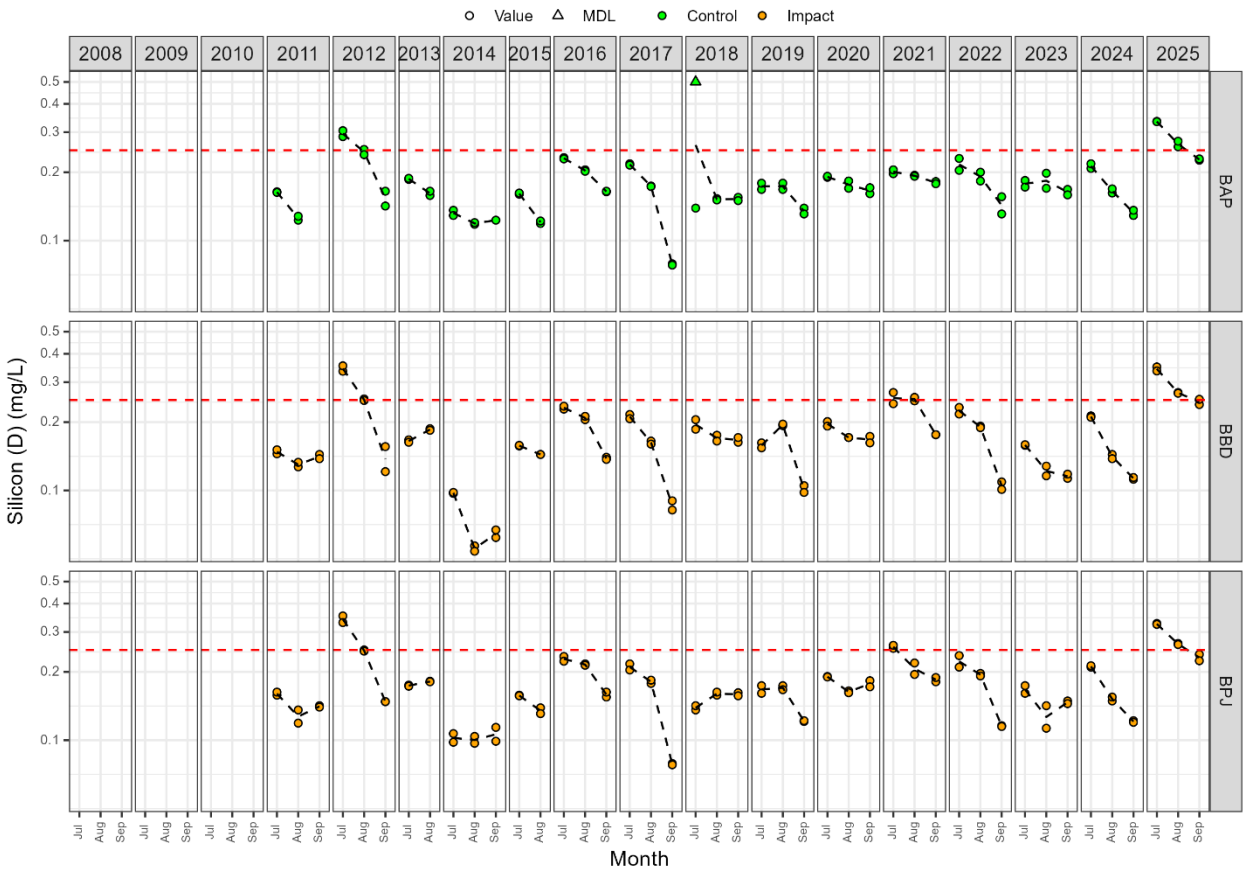


Figure C3-70. Dissolved silver (mg/L).

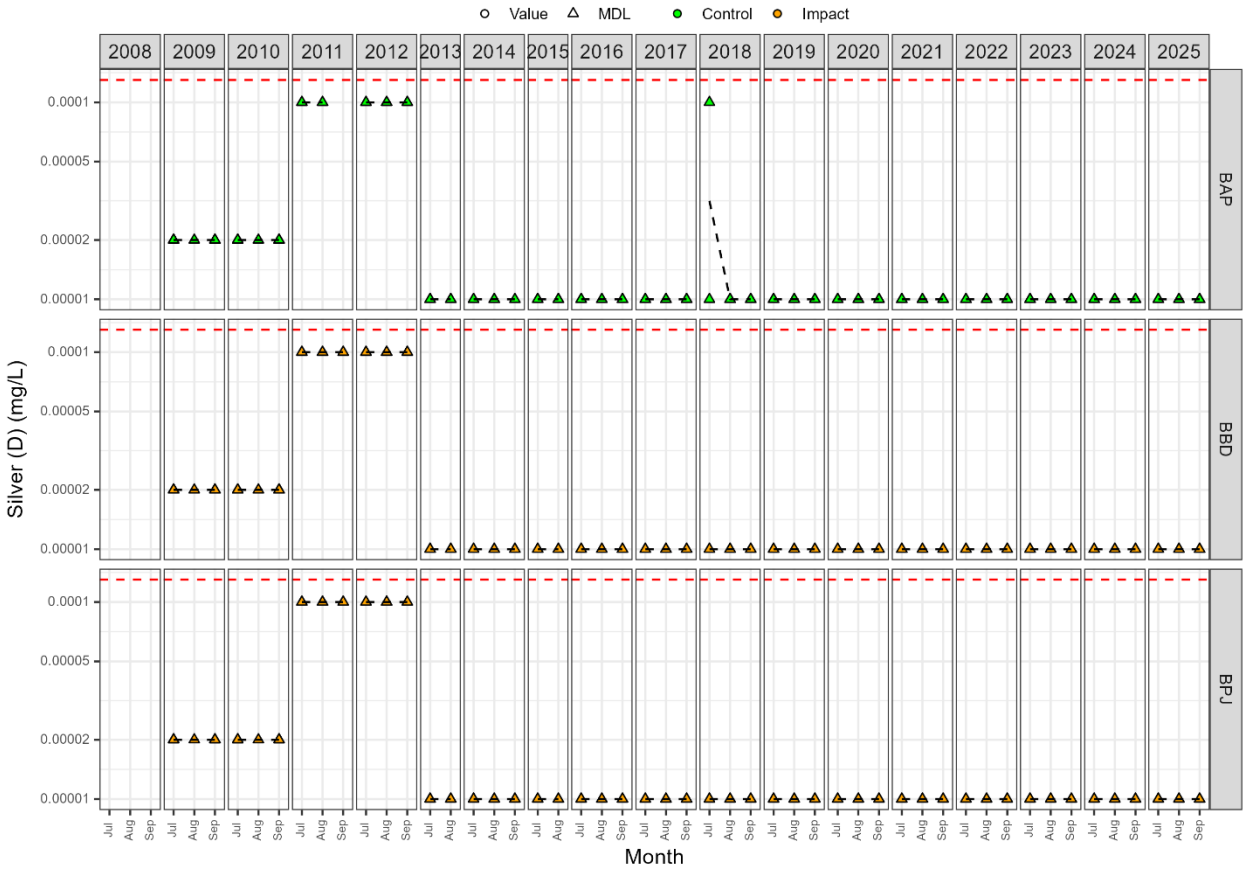


Figure C3-71. Dissolved strontium (mg/L).

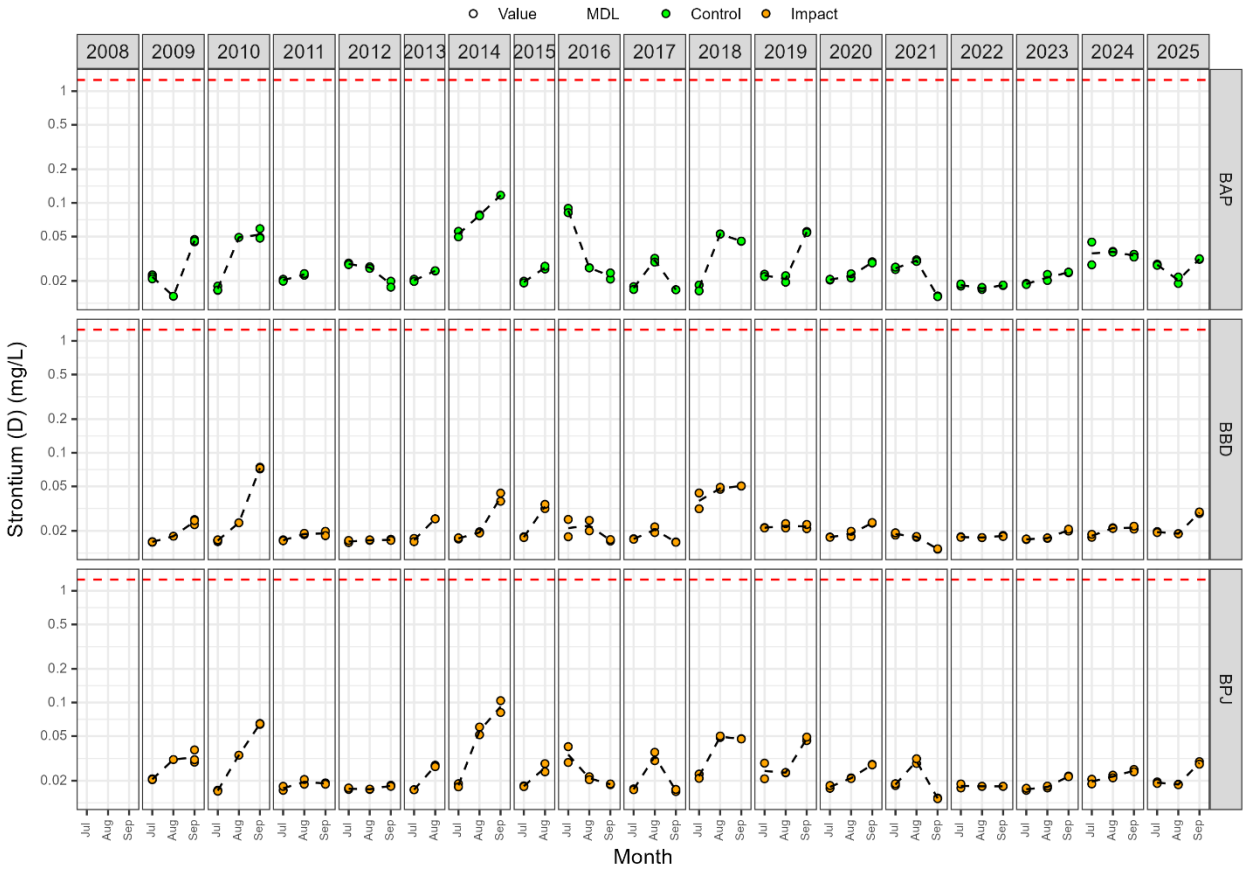


Figure C3-72. Dissolved thallium (mg/L).

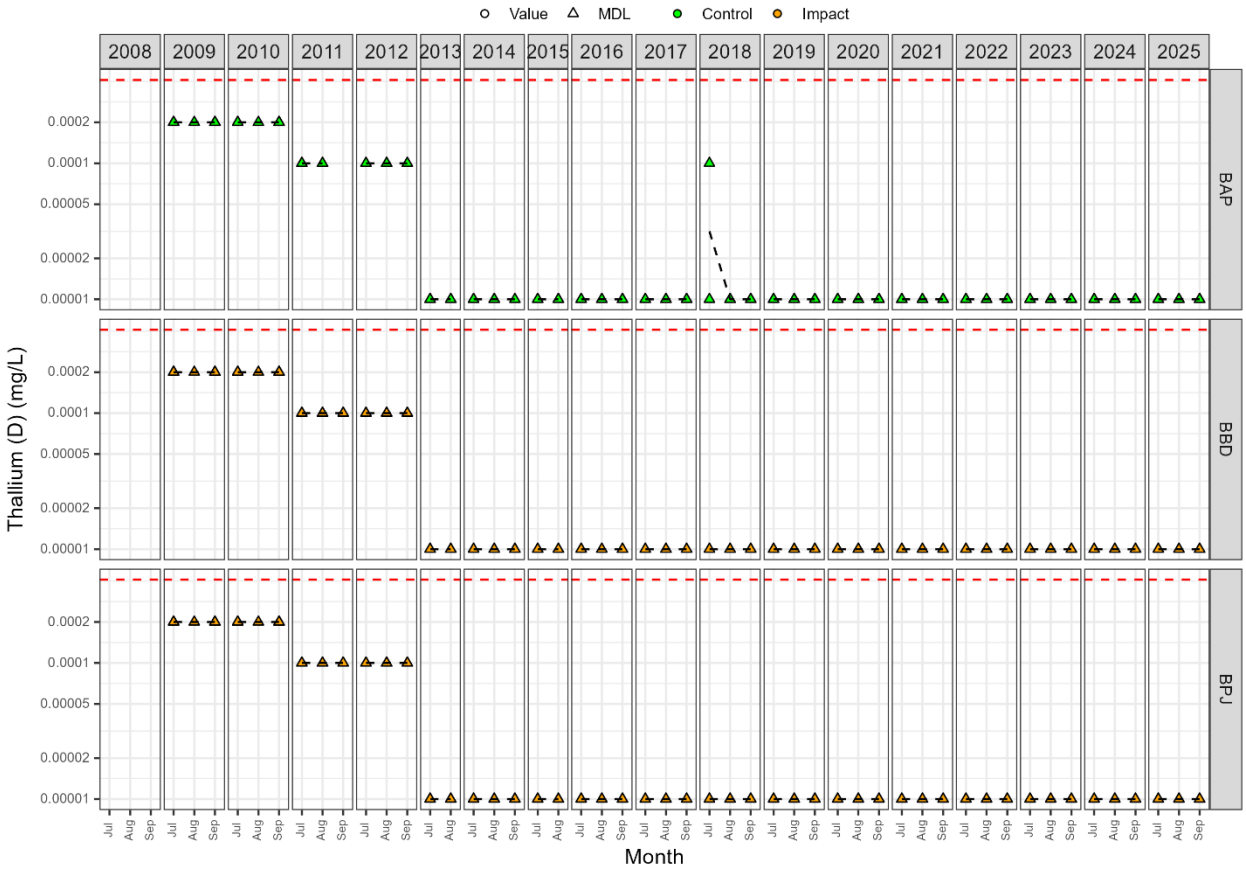


Figure C3-73. Dissolved tin (mg/L).

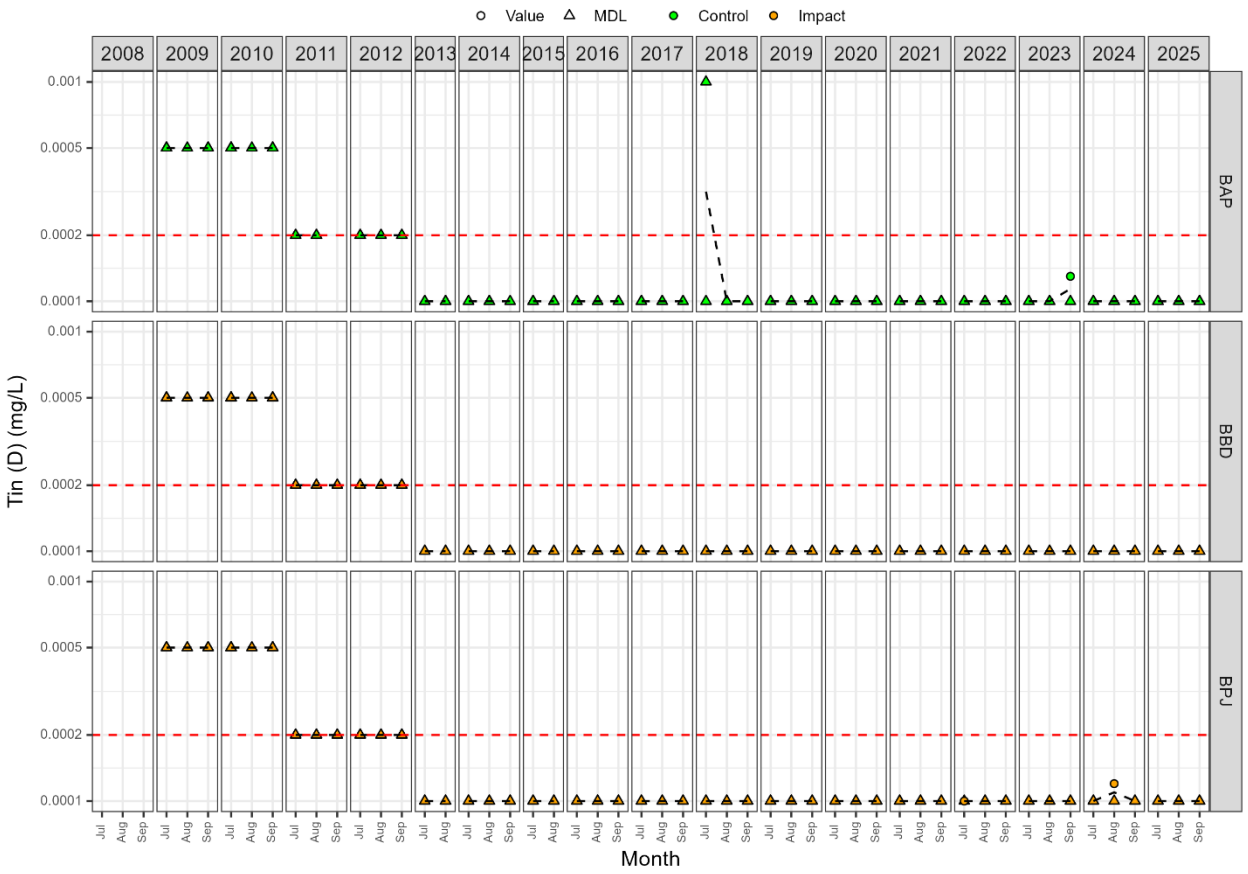


Figure C3-74. Dissolved titanium (mg/L).

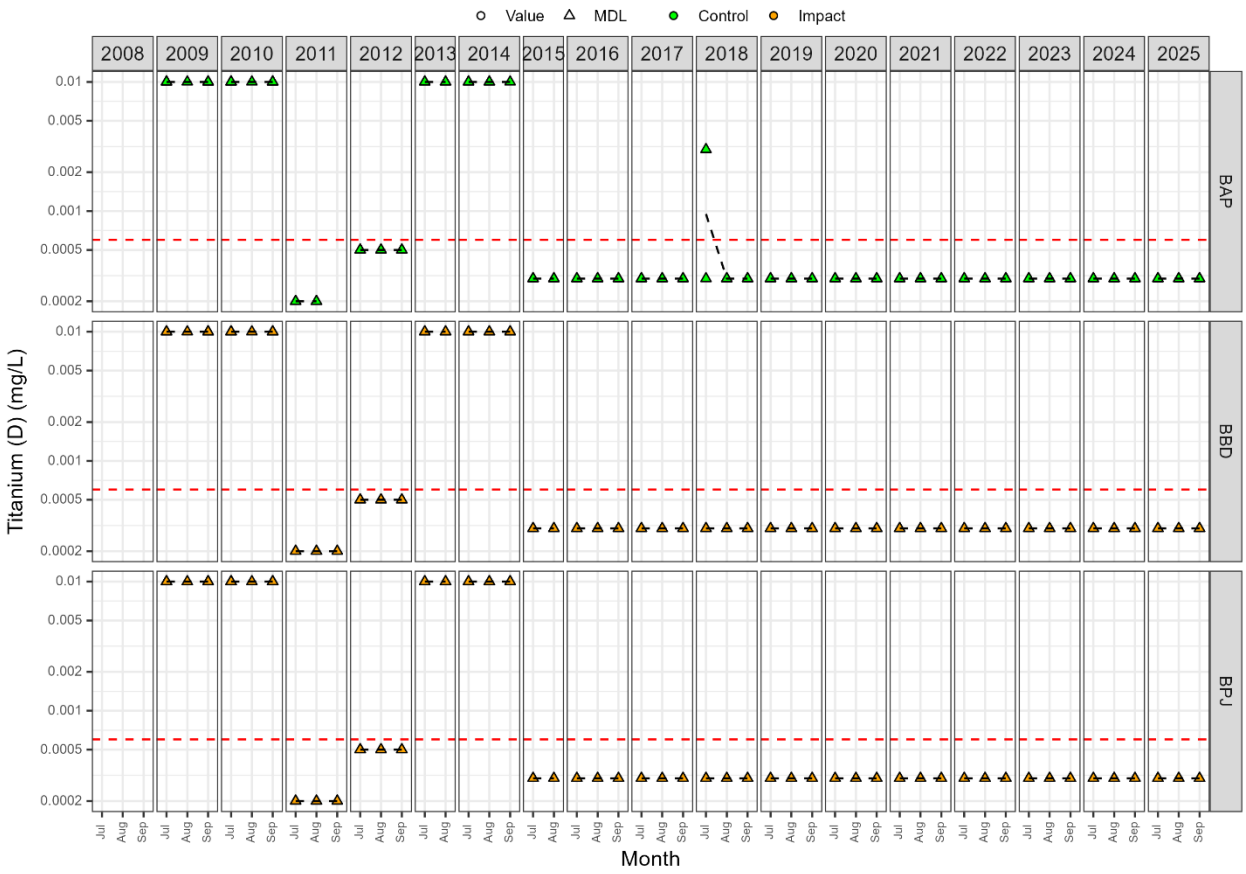


Figure C3-75. Dissolved uranium (mg/L).

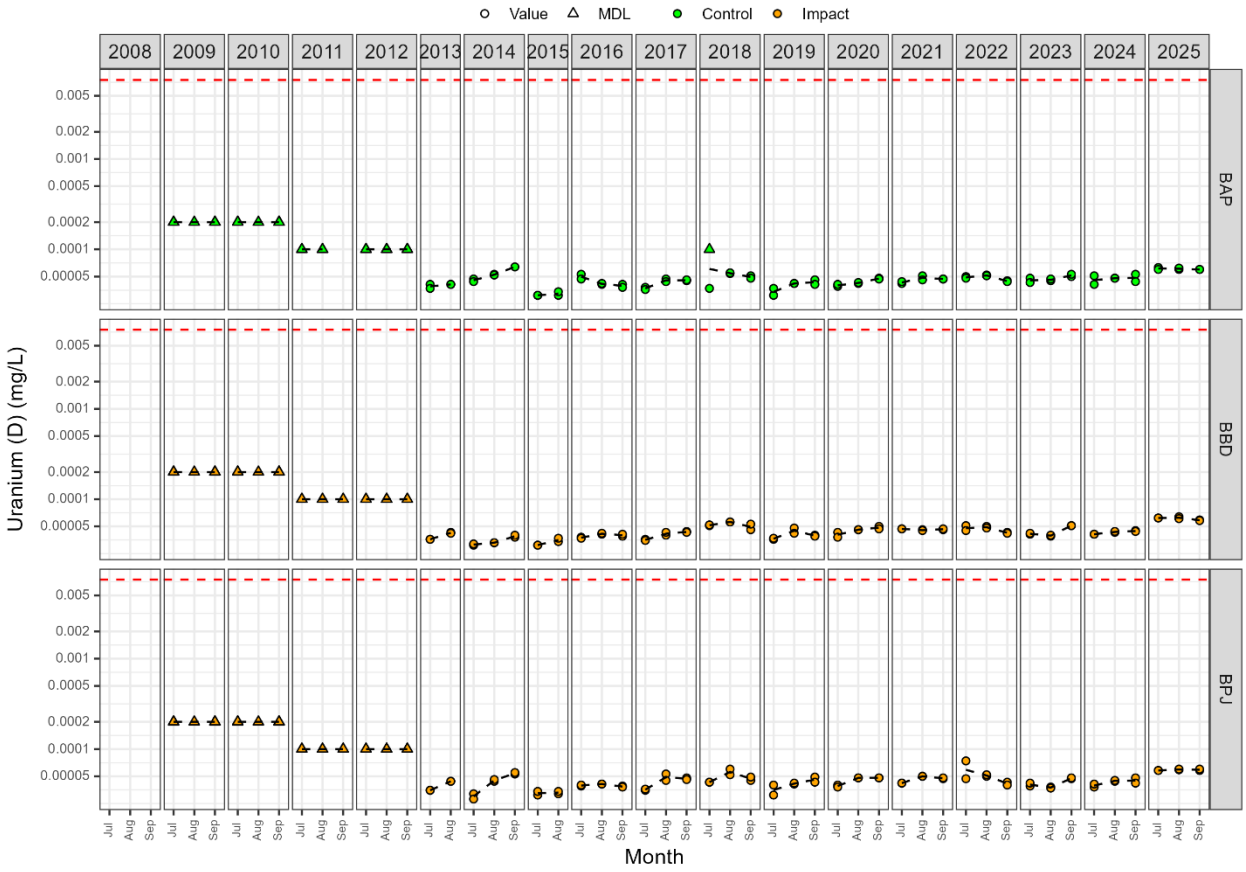


Figure C3-76. Dissolved vanadium (mg/L).

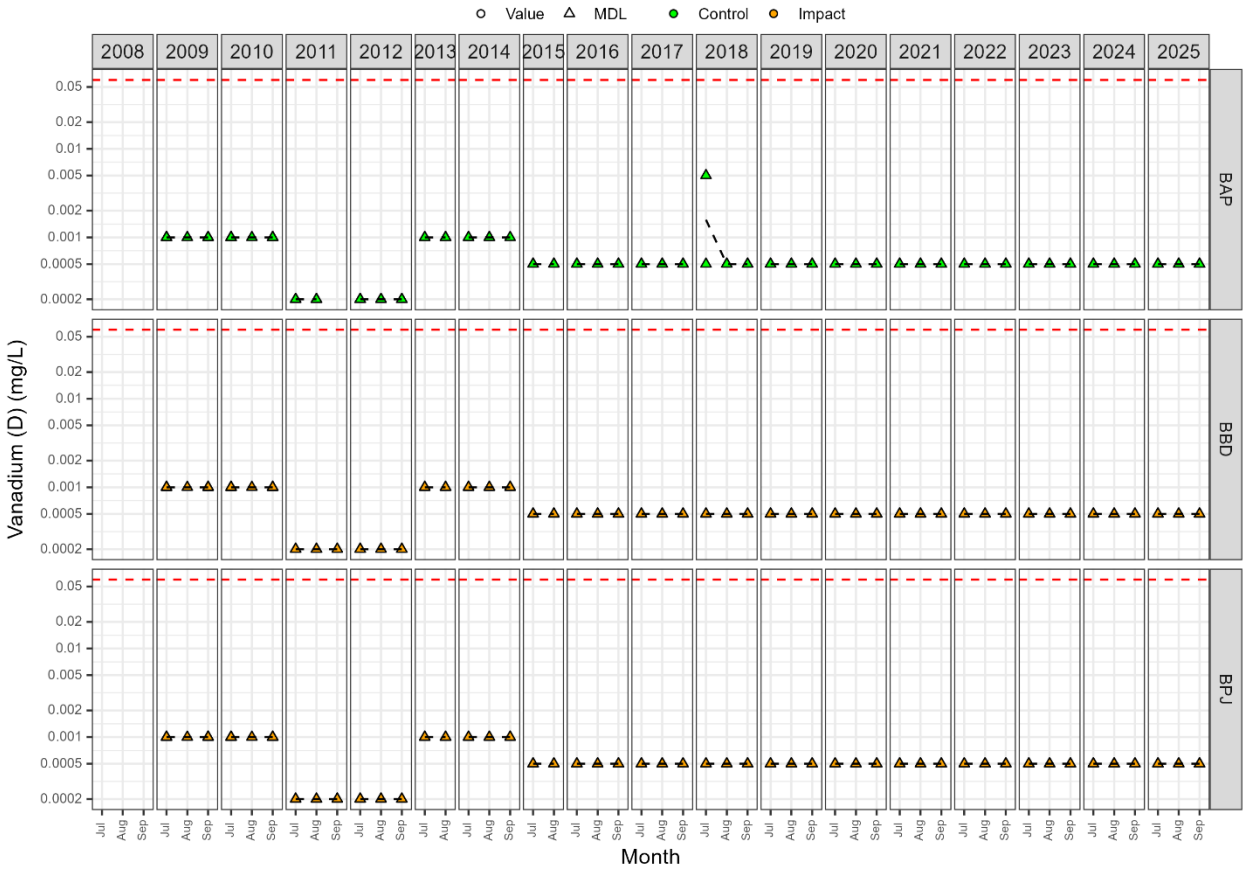
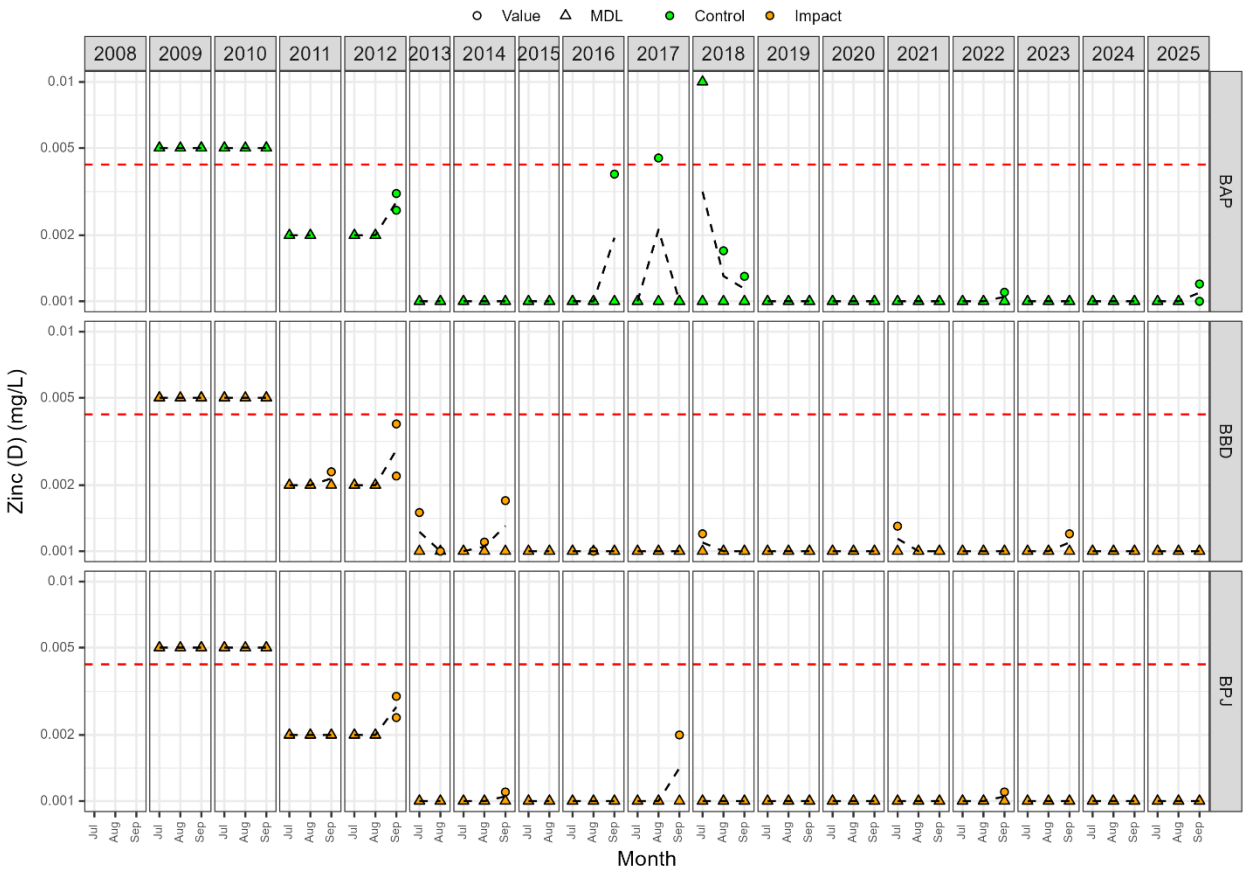


Figure C3-77. Dissolved zinc (mg/L).



APPENDIX D
SEDIMENT CHEMISTRY DATA

Appendix D1
Sediment Chemistry – Meadowbank Study Area Lakes

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Table D1-2. Hydrocarbon and PAH results for composite sediment grabs at Meadowbank study area lakes, 2025. 7

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SEDIMENT PROGRAM OVERVIEW

Below is an overview of the various sediment sampling programs at Meadowbank dating back to baseline sampling in 2008:

- **2008** – Baseline coring was conducted in July 2008 prior to onset of East Dike construction to characterize baseline surface metals concentrations at all monitoring areas.
- **2009** – The 2009 coring program was implemented to monitor potential changes to surface sediment chemistry that may have occurred as a result of the East Dike sedimentation event in August 2008. The 2009 study was conducted only at SP, TE, TPE, and INUG. TPE and INUG were used as the reference areas for SP and TE.
- **2010 to 2013** – The 2010 to 2013 sediment grab sampling programs covered all NF, MF, and FF Meadowbank study lakes as well as the reference areas INUG and PDL. Sediment coring was completed as part of the 2012 program.
- **2014** – The 2014 program was advanced a year ahead to align with EEM program. It covered all Meadowbank study lakes, sampling areas, and reference areas. Additional sampling was completed at TPE in 2014 to help assess whether the apparent changes in sediment chromium concentrations were related to spatially biased sampling or were a real temporal trend. Two zones in TPE were targeted for coring: the zone sampled initially in 2008 and 2009 (prior to dike construction; TPE-B) and the zone sampled in 2010 (TPE). Results from this analysis helped inform the design of the targeted chromium bioavailability study conducted at TPE in 2015.
- **2015** – The routine 2015 sediment sampling program was limited to the NF study lakes in accordance with the new approach outlined in the *CREMP Plan* (Azimuth, 2015b). In addition to routine sampling, a targeted bioavailability and toxicity testing program was completed on TPE sediments to help determine whether the apparent increase in chromium concentrations adversely affects the benthic invertebrate community. Sediment grab samples were collected from two zones in TPE and from the reference areas. Samples were analyzed for total metals and other conventional parameters, as per the routine CREMP program, and sequential extraction testing was performed to determine the bioavailability of sediment chromium. Bulk sediment was sent to a toxicity testing laboratory where two tests were run using *Chironomus dilutus* and *Hyalella azteca.*
- **2016** – Sediment sampling in 2016 was limited to grab sampling at the Meadowbank study lakes.
- **2017** – Sediment grab and core sampling was completed at all Meadowbank study area lakes. Samples were spaced throughout each basin. Grabs for chemistry and benthic invertebrates were collected at the same location. Core samples were opportunistically collected from some

of the grab sampling locations. The remaining replicates were spaced throughout the basin in areas with the targeted depth and substrate composition.

- **2018** – Sediment grab sampling at the Meadowbank study lakes was conducted concurrently with the benthic invertebrate community sampling locations. Targeted studies were conducted at TPE and WAL to follow up on recommendations in the 2017 CREMP (Azimuth, 2018c). The 2017 CREMP study found that chromium concentrations in the sediments at TPE and the arsenic concentrations at WAL appeared elevated compared to pre-development baseline concentrations. Sediment coring (10 replicates per location[1]) was conducted to verify the 2017 results, and toxicity testing was conducted following the method used in 2015.
- **2019** – Sediment grab sampling was completed at the Meadowbank study lakes concurrently with benthic invertebrate community sampling. The targeted bioavailability study completed in 2018 indicated lower mean chromium concentrations at TPE than were observed in 2017 but appeared to confirm that concentrations were higher than before-impact concentrations. Another year of coring was completed at TPE to provide three consecutive years of chemistry data to evaluate temporal changes in sediment chromium concentrations. Sediment coring at WAL in 2018 confirmed there are no temporal changes in sediment metals at WAL attributable to activities at the mine; no follow-up was completed in 2019.
- **2020** – Sediment grab and core sampling was completed at the NF and reference areas only. Samples were spaced throughout each basin. Grabs for chemistry and benthic invertebrates were collected at the same location. Core samples were opportunistically collected from some of the grab sampling locations. The remaining replicates were spaced throughout the basin in areas with the targeted depth and substrate composition. Targeted studies focusing on chromium in sediment at TPE were completed in 2019 and concluded that, while concentrations of chromium have increased relative to the baseline period and are most likely mining-related, current concentrations of chromium in sediment and porewater do not pose risks to the benthos at TPE.
- **2021** – Sediment grab sampling was completed at the NF and reference areas only. Samples were spaced throughout each basin. Grabs for chemistry and benthic invertebrates were collected at the same location. In 2021, due to a laboratory error, some of the sediment samples were discarded prior finalizing the request for analysis. As such, only one batch of sediment samples was analyzed which included the NF areas at Meadowbank (SP, TPE, and TPN [only

[1] A "replicate" is a discrete core sample following the standard operating procedure (SOP) in Azimuth 2015b.

grain size]). Samples from reference areas INUG and PDL, and from NF area WAL were accidentally discarded by the laboratory prior to analysis (See **Appendix A** and **Appendix C2** in the 2021 CREMP report for details, Azimuth 2022a).

- **2022** – Sediment grab sampling was conducted at the NF and reference areas. The NF study lake sediment was analyzed for grain size and total organic carbon (TOC) with the remaining sediment archived for chemistry. Full chemistry analysis was performed for the reference lakes (INUG and PDL), however due to elevated moisture content, grain size analysis could not be performed.
- **2023** – Sediment core and grab sampling were conducted at the NF and reference areas. Sediment grab samples for habitat characteristics were analyzed for moisture, TOC and grain size; composite grab samples for chemistry were analyzed for aggregate organics, hydrocarbons, and polycyclic aromatic hydrocarbons (PAHs). Sediment core samples were analyzed for moisture, pH, and total metals.
- **2024** – Sediment grabs were collected at the NF and reference areas. Sediment was analyzed for grain size and TOC; composite grab samples for chemistry were analyzed for aggregate organics, hydrocarbons, and PAHs. The remaining sediment was archived for chemistry as per the *CREMP Plan Update* (Azimuth, 2022b).
- **2025** – Sediment grabs were collected at the NF and reference areas. Sediment was analyzed for grain size and TOC; composite grab samples for chemistry were analyzed for aggregate organics, hydrocarbons, and PAHs.

TABLES

Table D1-1. Sediment grab results, Meadowbank study lakes, 2025.

Lake & Basin	Inuggugayualik Lake (INUG)					Pipedream Lake (PDL)					Third Portage Lake - East Basin (TPE)				
Month	**August**	**August**	**August**	**August**	**August**	**August**	**August**	**August**	**August**	**August**	**August**	**August**	**August**	**August**	**August**
Area-Replicate ID	**INUG-1**	**INUG-2**	**INUG-3**	**INUG-4**	**INUG-5**	**PDL-1**	**PDL-2**	**PDL-3**	**PDL-4**	**PDL-5**	**TPE-1**	**TPE-2**	**TPE-3**	**TPE-4**	**TPE-5**
Date	12-Aug-2025	12-Aug-2025	12-Aug-2025	12-Aug-2025	12-Aug-2025	12-Aug-2025	12-Aug-2025	12-Aug-2025	12-Aug-2025	12-Aug-2025	10-Aug-2025	10-Aug-2025	10-Aug-2025	10-Aug-2025	10-Aug-2025
Time	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00
ALS Sample ID	VA25C1775-019	VA25C1775-020	VA25C1775-021	VA25C1775-022	VA25C1775-023	VA25C1775-001	VA25C1775-002	VA25C1775-003	VA25C1775-004	VA25C1775-005	VA25C0823-013	VA25C0823-014	VA25C0823-015	VA25C0823-016	VA25C0823-017
DepthAtLocation (m)	8.8	8	8.1	8.9	8.5	8.2	8.7	7.3	8.7	8.5	8.3	9.2	7.7	8.4	8.6
UTM Zone	14W	14W	14W	14W	14W	14W	14W	14W	14W	14W	14W	14W	14W	14W	14W
Easting	622838	622768	622748	622723	622766	630683	630696	630662	630677	630681	639046	639093	639119	639141	639153
Northing	7216822	7216788	7216805	7216778	7216756	7223036	7222996	7223010	7222941	7222909	7211507	7211524	7211565	7211742	7211709
Physical Tests															
Moisture (%)	84	81	82	81	75	73	77	71	69	69	83	82	81	76	78
pH	5.1	5.1	5.4	5.3	5.5	6.1	6.2	6.1	5.4	6.0	6.0	5.9	6.1	6.2	6.0
Particle Size (%)															
Clay (<0.004mm)	15	18	18	18	23	19	19	15	13	15	29	31	32	36	30
Silt (0.063mm - 0.004mm)	84	81	79	80	72	76	78	80	73	73	69	69	68	57	65
Sand (2.0mm - 0.063mm)	1.5	1.6	2.4	2.0	5.1	4.4	2.9	4.4	14	12	1.5	*<1.0*	*<1.0*	7.3	5.1
Gravel (>2mm)	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Organic Carbon															
TOC (% dw)	4.1	3.8	3.5	3.7	2.4	2.3	2.3	1.9	1.7	1.8	3.6	3.3	3.2	2.5	2.9

Notes:

ISQG = interim sediment quality guideline; PEL = probable effect level

Italicized numbers are below detection limits.

Table D1-1. Sediment grab results, Meadowbank study lakes, 2025.

Lake & Basin	Third Portage Lake - North Basin (TPN)					Second Portage Lake (SP)					Wally Lake (WAL)				
Month	**August**	**August**	**August**	**August**	**August**	**August**	**August**	**August**	**August**	**August**	**August**	**August**	**August**	**August**	**August**
Area-Replicate ID	**TPN-1**	**TPN-2**	**TPN-3**	**TPN-4**	**TPN-5**	**SP-1**	**SP-2**	**SP-3**	**SP-4**	**SP-5**	**WAL-1**	**WAL-2**	**WAL-3**	**WAL-4**	**WAL-5**
Date	11-Aug-2025	11-Aug-2025	11-Aug-2025	11-Aug-2025	11-Aug-2025	09-Aug-2025	09-Aug-2025	09-Aug-2025	09-Aug-2025	09-Aug-2025	09-Aug-2025	09-Aug-2025	09-Aug-2025	09-Aug-2025	09-Aug-2025
Time	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00
ALS Sample ID	VA25C0823-019	VA25C0823-020	VA25C0823-021	VA25C0823-022	VA25C0823-023	VA25C0823-001	VA25C0823-002	VA25C0823-003	VA25C0823-004	VA25C0823-005	VA25C0823-007	VA25C0823-008	VA25C0823-009	VA25C0823-010	VA25C0823-011
DepthAtLocation (m)	7.4	8.5	7.5	9.5	9	8.5	7.4	8.5	7.2	7.8	8.8	8	8.1	8.9	8.5
UTM Zone	14W	14W	14W	14W	14W	14W	14W	14W	14W	14W	14W	14W	14W	14W	14W
Easting	636398	636415	636379	636371	636338	640001	640033	640057	640063	640066	622838	622768	622748	622723	622766
Northing	7215543	7215520	7215546	7215531	7215525	7214079	7214126	7214139	7214178	7214221	7216822	7216788	7216805	7216778	7216756
Physical Tests															
Moisture (%)	67	43	66	81	40	81	80	81	81	80	89	88	90	90	87
pH	6.1	6.2	5.7	5.8	6.1	5.9	5.8	5.7	5.6	5.7	6.4	6.4	6.4	6.7	6.7
Particle Size (%)															
Clay (<0.004mm)	16	21	14	17	37	24	26	28	22	32	15	14	16	19	15
Silt (0.063mm - 0.004mm)	46	34	43	59	37	75	72	72	77	66	84	85	83	80	84
Sand (2.0mm - 0.063mm)	37	45	44	24	26	1.1	1.6	*<1.0*	*<1.0*	1.7	*<1.0*	*<1.0*	1.1	1.2	1.8
Gravel (>2mm)	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Organic Carbon															
TOC (% dw)	1.6	0.63	1.8	3.9	0.49	3.8	3.4	3.6	4.0	3.3	9.5	9.6	9.5	8.1	7.4

Notes:

ISQG = interim sediment quality guideline; PEL = probable effect level

Italicized numbers are below detection limits.

Table D1-2. Hydrocarbon and PAH results for composite sediment grabs at Meadowbank study area lakes, 2025.

Area-Replicate ID	CCME Sediment Quality Guidelines[1]		INUG-COMP	PDL-COMP	TPE-COMP	TPN-COMP	SP-COMP	WAL-COMP	INUG-N-COMP	PDL-N-COMP
Date			12-Aug-2025	12-Aug-2025	10-Aug-2025	11-Aug-2025	09-Aug-2025	09-Aug-2025	13-Aug-2025	13-Aug-2025
Time			00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00
ALS Sample ID	ISQG	PEL	VA25C1775-024	VA25C1775-006	VA25C0823-018	VA25C0823-024	VA25C0823-006	VA25C0823-012	VA25C1775-018	VA25C1775-012
Physical Parameters										
Moisture (%)	-	-	82	74	83	63	82	91	85	81
Aggregate Organics (mg/kg)										
Mineral Oil and Grease	-	-	840	*<500*	*<500*	*<500*	*<500*	*<500*	*<500*	1140
Hydrocarbons (mg/kg)										
EPH10-19	-	-	*<280*	*<200*	*<330*	*<200*	*<330*	*<620*	*<340*	*<270*
EPH19-32	-	-	*<280*	*<200*	*<330*	*<200*	*<330*	*<620*	*<340*	*<270*
LEPH	-	-	*<280*	*<200*	*<330*	*<200*	*<330*	*<620*	*<340*	*<270*
HEPH	-	-	*<280*	*<200*	*<330*	*<200*	*<330*	*<620*	*<340*	*<270*
Polycyclic Aromatic Hydrocarbons (mg/kg)										
Acenaphthene	0.0067	0.089	*<0.0071*	*<0.0050*	*<0.0164*	*<0.0089*	*<0.0167*	*<0.031*	*<0.0086*	*<0.0068*
Acenaphthylene	0.0059	0.13	*<0.0071*	*<0.0050*	*<0.0164*	*<0.0089*	*<0.0167*	*<0.031*	*<0.0086*	*<0.0068*
Acridine	-	-	*<0.014*	*<0.010*	*<0.016*	*<0.010*	*<0.017*	*<0.031*	*<0.017*	*<0.014*
Anthracene	0.047	0.25	*<0.0071*	*<0.0049*	*<0.0164*	*<0.0089*	*<0.0167*	*<0.031*	*<0.0086*	*<0.0068*
Benz(a)anthracene	0.032	0.39	*<0.014*	*<0.010*	*<0.016*	*<0.010*	*<0.017*	*<0.031*	*<0.017*	*<0.014*
Benzo(a)pyrene	0.032	0.78	*<0.014*	*<0.010*	*<0.016*	*<0.010*	*<0.017*	*<0.031*	*<0.017*	*<0.014*
Benzo(b+j)fluoranthene	-	-	*<0.014*	*<0.010*	*<0.016*	*<0.010*	*<0.017*	*<0.031*	*<0.017*	*<0.014*
Benzo(b+j+k)fluoranthene	-	-	*<0.020*	*<0.015*	*<0.023*	*<0.015*	*<0.024*	*<0.044*	*<0.024*	*<0.020*
Benzo(g,h,i)perylene	-	-	*<0.014*	*<0.010*	*<0.016*	*<0.010*	*<0.017*	*<0.031*	*<0.017*	*<0.014*
Benzo(k)fluoranthene	-	-	*<0.014*	*<0.010*	*<0.016*	*<0.010*	*<0.017*	*<0.031*	*<0.017*	*<0.014*
Chrysene	0.057	0.86	*<0.014*	*<0.010*	*<0.016*	*<0.010*	*<0.017*	*<0.031*	*<0.017*	*<0.014*
Dibenz(a,h)anthracene	0.0062	0.14	*<0.0071*	*<0.0050*	*<0.0164*	*<0.0089*	*<0.0167*	*<0.031*	*<0.0086*	*<0.0068*
Fluoranthene	0.11	2.36	*<0.014*	*<0.010*	*<0.016*	*<0.010*	*<0.017*	*<0.031*	*<0.017*	*<0.014*
Fluorene	0.021	0.144	*<0.014*	*<0.010*	*<0.016*	*<0.010*	*<0.017*	*<0.031*	*<0.017*	*<0.014*
Indeno(1,2,3-c,d)pyrene	-	-	*<0.014*	*<0.010*	*<0.016*	*<0.010*	*<0.017*	*<0.031*	*<0.017*	*<0.014*
Methylnaphthalene, 1-	-	-	*<0.014*	*<0.010*	*<0.016*	*<0.010*	*<0.017*	*<0.031*	*<0.017*	*<0.014*
Methylnaphthalene, 2-	0.020	0.20	*<0.014*	*<0.010*	*<0.016*	*<0.010*	*<0.017*	*<0.031*	*<0.017*	*<0.014*
Naphthalene	0.035	0.39	*<0.014*	*<0.010*	*<0.016*	*<0.010*	*<0.017*	*<0.031*	*<0.017*	*<0.014*
Phenanthrene	0.042	0.52	*<0.014*	*<0.010*	*<0.016*	*<0.010*	*<0.017*	*<0.031*	*<0.017*	*<0.014*
Pyrene	0.053	0.88	*<0.014*	*<0.010*	*<0.016*	*<0.010*	*<0.017*	*<0.031*	*<0.017*	*<0.014*
Quinoline	-	-	*<0.014*	*<0.010*	*<0.016*	*<0.010*	*<0.017*	*<0.031*	*<0.017*	*<0.014*
PAH Surrogates (%)										
Acridine-d9	-	-	106	106	114	110	118	126	106	103
Chrysene-d12	-	-	126	120	130	127	138	144	126	121
Naphthalene-d8	-	-	118	114	113	114	120	130	119	114
Phenanthrene-d10	-	-	115	116	118	117	124	129	116	113

Notes:

1. Canadian Sediment Quality Guidelines for the Protection of Aquatic Life, 1999, updated in 2002.

ISQG = Interim freshwater Sediment Quality Guideline; PEL = probable effect level concentration.

Bolded concentrations exceed the ISQG guideline.

Italicized numbers are below detection limits.

Table D1-3. Sediment sampling location coordinates (GPS, UTM, NAD83) for the Meadowbank CREMP, 2025.

Area[1]	Area Type[2]	Area-Replicate	Date	Depth (m)	Zone	Easting	Northing
INUG	Ref	INUG-1	12-Aug-25	8.8	14W	622838	7216822
		INUG-2	12-Aug-25	8	14W	622768	7216788
		INUG-3	12-Aug-25	8.1	14W	622748	7216805
		INUG-4	12-Aug-25	8.9	14W	622723	7216778
		INUG-5	12-Aug-25	8.5	14W	622766	7216756
PDL	Ref	PDL-1	12-Aug-25	8.2	14W	630683	7223036
		PDL-2	12-Aug-25	8.7	14W	630696	7222996
		PDL-3	12-Aug-25	7.3	14W	630662	7223010
		PDL-4	12-Aug-25	8.7	14W	630677	7222941
		PDL-5	12-Aug-25	8.5	14W	630681	7222909
TPE	NF	TPE-1	10-Aug-25	8.3	14W	639046	7211507
		TPE-2	10-Aug-25	9.2	14W	639093	7211524
		TPE-3	10-Aug-25	7.7	14W	639119	7211565
		TPE-4	10-Aug-25	8.4	14W	639141	7211742
		TPE-5	10-Aug-25	8.6	14W	639153	7211709
TPN	NF	TPN-1	11-Aug-25	7.4	14W	636398	7215543
		TPN-2	11-Aug-25	8.5	14W	636415	7215520
		TPN-3	11-Aug-25	7.5	14W	636379	7215546
		TPN-4	11-Aug-25	9.5	14W	636371	7215531
		TPN-5	11-Aug-25	9	14W	636338	7215525
SP	NF	SP-1	9-Aug-25	8.5	14W	640001	7214079
		SP-2	9-Aug-25	7.4	14W	640033	7214126
		SP-3	9-Aug-25	8.5	14W	640057	7214139
		SP-4	9-Aug-25	7.2	14W	640063	7214178
		SP-5	9-Aug-25	7.8	14W	640066	7214221
WAL	NF	WAL-1	9-Aug-25	8	15W	360909	7220550
		WAL-2	9-Aug-25	9.2	15W	360931	7220477
		WAL-3	9-Aug-25	8.6	15W	360913	7220467
		WAL-4	9-Aug-25	8.4	15W	360918	7220440
		WAL-5	9-Aug-25	8	15W	360948	7220401

Appendix D2
Sediment Chemistry – Whale Tail Study Area Lakes

LIST OF TABLES

Table D2-1. Sediment grab results, Whale Tail study lakes, 2025. 1

Table D2-2. Hydrocarbon and PAH results for composite sediment grabs at Whale Tail study area lakes, 2025. 4

Table D2-3. Sediment sampling location coordinates (GPS, UTM, NAD83) for the Meadowbank CREMP, 2025. 5

SEDIMENT PROGRAM OVERVIEW

Below is an overview of the various sediment sampling programs at Whale Tail dating back to baseline sampling in 2015:

- **2015** – Baseline grab sampling was conducted at the NF lakes WTS, KAN[1], and NEM to characterize total organic carbon (TOC), grain size, and baseline metals concentrations. A composite sample from each of the study lakes was also analyzed for hydrocarbons and PAHs. These analyses were conducted for each of the study lakes during each year of sampling to present.
- **2016** – Baseline grab sampling was expanded to include the MF lakes A20, A76, and DS1 along with the continued sampling at the NF lakes.
- **2017** – Baseline coring results collected in 2017 were used to establish trigger concentrations for each Whale Tail study area lake anticipating future mine developments. Unlike Meadowbank, where trigger values were applied across multiple lakes, sediment chemistry in the Whale Tail study area lakes was too heterogeneous to apply triggers at broader spatial scales. As a result, lake-specific trigger values were derived.
- **2018** – NF lake WTS moved to *Impact* designation following dike construction at Whale Tail Lake, which began on July 27. All other Whale Tail study area lakes remained designated as *Control*. Samples were collected using grab sampling methods.
- **2019** – All of the NF and MF Whale Tail study lakes were designated as *Impact*. Samples were collected using grab sampling methods.
- **2020** – Core sampling was conducted across Whale Tail study lakes, and results were formally compared to lake-specific trigger values. Increases in mean concentrations of arsenic, chromium, and copper were observed in some lakes; however, there was evidence that these concentrations may reflect natural spatial heterogeneity. As such, the findings were considered preliminary pending additional coring data from the 2023 sampling cycle.
- **2021** – Grab sampling was conducted throughout the Whale Tail study lakes. In 2021, due to a laboratory error, several sediment samples were discarded prior to finalizing the request for analysis. As such, results were missing for KAN, A20, and DS1.

[1] Kangislulik Lake (KAN) was formerly referred to as Mammoth Lake (MAM).

- **2022** – Grab sampling was conducted throughout the Whale Tail study lakes. Concentrations of metals were generally similar to results from the baseline period and early operations.
- **2023** – Sediment core and grab sampling were conducted at the Whale Tail study lakes. Sediment grab samples collected for habitat characterization were analyzed for moisture, TOC, and grain size, while composite grab samples for chemistry were analyzed for aggregate organics, hydrocarbons, and polycyclic aromatic hydrocarbons (PAHs). Sediment core samples were analyzed for moisture, pH, and total metals.
- **2024** – Grabs were collected throughout the Whale Tail study lakes, and 25 sediment cores were collected throughout the WTS basin. The focused coring program was done in response to concern that chromium concentrations were increasing within WTS. Sediment grab samples for habitat characterization were analyzed for moisture, TOC, and grain size; composite grab samples for chemistry were analyzed for aggregate organics, hydrocarbons, and PAHs. Sediment core samples were analyzed for moisture, pH, and total metals.
- **2025** – Sediment grab sampling was conducted at the Whale Tail study lakes. Sediment grab samples collected for habitat characterization were analyzed for moisture, TOC, and grain size, while composite grab samples for chemistry were analyzed for aggregate organics, hydrocarbons, and PAHs.

TABLES

Table D2-1. Sediment grab results, Whale Tail study lakes, 2025.

Lake & Basin	Lake A20 (Impoundment)					Whale Tail Lake - South Basin (WTS)				
Area-Replicate ID	**A20-1**	**A20-2**	**A20-3**	**A20-4**	**A20-5**	**WTS-1**	**WTS-2**	**WTS-3**	**WTS-4**	**WTS-5**
Date	16-Aug-2025	16-Aug-2025	16-Aug-2025	16-Aug-2025	16-Aug-2025	16-Aug-2025	16-Aug-2025	16-Aug-2025	16-Aug-2025	16-Aug-2025
ALS Sample ID	VA25C1753-019	VA25C1753-020	VA25C1753-021	VA25C1753-022	VA25C1753-023	VA25C1753-007	VA25C1753-008	VA25C1753-009	VA25C1753-010	VA25C1753-011
Physical Tests										
Moisture (%)	83	70	87	86	84	77	62	82	83	72
pH	5.3	5.9	5.3	5.5	5.5	6.1	6.0	5.3	5.6	5.8
Particle Size (%)										
clay (<0.004mm)	22	30	19	21	24	11	5.8	15	13	14
silt (0.063mm - 0.004mm)	78	63	81	79	75	77	64	84	87	78
sand (2.0mm - 0.063mm)	*<1.0*	6.6	*<1.0*	*<1.0*	*<1.0*	11	30	*<1.0*	*<1.0*	7.7
gravel (>2mm)	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Organic Carbon										
TOC (% dw)	4.6	2.1	5.6	5.1	4.5	3.3	1.7	5.3	4.9	2.5
Total Metals (mg/kg dw)										
Mercury	0.049	0.026	0.058	0.045	0.047	0.033	0.019	0.068	0.058	0.032

Notes:

Italicized numbers are below detection limits.

* Previously referred to as Mammoth Lake (MAM).

Table D2-1. Sediment grab results, Whale Tail study lakes, 2025.

Lake & Basin	Kangislulik Lake (KAN)*					Lake A76				
Area-Replicate ID	**MAM-1**	**MAM-2**	**MAM-3**	**MAM-4**	**MAM-5**	**A76-1**	**A76-2**	**A76-3**	**A76-4**	**A76-5**
Date	17-Aug-2025	17-Aug-2025	17-Aug-2025	17-Aug-2025	17-Aug-2025	16-Aug-2025	16-Aug-2025	16-Aug-2025	16-Aug-2025	16-Aug-2025
ALS Sample ID	VA25C1753-013	VA25C1753-014	VA25C1753-015	VA25C1753-016	VA25C1753-017	VA25C1775-025	VA25C1775-026	VA25C1775-027	VA25C1775-028	VA25C1775-029
Physical Tests										
Moisture (%)	89	89	87	84	81	88	82	89	81	85
pH	6.0	5.6	6.0	6.2	6.2	5.7	5.4	5.8	5.6	5.1
Particle Size (%)										
clay (<0.004mm)	18	15	18	15	16	20	21	18	20	22
silt (0.063mm - 0.004mm)	82	85	82	77	84	79	70	82	75	77
sand (2.0mm - 0.063mm)	*<1.0*	*<1.0*	*<1.0*	8.3	*<1.0*	*<1.0*	8.8	*<1.0*	5.4	*<1.0*
gravel (>2mm)	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Organic Carbon										
TOC (% dw)	9.3	9.1	9.2	9.0	9.9	4.9	4.0	7.5	3.8	5.0
Total Metals (mg/kg dw)										
Mercury	0.075	0.082	0.083	0.089	0.090	-	-	-	-	-

Notes:

Italicized numbers are below detection limits.

* Previously referred to as Mammoth Lake (MAM).

Table D2-1. Sediment grab results, Whale Tail study lakes, 2025.

Lake & Basin	Lake DS1					Nemo Lake (NEM)				
Area-Replicate ID	**DS1-1**	**DS1-2**	**DS1-3**	**DS1-4**	**DS1-5**	**NEM-1**	**NEM-2**	**NEM-3**	**NEM-4**	**NEM-5**
Date	15-Aug-2025	15-Aug-2025	15-Aug-2025	15-Aug-2025	15-Aug-2025	18-Aug-2025	18-Aug-2025	18-Aug-2025	18-Aug-2025	18-Aug-2025
ALS Sample ID	VA25C1775-031	VA25C1775-032	VA25C1775-033	VA25C1775-034	VA25C1775-035	VA25C1753-001	VA25C1753-002	VA25C1753-003	VA25C1753-004	VA25C1753-005
Physical Tests										
Moisture (%)	63	63	64	65	61	77	83	82	89	85
pH	6.1	6.6	6.3	5.9	6.9	6.8	6.7	6.7	6.6	6.5
Particle Size (%)										
clay (<0.004mm)	16	17	16	18	19	9.5	7.2	7.4	9.5	4.9
silt (0.063mm - 0.004mm)	84	83	84	82	81	72	73	70	80	54
sand (2.0mm - 0.063mm)	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	18	20	23	10	40
gravel (>2mm)	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Organic Carbon										
TOC (% dw)	1.4	1.4	2.0	1.5	1.5	8.0	6.6	6.8	8.5	5.4
Total Metals (mg/kg dw)										
Mercury	-	-	-	-	-	-	-	-	-	-

Notes:

Italicized numbers are below detection limits.

* Previously referred to as Mammoth Lake (MAM).

Table D2-2. Hydrocarbon and PAH results for composite sediment grabs at Whale Tail study area lakes, 2025.

Area-Replicate ID	CCME Sediment Quality Guidelines[1]		Lowest Detection Limit	A20-COMP	WTS-COMP	MAM-COMP	A76-COMP	DS1-COMP	NEM-COMP
Date				16-Aug-2025	16-Aug-2025	17-Aug-2025	16-Aug-2025	15-Aug-2025	18-Aug-2025
Time	ISQG	PEL		00:00	08:00	00:00	00:00	00:00	08:45
ALS Sample ID				VA25C1753-024	VA25C1753-012	VA25C1753-018	VA25C1775-030	VA25C1775-036	VA25C1753-006
Physical Parameters									
Moisture (%)	-	-	0.25	85	77	90	86	67	89
Aggregate Organics (mg/kg)									
Mineral Oil and Grease	-	-	500	*<500*	*<500*	*<500*	1550	*<500*	*<500*
Hydrocarbons (mg/kg)									
EPH10-19	-	-	200	*<360*	*<230*	*<520*	*<370*	*<200*	*<480*
EPH19-32	-	-	200	*<360*	*<230*	*<520*	*<370*	*<200*	*<480*
LEPH	-	-	200	*<360*	*<230*	*<520*	*<370*	*<200*	*<480*
HEPH	-	-	200	*<360*	*<230*	*<520*	*<370*	*<200*	*<480*
Polycyclic Aromatic Hydrocarbons (mg/kg)									
Acenaphthene	0.0067	0.089	0.005	*<0.0089*	*<0.0058*	*<0.0130*	*<0.0093*	*<0.0050*	*<0.0119*
Acenaphthylene	0.0059	0.13	0.005	*<0.0089*	*<0.0058*	*<0.0130*	*<0.0093*	*<0.0050*	*<0.0119*
Acridine	-	-	0.01	*<0.018*	*<0.012*	*<0.026*	*<0.018*	*<0.010*	*<0.024*
Anthracene	0.047	0.25	0.004	*<0.0089*	*<0.0058*	*<0.0130*	*<0.0093*	*<0.0040*	*<0.0119*
Benz(a)anthracene	0.032	0.39	0.01	*<0.018*	*<0.012*	*<0.026*	*<0.018*	*<0.010*	*<0.024*
Benzo(a)pyrene	0.032	0.78	0.01	*<0.018*	*<0.012*	*<0.026*	*<0.018*	*<0.010*	*<0.024*
Benzo(b+j)fluoranthene	-	-	0.01	*<0.018*	*<0.012*	*<0.026*	*<0.018*	*<0.010*	*<0.024*
Benzo(b+j+k)fluoranthene	-	-	0.015	*<0.025*	*<0.017*	*<0.037*	*<0.025*	*<0.015*	*<0.034*
Benzo(g,h,i)perylene	-	-	0.01	*<0.018*	*<0.012*	*<0.026*	*<0.018*	*<0.010*	*<0.024*
Benzo(k)fluoranthene	-	-	0.01	*<0.018*	*<0.012*	*<0.026*	*<0.018*	*<0.010*	*<0.024*
Chrysene	0.057	0.86	0.01	*<0.018*	*<0.012*	*<0.026*	*<0.018*	*<0.010*	*<0.024*
Dibenz(a,h)anthracene	0.0062	0.14	0.005	*<0.0089*	*<0.0058*	*<0.0130*	*<0.0093*	*<0.0050*	*<0.0119*
Fluoranthene	0.11	2.36	0.01	*<0.018*	*<0.012*	*<0.026*	*<0.018*	*<0.010*	*<0.024*
Fluorene	0.021	0.144	0.01	*<0.018*	*<0.012*	*<0.026*	*<0.018*	*<0.010*	*<0.024*
Indeno(1,2,3-c,d)pyrene	-	-	0.01	*<0.018*	*<0.012*	*<0.026*	*<0.018*	*<0.010*	*<0.024*
Methylnaphthalene, 1-	-	-	0.01	*<0.018*	*<0.012*	*<0.026*	*<0.018*	*<0.010*	*<0.024*
Methylnaphthalene, 2-	0.020	0.20	0.01	*<0.018*	*<0.012*	*<0.026*	*<0.018*	*<0.010*	*<0.024*
Naphthalene	0.035	0.39	0.01	*<0.018*	*<0.012*	*<0.026*	*<0.018*	*<0.010*	*<0.024*
Phenanthrene	0.042	0.52	0.01	*<0.018*	*<0.012*	*<0.026*	*<0.018*	*<0.010*	*<0.024*
Pyrene	0.053	0.88	0.01	*<0.018*	*<0.012*	*<0.026*	*<0.018*	*<0.010*	*<0.024*
Quinoline	-	-	0.01	*<0.018*	*<0.012*	*<0.026*	*<0.018*	*<0.010*	*<0.024*
PAH Surrogates (%)									
Acridine-d9	-	-	0.01	109	106	108	112	105	103
Chrysene-d12	-	-	0.01	128	126	124	128	120	126
Naphthalene-d8	-	-	0.01	117	116	114	121	111	115
Phenanthrene-d10	-	-	0.01	118	116	117	120	109	115

Notes:

1. Canadian Sediment Quality Guidelines for the Protection of Aquatic Life, 1999, updated in 2002.
   ISQG = Interim freshwater Sediment Quality Guideline; PEL = probably effect level concentration.

Bolded concentrations exceed the ISQG guideline.

Italicized numbers are below detection limits.

Table D2-3. Sediment sampling location coordinates (GPS, UTM, NAD83) for the Meadowbank CREMP, 2025.

Notes: Monitoring area KAN was previously referred to as MAM. Sample IDs still use MAM for consistency with historical data.

Area[1]	Area Type[2]	Type	Area-Replicate	Date	Depth (m)	Zone	Easting	Northing
A20	MF	Grab	A20-1	16-Aug-2025	7.8	14W	604592	7252543
		Grab	A20-2	16-Aug-2025	7.7	14W	604665	7252556
		Grab	A20-3	16-Aug-2025	8.1	14W	604620	7252504
		Grab	A20-4	16-Aug-2025	8.3	14W	604673	7252534
		Grab	A20-5	16-Aug-2025	8.4	14W	604616	7252555
KAN	NF	Grab	MAM-1	17-Aug-2025	7.8	14W	605061	7254886
		Grab	MAM-2	17-Aug-2025	6.9	14W	605047	7254903
		Grab	MAM-3	17-Aug-2025	7.4	14W	605023	7254896
		Grab	MAM-4	17-Aug-2025	8.3	14W	604991	7254872
		Grab	MAM-5	17-Aug-2025	8.4	14W	605023	7254868
A76	MF	Grab	A76-1	16-Aug-2025	8.8	14W	602267	7256937
		Grab	A76-2	16-Aug-2025	8.3	14W	602230	7256925
		Grab	A76-3	16-Aug-2025	8.5	14W	602286	7256972
		Grab	A76-4	16-Aug-2025	7	14W	602264	7256862
		Grab	A76-5	16-Aug-2025	8.1	14W	602206	7256928
DS1	FF	Grab	DS1-1	15-Aug-2025	9.5	14W	598035	7262028
		Grab	DS1-2	15-Aug-2025	9.5	14W	598091	7262025
		Grab	DS1-3	15-Aug-2025	8.5	14W	598083	7262065
		Grab	DS1-4	15-Aug-2025	9.5	14W	598125	7262009
		Grab	DS1-5	15-Aug-2025	8.2	14W	598122	7261976
NEM	NF	Grab	NEM-1	18-Aug-2025	8.9	14W	606551	7257383
		Grab	NEM-2	18-Aug-2025	8.8	14W	606547	7257366
		Grab	NEM-3	18-Aug-2025	8.5	14W	606531	7257324
		Grab	NEM-4	18-Aug-2025	8.1	14W	606546	7257349
		Grab	NEM-5	18-Aug-2025	7.1	14W	606565	7257347
WTS	NF	Grab	WTS-1	16-Aug-2025	7.5	14W	607120	7253502
		Grab	WTS-2	16-Aug-2025	7	14W	607183	7253502
		Grab	WTS-3	16-Aug-2025	9	14W	607057	7253561
		Grab	WTS-4	16-Aug-2025	8.5	14W	607082	7253643
		Grab	WTS-5	16-Aug-2025	8	14W	607073	7253501

APPENDIX E
PHYTOPLANKTON TAXONOMY DATA AND SUPPLEMENTAL PLOTS

Appendix E1
Phyto Data – Meadowbank Study Area Lakes

Table E1-1. Phytoplankton density (cells/L), biomass (mg/m3), and diversity by major taxa group, Meadowbank study lakes, 2025.

Area-Replicate	Date	Phytoplankton Biomass (mg/m^3)								Taxa Richness	Simpson's Diversity	Phytoplankton Density (cells/L)						
		Cyanophyte	Chlorophyte	Euglenophyte	Chrysophyte	Diatom	Cryptophyte	Dinoflagellate	TOTAL			Cyanophyte	Chlorophyte	Chrysophyte	Diatom	Cryptophyte	Dinoflagellate	TOTAL
Inuggugayualik Lake																		
INUG - 170	7-Jul-25	0.20	0.65	0	217	20	25	47	310	30	0.77	1,200	400	2,841,712	203,432	80,440	7,000	3,134,184
INUG - 171	7-Jul-25	0.33	0	0	277	21	31	46	375	26	0.69	2,000	0	4,959,192	206,416	77,256	6,600	5,251,464
INUG - 172	12-Aug-25	6.8	10	0	62	29	1.8	4.7	115	26	0.88	31,200	805,608	758,120	143,496	1,000	200	1,739,624
INUG - 173	12-Aug-25	8.2	11	0	80	16	1.8	6.2	122	27	0.89	71,104	511,064	692,664	34,936	1,000	400	1,311,168
INUG - 174	7-Sep-25	0.51	12	0	53	7.0	3.5	7.4	84	33	0.88	3,000	654,944	507,280	133,512	8,584	1,400	1,308,720
INUG - 175	7-Sep-25	2.5	15	0	57	13	0.71	4.8	92	32	0.90	23,752	568,536	413,488	169,632	400	800	1,176,608
Percent Biomass or Density		***1.7***	***4.4***	***<0.1***	***68***	***9.7***	***5.8***	***11***				***0.95***	***18***	***73***	***6.4***	***1.2***	***0.12***	
Pipedream Lake																		
PDL - 135	7-Jul-25	0.73	1.5	0	87	29	12	35	165	28	0.85	3,800	28,736	1,326,256	285,320	53,288	5,600	1,703,000
PDL - 136	7-Jul-25	0.76	0.29	0	52	37	7.8	28	125	22	0.86	4,000	28,736	910,784	392,248	10,984	3,600	1,350,352
PDL - 137	12-Aug-25	1.5	7.3	0	75	44	6.4	8.6	143	29	0.91	6,800	295,744	600,072	540,416	3,400	600	1,447,032
PDL - 138	12-Aug-25	1.5	9.4	0	108	39	8.5	19	186	28	0.91	7,200	632,392	829,960	421,672	4,800	1,800	1,897,824
PDL - 139	7-Sep-25	7.8	8.6	0	92	22	5.0	7.0	143	33	0.91	46,200	590,288	788,456	304,328	9,584	1,400	1,740,256
PDL - 140	7-Sep-25	7.0	5.7	0	109	25	1.4	4.8	153	30	0.92	41,400	324,080	787,856	325,296	7,784	1,000	1,487,416
Percent Biomass or Density		***2.1***	***3.6***	***<0.1***	***57***	***21***	***4.5***	***11***				***1.1***	***20***	***54***	***24***	***0.93***	***0.15***	
Third Portage Lake - East Basin																		
TPE - 182	9-Jul-25	0	0.94	0	90	9.1	1.9	7.9	110	22	0.78	0	64,656	1,042,112	154,792	1,000	1,600	1,264,160
TPE - 183	9-Jul-25	0	0.59	0	70	22	2.6	12	107	24	0.76	0	65,456	1,013,976	122,656	8,184	2,800	1,213,072
TPE - 184	11-Aug-25	0.24	4.3	0	82	18	3.0	14	123	27	0.92	1,400	324,680	736,368	257,040	8,384	800	1,328,672
TPE - 185	11-Aug-25	0.54	4.7	0	93	17	4.3	9.4	128	28	0.90	3,200	381,752	707,032	270,608	2,400	600	1,365,592
TPE - 186	3-Sep-25	0.86	1.2	0	116	19	6.3	6.3	150	27	0.80	3,800	222,904	928,936	800,424	10,184	1,200	1,967,448
TPE - 187	3-Sep-25	0.69	4.2	0	98	22	0.81	0	125	28	0.82	2,800	288,360	777,272	727,584	400	0	1,796,416
Percent Biomass or Density		***0.31***	***2.1***	***<0.1***	***74***	***14***	***2.6***	***6.7***				***0.13***	***15***	***58***	***26***	***0.34***	***<0.1***	
Third Portage Lake - North Basin																		
TPN - 182	9-Jul-25	0	1.5	0	79	11	2.4	5.6	99	20	0.87	0	43,704	864,096	223,200	1,400	1,000	1,133,400
TPN - 183	9-Jul-25	0	0.36	0	72	6.8	0.70	4.0	84	16	0.88	0	35,920	820,392	141,160	400	600	998,472
TPN - 184	11-Aug-25	0.030	2.7	0	83	12	4.8	7.6	111	22	0.84	200	283,176	584,704	79,856	2,600	800	951,336
TPN - 185	11-Aug-25	0	2.6	0	87	11	1.1	16	117	21	0.84	0	159,448	585,704	110,576	600	1,400	857,728
TPN - 186	2-Sep-25	0.43	11	0	67	13	15	4.8	111	32	0.88	2,000	548,184	901,200	392,736	34,936	1,000	1,880,056
TPN - 187	4-Sep-25	0.13	12	0	108	7.4	13	10	151	33	0.89	600	793,840	1,189,760	221,120	60,872	1,200	2,267,392
Percent Biomass or Density		***<0.1***	***4.5***	***<0.1***	***74***	***9.0***	***5.6***	***7.1***				***<0.1***	***23***	***61***	***14***	***1.2***	***<0.1***	
Second Portage Lake																		
SP - 182	8-Jul-25	0	1.5	0	86	26	8.4	2.2	124	23	0.85	0	15,168	1,088,584	291,008	11,384	600	1,406,744
SP - 183	8-Jul-25	0	1.7	0	99	27	5.9	2.2	135	23	0.84	0	7,984	1,238,648	345,912	23,952	400	1,616,896
SP - 184	9-Aug-25	0.10	38	0	57	31	3.6	1.1	131	26	0.73	200	1,739,728	632,792	200,168	2,000	200	2,575,088
SP - 185	9-Aug-25	0	6.4	0	62	29	7.7	3.1	108	26	0.87	0	604,256	604,656	343,648	24,352	800	1,577,712
SP - 186	2-Sep-25	0.038	6.1	0	28	17	5.1	2.9	59	27	0.85	200	274,392	439,024	122,344	9,584	800	846,344
SP - 187	2-Sep-25	0.82	9.2	0	38	21	2.3	7.7	79	30	0.85	7,384	374,968	424,456	402,920	7,984	1,800	1,219,512
Percent Biomass or Density		***0.15***	***10.0***	***<0.1***	***58***	***24***	***5.2***	***3.0***				***<0.1***	***33***	***48***	***18***	***0.86***	***<0.1***	
Wally Lake																		
WAL - 151	10-Jul-25	0.13	1.5	0	113	9.4	5.9	5.5	135	25	0.78	600	100,576	1,440,600	178,648	37,520	1,000	1,758,944
WAL - 152	10-Jul-25	0.088	0.80	0	110	17	3.6	4.5	135	29	0.84	400	28,936	1,276,168	214,584	8,784	800	1,529,672
WAL - 153	10-Aug-25	0.061	10	0	19	30	4.5	4.0	67	24	0.81	400	696,848	424,256	604,672	2,400	1,000	1,729,576
WAL - 154	10-Aug-25	0	13	0	27	28	6.7	1.8	76	24	0.85	0	962,856	481,528	371,984	3,600	400	1,820,368
WAL - 155	2-Sep-25	0.032	3.0	0	35	34	5.9	7.8	87	28	0.75	200	294,944	524,632	723,016	9,984	1,000	1,553,776
WAL - 156	2-Sep-25	0	3.3	0	52	32	6.0	5.9	99	24	0.70	0	223,104	646,960	904,000	3,400	1,200	1,778,664
Percent Biomass or Density		***<0.1***	***5.2***	***<0.1***	***59***	***25***	***5.4***	***4.9***				***<0.1***	***23***	***47***	***29***	***0.65***	***<0.1***	
All Locations		***0.90***	***4.8***	***<0.1***	***65***	***17***	***4.9***	***7.8***				***0.44***	***22***	***58***	***19***	***0.89***	***<0.1***	

Figure E1-1. Cyanophyte biomass (mg/m^3) from Meadowbank study area lakes since 2006.

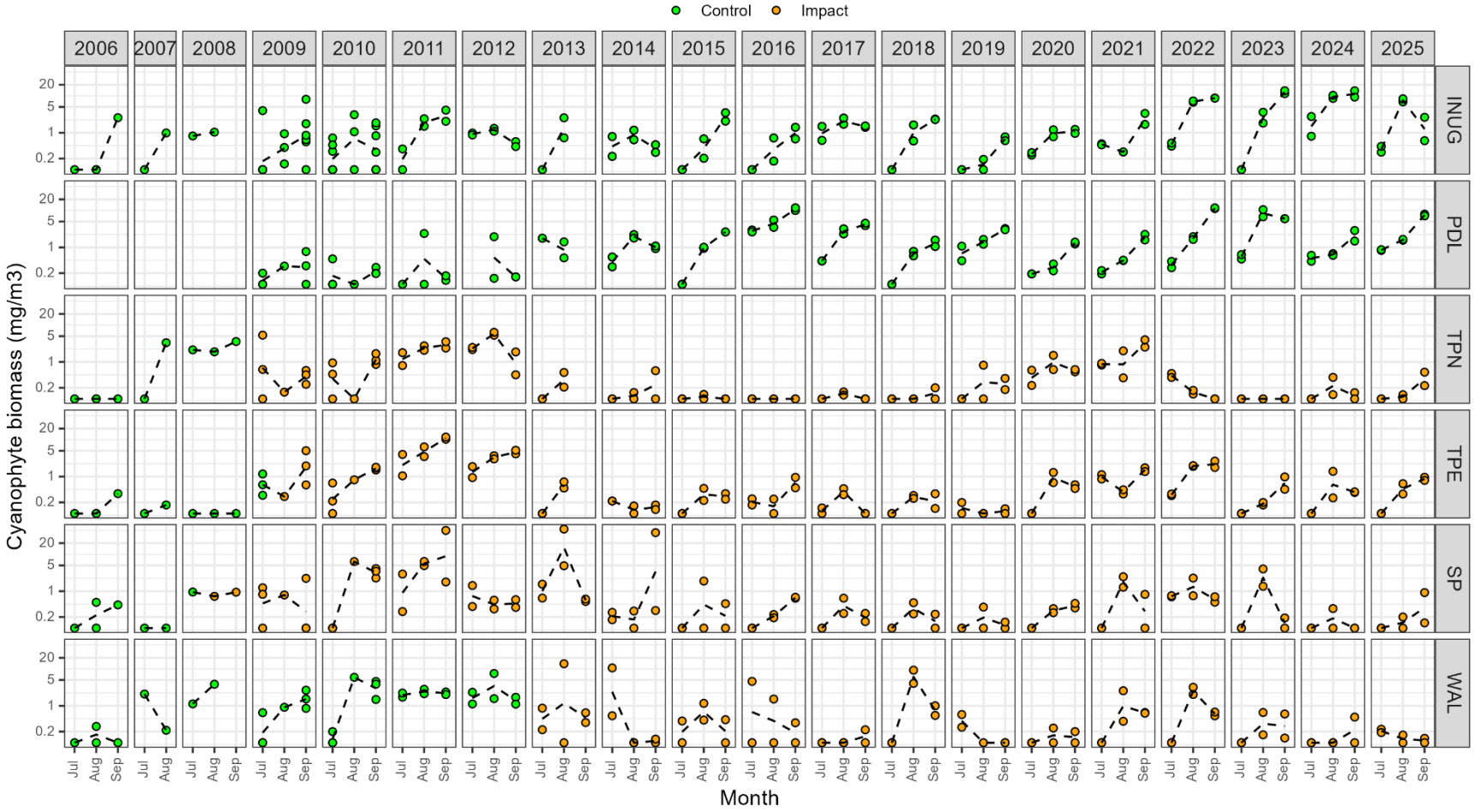

Figure E1-2. Chlorophyte biomass (mg/m^3) from Meadowbank study area lakes since 2006.

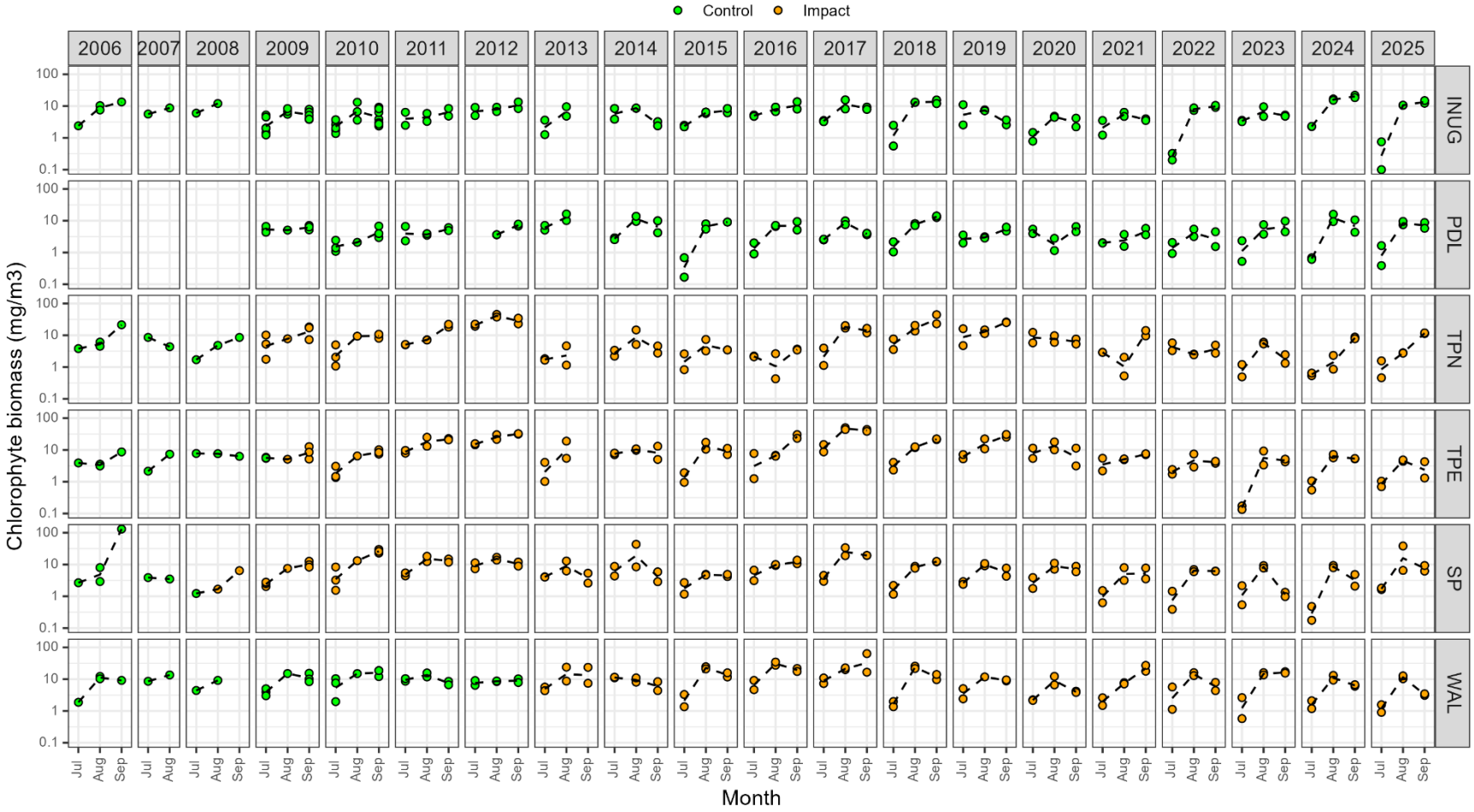

Figure E1-3. Chrysophyte biomass (mg/m^3) from Meadowbank study area lakes since 2006.

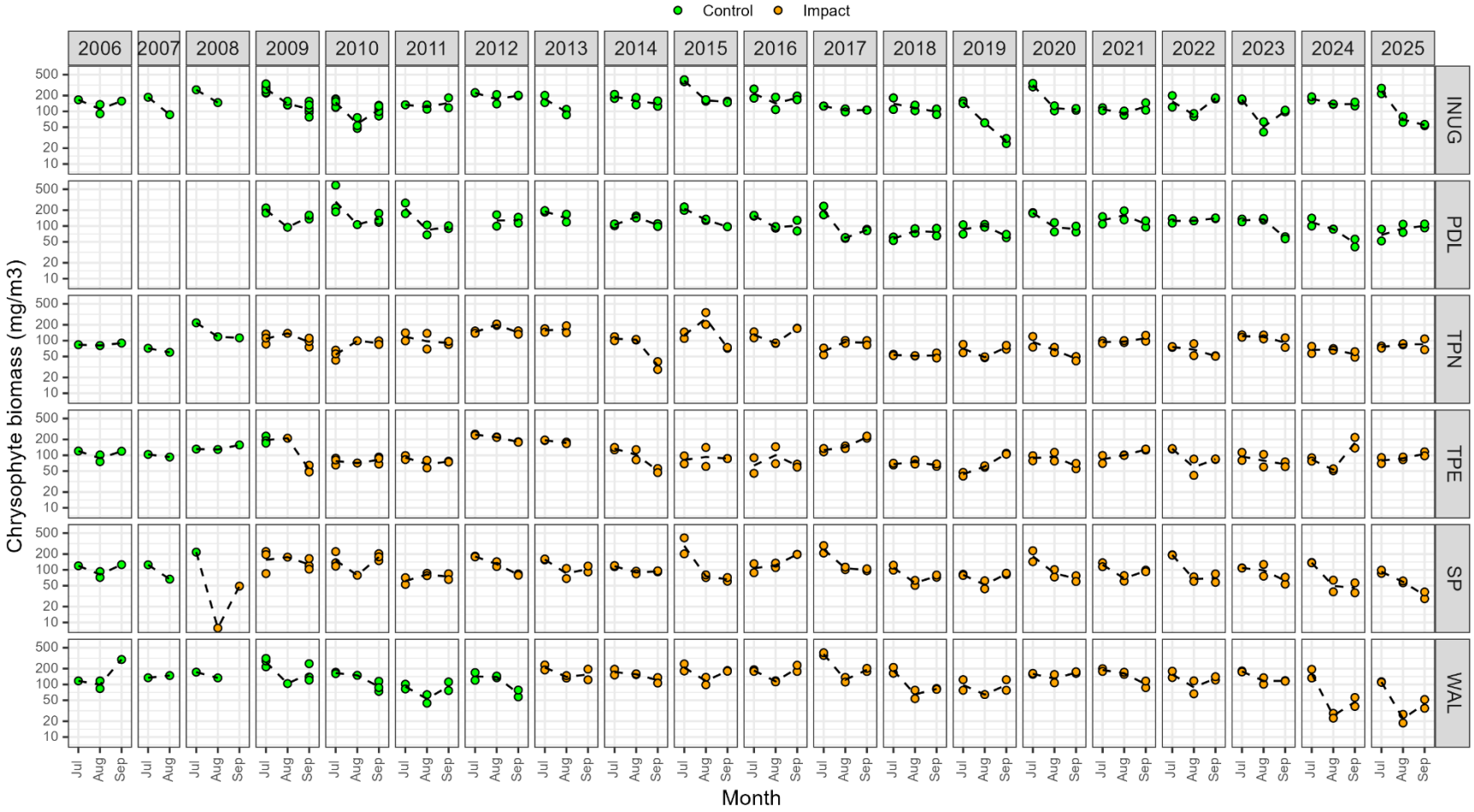

Figure E1-4. Diatom biomass (mg/m^3) from Meadowbank study area lakes since 2006.

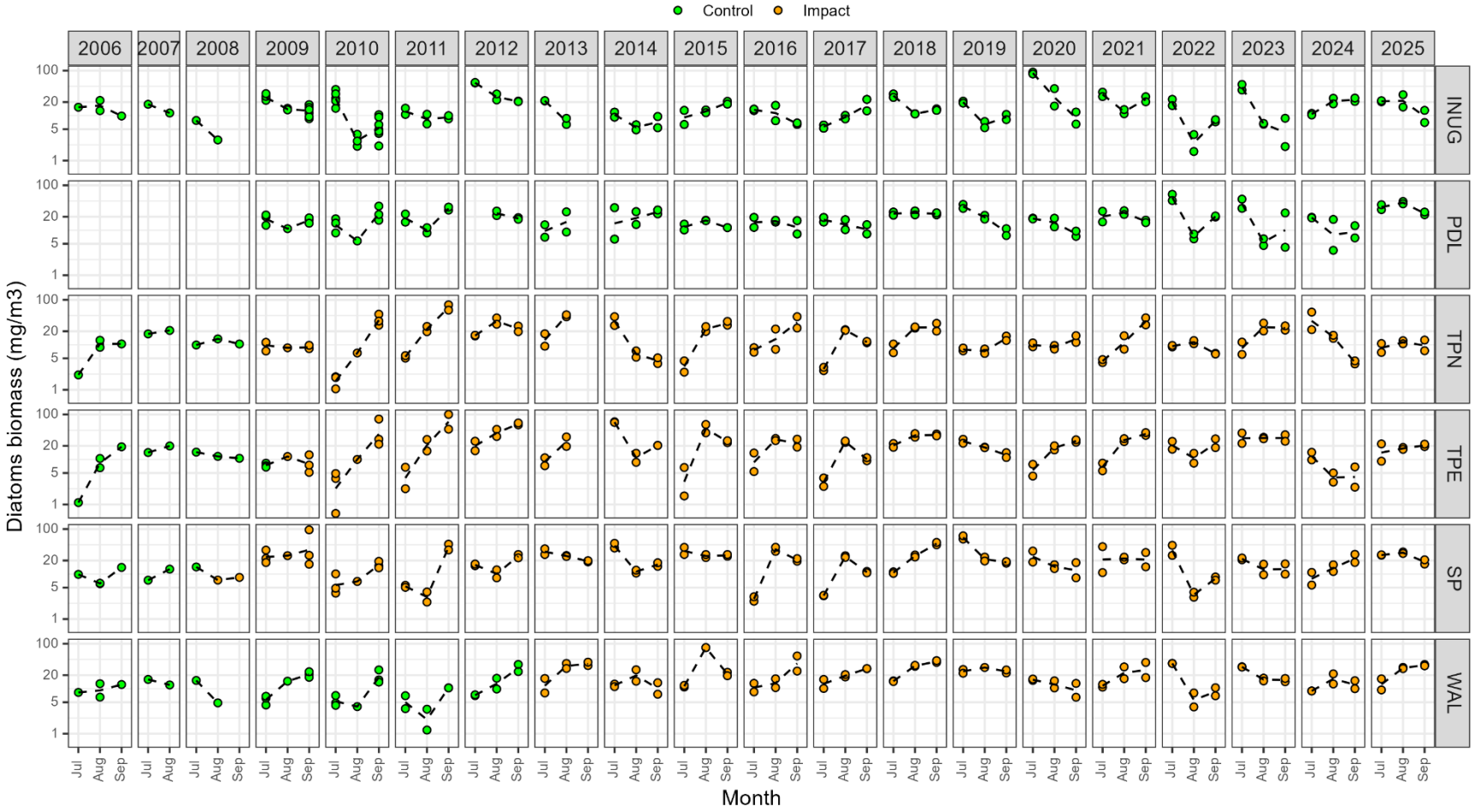

Figure E1-5. Cryptophyte biomass (mg/m^3) from Meadowbank study area lakes since 2006.

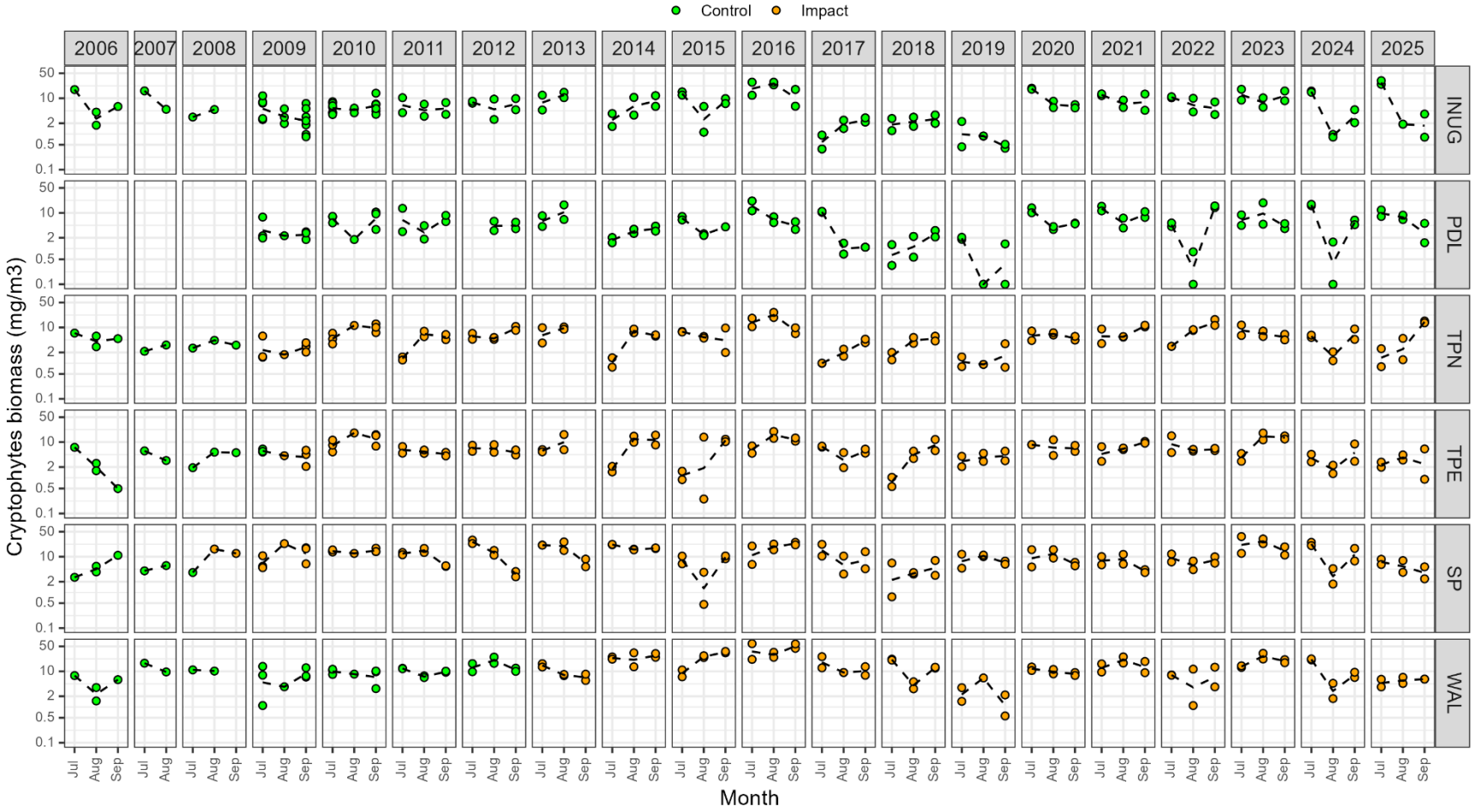

Figure E1-6. Dinoflagellate biomass (mg/m^3) from Meadowbank study area lakes since 2006.

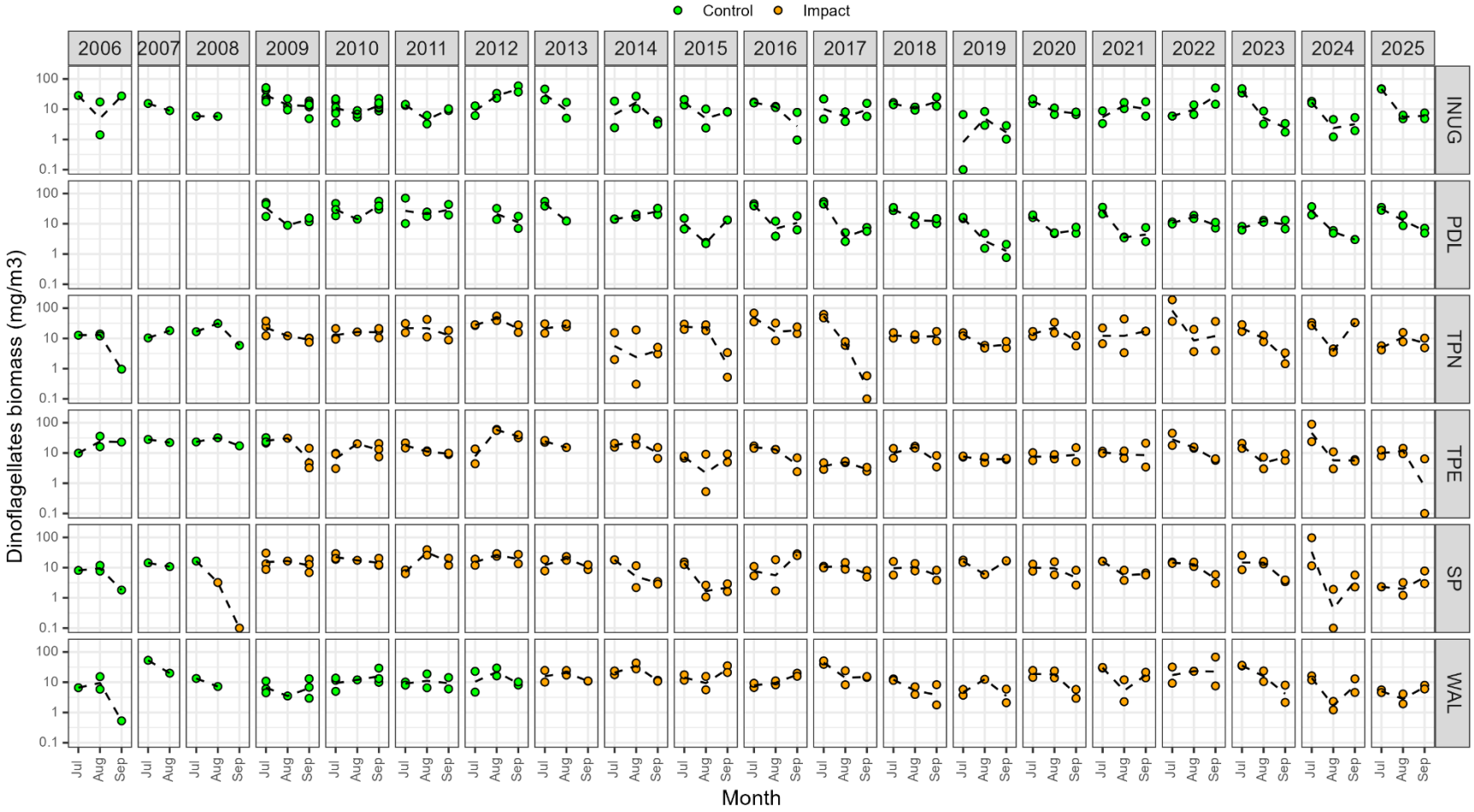

Figure E1-7. Phytoplankton density (cells/L) by major taxa group from Meadowbank study area lakes since 2006.

Note: High chlorophyll value in December 2011 at TPE omitted.

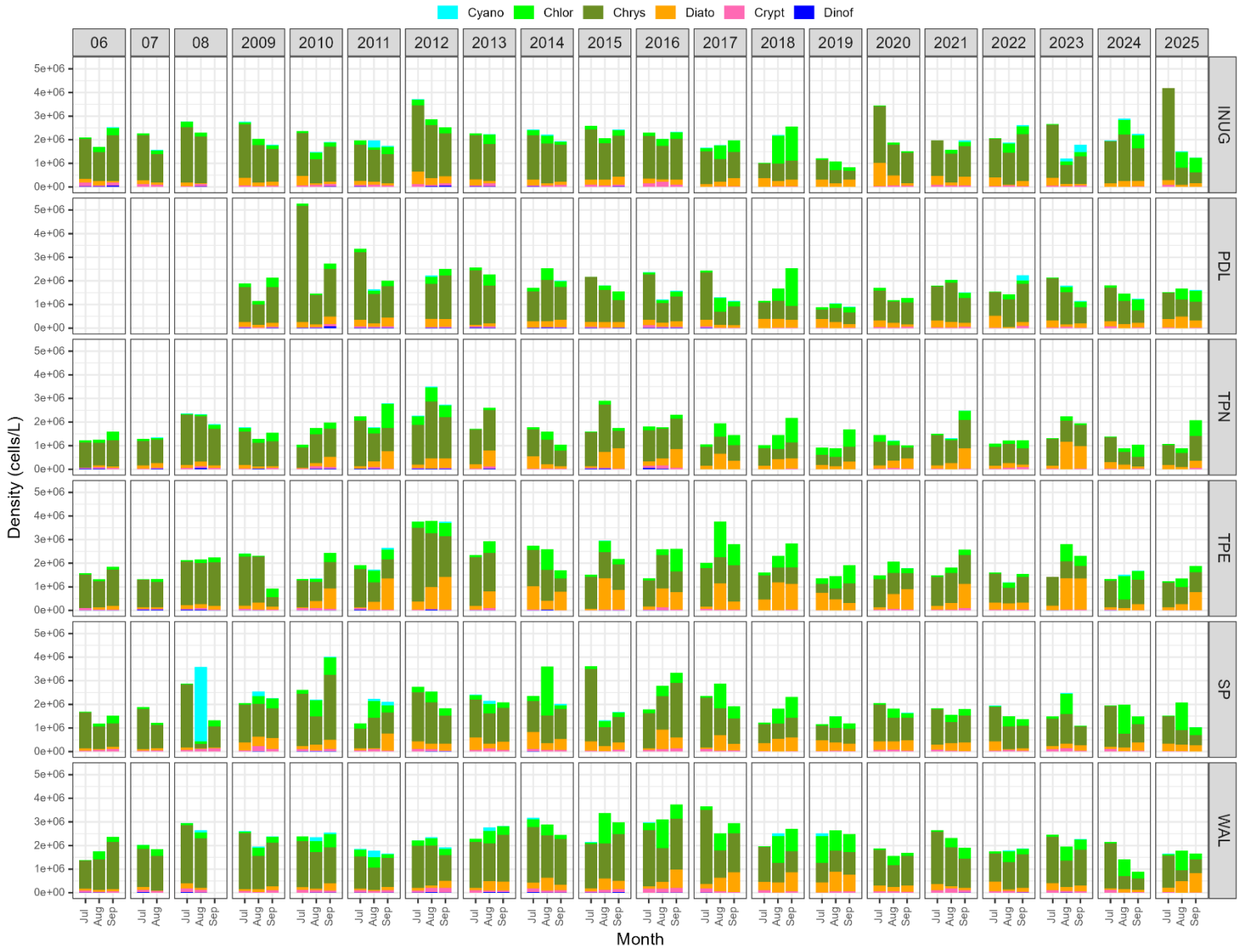

Figure E1-8. Relative phytoplankton density by major taxa group from Meadowbank study area lakes since 2006.

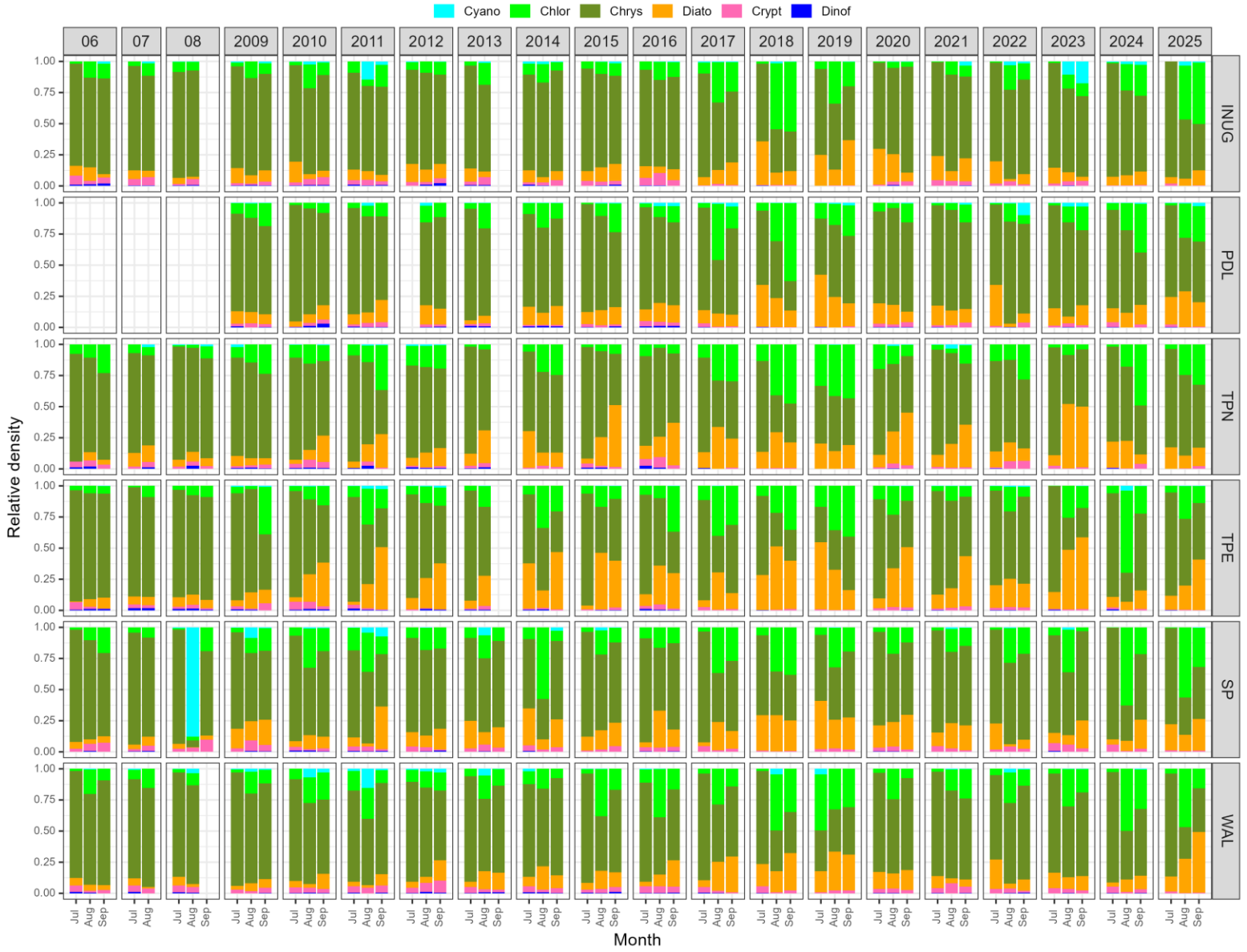

Figure E1-9. Cyanophyte density (cells/L) from Meadowbank study area lakes since 2006.

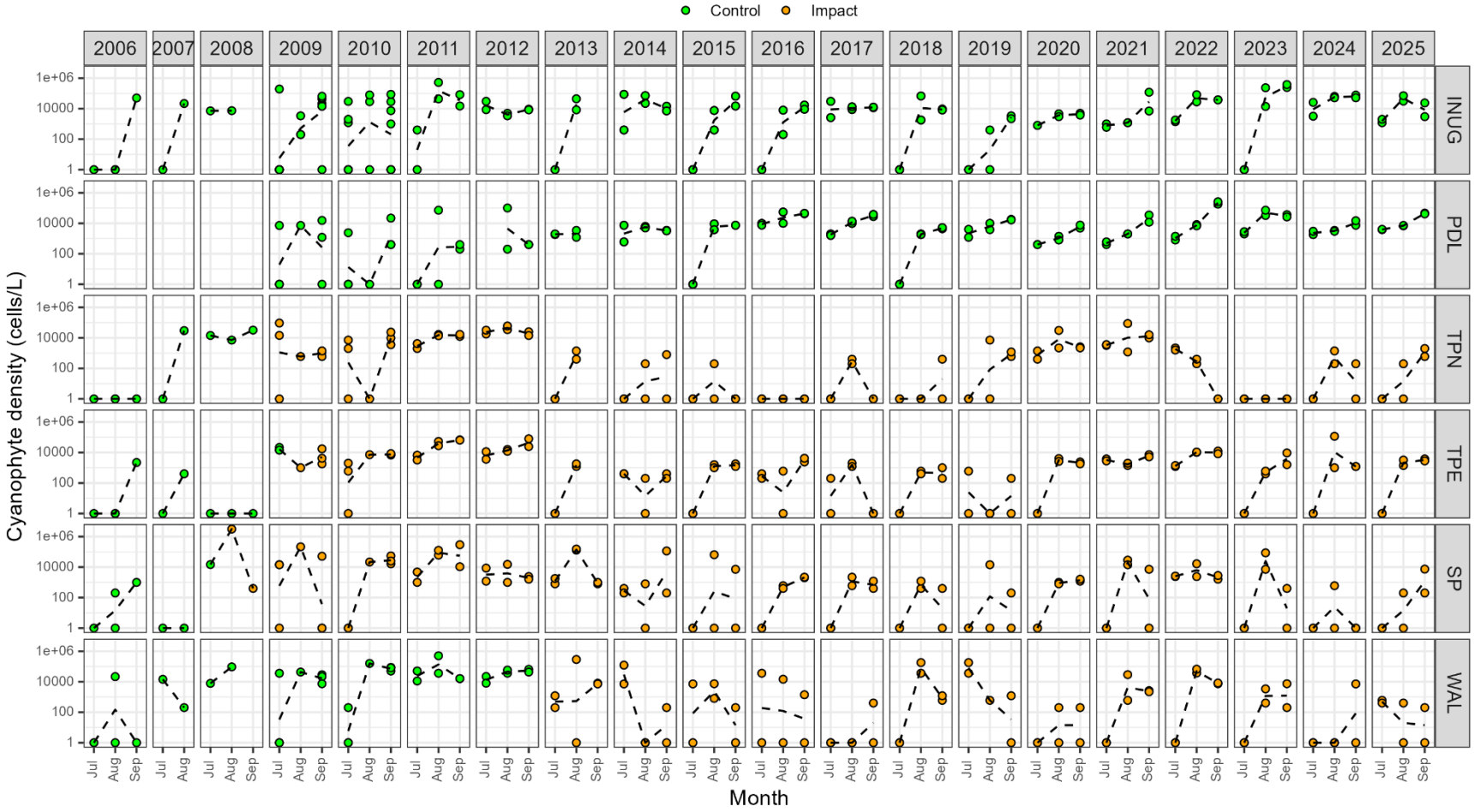

Figure E1-10. Chlorophyte density (cells/L) from Meadowbank study area lakes since 2006.

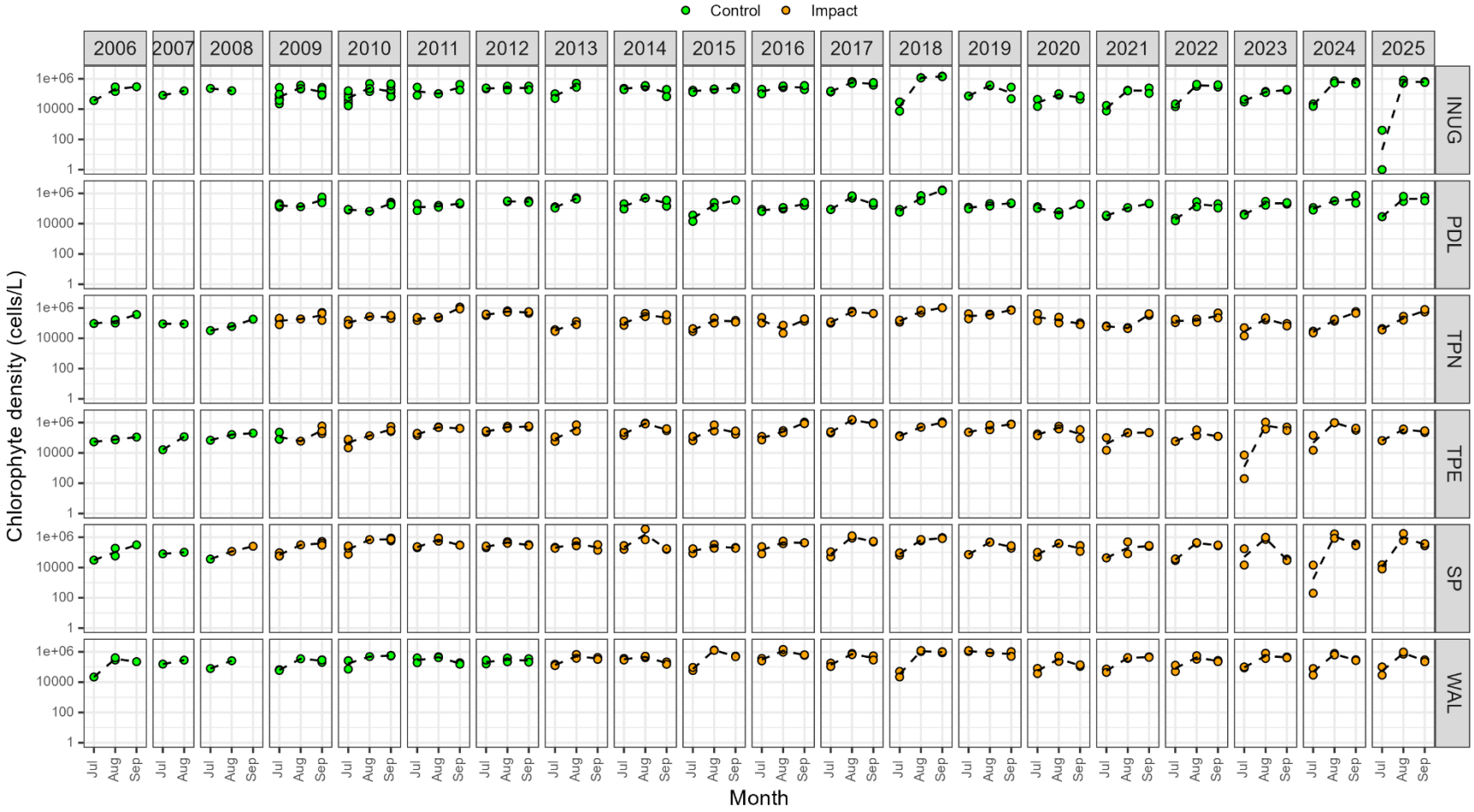

Figure E1-11. Chrysophyte density (cells/L) from Meadowbank study area lakes since 2006.

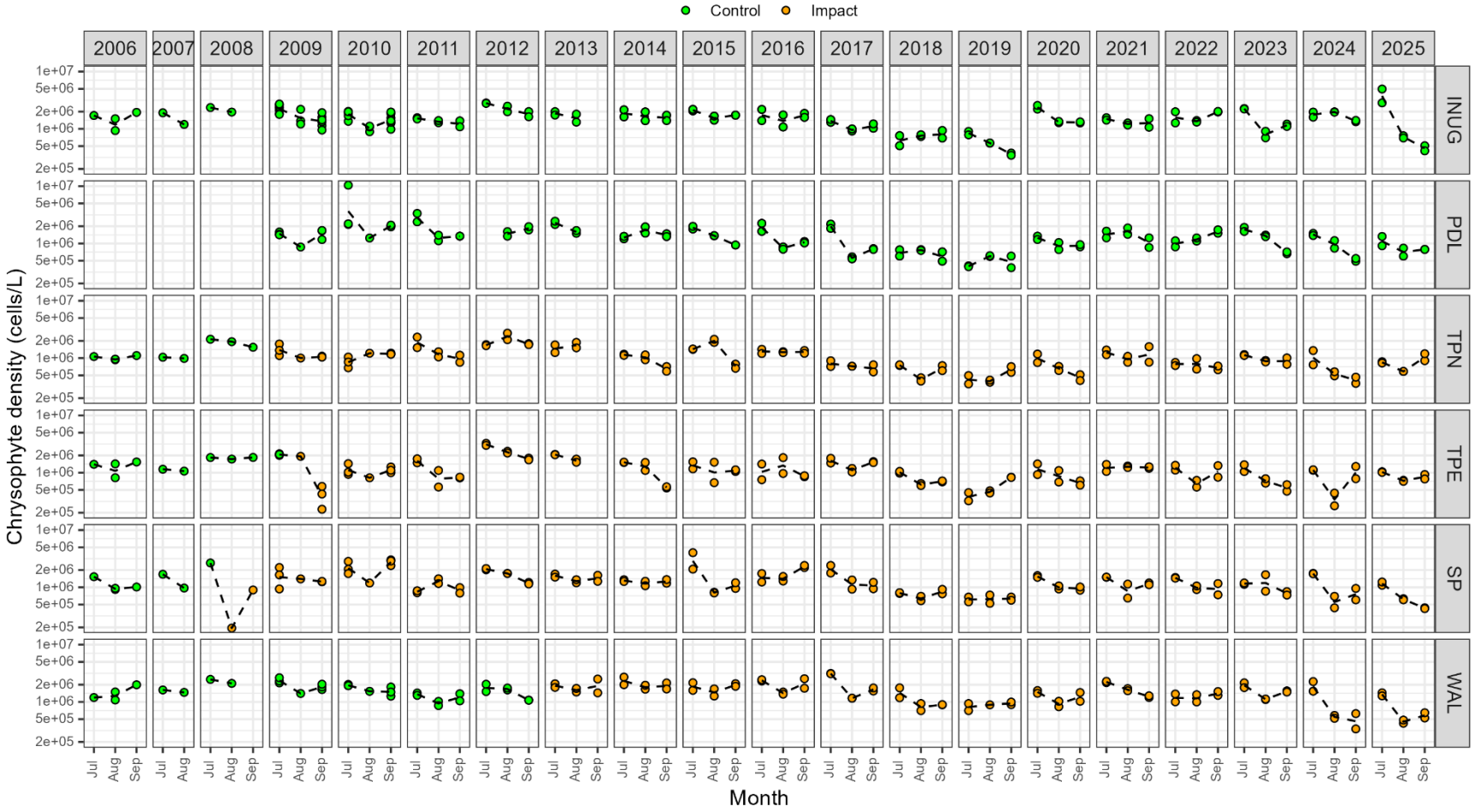

Figure E1-12. Diatoms density (cells/L) from Meadowbank study area lakes since 2006.

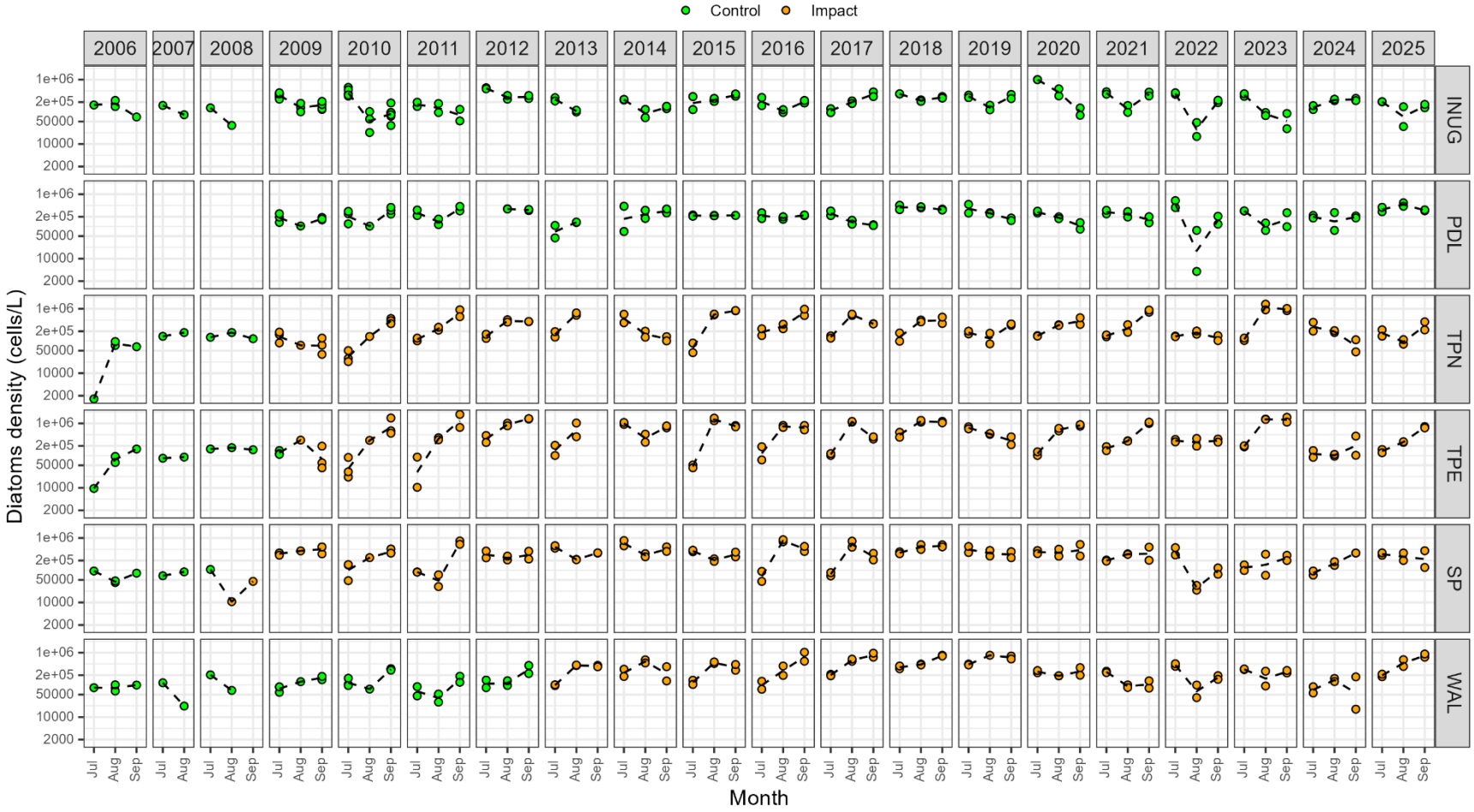

Figure E1-13. Cryptophytes density (cells/L) from Meadowbank study area lakes since 2006.

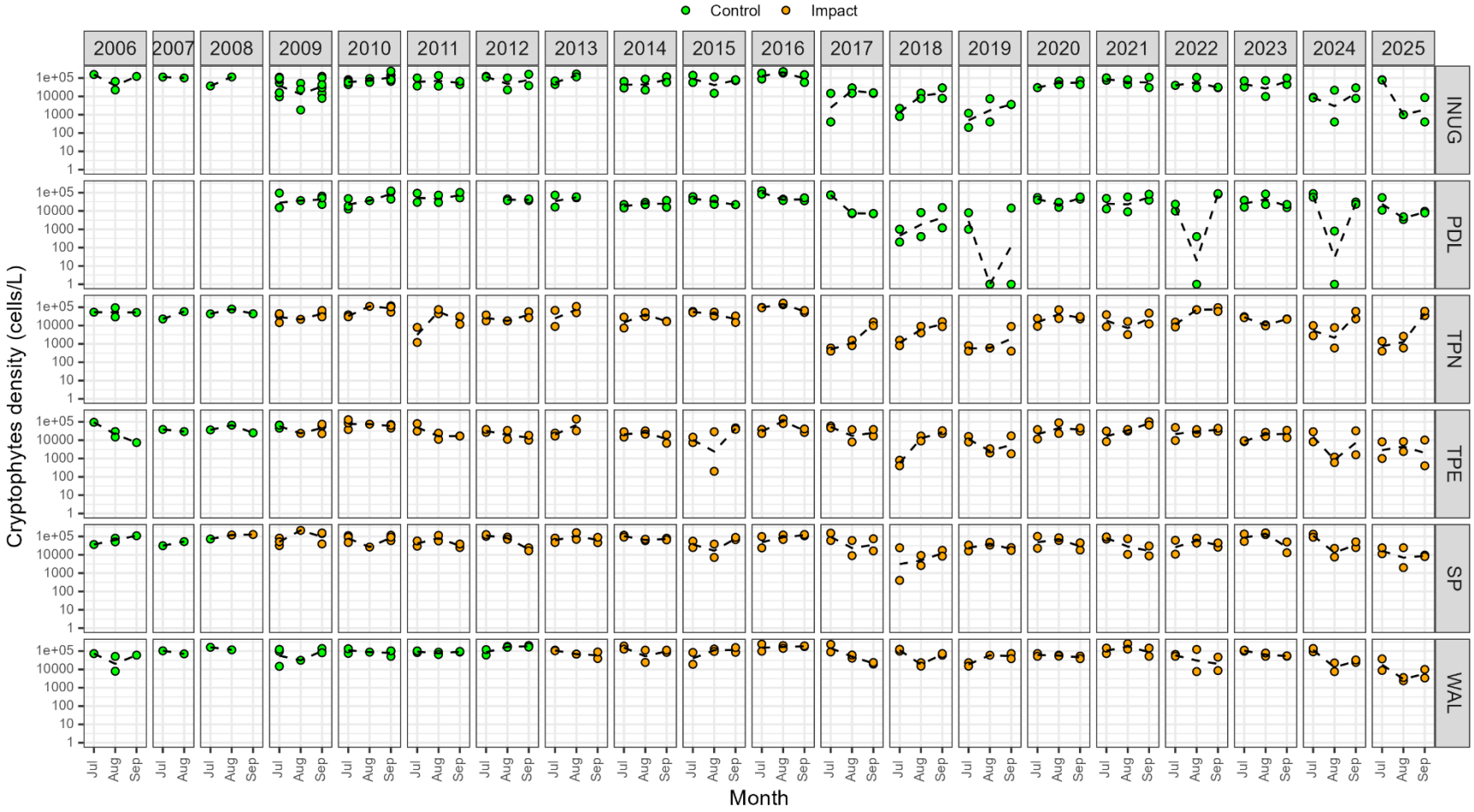

Figure E1-14. Dinoflagellates density (cells/L) from Meadowbank study area lakes since 2006.

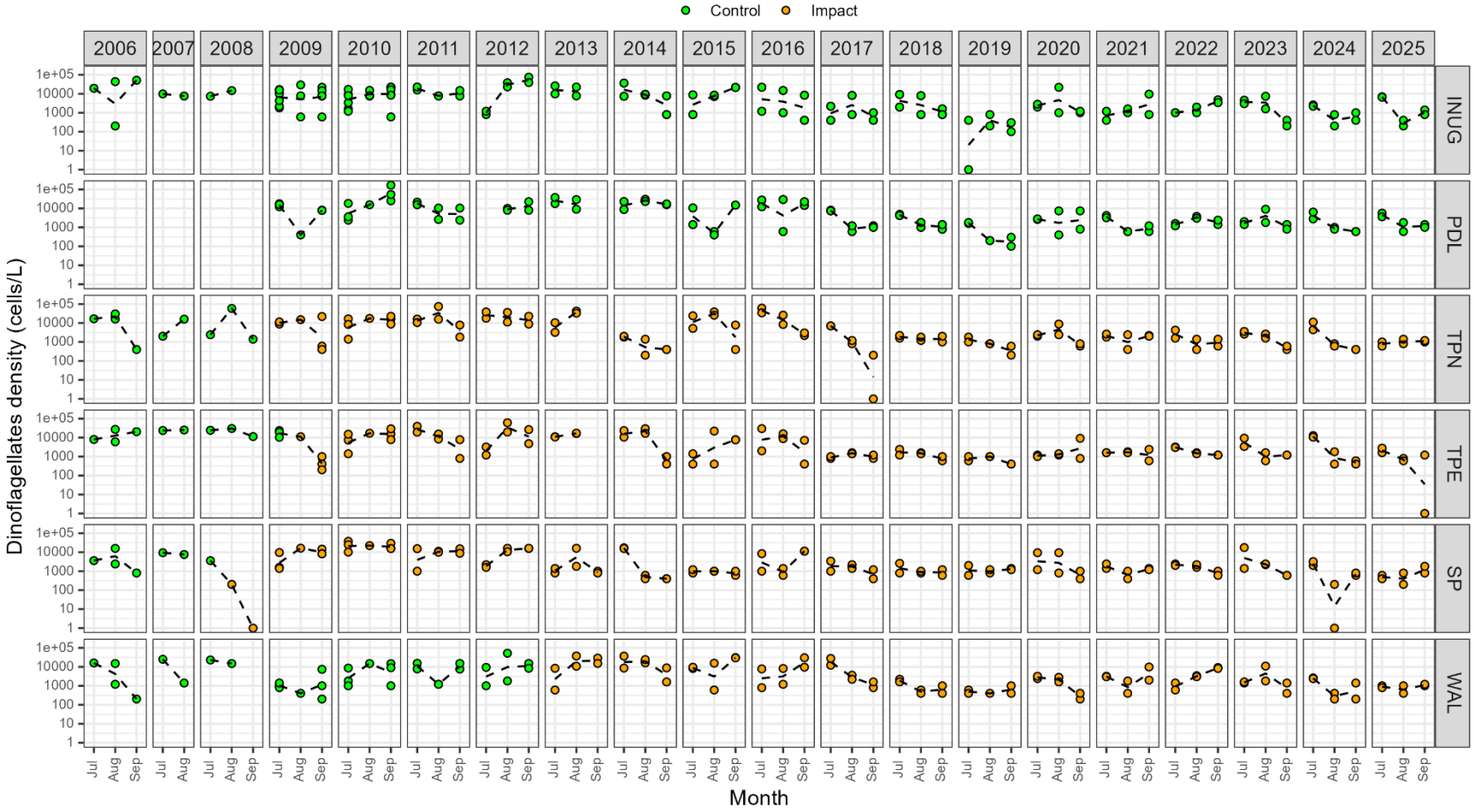

Figure E1-15. Simpsons' Diversity for the phytoplankton community from Meadowbank study area lakes since 2006.

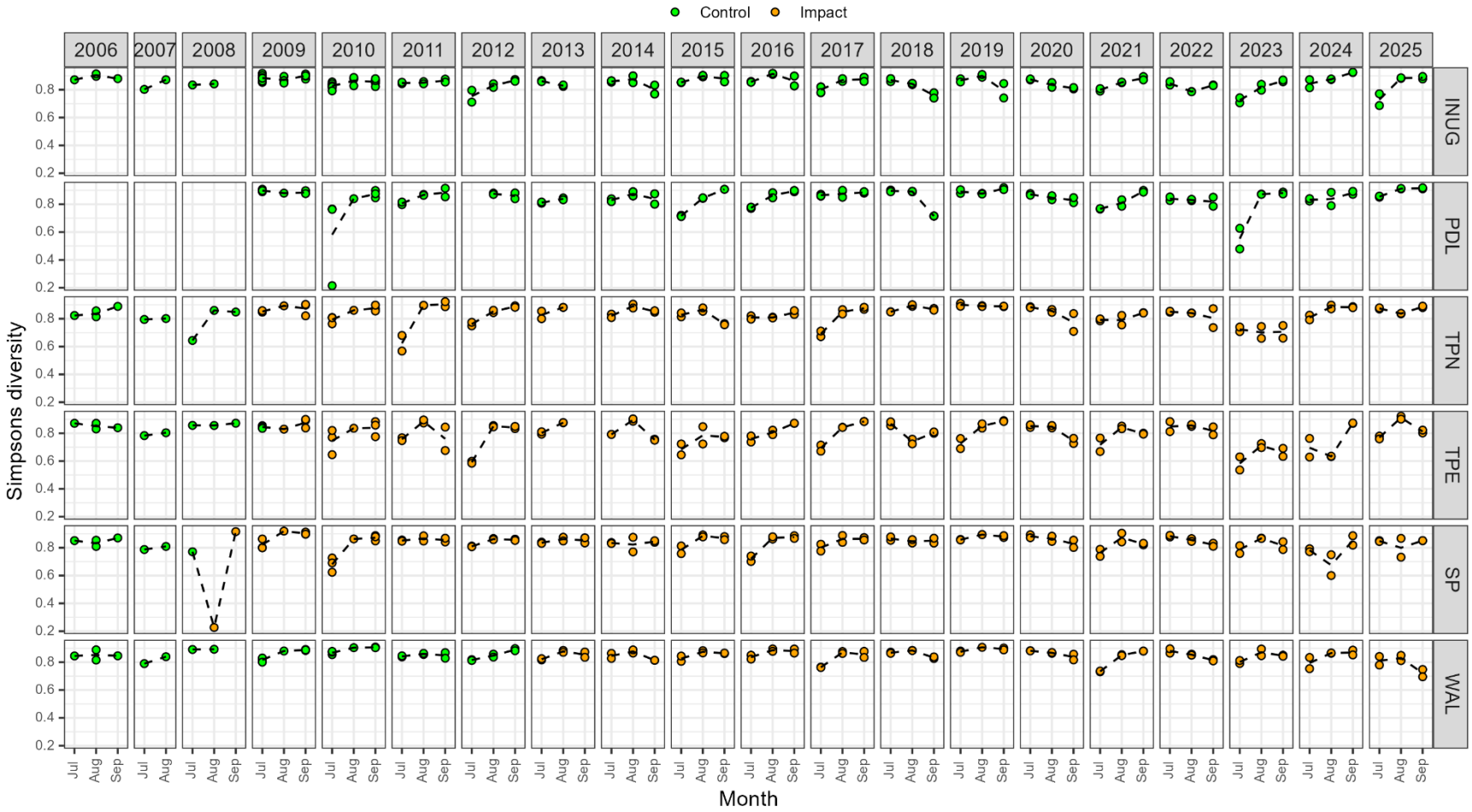

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Table E2-1. Phytoplankton density (cells/L), biomass (mg/m^3), and diversity by major taxa group, Whale Tail study area lakes, 2025.

Area-Replicate	Date	Phytoplankton Biomass (mg/m^3)							Taxa Richness	Simpson's Diversity	Phytoplankton Density (cells/L)						
		Cyanophyte	Chlorophyte	Chrysophyte	Diatom	Cryptophyte	Dinoflagellate	TOTAL			Cyanophyte	Chlorophyte	Chrysophyte	Diatom	Cryptophyte	Dinoflagellate	TOTAL
Kangislulik Lake (KAN) *																	
MAM - 101	8-Jul-25	0	0.10	236	376	20	2.4	634	21	0.84	0	21,552	2,160,848	1,046,392	31,352	600	3,260,744
MAM - 102	8-Jul-25	0	1.3	234	379	9.6	7.1	631	22	0.84	0	21,552	2,241,056	1,092,664	11,984	1,200	3,368,456
MAM - 103	17-Aug-25	0.037	9.8	38	415	11	0.67	476	21	0.64	200	265,808	416,672	3,337,176	5,800	200	4,025,856
MAM - 104	17-Aug-25	0.14	8.4	15	436	20	4.0	484	19	0.60	800	143,680	344,832	3,624,736	10,400	800	4,125,248
MAM - 105	2-Sep-25	0	12	46	281	21	8.1	369	30	0.77	0	474,144	1,059,048	3,011,112	31,152	1,600	4,577,056
MAM - 106	2-Sep-25	0.098	13	55	231	14	13	326	31	0.76	600	396,920	994,792	2,746,304	13,984	2,400	4,155,000
Percent Density or Biomass		***<0.1***	***1.5***	***21***	***73***	***3.3***	***1.2***				***<0.1***	***5.6***	***31***	***63***	***0.45***	***<0.1***	
Nemo Lake																	
NEM - 99	8-Jul-25	0	1.1	85	157	28	5.8	277	23	0.80	0	14,568	1,380,328	1,132,272	42,336	800	2,570,304
NEM - 100	8-Jul-25	0	2.6	102	235	21	10	370	25	0.81	0	15,168	1,769,464	1,228,264	18,184	1,200	3,032,280
NEM - 101	18-Aug-25	0.76	7.1	128	53	4.1	11	205	25	0.82	5,200	237,072	754,152	957,488	22,352	1,400	1,977,664
NEM - 102	18-Aug-25	0.63	5.2	104	39	1.1	1.1	150	23	0.78	3,800	187,184	441,656	793,856	600	200	1,427,296
NEM - 103	3-Sep-25	1.1	9.6	416	20	11	10	468	28	0.82	7,600	208,536	1,488,736	481,344	93,592	1,200	2,281,008
NEM - 104	3-Sep-25	0.90	8.1	414	26	4.8	6.3	461	27	0.85	6,400	172,816	1,800,448	718,816	22,752	1,200	2,722,432
Percent Density or Biomass		***0.18***	***1.7***	***65***	***27***	***3.6***	***2.3***				***0.16***	***6.0***	***54***	***38***	***1.4***	***<0.1***	
Whale Tail South																	
WTS - 101	7-Jul-25	0.10	1.5	135	15	20	1.9	173	21	0.78	600	64,656	1,754,496	172,144	17,584	400	2,009,880
WTS - 102	7-Jul-25	0.068	1.3	123	14	17	3.9	160	24	0.76	400	50,288	1,561,928	162,576	29,552	800	1,805,544
WTS - 103	16-Aug-25	1.9	23	34	578	4.1	3.7	645	23	0.68	8,400	747,736	660,928	5,369,128	2,200	800	6,789,192
WTS - 104	16-Aug-25	2.2	18	40	556	5.8	1.8	623	25	0.69	8,000	646,760	668,112	5,360,744	3,800	1,200	6,688,616
WTS - 105	4-Sep-25	1.7	12	74	190	7.0	7.0	292	29	0.75	10,600	309,112	1,085,584	3,057,048	31,536	1,400	4,495,280
WTS - 106	4-Sep-25	1.3	10	91	197	0.81	1.4	302	29	0.75	8,000	308,912	1,051,264	3,134,688	400	400	4,503,664
Percent Density or Biomass		***0.33***	***3.0***	***23***	***71***	***2.5***	***0.90***				***0.14***	***8.1***	***26***	***66***	***0.32***	***<0.1***	
Lake A20																	
A20 - 93	8-Jul-25	0	15	171	164	66	10	427	25	0.86	0	222,704	2,307,680	479,104	146,144	1,400	3,157,032
A20 - 94	8-Jul-25	0	17	240	207	54	6.0	523	27	0.86	0	323,280	2,705,000	544,544	105,024	1,400	3,679,248
A20 - 95	16-Aug-25	0.41	52	116	55	21	7.6	252	29	0.85	2,400	2,090,744	1,459,952	1,202,976	10,200	2,000	4,768,272
A20 - 96	16-Aug-25	0.20	42	121	61	24	12	260	30	0.86	1,200	1,774,648	1,517,824	1,257,048	38,536	2,800	4,592,056
A20 - 97	4-Sep-25	1.2	38	371	92	15	23	540	35	0.87	5,400	1,265,584	3,444,736	1,115,816	42,520	3,200	5,877,256
A20 - 98	4-Sep-25	1.1	44	300	135	16	27	524	37	0.88	10,384	1,304,504	3,126,840	1,156,136	44,120	3,000	5,644,984
Percent Density or Biomass		***0.12***	***8.2***	***52***	***28***	***7.7***	***3.4***				***<0.1***	***25***	***53***	***21***	***1.4***	***<0.1***	
Lake A76																	
A76 - 91	3-Jul-25	0	1.6	262	13	28	30	334	26	0.82	0	22,552	2,700,848	121,224	62,488	2,400	2,909,512
A76 - 92	3-Jul-25	0	2.8	285	30	82	11	411	23	0.81	0	79,024	3,490,872	210,976	289,824	2,200	4,072,896
A76 - 93	15-Aug-25	0	44	39	150	9.5	32	274	24	0.72	0	3,966,168	689,664	2,677,264	5,200	2,000	7,340,296
A76 - 94	15-Aug-25	0	43	32	143	8.4	5.4	231	22	0.74	0	3,879,960	682,480	2,526,800	4,400	400	7,094,040
Percent Density or Biomass		***<0.1***	***7.3***	***49***	***27***	***10***	***6.3***				***<0.1***	***37***	***35***	***26***	***1.7***	***<0.1***	
Lake DS1																	
DS1 - 89	3-Jul-25	0	0.42	141	7.0	34	19	201	25	0.80	0	28,936	2,813,144	32,752	25,584	3,800	2,904,216
DS1 - 90	3-Jul-25	0	4.0	152	4.9	18	53	232	31	0.78	0	287,760	2,439,376	21,584	44,320	7,800	2,800,840
DS1 - 91	15-Aug-25	0	9.0	80	7.4	8.9	6.6	112	30	0.87	0	567,736	1,093,768	204,152	11,584	1,400	1,878,640
DS1 - 92	15-Aug-25	0	14	75	7.1	10	5.5	112	31	0.84	600	489,112	1,157,824	308,928	19,768	800	1,977,032
Percent Density or Biomass		***<0.1***	***4.2***	***68***	***4.0***	***11***	***13***				***<0.1***	***14***	***78***	***5.9***	***1.1***	***0.14***	
All Locations Relative Density or Biomass (%)		***0.12***	***4.1***	***41***	***46***	***5.3***	***3.0***				***<0.1***	***17***	***42***	***40***	***1.0***	***<0.1***	

Note:
*Kangislulik Lake (KAN) was formerly Mammoth Lake (MAM).

Figure E2-1. Cyanophyte biomass (mg/m^3) from Whale Tail study area lakes since 2014.

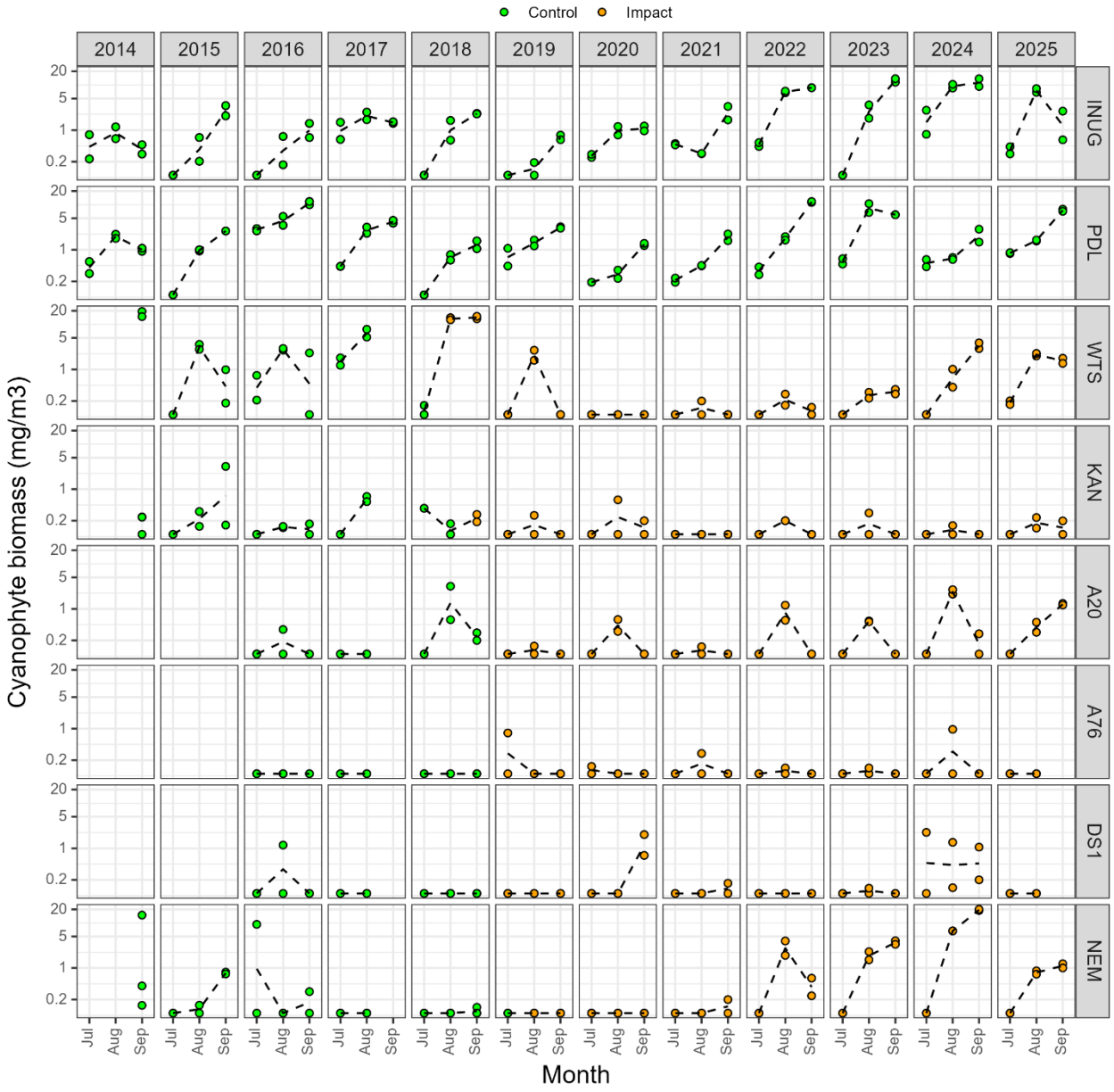


Figure E2-2. Chlorophyte biomass (mg/m^3) from Whale Tail study area lakes since 2014.

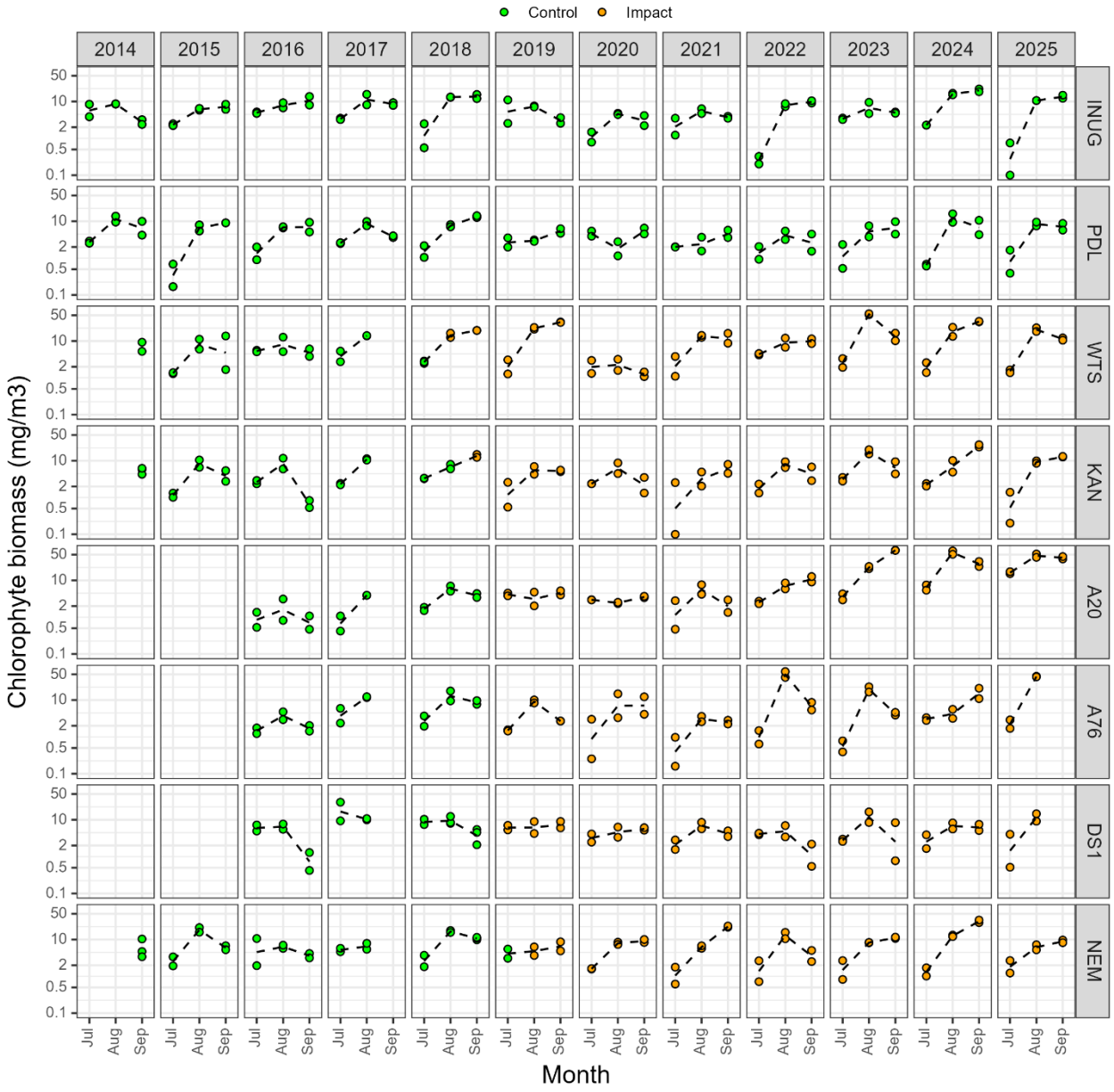


Figure E2-3. Chrysophyte biomass (mg/m^3) from Whale Tail study area lakes since 2014.

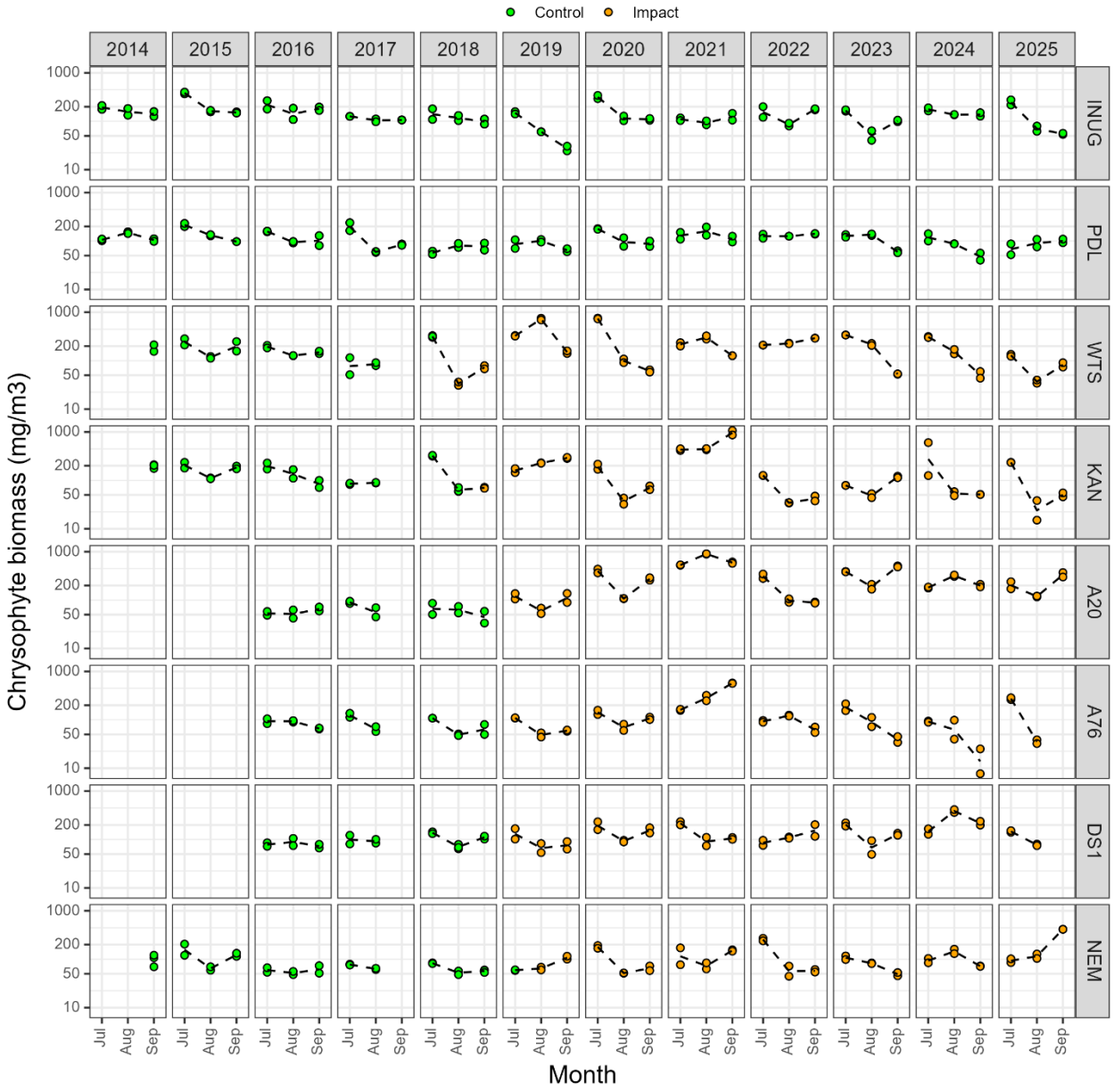


Figure E2-4. Diatoms biomass (mg/m^3) from Whale Tail study area lakes since 2014.

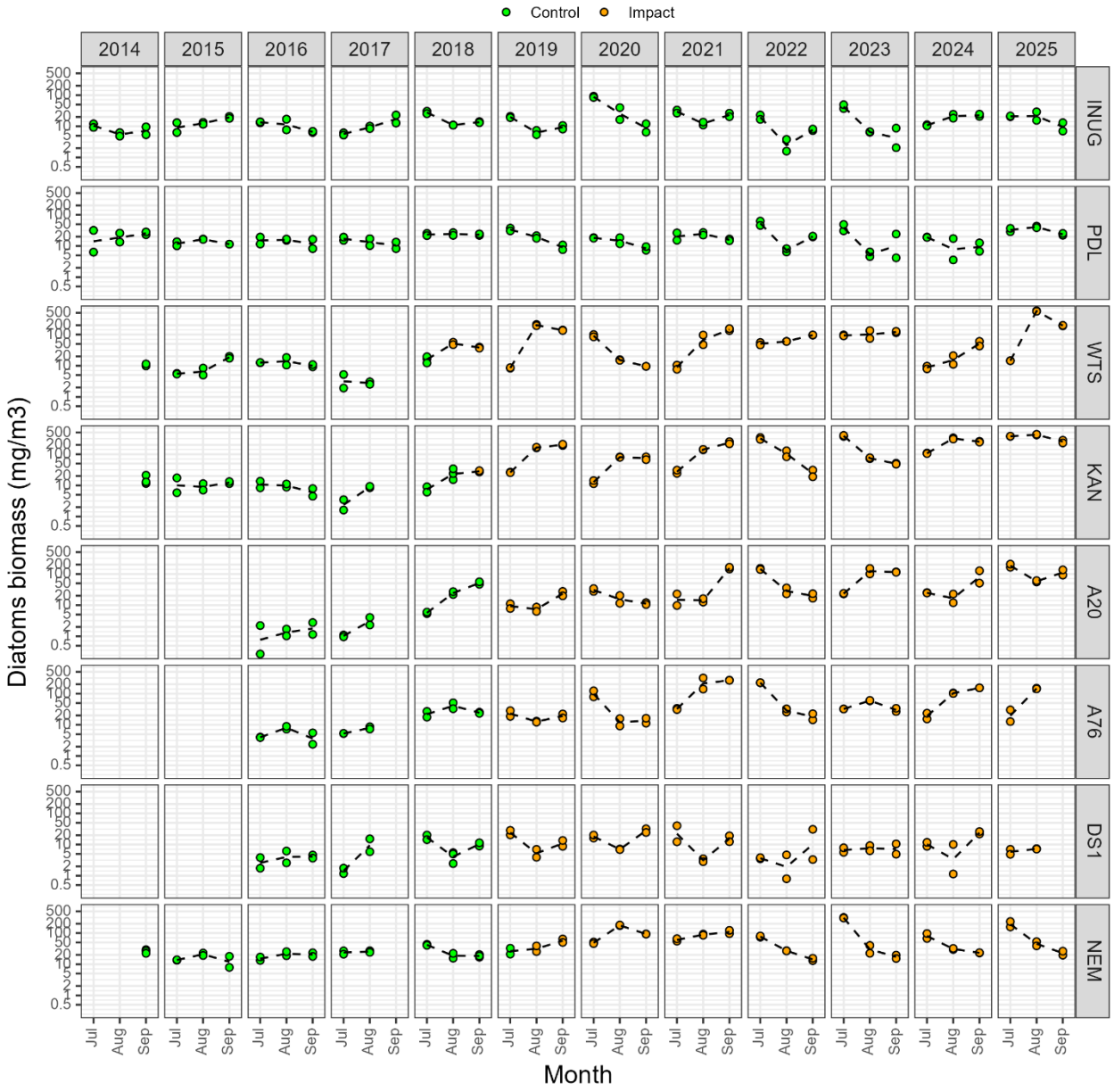


Figure E2-5. Cryptophytes biomass (mg/m^3) from Whale Tail study area lakes since 2014.

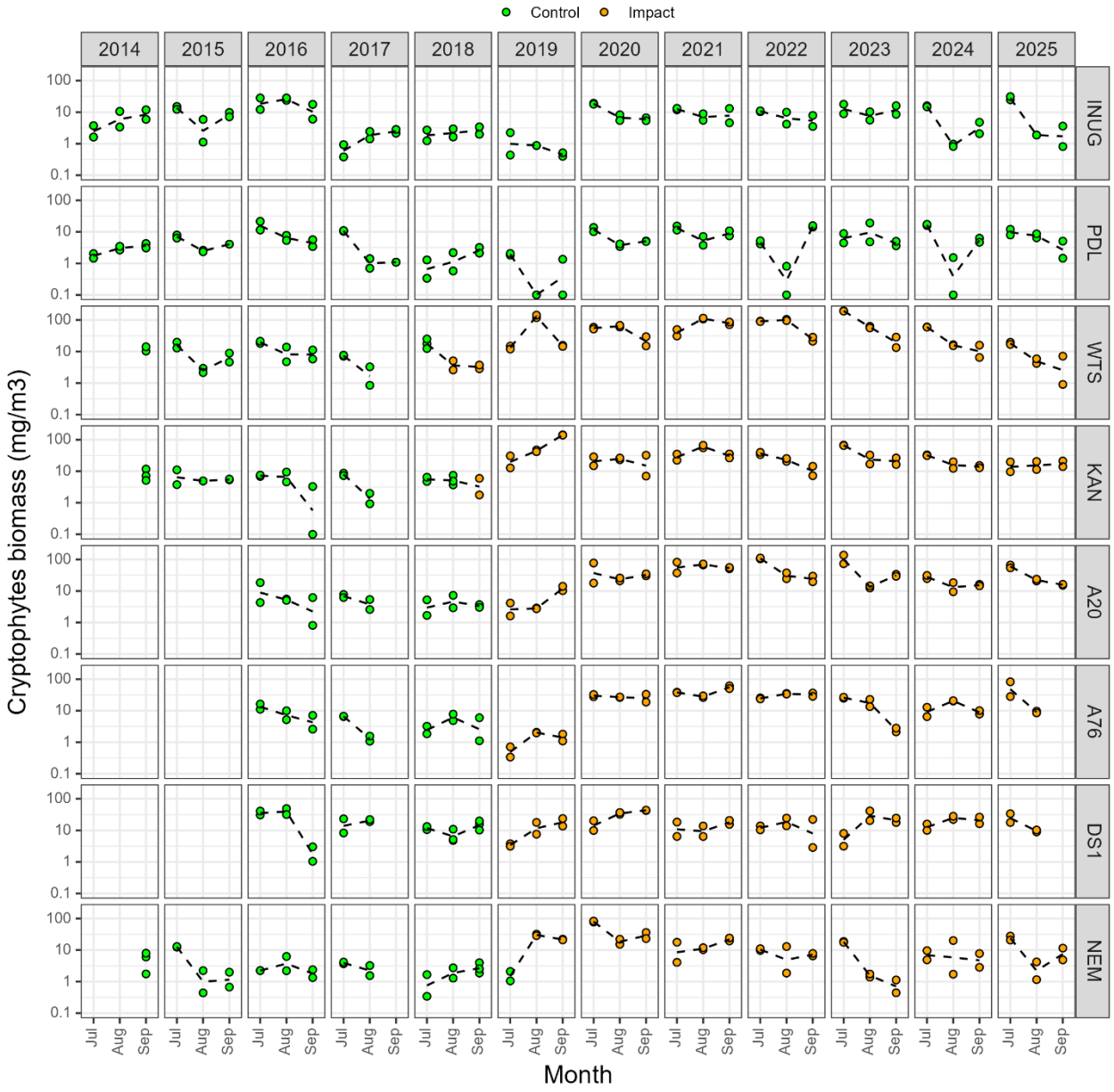


Figure E2-6. Dinoflagellates biomass (mg/m^3) from Whale Tail study area lakes since 2014.

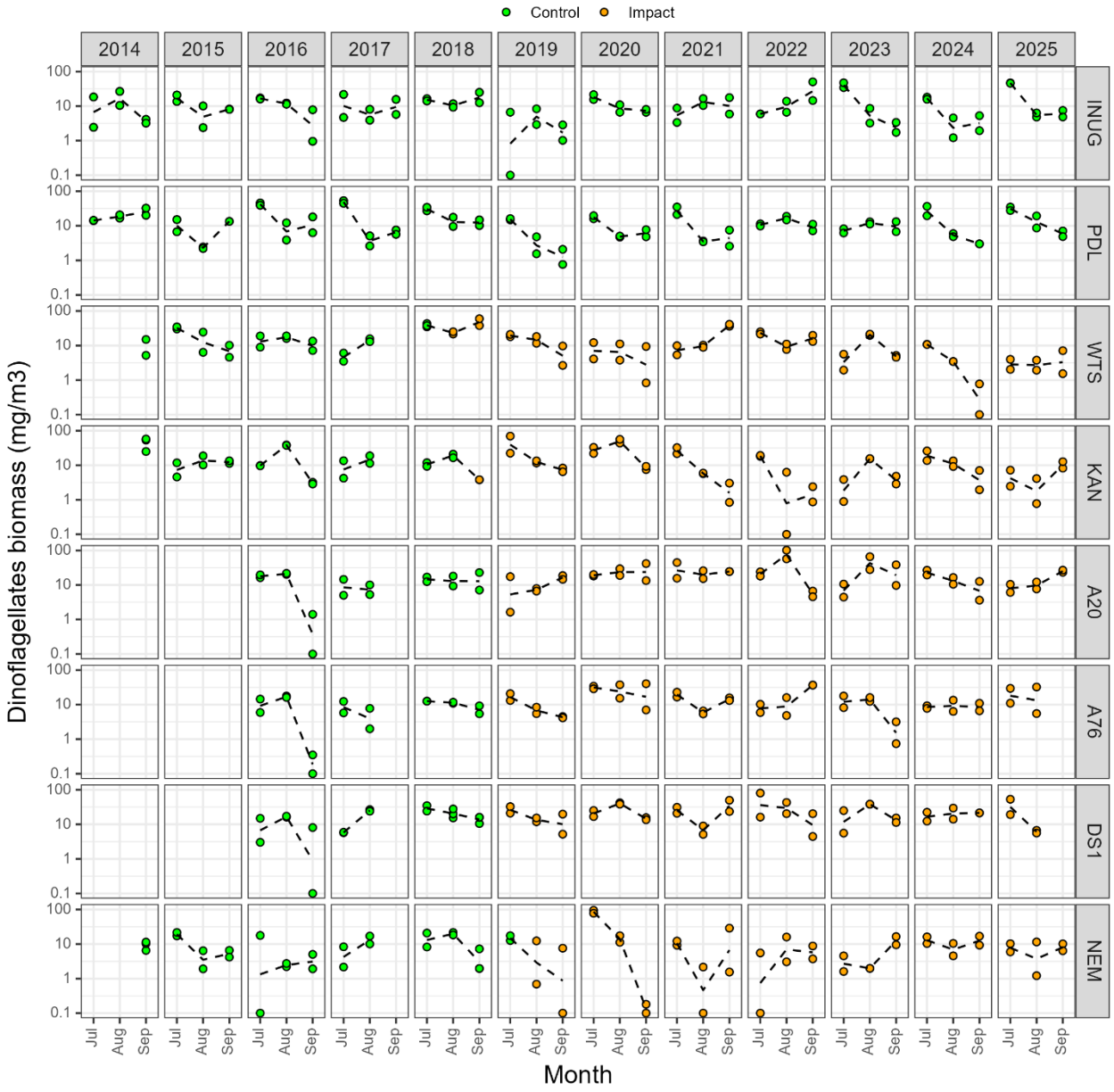


Figure E2-7. Phytoplankton density (cells/L) by major taxa group from Whale Tail study area lakes since 2014.

Figure E2-8. Relative phytoplankton density by major taxa group from Whale Tail study area lakes since 2014.

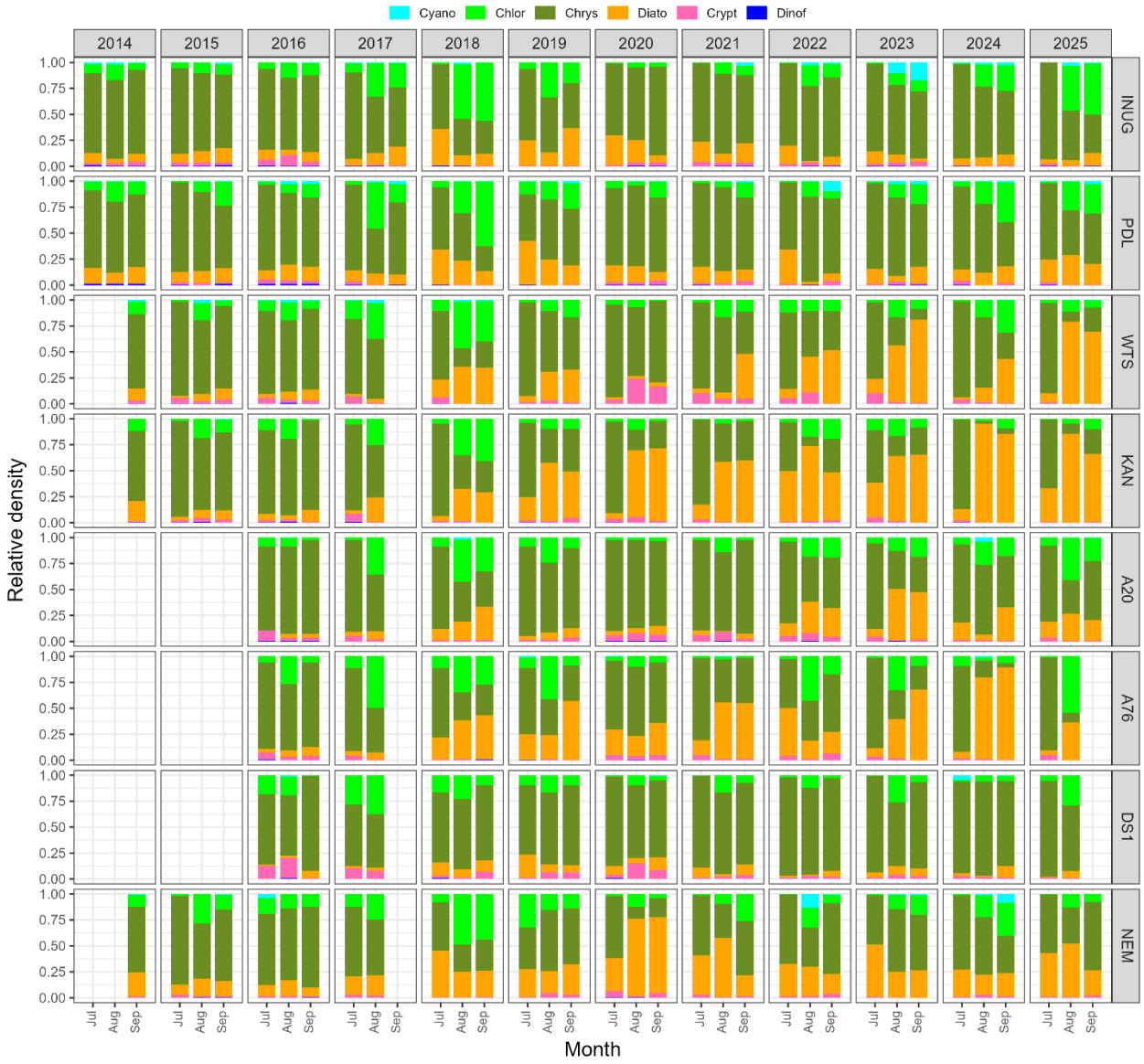


Figure E2-9. Cyanophyte density (cells/L) from Whale Tail study area lakes since 2014.

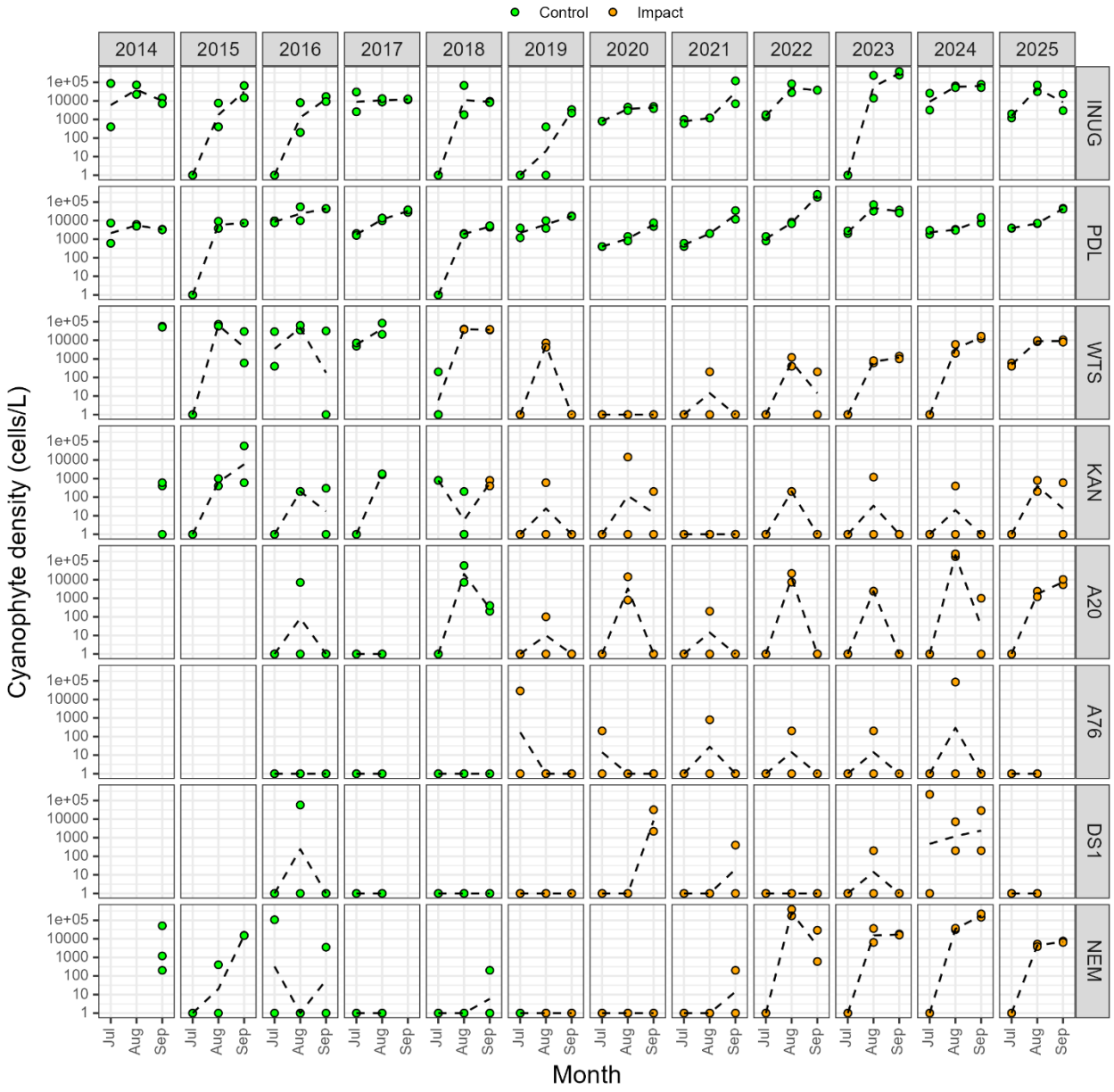


Figure E2-10. Chlorophyte density (cells/L) from Whale Tail study area lakes since 2014.

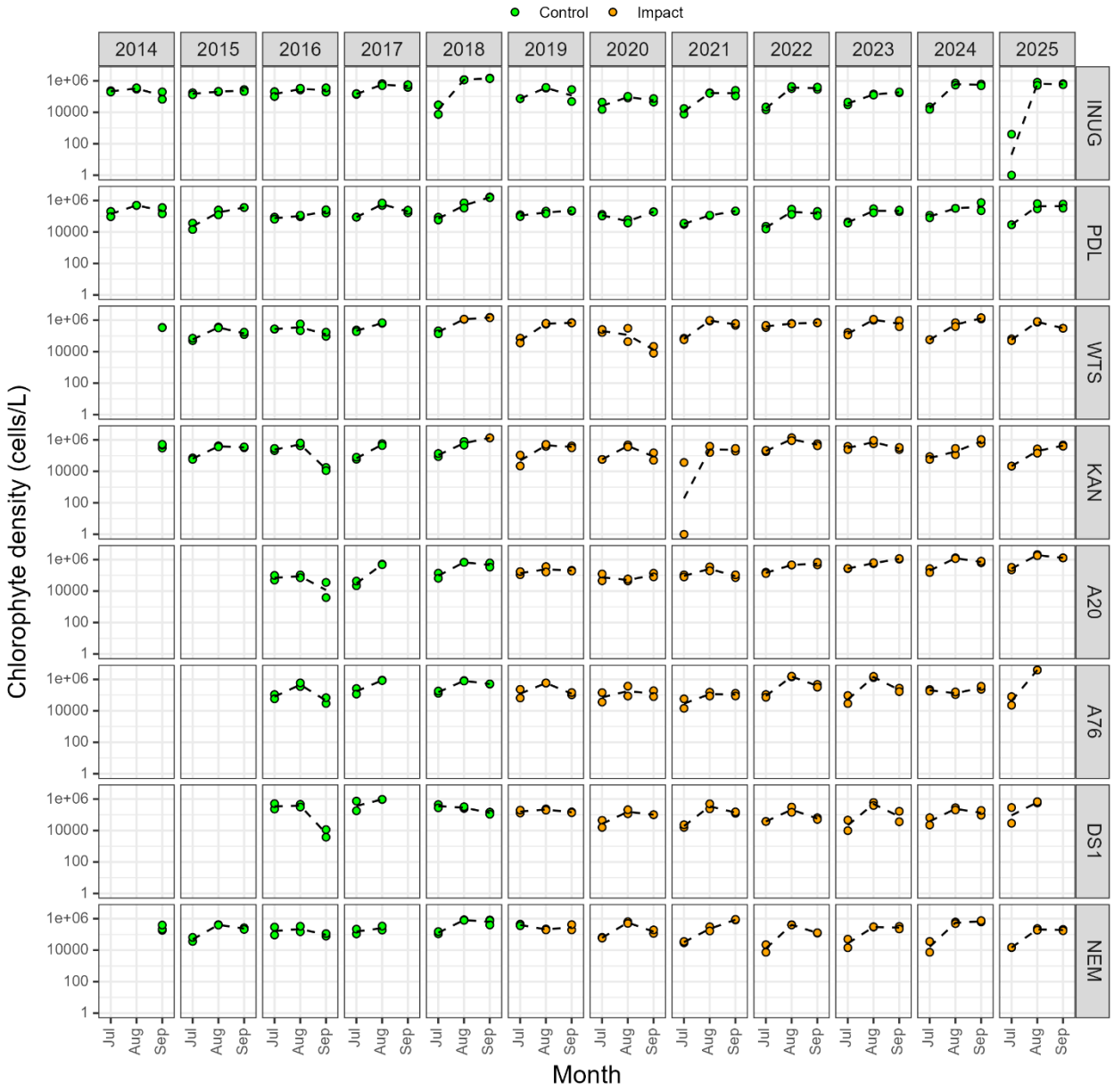


Figure E2-11. Chrysophyte density (cells/L) from Whale Tail study area lakes since 2014.

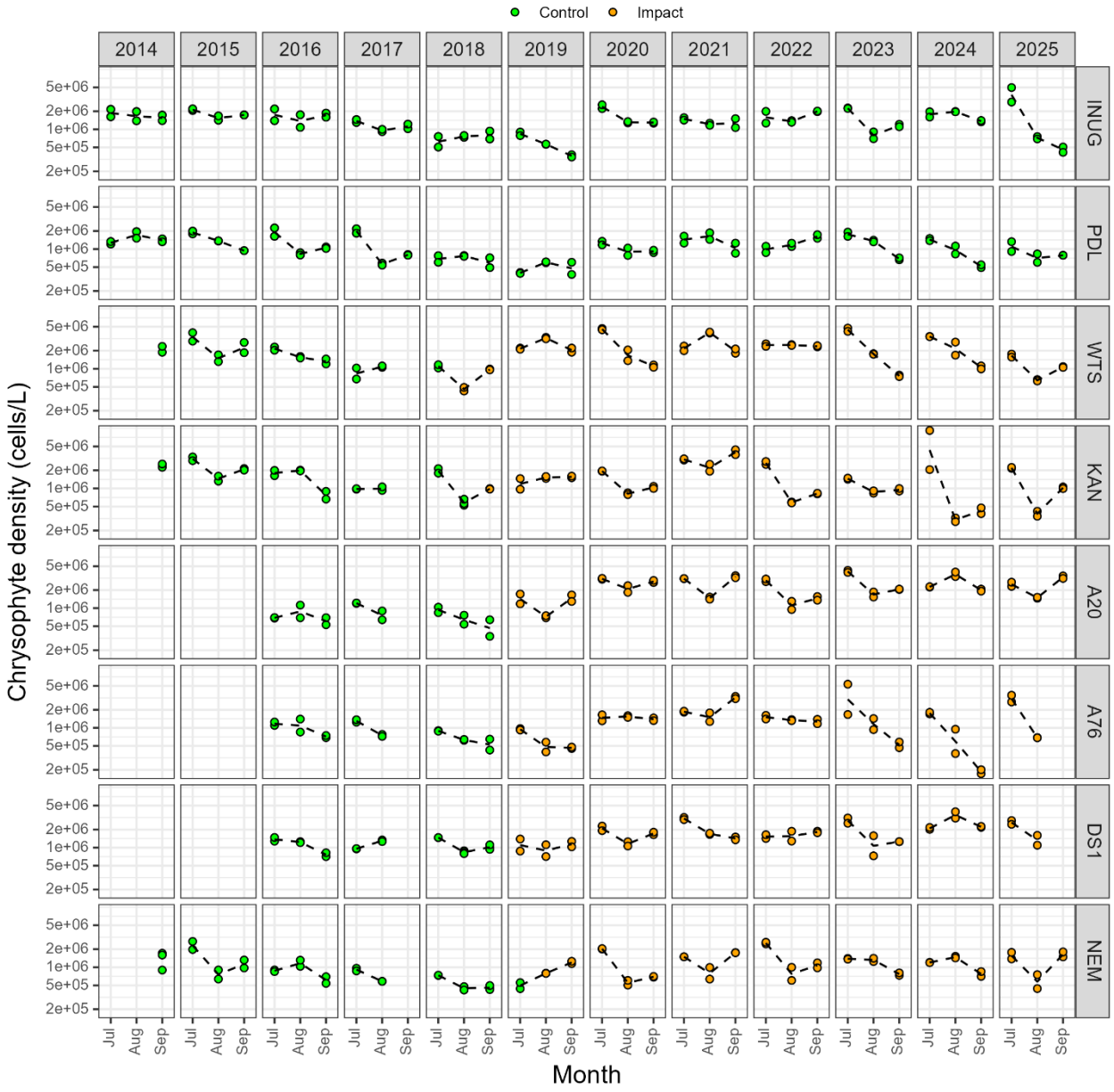


Figure E2-12. Diatoms density (cells/L) from Whale Tail study area lakes since 2015.

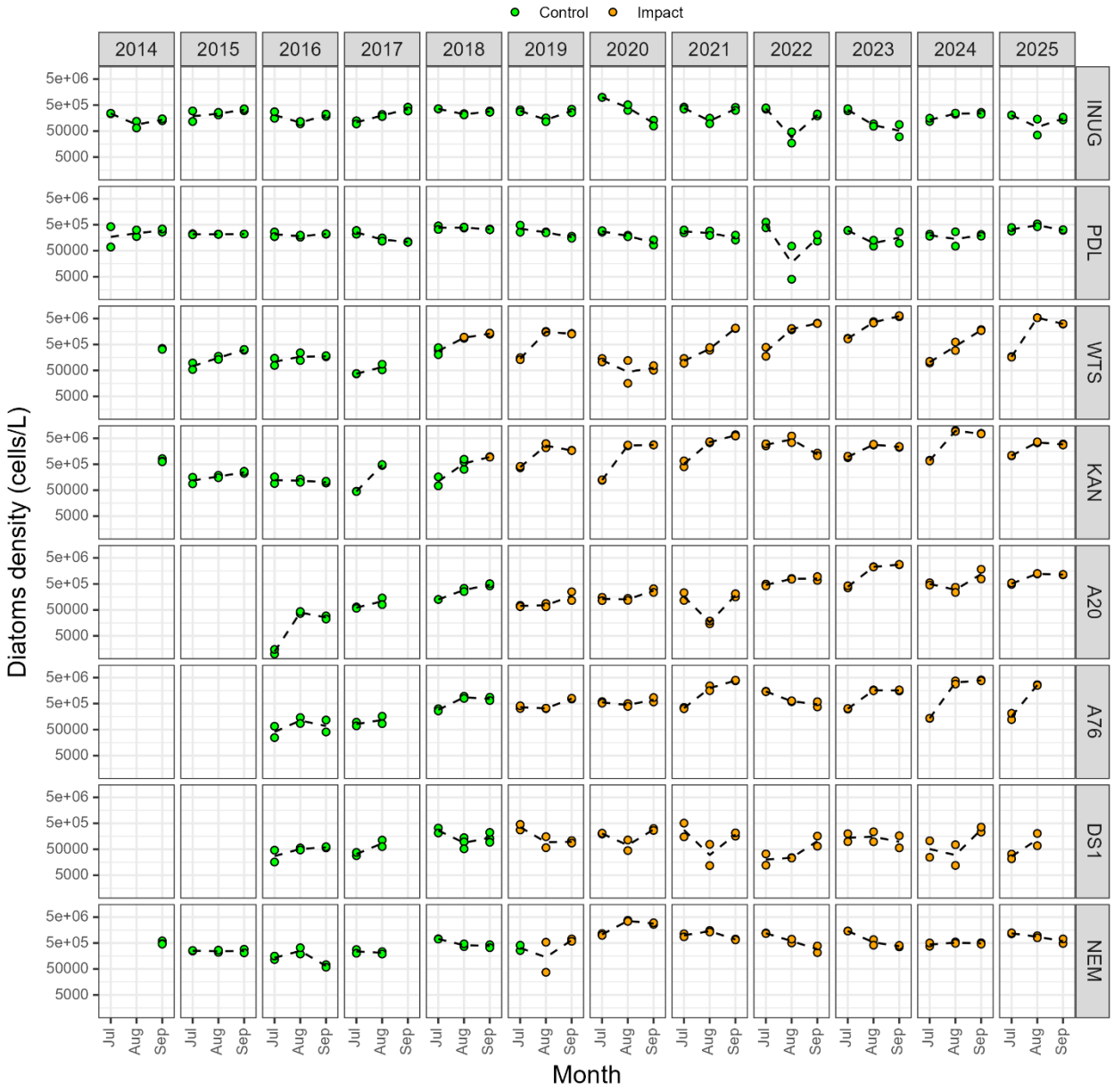


Figure E2-13. Cryptophytes density (cells/L) from Whale Tail study area lakes since 2015.

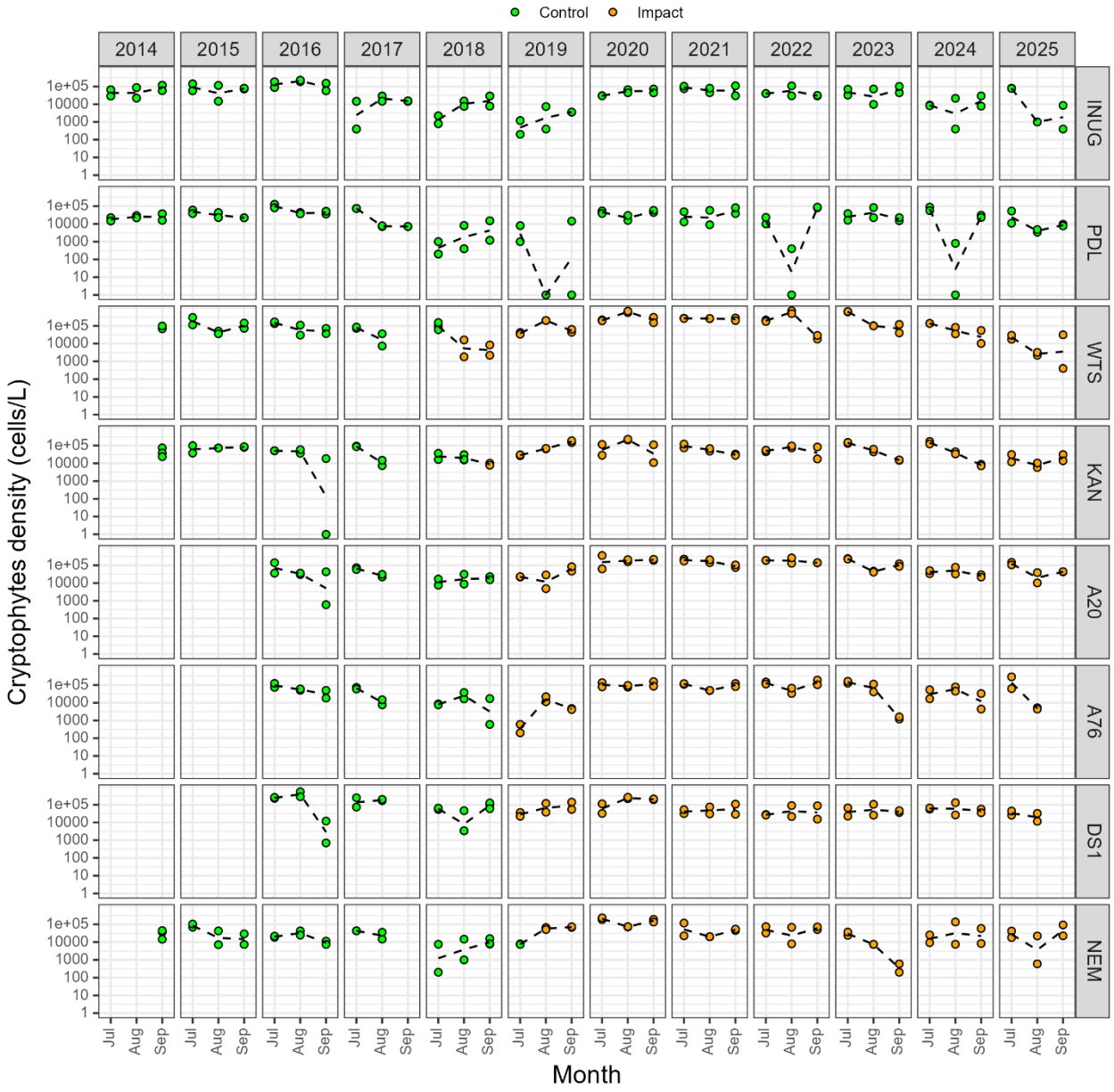


Figure E2-14. Dinoflagellates density (cells/L) from Whale Tail study area lakes since 2014.

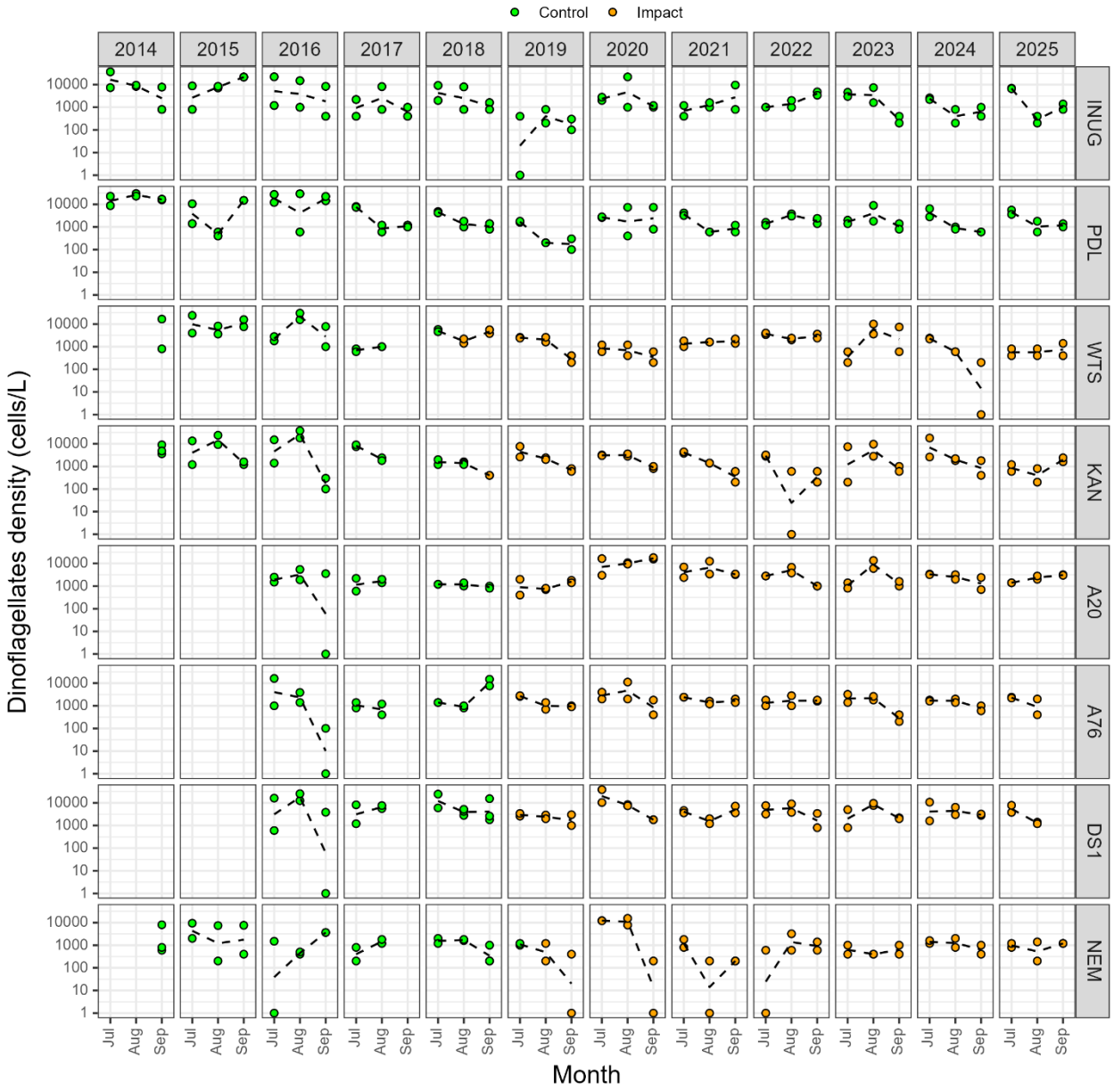
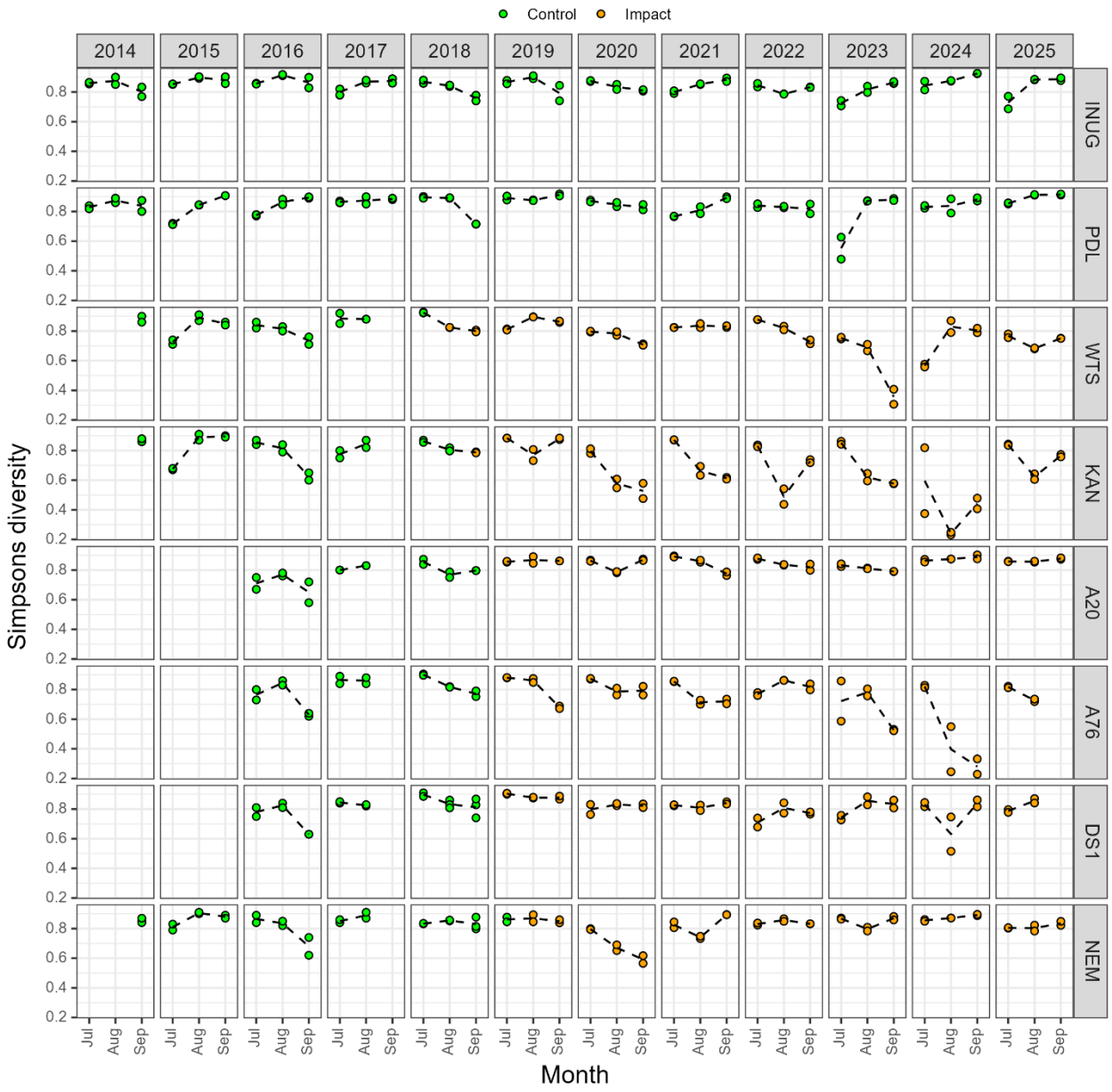


Figure E2-15. Simpsons' Diversity for the phytoplankton community from Whale Tail study area lakes since 2014.



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Phyto Data – Baker Lake

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Table E3-1. Phytoplankton density (cells/L), biomass (mg/m^3), and diversity by major taxa group, Baker Lake, 2025.

Area-Replicate	Date	Phytoplankton Biomass (mg/m^3)							Taxa Richness	Simpson's Diversity	Phytoplankton Density (cells/L)							
		Cyanophyte	Chlorophyte	Chrysophyte	Diatom	Cryptophyte	Dinoflagellate	TOTAL			Cyanophyte	Chlorophyte	Euglenophyte	Chrysophyte	Diatom	Cryptophyte	Dinoflagellate	TOTAL
Baker Akilahaarjuk Point																		
BAP - 97	12-Jul-25	0	0	73	18	12	22	126	26	0.70	0	200	0	857,696	18,184	54,688	3,400	934,168
BAP - 98	12-Jul-25	0	1	56	18	5	23	103	24	0.74	0	50,288	0	857,496	36,752	42,520	2,800	989,856
BAP - 99	14-Aug-25	0	9	132	43	18	7	209	37	0.91	0	503,480	0	1,423,648	299,416	110,360	1,000	2,337,904
BAP - 100	14-Aug-25	0	8	129	41	8	11	197	34	0.90	600	647,960	0	1,453,184	341,336	88,008	600	2,531,688
BAP - 101	6-Sep-25	0	4	50	38	3	4	98	27	0.85	200	424,056	0	712,416	162,896	8,384	400	1,308,352
BAP - 102	6-Sep-25	0	4	61	41	2	2	110	30	0.90	0	222,904	0	691,264	188,464	7,584	600	1,110,816
Percent Density or Biomass		***<0.1***	***3.1***	***59***	***24***	***5.8***	***8.2***				***<0.1***	***20***	***<0.1***	***65***	***11***	***3.4***	***<0.1***	
Baker Barge Dock																		
BBD - 97	12-Jul-25	0	2	89	21	27	29	168	27	0.77	0	28,936	0	1,386,912	46,336	120,144	3,800	1,586,128
BBD - 98	12-Jul-25	0	4	103	16	28	15	165	34	0.82	0	107,960	0	1,445,184	35,168	107,176	1,800	1,697,288
BBD - 99	14-Aug-25	0	3	72	65	7	1	148	28	0.87	0	337,848	0	739,168	148,256	30,336	400	1,256,008
BBD - 100	14-Aug-25	0	7	72	46	19	8	152	29	0.89	0	352,416	0	818,392	124,936	145,280	1,000	1,442,024
BBD - 101	6-Sep-25	0	2	60	39	11	3	116	33	0.85	200	136,696	0	704,832	129,808	73,440	600	1,045,576
BBD - 102	6-Sep-25	0	2	36	35	12	3	88	31	0.80	0	158,048	0	668,712	158,544	53,688	600	1,039,592
Percent Density or Biomass		***<0.1***	***2.4***	***52***	***27***	***12***	***7.1***				***<0.1***	***14***	***<0.1***	***71***	***8.0***	***6.6***	***0.10***	
Baker Proposed Jetty																		
BPJ - 97	12-Jul-25	0	2	72	13	21	20	128	28	0.75	0	35,920	0	1,208,712	74,872	117,144	2,400	1,439,048
BPJ - 98	12-Jul-25	0	2	82	13	31	17	144	30	0.77	600	35,920	0	1,137,472	116,176	148,880	2,600	1,441,648
BPJ - 99	14-Aug-25	0	5	48	36	16	3	108	36	0.80	0	80,424	0	876,064	158,808	81,824	400	1,197,520
BPJ - 100	14-Aug-25	0	10	53	25	13	5	107	35	0.87	0	230,688	0	768,704	102,520	73,640	800	1,176,352
BPJ - 101	6-Sep-25	0	5	38	91	25	7	167	27	0.85	0	179,600	0	655,344	147,824	140,696	1,200	1,124,664
BPJ - 102	6-Sep-25	1	6	39	90	20	10	166	30	0.87	28,736	165,432	0	539,800	99,120	111,360	1,800	946,248
Percent Density or Biomass		***0.13***	***3.6***	***40***	***33***	***15***	***7.6***				***0.40***	***9.9***	***<0.1***	***71***	***9.5***	***9.2***	***0.13***	
All Locations Relative Density or Biomass (%)		***<0.1***	***3.0***	***51***	***28***	***11***	***7.6***				***0.12***	***15***	***<0.1***	***69***	***9.7***	***6.2***	***0.11***	

Figure E3-1. Cyanophyte biomass (mg/m^3) from Baker Lake since 2008.

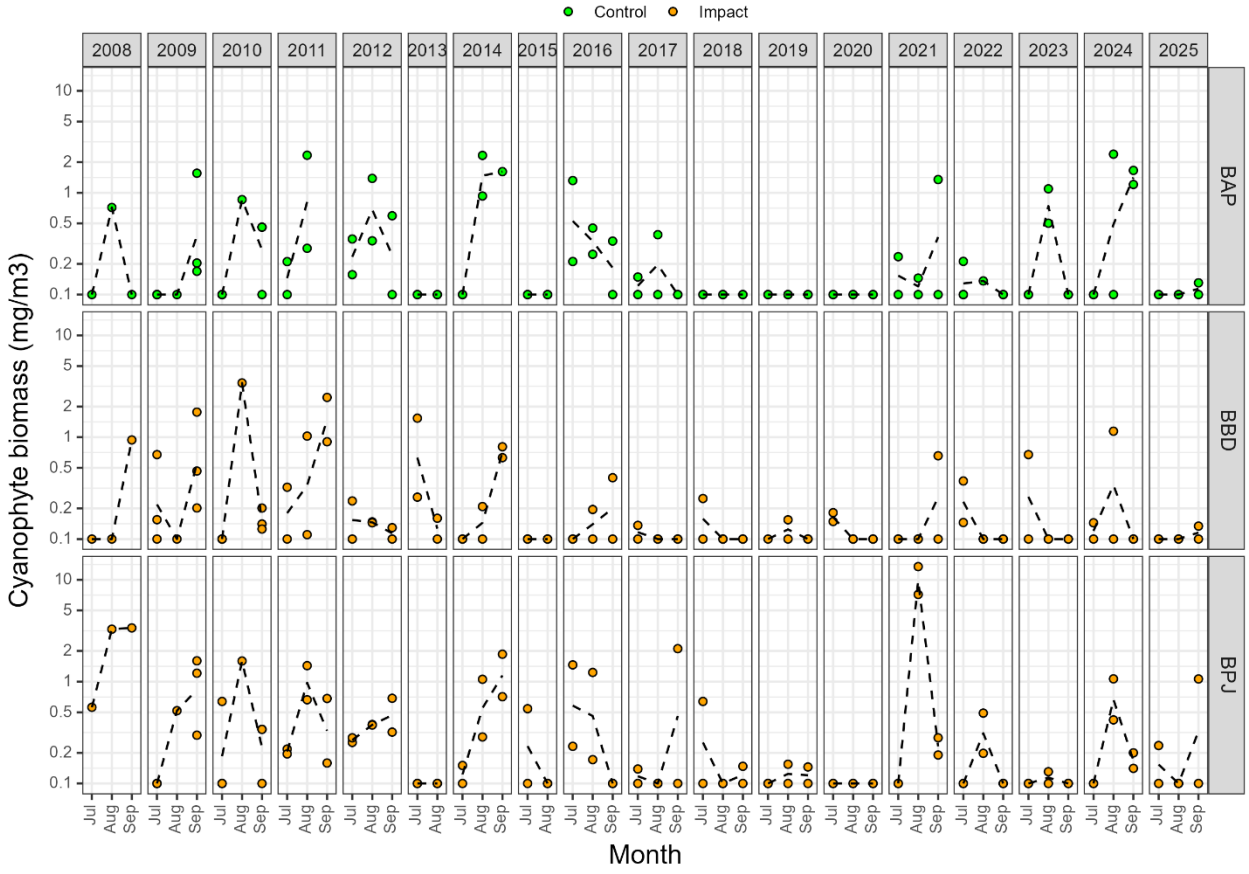


Figure E3-2. Chlorophyte biomass (mg/m^3) from Baker Lake since 2008.

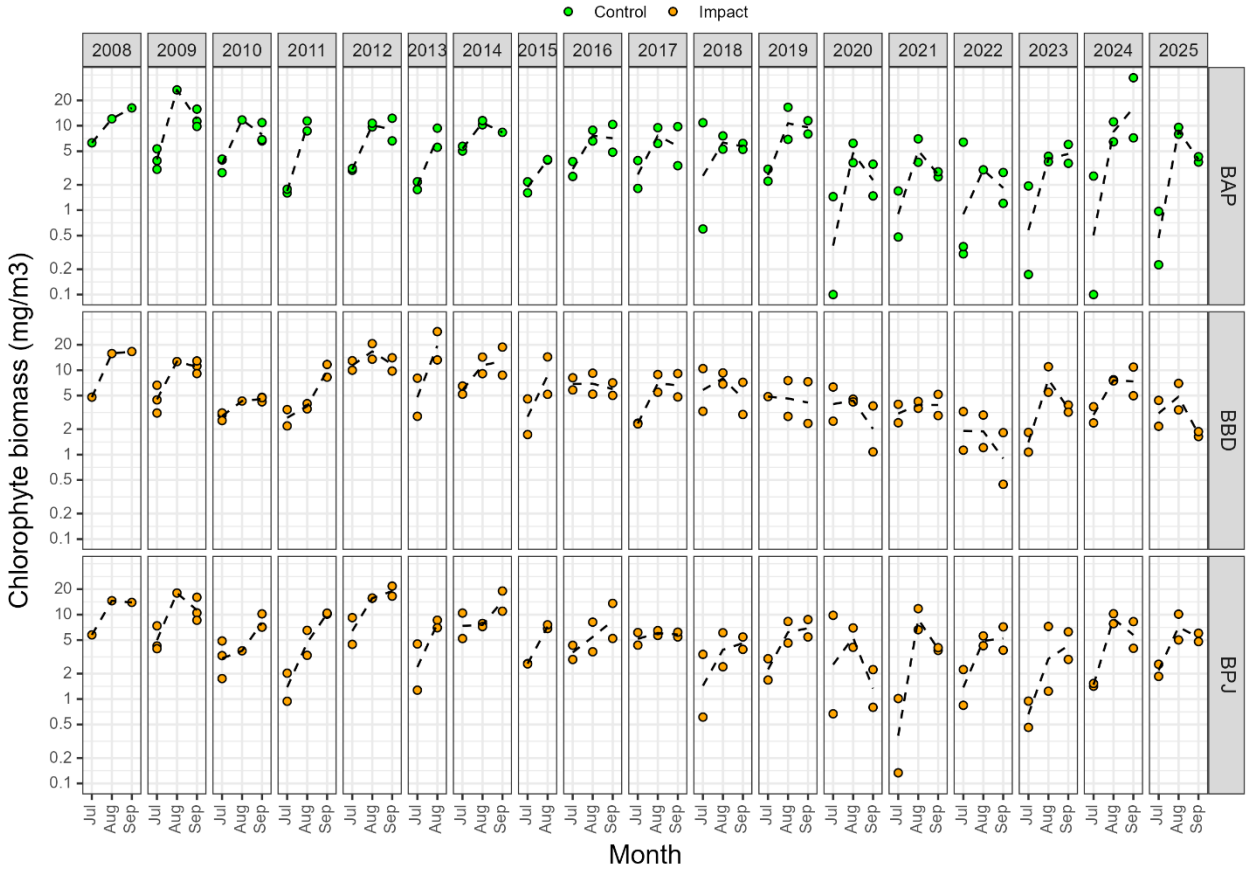


Figure E3-3. Chrysophyte biomass (mg/m^3) from Baker Lake since 2008.

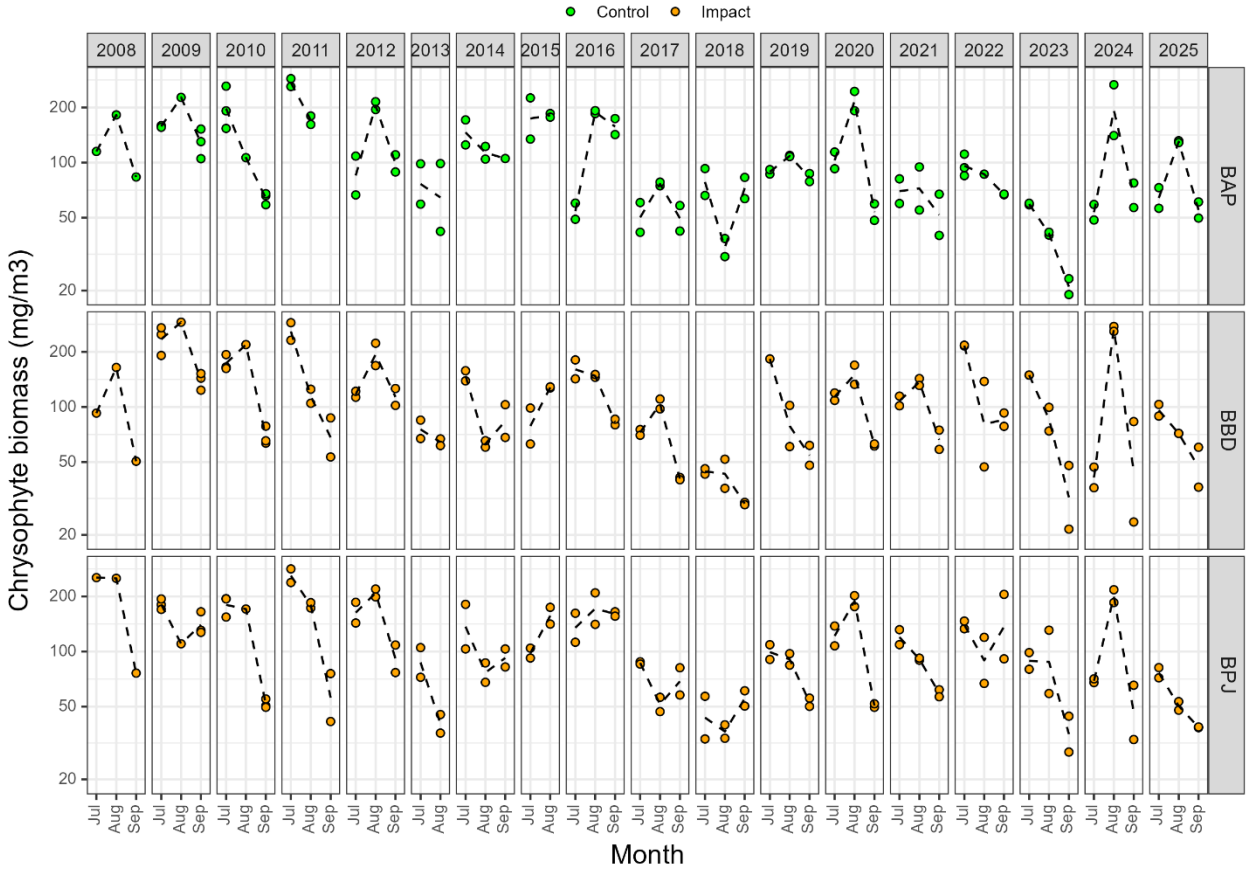


Figure E3-4. Diatoms biomass (mg/m^3) from Baker Lake since 2008.

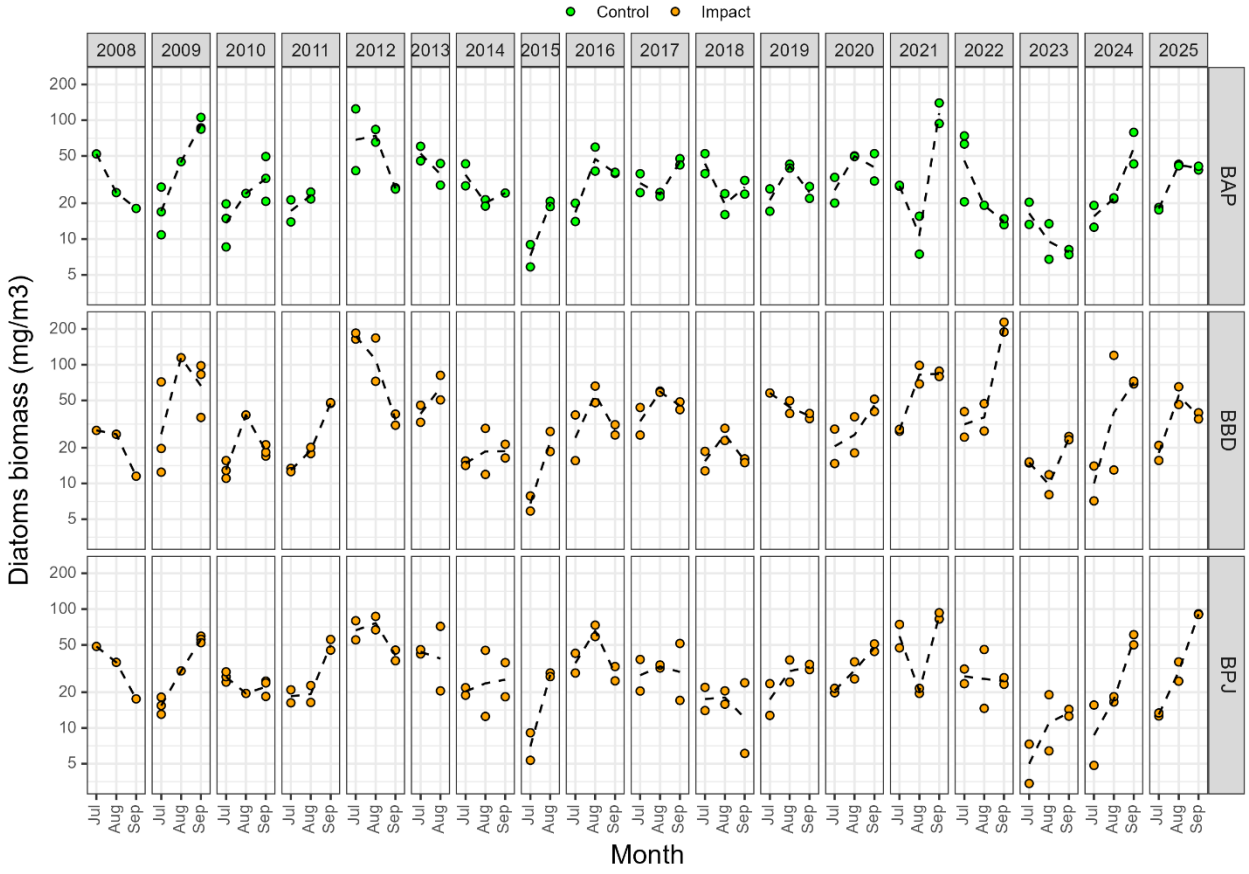


Figure E3-5. Cryptophytes biomass (mg/m^3) from Baker Lake since 2008.

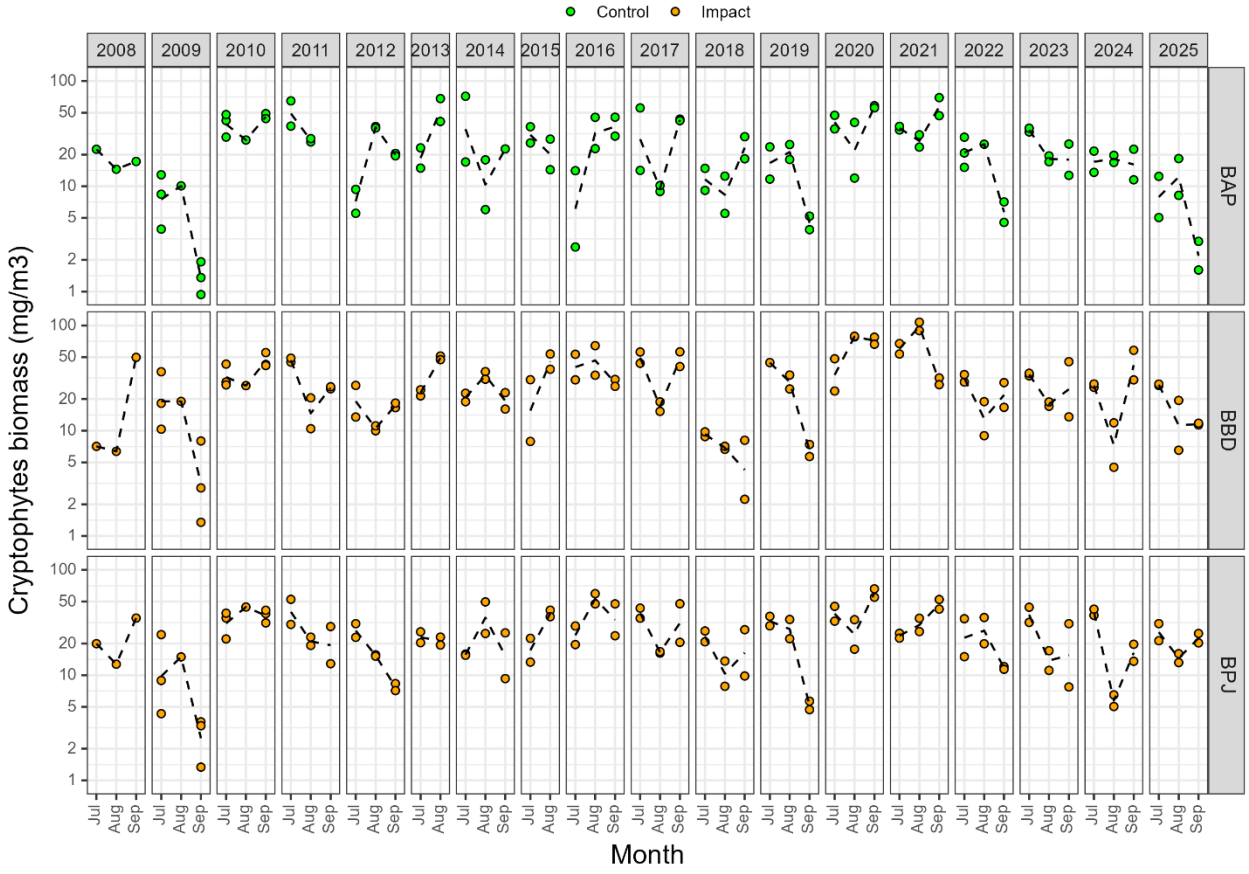


Figure E3-6. Dinoflagellates biomass (mg/m^3) from Baker Lake since 2008.

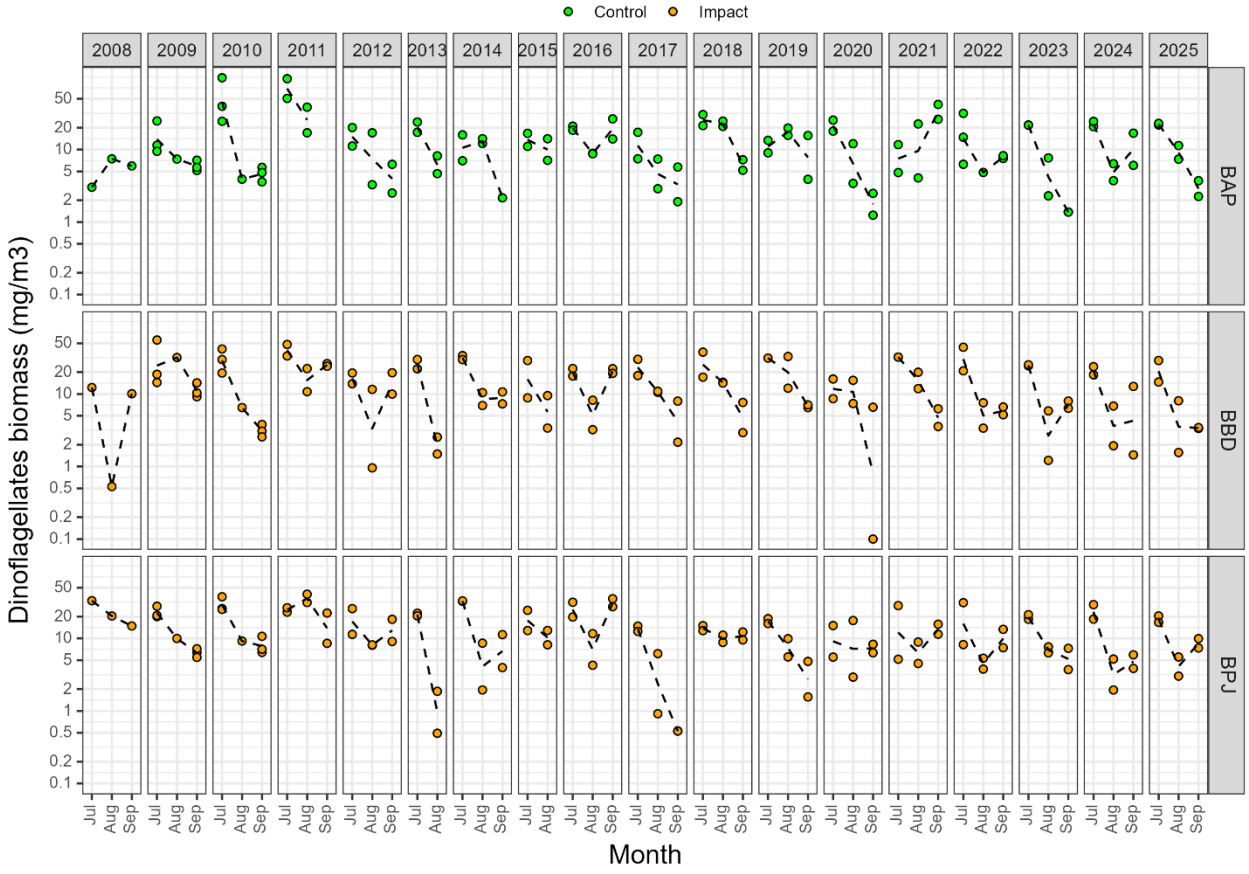


Figure E3-7. Phytoplankton density (cells/L) by major taxa group from Baker Lake since 2008.

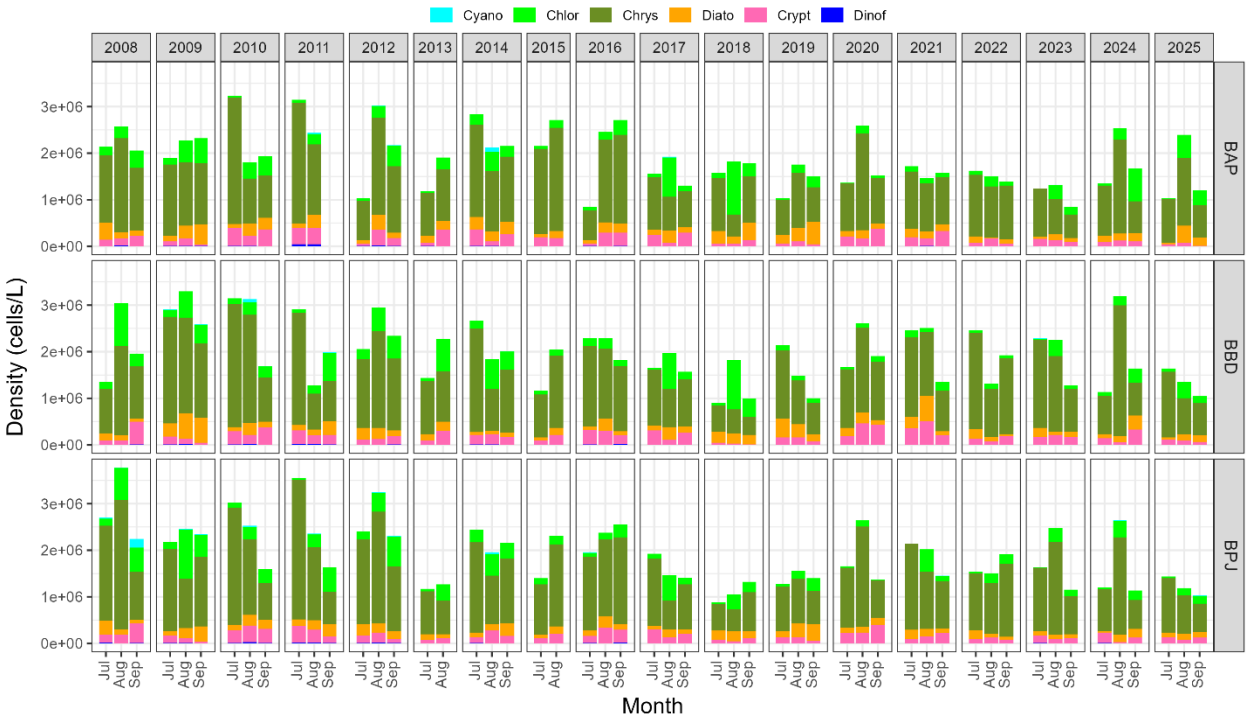


Figure E3-8. Relative phytoplankton density by major taxa group from Baker Lake since 2008.

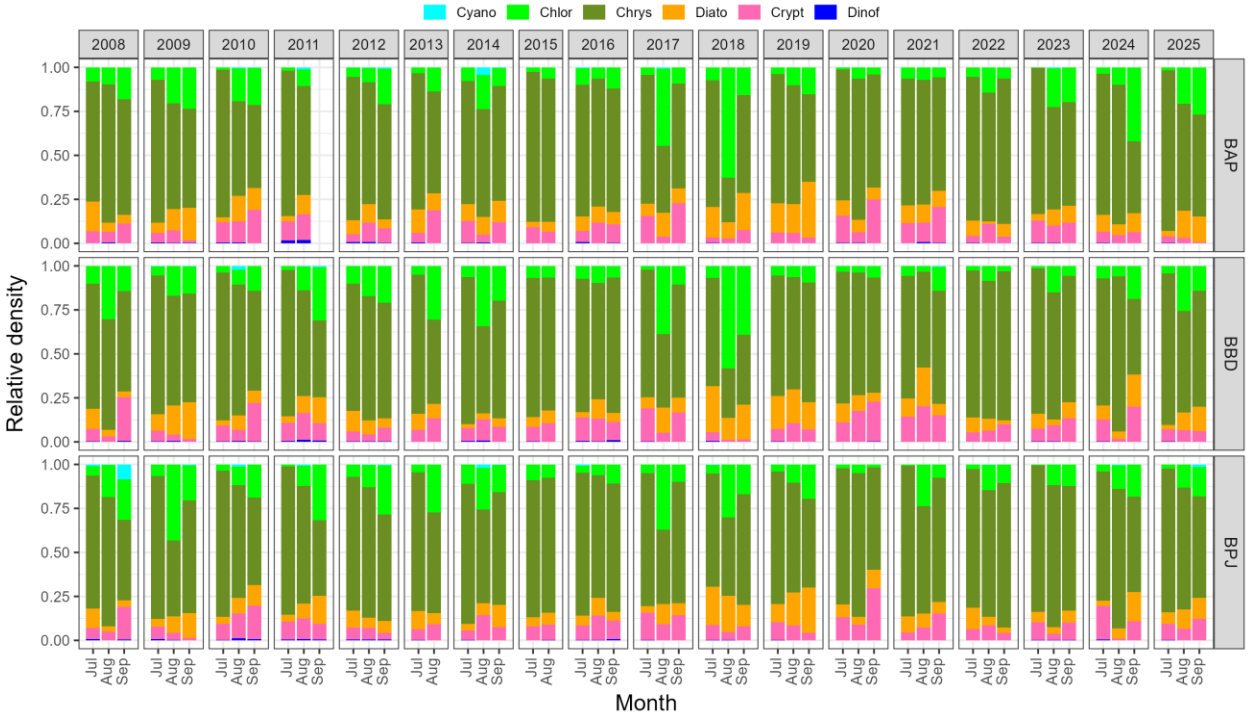


Figure E3-9. Cyanophyte density (cells/L) from Baker Lake since 2008.

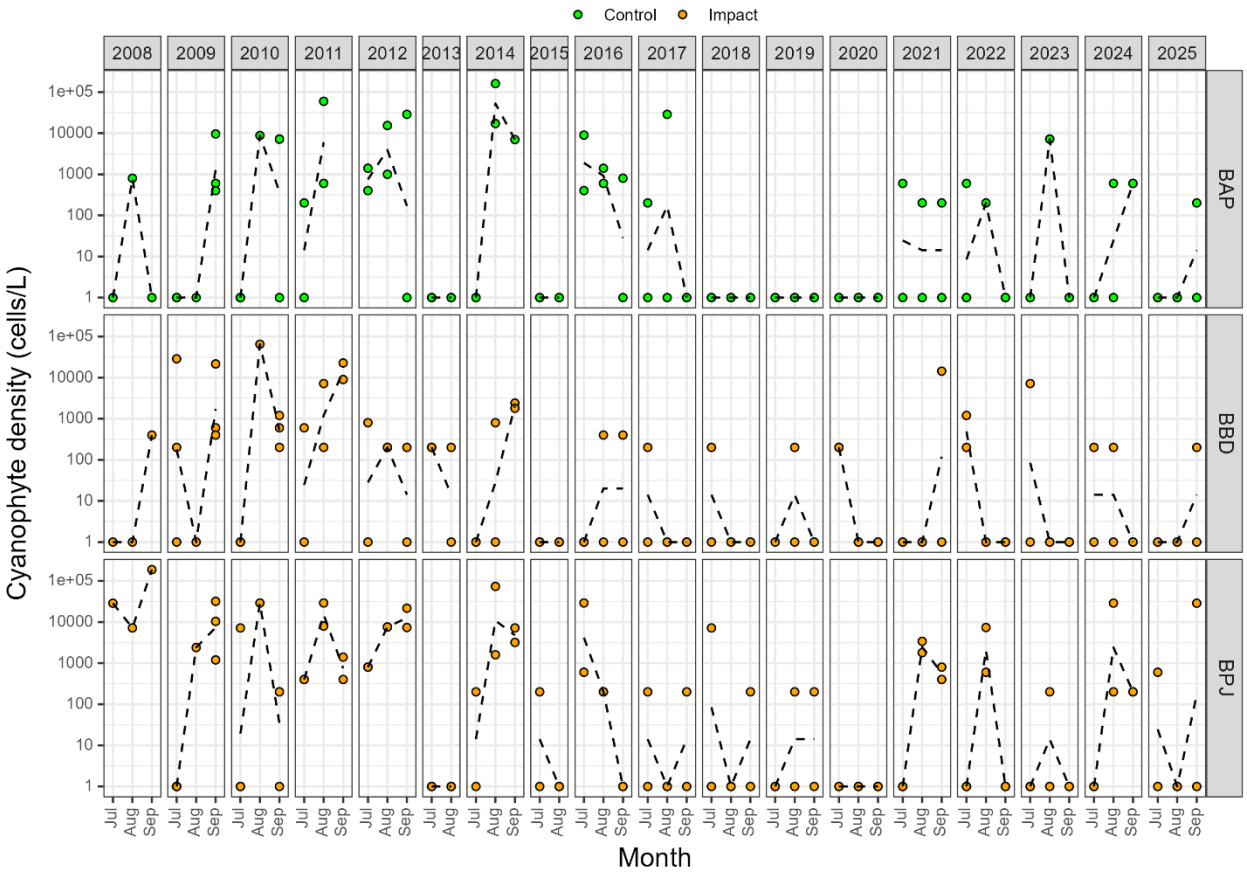


Figure E3-10. Chlorophyte density (cells/L) from Baker Lake since 2008.

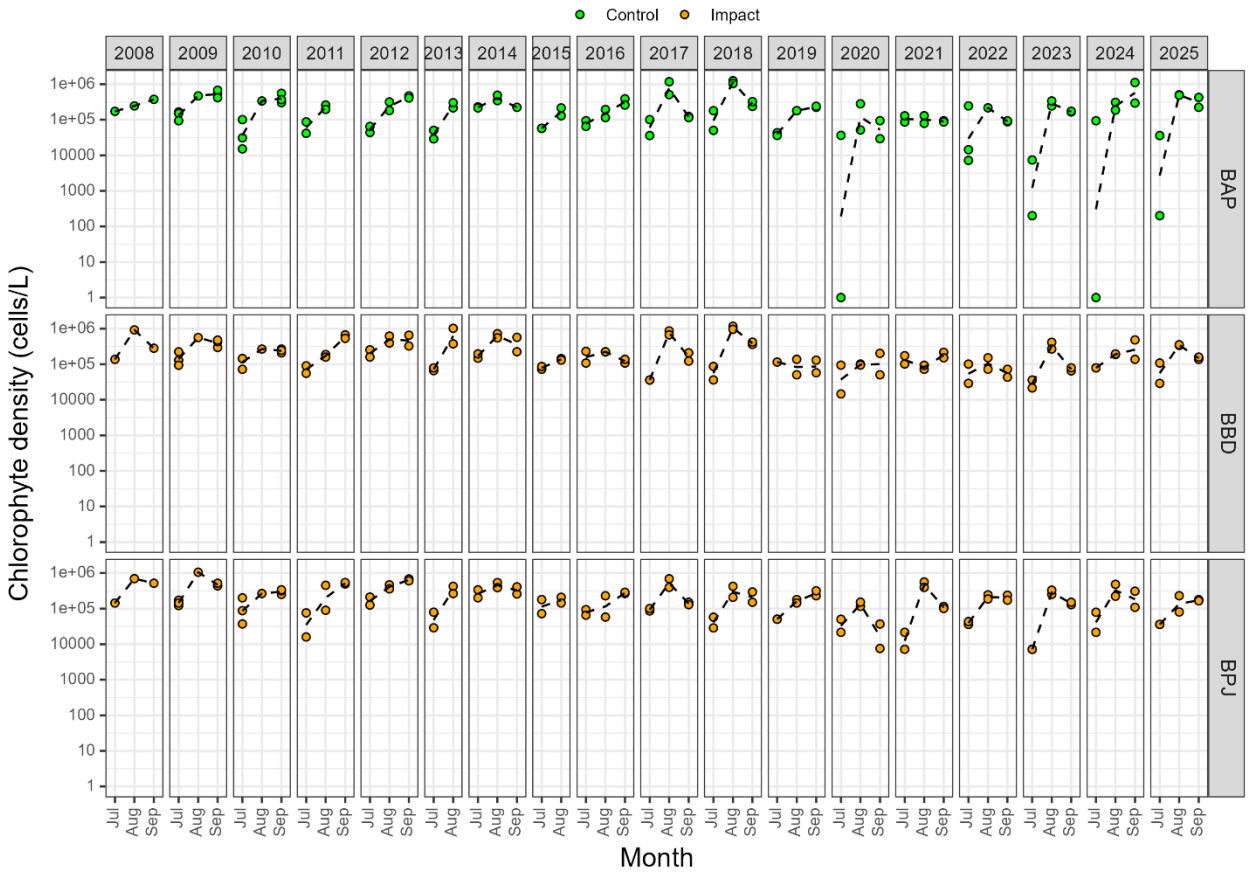


Figure E3-11. Chrysophyte density (cells/L) from Baker Lake since 2008.

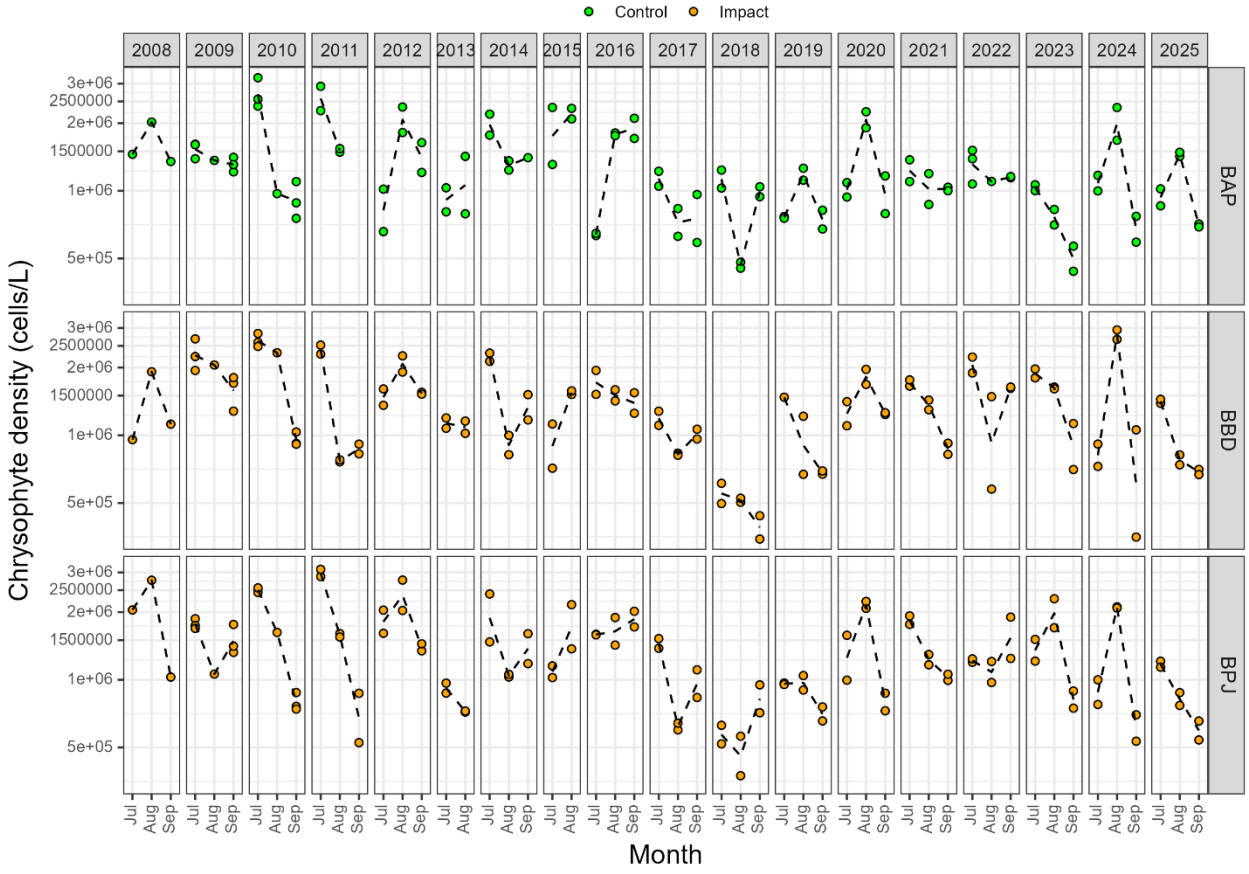


Figure E3-12. Diatoms density (cells/L) from Baker Lake since 2008.

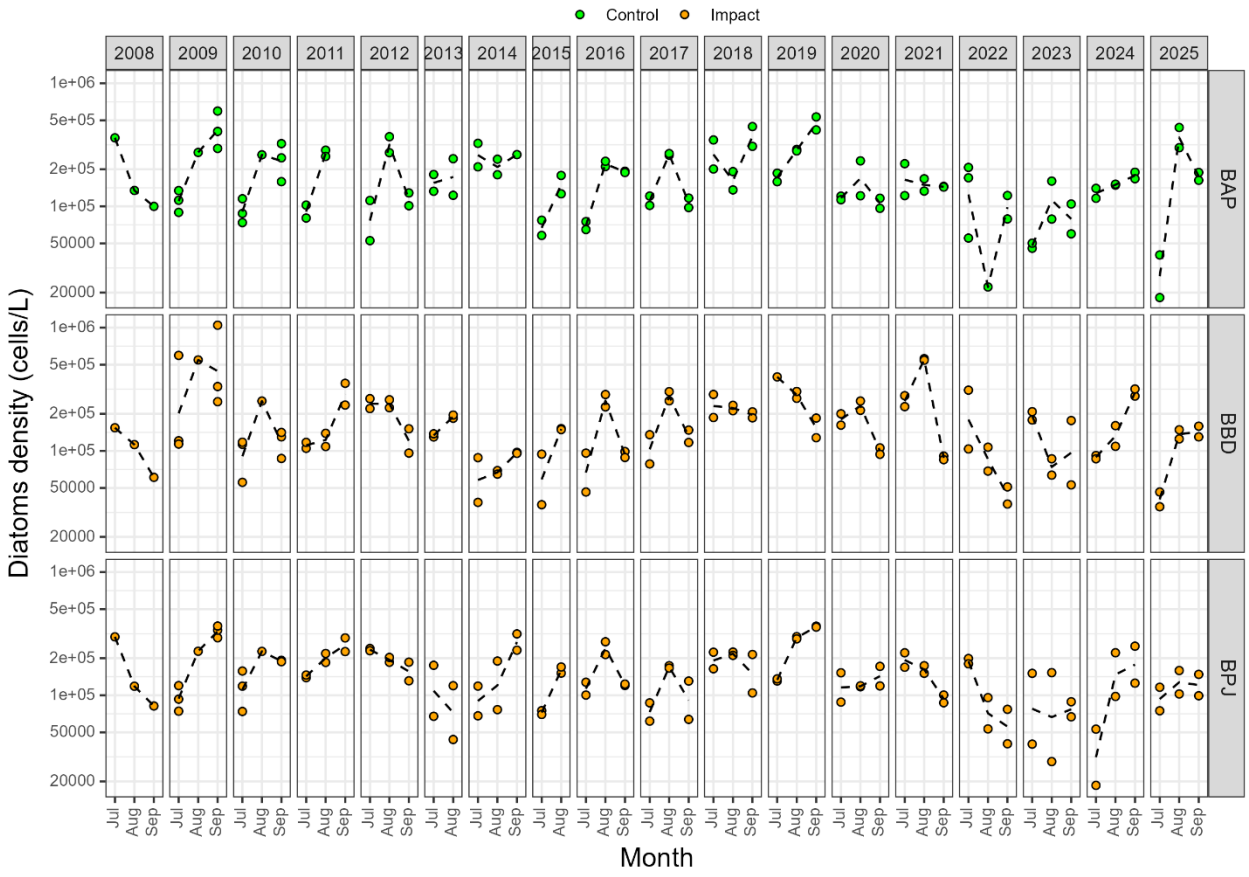


Figure E3-13. Cryptophytes density (cells/L) from Baker Lake since 2008.

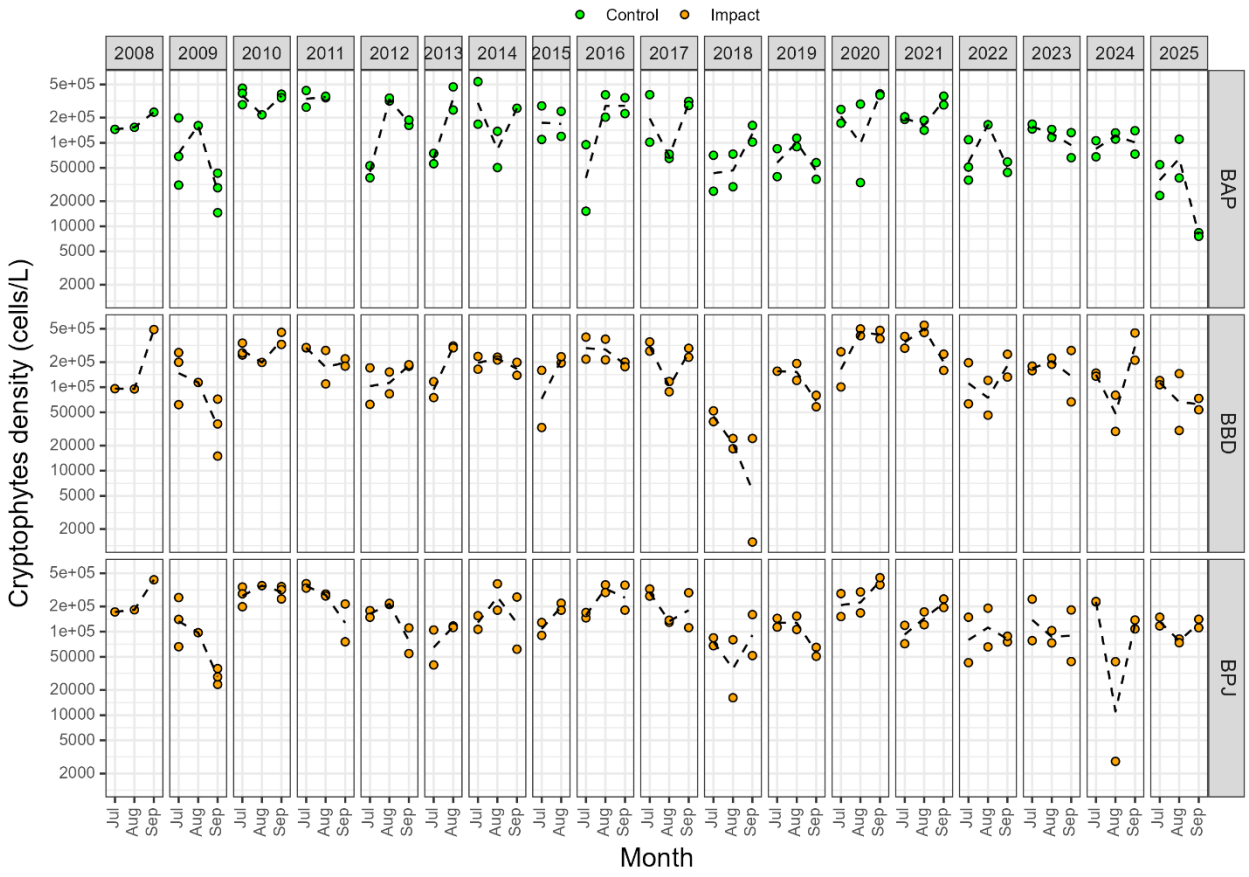


Figure E3-14. Dinoflagellate density (cells/L) from Baker Lake since 2008.

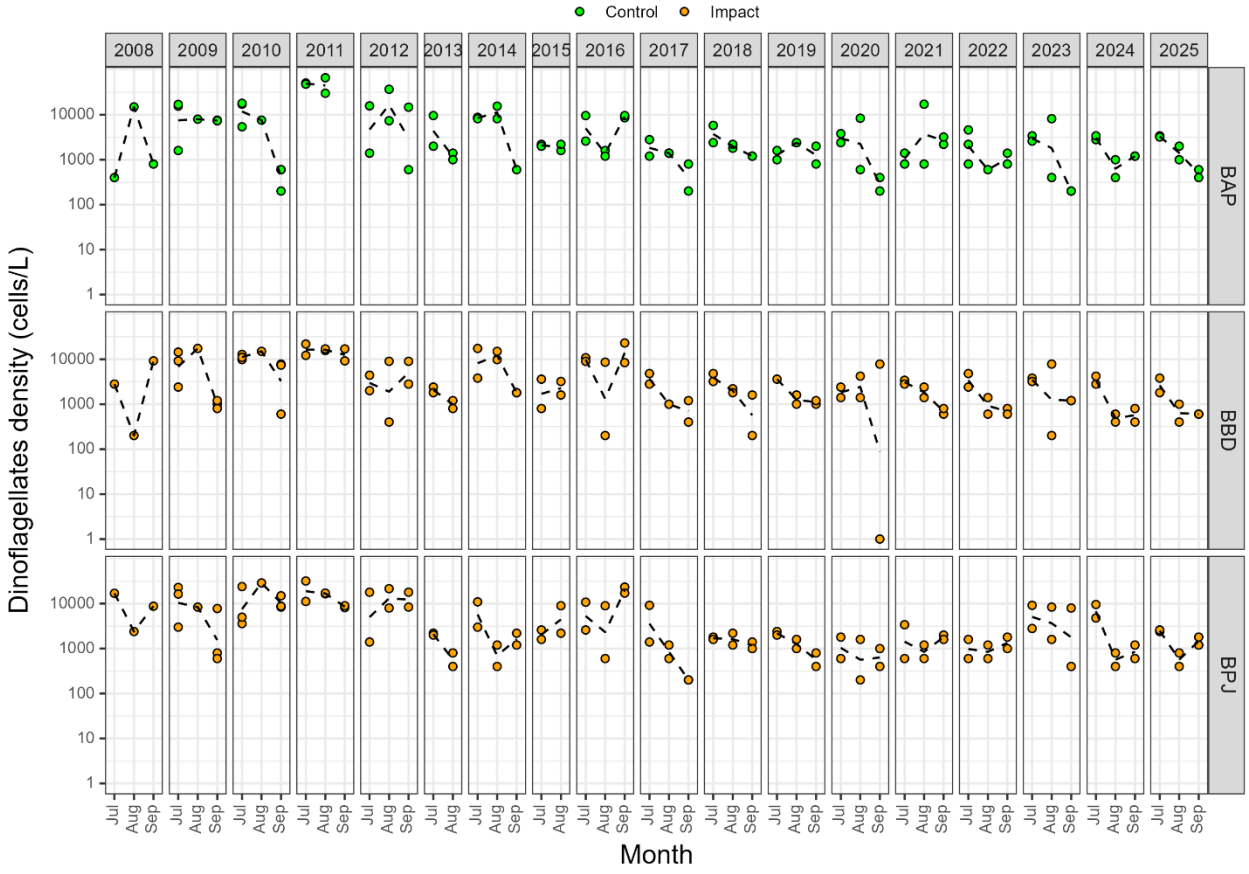
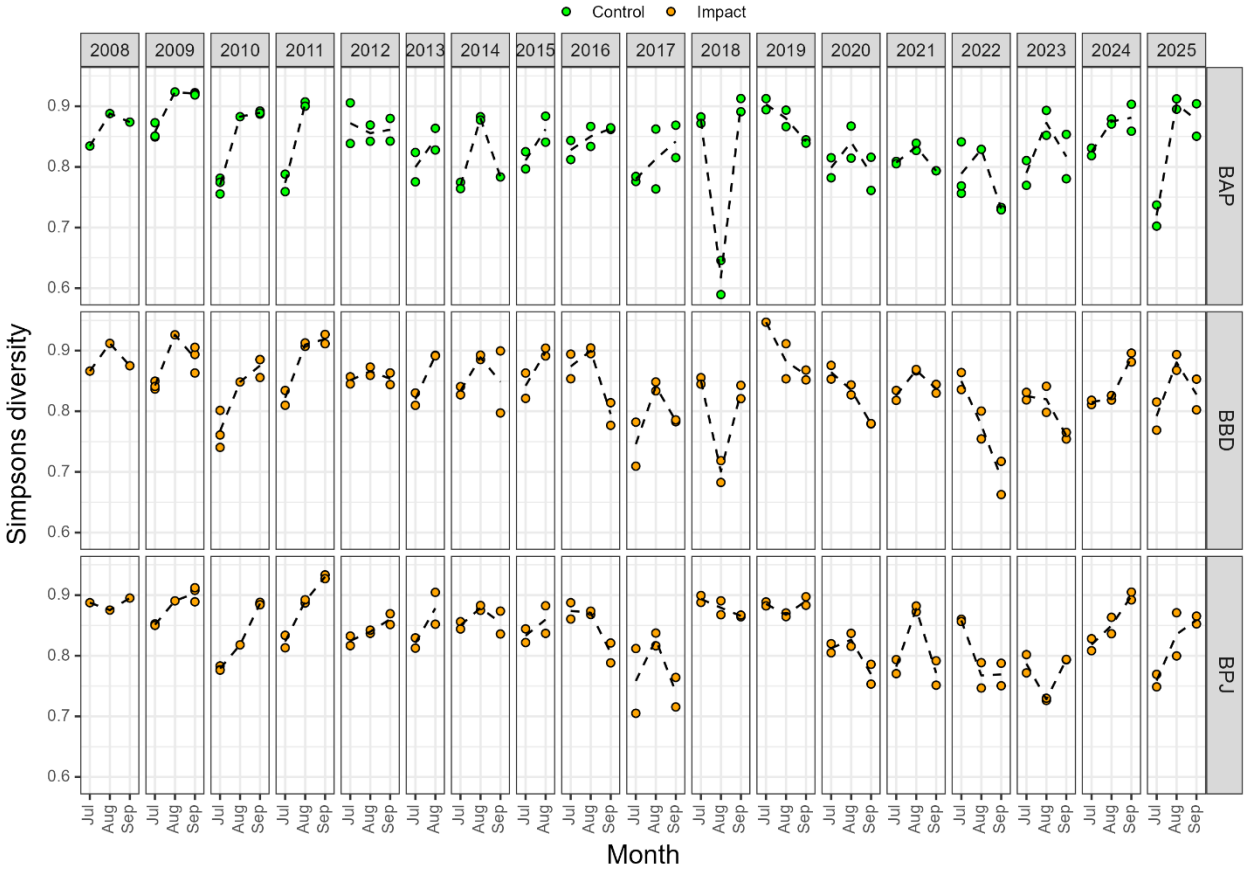


Figure E3-15. Simpsons' Diversity for the phytoplankton community from Baker Lake since 2008.



APPENDIX F
BENTHOS TAXONOMY DATA AND SUPPLEMENTAL PLOTS

Appendix F1
Benthos Data – Meadowbank Study Area Lakes

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Table F1-1. Benthic invertebrate abundance (#/m^2) and richness (# taxa) by major taxa group, Meadowbank study area lakes, 2025.

Area-Replicate	Date	Depth (m)	Abundance (#/m^2)					Richness (# taxa)					Simpson's Diversity	Bray-Curtis Index
			Oligochaetes	Insects	Molluscs	Other Taxa[1]	TOTAL	Oligochaetes	Insects	Molluscs	Other Taxa[1]	TOTAL		
Inuggugayualik Lake														
INUG-1	12-Aug-25	8.8	0	674	674	0	1,348	0	9	3	0	12	0.81	0.28
INUG-2	12-Aug-25	8	43	435	391	22	891	1	8	3	1	13	0.87	0.17
INUG-3	12-Aug-25	8.1	43	261	370	43	717	2	6	3	2	13	0.90	0.17
INUG-4	12-Aug-25	8.9	65	370	326	22	783	2	8	3	1	14	0.90	0.10
INUG-5	12-Aug-25	8.5	65	739	587	22	1,413	2	10	2	1	15	0.88	0.23
Area Mean			***43***	***496***	***470***	***22***	***1,030***	***1.4***	***8.2***	***2.8***	***1.0***	***13.4***	***0.87***	***0.19***
Pipedream Lake														
PDL-1	12-Aug-25	8.2	0	196	261	22	478	0	3	2	1	6	0.81	0.17
PDL-2	12-Aug-25	8.7	0	587	0	22	609	0	7	0	1	8	0.87	0.25
PDL-3	12-Aug-25	7.3	43	326	478	0	848	1	6	2	0	9	0.78	0.15
PDL-4	12-Aug-25	8.7	0	239	304	22	565	0	5	2	1	8	0.85	0.22
PDL-5	12-Aug-25	8.5	0	261	478	65	804	0	4	2	3	9	0.76	0.21
Area Mean			***9***	***322***	***304***	***26.1***	***661***	***0.2***	***5.0***	***1.6***	***1.2***	***8.0***	***0.81***	***0.20***
Second Portage Lake														
SP-1	9-Aug-25	8.5	22	435	109	22	587	1	5	1	1	8	0.77	0.30
SP-2	9-Aug-25	7.4	43	935	283	22	1,283	2	8	2	1	13	0.89	0.36
SP-3	9-Aug-25	8.5	65	891	543	22	1,522	2	10	2	1	15	0.87	0.28
SP-4	9-Aug-25	7.2	43	913	261	22	1,239	2	8	2	1	13	0.89	0.34
SP-5	9-Aug-25	7.8	0	261	326	43	630	0	4	2	1	7	0.80	0.16
Area Mean			***35***	***687***	***304***	***26***	***1,052***	***1.4***	***7.0***	***1.8***	***1.0***	***11.2***	***0.84***	***0.29***
Third Portage Lake - East Basin														
TPE-1	10-Aug-25	8.3	43	1,435	826	0	2,304	2	8	3	0	13	0.83	0.49
TPE-2	10-Aug-25	9.2	65	848	543	0	1,457	2	8	3	0	13	0.89	0.32
TPE-3	10-Aug-25	7.7	283	1,413	609	0	2,304	2	9	2	0	13	0.90	0.44
TPE-4	10-Aug-25	8.4	22	826	652	0	1,500	1	10	2	0	13	0.86	0.41
TPE-5	10-Aug-25	8.6	22	1,087	957	0	2,065	1	11	2	0	14	0.86	0.39
Area Mean			***87***	***1,122***	***717***	***0***	***1,926***	***1.6***	***9.2***	***2.4***	***0***	***13.2***	***0.87***	***0.41***
Third Portage Lake - North Basin														
TPN-1	11-Aug-25	7.4	22	804	457	22	1,304	1	9	3	1	14	0.91	0.29
TPN-2	11-Aug-25	8.5	0	435	174	65	674	0	6	2	1	9	0.91	0.26
TPN-3	11-Aug-25	7.5	22	913	370	22	1,326	1	7	2	1	11	0.88	0.24
TPN-4	11-Aug-25	9.5	43	826	435	87	1,391	1	10	3	2	16	0.88	0.32
TPN-5	11-Aug-25	9	0	413	109	22	543	0	8	2	1	11	0.88	0.48
Area Mean			***17***	***678***	***309***	***43***	***1,048***	***0.6***	***8.0***	***2.4***	***1.2***	***12.2***	***0.89***	***0.32***
Wally Lake														
WAL-1	9-Aug-25	8	0	5,717	696	43	6,457	0	7	2	2	11	0.36	0.82
WAL-2	9-Aug-25	9.2	0	3,065	609	22	3,696	0	8	3	1	12	0.66	0.68
WAL-3	9-Aug-25	8.6	0	4,435	304	43	4,783	0	5	1	2	8	0.36	0.79
WAL-4	9-Aug-25	8.4	22	1,043	261	65	1,391	1	8	2	2	13	0.73	0.45
WAL-5	9-Aug-25	8	22	1,261	413	43	1,739	1	5	2	1	9	0.65	0.47
Area Mean			***9***	***3,104***	***457***	***43***	***3,613***	***0.4***	***6.6***	***2.0***	***1.6***	***10.6***	***0.55***	***0.64***

Notes:

1. "Other taxa" includes flatworms (Turbellaria) and arthropods (Acalyptonotidae, Hygrobatidae, Lebertiidae, Oxidae, Pionidae, Harpacticoida, O. Notostraca, and Gammaracanthidae).

Table F1-2. Raw benthic invertebrate data from the Meadowbank study area lakes, 2025.

Program	Meadowbank									
Location	Inuggugayualik Lake					Pipedream Lake				
Station	INUG					PDL				
Control/Impact?	Control					Control				
Replicate	1	2	3	4	5	1	2	3	4	5
Date	12-Aug-25	12-Aug-25	12-Aug-25	12-Aug-25	12-Aug-25	12-Aug-25	12-Aug-25	12-Aug-25	12-Aug-25	12-Aug-25
Sample Depth (m)	8.8	8	8.1	8.9	8.5	8.2	8.7	7.3	8.7	8.5
ROUNDWORMS										
P. Nemata	1	-	-	2	-	3	2	1	3	6
FLATWORMS										
P. Platyhelminthes										
Cl. Turbellaria										
indeterminate	-	-	-	-	-	-	-	-	-	-
ANNELIDS										
P. Annelida										
WORMS										
Cl. Oligochaeta										
F. Naididae										
S.F. Naidinae										
S.F. Tubificinae										
Tasserkidrilus americanus	-	-	-	-	1	-	-	-	-	-
immatures with hair chaetae	-	-	-	1	-	-	-	-	-	-
S.F. Rhyacodrilinae										
Rhyacodrilus coccineus	-	-	1	-	-	-	-	-	-	-
F. Lumbriculidae										
Lumbriculus	-	2	1	2	2	-	-	2	-	-
ARTHROPODS										
P. Arthropoda										
MITES										
Cl. Arachnida										
O. Acarina										
immature	-	-	-	-	-	-	-	-	-	-
F. Acalyptonotidae										
Acalyptonotus	-	-	-	-	-	-	-	-	1	-
F. Hygrobatidae										
Hygrobates	-	-	-	-	-	-	-	-	-	1
F. Lebertiidae										
Lebertia	-	-	1	-	1	-	1	-	-	1
F. Oxidae										
Oxus	-	1	1	1	-	-	-	-	-	1
SEED SHRIMPS										
Cl. Ostracoda	1	4	1	1	3	3	1	2	5	4
FAIRY SHRIMPS										
O. Notostraca										
Lepidurus arcticus	-	-	-	-	-	1	-	-	-	-
INSECTS										
Cl. Insecta										
CADDISFLIES										
O. Trichoptera										
immature	-	-	-	-	-	-	-	-	-	-
F. Apataniidae										
Apatania	-	-	-	-	-	-	-	-	-	-
F. Limnephilidae										
Grensia praeterita	-	-	-	-	-	-	-	-	1	-
TRUE FLIES										
O. Diptera										
MIDGES										
F. Chironomidae										
chironomid pupae	**-**	**1**	**-**	**1**	**2**	**-**	**6**	**3**	**2**	**1**
S.F. Chironominae										
Cladopelma	-	-	-	-	-	-	-	-	-	-
Cladotanytarsus	-	-	-	-	-	-	-	-	-	-
Corynocera ambigua	2	2	1	1	12	-	-	-	-	-
Dicrotendipes	-	-	-	-	-	-	-	-	-	-
Micropsectra	6	6	2	3	1	-	1	1	-	-
Microtendipes	2	-	-	-	-	-	-	-	-	-
Paracladopelma	-	-	-	-	-	-	-	-	1	-
Paratanytarsus	1	2	-	1	1	-	1	-	-	-
Stempellinella	-	-	-	-	-	-	-	1	-	-
Sergentia	-	-	-	-	-	-	-	-	-	-
Stictochironomus	9	4	1	2	3	1	6	1	3	1
Tanytarsus	3	-	-	-	6	-	-	-	-	-
S.F. Diamesinae										
Protanypus	-	-	-	-	-	-	-	-	-	-
S.F. Orthocladiinae										
Abiskomyia	-	-	-	1	1	-	-	-	-	-
Heterotrissocladius	2	1	-	3	2	-	5	2	1	-
Paracladius	-	-	-	-	-	-	-	-	-	-
Psectrocladius	1	-	2	-	3	3	3	1	-	7
Zalutschia	-	-	-	-	-	-	-	-	-	-
Orthocladiinae Genus "Greenland"	-	-	-	-	-	-	-	-	-	-
S.F. Prodiamesinae										
Monodiamesa	-	1	2	1	1	-	1	-	-	2
S.F. Tanypodinae										
Ablabesmyia	-	-	-	-	-	-	-	-	-	-
Procladius	5	2	4	4	2	5	4	6	3	1
Thienemannimyia complex	-	-	-	-	-	-	-	-	-	-
F. Empididae										
Chelifera/Metachela	-	1	-	-	-	-	-	-	-	-
MOLLUSCS										
P. Mollusca										
SNAILS										
Cl. Gastropoda										
F. Valvatidae										
Valvata lewisi	-	-	-	-	-	-	-	-	-	-
Valvata	-	-	-	-	-	-	-	-	-	-
CLAMS										
Cl. Bivalvia										
F. Sphaeriidae										
Pisidium/Cyclocalyx	24	13	8	10	13	7	-	17	6	16
Pisidium (Cyclocalyx/Neopisidium)	2	3	6	-	-	5	-	5	8	6
Sphaerium nitidum	5	2	3	4	14	-	-	-	-	-
immature	-	-	-	**1**	-	-	-	-	-	-
TOTAL NUMBER OF ORGANISMS	64	45	34	39	68	28	31	42	34	47
TOTAL NUMBER OF TAXA [a]	14	14	14	15	16	8	10	11	10	11
[a] Bold entries excluded from taxa count										
R (Richness) - totals [2,3]										
Total	12	13	13	14	15	6	8	9	8	9
Oligochaete	0	1	2	2	2	0	0	1	0	0
Insect	9	8	6	8	10	3	7	6	5	4
Mollusc	3	3	3	3	2	2	0	2	2	2
Other[4]	0	1	2	1	1	1	1	0	1	3
Abundance (raw) - totals [5,6]										
Total	62	41	33	36	65	22	28	39	26	37
Oligochaete	0	2	2	3	3	0	0	2	0	0
Insect	31	20	12	17	34	9	27	15	11	12
Mollusc	31	18	17	15	27	12	0	22	14	22
Other[4]	0	1	2	1	1	1	1	0	1	3
N (Abundance) - #/m²										
Total	1,348	891	717	783	1,413	478	609	848	565	804
Oligochaete	0	43	43	65	65	0	0	43	0	0
Insect	674	435	261	370	739	196	587	326	239	261
Mollusc	674	391	370	326	587	261	0	478	304	478
Other[4]	0	22	43	22	22	22	22	0	22	65

Notes:

1. Benthic invertebrate count data shown in this table are from composite of two grabs sieved to 500 µm.
2. Richness totals exclude P. Nemata, Cl. Ostracoda, indeterminates (O. Acarina, F. Lumbriculidae), immatures (S.F. Tubificinae, O. Acarina), and pupae.
3. Pupae and immatures (bolded values) are excluded from the richness totals if other life stages are present in the replicate sample.
4. Other Taxa include: Cl. Turbellaria, F. Acalyptonotidae, F. Hygrobatidae, F. Lebertiidae, F. Oxidae, F. Pionidae, O. Harpacticoida, O. Notostraca, and F. Gammaracanthidae.
5. Abundance totals exclude P. Nemata and Cl. Ostracoda.
6. Raw abundance from two grabs (grab area = 0.023 m^2).

Table F1-2. (Continued) Raw benthic invertebrate data from the Meadowbank study area lakes, 2025.

Program	Meadowbank									
Location	Second Portage Lake					Third Portage Lake - East Basin				
Station	SP					TPE				
Control/Impact?	Impact					Impact				
Replicate	1	2	3	4	5	1	2	3	4	5
Date	9-Aug-25	9-Aug-25	9-Aug-25	9-Aug-25	9-Aug-25	10-Aug-25	10-Aug-25	10-Aug-25	10-Aug-25	10-Aug-25
Sample Depth (m)	8.5	7.4	8.5	7.2	7.8	8.3	9.2	7.7	8.4	8.6
ROUNDWORMS										
P. Nemata	5	6	2	3	9	2	1	5	1	5
FLATWORMS										
P. Platyhelminthes										
Cl. Turbellaria										
indeterminate	-	-	-	-	-	-	-	-	-	-
ANNELIDS										
P. Annelida										
WORMS										
Cl. Oligochaeta										
F. Naididae										
S.F. Naidinae										
S.F. Tubificinae										
Tasserkidrilus americanus	-	-	-	-	-	-	-	-	-	-
immatures with hair chaetae	1	1	1	1	-	-	-	-	-	-
S.F. Rhyacodrilinae										
Rhyacodrilus coccineus	-	-	-	-	-	1	2	9	1	1
F. Lumbriculidae										
Lumbriculus	-	1	2	1	-	1	1	4	-	-
ARTHROPODS										
P. Arthropoda										
MITES										
Cl. Arachnida										
O. Acarina										
immature	-	-	-	-	-	-	-	-	-	-
F. Acalyptonotidae										
Acalyptonotus	-	-	-	-	-	-	-	-	-	-
F. Hygrobatidae										
Hygrobates	-	-	-	-	-	-	-	-	-	-
F. Lebertiidae										
Lebertia	-	-	-	-	-	-	-	-	-	-
F. Oxidae										
Oxus	1	1	1	1	2	-	-	-	-	-
SEED SHRIMPS										
Cl. Ostracoda	1	3	-	2	-	40	35	79	13	37
FAIRY SHRIMPS										
O. Notostraca										
Lepidurus arcticus	-	-	-	-	-	-	-	-	-	-
INSECTS										
Cl. Insecta										
CADDISFLIES										
O. Trichoptera										
immature	-	-	-	-	-	-	-	-	-	-
F. Apataniidae										
Apatania	-	-	-	-	-	-	-	-	-	-
F. Limnephilidae										
Grensia praeterita	-	-	-	-	-	-	-	-	-	-
TRUE FLIES										
O. Diptera										
MIDGES										
F. Chironomidae										
chironomid pupae	**2**	**10**	**3**	**4**	**-**	**2**	**1**	**3**	**4**	**2**
S.F. Chironominae										
Cladopelma	-	-	-	-	-	-	-	-	-	-
Cladotanytarsus	-	-	-	-	-	-	-	-	-	-
Corynocera ambigua	-	1	-	1	-	1	-	-	-	-
Dicrotendipes	-	-	-	-	-	-	-	-	-	-
Micropsectra	2	2	2	3	1	17	9	5	13	11
Microtendipes	2	8	9	9	5	1	-	-	1	-
Paracladopelma	-	-	-	-	-	-	-	-	-	-
Paratanytarsus	1	3	2	1	-	28	9	16	8	12
Stempellinella	-	-	-	-	-	-	-	-	-	-
Sergentia	-	-	-	-	-	-	-	-	-	-
Stictochironomus	-	8	5	9	-	5	2	11	1	4
Tanytarsus	-	1	3	-	-	-	-	4	-	3
S.F. Diamesinae										
Protanypus	-	-	-	-	-	-	-	-	-	1
S.F. Orthocladiinae										
Abiskomyia	-	-	-	-	-	-	-	-	-	-
Heterotrissocladius	-	-	1	-	-	5	5	3	1	2
Paracladius	-	-	1	-	-	1	-	-	-	-
Psectrocladius	-	2	1	2	-	-	-	1	1	3
Zalutschia	-	-	-	-	-	-	-	-	1	1
Orthocladiinae Genus "Greenland"	-	-	-	-	-	-	-	1	-	-
S.F. Prodiamesinae										
Monodiamesa	1	-	2	2	1	-	2	-	5	3
S.F. Tanypodinae										
Ablabesmyia	-	-	-	-	-	-	-	-	-	-
Procladius	12	8	12	11	5	6	8	15	2	4
Thienemannimyia complex	-	-	-	-	-	-	2	6	1	4
F. Empididae										
Chelifera/Metachela	-	-	-	-	-	-	1	-	-	-
MOLLUSCS										
P. Mollusca										
SNAILS										
Cl. Gastropoda										
F. Valvatidae										
Valvata lewisi	-	-	-	-	-	-	-	-	-	-
Valvata	-	-	-	-	-	-	-	-	-	-
CLAMS										
Cl. Bivalvia										
F. Sphaeriidae										
Pisidium/Cyclocalyx	5	10	20	9	11	27	13	17	15	17
Pisidium (Cyclocalyx/Neopisidium)	-	3	5	3	4	7	11	11	15	27
Sphaerium nitidum	-	-	-	-	-	-	-	-	-	-
immature	-	-	-	-	-	**4**	**1**	-	-	-
TOTAL NUMBER OF ORGANISMS	33	68	72	62	38	148	103	190	83	137
TOTAL NUMBER OF TAXA [a]	10	15	16	15	8	14	14	15	15	16
[a] Bold entries excluded from taxa count										
R (Richness) - totals [2,3]										
Total	8	13	15	13	7	13	13	13	13	14
Oligochaete	1	2	2	2	0	2	2	2	1	1
Insect	5	8	10	8	4	8	8	9	10	11
Mollusc	1	2	2	2	2	3	3	2	2	2
Other[4]	1	1	1	1	1	0	0	0	0	0
Abundance (raw) - totals [5,6]										
Total	27	59	70	57	29	106	67	106	69	95
Oligochaete	1	2	3	2	0	2	3	13	1	1
Insect	20	43	41	42	12	66	39	65	38	50
Mollusc	5	13	25	12	15	38	25	28	30	44
Other[4]	1	1	1	1	2	0	0	0	0	0
N (Abundance) - #/m²										
Total	587	1283	1522	1239	630	2304	1457	2304	1500	2065
Oligochaete	22	43	65	43	0	43	65	283	22	22
Insect	435	935	891	913	261	1435	848	1413	826	1087
Mollusc	109	283	543	261	326	826	543	609	652	957
Other[4]	22	22	22	22	43	0	0	0	0	0

Notes:

1. Benthic invertebrate count data shown in this table are from composite of two grabs sieved to 500 µm.
2. Richness totals exclude P. Nemata, Cl. Ostracoda, indeterminates (O. Acarina, F. Lumbriculidae), immatures (S.F. Tubificinae, O. Acarina), and pupae.
3. Pupae and immatures (bolded values) are excluded from the richness totals if other life stages are present in the replicate sample.
4. Other Taxa include: Cl. Turbellaria, F. Acalyptonotidae, F. Hygrobatidae, F. Lebertiidae, F. Oxidae, F. Pionidae, O. Harpacticoida, O. Notostraca, and F. Gammaracanthidae.
5. Abundance totals exclude P. Nemata and Cl. Ostracoda.
6. Raw abundance from two grabs (grab area = 0.023 m^2).

Table F1-2. (Continued) Raw benthic invertebrate data from the Meadowbank study area lakes, 2025.

Program	Meadowbank									
Location	Third Portage Lake - North Basin					Wally Lake				
Station	TPN					WAL				
Control/Impact?	Impact					Impact				
Replicate	1	2	3	4	5	1	2	3	4	5
Date	11-Aug-25	11-Aug-25	11-Aug-25	11-Aug-25	11-Aug-25	9-Aug-25	9-Aug-25	9-Aug-25	9-Aug-25	9-Aug-25
Sample Depth (m)	7.4	8.5	7.5	9.5	9	8	9.2	8.6	8.4	8
ROUNDWORMS										
P. Nemata	2	5	2	4	8	1	2	-	1	6
FLATWORMS										
P. Platyhelminthes										
Cl. Turbellaria										
indeterminate	-	-	-	-	-	1	-	1	2	-
ANNELIDS										
P. Annelida										
WORMS										
Cl. Oligochaeta										
F. Naididae										
S.F. Naidinae										
S.F. Tubificinae										
Tasserkidrilus americanus	-	-	-	1	-	-	-	-	-	-
immatures with hair chaetae	-	-	-	1	-	-	-	-	-	-
S.F. Rhyacodrilinae										
Rhyacodrilus coccineus	1	-	1	-	-	-	-	-	-	-
F. Lumbriculidae										
Lumbriculus	-	-	-	-	-	-	-	-	1	1
ARTHROPODS										
P. Arthropoda										
MITES										
Cl. Arachnida										
O. Acarina										
immature	-	-	-	-	-	-	-	-	-	-
F. Acalyptonotidae										
Acalyptonotus	-	-	-	3	1	-	-	-	-	-
F. Hygrobatidae										
Hygrobates	-	-	-	-	-	-	-	-	-	-
F. Lebertiidae										
Lebertia	-	3	-	-	-	-	-	1	-	2
F. Oxidae										
Oxus	1	-	1	1	-	1	1	-	1	-
SEED SHRIMPS										
Cl. Ostracoda	11	11	10	7	5	11	4	15	13	9
FAIRY SHRIMPS										
O. Notostraca										
Lepidurus arcticus	-	-	-	-	-	-	-	-	-	-
INSECTS										
Cl. Insecta										
CADDISFLIES										
O. Trichoptera										
immature	-	-	-	-	-	-	-	-	-	-
F. Apataniidae										
Apatania	-	-	-	-	-	-	-	-	-	-
F. Limnephilidae										
Grensia praeterita	-	-	-	-	-	-	-	2	-	-
TRUE FLIES										
O. Diptera										
MIDGES										
F. Chironomidae										
chironomid pupae	**3**	**1**	**2**	**-**	**-**	**1**	**-**	**1**	**1**	**1**
S.F. Chironominae										
Cladopelma	-	-	-	-	-	-	-	-	-	-
Cladotanytarsus	-	-	-	-	-	3	2	-	1	-
Corynocera ambigua	-	-	-	-	-	236	90	175	32	45
Dicrotendipes	-	-	-	-	-	-	-	-	-	-
Micropsectra	6	3	10	4	1	-	-	-	-	1
Microtendipes	-	-	-	-	-	3	1	-	-	-
Paracladopelma	-	-	-	-	-	-	-	-	-	-
Paratanytarsus	-	1	-	-	-	-	1	-	-	-
Stempellinella	-	-	-	1	-	-	-	-	-	-
Sergentia	-	-	-	-	-	-	-	-	-	-
Stictochironomus	7	3	11	16	4	7	36	14	4	2
Tanytarsus	2	-	4	2	-	1	1	2	1	1
S.F. Diamesinae										
Protanypus	2	-	-	-	-	-	-	-	-	-
S.F. Orthocladiinae										
Abiskomyia	-	-	-	-	-	-	-	-	-	-
Heterotrissocladius	2	-	-	1	1	-	-	-	1	-
Paracladius	-	-	-	-	-	-	-	-	-	-
Psectrocladius	6	3	4	2	7	-	-	-	2	-
Zalutschia	1	-	2	1	1	-	-	-	-	-
Orthocladiinae Genus "Greenland"	-	-	1	-	-	-	-	-	-	-
S.F. Prodiamesinae										
Monodiamesa	-	-	-	1	1	1	1	-	2	-
S.F. Tanypodinae										
Ablabesmyia	-	-	-	-	-	-	-	-	-	-
Procladius	5	5	8	9	2	11	9	10	4	8
Thienemannimyia complex	3	4	-	1	2	-	-	-	-	-
F. Empididae										
Chelifera/Metachela	-	-	-	-	-	-	-	-	-	-
MOLLUSCS										
P. Mollusca										
SNAILS										
Cl. Gastropoda										
F. Valvatidae										
Valvata lewisi	-	-	-	-	-	-	-	-	-	-
Valvata	-	-	-	-	-	-	-	-	-	-
CLAMS										
Cl. Bivalvia										
F. Sphaeriidae										
Pisidium/Cyclocalyx	8	5	13	10	1	29	16	14	9	13
Pisidium (Cyclocalyx/Neopisidium)	11	3	4	8	-	3	7	-	3	6
Sphaerium nitidum	-	-	-	-	-	-	-	-	-	-
immature	**2**	**-**	**-**	**2**	**4**	**-**	**5**	**-**	**-**	**-**
TOTAL NUMBER OF ORGANISMS	73	47	73	75	38	309	176	235	78	95
TOTAL NUMBER OF TAXA [a]	15	11	13	18	12	13	13	9	15	11
[a] Bold entries excluded from taxa count										
R (Richness) - totals [2,3]										
Total	14	9	11	16	11	11	12	8	13	9
Oligochaete	1	0	1	1	0	0	0	0	1	1
Insect	9	6	7	10	8	7	8	5	8	5
Mollusc	3	2	2	3	2	2	3	1	2	2
Other[4]	1	1	1	2	1	2	1	2	2	1
Abundance (raw) - totals [5,6]										
Total	60	31	61	64	25	297	170	220	64	80
Oligochaete	1	0	1	2	0	0	0	0	1	1
Insect	37	20	42	38	19	263	141	204	48	58
Mollusc	21	8	17	20	5	32	28	14	12	19
Other[4]	1	3	1	4	1	2	1	2	3	2
N (Abundance) - #/m²										
Total	1304	674	1326	1391	543	6457	3696	4783	1391	1739
Oligochaete	22	0	22	43	0	0	0	0	22	22
Insect	804	435	913	826	413	5717	3065	4435	1043	1261
Mollusc	457	174	370	435	109	696	609	304	261	413
Other[4]	22	65	22	87	22	43	22	43	65	43

Notes:

1. Benthic invertebrate count data shown in this table are from composite of two grabs sieved to 500 µm.
2. Richness totals exclude P. Nemata, Cl. Ostracoda, indeterminates (O. Acarina, F. Lumbriculidae), immatures (S.F. Tubificinae, O. Acarina), and pupae.
3. Pupae and immatures (bolded values) are excluded from the richness totals if other life stages are present in the replicate sample.
4. Other Taxa include: Cl. Turbellaria, F. Acalyptonotidae, F. Hygrobatidae, F. Lebertiidae, F. Oxidae, F. Pionidae, O. Harpacticoida, O. Notostraca, and F. Gammaracanthidae.
5. Abundance totals exclude P. Nemata and Cl. Ostracoda.
6. Raw abundance from two grabs (grab area = 0.023 m^2).

Figure F1-1. Oligochaete abundance (#/m^2) from Meadowbank lakes since 2006.

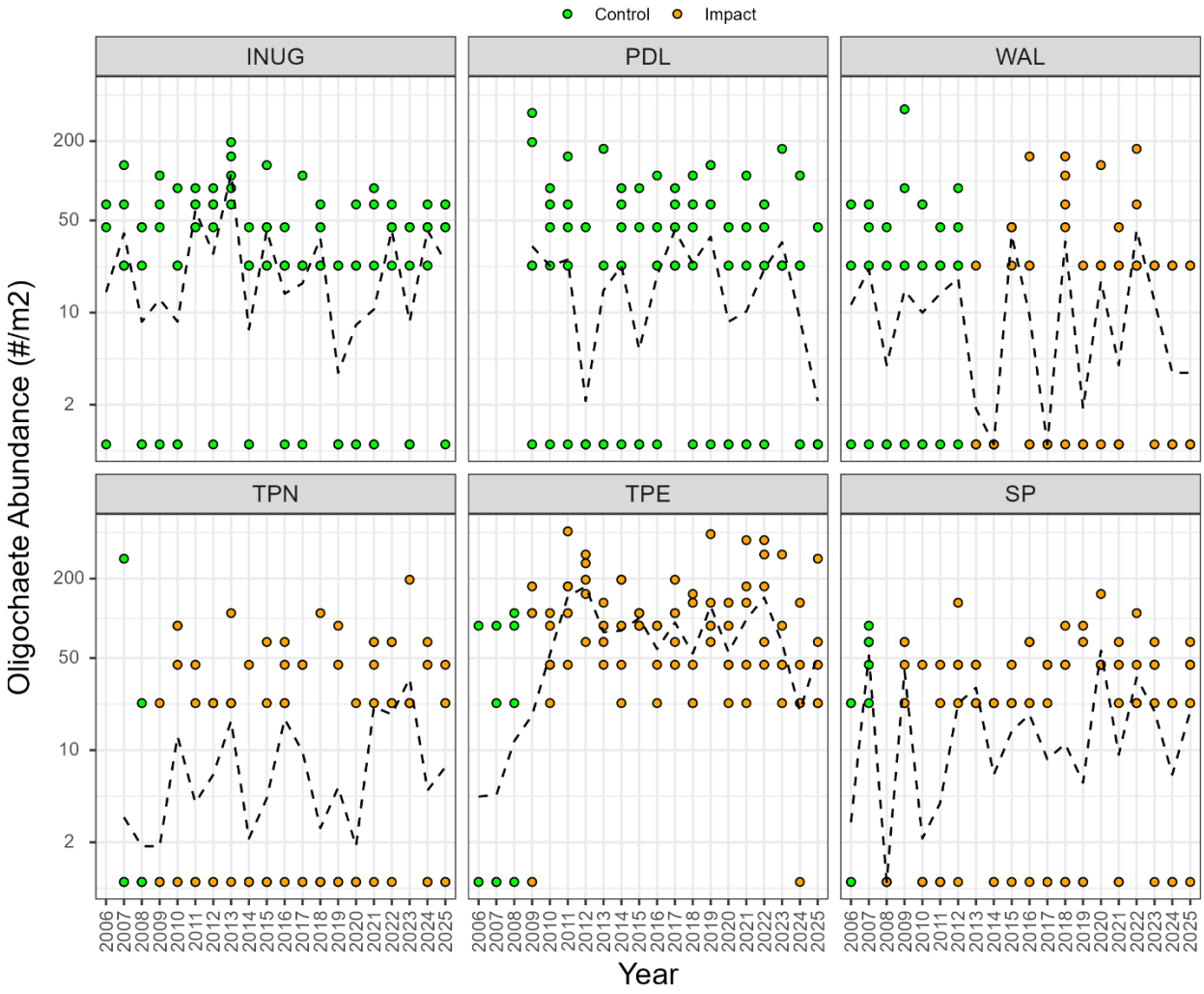


Figure F1-2. Insect abundance (#/m^2) from Meadowbank lakes since 2006.

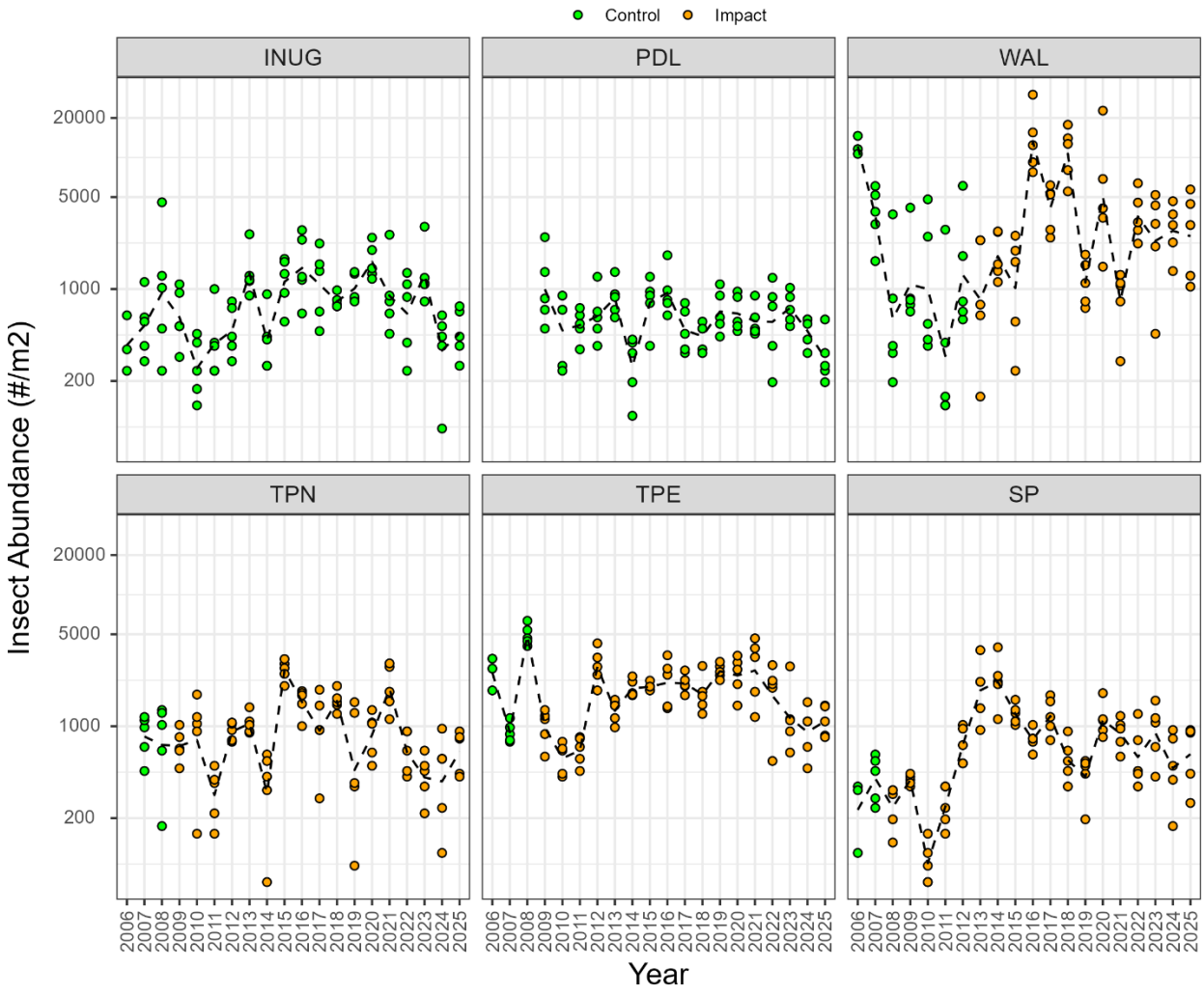


Figure F1-3. Mollusc abundance (#/m^2) from Meadowbank lakes since 2006.

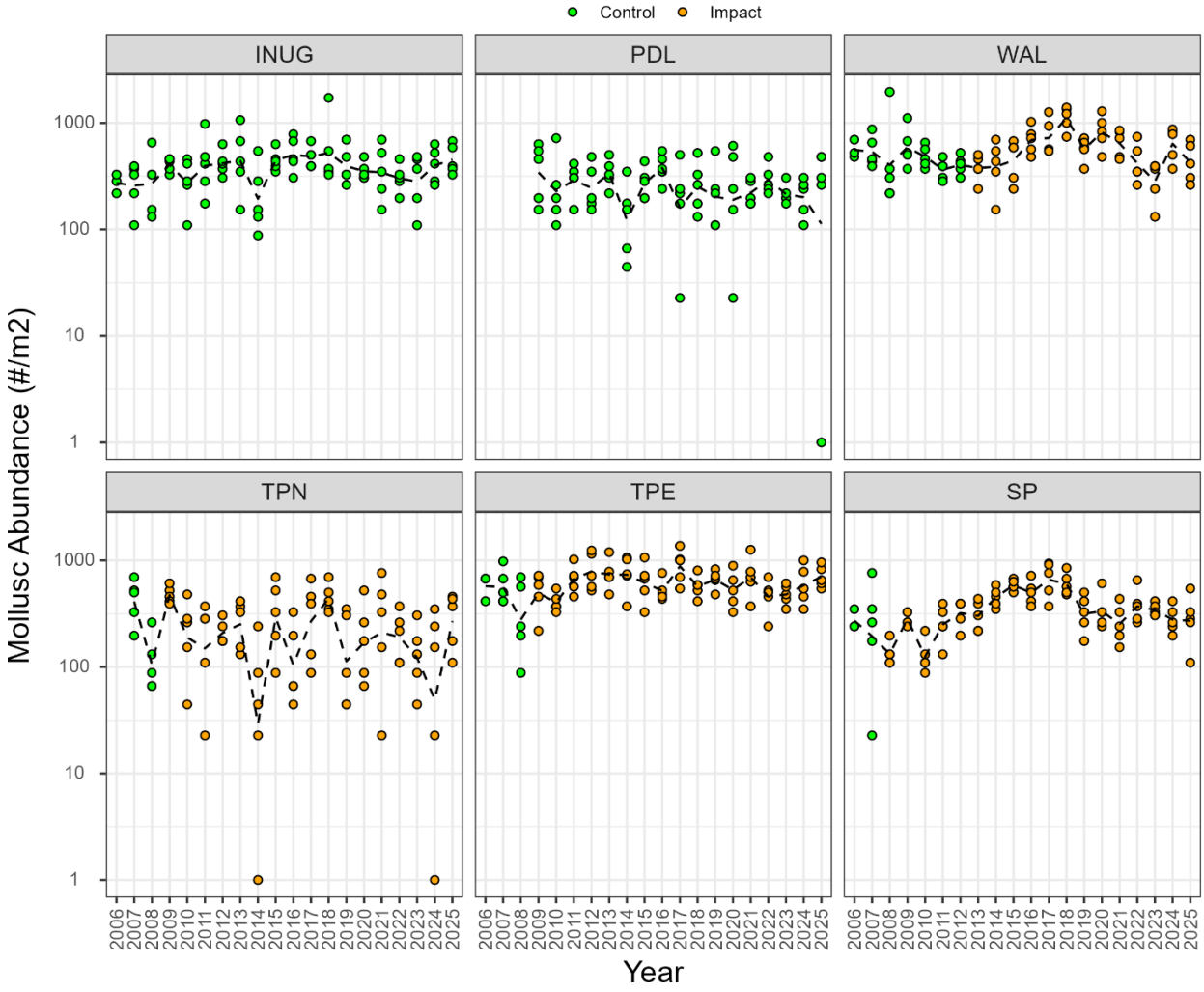


Figure F1-4. Other taxa abundance (#/m^2) from Meadowbank lakes since 2006.

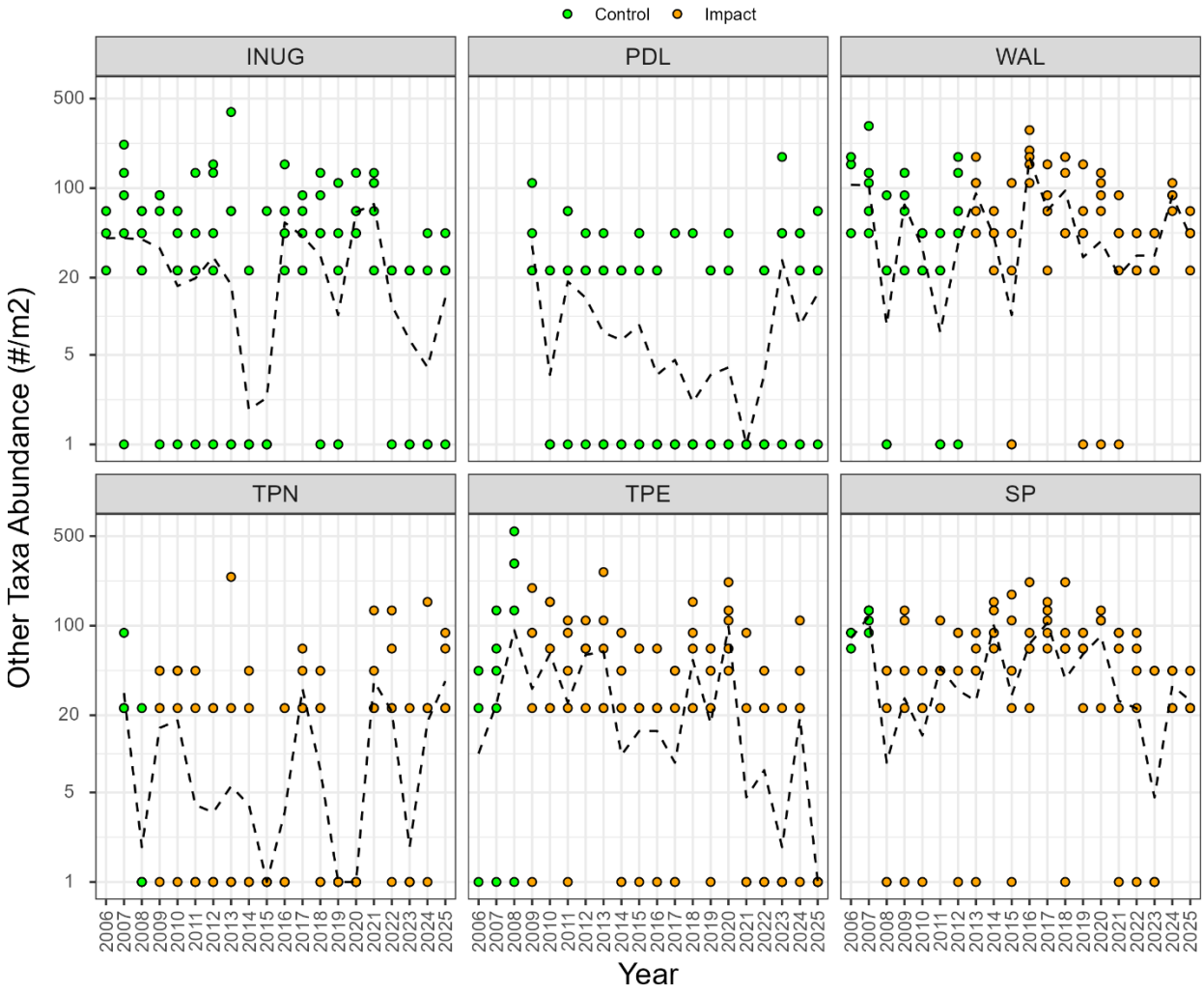


Figure F1-5. Oligochaete richness (# of taxa) from Meadowbank lakes since 2006.

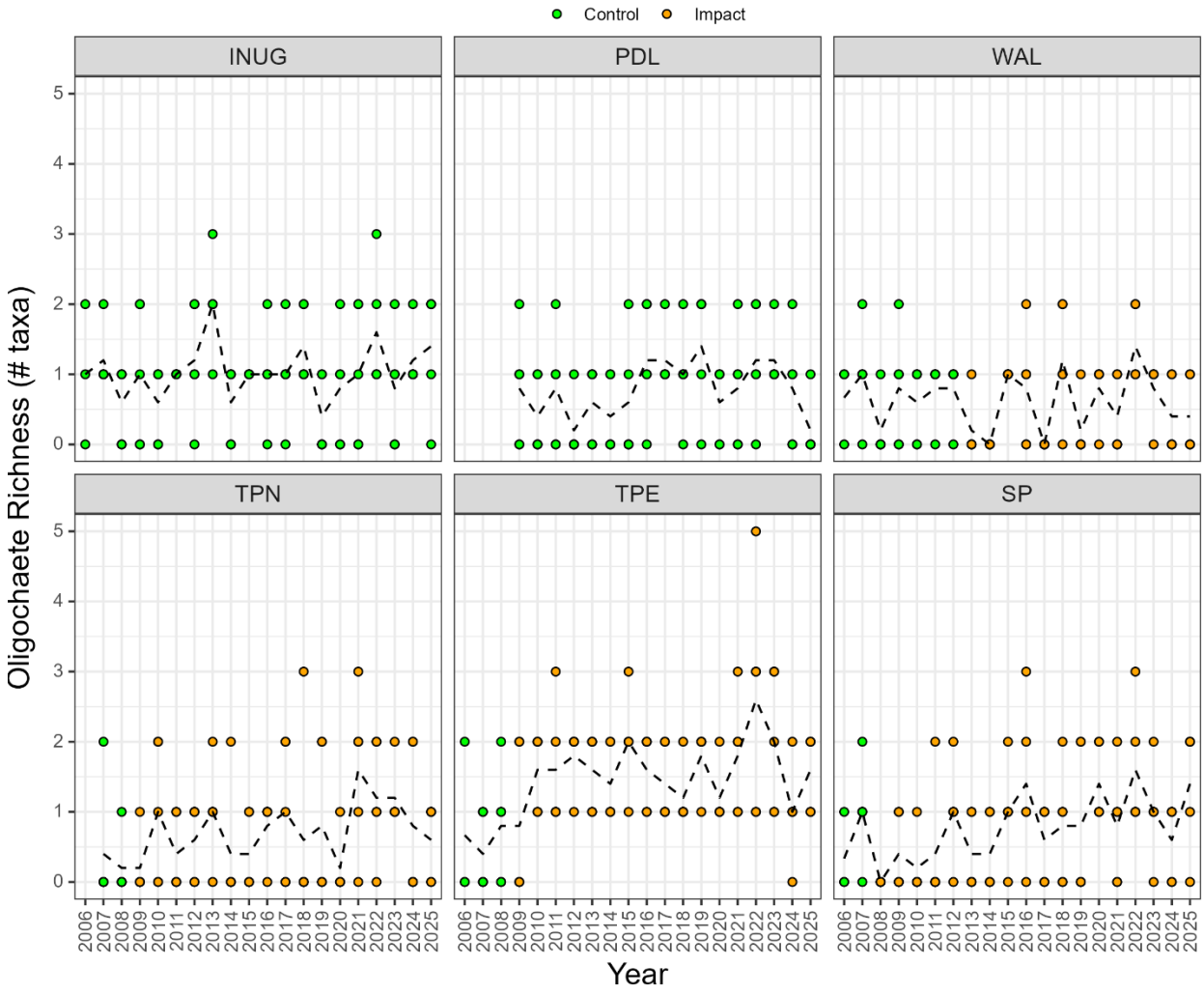


Figure F1-6. Insect richness (# of taxa) from Meadowbank lakes since 2006.

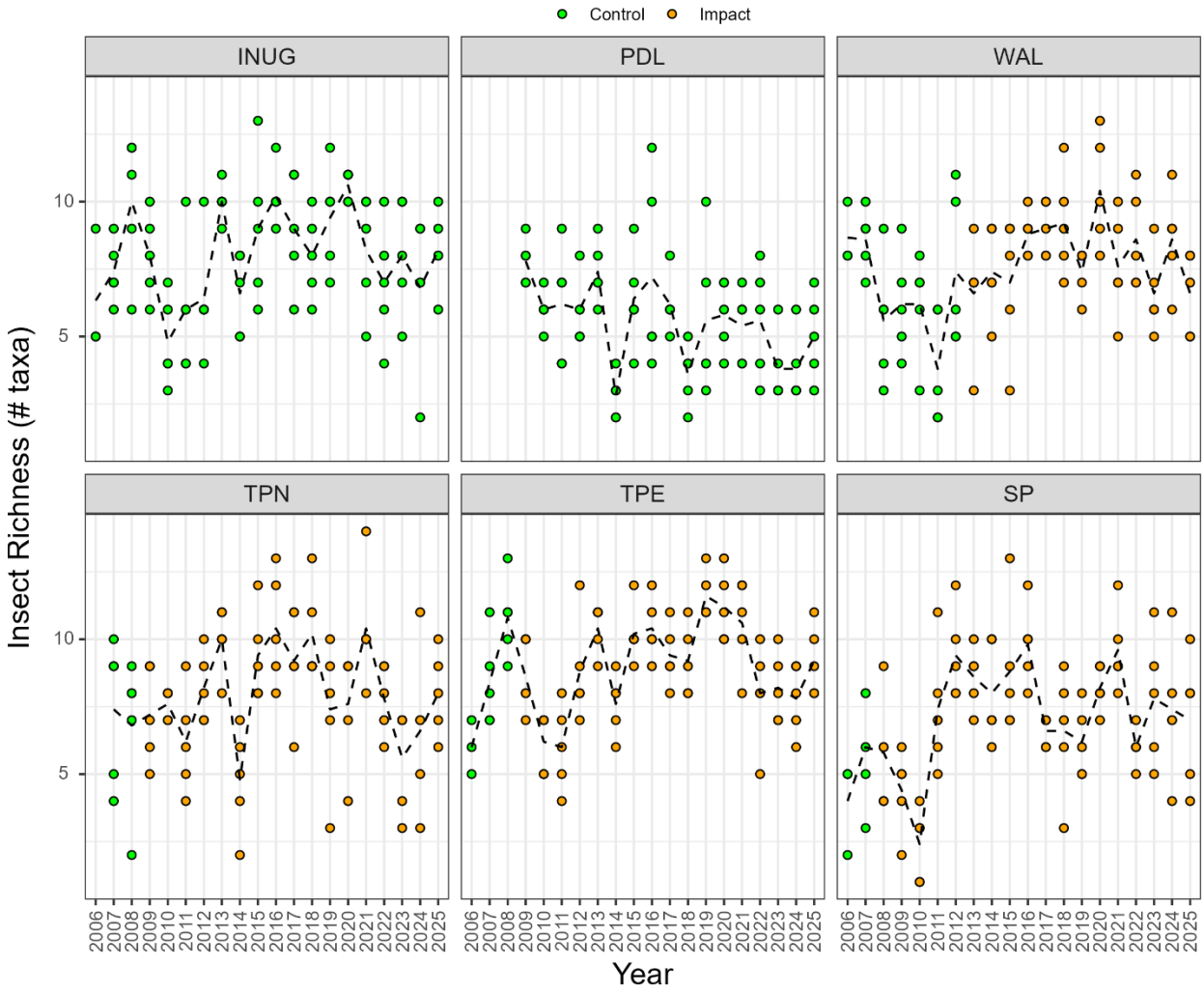


Figure F1-7. Mollusc richness (# of taxa) from Meadowbank lakes since 2006.

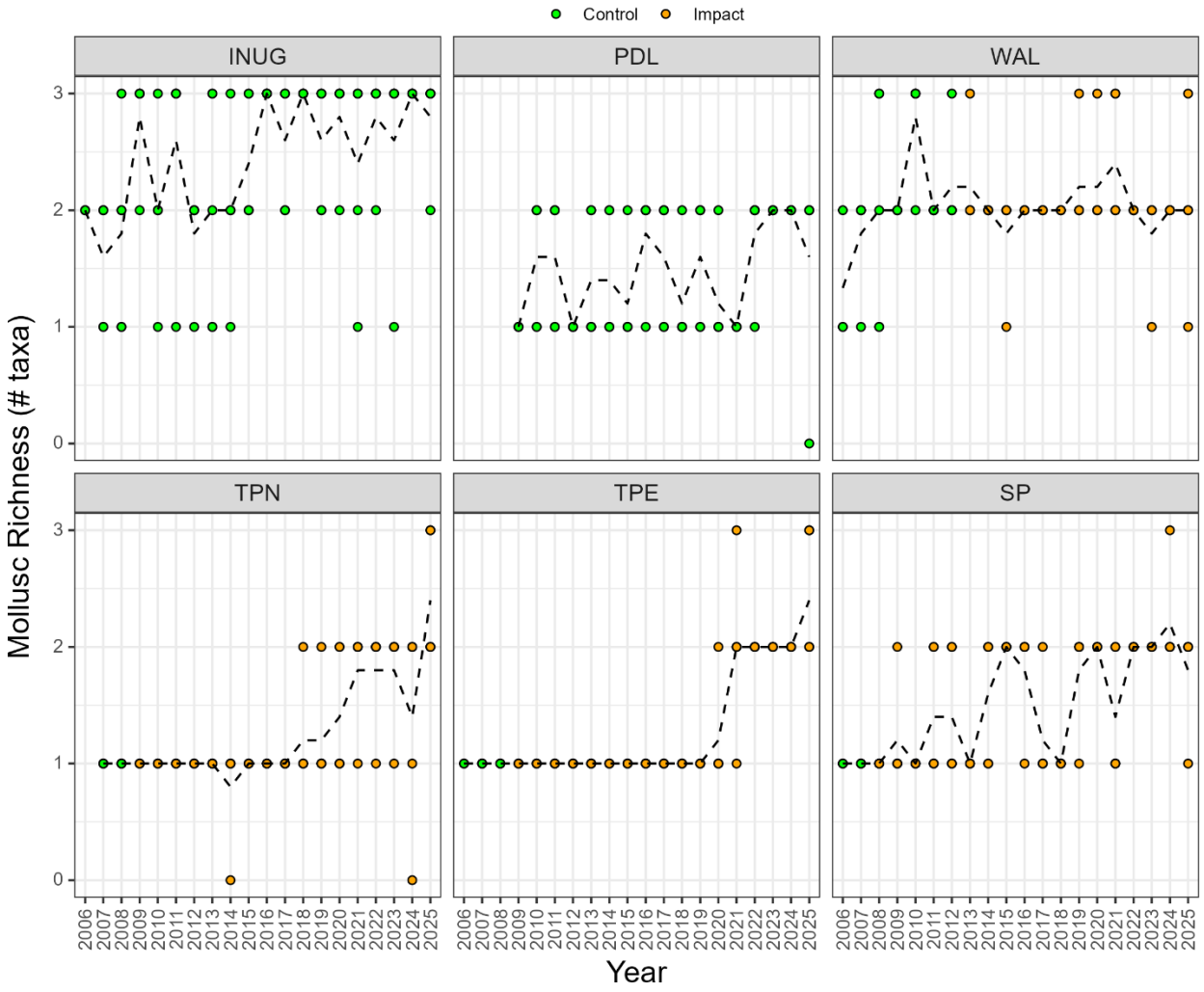


Figure F1-8. Other taxa richness (# of taxa) from Meadowbank lakes since 2006.

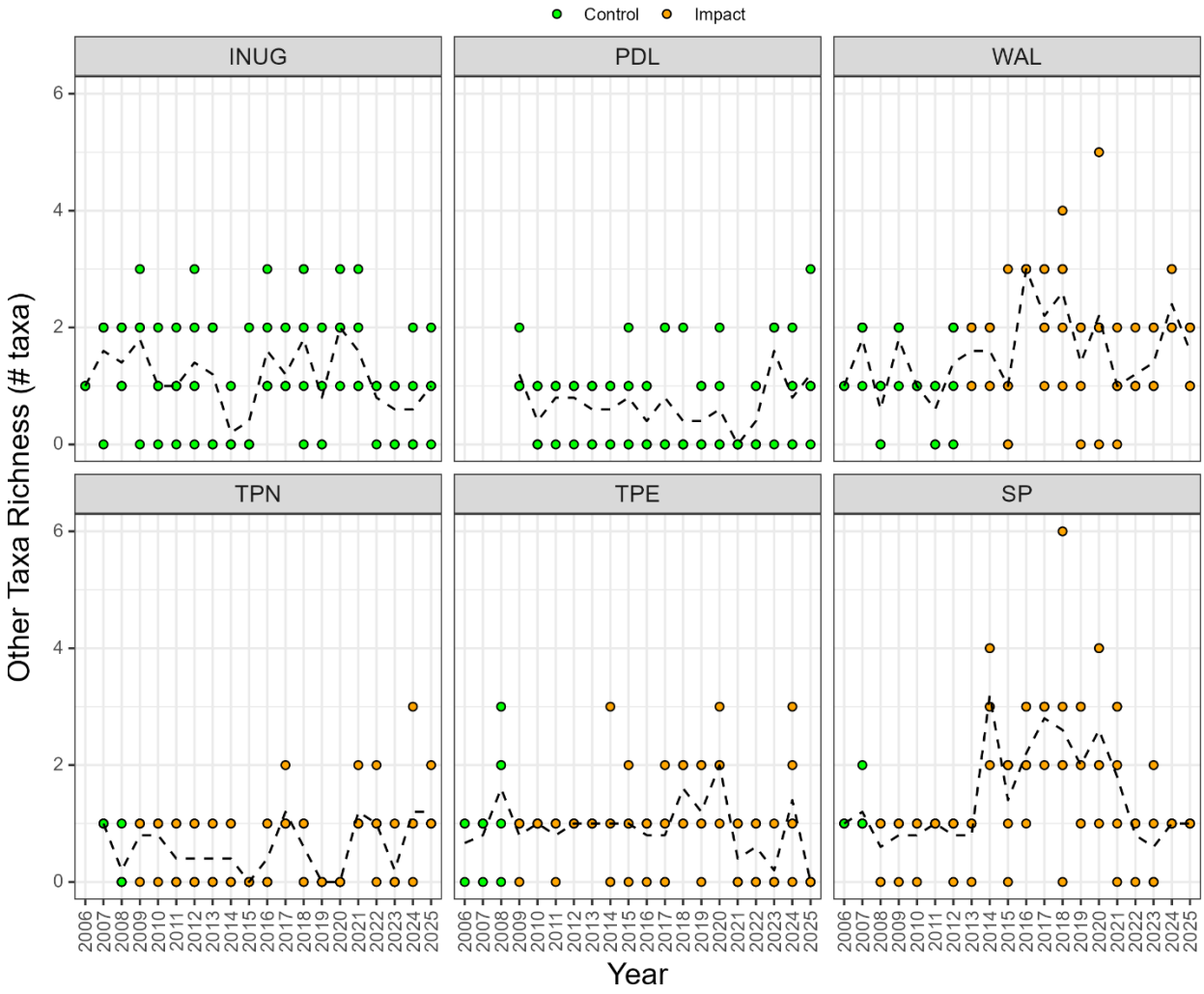


Figure F1-9. Simpsons' Diversity for the benthic invertebrate community at the Meadowbank lakes since 2006.

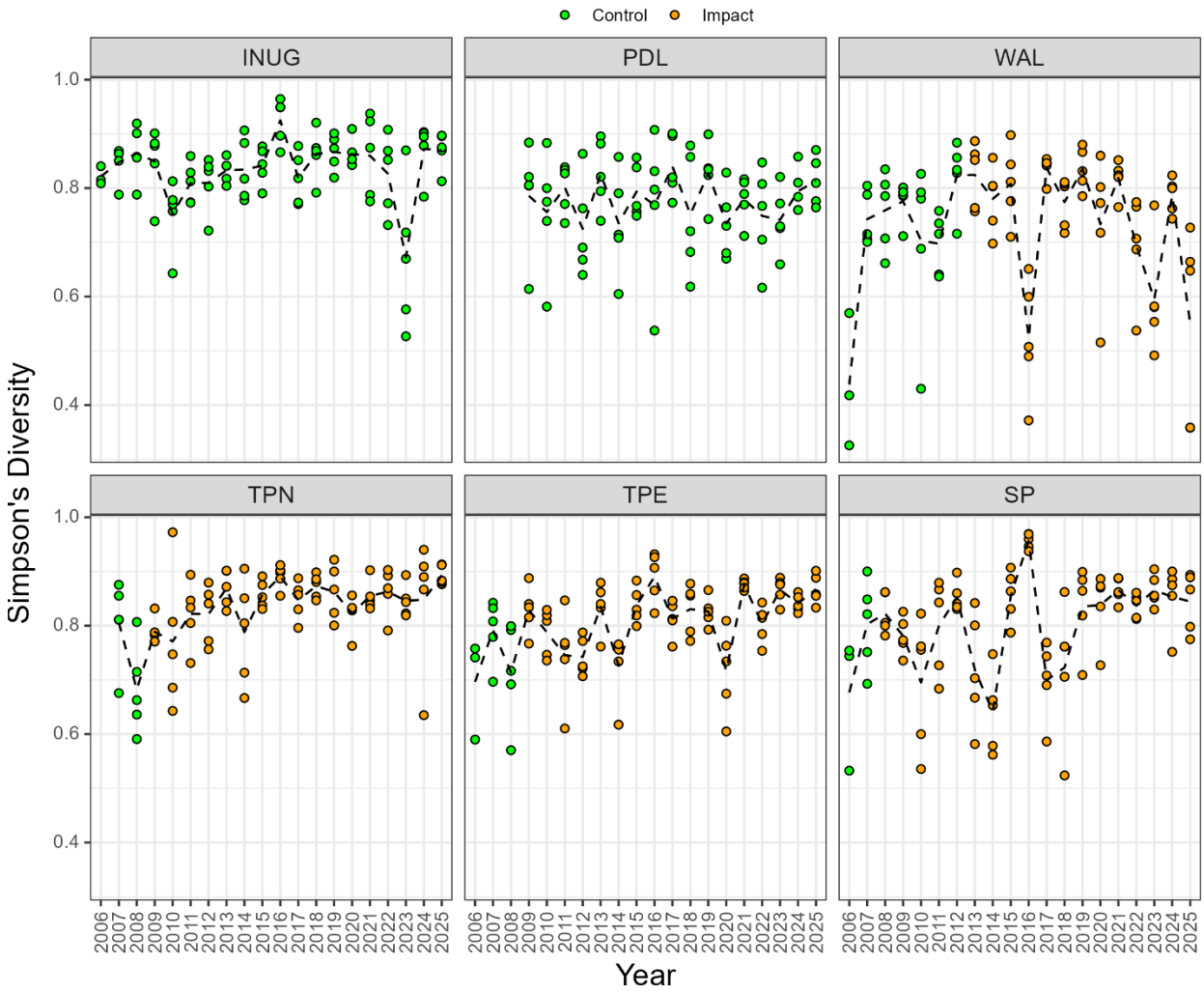
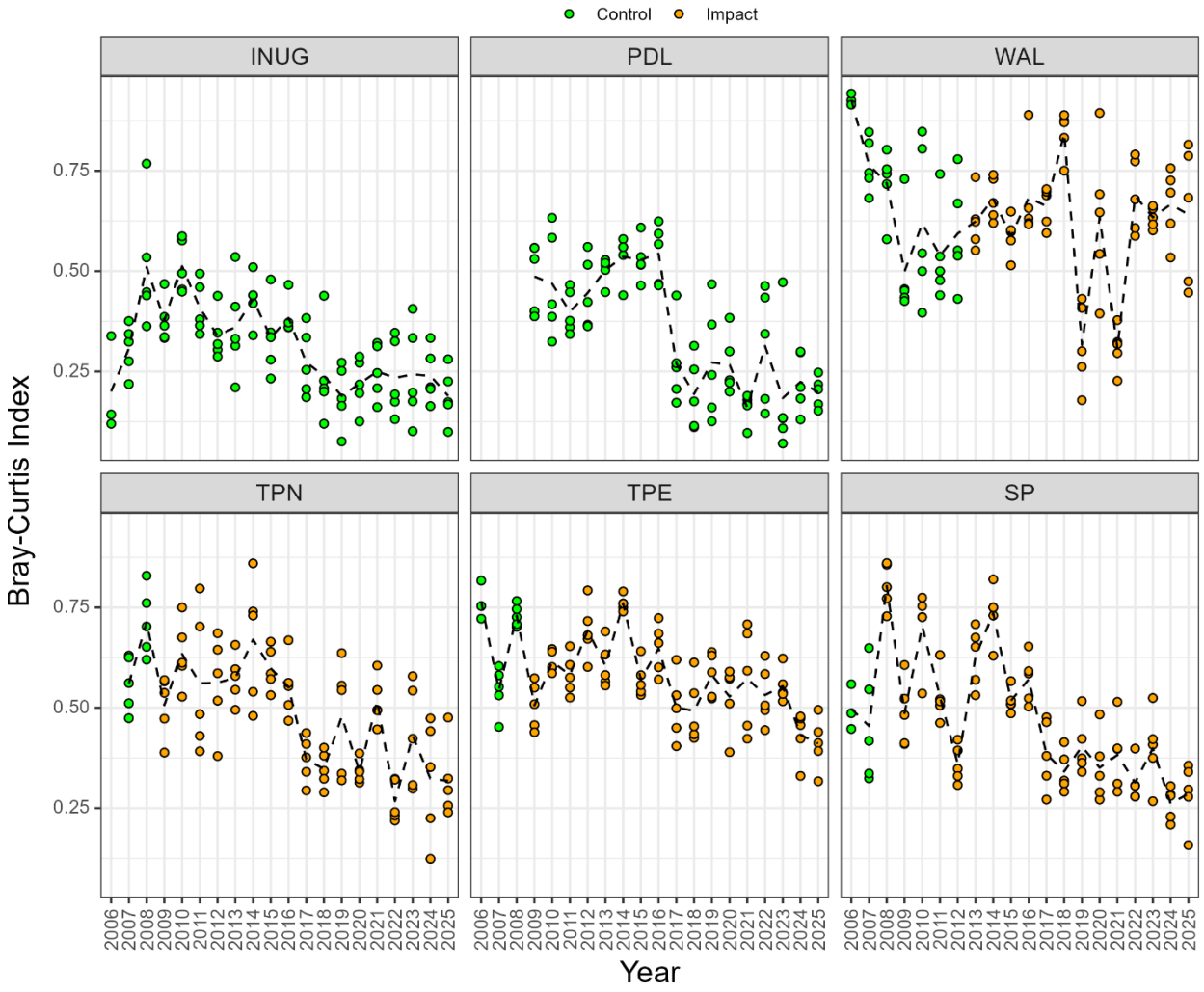


Figure F1-10. Bray-Curtis Index for the benthic invertebrate community at the Meadowbank lakes since 2006.



Appendix F2
Benthos Data – Whale Tail Study Area Lakes

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Table F2-1. Benthic invertebrate abundance (#/m^2) and richness (# taxa) by major taxa group, Whale Tail study area lakes, 2025.

Area-Replicate	Date	Depth (m)	Abundance (#/m^2)					Richness (# taxa)					Simpson's Diversity	Bray-Curtis Index
			Oligochaetes	Insects	Molluscs	Other Taxa[1]	TOTAL	Oligochaetes	Insects	Molluscs	Other Taxa[1]	TOTAL		
Whale Tail Lake - South Basin (WTS)														
WTS-1	16-Aug-25	7.5	0	935	1,957	87	2,978	0	9	3	3	15	0.82	0.54
WTS-2	16-Aug-25	7.0	0	761	4,109	22	4,891	0	9	4	1	14	0.80	0.69
WTS-3	16-Aug-25	9.0	22	978	2,587	43	3,630	1	9	4	1	15	0.82	0.60
WTS-4	16-Aug-25	8.5	65	1,500	2,065	130	3,761	2	10	4	2	18	0.85	0.58
WTS-5	16-Aug-25	8.0	65	891	1,870	87	2,913	2	8	4	3	17	0.84	0.50
	Area Mean		***30.4***	***1,013***	***2,517***	***74***	***3,635***	***1.0***	***9.0***	***3.8***	***2.0***	***15.8***	***0.83***	***0.58***
Kangislulik Lake (KAN)*														
MAM-1	17-Aug-25	7.8	87	2,391	1,609	152	4,239	2	10	4	1	17	0.81	0.60
MAM-2	17-Aug-25	6.9	22	1,891	2,043	87	4,043	1	12	3	3	19	0.85	0.62
MAM-3	17-Aug-25	7.4	130	8,543	1,891	130	10,696	2	12	3	1	18	0.74	0.82
MAM-4	17-Aug-25	8.3	174	2,478	3,543	65	6,261	2	12	4	3	21	0.83	0.71
MAM-5	17-Aug-25	8.4	65	1,609	1,457	43	3,174	1	9	3	2	15	0.81	0.57
	Area Mean		***96***	***3,383***	***2,109***	***96***	***5,683***	***1.6***	***11.0***	***3.4***	***2.0***	***18.0***	***0.81***	***0.66***
Lake A20														
A20-1	16-Aug-25	7.8	65	870	1,543	43	2,522	1	9	3	1	14	0.79	0.48
A20-2	16-Aug-25	7.7	0	761	1,130	43	1,935	0	9	4	1	14	0.84	0.45
A20-3	16-Aug-25	8.1	43	1,522	1,174	87	2,826	2	11	3	3	19	0.88	0.44
A20-4	16-Aug-25	8.3	43	2,913	1,217	22	4,196	1	11	4	1	17	0.86	0.64
A20-5	16-Aug-25	8.4	22	457	1,152	0	1,630	1	8	3	0	12	0.75	0.41
	Area Mean		***35***	***1,304***	***1,243***	***39***	***2,622***	***1.0***	***9.6***	***3.4***	***1.2***	***15.2***	***0.82***	***0.48***
Lake A76														
A76-1	16-Aug-25	8.8	43	1,522	696	109	2,370	2	8	3	3	16	0.84	0.45
A76-2	16-Aug-25	8.3	22	1,848	1,326	65	3,261	1	7	3	1	12	0.82	0.57
A76-3	16-Aug-25	8.5	304	12,283	2,283	0	14,870	3	12	3	0	18	0.67	0.87
A76-4	16-Aug-25	7.0	87	2,435	543	65	3,130	3	9	3	2	17	0.78	0.49
A76-5	16-Aug-25	8.1	22	1,696	587	0	2,304	1	7	3	0	11	0.86	0.46
	Area Mean		***96***	***3,957***	***1,087***	***48***	***5,187***	***2.0***	***8.6***	***3.0***	***1.2***	***14.8***	***0.79***	***0.57***
Lake DS1														
DS1-1	15-Aug-25	9.5	0	739	413	109	1,261	0	7	2	2	11	0.88	0.40
DS1-2	15-Aug-25	9.5	0	717	848	130	1,696	0	5	4	3	12	0.79	0.43
DS1-3	15-Aug-25	8.5	0	761	522	65	1,348	0	8	4	2	14	0.88	0.29
DS1-4	15-Aug-25	9.5	0	478	435	22	935	0	3	4	1	8	0.82	0.29
DS1-5	15-Aug-25	8.2	0	848	870	109	1,826	0	6	4	3	13	0.86	0.43
	Area Mean		***0.0***	***709***	***617***	***87***	***1,413***	***0.0***	***5.8***	***3.6***	***2.2***	***11.6***	***0.85***	***0.37***
Nemo Lake (NEM)														
NEM-1	18-Aug-25	8.9	109	4,935	1,500	109	6,652	1	9	3	2	15	0.85	0.72
NEM-2	18-Aug-25	8.8	22	2,674	1,478	174	4,348	1	10	4	4	19	0.87	0.61
NEM-3	18-Aug-25	8.5	43	5,413	1,196	43	6,696	1	10	4	2	17	0.80	0.76
NEM-4	18-Aug-25	8.1	43	3,087	804	87	4,022	1	9	3	3	16	0.78	0.59
NEM-5	18-Aug-25	7.1	*65*	*5,065*	*1,283*	*152*	*6,565*	*1*	*11*	*3*	*4*	*19*	*0.82*	*0.72*
	Area Mean		***57***	***4,235***	***1,252***	***113***	***5,657***	***1.0***	***9.8***	***3.4***	***3.0***	***17.2***	***0.82***	***0.68***

Notes:

1. "Other taxa" includes flatworms (Turbellaria) and arthropods (Acalyptonotidae, Hygrobatidae, Lebertiidae, Oxidae, Pionidae, Harpacticoida, O. Notostraca, and Gammaracanthidae).

* Kangislulik Lake (KAN) was previously referred to as Mammoth Lake (MAM).

Table F2-2. Raw benthic invertebrate data from the Whale Tail study area lakes 2025.

Program	Whale Tail									
Location	Lake A20					Lake A76				
Station	A20					A76				
Control/Impact?	Impact					Impact				
Replicate	1	2	3	4	5	1	2	3	4	5
Date	16-Aug-25	16-Aug-25	16-Aug-25	16-Aug-25	16-Aug-25	16-Aug-25	16-Aug-25	16-Aug-25	16-Aug-25	16-Aug-25
Sample Depth (m)	7.8	7.7	8.1	8.3	8.4	8.8	8.3	8.5	7.0	8.1
ROUNDWORMS										
P. Nemata	3	3	2	5	1	4	7	11	2	2
FLATWORMS										
P. Platyhelminthes										
Cl. Turbellaria										
indeterminate	-	-	2	-	-	-	-	-	-	-
ANNELIDS										
P. Annelida										
WORMS										
Cl. Oligochaeta										
F. Naididae										
S.F. Naidinae										
S.F. Tubificinae										
Tasserkidrilus americanus	-	-	-	-	-	-	-	-	-	-
immatures with hair chaetae	-	-	-	2	-	1	1	2	1	-
S.F. Rhyacodrilinae										
Rhyacodrilus coccineus	-	-	1	-	-	1	-	9	1	-
F. Lumbriculidae										
Lumbriculus	3	-	1	-	1	-	-	3	2	1
ARTHROPODS										
P. Arthropoda										
MITES										
Cl. Arachnida										
O. Acarina										
immature	-	-	-	-	-	-	-	-	-	-
F. Acalyptonotidae										
Acalyptonotus	2	-	1	1	-	2	-	-	-	-
F. Hygrobatidae										
Hygrobates	-	-	-	-	-	2	-	-	-	-
F. Lebertiidae										
Lebertia	-	-	1	-	-	-	-	-	1	-
F. Oxidae										
Oxus	-	2	-	-	-	1	3	-	2	-
SEED SHRIMPS										
Cl. Ostracoda	47	43	48	31	17	12	54	76	40	20
FAIRY SHRIMPS										
O. Notostraca										
Lepidurus arcticus	-	-	-	-	-	-	-	-	-	-
INSECTS										
Cl. Insecta										
CADDISFLIES										
O. Trichoptera										
immature	-	-	-	-	-	-	-	1	-	-
F. Apataniidae										
Apatania	-	-	-	-	-	-	-	-	-	-
F. Limnephilidae										
Grensia praeterita	-	-	-	-	-	-	-	-	-	-
TRUE FLIES										
O. Diptera										
MIDGES										
F. Chironomidae										
chironomid pupae	**5**	**1**	**6**	**4**	**2**	**-**	**2**	**1**	**1**	**2**
S.F. Chironominae										
Cladopelma	-	-	-	-	-	-	-	-	-	-
Cladotanytarsus	-	-	2	2	-	-	-	-	-	-
Corynocera ambigua	8	12	16	47	-	34	37	382	64	27
Dicrotendipes	-	-	-	2	-	-	-	11	-	-
Micropsectra	1	-	10	-	3	1	8	38	11	13
Microtendipes	1	-	8	2	-	-	-	1	3	2
Paracladopelma	-	-	-	-	-	-	-	-	-	-
Paratanytarsus	4	2	5	37	3	8	10	33	12	-
Stempellinella	-	-	-	-	-	-	-	-	-	-
Sergentia	-	-	-	-	-	-	-	-	-	-
Stictochironomus	3	9	4	9	1	1	-	12	3	-
Tanytarsus	3	1	5	15	2	7	8	38	6	8
S.F. Diamesinae										
Protanypus	-	-	-	-	-	-	-	-	-	-
S.F. Orthocladiinae										
Abiskomyia	-	1	-	-	-	-	-	-	-	-
Heterotrissocladius	-	-	2	-	-	-	-	-	-	-
Paracladius	-	-	-	-	-	-	-	-	-	-
Psectrocladius	-	-	2	1	1	-	1	-	-	1
Zalutschia	-	-	-	-	-	-	-	-	-	-
Orthocladiinae Genus "Greenland"	-	-	-	-	-	-	-	-	-	-
S.F. Prodiamesinae										
Monodiamesa	3	1	6	6	3	3	5	4	5	9
S.F. Tanypodinae										
Ablabesmyia	-	-	-	-	-	-	-	3	-	-
Procladius	5	4	4	3	5	14	14	27	4	16
Thienemannimyia complex	7	3	-	6	1	2	-	14	3	-
F. Empididae										
Chelifera/Metachela	-	1	-	-	-	-	-	-	-	-
MOLLUSCS										
P. Mollusca										
SNAILS										
Cl. Gastropoda										
F. Valvatidae										
Valvata lewisi	-	-	-	-	-	-	-	-	-	-
Valvata	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CLAMS										
Cl. Bivalvia										
F. Sphaeriidae										
Pisidium/Cyclocalyx	47	28	35	32	33	22	46	68	15	16
Pisidium (Cyclocalyx/Neopisidium)	23	17	16	18	17	6	6	14	5	8
Sphaerium nitidum	-	1	3	1	-	4	9	23	5	3
immature	**1**	**6**	-	**5**	**3**	-	-	-	-	-
TOTAL NUMBER OF ORGANISMS	166	135	180	229	93	125	211	771	186	128
TOTAL NUMBER OF TAXA [a]	15	15	21	18	13	18	14	20	19	13
[a] Bold entries excluded from taxa count										
R (Richness) - totals [2,3]										
Total	14	14	19	17	12	16	12	18	17	11
Oligochaete	1	0	2	1	1	2	1	3	3	1
Insect	9	9	11	11	8	8	7	12	9	7
Mollusc	3	4	3	4	3	3	3	3	3	3
Other[4]	1	1	3	1	0	3	1	0	2	0
Abundance (raw) - totals [5,6]										
Total	116	89	130	193	75	109	150	684	144	106
Oligochaete	3	0	2	2	1	2	1	14	4	1
Insect	40	35	70	134	21	70	85	565	112	78
Mollusc	71	52	54	56	53	32	61	105	25	27
Other[4]	2	2	4	1	0	5	3	0	3	0
N (Abundance) - #/m^2										
Total	2,522	1,935	2,826	4,196	1,630	2,370	3,261	14,870	3,130	2,304
Oligochaete	65	0	43	43	22	43	22	304	87	22
Insect	870	761	1,522	2,913	457	1,522	1,848	12,283	2,435	1,696
Mollusc	1,543	1,130	1,174	1,217	1,152	696	1,326	2,283	543	587
Other[4]	43	43	87	22	0	109	65	0	65	0

Notes:

1. Benthic invertebrate count data shown in this table are from composite of two grabs sieved to 500 µm.
2. Richness totals exclude P. Nemata, Cl. Ostracoda, indeterminates (O. Acarina, F. Lumbriculidae), immatures (S.F. Tubificinae, O. Acarina), and pupae.
3. Pupae and immatures (bolded values) are excluded from the richness totals if other life stages are present in the replicate sample.
4. Other Taxa include: Cl. Turbellaria, F. Acalyptonotidae, F. Hygrobatidae, F. Lebertiidae, F. Oxidae, F. Pionidae, O. Harpacticoida, O. Notostraca, and F. Gammaracanthidae.
5. Abundance totals exclude P. Nemata and Cl. Ostracoda.
6. Raw abundance from two grabs (grab area = 0.023 m^2).

Table F2-2. Raw benthic invertebrate data from the Whale Tail study area lakes 2025.

Program	Whale Tail									
Location	Lake DS1					Kangislulik Lake				
Station	DS1					KAN				
Control/Impact?	Impact					Impact				
Replicate	1	2	3	4	5	1	2	3	4	5
Date	15-Aug-25	15-Aug-25	15-Aug-25	15-Aug-25	15-Aug-25	17-Aug-25	17-Aug-25	17-Aug-25	17-Aug-25	17-Aug-25
Sample Depth (m)	9.5	9.5	8.5	9.5	8.2	7.8	6.9	7.4	8.3	8.4
ROUNDWORMS										
P. Nemata	8	1	9	8	7	-	2	-	-	-
FLATWORMS										
P. Platyhelminthes										
Cl. Turbellaria										
indeterminate	-	-	-	-	2	6	-	-	1	1
ANNELIDS										
P. Annelida										
WORMS										
Cl. Oligochaeta										
F. Naididae										
S.F. Naidinae										
S.F. Tubificinae										
Tasserkidrilus americanus	-	-	-	-	-	-	-	-	-	-
immatures with hair chaetae	-	-	-	-	-	-	-	-	-	-
S.F. Rhyacodrilinae										
Rhyacodrilus coccineus	-	-	-	-	-	3	1	3	5	3
F. Lumbriculidae										
Lumbriculus	-	-	-	-	-	1	-	3	3	-
ARTHROPODS										
P. Arthropoda										
MITES										
Cl. Arachnida										
O. Acarina										
immature	-	-	-	-	-	1	-	-	-	-
F. Acalyptonotidae										
Acalyptonotus	-	-	-	-	-	-	2	-	-	-
F. Hygrobatidae										
Hygrobates	-	1	1	1	-	-	-	-	-	-
F. Lebertiidae										
Lebertia	1	4	2	-	1	-	1	6	1	-
F. Oxidae										
Oxus	4	1	-	-	2	-	1	-	1	1
SEED SHRIMPS										
Cl. Ostracoda	1	4	3	-	12	50	43	93	39	34
FAIRY SHRIMPS										
O. Notostraca										
Lepidurus arcticus	-	-	-	-	-	-	-	-	-	-
INSECTS										
Cl. Insecta	-	-	-	-	-	-	-	-	-	-
CADDISFLIES										
O. Trichoptera										
immature	-	-	-	-	-	-	-	-	-	-
F. Apataniidae										
Apatania	-	-	-	-	1	-	-	-	-	-
F. Limnephilidae										
Grensia praeterita	-	-	-	-	-	-	-	-	-	-
TRUE FLIES										
O. Diptera										
MIDGES										
F. Chironomidae										
chironomid pupae	**2**	**2**	**-**	**1**	**4**	**-**	**-**	**1**	**-**	**2**
S.F. Chironominae										
Cladopelma	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**4**	**-**	**-**
Cladotanytarsus	-	-	-	-	-	5	5	16	3	1
Corynocera ambigua	-	-	-	-	-	64	32	234	43	43
Dicrotendipes	2	-	-	-	1	2	1	-	1	-
Micropsectra	-	-	-	-	-	2	7	4	4	1
Microtendipes	-	-	5	-	-	4	14	12	3	2
Paracladopelma	-	-	-	-	-	-	-	-	-	-
Paratanytarsus	8	7	12	2	18	3	4	16	4	-
Stempellinella	1	-	1	-	-	-	-	-	-	-
Sergentia	-	-	-	-	-	-	-	27	-	-
Stictochironomus	-	2	4	-	-	7	7	-	22	4
Tanytarsus	-	-	2	-	-	11	10	55	15	9
S.F. Diamesinae										
Protanypus	-	-	-	-	-	-	-	-	-	-
S.F. Orthocladiinae										
Abiskomyia	-	-	-	-	-	-	-	-	-	-
Heterotrissocladius	9	7	1	8	4	-	-	-	-	-
Paracladius	-	-	-	-	-	-	-	-	-	-
Psectrocladius	-	-	-	-	-	-	1	-	1	-
Zalutschia	-	-	-	-	-	-	-	-	-	-
Orthocladiinae Genus "Greenland"	-	-	-	-	-	-	-	-	-	-
S.F. Prodiamesinae										
Monodiamesa	2	-	-	-	-	-	2	4	9	5
S.F. Tanypodinae										
Ablabesmyia	1	1	1	-	1	-	1	4	-	-
Procladius	9	14	9	11	10	4	-	8	5	4
Thienemannimyia complex	-	-	-	-	-	8	3	8	4	3
F. Empididae										
Chelifera/Metachela	-	-	-	-	-	-	-	-	-	-
MOLLUSCS										
P. Mollusca										
SNAILS										
Cl. Gastropoda										
F. Valvatidae										
Valvata lewisi	-	1	1	-	5	-	-	-	-	-
Valvata	**-**	**-**	**3**	**-**	**2**	**-**	**-**	**-**	**-**	**-**
CLAMS										
Cl. Bivalvia										
F. Sphaeriidae										
Pisidium/Cyclocalyx	8	32	13	11	21	51	55	66	67	30
Pisidium (Cyclocalyx/Neopisidium)	11	3	7	7	12	9	26	14	12	2
Sphaerium nitidum	-	-	-	1	-	11	13	7	81	35
immature	**-**	**3**	**-**	**1**	**-**	**3**	**-**	**-**	**3**	**-**
TOTAL NUMBER OF ORGANISMS	67	83	74	51	103	245	231	585	327	180
TOTAL NUMBER OF TAXA [a]	13	13	15	8	14	18	21	19	21	16
[a] Bold entries excluded from taxa count										
R (Richness) - totals [2,3]										
Total	11	12	14	8	13	17	19	18	21	15
Oligochaete	0	0	0	0	0	2	1	2	2	1
Insect	7	5	8	3	6	10	12	12	12	9
Mollusc	2	4	4	4	4	4	3	3	4	3
Other[4]	2	3	2	1	3	1	3	1	3	2
Abundance (raw) - totals [5,6]										
Total	58	78	62	43	84	195	186	492	288	146
Oligochaete	0	0	0	0	0	4	1	6	8	3
Insect	34	33	35	22	39	110	87	393	114	74
Mollusc	19	39	24	20	40	74	94	87	163	67
Other[4]	5	6	3	1	5	7	4	6	3	2
N (Abundance) - #/m^2										
Total	1,261	1,696	1,348	935	1,826	4,239	4,043	10,696	6,261	3,174
Oligochaete	0	0	0	0	0	87	22	130	174	65
Insect	739	717	761	478	848	2,391	1,891	8,543	2,478	1,609
Mollusc	413	848	522	435	870	1,609	2,043	1,891	3,543	1,457
Other[4]	109	130	65	22	109	152	87	130	65	43

Notes:
1. Benthic invertebrate count data shown in this table are from composite of two grabs sieved to 500 µm.
2. Richness totals exclude P. Nemata, Cl. Ostracoda, indeterminates (O. Acarina, F. Lumbriculidae), immatures (S.F. Tubificinae, O. Acarina), and pupae.
3. Pupae and immatures (bolded values) are excluded from the richness totals if other life stages are present in the replicate sample.
4. Other Taxa include: Cl. Turbellaria, F. Acalyptonotidae, F. Hygrobatidae, F. Lebertiidae, F. Oxidae, F. Pionidae, O. Harpacticoida, O. Notostraca, and F. Gammaracanthidae.
5. Abundance totals exclude P. Nemata and Cl. Ostracoda.
6. Raw abundance from two grabs (grab area = 0.023 m^2).

Table F2-2. Raw benthic invertebrate data from the Whale Tail study area lakes 2025.

Program	Whale Tail									
Location	Nemo Lake					Whale Tail Lake - South Basin				
Station	NEM					WTS				
Control/Impact?	Impact					Impact				
Replicate	1	2	3	4	5	1	2	3	4	5
Date	18-Aug-25	18-Aug-25	18-Aug-25	18-Aug-25	18-Aug-25	16-Aug-25	16-Aug-25	16-Aug-25	16-Aug-25	16-Aug-25
Sample Depth (m)	8.9	8.8	8.5	8.1	7.1	7.5	7.0	9.0	8.5	8.0
ROUNDWORMS										
P. Nemata	2	3	3	6	5	1	6	-	-	-
FLATWORMS										
P. Platyhelminthes										
Cl. Turbellaria										
indeterminate	-	3	1	1	1	2	-	-	-	-
ANNELIDS										
P. Annelida										
WORMS										
Cl. Oligochaeta										
F. Naididae										
S.F. Naidinae										
S.F. Tubificinae										
Tasserkidrilus americanus	-	-	-	-	-	-	-	-	1	-
immatures with hair chaetae	-	-	-	-	-	-	-	-	-	1
S.F. Rhyacodrilinae										
Rhyacodrilus coccineus	-	-	-	-	-	-	-	1	2	2
F. Lumbriculidae										
Lumbriculus	5	1	2	2	3	-	-	-	-	-
ARTHROPODS										
P. Arthropoda										
MITES										
Cl. Arachnida										
O. Acarina										
immature	-	-	-	-	-	-	-	-	-	-
F. Acalyptonotidae										
Acalyptonotus	4	1	1	2	3	1	1	-	1	1
F. Hygrobatidae										
Hygrobates	-	-	-	-	-	-	-	-	-	-
F. Lebertiidae										
Lebertia	1	3	-	-	2	-	-	-	-	1
F. Oxidae										
Oxus	-	1	-	1	1	1	-	2	5	2
SEED SHRIMPS										
Cl. Ostracoda	12	15	17	13	12	41	36	81	145	77
FAIRY SHRIMPS										
O. Notostraca										
Lepidurus arcticus	-	-	-	-	-	-	-	-	-	-
INSECTS										
Cl. Insecta										
CADDISFLIES										
O. Trichoptera										
immature	-	-	-	-	-	1	-	3	-	-
F. Apataniidae										
Apatania	-	-	-	1	-	-	-	-	-	-
F. Limnephilidae										
Grensia praeterita	-	-	-	-	-	-	-	-	-	-
TRUE FLIES										
O. Diptera										
MIDGES										
F. Chironomidae										
chironomid pupae	**2**	**1**	**-**	**-**	**1**	**1**	**2**	**-**	**1**	**-**
S.F. Chironominae										
Cladopelma	-	-	-	-	-	-	-	-	-	-
Cladotanytarsus	**-**	**-**	-	**-**	17	2	1	-	3	**-**
Corynocera ambigua	75	26	70	31	68	8	11	4	7	4
Dicrotendipes	-	-	-	-	-	-	-	-	-	-
Micropsectra	64	42	111	76	97	12	-	2	13	8
Microtendipes	9	5	7	3	6	-	4	-	3	2
Paracladopelma	-	-	-	-	-	-	-	-	-	-
Paratanytarsus	15	15	12	10	4	-	-	-	1	-
Stempellinella	-	-	-	-	-	-	-	-	-	-
Sergentia	-	-	-	-	-	-	-	-	-	-
Stictochironomus	11	6	14	3	2	-	1	1	1	-
Tanytarsus	38	8	-	10	13	12	9	20	25	16
S.F. Diamesinae										
Protanypus	-	-	-	-	-	-	-	-	-	-
S.F. Orthocladiinae										
Abiskomyia	-	-	-	-	-	1	1	1	-	3
Heterotrissocladius	-	-	-	-	-	-	-	-	-	-
Paracladius	-	-	-	-	-	-	-	-	-	-
Psectrocladius	3	4	7	4	8	1	1	-	1	1
Zalutschia	-	-	2	-	-	-	-	-	-	-
Orthocladiinae Genus "Greenland"	-	1	-	-	-	-	-	-	-	-
S.F. Prodiamesinae										
Monodiamesa	-	2	2	-	4	2	2	6	3	3
S.F. Tanypodinae										
Ablabesmyia	-	-	-	-	-	-	-	-	-	-
Procladius	7	13	19	4	11	4	3	7	11	4
Thienemannimyia complex	3	-	5	-	2	-	-	1	-	-
F. Empididae										
Chelifera/Metachela	-	-	-	-	-	-	-	-	-	-
MOLLUSCS										
P. Mollusca										
SNAILS										
Cl. Gastropoda										
F. Valvatidae										
Valvata lewisi	-	-	-	-	-	-	-	-	-	-
Valvata	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CLAMS										
Cl. Bivalvia										
F. Sphaeriidae										
Pisidium/Cyclocalyx	47	44	34	28	39	47	54	51	49	37
Pisidium (Cyclocalyx/Neopisidium)	15	20	16	5	17	20	61	28	31	32
Sphaerium nitidum	7	2	1	4	-	23	57	35	11	15
immature	**-**	**2**	**4**	-	**3**	**-**	**17**	**5**	**4**	**2**
TOTAL NUMBER OF ORGANISMS	320	218	328	204	319	180	267	248	318	211
TOTAL NUMBER OF TAXA [a]	17	20	18	18	20	17	15	15	18	17
[a] Bold entries excluded from taxa count										
R (Richness) - totals [2,3]										
Total	15	19	17	16	19	15	14	15	18	17
Oligochaete	1	1	1	1	1	0	0	1	2	2
Insect	9	10	10	9	11	9	9	9	10	8
Mollusc	3	4	4	3	3	3	4	4	4	4
Other[4]	2	4	2	3	4	3	1	1	2	3
Abundance (raw) - totals [5,6]										
Total	306	200	308	185	302	137	225	167	173	134
Oligochaete	5	1	2	2	3	0	0	1	3	3
Insect	227	123	249	142	233	43	35	45	69	41
Mollusc	69	68	55	37	59	90	189	119	95	86
Other[4]	5	8	2	4	7	4	1	2	6	4
N (Abundance) - #/m²										
Total	6,652	4,348	6,696	4,022	6,565	2,978	4,891	3,630	3,761	2,913
Oligochaete	109	22	43	43	65	0	0	22	65	65
Insect	4,935	2,674	5,413	3,087	5,065	935	761	978	1,500	891
Mollusc	1,500	1,478	1,196	804	1,283	1,957	4,109	2,587	2,065	1,870
Other[4]	109	174	43	87	152	87	22	43	130	87

Notes:

1. Benthic invertebrate count data shown in this table are from composite of two grabs sieved to 500 µm.
2. Richness totals exclude P. Nemata, Cl. Ostracoda, indeterminates (O. Acarina, F. Lumbriculidae), immatures (S.F. Tubificinae, O. Acarina), and pupae.
3. Pupae and immatures (bolded values) are excluded from the richness totals if other life stages are present in the replicate sample.
4. Other Taxa include: Cl. Turbellaria, F. Acalyptonotidae, F. Hygrobatidae, F. Lebertiidae, F. Oxidae, F. Pionidae, O. Harpacticoida, O. Notostraca, and F. Gammaracanthidae.
5. Abundance totals exclude P. Nemata and Cl. Ostracoda.
6. Raw abundance from two grabs (grab area = 0.023 m^2).

Figure F2-1. Oligochaete abundance (#/m^2) from the Whale Tail study lakes since 2015.

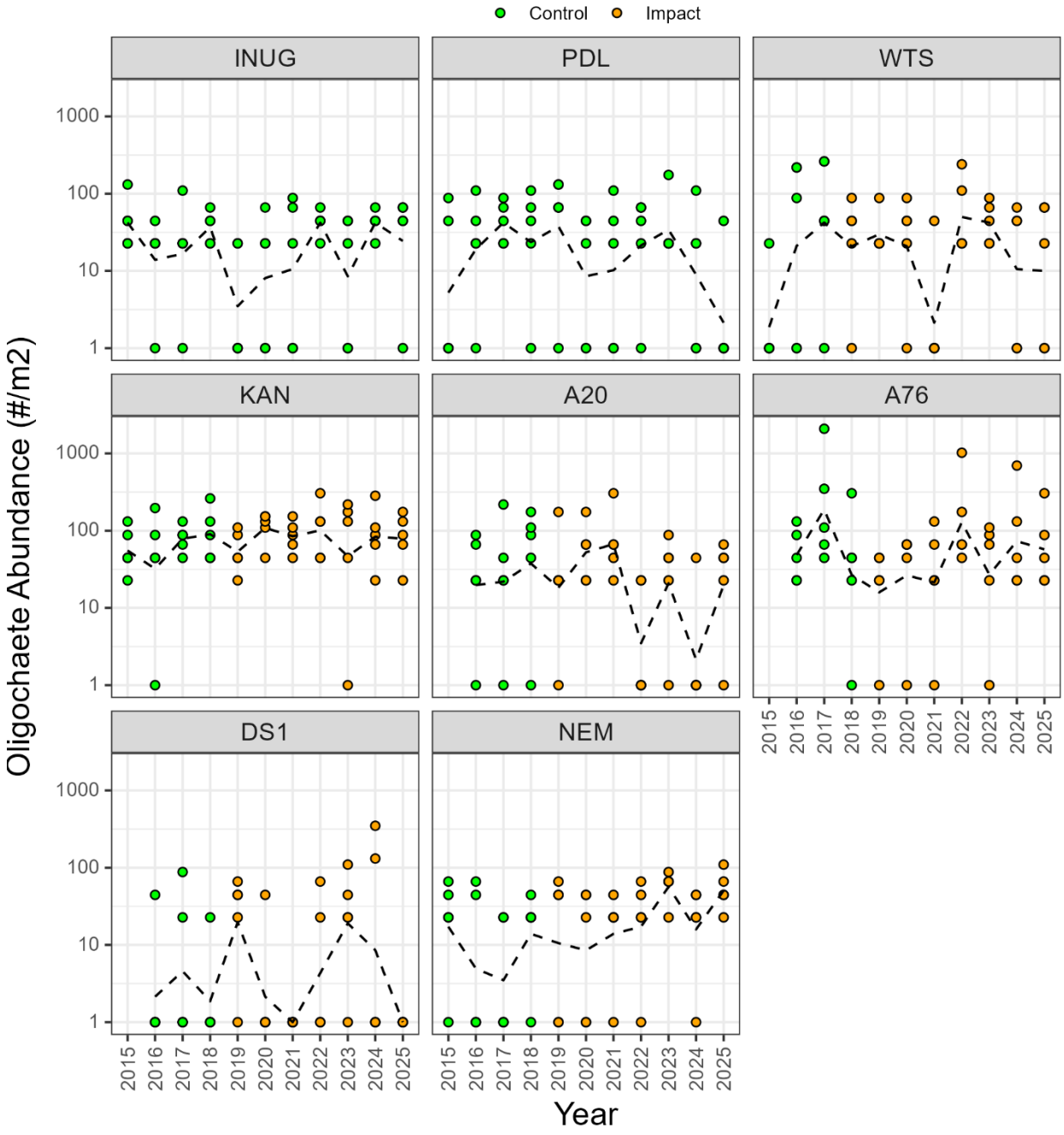

Figure F2-2. Insect abundance (#/m^2) from the Whale Tail study lakes since 2015.

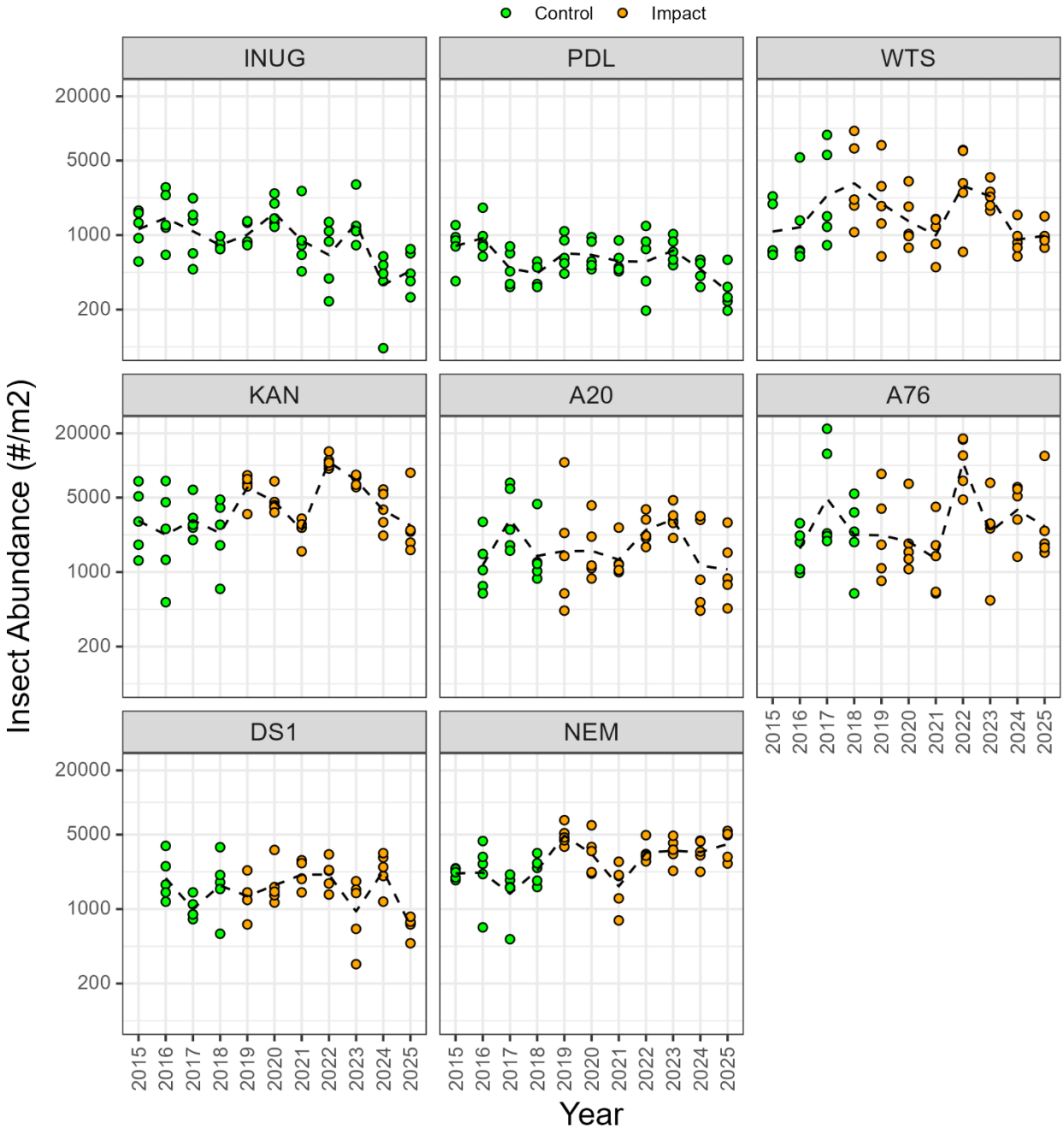

Figure F2-3. Mollusc abundance (#/m^2) from the Whale Tail study lakes since 2015.

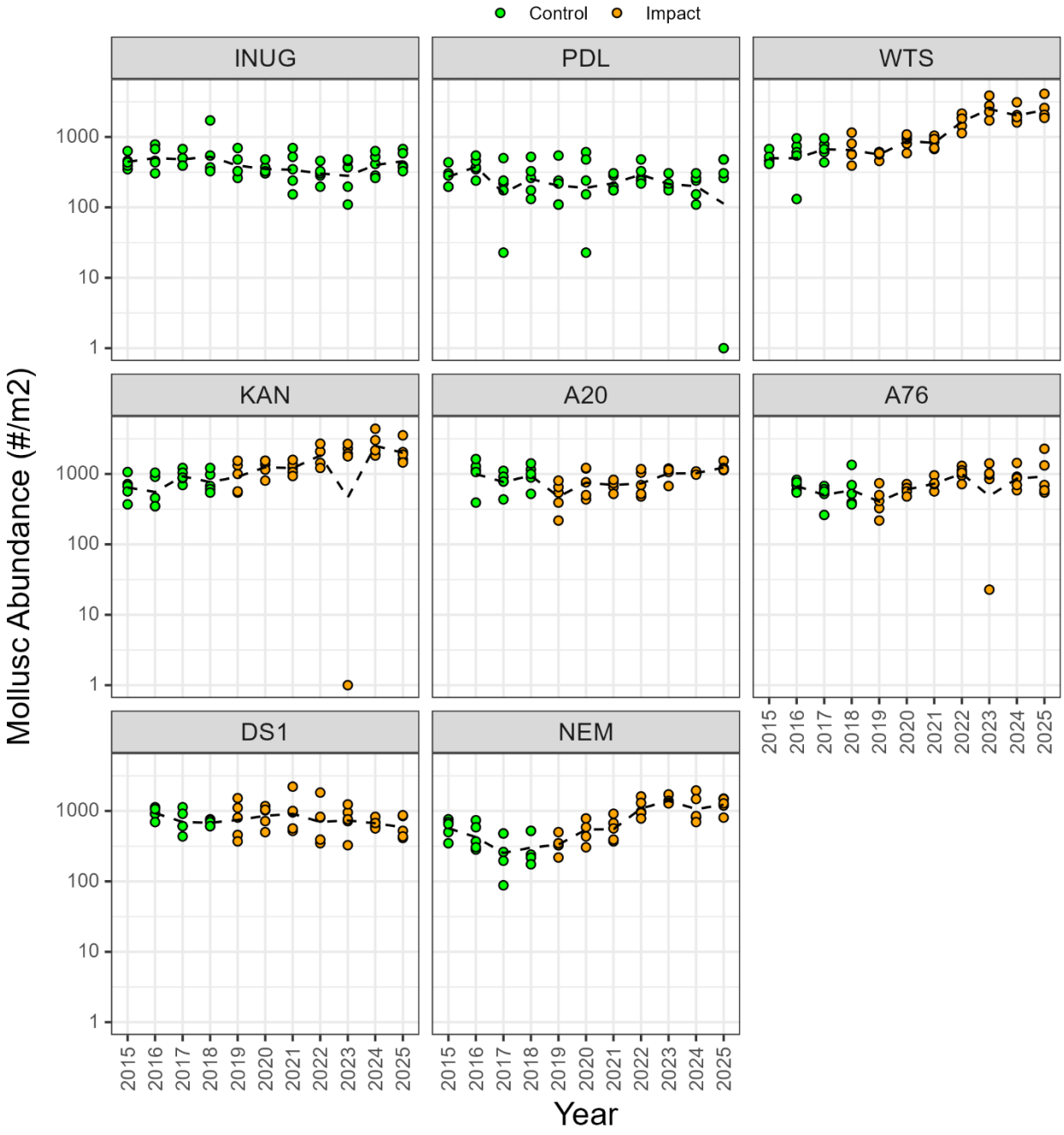

Figure F2-4. Other taxa abundance (#/m^2) from the Whale Tail study lakes since 2015.

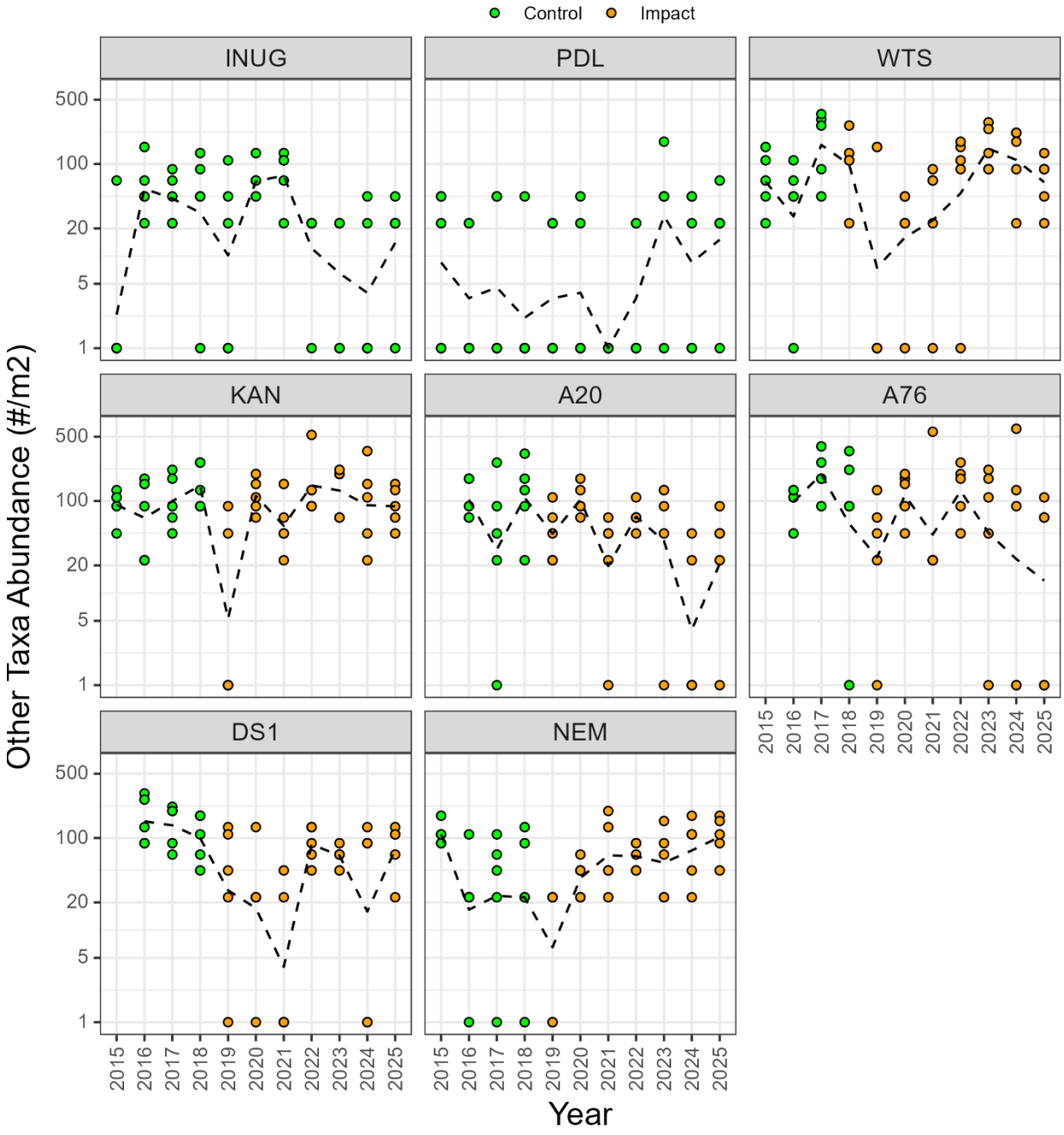

Figure F2-5. Oligochaete richness (# of taxa) from the Whale Tail study lakes since 2015.

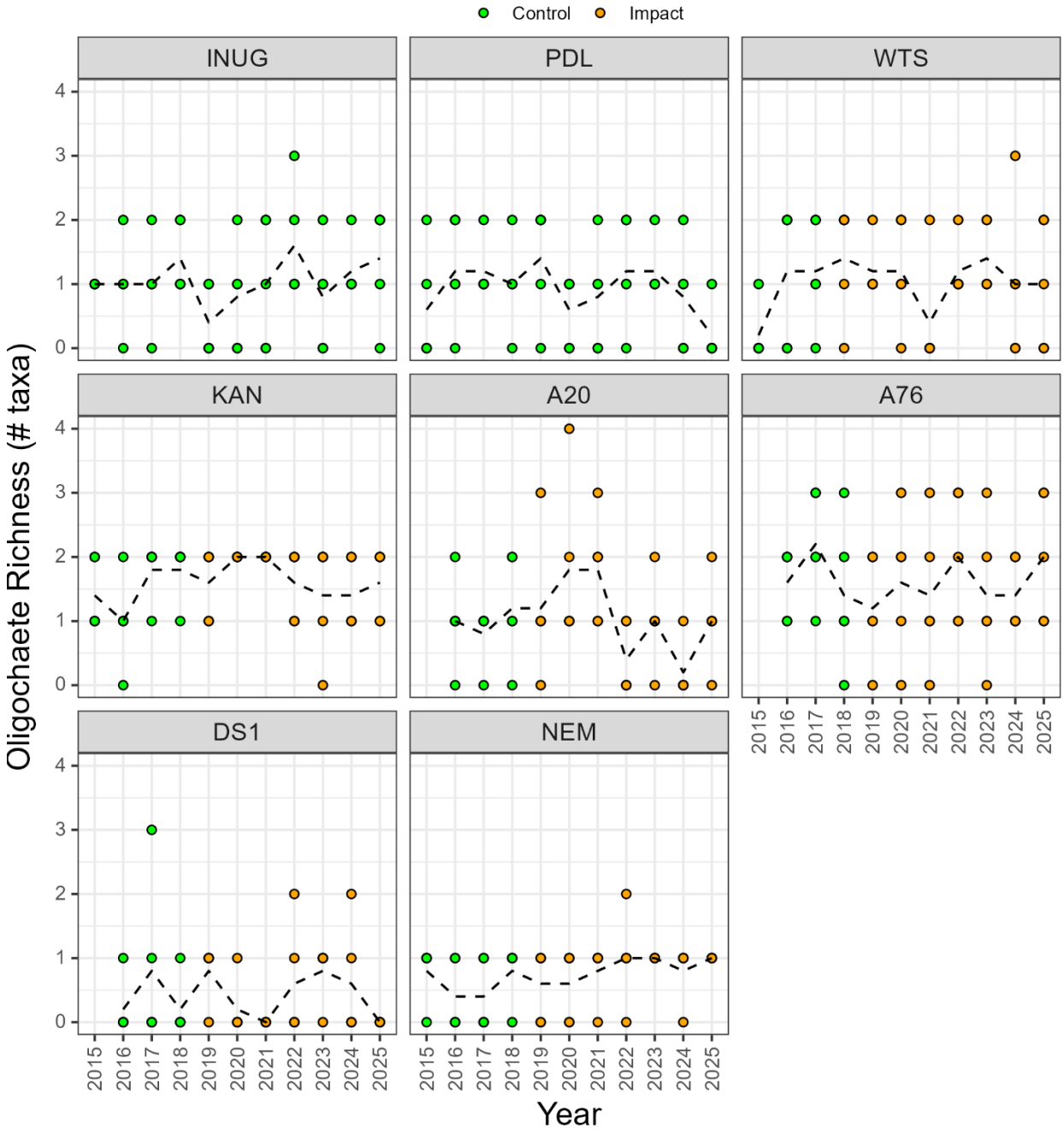

Figure F2-6. Insect richness (# of taxa) from the Whale Tail study lakes since 2015.

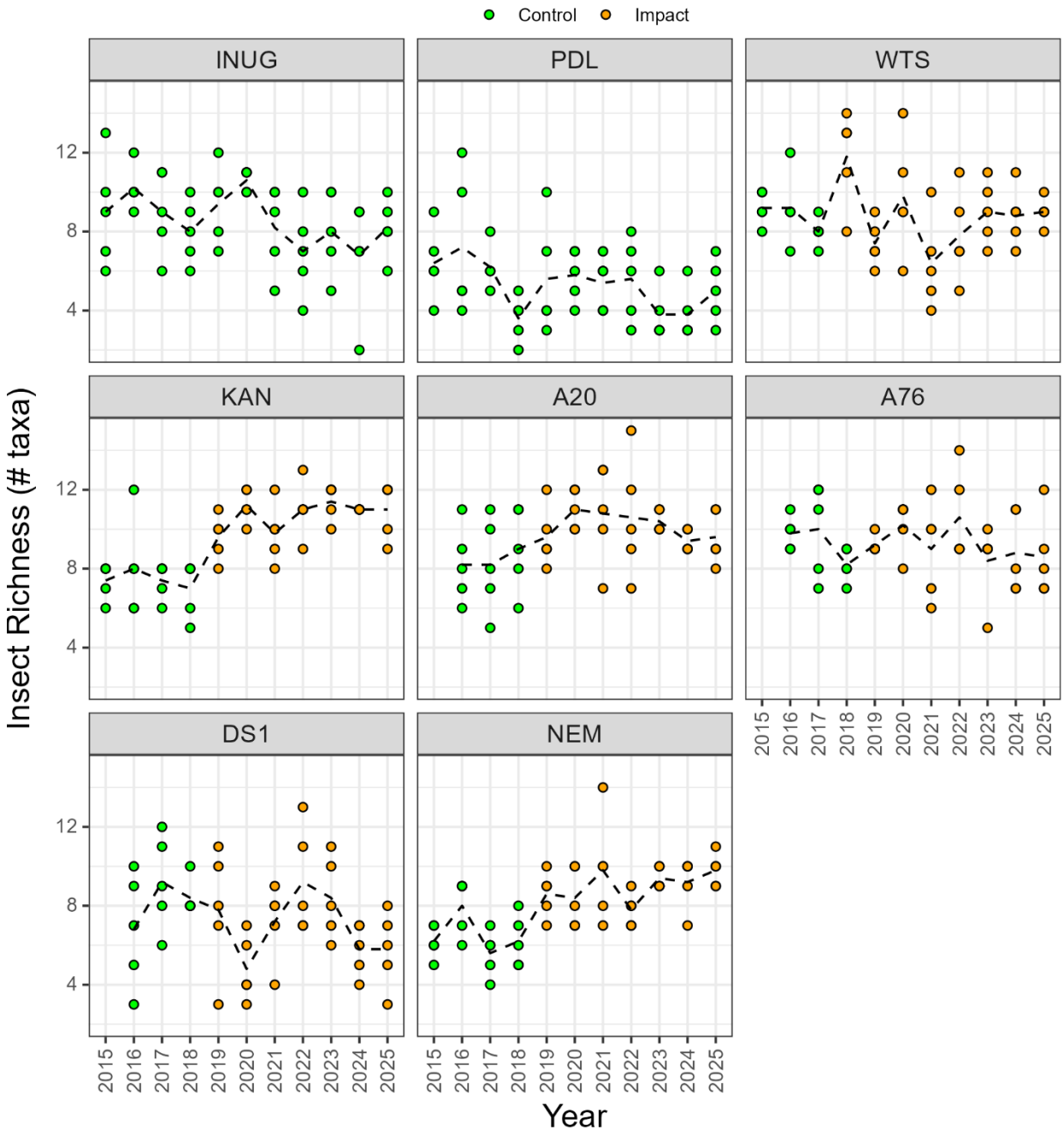

Figure F2-7. Mollusc richness (# of taxa) from the Whale Tail study lakes since 2015.

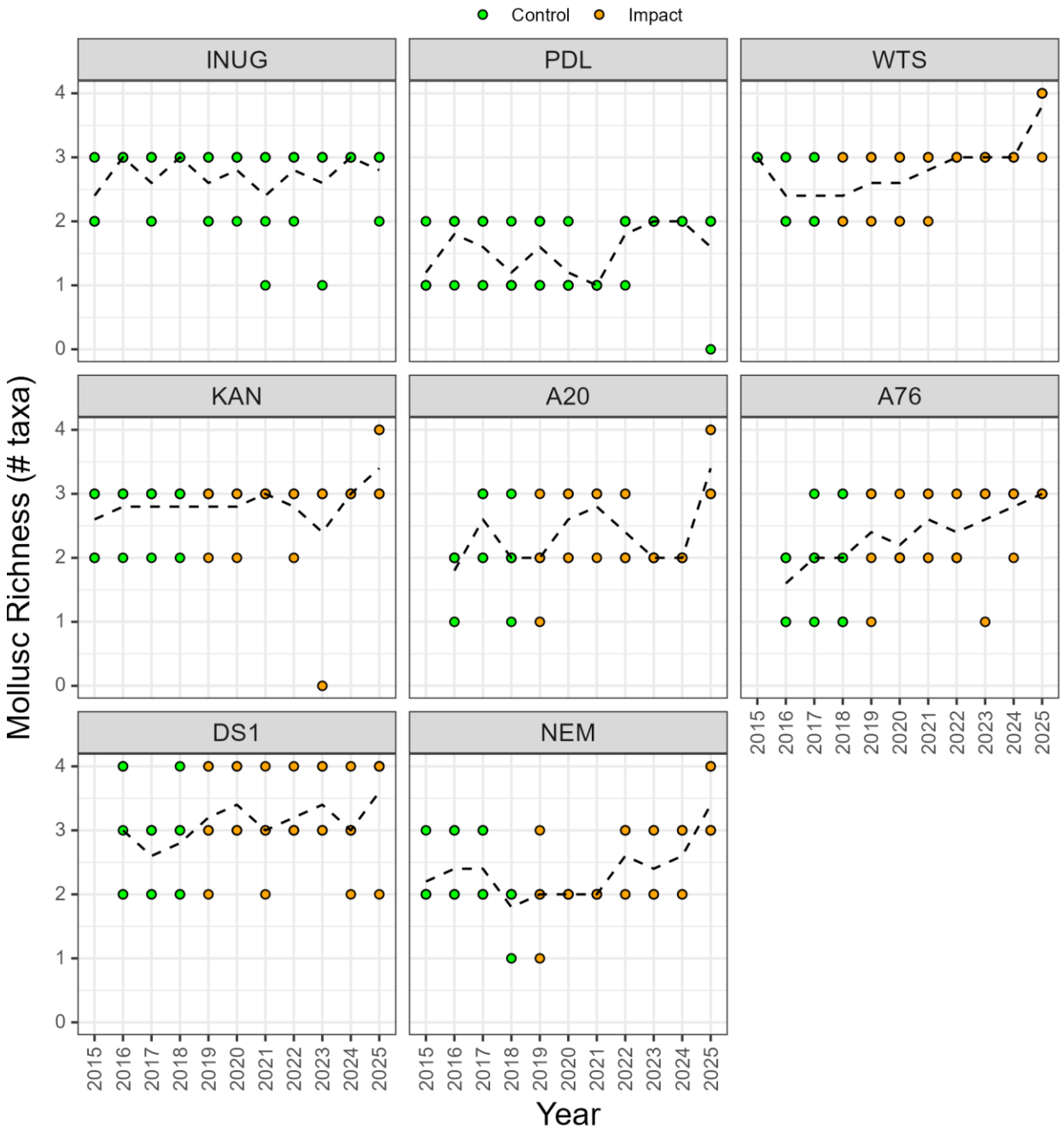

Figure F2-8. Other taxa richness (# of taxa) from the Whale Tail study lakes since 2015.

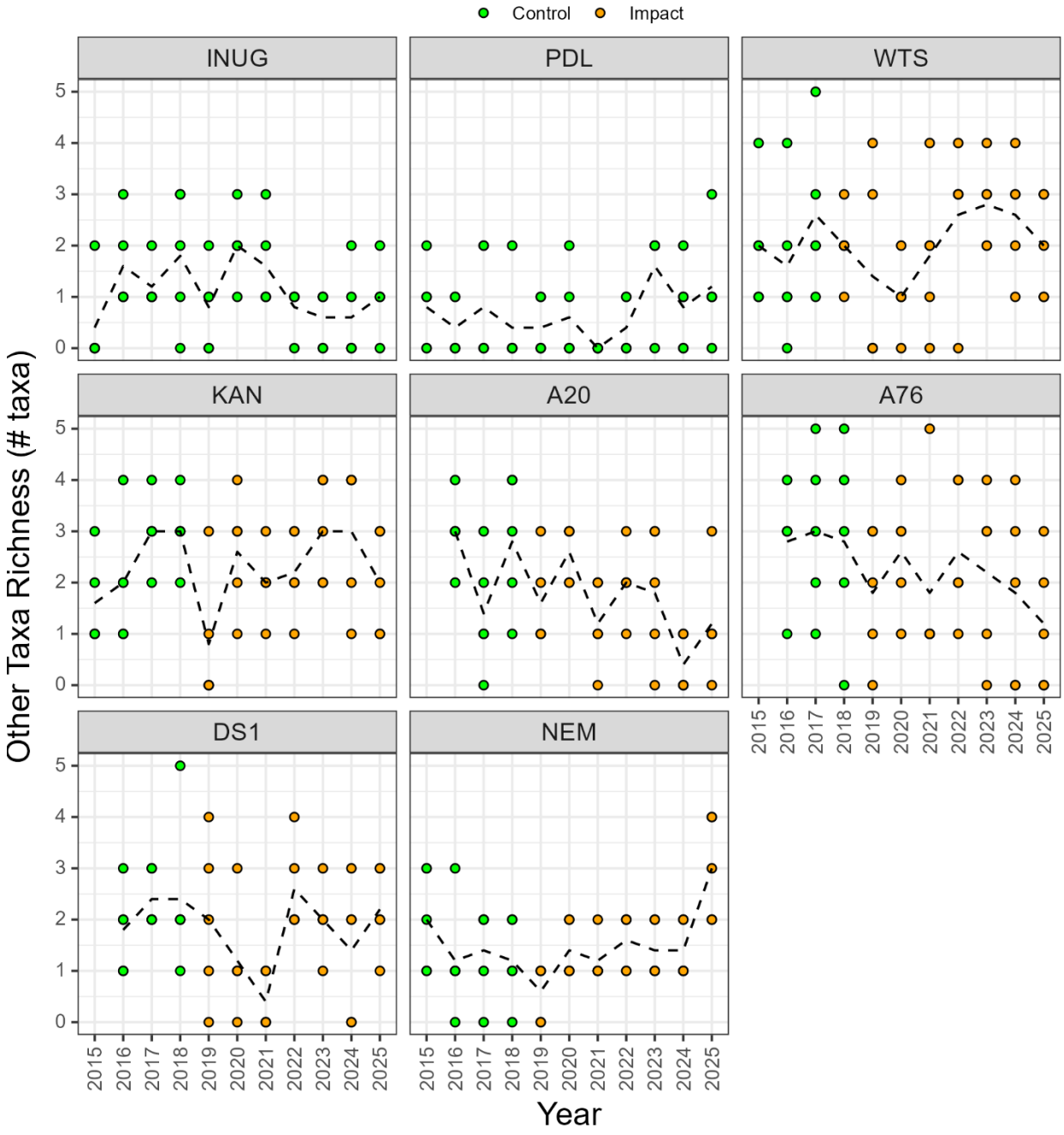

Figure F2-9. Simpson's Diversity for the benthic invertebrate community at the Whale Tail study lakes since 2015.

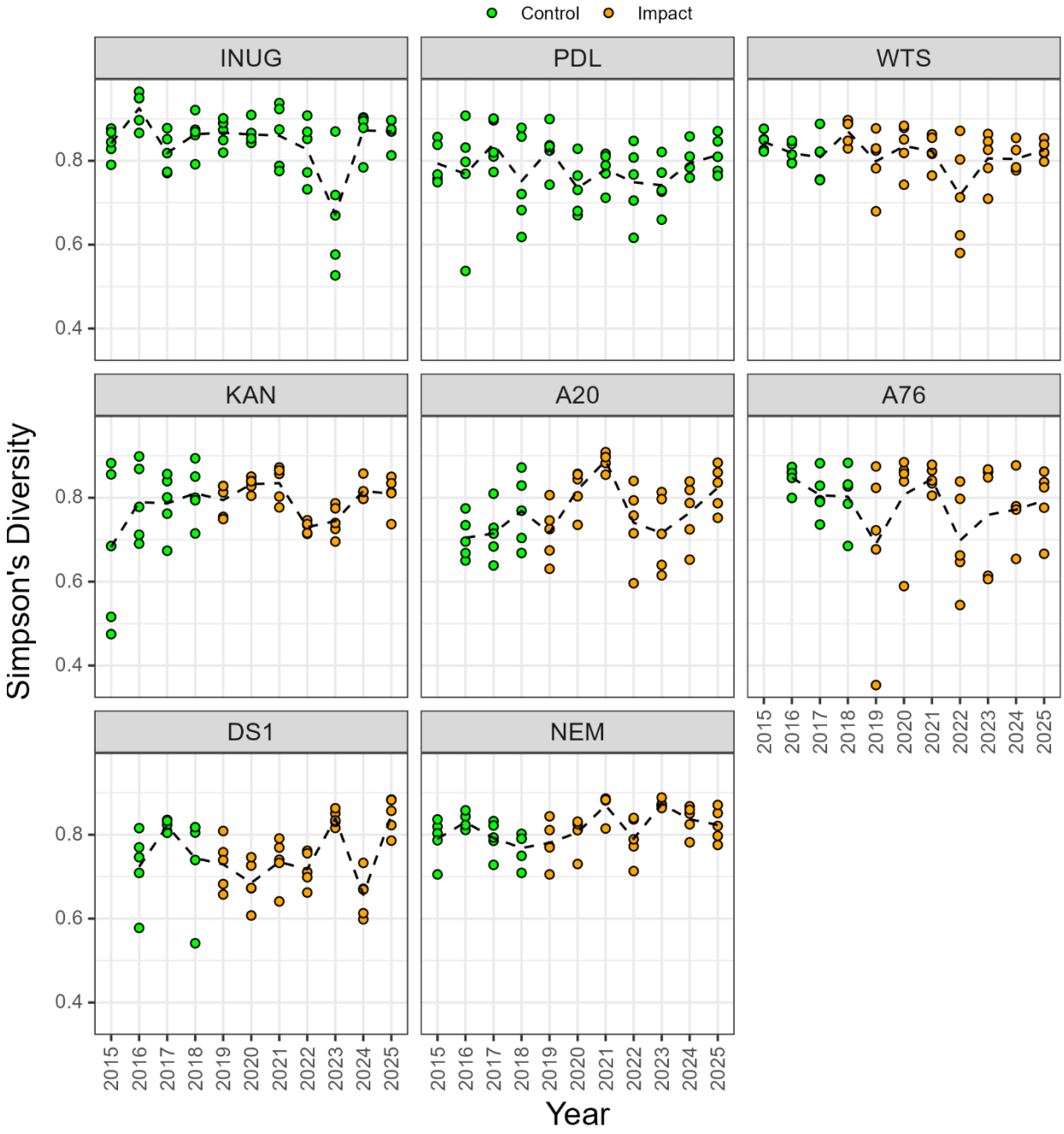

Figure F2-10. Bray-Curtis Index for the benthic invertebrate community at the Whale Tail study lakes since 2015.