Kahshe Lake Near-Shore Water Sampling Project – 2021

Updated Final

Kahshe Lake Ratepayers' Association
Conservation Committee

Prepared by Ron Pearson, M.Sc. - Kahshe and Bass Lake Steward

November 1, 2022

Kahshe Lake Ratepayers' Association
PO Box 1318, Gravenhurst, Ontario, Canada, P1P 1V5 www.kahshelake.ca

EXECUTIVE SUMMARY – KAHSHE LAKE NEAR-SHORE WATER SAMPLING PROJECT- 2021

CONSERVATION COMMITTEE – KAHSHE LAKE RATEPAYERS' ASSOCIATION

NOVEMBER 2022

Both Kahshe and Bass Lakes have been classed as 'Vulnerable' by the District Municipality of Muskoka (DMM) under the Muskoka Official Plan and this will be considered in the review of development proposals starting in 2021. Bass Lake is considered vulnerable because of a total phosphorus level greater than 20 parts per billion (ppb) and Kahshe Lake because of the confirmed harmful algal bloom (HAB) in November 2020.

The DMM initiated 'Causation Studies' on 10 lakes with confirmed blooms in 2020 and the two lakes with total phosphorus (TP) levels exceeding 20 µg/L (parts per billion). However, because of budget limitations, only five of these Causation Studies were undertaken in 2021, with the others being delayed until the completion of the first five.

As all water quality monitoring on Kahshe Lake is conducted in deep, mid-lake locations, these historical data provide an excellent base upon which to evaluate long term trends in lake water chemistry; however, they may not be providing a representative measure of water chemistry and nutrient loading in the shoreline areas, particularly in the most heavily developed areas of Kahshe where shorelines have been disturbed/managed for recreational use. Concern regarding shoreline contributions is exacerbated by the fact that the Town of Gravenhurst's Septic Re-Inspection Program has not taken place since 2009 for water access properties and since 2013 for road access properties.

Based on the foregoing concern, the Kahshe Lake Ratepayers' Association's (KLRA) Conservation Committee developed a pilot Near-Shore Water Sampling Program to explore and characterize water chemistry and to examine how water chemistry close to the shore changes as the season progresses. The temporal aspect to the study was considered important, as the mid-lake sampling and analysis for algal friendly nutrients by the DMM and the Ontario Ministry of Environment, Conservation and Parks (MECP) is conducted only in May. The Near-Shore project commenced in May 2021 and included additional sampling in late-July and late-September. To keep costs as low as possible, it was focussed on the most heavily developed areas of the lake along Oak Road and the north shore and was carried out by Conservation Committee volunteers. However, because of the known input from Bass Lake, additional sampling was included in the east end of the lake.

After a review of the relevant literature and discussion with the KLRA, six goals were developed as shown below:

1. Are algal friendly nutrient levels from traditional spring sampling of mid-lake sites which have remained fairly low and stable over the past 35-40 years representative of water quality in the near-shore environment where algal blooms typically appear?
2. Are algal friendly nutrients in the near-shore environment where blue-green algal blooms have been confirmed in 2020 and 2021, increasing as the season progresses, resulting in a further disconnect with the historical data which are based on spring sampling of mid-lake sites?
3. Are near-shore waters being impacted by fecal contamination at levels of concern for recreational use and as a source of drinking water?
4. Do these findings shed any light on why Kahshe Lake is now vulnerable to late season blue-green algal blooms?
5. Do these findings provide any insight into a possible causal role or association with any of the typical shoreline sources of algal friendly nutrients that could be further investigated in the DMM-funded Causation Study? Typical shoreline sources include:
    A. Migration of septic system effluents.
    B. Contamination from waterfowl and other types of animals.
    C. Nutrient leaching/runoff from lawns and beaches.
    D. Soil erosion/runoff from disturbed shorelines.
6. Based on the findings of this program, is there anything the KLRA can do to educate and/or inform stakeholders on actions that could improve water quality and reduce the likelihood of continued late season algal blooms?

Summary of Findings from the Six Goals

- The near-shore analysis results for total phosphorus (TP) in the heavily developed Oak Road and North shore areas in mid-May were in line with the mid-lake TP levels. However, this was not the case In the East end of the lake, where TP levels were well above those from existing DMM and MECP mid-lake locations.
- Based on the near-shore water quality data, there is compelling evidence that the historical sampling by the DMM and MECP of mid-lake locations in the spring of the year is not providing a fully representative assessment of water quality in the near-shore environment as the season progresses. As such, the sensitivity of Kahshe Lake to late-season HABs cannot be reliably determined via mid-lake nutrient concentrations that comprise the historical database.
- Another important finding of this project is that the water quality data generated by the mid-lake sampling sites of the DMM and MECP programs likely under-report nutrient levels in the East end of the lake where elevated nutrient loads enter Kahshe Lake from Bass Lake via the Kahshe River. This is due to the absence of any DMM or MECP mid-lake sampling sites in the East end of the lake.
- As none of the fecal coliform levels exceeded the Canadian Recreational Water Quality Guideline for a single sample of 400 CFU/100mL, there should not be any concern regarding the use of shoreline waters for swimming and other recreational activities.
- However, as the Ontario Drinking Water Standard for fecal coliforms is 'Not Detected', all reported levels from mid-May through late-September do exceed the safe drinking water standard and as such, property owners using surface water from Kahshe Lake as a potable supply need to ensure that their treatment system is effectively removing this contamination prior to its use as drinking water.

The evaluation of near-shore water chemistry in relation to HAB development was rendered even more realistic in 2021 as HABs were observed in the immediate vicinity of several near-shore sampling sites the day following the September 30 sampling. Based on this, the investigation revealed that:

- The HABs in the west end of the lake along the Oak Road shoreline developed in the presence of typical TP concentrations of around 10 parts per billion (ppb), while the HABs at near-shore sites in the East end of the lake developed in waters that had more than twice the levels of TP (23-26 ppb).
- However, the near-shore sites in both the West and East areas of the lake that developed HABs immediately following our September 30th sampling all had elevated ammonium-N levels, suggesting a causal role for this form of nitrogen.

As phosphorus is recognized as the principal nutrient driver of algal bloom development, there are a number of possible reasons for the appearance of the bloom in the Oak Road area where TP levels immediately prior to bloom development were in a normal range, and these are discussed in the report.

The near-shore sampling program was not designed to identify a property-specific source of algal friendly nutrients. However, by selecting a number of different shoreline types and including sites with no development, the investigation findings were evaluated to explore possible/plausible linkage with known sources of algal friendly nutrients. This was undertaken by:

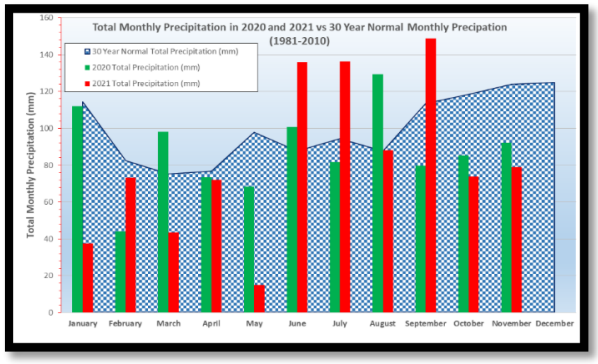
- Examining the environmental mobility and biological availability of phosphorus and nitrogen,
- Assessing the chemical composition of septic effluents, waterfoul feces and leaching/runoff from managed lawns,
- Determining if any of the over 35 different chemicals that were analyzed could be used as tracers of the above sources based on published studies where these types of relationships have been explored, and,
- Evaluating the role of climatic variables that have been identified as outcomes of climate change to see if there were any plausible reasons to explain why Kahshe Lake is now vulnerable to late-season HABs.

Based on the characteristics of the above four potential shoreline sources, the most likely origin of the nutrients found in the near-shore water was a combination of septic system effluents and waterfowl feces, as both phosphorus and the ammonium form of nitrogen are characteristic of these sources. The fact that ammonium-N levels were not detected in May, prior to occupation by most property owners and before Canada geese become heavy grazers of lush lawn areas adds further support to these sources being involved in the late-season HABs.

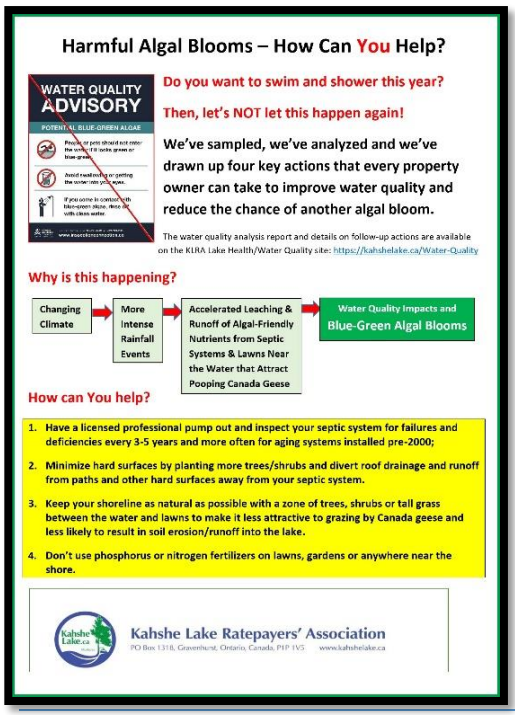
The leaching and/or runoff of from lawns and beaches typically involves the more water soluble nitrate-N which was elevated in the mid-May sampling but decreased as the season progressed. However, as managed lawn areas located in close proximity to the shoreline attract Canada geese and other waterfowl, they cannot be ruled out as contributing sources of algal friendly nutrients. And finally, the contribution from soil erosion/runoff from disturbed shorelines was considered a minor contributor.

So, why has Kahshe Lake suddenly become susceptible to late season HABs - i.e. what has changed?

Some of the published studies in recent years attribute the trend toward increasing numbers of late season HABs to one or more components of a changing climate. While the Near-Shore program was not designed to comprehensively evaluate the impact of climatic variables, the one climatic factor that does appear to be changing is the severity/intensity of rainfall events.



As shown in the chart aside, monthly rainfall in both 2020 and 2021 significantly exceeded the 30 year normal and in 2021 resulted in an elevation of the lake by over 30 cm in July, resulting in many shallow shorelines and beach areas being submerged for several days. In addition to the release of algal friendly nutrients sourced from coarse-textured sands with low nutrient adsorption capacities and waterfowl feces being submerged during these high water periods, the atypical rainfall received also is likely to have accelerated the leaching of 'legacy' phosphorus and nitrogen nutrients sourced from septic effluents and from near-shore lawns and manicured/disturbed waterfronts.



Based on the findings of this sampling and analysis project, the Conservation Committee developed a science-based action plan that can be deployed by shoreline property owners and the Municipal agencies with responsibility for ensuring that future development proceeds with appropriate regard for shoreline protection and the installation of new and inspection of existing septic systems on waterfront properties. The actions required to minimize the potential for future HABs have been briefly summarized in this report and published in full on the KLRA's Lake Health web portal. The graphic below summarizes the actions that all shoreline property owners can take to minimize the potential of another HAB.

Ron Pearson, M.Sc.
Kahshe and Bass Lake Steward
Conservation Committee, Kahshe Lake Ratepayers' Association

Table of Contents

1.0 Background:

In early 2021, the District Municipality of Muskoka (DMM) amended the Muskoka Official Plan to add Kahshe Lake to the list of 'Vulnerable Lakes', as a Harmful Algal Bloom (HAB) had been documented by the Ontario Ministry of Environment, Conservation and Parks (MECP) in early November 2020.

As the 2020 late-season HAB was detected in shallow, near-shore water in a small bay along the shoreline of Oak Road, two questions arose that needed to be addressed:

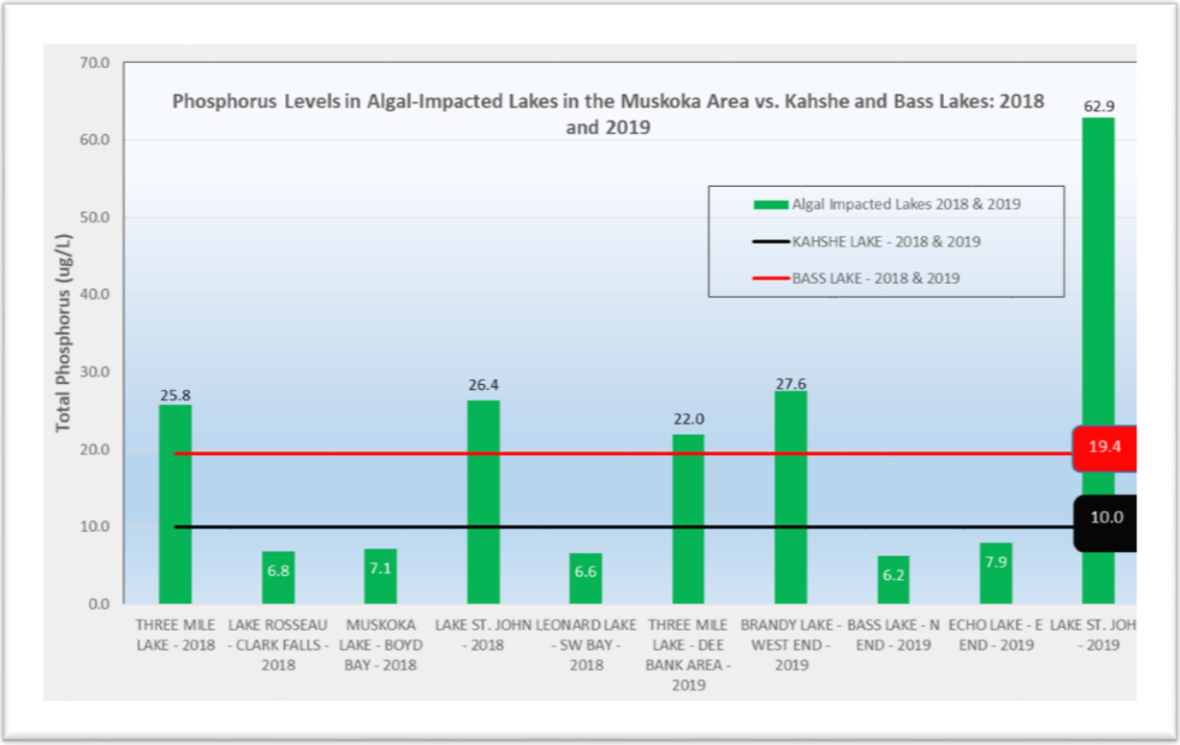
I. Are the fairly low and stable levels of algal friendly nutrients (phosphorus and nitrogen) detected in deep, mid-lake locations over the past 35-40 years representative of nutrient levels in near-shore waters where the HAB was observed? and,
II. Are the historical levels of algal friendly nutrients which are based on the sampling of deep, mid-lake locations in early spring each year representative of near-shore levels as the season progresses?

The causal factors involved in the development of HABs are complex, but in general terms, the conditions that favour bloom development include:

- Abundant sunlight and low wind conditions,
- Warm, slow moving water,
- Availability of soluble phosphorous and to a lesser extent, nitrogen compounds, and in some cases,
- Nutrient rich sediments and oxygen-starved (hypoxic) or depleted (anoxic) water conditions at the lake bottom.

The reference to sediment quality adds an additional layer of complexity, as there are two morphologically different types of cyanobacteria involved in the formation of HABs. One group is referred to as benthic (sediment dwelling), and derive their phosphorus primarily from sediments. The other group is referred to as planktonic, and derive their nutrients from the surface water column. However, the planktonic species have buoyancy features that give them the ability to move up and down within the water column to gain access to more nutrient rich water at the sediment:water interface. Within this planktonic group, there also are differences in the degree to which they rely on sediment generated nutrients under conditions of low oxygen. Fortunately, the HAB that was experienced on Kahshe in late 2020 involved two cyanobacteria species that are considered planktonic and no benthic dwelling species were detected. And the species involved in the 2020 HAB (and in 2021) did not include the one identified in the Peninsula Lake causation study which appeared more reliant on sediment-sourced nutrients. This is fortunate, as it means that at least for now, efforts to limit the development of future blooms can remain focussed on maintaining low levels of nutrients in the water. Had the bloom been identified as one of the species that favour sediment-sourced nutrients, there is virtually no feasible control method, as limiting the release of phosphorus from the sediment would require the injection of oxygen at the lake bottom.

The chart below underscores the need to better understand the linkage of nutrients such as total phosphorus with algal bloom development, as many low-level phosphorus lakes in Muskoka have recently developed blue-green algal blooms.



To address these and other related questions, a Near-Shore Water Sampling project was developed by the Conservation Committee and funded by the KLRA. This study was not designed as a pure causation study, as the DMM will develop and fund that type of study as soon as funds are available following completion of the Causation Studies that are now ongoing in other vulnerable Muskoka lakes (including Bass Lake).

However, the findings should provide input to the Causation Study when it is undertaken and reduce the time required to understand why Kahshe and other Muskoka lakes are experiencing late season HABs. The results also should help the KLRA educate waterfront property owners on actions they can take to reduce the risk of water impairment.

After a review of the relevant literature and discussion with the KLRA, six goals were developed as shown below:

1. Are algal friendly nutrient levels from traditional spring sampling of mid-lake sites which have remained fairly low and stable over the past 35-40 years representative of water quality in the near-shore environment where algal blooms typically appear?
2. Are algal friendly nutrients in the near-shore environment where blue-green algal blooms have been confirmed in 2020 and 2021, increasing as the season progresses, resulting in a further disconnect with the historical data which are based on spring sampling of mid-lake sites?
3. Are near-shore waters being impacted by fecal contamination at levels of concern for recreational use and as a source of drinking water?
4. Do these findings shed any light on why Kahshe Lake is now vulnerable to late season blue-green algal blooms?

5. Do these findings provide any insight into a possible causal role or association with any of the typical shoreline sources of algal friendly nutrients that could be further investigated in the DMM-funded Causation Study? Typical shoreline sources include:
    a. Migration of septic system effluents.
    b. Contamination from waterfowl and other types of animals.
    c. Nutrient leaching/runoff from lawns and beaches.
    d. Soil erosion/runoff from disturbed shorelines.
6. Based on the findings of this program, is there anything the KLRA can do to educate and/or inform stakeholders on actions that could improve water quality and reduce the likelihood continued late season algal blooms?

2.0 Methods:

At present, the current database of water quality information for Kahshe Lake consists of data from sampling in the spring of the year (usually mid-May to early-June) during the time of the year following ice melt and prior to thermal stratification (referred to as lake turnover). The sampling consists of two locations selected by the DMM and from three locations via the MECP's Lake Partner Program. In all cases, these samples are from the surface to the Secchi depth (approx. 0-3m) of the mid-lake locations, well removed from the shorelines where most phosphorous and nitrogen nutrients are known to originate. The data from these locations provide an excellent base upon which to evaluate long term trends in lake chemistry as they avoid the variability that would be encountered closer to shoreline sources; however, this limits their use in characterizing water chemistry and nutrient loading in the vicinity of shoreline nutrient sources related to land development. As such, this study was designed to explore and characterize water chemistry in much closer proximity to the development-related sources of nutrient loading identified above and to examine how water chemistry in the near-shore environment changes as the season progresses.

The design of the sampling program required the analysis of the main parameters of interest in the assessment of algal growth as well as others associated with the sources of these nutrients. The main considerations are shown below:

- The main parameters of interest included total phosphorus (dissolved and particulate forms) and several forms of nitrogen (total N, nitrate-N, nitrite-N and ammonia-N), as these are well documented as the main nutrient accelerants of algal growth.
- However, based on a review of the scientific literature, a suite of six additional inorganic parameters were included because they have been identified as potential tracer chemicals or as components of chemical ratios that might help differentiate among major nutrient sources associated with water quality impairment. These included:
    - barium, potassium, iron, zinc, chloride and E. coli
- Although additional parameters were not requested or paid for, the laboratory included a large suite of over 35 additional metals and other inorganics which have been evaluated to explore any association with the above sources that are difficult separate due to similar chemical footprints.

The study was designed as shown below:

- The near-shore sampling program was designed to explore nutrient loading along the shoreline of the most heavily developed areas of Kahshe Lake, including Oak Road and the North shore. As Bass Lake, which has about twice the level of total phosphorus, drains into Kahshe Lake via the Kahshe River, sampling sites also were located in the east end of the lake. One site was located in Grant Bay to provide a near-shore location in the area of the Grant Bay DMM and MECP mid-lake location.
- To ensure that these finding would be comparable to the mid-lake sampling that has been performed by DMM and the MECP over the past 35-40 years, the first sampling was timed to coincide with the MECP sampling in May and close to the same time as the DMM's sampling. The sampling also included the two mid-lake sampling sites – Kahshe Main and Grant Bay - utilized by these historical programs.
- After reviewing the literature pertaining to sampling techniques, a decision was made to collect all near-shore samples from the 0-0.1m depth and within 2m of the shore. It was also considered important to maintain a separation distance from the lake bottom of at least 0.8m to ensure minimal sediment interference. Because the types of shoreline varied in terms of overall water depth, so did the distance from the shore that the samples were collected in order to ensure that there was a minimum separation distance from the sampled water surface to the lake bottom.
- As the sampling was not performed in deep water, it was not possible to match the DMM and MECP method of sampling from the surface down to the Secchi depth (approx. 0-3m). However, to better understand if there were any differences that would need to be considered, the sampling of the two mid-lake sites in May included both 0-0.1m and 0-Secchi depth samples.
- The sampling also followed the format of the DMM and MECP, whereby total phosphorus samples at each site were collected in duplicate for quality control. The sampling program also included the collection of water for analysis of all parameters from two blind duplicates at KL-3 and KL-1 in May and July, respectively.
- Other sampling methods that were undertaken to ensure compatibility with the historical database included the use of the same collection apparatus, funnels and filtering paper (kindly supplied by the MECP) and the same collection technique with multiple rinses of containers prior to bottling in the field.
- The near-shore program also followed the analytical protocols to the extent possible in the selection of a private laboratory to perform the analysis - ALS Environmental (ALS). And while none of the Ontario laboratories could achieve the ultra-low detection levels (DL) for total phosphorus as those obtained by the MECP's Dorset lab, ALS was able to achieve a 10-fold reduction in the DL for total phosphorus compared to other Ontario labs by having the samples analyzed in their laboratory in Edmonton, Alberta.
- The study also was designed to provide information on the temporal variability in near-shore water chemistry by going back to some of the sites in mid-July and late-September. This was considered important, as the algal bloom that was confirmed in 2020 did not appear until early November.
- The final design consideration was to include near-shore sites with a variety of shoreline development types (beaches, unbuffered lawns, consolidated rock and manicured cottage lots). Three of the near-shore sites also were established in areas with no building/development activity to better understand the chemistry of near-shore water in natural, undeveloped areas.
- At each site, the Conservation Committee volunteers also recorded water depth, water temperature, wind and current direction and speed and the samples were collected into prescribed laboratory-supplied bottles and placed on ice in supplied coolers and delivered with Chain-of-Custody forms to the ALS laboratory in Richmond Hill the same day they were collected.

Figure 1 shows the locations of each of the near-shore as well as the two mid-lake sampling locations. Table 1 provides details on physical condition and location of the near-shore and mid-lake sampling locations. Table 1 also includes the water temperature at the 0.1 and 0.5m depths.

3.0 Results and Discussion:

The Certificates of Analysis (COA) for each of the three laboratory submissions to ALS are provided in Appendix A-2, A-3 and A-4. These include the results and the Quality Assurance Controls utilized by ALS as part of standard laboratory operation and data validation procedures. Appendix A-1 provides additional information on the Quality Assurance analysis undertaken in the field/investigative aspects of the Near-Shore project.

The results from each sampling event for total phosphorus (TP), the various forms of nitrogen and for fecal coliforms (*E. coli*) analyzed in this program are provided in Table 2. Table 3 includes the analytical results for chloride and major metals while Tables 4 and 5 provide the results of all additional parameters that were analyzed. Note that with the exception of chloride, calcium, magnesium, potassium, silicon and sodium, the units of all reported results have been converted from mg/L to µg/L to match the units for TP and in the case of the other parameters, to match the units used in all previous Lake Steward reports.

The results from this investigation have been partitioned into the six major goals identified above.

3.1 Goal 1 Results

Goal #1: Are algal friendly nutrient levels from traditional spring sampling of mid-lake sites which have remained fairly low and stable over the past 35-40 years representative of water quality in the near-shore environment where algal blooms typically appear?

The analytical results for the May 19, 2021 sampling are presented in Figure 2 (total phosphorus) and Figure 3 (forms of nitrogen).

From Figure 2 it is apparent that:

- In the highly developed Oak Road and North shoreline areas, the May near-shore TP concentrations were, with one exception, in line with the levels detected at the two mid-lake locations (i.e. at or below the dashed red line).
- However, this was not the case in the East end of the lake where TP levels in near-shore waters were well above those from the mid-lake locations.
    - A comparison of the TP concentrations in both the near-shore and mid-lake sampling locations with the most recent (2021) data from the DMM's spring mid-lake results (horizontal blue/purple lines) is discussed in detail in Appendix A-1, and reveals that the near-shore TP levels are up to 50% lower than those generated by the DMM's sampling program. The most likely reason for this finding is that the DMM and MECP samples are collected directly into laboratory digestion tubes to minimize TP loss due to adsorption to the glass field sample bottles and/or microbial breakdown of the TP in the field sample bottles prior to analysis, both of which have been demonstrated (Clark et al. 2010) to reduce TP concentrations. Unfortunately, no other laboratory in Ontario allows the use of their digestion tubes as sampling vials, and as such, TP concentrations have been adjusted by a factor of 1.5x.

From Figure 3, it is apparent that:

- As there are several forms of nitrogen that can promote algal growth, the evaluation of the near-shore findings was partitioned into the four main components typically found in surface water - Total N, nitrate-N, nitrite-N and ammonia-N.
- Total Kjeldahl N also was analyzed as it can be used to separate organic nitrogen from inorganic forms. These results are not charted.
- With three exceptions, the levels of total N and nitrate-N in near-shore locations in mid-May were in line with levels detected in water from the two mid-lake locations and with the levels at the undeveloped locations.
- All ammonia-N (green columns) and nitrite-N (not shown on Fig. 3) concentrations in mid-May were below their respective detection levels (DL) of 10 µg/L.
- Three sites stand out among the near-shore sites sampled in May, those being KL-9 (Nagaya Beach), KL-11 and KL-19 which were well above the mid-lake levels of both total N and nitrate-N. Total N at KL-4 on Oak Road also exceeded the mid-lake total N level as did the near-shore sites in the undeveloped natural shoreline area.
- A comparison of 2021 nitrogen concentrations from the mid-lake sampling locations with the most recent 2021 data from the DMM's spring mid-lake results (horizontal dashed blue and red lines) reveals that the 2021 near-shore total N and nitrate-N levels are less than 1% higher or lower than those generated by the DMM's 2021 sampling program. This is discussed in greater detail in Appendix A-1.

Goal 1 Summary and Conclusions:

- ❑ The first goal was to determine if the nutrient levels of Near-Shore samples from a variety of locations with different types of shoreline development were in line with those from mid-lake samples collected via the DMM and MECP programs.
- ❑ It was also important to calibrate the Near-Shore sampling results with the analytical results from the historical database. This required the sampling of two mid-lake sites from the DMM and MECP programs at approximately the same date in May to match the timing of the DMM and MECP spring sampling programs.
- ❑ In the case of total phosphorus, the near-shore analysis results for the heavily developed Oak Road and North shore areas which were sampled mid-May were in line with the mid-lake TP levels. However, this was not the case In the East end of the lake, where TP levels were well above those from mid-lake locations.
- ❑ In the case of total nitrogen and nitrate-N, there were three near-shore sites where the mid-May results were well above corresponding levels from the mid-lake sampling. However, unlike phosphorus, the results from the East end of the lake were generally in line with those from other parts of the lake.
- ❑ As the DMM and MECP mid-lake TP and nitrogen data have now been released, it is possible to compare the 2021 Near-Shore data with the 2021 results from the other programs. This has demonstrated that the Near-Shore results for TP are under reporting TP levels by up to 50% while nitrogen levels differ by less than 1%. As such, the TP analysis results from the NSWSP have been adjusted by a factor of 1.5x to reflect the underreporting and these adjusted results are charted in Figure 4A.

3.2 Goal 2 Results

Goal #2: Are algal friendly nutrients in the near-shore environment where blue-green algal blooms have been confirmed in 2020 and 2021, increasing as the season progresses, resulting in a further disconnect with the historical data which are based on spring sampling of mid-lake sites?

The analytical results for the sampling on May 19, July 29 and September 30, 2021 are presented in Figures 4 (total phosphorus), Figure 5 (total nitrogen), Figure 6 (nitrate-nitrogen) and Figure 7 (ammonia-nitrogen).

From Figure 4A (adjusted TP) it is apparent that:

- As TP is the primary nutrient driver of algal growth, the assessment of seasonal variability in near-shore levels of TP have been examined first.
- In all except the undeveloped shoreline areas, where TP levels remained fairly stable over the three sampling events, the concentrations of TP did increase above levels found in the May sampling event and generally were highest in mid-July.
- This increase in TP as the season progresses was minimal in the Oak Road and North Shore sites but very pronounced in the three East end sampling locations where the levels peaked in mid-July and were slightly lower in the late September sampling event.
- To provide some relevance to these increases, the TP levels in the undeveloped natural shoreline areas as well as the mid-lake TP levels are shown and indicate that although TP levels do increase in the highly developed near-shore locations along Oak Road and North shore as the season progresses, they are generally aligned with the TP levels detected in the undeveloped, natural shoreline areas.
- As was the case for the May sampling event (Goal #1), the levels of TP in July and September were considerably higher in the East end of the lake relative to all other locations. The contribution from Bass Lake was substantiated by the TP levels at KL-17 which was located in the Kahshe River, upstream from the near-shore samples located around the main body of the lake

From Figure 5 it is apparent that:

- Figure 5 examines the seasonal variation in total N from mid-May through late-September at sites with two or more sampling events.
- With two exceptions, concentrations of total N increased from the initial levels in May through July and September. As was the case with total phosphorus, these increases were most pronounced in the near-shore sites located in the East end of the lake.
- A comparison of the July and September near-shore total N results with the levels detected at the two mid-lake sites in May reveals that in almost all cases, the total N from near-shore sampling exceeded levels detected in the mid-lake sites (shown as the white and red horizontal lines in Figure 5).
- A comparison of near-shore total N results for July and September with the levels detected in the same months at the two undeveloped sites also revealed increasing levels of total N at the three

sites located in the East end of the lake and a spike of 1,500 µg/L at in July at KL-11 along the north shore. This is more than 3x the highest July level at the undeveloped location.

- A further examination of the spike in total nitrogen at KL-11 revealed that the inorganic forms of nitrate-N and ammonia-N were both below detection levels, with the organic form as detected via the total Kjeldahl method (TKN) representing all of the nitrogen in this sample. This is examined further in discussion of Goal #4.

From Figure 6 it is apparent that:

- Figure 6 examines the seasonal variation in nitrate-N from mid-May through late-September at near-shore sites with two or more sampling events.
- With only two exceptions (KL-15 and KL-17), nitrate-N levels were highest in mid-May, and substantially lower in late-July and late-September at all other locations.
- As the season progressed, nitrate-N concentrations decreased to levels below the detection in mid-July and late-September in all but two sites located in the East end of the lake (KL-15 and KL-17) where nitrate-N levels in late-September were about two times higher than at the undeveloped, natural shoreline site (KL-14).
- As KL-17 was located in the narrow river up-stream of Kahshe Lake, an elevated nitrate-N level is likely associated with incoming nitrate-N from Bass Lake.

From Figure 7 it is apparent that:

- Figure 7 examines the seasonal variation in ammonia-N from mid-May through late-September at near-shore sites with two or more sampling events.
- Although the laboratory reports the findings as ammonia, the analytical procedure technically captures both NH_3 (ammonia) and NH_4 (ammonium)-N; however, as surface water typically contains only trace levels of ammonia-N, it can be concluded that the near-shore sample results identified as ammonia-N consist mostly of the ammonium (NH_4) form of nitrogen.
- Unlike nitrate-N, ammonium-N at all near-shore sites was found to increase as the season progressed, including at the undeveloped natural shoreline site (KL-14).
- The near-shore sites in which ammonium-N levels in late-September exceeded the undeveloped site (KL-14) included KL-1, KL-3, KL-6, KL-7 along Oak Road; KL-11 along the North shore; and KL-15, KL-16 and KL-17 in the East end of the lake.
- The most notable of these ammonium-N increases was at KL-16 where the late-September level of ammonium-N was 71 µg/L, almost triple the level at the undeveloped natural shoreline site at KL-14 (27 µg/L).

Goal 2 Summary and Conclusions:

- ❑ Based on the near-shore water quality data presented in Figures 4 through 7, and on the accompanying discussion of the results for total phosphorus and several forms of nitrogen, there is compelling evidence that the historical sampling by the DMM and MECP of mid-lake locations in the spring of the year is not providing a fully representative assessment of the levels of algal friendly nutrients in the near-shore environment as the season progresses.

- ❑ The biological importance of the increased levels of total phosphorus as well as total nitrogen and ammonium-N in the near-shore waters where algal blooms are first detected are further discussed in Goal #4.
- ❑ As Kahshe Lake has now been designated as a 'Vulnerable' lake by the Muskoka Official Plan, it will be evaluated in a Causation Study, and these findings should help inform the design and conduct of that study when it is undertaken by the DMM.
- ❑ The water quality data generated by the mid-lake sampling sites of the DMM and MECP programs under report nutrient levels in the East end of the lake where elevated nutrient loads enter Kahshe Lake from Bass Lake via the Kahshe River. This is due to the fact that none of the mid-lake sampling sites are located in the East end of the lake.

3.3 Goal 3 Results

Goal #3: Are near-shore waters being impacted by fecal contamination at levels of concern for recreational use and as a source of drinking water?

The fecal coliform counts for the sampling on May 19, July 29 and September 30, 2021 are presented in Figure 8.

- Evidence of fecal contamination (based on counts of E. coli colonies in 100mL of water) of near-shore water was found at several sites in each of the three sampling events.
- The highest levels of fecal contamination were found in samples collected in late-July at KL-9 (Nagaya Beach), KL-15, KL-16 and at KL-17 in the Kahshe River.
- The levels at these four sites were lower in September, but still greater than other near-shore sites.
- None of the fecal coliform levels exceeded the Canadian Recreational Water Quality Guideline for a single sample of 400 CFU/100mL (Health Canada, 2012).
- However, as the Ontario Drinking Water Standard for fecal coliforms is 'Not Detected' (O. Reg. 169/03, 2020), all reported levels from mid-May through late-September do exceed the safe drinking water standard.

Goal 3 Summary and Conclusions:

- ❑ As none of the fecal coliform levels exceeded the Canadian Recreational Water Quality Guideline for a single sample of 400 CFU/100mL (Health Canada, 2012), there should not be any concern regarding the use of shoreline waters for swimming and other recreational activities.
- ❑ However, as the Ontario Drinking Water Standard for fecal coliforms is 'Not Detected' (O. Reg. 169/03, 2020), all reported levels from mid-May through late-September do exceed the safe drinking water standard and as such, property owners using surface water from Kahshe Lake as a potable supply need to ensure that their treatment system is effectively removing this contamination prior to its use as drinking water.

- ❑ This in line with the KLRA's policy of recommending that **lake water not be used as a source of drinking water**.

3.4 Goal 4 Results

Goal #4: Do these findings shed any light on why Kahshe Lake is now vulnerable to late season blue-green algal blooms?

The locations of algal blooms detected in early October following the September 30th near-shore sampling are presented in Figure 9 along with the unadjusted TP analysis results.

From Figure 9 it is apparent that:

- The timing of the near-shore sampling on September 30 was fortunate, as blue-green algal blooms started being reported the next day or two after (early October 2021).
- Even more fortunate was the fact that blooms were reported in the immediate vicinity of four near-shore sampling sites - KL-1, KL-6, KL-15 and KL-17.
- An algal bloom which was not confirmed as a blue-green type also was observed at KL-16 during the July 29th sampling.
- As Figure 9 confirms, there were major differences in total phosphorus levels at the four sites with blue-green blooms. The two in the Oak Road area (KL-1 and KL-6) had normal TP levels for Kahshe Lake of 10.8 and 10.3 µg/L while the two in the East end of the lake (KL-15 and KL-17) had more than twice (21.5 and 26.5 µg/L) the TP as those in the Oak Road area.
- These findings are amplified by the calibration adjustment of the TP levels by a factor of 1.5x as shown in Figure 4A.
- In the case of the bloom identified at KL-16 in late-July, the TP concentration was higher, at 36.3 µg/L (average of 28.1 and 44.4 µg/L) and certainly at a concentration where algal blooms would be expected.
- Given the development of blue-green blooms at near-shore sampling sites in the Oak Road area at normal TP levels of around 10 µg/L, the nitrogen data were examined to determine if there were any concentrations of the three main nitrogen forms that might shed light on the bloom development at these sites.
- These data are presented in Figures 5, 6 and 7. Neither total N nor nitrate-N were elevated at the two Oak Road sites (KL-1 and KL-6) where blooms were documented.
- However, ammonium-N was elevated at both sites as well as neighbouring KL-7 and at KL-3 where the 2020 bloom was identified.
- The ammonium-N at these sites ranged from 32-45 µg/L with an average of 41 µg/L. In comparison, the two sites in the East end of the lake with documented blooms had similar ammonium-N levels ranging from 46-47 µg/L with an average of 47 µg/L.
- It should be noted also that ammonium-N was not detected in May and began to be detected in late-July and again in late-September.

Goal 4 Summary and Conclusions:

Given that phosphorus is recognized as the principal nutrient driver of algal bloom development, there are a number of possible explanations for the appearance of the bloom in the Oak Road area where TP levels were at normal concentrations:

- ❑ The use of TP as a combined measure of all soluble and particulate forms of phosphorus could be masking differences in other forms of phosphorus that may be more biologically relevant. An example would be soluble reactive phosphorus (SRP).
- ❑ The algae that developed in the Oak Road area could be different than those confirmed by the MECP in the sample from the East end of the lake and as such, the algae in this area could be accessing phosphorus from sediments, as was the case in the DMM-funded Peninsula Lake Causation Study.
- ❑ The other nutrient required for algal growth is nitrogen, and as there were elevated levels of ammonium-N at the Oak Road sites that were similar to the levels at the sites with algal bloom development in the East end of the lake, this could explain the appearance of blooms in both the Oak Road and East end sites.

These findings should be further explored in the DMM-funded Causation Study that is planned for Kahshe Lake when funding permits.

3.5 Goal 5 Results

Goal #5: Do these findings point to one or more of the following shoreline sources of algal friendly nutrients that could be further explored in the DMM funded Causation Study?

- ❑ Migration of septic system effluents.
- ❑ Contamination from waterfowl and other types of animals.
- ❑ Nutrient leaching/runoff from lawns and beaches.
- ❑ Soil erosion/runoff from disturbed shorelines.

As algal growth and bloom development is primarily fueled by elevated phosphorus and to a lesser extent, nitrogen levels, these two nutrients have been the focus of this study. However, as algal growth and bloom development also depend on sunlight and warm, slow moving water, the effects of a changing climate also are known to play a causal role in bloom development.

To better understand how nutrients and other parameters from the above sources potentially impact Kahshe Lake, this section has been partitioned as follows:

A. Nutrient Characteristics
B. Source Characteristics
C. Can Other Parameters Help Identify Sources? and,
D. Are Climatic Factors Involved?

3.5.1 A. Nutrient Characteristics

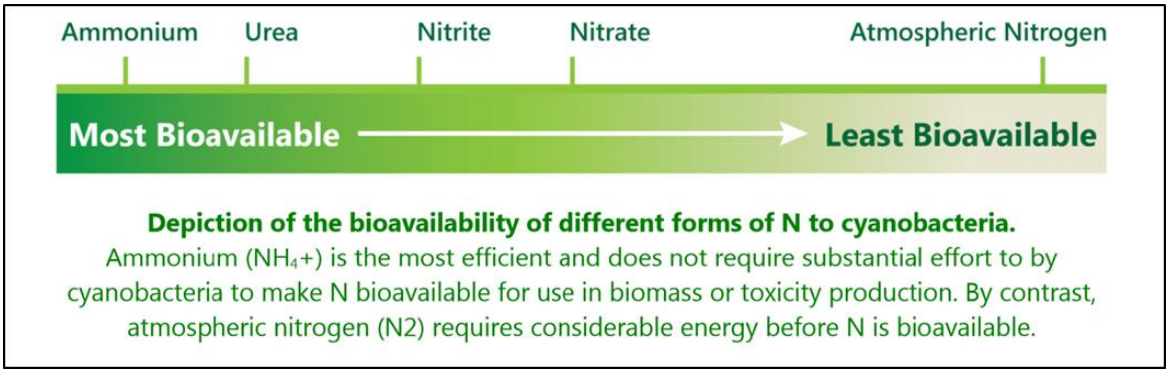
- Phosphorus is a naturally occurring nutrient that is essential for life and is associated with all four potential shoreline sources.
- Phosphorus is typically measured as total phosphorus (TP) which consists of dissolved and particulate forms; however, studies have shown that the more soluble, reactive phosphorus (SRP) is typically found in higher concentrations than some other forms and is more mobile in groundwater and more available for algal uptake once it reaches surface water (Clark et al. 2010; Oldfield, 2019).
- While SRP migration within the unsaturated and saturated soil zones is retarded by adsorption onto positively charged soil particles, other forms of phosphorus can be transformed into SRP via microbial respiration, hydrolysis or plant uptake and decomposition (Oldfield, 2019), adding to the levels of SRP.
- Unfortunately, neither the DMM, MECP nor the Near-Shore study included the analysis of the water for SRP and as such, it is recommended that the future DMM-funded causation study for Kahshe include this form of phosphorous to provide a more biologically relevant concentration in assessing the role of phosphorous in algal bloom development.
- Nitrogen enters water in two main forms: inorganic and organic. The primary inorganic forms of N are ammonia-N (NH_3), ammonium-N (NH_4), nitrate-N (NO_3), and nitrite-N (NO_2). Organic-nitrogen is found in proteins, amino acids, urea, living or dead organisms (i.e., algae and bacteria) and decaying plant material (Wall, 2013).
- Organic-N is usually determined from the laboratory method called Total Kjeldahl Nitrogen (TKN), which measures a combination of organic-N plus ammonia+ammonium-N. As the ammonia and ammonium-N are analyzed separately, they can be subtracted from the TKN analysis to yield an organic-N concentration.
- Organic-N is important, as it can be biologically transformed to the ammonium form and then to the nitrite and nitrate form. Once in the nitrate or ammonium forms, these nutrients can be used by algae and other aquatic organisms
- Because nitrate is typically very low in forested and grassland areas, organic-N is typically higher than nitrate-N in landscapes dominated by natural conditions.
- Ammonia-N and ammonium-N are usually only elevated near sources of human or animal waste, although leaching from fertilized and natural grassland areas also can contribute.
- Since N can transform from one form to another, it is often considered in its totality as total nitrogen (TN).

The various forms of nitrogen are discussed further in Table 5.

Table 5: Forms of Nitrogen and Their Sources

Form of Nitrogen	General Description	Sources to Surface Water
Nitrate-N (NO_3)	Main form of N in surface water. It is soluble and moves readily through soil.	Nitrogen forms found in soil, fertilizer, the atmosphere and human/animal waste are transformed into nitrate-N via the N cycle.
Nitrite-N (NO_2)	Low levels in surface water.	Similar to NO_3, but less stable intermediate during N cycle to NO_3
Ammonia-N (NH_3)	Unionized – low levels in most waters	Human and animal waste.
Ammonium (NH_4)	Usually higher than NH_3 and lower than NO_3 except near waste sources. As shown below, it is the most bioavailable form of N to algae.	Human and animal waste.

This reproduction from Newell et al., 2017 shows the biological availability of the various forms of nitrogen in the environment.



Depiction of the bioavailability of different forms of N to cyanobacteria.
Ammonium (NH_4+) is the most efficient and does not require substantial effort to by cyanobacteria to make N bioavailable for use in biomass or toxicity production. By contrast, atmospheric nitrogen (N2) requires considerable energy before N is bioavailable.

3.5.2 B. Source Characteristics

Septic Effluents

Table 6 below provides information on typical levels of algal friendly nutrients phosphorus and nitrogen in septic effluents.

Table 6: Levels of Phosphorous and Nitrogen in Septic Effluents

Estimated Phosphorus Levels	Estimated Nitrogen Levels
TP = 10,000 µg/L with range of 3,000-40,000 µg/L SRP = 7,400 µg/L with range of 100-30,000 µg/L (Oldfield, 2019)	NH_4-N = 67,000 µg/L with range of 7,000-165,000 µg/L NO_3-N = <2,000 µg/L (Oldfield, 2019)
TP = 14,550 and SRP = 8,370 µg/L (Richards et al. 2016a)	NH_4-N = 55,000 µg/L, NO_3-N = 440 µg/L (Richards et al. 2016a)
TP = 8,100 µg/L (Gross, 2004)	TN = 60,000 µg/L, NH_4-N = 40,000 µg/L (Gross, 2004)

Septic effluents also are a source of fecal coliform contamination, with concentrations as high as 1,300,000 CFU/100mL with a range from 1,000-10,000,000 CFM/100mL (Richards et al. 2016a).

Waterfowl Feces

Feces from waterfowl and to a lesser extent, water-dwelling warm blooded mammals also contain high levels of algal friendly nutrients as noted in Table 7 below.

Table 7: Estimated Levels of Phosphorus and Nitrogen in Bird Feces

Estimated Phosphorus Levels	Estimated Nitrogen Levels
TP = 14,000 µg/g dw for geese and 17,400 µg/g dw for ducks (Purcell, 1999)	Total N = 5,720 µg/g dw for geese and 52,300 µg/g for ducks.
TP = 18,700 µg/g dw with total feces/day = 81.6 g dw (Scherer et al. 1995)	NH_4-N = 2,580 µg/g dw for geese. (Purcell, 1999)

Fecal coliform contamination also needs to be considered, as typical gull and Canada geese droppings contain up to 10,000 CFU (E. coli) per gram on a dry weight basis. As Canada geese are known to defecate between 28 and 92 times per day, with a dropping dry weight of around 1.4 g, this equates to a large amount of fecal coliforms and associated phosphorus and nitrogen nutrients.

Geese don't normally defecate in the water; however, the fecal material that is deposited on beaches and grazing areas (lawns) or on shoreline rocks during roosting may be washed or leached to the water as a result of rainfall events. In the case of rocks and shallow beach areas, this would be exacerbated by high water events during the season or by wave action.

Although the total number of Canada geese on Kahshe Lake is not known, as many as 30-40 can be seen grazing on lawn areas bordering the shoreline of many properties and this is likely to increase each year as there appear to be few predators controlling the population.

The other factor that contributes to population expansion is the availability of highly desirable manicured lawns that are accessible to Canada geese. In 2019, the Love Your Lake initiative (WC&CWF,

2019) determined that out of the 696 waterfront properties on Kahshe Lake (with a total shoreline length of 79 km), 251 (36%) had some type of lawn, with 17 (2.4%) being mowed to the water's edge and 79 (11.3%) having a beach located between the water and the lawn, thereby providing easy access to Canada geese. These open areas also are considered safe havens from predators, as there are no trees or natural vegetation for predators to hide.

Lawns and Beaches

Nutrient loss via leaching or runoff from manicured lawns/beaches are less well quantified due to site specific variability in soil type, organic matter content, depth of the water table, intensity of precipitation and many other factors.

- In addition to the above factors, soil runoff losses of nutrients are accelerated by the slope of waterfront properties towards the shoreline, and this is a concern on Kahshe, as the Love Your Lake program (WC&CWF, 2019) found that over 75% of the waterfront properties had moderate to steep slopes towards the water.
- It is well documented that the main nutrient lost via leaching from landscaped areas as a result of rainfall infiltration is nitrate-N, as it is prone to movement in soils due to its water solubility and its negative charge, which repels it from soil exchange sites (Qin, 2012).
- Ammonium (NH_4^+) is another form of nitrogen found in soils, but is considered to be fairly immobile due to its negative charge which attracts it to soil exchange sites. Ammonium-N also is converted to the nitrate form by soil microorganisms in the presence of oxygen, thereby increasing the potential loss of nitrate-N from soil (Qin, 2012).
- In contrast to nitrogen, phosphorus is more immobile due to its bonding with metals and other soil complexes, and as such, leaching migration from soil to surface water is typically via runoff/erosion losses.
- More recent studies have identified leaching losses of soluble phosphorus, but these would not have been identified, as SRP has not been measured in any of the sampling on Kahshe to date.

Soil Erosion/Runoff from Disturbed Shorelines

- Based on the Love Your Lake survey of 2019 (WC&CWF, 2019), the runoff or erosion of soils from disturbed shorelines is a potential but relatively small contributor to nutrient loading of Kahshe Lake waters.
- This is based on the finding of only three properties with the potential for soil erosion due to a disturbed shoreline.
- However, it should be noted that soil erosion can have very serious implications for nutrient losses, as this source was identified in the DMM's Peninsula Lake Causation study (HESL, 2020) as the principal cause of HABs.

3.5.3 C. Can Other Parameters Help Identify Sources?

Fecal Coliform (E. coli)

Given the development of a blue-green algal bloom at six of the near-shore sites shortly following the September 30 sampling, fecal coliform levels have been shown in Table 8 below and compared to levels at KL-14 with no development and a shoreline that would not attract geese.

Table 8: Role of Fecal Coliform in Algal Bloom Development

Site	Shoreline Type	Algal Bloom?	Geese Grazing?	Fecal Coliform (CFU/100mL)
KL-1	Sandy beach with lawn behind.	Yes	Yes	5
KL-6	Rock wall with lawn behind one property.	Yes	Yes	4
KL-7	Landscaped (trees, path, sandy areas)	Yes*	No	3
KL-15	Narrow dock with extensive lawn behind.	Yes	Yes	4
KL-16	Large managed lawn	Yes*	Yes	10
KL-17	Kahshe River, with dock and steep treed slope.	Yes	No	15

*not reported by owner but close to KL-6 and KL-15 where HABs were identified

- Based on Table 8, there appears to be no direct linkage between fecal coliform contamination associated with Canada geese grazing on manicured lawn areas and late-season algal bloom development.
- However, as ammonium-N levels in bird feces also are high and are the most bioavailable form of nitrogen for algal growth, and as all sites with late season algal blooms had elevated levels of ammonium-N in water sampled immediately prior to bloom development, contamination of the near-shore environment with Canada goose and other bird/mammal feces cannot be completely ruled out as a contributing factor.
- This is consistent with some of the published literature which indicates that large numbers of geese can quickly increase the load of fecal material and nutrients into surface water (Petkuviene et al. 2019; Post et al., 1998); however, there are conflicting studies (Swallow et al., 2010; Uncless, 2006) regarding the extent that fecal runoff affects water chemistry.
- This may be due to factors that influence runoff (discussed earlier) and to the fact that the feces tend to sink to the sediment and may not be released until later via sediment disturbance and microbial transformation via the N cycle (Scherer et al., 1995).

Other Septic Tracer Parameters and Ratios of Parameters

Numerous studies have linked septic system discharge to impacts on surface water quality (Olfield, 2019; Richards et al., 2016a,b; Withers et al., 2011); however, there is general agreement that more research is needed to better understand the linkage between nutrient loading and algal bloom

development, as many lakes in Muskoka with historically low levels of algal friendly nutrients are being impacted by late-season blooms.

In extensive work on the Great Lakes, TP levels have been shown to be decreasing; however, this is not the case for the soluble reactive phosphorus (SRP) which is the dominant form of phosphorus in groundwater and linked with septic system discharge (Olfield, 2019).

As the contribution of septic systems to nutrient loading of surface waters remains poorly quantified, more recent studies have focused on the study of tracer chemicals such as pharmaceuticals, personal care products, caffeine and artificial sweeteners as a means to identify septic effluent impacts. While these substances may improve the linkage of surface water degradation with septic system effluent discharge, they are costly to analyze, require input from property owners regarding their septic usage and, as such, were not included in the Near-Shore program.

Some other parameters that have been linked with septic effluent discharge include chloride, boron and sodium (Withers et al., 2011; Oldfield, 2019). An earlier comprehensive assessment of septic effluent tracer parameters, Richards et al. (2016a) identified a large number of major and trace elements that were present in septic effluents in Scotland and at concentrations that had the potential to impact surface water. They calculated Enrichment Factors (EF) which were multiples by which effluent concentrations exceeded up-stream tributary river concentrations. The parameters that emerged as the most likely to co-contaminate with phosphorus and nitrogen were those with EFs of 4 or higher as shown in Table 9 below:

Table 9: Enrichment Factors Related to Septic Effluent Migration to Surface Water

Tracer Element	Mean and Range in Effluent Concentration (µg/L)	Mean of Up-Stream River Concentration (µg/L)	Enrichment Factor
Copper	109 (5-637)	1.85	63
Potassium	24,000 (3,000-42,000)	3,310	8
Tungsten	45 (5-346)	5.46	7
Titanium	11 (2-65)	2.5	5
Boron	111 (19-244)	27	5
Sodium	53,000 (17,000-113,000	17,000	4
Aluminium	60 (<10-200)	20	4
Zinc	150 (18-287)	32	4

Although several other elements displayed EFs less than 4, they were not identified as potential tracers in Richards et al. 2016a, but have been included here, as the author's decision to rule out stream enrichment at an EF =>4 appeared arbitrary. They included arsenic (EF=3), barium (EF=3), cobalt (EF=3), chromium (EF=3), manganese (EF=3), iron (EF=2), lead (EF=2), chloride (EF=2) and a few others which have not been shown here, as they were not analyzed in our near-shore sampling program.

In a later evaluation of seasonal variability, Richards et al. (2016b) demonstrated several differences in both effluent and down-gradient stream water chemistry; however, these need to be viewed cautiously, as their study involved septic systems with year round occupancy/septic use and was conducted in a climate that is much different than for Kahshe Lake, where occupancy is mostly seasonal and winter conditions (ice cover) exist.

That said, the study did confirm a statistically significant influence of septic effluents on downstream waters relative to up-stream (*p*-value >95%) for total suspended solids, total particulate P and N, ammonium-N, coliforms and E. coli. As such, these parameters have been further evaluated in our Near-Shore water sampling program.

The various forms of major nutrient concentrations reported in the Richards study displayed the following EFs: TP (EF=98), SRP (EF=176), TN (EF=13), NH_4-N (EF=1,651), NO_3-N (EF = <0.1).

Based on these findings, the nutrients/forms of nutrients most likely to be detected in a surface water body down-gradient of a septic system would be NH_4-N, with an EF of 1,651 and an average septic effluent concentration of 55,000 µg/L (range of 2,000-144,000 µg/L).

In a follow-up study to explore other ways of tracing septic effluents, Richards et al. (2017) examined mass ratios of chloride (Cl) to other effluent indicators in up- and downstream waters. These included several parameters that were not analyzed in our program, but for those that were, mass ratios of Cl/NH_4-N, Cl/Total N and Cl/Zinc were found to be useful indicators for septic effluent discharge but only in streams with low levels of dilution.

As element mass ratios have some potential to differentiate septic effluent discharge from other possible shoreline sources, they have been included in the analysis of our Near-Shore sampling program.

As studies examining the migration of septic effluent to nearby surface waters have all involved small, low volume streams where dilution would be minimal, the likelihood of a convincing conclusion regarding septic effluents impacts on near-shore water concentrations of tracer elements/ratios was considered unlikely; however, given the lack of any historical data on near-shore water chemistry and the timing of the September 30 sampling immediately prior to algal bloom development, an evaluation of possible septic effluent contributions via this approach was undertaken.

Based on the findings of septic effluent tracer studies, the Near-Shore findings were evaluated for any evidence of a relationship between the two main nutrients in septic effluents (TP and NH_4-N) and other parameters and ratios that have been linked with septic effluent impacts. Based on the work of Oldfield (2019) and Richards et al. (2016a,b and 2017) as previously discussed, the parameters and ratios of parameters that have been identified as possible septic effluent tracers included:

- NH_4-N, total phosphorus, chloride, sodium, boron, copper, potassium, titanium, aluminum, zinc, barium, cobalt, chromium, manganese, iron and lead.

- The ratios included: Chloride:NH_4-N, Chloride:Total N and Chloride:Zinc

This was done under three scenarios via correlation and regression analysis to explore the hypotheses described below.

I. Are any of the elements or mass ratios of elements analyzed/calculated using all data from the three sampling events (May, July and September) at near-shore sites correlated with TP levels at these sites under two scenarios:

   i) using near-shore analysis results from shorelines of developed properties with septic systems,
   ii) using near-shore analysis results from shorelines with no development (no septic systems)

II. As above but using NH_4-N as the principal nutrient for comparison.

III. As above using NH_4-N but limiting the correlation analysis to the six near-shore sites that experienced algal bloom development the day after the September 30 sampling event. The correlation analysis was based on NH_4-N as it was the nutrient that predominated at these sites in September.

The correlation analysis results under the above three scenarios are presented in Tables 10 (Scenario I), Table 11 (Scenario II) and Table 12 (Scenario III). These findings should be considered as very preliminary, as the statistical analysis has been performed under the assumption of normally (parametrically) distributed sets of data. More detailed statistical analysis was not undertaken, as this requires a more informed analysis by qualified professionals and could be undertaken when the DMM retains a consulting firm to carry out the Kahshe Lake Causation study at some future date. It should also be noted that any of the correlation analyses involving zinc need to be qualified, as it was noted in Appendix A-1 (Table A-1.4) that there was significant variability in the zinc analyses which was determined via an analysis of the Relative Percent Difference using blind duplicates at two near-shore sites (KL-3 and KL-1) in May and July, respectively.

Although total phosphorus levels were similar to those of the historical mid-lake sampling by DMM and MECP and did not appear to be playing a causal role in the sites with algal blooms along Oak Road, the correlation of all other elements and ratios with total phosphorus was considered important, as TP has been the traditional benchmark for nutrient enhanced algal growth.

The correlation analysis results for Scenario I are discussed below:

Scenario I

- Very robust positive correlation coefficients (r values of >0.7) for a large number of chemical elements at developed waterfront properties were found to be highly significant (p >99%) and this was not the case at the undeveloped near-shore sites. These included several of the parameters identified as potential septic effluent tracers including:
  - Aluminum, cobalt, chromium, manganese, iron and lead.
- Several other chemicals identified as potential tracers by Richards and Oldfield were not found to be highly correlated with total phosphorus. These included chloride, copper, potassium and zinc.

Sodium also can be included in this category, as although the r value was significant at the 95% level, it was low (0.39).

Scenario II

- Less robust positive correlation coefficients (r values of 0.44 to 0.77) for a number of chemical elements using NH_4-N as the predicted (Y axis) at developed waterfront properties were found to be highly significant (*p* >99%).
- However, in several cases (manganese, strontium, arsenic and selenium), significant correlations with NH_4-N also were found in the analysis results from the undeveloped shoreline, thereby ruling out these parameters as having any relationship with septic effluent migration.
- The parameters identified as potential septic effluent tracers included only barium, manganese and iron. In the case of element ratios, only chloride:NH_4-N, was significant, although this is most likely only due to the role of NH_4-N in the ratio itself, as a highly significant r value also was found with the data from the undeveloped sites.
- Several other chemicals identified as potential tracers by Richards and Oldfield were not found to be correlated with NH_4-N. These included chloride, sodium, copper, potassium, titanium, aluminum, zinc, cobalt, chromium and lead.

Scenario III

- The six sites included in this statistical evaluation included: KL-1, KL-6, KL-7, KL-15, KL-16 and KL-17.
- The only significant (*p*>95%) r values from this analysis were with copper and the ratio of chloride:NH_4-N. In the case of the ratio, this is most likely an artifact of having the NH_4-N parameter as part of the ratio calculation.
- However, there were three other parameters (calcium, magnesium and arsenic) with *p* values >90%, which were only marginally below the typical biological statistical threshold for significance of *p*=>95%. None of these had been identified as a septic effluent tracer in the Richards and Oldfield studies.
- Several other chemicals identified as potential tracers by Richards and Oldfield were not found to be correlated with NH_4-N at these algal-impacted sites. These included chloride, sodium, potassium, titanium, aluminum, zinc, barium, cobalt, chromium, manganese, iron and lead.

Goal 5 Summary and Conclusions:

- ❑ From the results of the foregoing evaluation of some of the parameters that have shown promise as tracer elements for septic effluents, a strong, evidence-based conclusion regarding the role of septic effluents in near-shore water chemistry and algal bloom development has not emerged.
- ❑ This is not surprising, as all of the published studies which were reviewed indicated that the detection of surface water enrichment associated with septic effluent migration has been limited to migration into small streams with low level dilution – i.e. small, slow moving water courses.

- ❑ The fact that the studies of septic effluent tracers has been carried out in other parts of the world where consumer input to septic systems is likely to be different than in the seasonally occupied shores of Kahshe Lake also may factor into the findings discussed in this section.
- ❑ However, the failure to positively link all previously identified septic tracer chemicals with near-shore phosphorus and nitrogen compounds does not rule out a possible causal linkage with septic effluent migration, as the September 30 findings clearly identified elevated concentrations of water soluble NH_4-N in near-shore waters in the vicinity of sites where algal blooms developed the next day.
- ❑ Given that NH_4-N is a major component of septic effluents, a minor component of soil nutrient leaching and the most bioavailable form of nitrogen for algal growth, a causal role for the migration of septic effluents into the lake cannot be ruled out.
- ❑ This is further supported by the fact that NH_4-N levels were not detected at any of the algal bloom sites sampled in May, prior to seasonal activation of septic systems and before the more active grazing of Canada geese.

The September 30 TP and NH_4-N results for the six sites which developed algal blooms the next day are shown in Table 13 below.

Table 13: Nutrient Levels in Near-Shore Samples at Sites that Developed Algal Blooms

Site	Shoreline Type	Algal Bloom?	Septic System?	Total Phosphorus /Adjusted Total Phosphorus September 30 (µg/L)	Ammonium-N September 30 (µg/L)
KL-1	Sandy beach with lawn behind.	Yes	Yes	10.8/16.2	44
KL-6	Rock wall with lawn behind only one of several properties.	Yes	Yes	10.3/15.5	32
KL-7	Landscaped (trees, path, sandy areas)	Yes*	Yes	10.0/15	45
KL-15	Narrow dock with extensive lawn behind.	Yes	Yes	21.5/32.3	47
KL-16	Large managed & unbuffered lawn	Yes*	Yes	23.7/35.6	71
KL-17	Kahshe River, with dock and steep treed slope behind.	Yes	Yes	26.5/39.8	46
KL-14	Natural shoreline of rocks and trees with no development.	No	No	12.1/18.2	<10

* not reported by owner but close to KL-6 and KL-15 where HABs were identified

- ❑ Based on the NH_4-N data in Table 13, ammonia-N sourced either from septic effluent migration and/or fecal deposits from a growing population of Canada geese both are considered potential contributors, as both are known to contain high levels of ammonia-N.

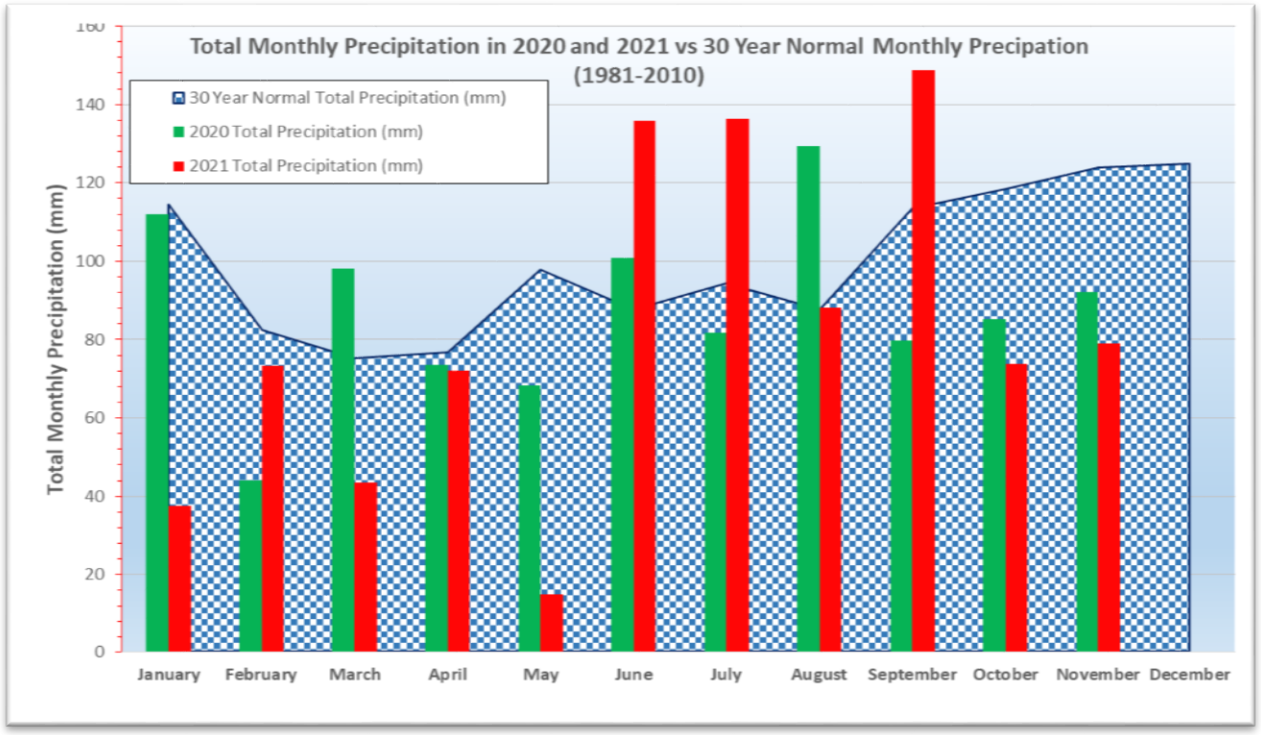
- ❑ And while the data on total phosphorus are inconclusive due to the normal TP levels at algal bloom locations in the Oak Road shoreline (KL-1, KL-6 and KL-7), it is possible that soluble reactive phosphorus levels (SRP) would clarify the role of phosphorus in the 2021 bloom development.
- ❑ Three other factors that may be impacting algal bloom development should be recognized:
    - It is noted that atmospheric deposition of phosphorus and nitrogen nutrients represents an ongoing source that is beyond the realm of this study; however, this contribution is likely to be most important in the May sampling, as the accumulation of snow and ice over the winter would be released following spring melt.
    - It is well established that the algae (cyanobacteria) involved in HABs have the capability of assimilating their nitrogen needs from the atmosphere via a nitrogen fixing process. This doesn't rule out their utilization of nitrogen in the water but it does add another level of complexity to the causal role of nitrogen in algal bloom development.
    - It is also possible that the source of phosphorus that fueled the algal blooms was from sediments, as it is well documented that phosphorus can be released from sediments to the water near the sediment interface in an anaerobic process driven by microorganisms. This phosphorus can be accessed by blue-green algae as the two blue-green organisms identified by the MECP in 2021 are known to have buoyancy features that allow them to move up and down in the water column to access phosphorus that is not available at the surface.
- ❑ In the case of the soil leaching/runoff from managed lawns, the findings from this near-shore sampling program have demonstrated that near-shore surface water in the vicinity of large, managed lawns is definitely being impacted by algal friendly nutrients. It just isn't clear whether this impact is related to the attractiveness of these shoreline lawn areas to Canada geese and other herbivorous grazers or to the leaching of nutrients from the soil that supports lawn growth.
- ❑ And finally, in the case of shoreline disturbance, other than for sandy beach areas, there were no observed construction or shoreline disturbance activities in the vicinity of the near-shore sites we sampled in 2021. However, it should be noted that the DMM's Causation Study (HESL, 2020) for Peninsula Lake did identify shoreline disturbance as a major source of phosphorus migration into the lake and this nutrient then became available to blue-green algae (a different genus than those in Kahshe) that were able to adjust their flotation to feed from the phosphorus released to the water under anaerobic (low oxygen) conditions at the water-sediment interface.
- ❑ If these sources are contributing to the elevated nutrient load of the shoreline waters where algal blooms have been documented in the past two years, the most important question is:

  Why is this happening now and not previously – i.e. what has changed?

Some of the published studies in recent years attribute the trend toward increasing numbers of late season algal blooms to one or more components of a changing climate (Winter et al., 2011; Shimoda et al. 2011; MNR, 2011).

- ❑ While this Near-Shore program was not designed to comprehensively evaluate the impact of multimedia climatic variables on algal bloom development, some climatic variables were included in the Near-Shore sampling program and others have been accessed from weather data collected by Environment Canada.
- ❑ Their potential role in the release of shoreline sourced nutrients and the development of late season blooms on Kahshe have been briefly discussed below.
- ❑ As can be seen in Figure 10 that follows, large, atypical amounts of rain were recorded during the summer months in both 2020 (green columns) and 2021 (red columns). The 30 year normal monthly rainfall is shown as the blue shaded area for comparison purposes.
- ❑ In 2021, this rainfall resulted in an elevation of the lake by over 30 cm in early July, resulting in many shallow shorelines and beach areas being submerged for several days.
- ❑ In addition to the release of algal friendly nutrients sourced from coarse-textured sands with low nutrient adsorption capacities and waterfowl feces being submerged during these high water periods, the atypical rainfall received also is likely to have accelerated the leaching of phosphorus and nitrogen nutrients sourced from septic effluents and from near-shore lawns and manicured/disturbed waterfronts.

Figure 10:



Another climatic variable that was evaluated in the Near-Shore program was water temperature, as blue-green algal blooms are known to develop in warm, slow moving water. Although there were no shoreline water temperature data available to determine if water temperature was a factor in the

bloom of 2020 (at 2021 Site KL-3), the 2021 Near-Shore project did collect water temperature data at 0.1 and 0.5m depths at each sampling site during each sampling event over the 2021 season.

The findings from these measurements are presented in Figures 11 and 12. The temperature data also were statistically evaluated to determine if water depth or distance from the shoreline were factors that required additional consideration.

First, a statistical analysis of the data revealed that water temperature at the near-shore sampling sites was not related (correlated) with either water depth or sampling distance from the shore. Second, as shown in Figure 11, the appearance of a late-season algal bloom was not related to elevated water temperatures at the time of bloom development, as water temperature at all near-shore sites in late-September, immediately prior to reports of bloom development was lower than at the same sites in mid-July.

And third, as shown in Figure 12, the temperature of the water in late-September at the sites with bloom development (KL-1, KL-6, KL-7, KL-15, KL-16 and KL-17)) was similar to all other sites that were free of algal bloom development.

Some of the potential impacts of a changing climate have been reviewed and summarized by Shimoda et al. (2011) and MNR (2011) and show a close coupling between climate, lake thermal properties and individual organism physiology, population abundance, community structure and food-web structure.

These studies also conclude that there is evidence of a strong relationship between weather conditions such as air temperature and wind patterns on lake thermal structure and that climatic factors have the ability to modulate the interplay among lake hydrodynamics, chemical factors and food-web interactions. Some of the more important physical impacts include:

- an increase in overall lake and especially epilimnetic (surface layer) temperatures,
- an increase in thermal stability,
- a lengthening of the thermal stratification period, and/or
- a shortening of the ice cover period.

Shimoda et al. further conclude that lakes have a strong potential as sentinels of climate change because they have a number of variables with response times that allow them to reflect the rapid and often non-linear rates of current changes in climate.

And finally, they caution that much of the current understanding of climatic impacts has been based on empirical evidence from off-shore areas and that in many lakes, the most degraded areas are near-shore zones above the summer thermocline and in enclosed bays with restricted mixing with off shore water.

3.6 Goal 6 Results

Goal #6: How can these findings be used to educate/inform stakeholders?

The members of the Conservation Committee met in 2022 to discuss options for communicating these findings and possible actions to the membership to re-inforce the need for a more proactive septic re-inspection. These follow-up actions have been published separately and are available on the KLRA Water Quality web portal.

4.0 General Conclusions:

The general conclusions regarding the six main goals of the Near-Shore water sampling program have been summarized below. For a more detailed summary of the findings for each goal, refer to the green shaded text that follow the discussion of each of the goals.

Goal #1: Are algal friendly nutrient levels from traditional spring sampling of mid-lake sites which have remained fairly low and stable over the past 35-40 years representative of water quality in the near-shore environment where algal blooms typically appear?

- ❑ The near-shore analysis results for TP in the heavily developed Oak Road and North shore areas in mid-May were in line with the mid-lake TP levels. However, this was not the case In the East end of the lake, where TP levels were well above those from mid-lake locations.
- ❑ Total nitrogen and nitrate-N at three near-shore sites were well above corresponding levels from the mid-lake sampling in mid-May. However, unlike TP, the results from the East end of the lake were in line with those from other parts of the lake.
- ❑ A comparison of the near-shore findings to those from the mid-lake, deep water sampling sites of the DMM and MECP indicated that the results for TP were under reporting TP levels by up to 50%: however, the reporting of total nitrogen levels was less than 1% above or below the results from the DMM and MECP data. Based on these findings, Figure 4 showing all near-shore sampling data for TP was re-charted using adjusted TP levels and this comparison has been shown in Figure 4A. This adjustment was not required for any of the nitrogen parameters as the near-shore sampling program generated results that were within 1% of those generated via the DMM and MECP programs.

Goal #2: Are algal friendly nutrients in the near-shore environment where blue-green algal blooms have been confirmed in 2020 and 2021, increasing as the season progresses, resulting in a further disconnect with the historical data which are based on spring sampling of mid-lake sites?

- ❑ Based on the near-shore water quality data presented in Figures 4 through 7, and on the accompanying discussion of the results for total phosphorus and several forms of nitrogen, there is compelling evidence that the historical sampling by the DMM and MECP of mid-lake locations in the spring of the year is not providing a fully representative assessment of water quality in the near-shore environment as the season progresses. As such, the sensitivity of Kahshe Lake to late-season algal blooms cannot be reliably determined via mid-lake nutrient concentrations.
- ❑ As Kahshe Lake has now been designated as a 'Vulnerable' lake by the Muskoka Official Plan, it will be evaluated in a Causation Study, and these findings should help inform the design and conduct of that study when it is undertaken by the DMM.

- ❑ An important finding of this project is that the water quality data generated by the mid-lake sampling sites of the DMM and MECP programs likely under-report nutrient levels in the East end of the lake where elevated nutrient loads enter Kahshe Lake from Bass Lake via the Kahshe River. This is due to the absence of any mid-lake sampling sites in the East end of the lake.

Goal #3: Are near-shore waters being impacted by fecal contamination at levels of concern for recreational use and as a source of drinking water?

- ❑ As none of the fecal coliform levels exceeded the Canadian Recreational Water Quality Guideline for a single sample of 400 CFU/100mL, there should not be any concern regarding the use of shoreline waters for swimming and other recreational activities.
- ❑ However, as the Ontario Drinking Water Standard for fecal coliforms is 'Not Detected', all reported levels from mid-May through late-September do exceed the safe drinking water standard and as such, property owners using surface water from Kahshe Lake as a potable supply need to ensure that their treatment system is effectively removing this contamination prior to its use as drinking water. The Simcoe-Muskoka Health Unit provides a free of charge test for fecal coliform in drinking water and this can be accessed at the Town of Gravenhurst's municipal office in Gravenhurst.
- ❑ This is in line with the KLRA's policy of recommending that **lake water not be used as a source of drinking water**.

Goal #4: Do these findings shed any light on why Kahshe Lake is now vulnerable to late season blue-green algal blooms?

- ❑ As phosphorus is recognized as the principal nutrient driver of algal bloom development, there are a number of possible reasons for the appearance of the bloom in the Oak Road area where TP levels immediately prior to bloom development were only marginally above a normal range:
    - The use of TP as a combined measure of all phosphorus soluble and particulate forms could be masking differences in other forms of phosphorus that may be more biologically relevant. An example would be soluble reactive phosphorus (SRP).
    - The algae that developed in this area could be different than those confirmed by the MECP in the sample from the East end of the lake, and as such, the algae in this area could be accessing some portion of its phosphorus requirement from sediments.
- ❑ The other nutrient required for algal growth is nitrogen, and as there were elevated levels of ammonium-N at the Oak Road sites that were similar to the levels at the sites with algal bloom development in the East end of the lake, this could explain the appearance of blooms in both the Oak Road and East end sites.
- ❑ These findings should be further explored in the DMM-funded Causation Study that is planned for Kahshe Lake when funding permits.

Goal #5: Do these findings point to one or more of the following shoreline sources of algal friendly nutrients that could be further explored in the DMM funded Causation Study?

A. Migration of septic system effluents.

B. Contamination from waterfowl and other types of animals.

C. Nutrient leaching/runoff from lawns and beaches.

D. Soil erosion/runoff from disturbed shorelines.

The near-shore sampling program was not designed to identify a specific shoreline source of algal friendly nutrients. However, the timing of the sampling in September was fortuitous, as blue-green algal blooms were observed at or in the immediate vicinity of six of the near-shore sites the following day or two.

The water chemistry results for this pre-algal event clearly demonstrated that ammonium-N was in some way involved, as it was consistently elevated at all sites with algal bloom development. This contrasted with the findings for total phosphorus, which were elevated in the East end sites but not so at the algal impacted sites along the shoreline of Oak Road.

Based on the characteristics of the above four potential shoreline sources, the most likely origin of the nutrients found in the near-shore water was a combination of septic system effluents and waterfowl feces, as both phosphorus and the ammonium form of nitrogen are characteristic of these sources. The fact that ammonium-N levels were not detected in May, prior to occupation by most property owners and before Canada geese become heavy grazers of lush lawn areas adds further support to these sources being involved in the late-season algal blooms.

The leaching and/or runoff of nutrients from lawns and beaches typically leads to the migration of the more water soluble nitrate-N which was not detected at levels consistent with the locations of the algal blooms. However, as nutrient rich soils also contain ammonium-N which is converted by soil organisms to the nitrate form, some contribution from managed lawns cannot be totally ruled out.

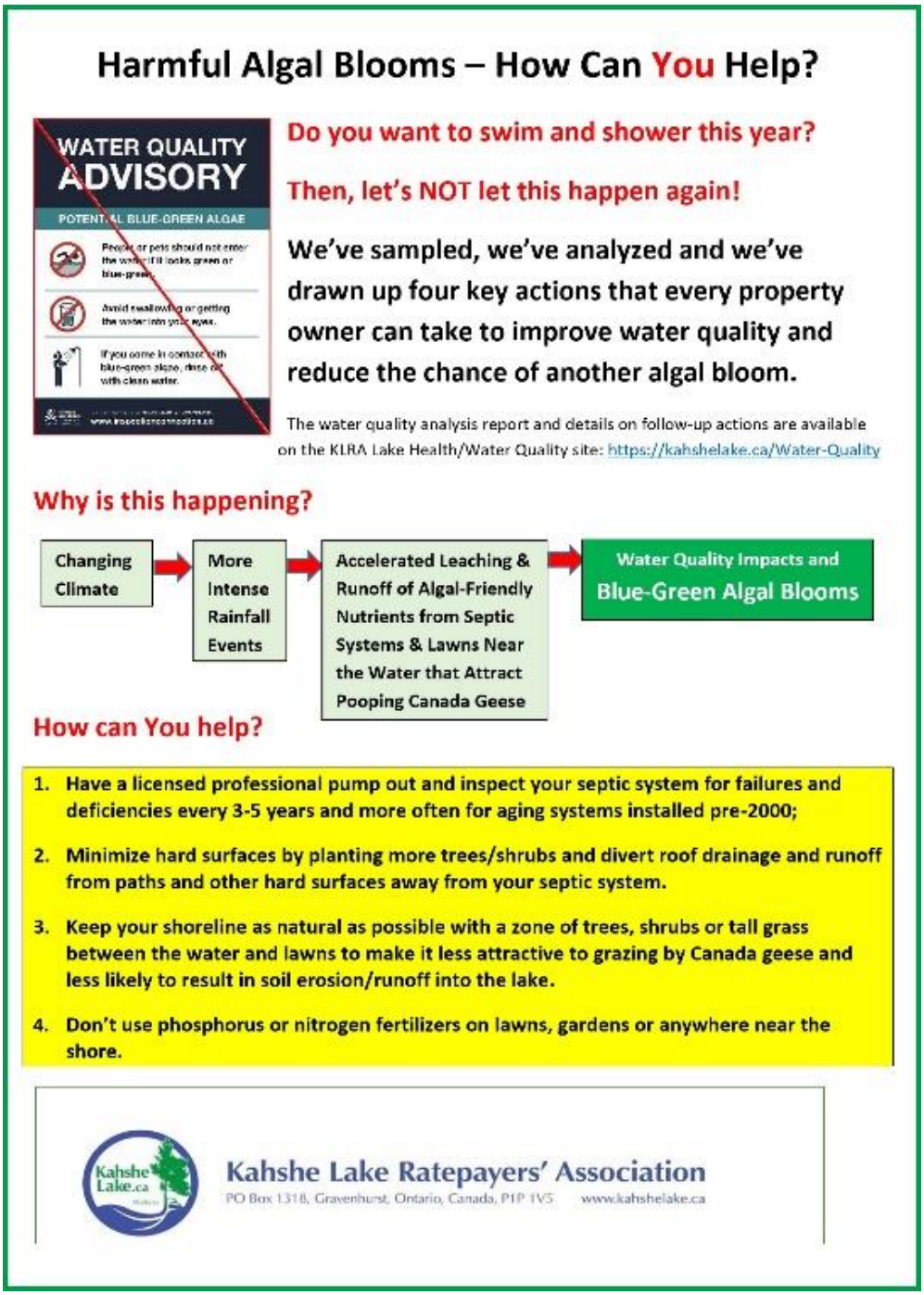
And finally, the contribution from soil erosion/runoff from disturbed shorelines was considered a minor contributor.

Although a specific source of nutrients was not identified, the near-shore analysis results do appear to be associated with severe precipitation events through the summer and fall in both 2020 and 2021 that significantly exceeded the 30 year normal in both years that algal blooms were detected. This would have accelerated the leaching and runoff of nutrients and other chemical parameters through shallow soils directly or indirectly via ground water migration to the lake.

The impact of this known climate change variable as well as other climate changes that have the potential to impact the enjoyment of our lake are discussed further in the summary portion of this section.

Goal #6: Based on the findings of this program, is there anything the KLRA can do to educate and/or inform stakeholders on actions that could improve water quality and reduce the likelihood continued late season algal blooms?

The completion of this goal has been undertaken by the Conservation Committee and a full analysis and findings has been published on the KLRA's Lake Health web portal. The graphic below represents a consensus of the Conservation Committee members on how the findings of this KLRA-funded study will be communicated.



5.0 References Cited:

Clark, B.J., Paterson, A.M., Jeziorski, A. and S. Kelsey.2010. *Assessing variability in total phosphorus measurements in Ontario lakes*. Lake and Reservoir Management 26: 63-72.

EPA.2013.*Impacts of climate change on the occurrence of harmful algal blooms.* United States Environmental Protection Agency. Factsheet EPA 820-S-13-001. Office of Water.

Gross, M.A. 2005. *Wastewater Characterization* Text. *in* (M.A. Gross and N.E. Deal, eds.) University Curriculum Development for Decentralized Wastewater Management. National Decentralized Water Resources Capacity Development Project. University of Arkansas, Fayetteville, AR.

Health Canada. 2012. *Guidelines for Canadian Recreational Water Quality*. Her Majesty to Queen in Right of Canada.

HESL. 2020. Peninsula Lake Algae Bloom Causation Study. Hutchinson Environmental Sciences Ltd. Prepared for the District of Muskoka.

Krimsky, L.S., Lusk, M.G., Abeels, H. and L. Seals. 2021. *Sources and concentrations of nutrients in surface runoff from waterfront homes with different landscape practices*. Sci. Total Env. 750:142320.

MNR. 2011. *A summary of the effects of climate change on Ontario's aquatic ecosystems*. Climate Change Research Report CCRR-11. © 2011, Queen's Printer for Ontario. Authored by: Dove-Thompson, D., Lewis, C., Gray, P.A., Chu, C. and W. I. Dunlop.

Newell, S., Johnson, L., McCarthy, M., Chaffin, J., Salk, K., Skopec, M., Brian, A., Pebbles, V. and K. Gibbons. 2017. *How does nitrogen affect harmful algal blooms?* Great Lakes HABs Collaborative.

O. Reg. 169/03. 2020. *Ontario Drinking Water Quality Standards*. *Safe Drinking water Act, 2002*. Consolidation Period: From January 1, 2020 to the e-Laws currency date. Last amendment: 457/16.

Oldfield, L. 2019. *Estimation of Nutrient Loads from Septic Systems to Tributaries in the Lake Erie Basis.* Electronic Thesis and Dissertation Repository, 6057. The University of Western Ontario, Engineering Science. *https://ir.lib.uwo.ca/etd/6057.*

Petkuviene, J., Vaiciute, D., Katarzyte, M., Gecaite, I., Rossato, G., Vybernaite-Lubiene, I. and M. Bartoli. 2019. *Feces from piscivorous and herbivorous birds stimulate differentially phytoplankton growth*. Water 11:2367.

Post, D.M., Taylor, J.P., Kitchell, M.H., Olson, D.E., Schindler, D.E. and B.R. Herwig. 1998. Conservation Biology 12: 910-920. (cited in Uncless, 2006).

Purcell, S.L. 1999. *The significance of waterfowl feces as a source of nutrients to algae in a prairie wetland*. The University of Manitoba, Faculty of Graduate Studies, Thesis.

Qin, Z. 2012. *Evaluation of nutrient leaching and nutrient use efficiency from mixed species residential landscapes*. Thesis presented to the Graduate School, University of Florida.

Richards, S., Paterson, E., Withers, P. and M. Stutter. 2016a. *Septic tank discharges as multi-pollutant hotspots in catchments*. Sci. Total Env. 542: 854-863.

Richards, S., Withers, P., Paterson, E., McRoberts, C. and M. Stutter. 2016b.*Temporal variability in domestic point source discharges and their associated impact on receiving waters*. Sci. Total Env. 571: 1275-1283.

Richards, S., Withers, P., Paterson, E., McRoberts, C. and M. Stutter. 2017. *Potential tracers for tracking septic tank effluent discharges in watercourses.* Env. Pollut. 228:245-255.

Scherer, N.M., Stoops, K.B., and M. Muller. 1995. *Phosphorus loading of an urban lake by bird droppings*. Lake and Reserv. Manage. 11: 317-327.

Shimoda, Y., Azim, M.E., Perhar, G., Ramim, M., Kenney, M., Sadraddini, S., Gudimov, A. and G.B. Arhonditsis.2011. *Our current understanding of lake ecosystem response to climate change: What have we really learned from the north temperate deep lakes?* J. Great Lakes Res.37: 173–193.

Swallow, M., Huffman, J., van Why, K. and G. D'Angelo. 2010. *The effect of goose management on water quality.* Proc 24th Vertebr. Pest Conf. at University of California, Davis, *Eds*. Timm, R.M. and K.A. Fagerstone. pp. 244-249.

Uncless, R. 2006. *The impact of nutrient loading from Canada geese (Branta canadensis) on water quality, a mesocosm approach.* Environmental Sci. and Ecology Theses 71.

Wall, D. 2013. *Nitrogen in Minnesota Surface Water*. Minnesota Pollution Control Agency. Chapter A2 – Nitrogen in Water: Forms and Concerns. June 2013.

WC&CWF.2019. Kahshe Lake Shoreline Assessment Summary Report. Love Your Lake. Watersheds Canada and the Canadian Wildlife Federation.

Winter, J., DeSellas, A.M., Fletcher, R., Heintsch, L., Morley, A., Nakamoto, L. and K. Utsumi. 2011. *Algal blooms in Ontario, Canada. Increases in reports since 1994*. Lake and Resevoir Management 27: 107-114.

Withers, P.J.A., Jarvie, H.P. and C. Stoate. 2011. *Quantifying the impact of septic tank systems on eutrophication risk in rural headwaters*. Environment International 37: 644-653.

USEPA. 2014. *Laboratory Data Review for the Non-Chemist.* United States Environmental Protection Agency Region 9 San Francisco, California.

Steel, R.D. and J.H.Torrie. 1960. Principles and Procedures of Statistics. McGraw-Hill Book Company Inc. Library of Congress Catalog Card Number 59-13216.

6.0 Acknowledgements:

The writer wishes to acknowledge the valuable contributions of the following individuals, as without their input and assistance this project could not have been completed.

Internal Proposal Review, Approval and Financial Payment Arrangements

Ms. Marg Taylor	Past President of the Kahshe Lake Ratepayers' Association Inc. (KLRA)
Ms. April Drane	Current President of the KLRA

Mr. Bob Reyburn Chair, KLRA Conservation Committee

Mr. Greig Holder Treasurer, KLRA

KLRA Board Members

KLRA Conservation Committee Members

Mr. Steve Wild, Greig Holder and Ms. Lauren Koenig: Chair and members of KLRA Investment Council

External Proposal Review and Assistance with Analytical Protocols

Ms. Rebecca Willison District Municipality of Muskoka

Ms. Anna DeSellas Ontario Ministry of Environment, Conservation and Parks

Mr. Costas Farassoglou ALS Environmental Inc.

Mr. Eric Dobbins ALS Environmental Inc.

Ms. Allyn Abbott Muskoka Conservancy

Dedicated Sampling Team

Bob and Donna Reyburn

Dave Barker

George Lindsay and Greig Holder

Figure 1

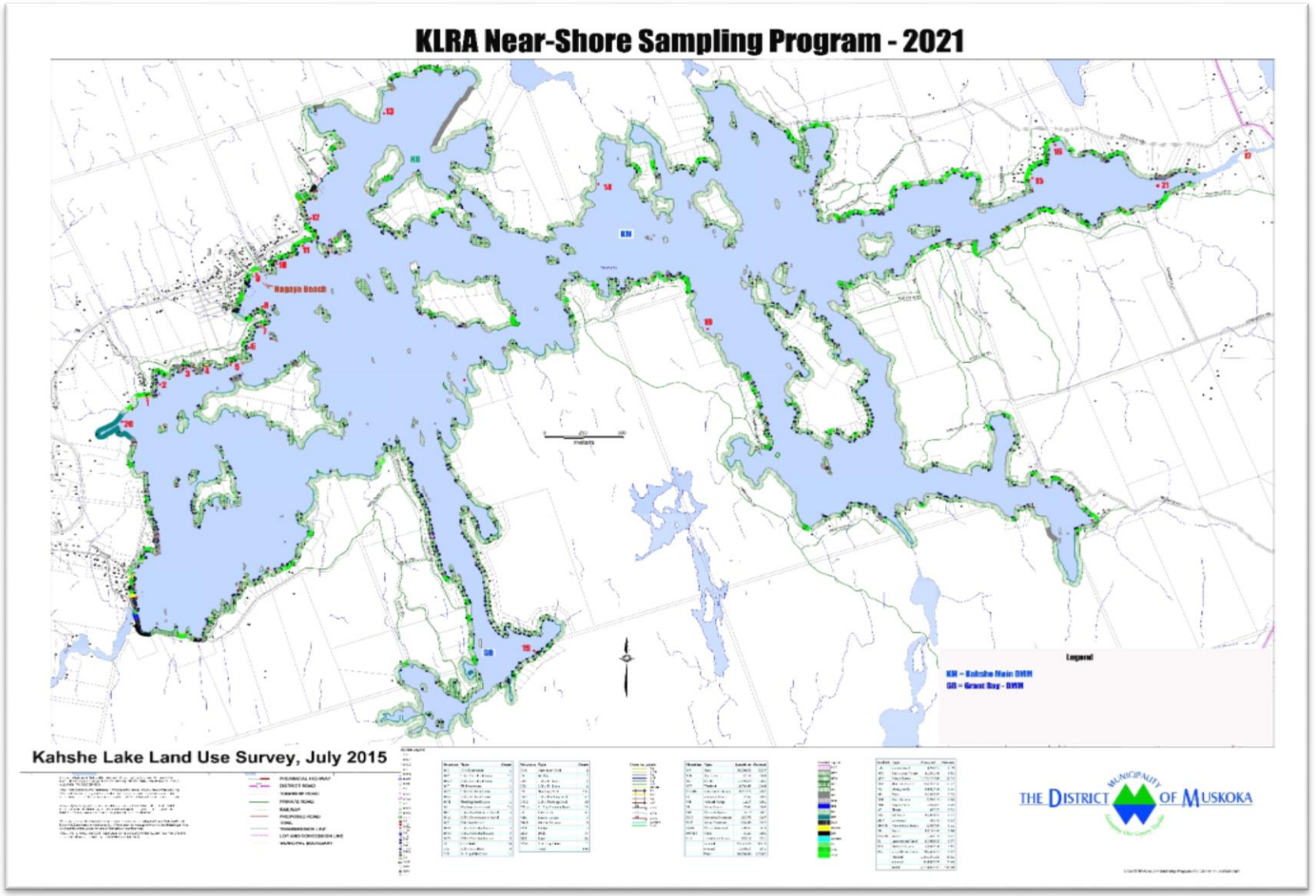

KLRA Near-Shore Sampling Program - 2021
Kahshe Lake Land Use Survey, July 2015
THE DISTRICT MUNICIPALITY OF MUSKOKA

Figure 2

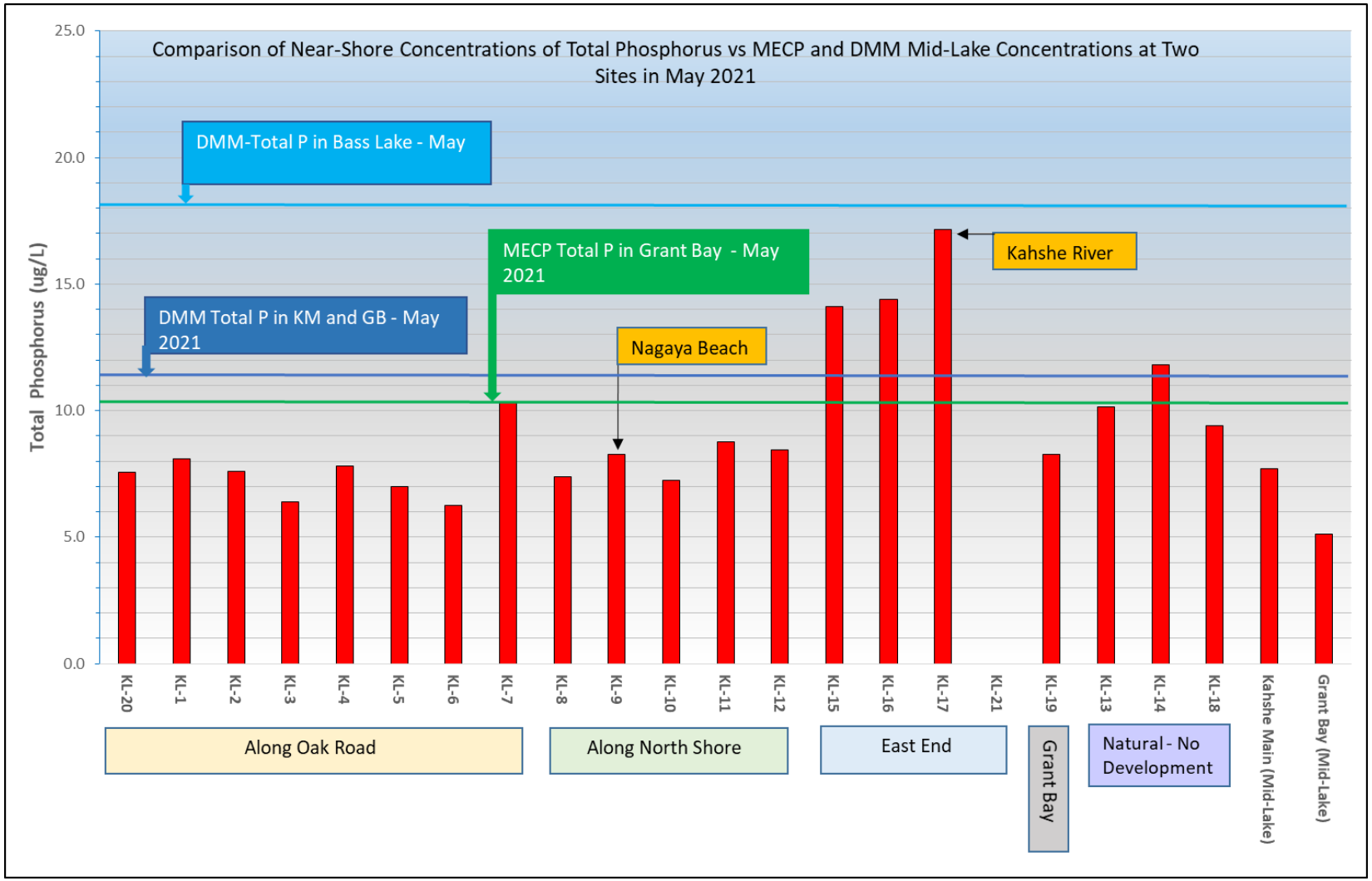

Comparison of Near-Shore Concentrations of Total Phosphorus vs MECP and DMM Mid-Lake Concentrations at Two Sites in May 2021
Total Phosphorus (ug/L)
25.0
20.0
15.0
10.0
5.0
0.0
DMM-Total P in Bass Lake - May
MECP Total P in Grant Bay - May 2021
DMM Total P in KM and GB - May 2021
Nagaya Beach
Kahshe River
KL-20
KL-1
KL-2
KL-3
KL-4
KL-5
KL-6
KL-7
KL-8
KL-9
KL-10
KL-11
KL-12
KL-15
KL-16
KL-17
KL-21
KL-19
KL-13
KL-14
KL-18
Kahshe Main (Mid-Lake)
Grant Bay (Mid-Lake)
Along Oak Road
Along North Shore
East End
Grant Bay
Natural - No Development

Figure 3

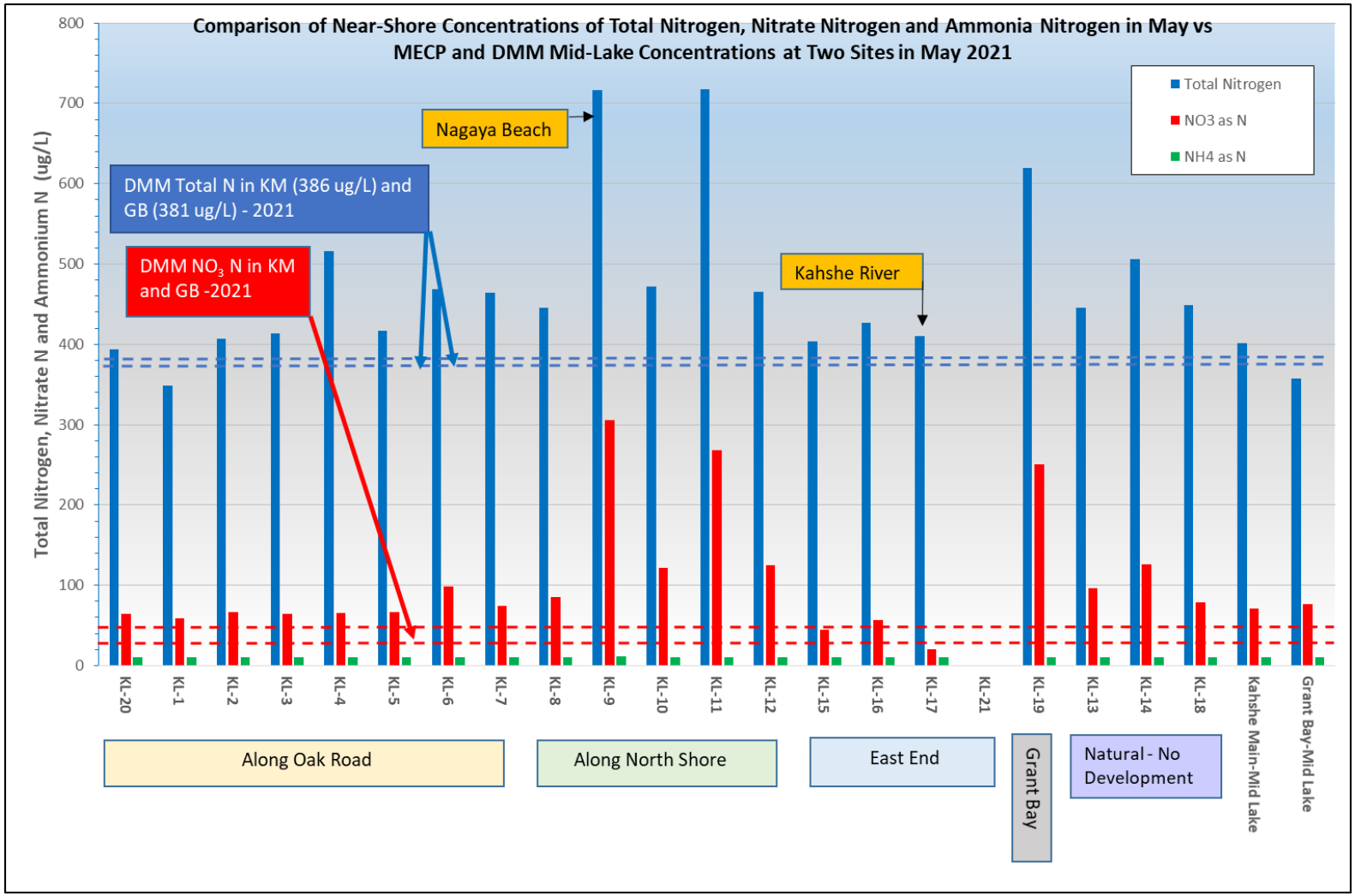

Comparison of Near-Shore Concentrations of Total Nitrogen, Nitrate Nitrogen and Ammonia Nitrogen in May vs MECP and DMM Mid-Lake Concentrations at Two Sites in May 2021
Total Nitrogen, Nitrate N and Ammonium N (ug/L)
800
700
600
500
400
300
200
100
0
Total Nitrogen
NO3 as N
NH4 as N
Nagaya Beach
DMM Total N in KM (386 ug/L) and GB (381 ug/L) - 2021
DMM NO3 N in KM and GB -2021
Kahshe River
KL-20
KL-1
KL-2
KL-3
KL-4
KL-5
KL-6
KL-7
KL-8
KL-9
KL-10
KL-11
KL-12
KL-15
KL-16
KL-17
KL-21
KL-19
KL-13
KL-14
KL-18
Kahshe Main-Mid Lake
Grant Bay-Mid Lake
Along Oak Road
Along North Shore
East End
Grant Bay
Natural - No Development

Figure 4

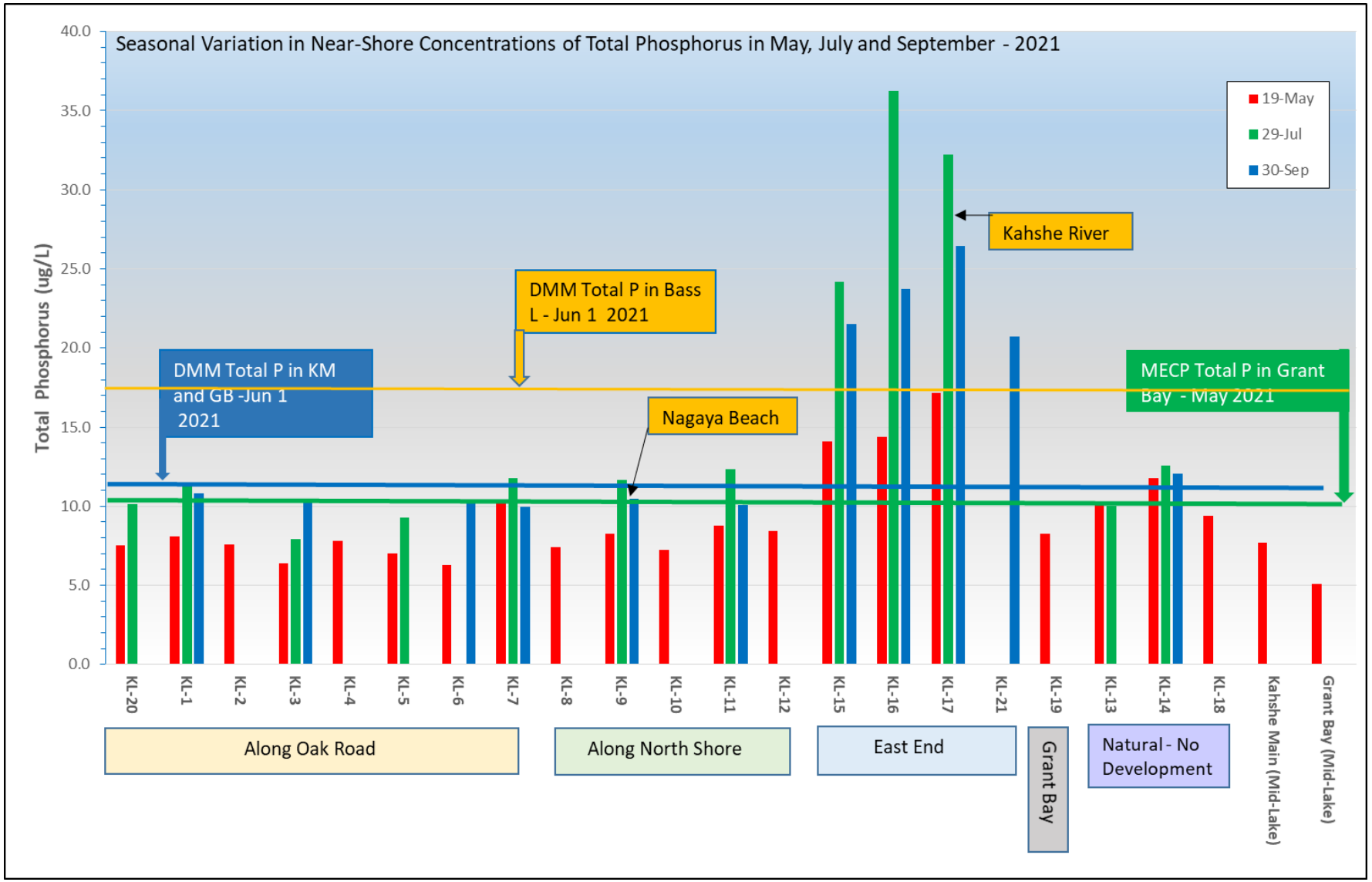

Seasonal Variation in Near-Shore Concentrations of Total Phosphorus in May, July and September - 2021
Total Phosphorus (ug/L)
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
19-May
29-Jul
30-Sep
Kahshe River
DMM Total P in Bass L - Jun 1 2021
DMM Total P in KM and GB -Jun 1 2021
Nagaya Beach
MECP Total P in Grant Bay - May 2021
KL-20
KL-1
KL-2
KL-3
KL-4
KL-5
KL-6
KL-7
KL-8
KL-9
KL-10
KL-11
KL-12
KL-15
KL-16
KL-17
KL-21
KL-19
KL-13
KL-14
KL-18
Kahshe Main (Mid-Lake)
Grant Bay (Mid-Lake)
Along Oak Road
Along North Shore
East End
Grant Bay
Natural - No Development

Figure 4A

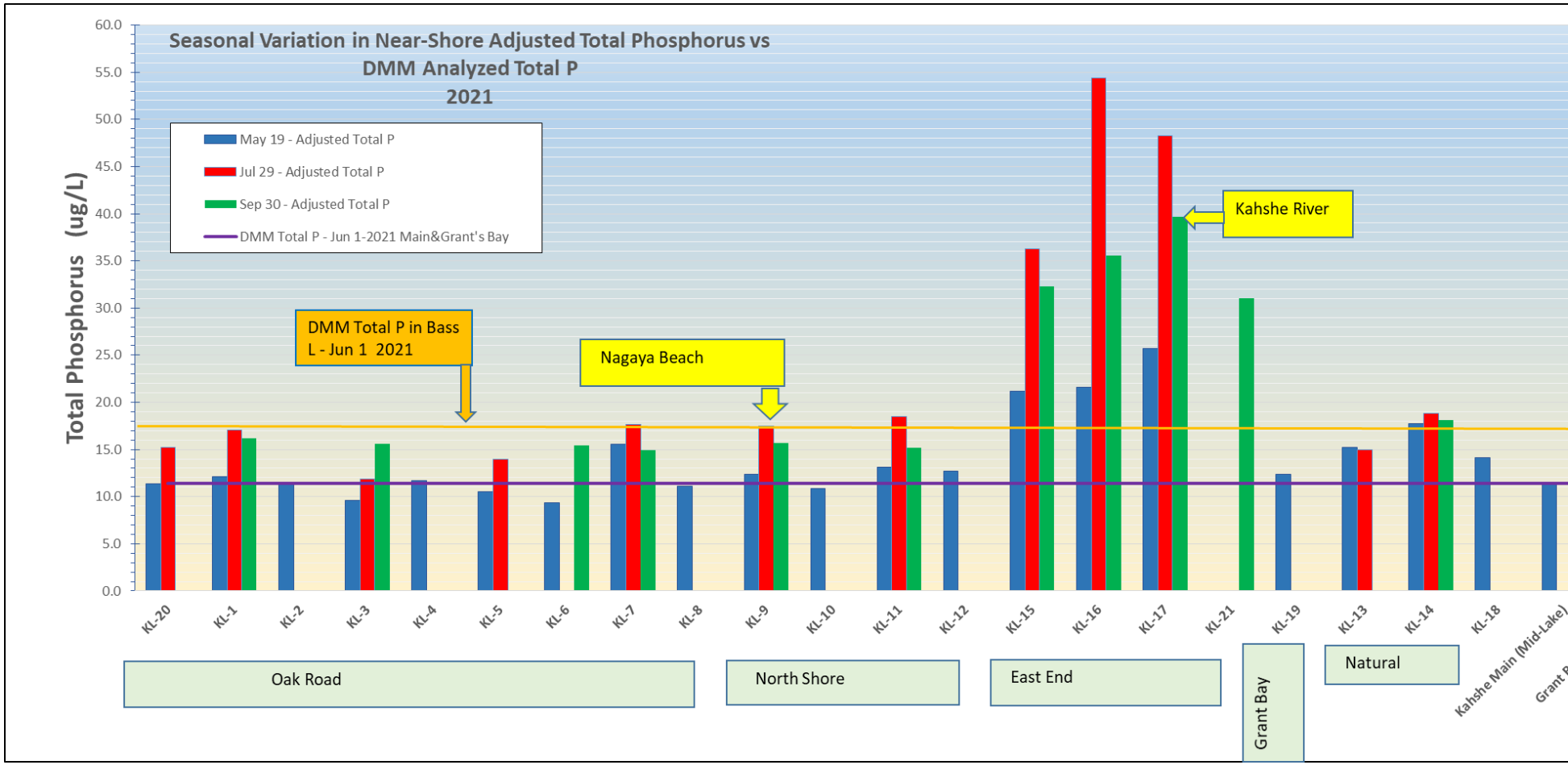

Seasonal Variation in Near-Shore Adjusted Total Phosphorus vs DMM Analyzed Total P 2021
May 19 - Adjusted Total P
Jul 29 - Adjusted Total P
Sep 30 - Adjusted Total P
DMM Total P - Jun 1-2021 Main&Grant's Bay
Total Phosphorus (ug/L)
60.0
55.0
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
DMM Total P in Bass L - Jun 1 2021
Nagaya Beach
Kahshe River
KL-20
KL-1
KL-2
KL-3
KL-4
KL-5
KL-6
KL-7
KL-8
KL-9
KL-10
KL-11
KL-12
KL-15
KL-16
KL-17
KL-21
KL-19
KL-13
KL-14
KL-18
Kahshe Main (Mid-Lake)
Grant
Oak Road
North Shore
East End
Grant Bay
Natural

Figure 5

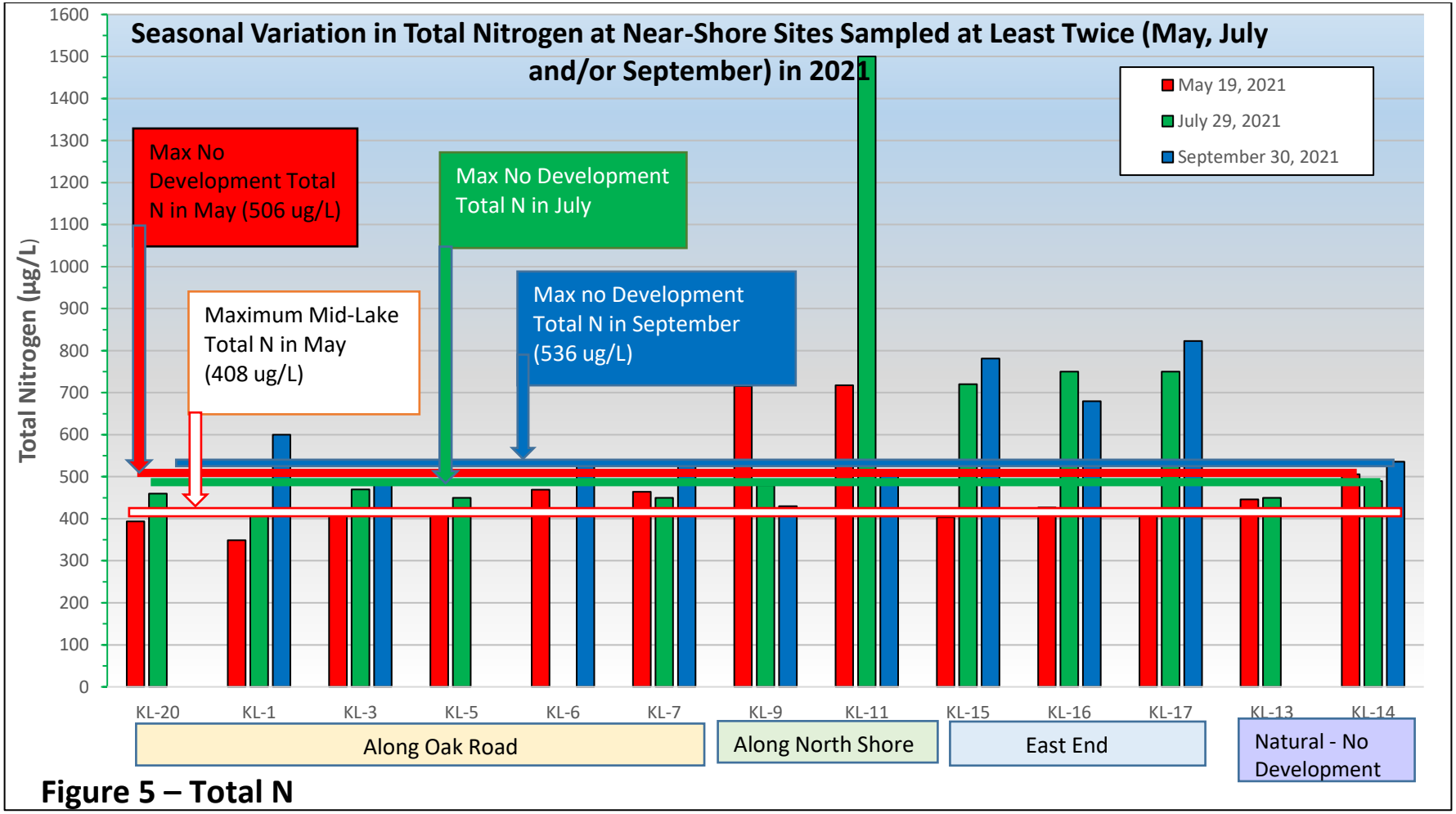


Figure 5 – Total N

Figure 6

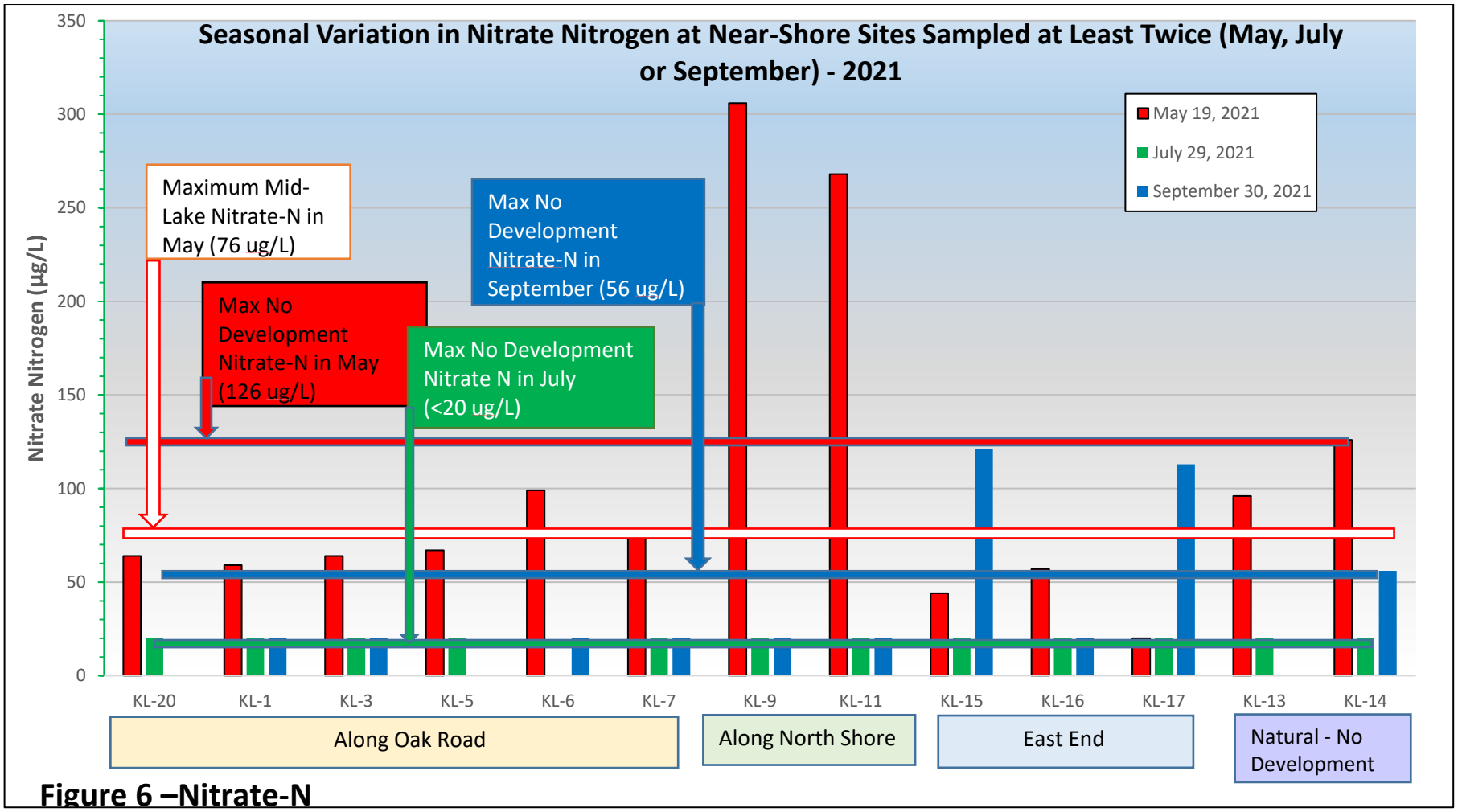


Figure 6 –Nitrate-N

Figure 7

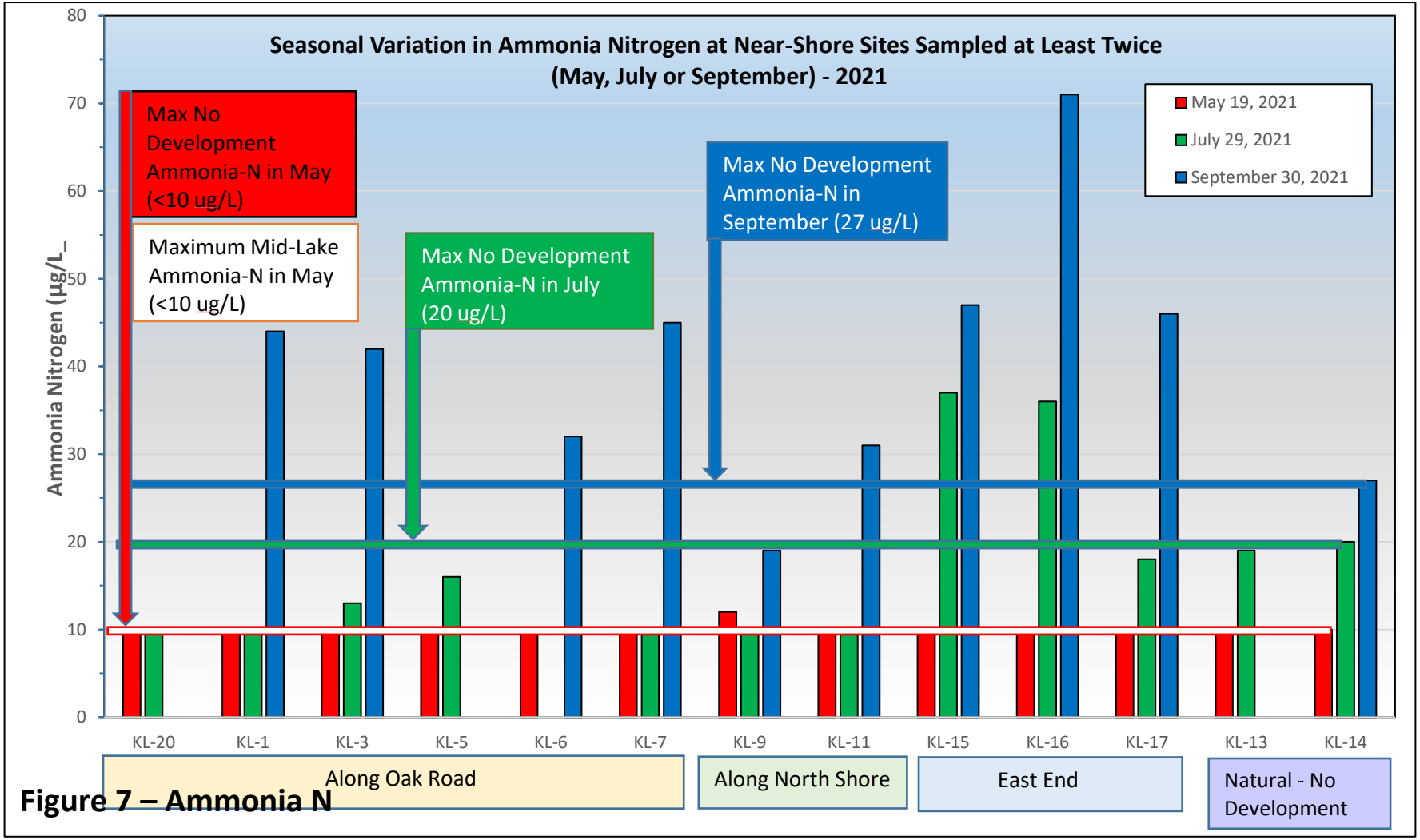


Figure 7 – Ammonia N

Figure 8

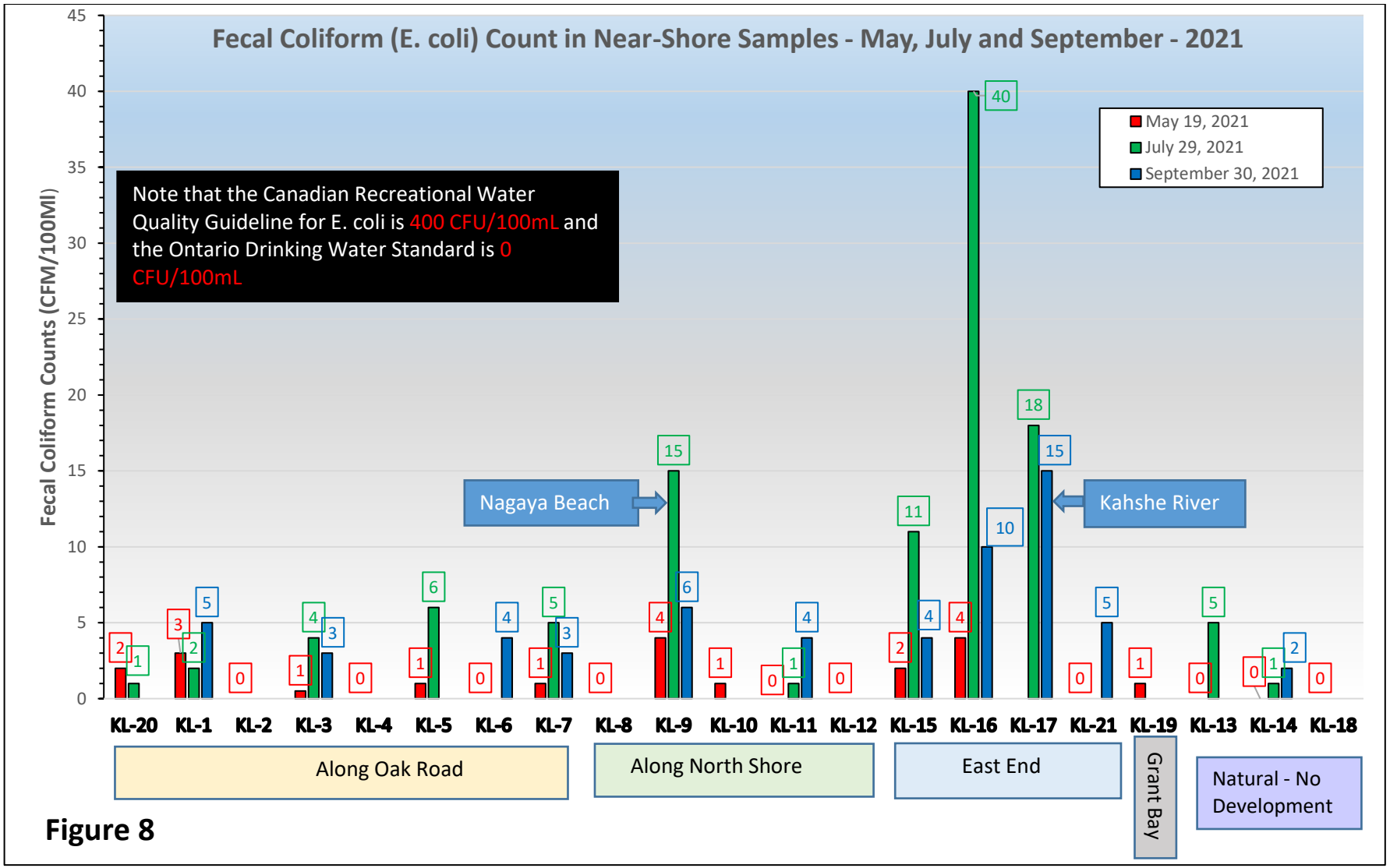

Fecal Coliform (E. coli) Count in Near-Shore Samples - May, July and September - 2021
Fecal Coliform Counts (CFM/100Ml)
May 19, 2021
July 29, 2021
September 30, 2021
Note that the Canadian Recreational Water Quality Guideline for E. coli is 400 CFU/100mL and the Ontario Drinking Water Standard is 0 CFU/100mL
Nagaya Beach
Kahshe River
KL-20 KL-1 KL-2 KL-3 KL-4 KL-5 KL-6 KL-7 KL-8 KL-9 KL-10 KL-11 KL-12 KL-15 KL-16 KL-17 KL-21 KL-19 KL-13 KL-14 KL-18
Along Oak Road
Along North Shore
East End
Grant Bay
Natural - No Development
Figure 8

Figure 9

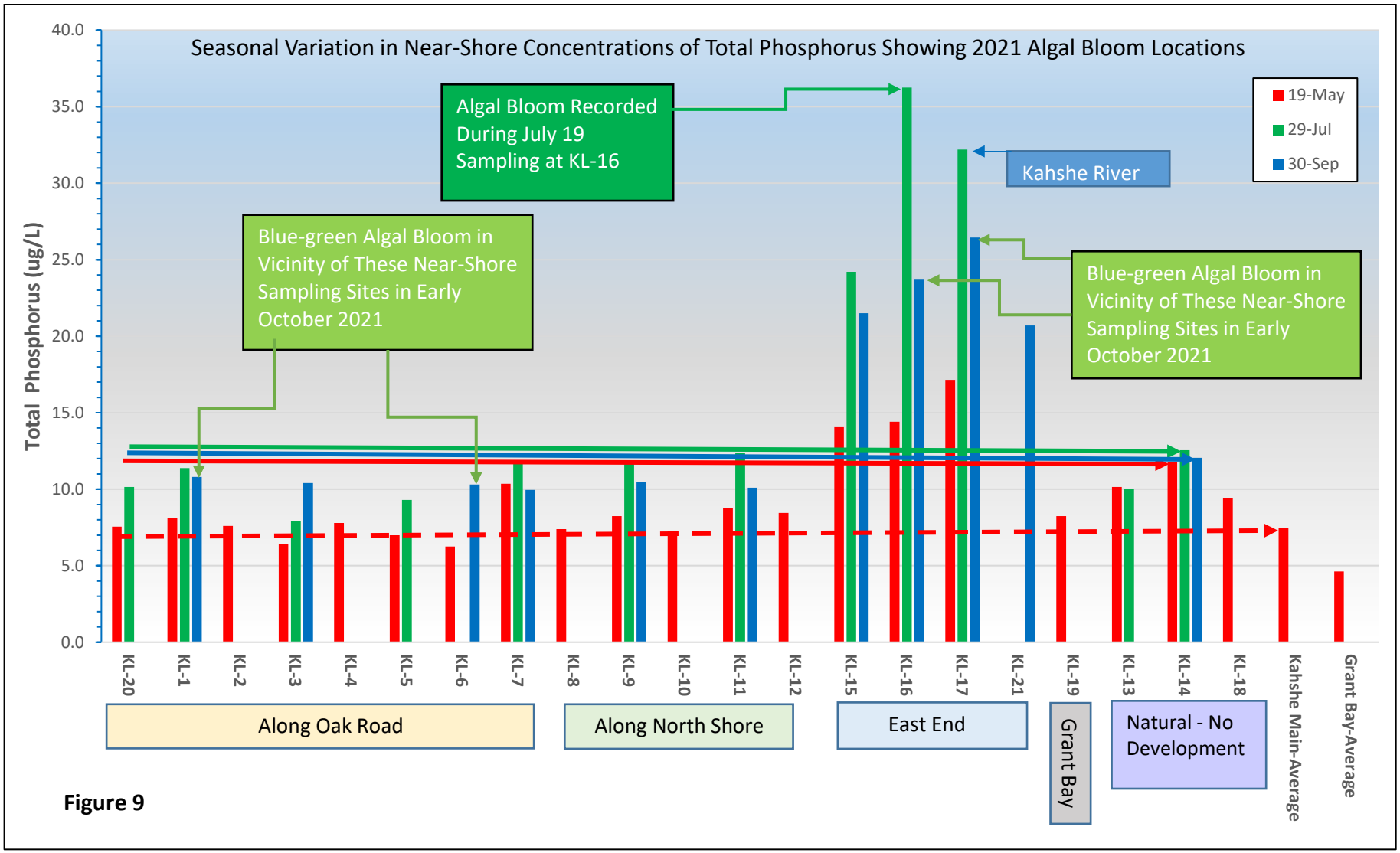


Figure 9

Figure 10

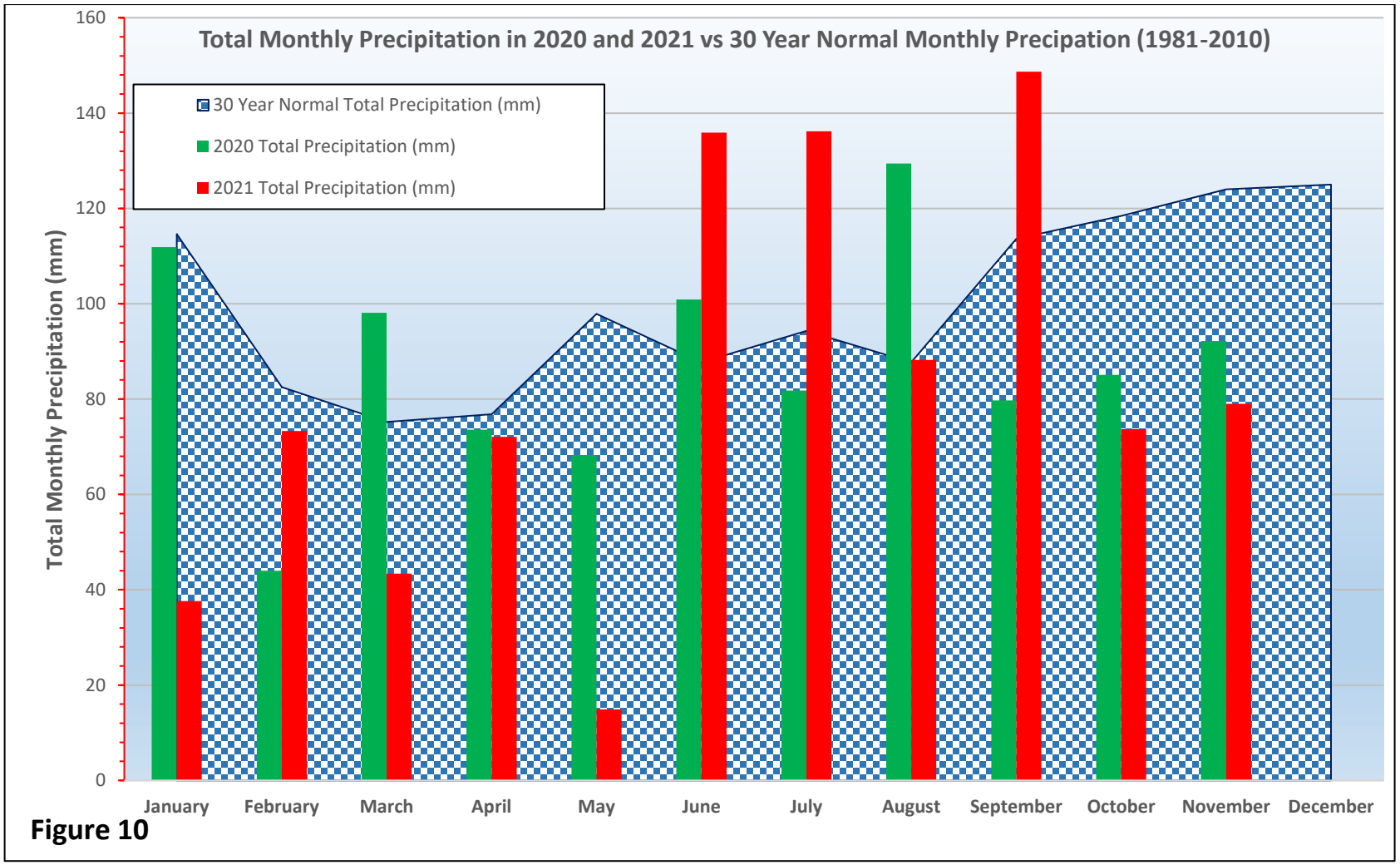


Figure 10

Figure 11

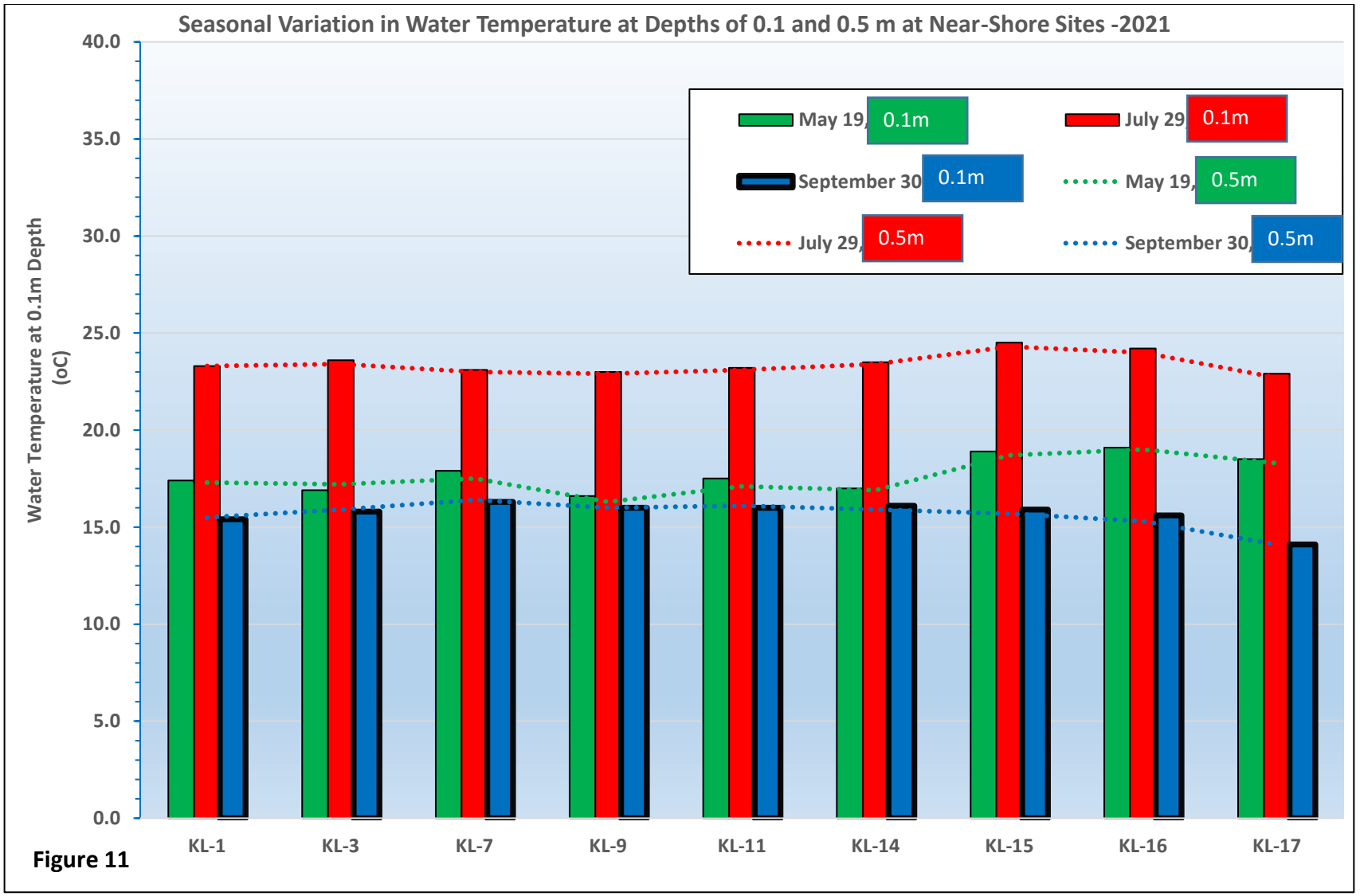


Figure 11

Figure 12

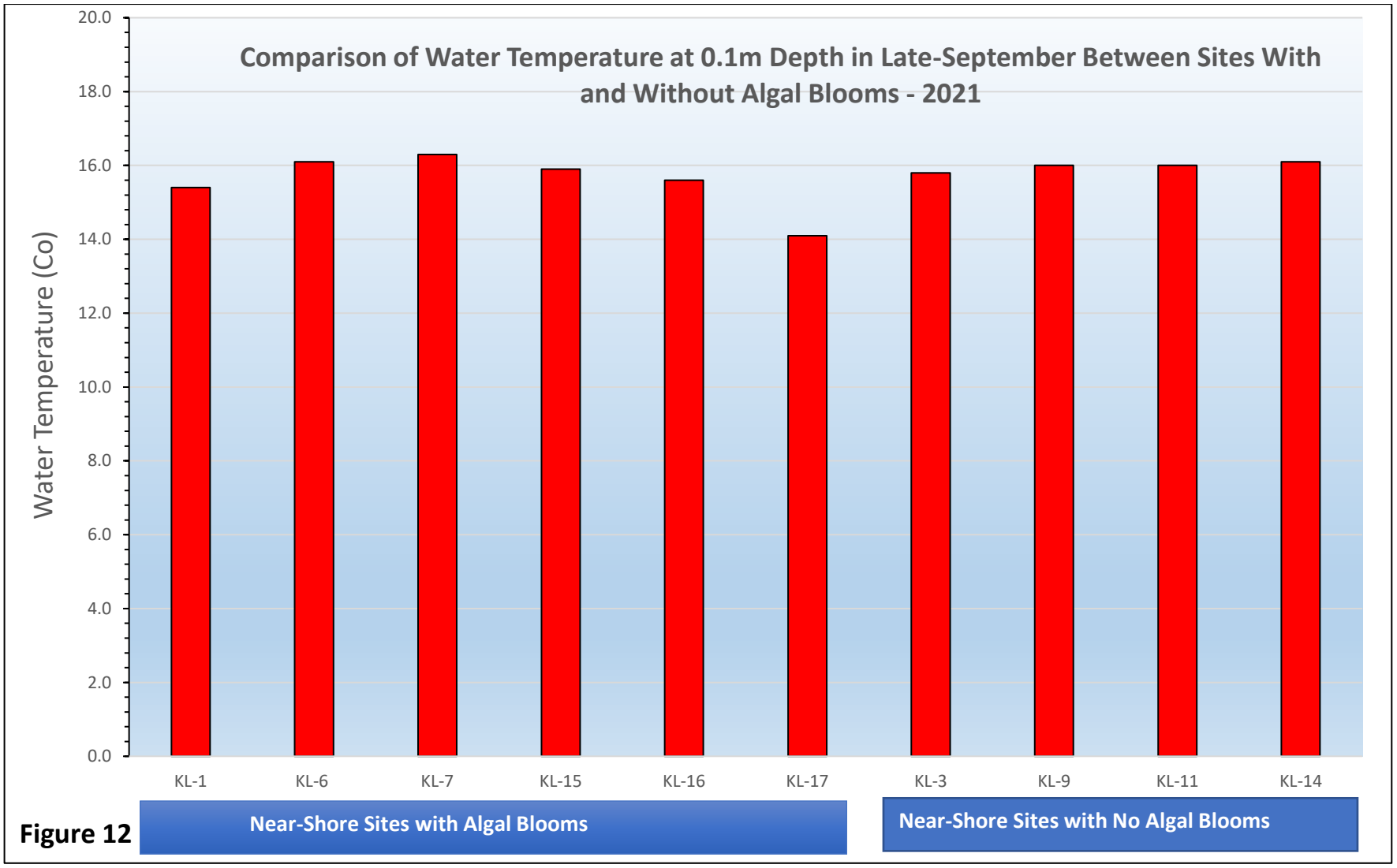


Figure 12

Table 1: Description of Near-Shore Sampling Sites in 2021

Site No.	GPS Coordinates		Shoreline/Water Interface	Backlot Description	Shoreline Area Developed?	Date Sampled	Approx. Distance from Shore (m)	Approx. Water Depth (m)	Water Temperature at 0.1m Depth (°C)	Water Temperature at 0.5m Depth (°C)
KL-20	44 51 8N	79 18 18W	Natural Shrubs	Wetland Trees/Shrubs	N	May 19, 2021	5.2	0.84	17.3	17.2
KL-20	44 51 8N	79 18 18W	Natural Shrubs	Wetland Trees/Shrubs	N	July 29, 2021	5.2	0.85	23.1	22.9
KL-1	44 51 15N	79 18 14W	Sandy Beach	Sand/Unbuffered Lawn	Y	May 19, 2021	16.9	0.83	17.4	17.3
KL-1**	44 51 15N	79 18 14W	Sandy Beach	Sand/Unbuffered Lawn	Y	July 29, 2021	16.9	1.00	23.3	23.3
KL-1	44 51 15N	79 18 14W	Sandy Beach	Sand/Unbuffered Lawn	Y	September 30, 2021	16.9	1.10	15.4	15.5
KL-2	44 51 18N	79 18 8W	Large Rock	Thinned Forest/Grass Areas	Y	May 19, 2021	2.0	2.80	17.4	17.4
KL-3*	44 51 23N	79 18 0W	Sandy Beach	Sandy/Unbuffered Lawn	Y	May 19, 2021	10.0	0.84	16.9	17.2
KL-3	44 51 23N	79 18 0W	Sandy Beach	Sandy/Unbuffered Lawn	Y	July 29, 2021	10.0	1.45	23.6	23.4
KL-3	44 51 23N	79 18 0W	Sandy Beach	Sandy/Unbuffered Lawn	Y	September 30, 2021	10.0	0.95	15.8	15.9
KL-4	44 51 22N	79 17 54W	Sandy Beach	Sandy with Limited Growth	Y	May 19, 2021	9.0	0.83	17.6	17.1
KL-5	44 51 23N	79 17 46W	Large Rock	Landscaped/Grass/Stone Wall	Y	May 19, 2021	3.0	0.95	17.2	17.0
KL-5	44 51 23N	79 17 46W	Large Rock	Landscaped/Grass/Stone Wall	Y	July 29, 2021	3.0	1.40	23.4	23.3
KL-6	44 51 26N	79 17 42W	Large Rock	Landscaped/Trees/Stone Path	Y	May 19, 2021	3.0	0.90	18.5	17.9
KL-6	44 51 97N	79 17 42W	Large Rock	Landscaped/Trees/Stone Path	Y	September 30, 2021	3.0	0.95	16.1	16.2
KL-7	44 51 31N	79 17 37W	Natural Shrubs	Landscaped Sand/Trees/Path	Y	May 19, 2021	3.0	0.94	17.9	17.5
KL-7	44 51 31N	79 17 37W	Natural Shrubs	Landscaped Sand/Trees/Path	Y	July 29, 2021	3.0	1.35	23.1	23.0

Site No.	GPS Coordinates		Shoreline/Water Interface	Backlot Description	Shoreline Area Developed?	Date Sampled	Approx. Distance from Shore (m)	Approx. Water Depth (m)	Water Temperature at 0.1m Depth (°C)	Water Temperature at 0.5m Depth (°C)
KL-7	44 51 31N	79 17 37W	Natural Shrubs	Landscaped Sand/Trees/Path	Y	September 30, 2021	3.0	0.95	16.3	16.4
KL-8	44 51 35N	79 17 37W	Large Rock	Shrubs/Buffered Lawn	Y	May 19, 2021	2.8	0.80	16.5	16.3
KL-9	44 51 43N	79 17 40W	Sandy Beach	Managed/Unbuffered Lawn	Y	May 19, 2021	11.7	0.80	16.6	16.3
KL-9	44 51 43N	79 17 40W	Sandy Beach	Managed/Unbuffered Lawn	Y	July 29, 2021	11.7	0.88	23.0	22.9
KL-9	44 51 43N	79 17 40W	Sandy Beach	Managed/Unbuffered Lawn	Y	September 30, 2021	11.7	1.10	16.0	16.0
KL-10	44 51 46N	79 17 33W	Large Rock	Landscaped Sand/Trees/Path	Y	May 19, 2021	15.5	0.80	17.1	16.8
KL-11	44 51 49N	79 17 25W	Sandy Beach	Managed/Unbuffered Lawn	Y	May 19, 2021	20.5	0.80	17.5	17.1
KL-11	44 51 49N	79 17 25W	Sandy Beach	Managed/Unbuffered Lawn	Y	July 29, 2021	20.5	0.80	23.2	23.1
KL-11	44 51 49N	79 17 25W	Sandy Beach	Managed/Unbuffered Lawn	Y	September 30, 2021	20.0	0.95	16.0	16.1
KL-12	44 51 54N	79 17 23W	Natural Shrubs	Managed/Unbuffered Lawn	Y	May 19, 2021	2.5	0.80	18.4	17.6
KL-13	44 52 19N	79 17 2W	Natural Shrubs	Natural Mixed Forest	N	May 19, 2021	8.7	0.78	17.9	17.8
KL-13	44 52 19N	79 17 2W	Natural Shrubs	Natural Mixed Forest	N	July 29, 2021	5.0	0.63	23.4	23.2
KL-14	45 52 2N	79 16 0W	Large Rock	Natural Mixed Forest	N	May 19, 2021	3.5	0.92	17.0	16.9
KL-14	45 52 2N	79 16 0W	Large Rock	Natural Mixed Forest	N	July 29, 2021	3.5	0.97	23.5	23.4
KL-14	45 52 2N	79 16 0W	Large Rock	Natural Mixed Forest	N	September 30, 2021	2.5	1.15	16.1	15.9
KL-15	44 52 0N	79 13 55W	Dock/Sandy Beach	Managed/Unbuffered Lawn	Y	May 19, 2021	8.3	0.80	18.9	18.7
KL-15	44 52 0N	79 13 55W	Dock/Sandy Beach	Managed/Unbuffered Lawn	Y	July 29, 2021	4.0	0.65	24.5	24.3

Site No.	GPS Coordinates		Shoreline/Water Interface	Backlot Description	Shoreline Area Developed?	Date Sampled	Approx. Distance from Shore (m)	Approx. Water Depth (m)	Water Temperature at 0.1m Depth (°C)	Water Temperature at 0.5m Depth (°C)
KL-15	44 52 0N	79 13 55W	Dock/Sandy Beach	Managed/Unbuffered Lawn	Y	September 30, 2021	3.5	0.80	15.9	15.7
KL-16	44 52 9N	79 13 48W	Sandy Beach	Managed/Unbuffered Lawn	Y	May 19, 2021	3.0	0.78	19.1	19.0
KL-16	44 52 9N	79 13 48W	Sandy Beach	Managed/Unbuffered Lawn	Y	July 29, 2021	3.5	0.77	24.2	24.0
KL-16	44 52 9N	79 13 48W	Sandy Beach	Managed/Unbuffered Lawn	Y	September 30, 2021	3.0	0.67	15.6	15.3
KL-17	44 52 6N	79 12 52W	Dock/Small Rocks	River Landscaped/Trees/Shrubs	Y	May 19, 2021	2.5	0.83	18.5	18.3
KL-17	44 52 6N	79 12 52W	Dock/Small Rocks	River Landscaped/Trees/Shrubs	Y	July 29, 2021	2.5	0.68	22.9	22.7
KL-17	44 52 6N	79 12 52W	Dock/Small Rocks	River Landscaped/Trees/Shrubs	Y	September 30, 2021	2.5	0.70	14.1	14.1
KL-18	44 51 28N	79 15 30W	Large Rock	Mixed Forest	N	May 19, 2021	3.7	0.80	18.5	17.9
KL-19	44 50 16N	79 16 20W	Large Rock	Landscaped Sand/Trees/Path	Y	May 19, 2021	4.9	0.82	18.9	19.9
KL-21	44 51 59N	79 13 14W	Large Rock	Landscaped/Trees/Stone Path	Y	September 30, 2021	30.0	3.45	15.8	15.7
Kahshe Main - Shallow (0-0.1m)	44 51 49.7N	79 15 48.2W	Open Water	None		May 19, 2021	260	22.0	17.7	17.5
Kahshe Main - 0 to Secchi Depth	44 51 49.7N	79 15 48.2W	Open Water	None		May 19, 2021	260	22.0	17.7	17.5
Kahshe Main - Average							260	22.0		
Kahshe Grant Bay - Shallow (0-0.1m)	44 50 15N	79 16 34W	Open Water	None		May 19, 2021	100	6.2	20.1	19.5
Kahshe Grant Bay - 0 to Secchi Depth	44 50 15N	79 16 34W	Open Water	None		May 19, 2021	100	6.2	20.1	19.5
Kahshe Grant Bay - Average							100	6.2	20.1	19.5

Table 2: Nutrient and Fecal Coliform Analysis Results for Near-Shore and Mid-Lake Samples Collected in May, July and September 2021

Site No.	Date Sampled	Total Phosphorus (R-1)	Total Phosphorus (R-2)	Total Phosphorus (Average)	Ammonia Total (as N)	Nitrate (as N)	Nitrite (as N)	Total Kjeldahl Nitrogen	Total Organic Nitrogen (TKN-(NH4-N))	Total Nitrogen	Fecal Coliform (E. Coli)
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	CFU/100mL
KL-20	May 19, 2021	7.7	7.4	7.6	<10	64	<10	330	330	394	2
KL-20	July 29, 2021	8.4	11.9	10.2	<10	<20	<10	460	460	460	1
KL-1	May 19, 2021	8.3	7.9	8.1	<10	59	<10	290	290	349	3
KL-1**	July 29, 2021	11.9	10.9	11.4	<10	<20	<10	425	425	425	2
KL-1	September 30, 2021	11.0	10.6	10.8	44	<20	<10	600	556	600	5
KL-2	May 19, 2021	7.7	7.5	7.6	<10	67	<10	340	340	407	0
KL-3*	May 19, 2021	6.2	6.6	6.4	<10	64	<10	350	350	414	1
KL-3	July 29, 2021	9.8	6.0	7.9	13	<20	<10	470	457	470	4
KL-3	September 30, 2021	10.4	10.4	10.4	42	<20	<10	490	448	490	3
KL-4	May 19, 2021	8.1	7.5	7.8	<10	66	<10	450	450	516	0
KL-5	May 19, 2021	7.1	6.9	7.0	<10	67	<10	350	350	417	1
KL-5	July 29, 2021	8.8	9.8	9.3	16	20	<10	450	434	450	6
KL-6	May 19, 2021	6.2	6.3	6.3	<10	99	<10	370	370	469	0
KL-6	September 30, 2021	10.6	10.0	10.3	32	<20	<10	540	508	540	4
KL-7	May 19, 2021	13.8	6.9	10.4	<10	74	<10	390	390	464	1
KL-7	July 29, 2021	12.6	10.9	11.8	<10	<20	<10	450	450	450	5
KL-7	September 30, 2021	10.0	9.9	10.0	45	<20	<10	530	485	530	3

Site No.	Date Sampled	Total Phosphorus (R-1)	Total Phosphorus (R-2)	Total Phosphorus (Average)	Ammonia Total (as N)	Nitrate (as N)	Nitrite (as N)	Total Kjeldahl Nitrogen	Total Organic Nitrogen (TKN-(NH4-N))	Total Nitrogen	Fecal Coliform (E. Coli)
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	CFU/100mL
KL-8	May 19, 2021	7.6	7.2	7.4	<10	85	<10	360	360	445	0
KL-9	May 19, 2021	8.8	7.7	8.3	12	306	<10	410	398	716	4
KL-9	July 29, 2021	12.4	10.9	11.7	<10	<20	<10	480	480	480	15
KL-9	September 30, 2021	10.9	10.0	10.5	19	<20	<10	430	411	430	6
KL-10	May 19, 2021	7.3	7.2	7.3	<10	122	<10	350	350	472	1
KL-11	May 19, 2021	8.5	9.0	8.8	<10	268	<10	450	450	718	0
KL-11	July 29, 2021	14.3	10.4	12.4	<10	<20	<10	1500	1500	1500	1
KL-11	September 30, 2021	10.7	9.5	10.1	31	<20	<10	510	479	510	4
KL-12	May 19, 2021	8.4	8.5	8.5	<10	125	<10	340	340	465	0
KL-13	May 19, 2021	10.0	10.3	10.2	<10	96	<10	350	350	446	1
KL-13	July 29, 2021	9.6	10.4	10.0	19	<20	<10	450	431	450	5
KL-14	May 19, 2021	9.7	13.9	11.8	<10	126	<10	380	380	506	0
KL-14	July 29, 2021	12.2	12.9	12.6	20	<20	<10	490	470	490	1
KL-14	September 30, 2021	12.7	11.4	12.1	27	56	<10	480	453	536	2
KL-15	May 19, 2021	14.0	14.2	14.1	<10	44	<10	360	360	404	0
KL-15	July 29, 2021	22.3	26.1	24.2	37	<20	<10	720	683	720	11
KL-15	September 30, 2021	22.7	20.3	21.5	47	121	<10	660	613	781	4
KL-16	May 19, 2021	14.7	14.1	14.4	<10	57	<10	370	370	427	2

Site No.	Date Sampled	Total Phosphorus (R-1)	Total Phosphorus (R-2)	Total Phosphorus (Average)	Ammonia Total (as N)	Nitrate (as N)	Nitrite (as N)	Total Kjeldahl Nitrogen	Total Organic Nitrogen (TKN-(NH4-N))	Total Nitrogen	Fecal Coliform (E. Coli)
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	CFU/100mL
KL-16	July 29, 2021	28.1	44.4	36.3	36	<20	<10	750	714	750	40
KL-16	September 30, 2021	24.9	22.5	23.7	71	<20	<10	660	589	680	10
KL-17	May 19, 2021	17.6	16.7	17.2	<10	<20	<10	410	410	410	4
KL-17	July 29, 2021	31.9	32.5	32.2	18	<20	<10	750	732	750	18
KL-17	September 30, 2021	27.7	25.2	26.5	46	113	<10	710	664	823	15
KL-18	May 19, 2021	9.7	9.1	9.4	<10	79	<10	370	370	449	0
KL-19	May 19, 2021	8.1	8.4	8.3	<10	250	<10	370	370	620	0
KL-21	September 30, 2021	23.4	20.7	22.1	50	46	<10	640	590	686	5
Kahshe Main - Shallow (0-0.1m)	May 19, 2021	8.4	6.1	7.3	<10	74	<10	340	340	414	NA
Kahshe Main - 0 to Secchi Depth	May 19, 2021	8.4	6.9	7.7	<10	71	<10	330	330	401	NA
Kahshe Main - Average	May 19, 2021	**8.4**	**6.5**	**7.5**	**<10**	**73**	**<10**	**335**	335	**408**	NA
Kahshe Grant Bay - Shallow (0-0.1m)	May 19, 2021	4.2	4.2	4.2	<10	75	<10	290	290	365	NA
Kahshe Grant Bay - 0 to Secchi Depth	May 19, 2021	5.4	4.7	5.1	<10	77	<10	280	280	357	NA
Kahshe Grant Bay - Average	May 19, 2021	**4.8**	**4.5**	**4.6**	**<10**	**76**	**<10**	**285**	285	**361**	**NA**
Legend:											
< means not detected at reporting limit											
K-3* all May 19 results are average of K-3 and field duplicate sample at this location											
K-1* all July 29 results are average of K-3 and field duplicate sample at this location											

Table 3: Major Metals and Chloride Analysis Results for Near-Shore and Mid-Lake Samples Collected in May, July and September 2021

Site No.	Date Sampled	Chloride	Barium-Total	Iron-Total	Potassium-Total	Zinc-Total
		mg/L	µg/L	µg/L	µg/L	µg/L
KL-20	May 19, 2021	2.61	10.4	315	399	5.0
KL-20	July 29, 2021	3.09	9.1	324	360	3.4
KL-1	May 19, 2021	2.57	10.4	317	402	4.6
KL-1**	July 29, 2021	2.43	9.4	267	366	4.0
KL-1	September 30, 2021	2.6	9.2	333	334	3.3
KL-2	May 19, 2021	2.63	10.5	309	392	3.4
KL-3**	May 19, 2021	2.57	10.5	320	398.5	5.9
KL-3	July 29, 2021	2.29	9.8	264	374	5.3
KL-3	September 30, 2021	2.57	9.2	378	344	<3.0
KL-4	May 19, 2021	2.6	10.4	310	406	3.4
KL-5	May 19, 2021	2.57	10.4	310	412	3.2
KL-5	July 29, 2021	2.24	9.8	251	375	<3.0
KL-6	May 19, 2021	2.42	10.0	298	392	3.5
KL-6	September 30, 2021	2.33	9.1	367	336	<3.0
KL-7	May 19, 2021	2.4	10.3	356	408	4.4
KL-7	July 29, 2021	2.25	10.2	261	375	3.4
KL-7	September 30, 2021	2.31	9.0	376	339	<3.0

Site No.	Date Sampled	Chloride	Barium-Total	Iron-Total	Potassium-Total	Zinc-Total
		mg/L	µg/L	µg/L	µg/L	µg/L
KL-8	May 19, 2021	2.41	10.1	313	396	4.5
KL-9	May 19, 2021	2.39	10.2	312	398	3.7
KL-9	July 29, 2021	2.23	10.3	267	376	5.9
KL-9	September 30, 2021	2.34	9.2	381	345	6.0
KL-10	May 19, 2021	2.35	9.9	304	387	3.7
KL-11	May 19, 2021	2.32	10.2	323	393	3.1
KL-11	July 29, 2021	2.14	10.1	265	375	3.5
KL-11	September 30, 2021	2.29	9.3	385	341	<3.0
K-12	May 19, 2021	2.3	10.3	316	396	<3.0
K-13	May 19, 2021	2.29	10.2	313	394	5.0
KL-13	July 29, 2021	2.11	10.0	248	372	4.2
K-14	May 19, 2021	2.34	10.2	306	385	4.4
KL-14	July 29, 2021	2.15	11.3	359	388	3.1
KL-14	September 30, 2021	2.24	14.6	485	339	3.4
K-15	May 19, 2021	2.58	11.0	334	355	4.3
KL-15	July 29, 2021	2.43	14.3	945	377	5.0
KL-15	September 30, 2021	2.27	12.3	1060	384	<3.0
KL-16	May 19, 2021	2.58	10.8	327	349	<3.0

Site No.	Date Sampled	Chloride	Barium-Total	Iron-Total	Potassium-Total	Zinc-Total
		mg/L	µg/L	µg/L	µg/L	µg/L
KL-16	July 29, 2021	2.45	17.9	1020	409	6.2
KL-16	September 30, 2021	2.32	13.1	1210	398	<3.0
KL-17	May 19, 2021	2.72	11.7	412	338	3.4
KL-17	July 29, 2021	2.59	16.1	1510	379	3.8
KL-17	September 30, 2021	1.99	14.2	1100	401	3.5
KL-18	May 19, 2021	2.31	10.0	299	384	<3.0
KL-19	May 19, 2021	2.29	9.9	293	386	3.2
KL-21	September 30, 2021	2.26	12.6	1150	402	<3.0
Kahshe Main - Shallow (0-0.1m)	May 19, 2021	2.34	10.7	316	396	<3.0
Kahshe Main - 0 to Sechi Depth	May 19, 2021	2.32	10.4	305	380	3.0
Kahshe Main - Average		2.33	10.6	311	388	3.0
Kahshe Grant Bay - Shallow (0-0.1m)	May 19, 2021	2.24	10.0	297	389	3.5
Kahshe Grant Bay - 0 to Sechi Depth	May 19, 2021	2.27	10.2	307	386	3.6
Kahshe Grant Bay - Average		2.26	10.1	302	388	3.6
Legend:						
K-3* all May 19 results are average of K-3 and field duplicate sample at this location						
K-1** all July 29 results are average of K-1 and field duplicate sample at this location						
<3.0 means less than Detection Level						

Table 4: Metal and Other Chemical Parameter Results for Near-Shore and Mid-Lake Samples Collected in May, July and September 2021 (A to M)

Site No.	Date Sampled	Aluminium	Antimony	Arsenic	Beryllium	Bismuth	Boron	Cadmium	Calcium	Cesium	Chromium	Cobalt	Copper	Lead	Lithium	Magnesium	Manganese	Molybdenum
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L
KL-20	May 19, 2021	80.2	0.1	0.21	0.1	0.05	10	0.0101	2.74	0.01	0.5	0.1	1.24	0.114	1	0.756	14.5	0.05
KL-20	July 29, 2021	39.4	0.1	0.24	0.1	0.05	10	0.005	2.95	0.01	0.5	0.1	0.95	0.083	1	0.807	28.4	0.05
KL-1	May 19, 2021	81.5	0.1	0.18	0.1	0.05	10	0.0135	2.76	0.01	0.5	0.1	1.23	0.16	1	0.749	14.4	0.05
KL-1**	July 29, 2021	41.4	0.1	0.225	0.1	0.05	10	0.0063	2.87	0.01	0.5	0.1	0.705	0.071	1	0.812	33.6	0.05
KL-1	September 30, 2021	32.9	0.1	0.22	0.1	0.05	10	0.005	2.97	0.01	0.5	0.1	0.66	0.084	1	0.742	37.0	0.05
KL-2	May 19, 2021	79	0.1	0.22	0.1	0.05	10	0.0083	2.70	0.01	0.5	0.1	0.65	0.112	1	0.745	14.1	0.05
KL-3**	May 19, 2021	87.75	0.1	0.215	0.1	0.05	10	0.01205	2.66	0.01	0.5	0.1	0.65	0.0995	1	0.737	17	0.05
KL-3	July 29, 2021	46.1	0.1	0.23	0.1	0.05	10	0.0073	2.87	0.01	0.5	0.1	0.76	0.092	1	0.805	31	0.05
KL-3	September 30, 2021	34.2	0.1	0.23	0.1	0.05	10	0.005	2.94	0.01	0.5	0.1	0.62	0.085	1	0.768	45	0.05
KL-4	May 19, 2021	84.6	0.1	0.23	0.1	0.05	10	0.0077	2.72	0.01	0.5	0.1	0.62	0.106	1	0.746	14.3	0.05
KL-5	May 19, 2021	81.9	0.1	0.19	0.1	0.05	10	0.008	2.67	0.01	0.5	0.1	0.62	0.113	1	0.752	14.3	0.05
KL-5	July 29, 2021	47.9	0.1	0.21	0.1	0.05	10	0.0054	2.88	0.01	0.5	0.1	0.68	0.075	1	0.808	29.3	0.05
KL-6	May 19, 2021	82	0.1	0.23	0.1	0.05	10	0.008	2.63	0.01	0.5	0.1	0.66	0.103	1	0.738	14.3	0.05
KL-6	September 30, 2021	35.6	0.1	0.25	0.1	0.05	10	0.005	2.86	0.01	0.5	0.1	0.68	0.088	1	0.754	53.1	0.05
KL-7	May 19, 2021	81	0.1	0.2	0.1	0.05	10	0.0091	2.65	0.01	0.5	0.1	0.71	0.125	1	0.738	15.0	0.05
KL-7	July 29, 2021	53.8	0.1	0.22	0.1	0.05	10	0.005	2.84	0.01	0.5	0.1	0.73	0.077	1	0.795	25.8	0.05

Site No.	Date Sampled	Aluminium	Antimony	Arsenic	Beryllium	Bismuth	Boron	Cadmium	Calcium	Cesium	Chromium	Cobalt	Copper	Lead	Lithium	Magnesium	Manganese	Molybdenum
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L
KL-7	September 30, 2021	36.8	0.1	0.23	0.1	0.05	10	0.005	2.89	0.01	0.5	0.1	0.63	0.086	1	0.771	56.5	0.05
KL-8	May 19, 2021	84.2	0.1	0.25	0.1	0.05	10	0.0111	2.66	0.01	0.5	0.1	2.56	0.118	1	0.740	16.1	0.05
KL-9	May 19, 2021	85.7	0.1	0.22	0.1	0.05	10	0.0093	2.67	0.01	0.5	0.1	1.17	0.113	1	0.740	16.4	0.05
KL-9	July 29, 2021	56.7	0.1	0.24	0.1	0.05	10	0.0077	2.96	0.01	0.5	0.1	0.8	0.092	1	0.815	24.9	0.05
KL-9	September 30, 2021	37.6	0.1	0.25	0.1	0.05	10	0.005	2.95	0.01	0.5	0.1	0.64	0.093	1	0.779	59.4	0.05
KL-10	May 19, 2021	83.2	0.1	0.23	0.1	0.05	10	0.0119	2.63	0.01	0.5	0.1	0.7	0.108	1	0.731	15.6	0.05
KL-11	May 19, 2021	86.4	0.1	0.21	0.1	0.05	10	0.0091	2.65	0.01	0.5	0.1	0.85	0.115	1	0.739	18.4	0.05
KL-11	July 29, 2021	55.7	0.1	0.24	0.1	0.05	10	0.0092	2.91	0.01	0.5	0.1	0.85	0.093	1	0.806	23.7	0.05
KL-11	September 30, 2021	38.2	0.1	0.25	0.1	0.05	10	0.005	2.80	0.01	0.5	0.1	0.65	0.091	1	0.773	63.1	0.05
K-12	May 19, 2021	84.7	0.1	0.22	0.1	0.05	10	0.0082	2.64	0.01	0.5	0.1	0.67	0.095	1	0.748	16.9	0.05
K-13	May 19, 2021	86.5	0.1	0.21	0.1	0.05	10	0.0108	2.64	0.01	0.5	0.1	0.89	0.099	1	0.759	17.2	0.05
KL-13	July 29, 2021	56.7	0.1	0.24	0.1	0.05	10	0.0059	2.84	0.01	0.5	0.1	1.16	0.068	1	0.796	17.8	0.05
K-14	May 19, 2021	90.8	0.1	0.22	0.1	0.05	10	0.0073	2.65	0.01	0.5	0.1	0.63	0.086	1	0.741	15.7	0.05
KL-14	July 29, 2021	75.6	0.1	0.27	0.1	0.05	10	0.009	2.96	0.01	0.5	0.1	1.04	0.07	1	0.853	20.6	0.05
KL-14	September 30, 2021	47.1	0.1	0.25	0.1	0.05	10	0.0083	2.92	0.01	0.5	0.1	0.69	0.086	1	0.777	73.8	0.05
K-15	May 19, 2021	116	0.1	0.21	0.1	0.05	10	0.012	2.67	0.01	0.5	0.1	0.8	0.113	1	0.755	15.7	0.05

Site No.	Date Sampled	Aluminium	Antimony	Arsenic	Beryllium	Bismuth	Boron	Cadmium	Calcium	Cesium	Chromium	Cobalt	Copper	Lead	Lithium	Magnesium	Manganese	Molybdenum
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L
KL-15	July 29, 2021	140	0.1	0.35	0.1	0.05	10	0.015	3.41	0.01	0.74	0.14	1.54	0.178	1	0.922	43.1	0.065
KL-15	September 30, 2021	83.6	0.1	0.29	0.1	0.05	10	0.0064	3.20	0.01	0.5	0.14	0.69	0.146	1	0.823	62.7	0.052
KL-16	May 19, 2021	116	0.1	0.22	0.1	0.05	10	0.0125	2.67	0.01	0.5	0.1	0.65	0.124	1	0.741	15.4	0.05
KL-16	July 29, 2021	234	0.1	0.39	0.1	0.05	10	0.0288	3.46	0.014	0.72	0.28	1.19	0.436	1	0.953	102	0.05
KL-16	September 30, 2021	106	0.1	0.34	0.1	0.05	10	0.0101	3.24	0.01	0.5	0.16	0.81	0.169	1	0.860	70.4	0.05
KL-17	May 19, 2021	129	0.1	0.23	0.1	0.05	10	0.0115	2.68	0.01	0.5	0.13	0.72	0.128	1	0.782	29.9	0.05
KL-17	July 29, 2021	173	0.1	0.43	0.1	0.05	10	0.0121	3.59	0.01	0.69	0.21	0.69	0.225	1	0.985	58.5	0.062
KL-17	September 30, 2021	153	0.1	0.29	0.1	0.05	10	0.0116	2.98	0.01	0.55	0.22	0.66	0.215	1	0.828	50.9	0.05
KL-18	May 19, 2021	88.8	0.1	0.21	0.1	0.05	10	0.0087	2.57	0.01	0.5	0.1	0.64	0.086	1	0.729	14.8	0.05
KL-19	May 19, 2021	79.2	0.1	0.21	0.1	0.05	10	0.0086	2.60	0.01	0.5	0.1	0.75	0.103	1	0.728	12.9	0.05
KL-21	September 30, 2021	94.4	0.1	0.3	0.1	0.05	10	0.0089	3.19	0.01	0.5	0.15	0.74	0.152	1	0.853	63.2	0.058
Kahshe Main - Shallow (0-0.1m)	May 19, 2021	96.5	0.1	0.23	0.1	0.05	10	0.0119	2.65	0.01	0.5	0.1	0.54	0.092	1	0.750	17.1	0.05
Kahshe Main - 0 to Secchi Depth	May 19, 2021	93.1	0.1	0.22	0.1	0.05	10	0.0141	2.61	0.01	0.5	0.1	0.54	0.093	1	0.726	17.3	0.05
Kahshe Main - Average		**94.8**	**0.1**	**0.23**	**0.1**	**0.05**	**10**	**0.013**	**2.63**	**0.01**	**0.5**	**0.1**	**0.54**	**0.09**	**1**	**0.738**	**17.2**	**0.05**

Site No.	Date Sampled	Aluminium	Antimony	Arsenic	Beryllium	Bismuth	Boron	Cadmium	Calcium	Cesium	Chromium	Cobalt	Copper	Lead	Lithium	Magnesium	Manganese	Molybdenum
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L
Kahshe Grant Bay - Shallow (0-0.1m)	May 19, 2021	82.1	0.1	0.2	0.1	0.05	10	0.0107	2.62	0.01	0.5	0.1	0.65	0.1	1	0.739	13.9	0.05
Kahshe Grant Bay - 0 to Secchi Depth	May 19, 2021	81.7	0.1	0.19	0.1	0.05	10	0.0132	2.67	0.01	0.5	0.1	0.69	0.117	1	0.738	14.6	0.05
Kahshe Grant Bay - Average		**81.9**	**0.1**	**0.20**	**0.1**	**0.05**	**10**	**0.012**	**2.65**	**0.01**	**0.5**	**0.1**	**0.67**	**0.11**	**1**	**0.739**	**14.3**	**0.05**
Legend:																		
K-3* all May 19 results are average of K-3 and field duplicate sample at this location																		
K-1** all July 29 results are average of K-1 and field duplicate sample at this location																		
Yellow shaded cells were <DL																		

Table 5: Metal and Other Chemical Parameter Results for Near-Shore and Mid-Lake Samples Collected in May, July and September 2021 (N to Z)

Site No.	Date Sampled	Nickel	Rubidium	Selenium	Silicon	Silver	Sodium	Strontium	Sulfur	Tellurium	Thallium	Thorium	Tin	Titanium	Tungsten	Uranium	Vanadium	Zirconium
		µg/L	µg/L	µg/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
KL-20	May 19, 2021	0.5	1.21	0.056	2.13	0.05	2.0	23.2	690	0.2	0.01	0.1	0.1	2	0.1	0.01	0.5	0.2
KL-20	July 29, 2021	0.5	1.15	0.067	1.18	0.05	2.43	25.2	740	0.2	0.01	0.1	0.1	0.53	0.1	0.01	0.5	0.2
KL-1	May 19, 2021	0.5	1.19	0.073	2.17	0.05	1.99	23.3	710	0.2	0.01	0.1	0.1	1.03	0.1	0.01	0.5	0.2
KL-1**	July 29, 2021	0.5	1.255	0.084	1.245	0.05	2.0	24.1	845	0.2	0.01	0.1	0.1	0.545	0.1	0.01	0.5	0.2
KL-1	September 30, 2021	0.5	1.2	0.071	1.22	0.05	1.94	26.1	690	0.2	0.01	0.1	0.1	0.52	0.1	0.01	0.5	0.2
KL-2	May 19, 2021	0.5	1.24	0.072	2.15	0.05	1.96	23.2	720	0.2	0.01	0.1	0.1	0.99	0.1	0.01	0.5	0.2
KL-3**	May 19, 2021	0.5	1.185	0.0665	2.155	0.05	1.89	22.5	685	0.2	0.01	0.1	0.1	1.155	0.1	0.01	0.5	0.2
KL-3	July 29, 2021	0.5	1.26	0.091	1.35	0.05	1.95	23.8	750	0.2	0.01	0.1	0.1	0.7	0.1	0.01	0.5	0.2
KL-3	September 30, 2021	0.5	1.23	0.073	1.26	0.05	1.98	26.3	720	0.2	0.01	0.1	0.1	0.57	0.1	0.01	0.5	0.2
KL-4	May 19, 2021	0.5	1.18	0.056	2.18	0.05	1.97	22.9	690	0.2	0.01	0.1	0.1	2	0.1	0.01	0.5	0.2
KL-5	May 19, 2021	0.5	1.24	0.076	2.17	0.05	1.97	22.6	720	0.2	0.01	0.1	0.1	1.11	0.1	0.01	0.5	0.2
KL-5	July 29, 2021	0.5	1.25	0.069	1.27	0.05	1.91	24.2	950	0.2	0.01	0.1	0.1	0.63	0.1	0.01	0.5	0.2
KL-6	May 19, 2021	0.5	1.22	0.077	2.22	0.05	1.84	22.3	730	0.2	0.01	0.1	0.1	1.11	0.1	0.01	0.5	0.2
KL-6	September 30, 2021	0.5	1.22	0.087	1.30	0.05	1.84	26	720	0.2	0.01	0.1	0.1	0.81	0.1	0.01	0.5	0.2
KL-7	May 19, 2021	0.5	1.15	0.075	2.24	0.05	1.86	22.5	750	0.2	0.01	0.1	0.1	1	0.1	0.011	0.5	0.2
KL-7	July 29, 2021	0.5	1.20	0.091	1.30	0.05	1.86	23.9	890	0.2	0.01	0.1	0.1	0.88	0.1	0.01	0.5	0.2
KL-7	September 30, 2021	0.5	1.22	0.076	1.31	0.05	1.89	27.0	680	0.2	0.01	0.1	0.1	0.61	0.1	0.01	0.5	0.2

Site No.	Date Sampled	Nickel	Rubidium	Selenium	Silicon	Silver	Sodium	Strontium	Sulfur	Tellurium	Thallium	Thorium	Tin	Titanium	Tungsten	Uranium	Vanadium	Zirconium
		µg/L	µg/L	µg/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
KL-8	May 19, 2021	0.5	1.18	0.071	2.18	0.05	1.88	22.6	760	0.2	0.01	0.1	0.1	1.14	0.1	0.01	0.5	0.2
KL-9	May 19, 2021	0.5	1.19	0.067	2.19	0.05	1.85	22.5	700	0.2	0.01	0.1	0.1	1.25	0.1	0.01	0.5	0.2
KL-9	July 29, 2021	0.5	1.23	0.06	1.33	0.05	1.88	24.6	820	0.2	0.01	0.1	0.1	0.98	0.1	0.01	0.5	0.2
KL-9	September 30, 2021	0.5	1.23	0.08	1.31	0.05	1.89	26.1	770	0.2	0.01	0.1	0.1	0.73	0.1	0.01	0.5	0.2
KL-10	May 19, 2021	0.5	1.14	0.07	2.21	0.05	1.82	22.4	720	0.2	0.01	0.1	0.1	1.2	0.1	0.01	0.5	0.2
KL-11	May 19, 2021	0.5	1.15	0.066	2.26	0.05	1.81	22.2	700	0.2	0.01	0.1	0.1	1.33	0.1	0.01	0.5	0.2
KL-11	July 29, 2021	0.5	1.19	0.075	1.28	0.05	1.86	24.2	840	0.2	0.01	0.1	0.1	0.82	0.1	0.01	0.5	0.2
KL-11	September 30, 2021	0.5	1.26	0.076	1.32	0.05	1.89	25.3	760	0.2	0.01	0.1	0.1	0.76	0.1	0.01	0.5	0.2
K-12	May 19, 2021	0.5	1.19	0.063	2.29	0.05	1.83	22.4	680	0.2	0.01	0.1	0.1	1.12	0.1	0.01	0.5	0.2
K-13	May 19, 2021	0.5	1.21	0.065	2.27	0.05	1.84	22.2	710	0.2	0.01	0.1	0.1	1.11	0.1	0.01	0.5	0.2
KL-13	July 29, 2021	0.5	1.23	0.074	1.28	0.05	1.84	23.8	820	0.2	0.01	0.1	0.1	1.02	0.1	0.01	0.5	0.2
K-14	May 19, 2021	0.5	1.13	0.063	2.14	0.05	1.84	22	640	0.2	0.01	0.1	0.1	1.12	0.1	0.01	0.5	0.2
KL-14	July 29, 2021	0.5	1.32	0.077	1.38	0.05	1.93	25.7	930	0.2	0.01	0.1	0.1	1.16	0.1	0.011	0.5	0.2
KL-14	September 30, 2021	0.5	1.23	0.077	1.34	0.05	1.86	26.4	690	0.2	0.01	0.1	0.12	3.32	0.1	0.01	0.5	0.2
K-15	May 19, 2021	0.5	1.05	0.076	1.72	0.05	2.07	23.4	720	0.2	0.01	0.1	0.1	1.71	0.1	0.014	0.5	0.2
KL-15	July 29, 2021	0.65	1.33	0.079	1.50	0.05	2.10	30.5	840	0.2	0.01	0.1	0.1	2.3	0.1	0.017	0.59	0.2
KL-15	September 30, 2021	0.5	1.4	0.084	1.65	0.05	1.79	29.7	700	0.2	0.01	0.1	0.1	1.94	0.1	0.014	0.5	0.2
KL-16	May 19, 2021	0.5	1.07	0.062	1.66	0.05	2.05	23.2	680	0.2	0.01	0.1	0.1	1.91	0.1	0.013	0.5	0.2

Site No.	Date Sampled	Nickel	Rubidium	Selenium	Silicon	Silver	Sodium	Strontium	Sulfur	Tellurium	Thallium	Thorium	Tin	Titanium	Tungsten	Uranium	Vanadium	Zirconium
		µg/L	µg/L	µg/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
KL-16	July 29, 2021	0.76	1.44	0.097	1.57	0.05	2.12	30.7	780	0.2	0.01	0.7	0.1	7.1	0.1	0.052	0.84	0.2
KL-16	September 30, 2021	0.5	1.46	0.086	1.68	0.05	1.88	29.7	700	0.2	0.01	0.1	0.1	2.46	0.1	0.015	0.56	0.2
KL-17	May 19, 2021	0.5	1.02	0.067	1.29	0.05	2.24	24.2	680	0.2	0.01	0.1	0.1	2.43	0.1	0.014	0.5	0.2
KL-17	July 29, 2021	0.72	1.33	0.098	1.95	0.05	2.23	33.7	750	0.2	0.01	0.1	0.1	3.17	0.1	0.02	0.83	0.2
KL-17	September 30, 2021	0.54	1.4	0.076	2.01	0.05	1.70	29.5	720	0.2	0.01	0.1	0.1	3.28	0.1	0.017	0.65	0.2
KL-18	May 19, 2021	0.5	1.15	0.064	2.15	0.05	1.83	21.9	670	0.2	0.01	0.1	0.1	1.24	0.1	0.011	0.5	0.2
KL-19	May 19, 2021	0.5	1.22	0.073	2.13	0.05	1.78	22.9	690	0.2	0.01	0.1	0.1	0.96	0.1	0.01	0.5	0.2
KL-21	September 30, 2021	0.5	1.42	0.082	1.70	0.05	1.87	30.6	700	0.2	0.01	0.1	0.1	2.36	0.1	0.014	0.52	0.2
Kahshe Main - Shallow (0-0.1m)	May 19, 2021	0.5	1.16	0.085	2.26	0.05	1.92	22.5	760	0.2	0.01	0.1	0.1	2	0.1	0.01	0.5	0.2
Kahshe Main - 0 to Secchi Depth	May 19, 2021	0.5	1.14	0.081	2.13	0.05	1.82	22.2	650	0.2	0.01	0.1	0.1	1.27	0.1	0.01	0.5	0.2
Kahshe Main - Average		**0.5**	**1.15**	**0.083**	**2.195**	**0.05**	**1.87**	**22.4**	**705**	**0.2**	**0.01**	**0.1**	**0.1**	**1.64**	**0.1**	**0.01**	**0.5**	**0.2**
Kahshe Grant Bay - Shallow (0-0.1m)	May 19, 2021	0.5	1.15	0.064	2.15	0.05	1.79	22.8	700	0.2	0.01	0.1	0.1	1.07	0.1	0.01	0.5	0.2
Kahshe Grant Bay - 0 to Secchi Depth	May 19, 2021	0.5	1.16	0.066	2.21	0.05	1.79	23	710	0.2	0.01	0.1	0.1	1.17	0.1	0.01	0.5	0.2
Kahshe Grant Bay - Average		**0.5**	**1.16**	**0.065**	**2.18**	**0.05**	**1.79**	**22.9**	**705**	**0.2**	**0.01**	**0.1**	**0.1**	**1.12**	**0.1**	**0.01**	**0.5**	**0.2**
Legend:																		

Site No.	Date Sampled	Nickel	Rubidium	Selenium	Silicon	Silver	Sodium	Strontium	Sulfur	Tellurium	Thallium	Thorium	Tin	Titanium	Tungsten	Uranium	Vanadium	Zirconium
		µg/L	µg/L	µg/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
K-3* all May 19 results are average of K-3 and field duplicate sample at this location																		
K-1** all July 29 results are average of K-1 and field duplicate sample at this location																		
Yellow shaded cells were <DL																		

Table 10:

Correlation of Elements and Ratios with Total Phosphorus Using All Sampling Data: Developed and Undeveloped Near-Shore Sites

Parameter Tested for Relationship with Average Total P at Near-Shore Sites	Correlation Coefficient (r value)	Statistical Significance of F (P-value)	Interpreted Level of Statistical Significance	Correlation Coefficient (r value)	Statistical Significance of F (P-value)	Interpreted Level of Statistical Significance
	Near-Shore Sites with Developed Waterfront			Near-Shore Sites with No Development		
Ratio Chloride:NH4-N	-0.55	6.00E-04	Highly Significant (>99%)	0.57	1.40E-01	Not Significant (<95%)
Ratio Chloride: Tot N	-0.50	2.00E-03	Highly Significant (>99%)	0.75	3.00E-02	Significant (>95%)
Ratio Chloride: Zinc	-0.14	6.90E-01	Not Significant (<95%)			
Barium	0.93	3.90E-16	Highly Significant (>99%)	0.49	2.20E-01	Not Significant (<95%)
Cobalt	0.92	2.10E-15	Highly Significant (>99%)	NT	NT	NT
Iron	0.90	1.70E-13	Highly Significant (>99%)	0.50	2.10E-01	Not Significant (<95%)
Magnesium	0.89	1.10E-12	Highly Significant (>99%)	0.46	2.60E-01	Not Significant (<95%)
Strontium	0.88	1.90E-12	Highly Significant (>99%)	0.47	2.40E-01	Not Significant (<95%)
Calcium	0.86	5.60E-11	Highly Significant (>99%)	0.41	3.10E-01	Not Significant (<95%)
Titanium	0.85	1.40E-10	Highly Significant (>99%)	0.12	7.90E-01	Not Significant (<95%)
Vanadium	0.84	1.80E-10	Highly Significant (>99%)	NT	NT	NT
Lead	0.82	1.20E-09	Highly Significant (>99%)	-0.65	8.00E-02	Not Significant (<95%)
E. coli	0.81	4.10E-09	Highly Significant (>99%)	-0.18	6.60E-01	Not Significant (<95%)
Uranium	0.78	3.20E-08	Highly Significant (>99%)	0.20	6.40E-01	Not Significant (<95%)
Aluminum	0.77	5.10E-08	Highly Significant (>99%)	-0.16	7.10E-01	Not Significant (<95%)
Chromium	0.75	1.90E-07	Highly Significant (>99%)	NT	NT	NT
Manganese	0.74	3.40E-07	Highly Significant (>99%)	0.44	2.70E-01	Not Significant (<95%)
Arsenic	0.70	3.60E-13	Highly Significant (>99%)	0.70	5.00E-02	Significant (>95%)
Rubidium	0.64	3.30E-05	Highly Significant (>99%)	0.32	4.30E-01	Not Significant (<95%)
Cadmium	0.60	1.00E-04	Highly Significant (>99%)	-0.18	6.60E-01	Not Significant (<95%)
Selenium	0.57	3.00E-04	Highly Significant (>99%)	0.74	3.00E-02	Significant (>95%)
NH4-N	0.55	6.00E-04	Highly Significant (>99%)	0.58	1.30E-01	Not Significant (<95%)
Total Kjeldahl N	0.50	2.00E-03	Highly Significant (>99%)	0.69	5.70E-02	Not Significant (<95%)
Total N	0.42	1.00E-02	Highly Significant (>99%)	0.92	1.00E-03	Highly Significant (>99%)
Sodium	0.39	2.00E-02	Significant (>95%)	-0.18	6.70E-01	Not Significant (<95%)
NO3-N	-0.25	1.50E-01	Not Significant (<95%)			
Zinc	0.14	4.30E-01	Not Significant (<95%)			
Potassium	0.11	5.40E-01	Not Significant (<95%)			
Copper	0.08	6.60E-01	Not Significant (<95%)			
Sulphur	0.08	6.60E-01	Not Significant (<95%)			
Chloride	-0.09	6.00E-01	Not Significant (<95%)			
Silicon	-0.19	2.70E-01	Not Significant (<95%)			

Legend:
NT=Not Tested (all ND)
Shaded cells were not analyzed, since 'r' values at developed sites were not significant

Table 11:

Correlation of Elements and Ratios with Ammonium-N Using All Sampling Data: Developed and Undeveloped Near-Shore Sites

Parameter Tested for Relationship with Ammonium-N at Near-Shore Sites	Correlation Coefficient (r value)	Statistical Significance of F (P-value)	Interpreted Level of Statistical Significance	Correlation Coefficient (r value)	Statistical Significance of F (P-value)	Interpreted Level of Statistical Significance
	Near-Shore Sites with Developed Waterfront			Near-Shore Sites with No Development		
Ratio Chloride:NH4-N	-0.92	3.48E-15	Highly Significant (>99%)	-0.92	1.20E-03	Highly Significant (>99%)
Ratio Chloride: Tot N	0.28	9.80E-02	Not Significant (<95%)			
Ratio Chloride: Zinc	0.21	2.35E-01	Not Significant (<95%)			
Manganese	0.77	5.01E-08	Highly Significant (>99%)	0.76	2.90E-02	Significant (>95%)
Strontium	0.75	1.91E-07	Highly Significant (>99%)	0.76	2.70E-02	Significant (>95%)
Rubidium	0.72	1.31E-06	Highly Significant (>99%)	0.65	8.10E-02	Not Significant (<95%)
Iron	0.66	1.51E-05	Highly Significant (>99%)	0.67	7.10E-02	Not Significant (<95%)
Calcium	0.64	4.16E-05	Highly Significant (>99%)	-0.31	7.10E-02	Not Significant (<95%)
Total Phosphorus	0.55	6.00E-04	Highly Significant (>99%)	0.58	1.33E-01	Not Significant (<95%)
Arsenic	0.53	9.00E-04	Highly Significant (>99%)	0.75	3.00E-02	Significant (>95%)
Cobalt	0.47	4.00E-03	Highly Significant (>99%)	NT	NT	NT
Magnesium	0.44	9.00E-03	Highly Significant (>99%)	0.49	2.16E-01	Not Significant (<95%)
Selenium	0.38	2.50E-02	Significant (>95%)	0.87	5.00E-03	Highly Significant (>99%)
E. coli	0.37	2.70E-02	Significant (>95%)	0.47	2.40E-01	Not Significant (<95%)
Total Kjeldahl N	0.37	3.10E-02	Significant (>95%)	0.76	3.00E-02	Significant (>95%)
Barium	0.36	3.50E-02	Significant (>95%)	0.84	9.80E-03	Highly Significant (>99%)
Silicon	-0.35	3.90E-02	Significant (>95%)	-0.65	8.10E-02	Not Significant (<95%)
Lead	0.32	6.30E-02	Not Significant (<95%)			
Titanium	0.31	7.10E-02	Not Significant (<95%)			
Uranium	0.29	9.40E-02	Not Significant (<95%)			
Total N	0.28	9.80E-02	Not Significant (<95%)			
Vanadium	0.27	1.18E-01	Not Significant (<95%)			
Chloride	-0.26	1.37E-01	Not Significant (<95%)			
NO3 N	-0.25	1.46E-01	Not Significant (<95%)			
Chromium	0.22	2.14E-01	Not Significant (<95%)			
Zinc	-0.22	1.98E-01	Not Significant (<95%)			
Sulphur	-0.17	3.42E-01	Not Significant (<95%)			
Potassium	-0.15	4.01E-01	Not Significant (<95%)			
Sodium	-0.12	5.00E-01	Not Significant (<95%)			
Aluminum	0.10	5.50E-01	Not Significant (<95%)			
Cadmium	-0.01	9.74E-01	Not Significant (<95%)			
Copper	-0.07	7.01E-01	Not Significant (<95%)			

Legend:
NT=Not Tested (all analyses ND)
Shaded cells were not analyzed, since 'r' values at developed sites were not significant

Table 12:

Correlation of Parameters and Ratios with Ammonium-N at Near-Shore Sites with Algal Blooms in their Vicinity - September 30, 2021

Parameters and Ratios Tested for Correlation with Ammonium-N	Correlation Coefficient (r value)	Statistical Significance of F (P-value)	Interpreted Level of Statistical Significance
	Near-Shore Sites at or Close to Locations with Algal Blooms in September*		
Ratio Chloride:NH4-N	-0.9	1.60E-02	Significant (>95%)
Ratio Chloride: Tot N	-0.33	5.19E-01	Not Significant (<95%)
Ratio Chloride: Zinc	0.04	9.38E-01	Not Significant (<95%)
Copper	0.81	4.90E-02	Significant (>95%)
Calcium	0.80	5.70E-02	Not Significant (<95%)
Magnesium	0.78	6.80E-02	Not Significant (<95%)
Arsenic	0.76	7.90E-02	Not Significant (<95%)
Rubidium	0.73	1.00E-01	Not Significant (<95%)
Iron	0.68	1.32E-01	Not Significant (<95%)
Strontium	0.66	1.52E-01	Not Significant (<95%)
Potassium	0.65	1.64E-01	Not Significant (<95%)
Manganese	0.63	1.83E-01	Not Significant (<95%)
Total P	0.59	2.20E-01	Not Significant (<95%)
Cadmium	0.58	2.23E-01	Not Significant (<95%)
Barium	0.57	2.34E-01	Not Significant (<95%)
Uranium	0.54	2.74E-01	Not Significant (<95%)
Total Kjeldahl N	0.50	3.09E-01	Not Significant (<95%)
Titanium	0.50	3.16E-01	Not Significant (<95%)
Lead	0.49	3.23E-01	Not Significant (<95%)
Aluminum	0.47	3.47E-01	Not Significant (<95%)
E. coli	0.41	4.18E-01	Not Significant (<95%)
Silicon	0.41	4.21E-01	Not Significant (<95%)
Cobalt	0.40	4.38E-01	Not Significant (<95%)
Total N	0.32	5.30E-01	Not Significant (<95%)
Vanadium	0.30	5.59E-01	Not Significant (<95%)
Selenium	0.19	7.23E-01	Not Significant (<95%)
Sodium	0.13	8.08E-01	Not Significant (<95%)
NO3 N	0.06	9.11E-01	Not Significant (<95%)
Chromium	0.06	9.14E-01	Not Significant (<95%)
Chloride	-0.05	9.29E-01	Not Significant (<95%)
Zinc	-0.13	8.05E-01	Not Significant (<95%)
Sulphur	-0.25	6.33E-01	Not Significant (<95%)

Legend: * Near-Shore sites included KL-1, KL-6, KL-7, KL-15, KL-16 and KL-17

Shaded p-values were below the level of >95% probability generally used for biological tests of significance, but these p-values were close (>90%)

Appendix A-1 Quality Assurance for Field Component

Sampling and Record Taking Procedures

The sampling of near-shore locations during the three sampling events was conducted in a manner to ensure that the results from each of the three teams of samplers were as consistent as possible. This involved the following activities:

- The Project Manager (R. Pearson) held an in-person training session to review a training document prepared by the Project Manager that provided detailed instructions on how to take and store the samples coolers with ice packs provided by the ALS laboratory as well as how to record other information required to complete the field program;
- Each team was provided with a weighted tape measure for recording depth of water and distance to shore, an apparatus to record water temperature at the 0.1 and 0.5m depths, a weighted collection bottle on a line marked to ensure that the sample was always taken from the 0-0.1m depth, a funnel and 0.8µm filter kindly supplied by the MECP's Dorset laboratory, a set of pre-labelled and appropriately preserved sample containers provided by ALS Environmental for each type of analysis that was to be performed and a template form to complete with all required information at each site.
- Each team was also equipped with an iPhone to record GPS coordinates, wind and water current direction via the Compass app. and to take a picture of the sampling site's shoreline features.

In an effort to follow the MECP's Lake Partner Program (LPP) sampling procedures, sampling for total phosphorus (TP) was conducted in duplicate at each site. The only deviation from the MECP's LPP protocols was the decision to ensure that each duplicate sample for TP analysis was taken via a separate dip of the sampling container into the water. This will ensure that the evaluation of the duplicates for variability (precision) will include not only analytical variability but also the variability in the chemistry of the water at each site.

Finally, at the conclusion of each sampling event, the labelled bottles on ice in coolers were delivered to the ALS Environmental laboratory in Richmond Hill by the Project Manager along with a completed Chain of Custody prior to 3:00pm the same day.

Calibration of the Analytical Results

In an effort to ensure that the analytical data for TP from the near-shore program was consistent with the mid-lake TP data generated by the DMM program in 2021, the near-shore program included sampling at two of the DMM mid-lake sites (Kahshe Main and Grant Bay). Also, because the DMM sampling at deep mid-lake sites during spring turnover was from 0 to the Secchi depth, the Near-Shore project also included the collection of water from both the 0-0.1m and 0-Sechi Depth. The data from this mid-lake sampling has been summarized in Table A-1.1 below.

Table A-1.1 Evaluation of Total Phosphorus and Nitrogen at Two Mid-Lake Sites at Two Water Depths - 2021

Site No.	Date Sampled	Total Phosphorus (Average)	Ammonia Total (as N)	Nitrate (as N)	Total Kjeldahl Nitrogen	Total Nitrogen
		µg/L	µg/L	µg/L	µg/L	µg/L
Kahshe Main - Shallow (0-0.1m)	May 19, 2021	7.3	10	74	340	414
Kahshe Main - 0 to Secchi Depth	May 19, 2021	7.7	10	71	330	401
Kahshe Main	**Average**	**7.5**	**10.0**	**73**	**335**	**408**
Kahshe Main	**RPD**	**5.4**	**0.0**	**4.1**	**3.0**	**3.2**
Kahshe Grant Bay - Shallow (0-0.1m)	May 19, 2021	4.2	10	75	290	365
Kahshe Grant Bay - 0 to Secchi Depth	May 19, 2021	5.1	10	77	280	357
Kahshe Grant Bay	**Average**	**4.6**	**10.0**	**76**	**285**	**361**
Kahshe Grant Bay	**RPD**	**18.4**	**0.0**	**2.6**	**3.5**	**2.2**

The assessment of the variation in nutrient levels at two depths in the two mid-lake sampling sites has been evaluated via the Relative Percent Difference method which is calculated as: RPD = [(absolute difference between duplicate results)/ mean of duplicate results] x 100 = %

Although this procedure is typically undertaken when assessing the variability of duplicate samples, it was utilized in this situation as more detailed statistical analysis was not able to be carried out. It should be noted also that although there are no specific acceptance criteria for this expression of the precision of the field sampling, generally an RPD of ≤ 20% indicates an acceptable result for duplicate water samples, as long as the result is five to ten times the limit of reporting (LOR). In those circumstances where the result is close to the LOR, RPD may exceed 30% (USEPA. 2014). In this case, with one exception, the RPDs for the surface (0-0.1m depth) and 0-Secchi depth sample analysis were very low and indicate no measureable difference between these two sampling depths. The one case with an elevated RPD (18.4%) was for TP at the Grant Bay site. However, although this RPD was higher than the others, it was still within the range of normal variation for water samples.

The calibration of the Near-Shore sampling program was undertaken by comparing the mid-lake analysis results at the 0-Secchi depth with the corresponding analysis results from the DMM sampling at approximately the same time. This comparison is shown below in Table A-1.2.

Table A-1.2 Calibration of Near-Shore Sampling of TP and Nitrogen at Two Mid-Lake Sites

Year	Kahshe Main					Grant Bay				
	TP	NO_3-N	NH_4-N	TKN	TN	TP	NO_3-N	NH_4-N	TKN	TN
NSWSP 2021*	7.7	71	<10	330	401	5.1	77	<10	280	357
DMM 2021**	11.4	56	14.8	NA	386	11.4	37	14.5	NA	381
Adjustment Factor	-1.5				+0.04	-2.2				-0.07

Legend:

*Mid-lake value from Near-Shore sampling program is from depth of 0-Sechi depth sampled May 19, 2021

**results from DMM program sampled Jun 1, 2021

NA = not analyzed by DMM

TP=Total Phosphorus

NO_3-N = Nitrate Nitrogen

NO_4-N = Ammonium Nitrogen

TKN = Total Kjedahl Nitrogen

TN = Total Nitrogen (sum of NO_3-N and TKN)

Based on this comparison, it is apparent that for TP, the sampling and analysis of near-shore samples was under reporting the total phosphorus concentrations by factors of -1.5 and -2.2x for Kahshe Main and Grant Bay, respectively. However, given the apparent anomaly in the NSWSP TP value for Grant Bay (5.1 ug/L), this result was ruled out in the derivation of adjusted Total P levels using a factor of 1.5x as presented in Figure 4A. In the case of total nitrogen, the differences are minimal and accordingly, no adjustment of the NSWSP values was necessary.

Evaluation of Data Variability and Quality

As noted above, the assessment of sample duplicates is commonly undertaken by expressing the duplicate results as the Relative Percent Difference (RPD) which is calculated as:

RPD = [(absolute difference between duplicate results)/ mean of duplicate results] x 100 = %

Although there are no specific acceptance criteria for this expression of the precision of the field sampling, generally an RPD of ≤ 20% indicates an acceptable result for duplicate water samples, as long as the result is five to ten times the limit of reporting (LOR). In those circumstances where the result is close to the LOR, RPD may exceed 30% (USEPA. 2014).

An evaluation of the RPDs for the near-shore total phosphorus analysis results for which the LOR was 1.0 µg/L, has been summarized in Table A-1.3 below. A total of 86 samples were collected in duplicate and all but six samples (7%) fell within the generally acceptable 20% RPD, with an average RPD of 11.7% for the full dataset. As the near-shore duplicate samples consisted of a separate sample from each near-shore location and not a split sample from a single dip as is the case for the MECP's Lake Partner Program, the >20% variability at the six sites is most likely due to water quality differences due to local currents or to small changes in location due to movement of the boats used by the sampling teams.

Table A-1.3 also provides estimates of the variability within the entire data set along with variability within sites from developed and undeveloped shorelines. These are calculated via the determination of the average standard deviation at a 95% level of probability and the calculation of upper and lower confidence intervals (CI) of the means (Steel and Torrie, 1960). The CIs were calculated using the following equation:

CI Lower = Mean - [t_{05}@n-1 degrees of freedom*[√ (SD^2/n)]

CI Upper = Mean + [t_{05}@n-1 degrees of freedom*[√ (SD^2/n)]

As was the case for the RPD evaluation, the lower and upper CIs of the means for the three groups appear reasonable, with values ranging from 0.3, 0.5 and 0.9 µg/L above and below the respective means. In the case of the undeveloped shoreline data, the greater deviation above and below the mean is most likely due to a smaller data set

Table A-1.3 Evaluation of Variability in Near-Shore Sampling Results for Total Phosphorus

Near-Shore Sample Sites	Number of Observations	Total Phosphorus Rep 1	Total Phosphorus Rep 2	Total Phosphorus Mean	Relative Percent Difference (Absolute Values) (RPD)	Standard Deviation	Student t05*	95% Lower Confidence Interval (CI) of Mean	95% Upper Confidence Interval (CI) of Mean
All Data									
Mean	43	12.7	12.6	12.6	11.7	1.2	2.021	12.3	13.0
Minimum		6.2	6	6.3	0.0	0.0			
Maximum		31.9	44.4	36.3	66.7	11.5			
Developed Shoreline									
Mean	35	13.3	13.0	13.1	11.3	1.2	2.042	12.7	13.6
Minimum		6.2	6	6.3	0.0	0.0			
Maximum		31.9	44.4	36.3	66.7	11.5			
Undeveloped Shoreline									
Mean	8	10.0	10.9	10.5	13.5	1.0	2.365	9.6	11.3
Minimum		7.7	7.4	7.6	3.0	0.2			
Maximum		12.7	13.9	12.6	35.6	3.0			
* Student t05from Table A.3 Steele and Torrie, 1960									

CI Upper and Lower are the upper and lower limits of the Confidence Interval at a 95% level of probability where: CI Lower = mean - [t05@n-1 degrees of freedom*[V (SD2/n)] and CI Upper = mean + [t05@n-1 degrees of freedom*[V (SD2/n)]

In addition to the duplicate sampling for TP at each near-shore sampling site, two sites were chosen for the collection of blind duplicates for all analytical parameters. These findings have been utilized to generate average results which are displayed in Tables 2, 3, 4 and 5 for KL-3 (duplicate in May 19 sampling event) and KL-1 (July 29 sampling event). To determine how the duplicate samples varied, Table A-1.4 below provides the analysis results along with the calculated RPDs. The calculation of RPDs was limited to those parameters with measurable concentrations as there was no value in calculating an RPD for a not detected value.

Table A-1.4 Evaluation of Variability in Parameters where Duplicate Samples Were Collected

Parameter	Lowest Detection Level		KL-1	KL-1 Dup	KL-1 Average	RPD	KL-3	KL-3 Dup	KL-1 Average	RPD
	mg/L	µ/L								
Chloride (Cl)	0.5		2.52	2.33	2.425	7.8	2.61	2.53	2.57	3.1
Total Kjeldahl Nitrogen		50	440	410	425	7.1	380	320	350	17.1
Total Nitrogen		50	440	410	425	7.1	443	385	414	14.0
Aluminum (Al)-Total		5	41.9	40.9	41.4	2.4	82.4	81.1	81.75	1.6
Arsenic (As)-Total		0.1	0.22	0.23	0.225	4.4	0.21	0.2	0.205	4.9
Barium (Ba)-Total		0.1	9.48	9.4	9.44	0.8	10.5	10.4	10.45	1.0
Cadmium (Cd)-Total		0.005	0.008	0.005	0.006	41.3	0.01	0.009	0.009	12.8
Calcium (Ca)-Total	0.05		2.88	2.86	2.87	0.7	2.71	2.68	2.70	1.1
Copper (Cu)-Total		0.5	0.73	0.68	0.71	7.1	0.76	0.64	0.7	17.1
Iron (Fe)-Total		10	272	261	267	4.1	323	317	320	1.9
Lead (Pb)-Total		0.05	0.07	0.07	0.07	5.6	0.11	0.11	0.11	1.9
Magnesium (Mg)-Total	0.005		0.819	0.804	0.812	1.8	0.748	0.758	0.753	1.3
Manganese (Mn)-Total		0.5	34.0	33.2	33.6	2.4	16.7	14.5	15.6	14.1
Potassium (K)-Total		50	365	366	366	0.3	396	401	399	1.3
Rubidium (Rb)-Total		0.2	1.2	1.3	1.3	7.2	1.2	1.2	1.2	5.0
Selenium (Se)-Total		0.05	0.10	0.07	0.08	45.2	0.05	0.08	0.07	44.8
Silicon (Si)-Total	0.1		1.2	1.3	1.2	0.8	2.2	2.2	2.2	2.3
Sodium (Na)-Total	0.05		2.01	1.99	2.00	1.0	1.95	1.98	1.97	1.5
Strontium (Sr)-Total		1	24	24	24	0.0	23	23	23	0.0
Sulfur (S)-Total		500	830	860	845	3.6	720	760	740	5.4
Titanium (Ti)-Total		0.3	0.6	0.5	0.5	16.5	1.0	1.1	1.1	3.8
Zinc (Zn)-Total		3	3.2	4.7	3.95	38.0	7.8	3.9	5.85	66.7

Legend:

Shaded RPDs exceed 30% RPD acceptance level for analysis results that are <10x higher than lowest detection level

As shown in Table A-1.4 above, in only five cases were RPDs found to exceed the 30% acceptance level for concentrations that are less than 10x the lowest detection level. These RPDs were for cadmium, selenium and zinc.

Based on this, the average results for Site KL-3 in May and KL-4 in July have been utilized for all data charts and tabular summaries. In the case of zinc, caution is recommended for its use in the evaluation of ratios as discussed in the text for Goal #5.

Appendix A – ALS Environmental Certificates of Analysis (CoA)

A-2 Certificate of Analysis for May 19, 2021 Analysis

Cash Clients - Ottawa
ATTN: Ron Pearson
1099 Oak Road
Kilworthy ON POE 1G0

Date Received: 19-MAY-21
Report Date: 08-NOV-21 07:13 (MT)
Version: FINAL REV. 2

Client Phone: 416-843-2805

Certificate of Analysis

Lab Work Order #: L2590096

Project P.O. #: 201808-000760
Job Reference:
C of C Numbers:
Legal Site Desc:

Costas Farassoglou
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2590096-1 KL-1 Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	<0.010		0.010	mg/L		21-MAY-21	R5463069
Chloride (Cl)	2.57		0.50	mg/L		25-MAY-21	R5469497
Nitrate (as N)	0.059		0.020	mg/L		25-MAY-21	R5469497
Nitrite (as N)	<0.010		0.010	mg/L		25-MAY-21	R5469497
Total Kjeldahl Nitrogen	0.290		0.050	mg/L	21-MAY-21	21-MAY-21	R5466019
Total Nitrogen	0.349		0.050	mg/L		26-MAY-21	
Phosphorus (P)-Total	0.0083		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
Bacteriological Tests							
E. Coli	3		0	CFU/100mL		21-MAY-21	R5463712
Total Metals							
Aluminum (Al)-Total	0.0815		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Arsenic (As)-Total	0.00018		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Barium (Ba)-Total	0.0104		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Boron (B)-Total	<0.010		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Cadmium (Cd)-Total	0.0000135		0.0000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Calcium (Ca)-Total	2.76		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Copper (Cu)-Total	0.00123		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Iron (Fe)-Total	0.317		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Lead (Pb)-Total	0.000160		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Lithium (Li)-Total	<0.0010		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Magnesium (Mg)-Total	0.749		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Manganese (Mn)-Total	0.0144		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Phosphorus (P)-Total	<0.050		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Potassium (K)-Total	0.402		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Rubidium (Rb)-Total	0.00119		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Selenium (Se)-Total	0.000073		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Silicon (Si)-Total	2.17		0.10	mg/L	20-MAY-21	20-MAY-21	R5460543
Silver (Ag)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Sodium (Na)-Total	1.99		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Strontium (Sr)-Total	0.0233		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Sulfur (S)-Total	0.71		0.50	mg/L	20-MAY-21	20-MAY-21	R5460543
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2590096-1 KL-1 Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Total Metals							
Thorium (Th)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Tin (Sn)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Titanium (Ti)-Total	0.00103		0.00030	mg/L	20-MAY-21	20-MAY-21	R5460543
Tungsten (W)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Uranium (U)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Vanadium (V)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Zinc (Zn)-Total	0.0046		0.0030	mg/L	20-MAY-21	20-MAY-21	R5460543
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
L2590096-2 KL-1 (2) Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0079		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
L2590096-3 KL-2 Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	<0.010		0.010	mg/L		21-MAY-21	R5463069
Chloride (Cl)	2.63		0.50	mg/L		25-MAY-21	R5469497
Nitrate (as N)	0.067		0.020	mg/L		25-MAY-21	R5469497
Nitrite (as N)	<0.010		0.010	mg/L		25-MAY-21	R5469497
Total Kjeldahl Nitrogen	0.340		0.050	mg/L	21-MAY-21	21-MAY-21	R5466019
Total Nitrogen	0.407		0.050	mg/L		26-MAY-21	
Phosphorus (P)-Total	0.0077		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
Bacteriological Tests							
E. Coli	0		0	CFU/100mL		21-MAY-21	R5463712
Total Metals							
Aluminum (Al)-Total	0.0790		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Arsenic (As)-Total	0.00022		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Barium (Ba)-Total	0.0105		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Boron (B)-Total	<0.010		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Cadmium (Cd)-Total	0.0000083		0.0000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Calcium (Ca)-Total	2.70		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Copper (Cu)-Total	0.00065		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Iron (Fe)-Total	0.309		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Lead (Pb)-Total	0.000112		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2590096-3 KL-2 Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Total Metals							
Lithium (Li)-Total	<0.0010		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Magnesium (Mg)-Total	0.745		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Manganese (Mn)-Total	0.0141		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Phosphorus (P)-Total	<0.050		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Potassium (K)-Total	0.392		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Rubidium (Rb)-Total	0.00124		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Selenium (Se)-Total	0.000072		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Silicon (Si)-Total	2.15		0.10	mg/L	20-MAY-21	20-MAY-21	R5460543
Silver (Ag)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Sodium (Na)-Total	1.96		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Strontium (Sr)-Total	0.0232		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Sulfur (S)-Total	0.72		0.50	mg/L	20-MAY-21	20-MAY-21	R5460543
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Thorium (Th)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Tin (Sn)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Titanium (Ti)-Total	0.00099		0.00030	mg/L	20-MAY-21	20-MAY-21	R5460543
Tungsten (W)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Uranium (U)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Vanadium (V)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Zinc (Zn)-Total	0.0034		0.0030	mg/L	20-MAY-21	20-MAY-21	R5460543
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
L2590096-4 KL-2 (2) Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0075		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
L2590096-5 KL-3 Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	<0.010		0.010	mg/L		21-MAY-21	R5463069
Chloride (Cl)	2.61		0.50	mg/L		25-MAY-21	R5469497
Nitrate (as N)	0.063		0.020	mg/L		25-MAY-21	R5469497
Nitrite (as N)	<0.010		0.010	mg/L		25-MAY-21	R5469497
Total Kjeldahl Nitrogen	0.380		0.050	mg/L	21-MAY-21	25-MAY-21	R5468480
Total Nitrogen	0.443		0.050	mg/L		26-MAY-21	
Phosphorus (P)-Total	0.0075		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
Bacteriological Tests							
E. Coli	0		0	CFU/100mL		21-MAY-21	R5463712

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2590096-5 KL-3 Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Bacteriological Tests							
Total Metals							
Aluminum (Al)-Total	0.0824		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Arsenic (As)-Total	0.00021		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Barium (Ba)-Total	0.0105		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Boron (B)-Total	<0.010		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Cadmium (Cd)-Total	0.0000100		0.0000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Calcium (Ca)-Total	2.71		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Copper (Cu)-Total	0.00076		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Iron (Fe)-Total	0.323		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Lead (Pb)-Total	0.000106		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Lithium (Li)-Total	<0.0010		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Magnesium (Mg)-Total	0.748		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Manganese (Mn)-Total	0.0167		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Phosphorus (P)-Total	<0.050		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Potassium (K)-Total	0.396		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Rubidium (Rb)-Total	0.00123		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Selenium (Se)-Total	0.000052		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Silicon (Si)-Total	2.18		0.10	mg/L	20-MAY-21	20-MAY-21	R5460543
Silver (Ag)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Sodium (Na)-Total	1.95		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Strontium (Sr)-Total	0.0228		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Sulfur (S)-Total	0.72		0.50	mg/L	20-MAY-21	20-MAY-21	R5460543
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Thorium (Th)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Tin (Sn)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Titanium (Ti)-Total	0.00104		0.00030	mg/L	20-MAY-21	20-MAY-21	R5460543
Tungsten (W)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Uranium (U)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Vanadium (V)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Zinc (Zn)-Total	0.0078		0.0030	mg/L	20-MAY-21	20-MAY-21	R5460543
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
L2590096-6 KL-3 (2)							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2590096-6 KL-3 (2) Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0076		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
L2590096-7 KL-4 Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	<0.010		0.010	mg/L		21-MAY-21	R5463069
Chloride (Cl)	2.60		0.50	mg/L		25-MAY-21	R5469497
Nitrate (as N)	0.066		0.020	mg/L		25-MAY-21	R5469497
Nitrite (as N)	<0.010		0.010	mg/L		25-MAY-21	R5469497
Total Kjeldahl Nitrogen	0.450		0.050	mg/L	21-MAY-21	25-MAY-21	R5468480
Total Nitrogen	0.516		0.050	mg/L		26-MAY-21	
Phosphorus (P)-Total	0.0081		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
Bacteriological Tests							
E. Coli	0		0	CFU/100mL		21-MAY-21	R5463712
Total Metals							
Aluminum (Al)-Total	0.0846		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Arsenic (As)-Total	0.00023		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Barium (Ba)-Total	0.0104		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Boron (B)-Total	<0.010		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Cadmium (Cd)-Total	0.0000077		0.0000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Calcium (Ca)-Total	2.72		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Copper (Cu)-Total	0.00062		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Iron (Fe)-Total	0.310		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Lead (Pb)-Total	0.000106		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Lithium (Li)-Total	<0.0010		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Magnesium (Mg)-Total	0.746		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Manganese (Mn)-Total	0.0143		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Phosphorus (P)-Total	<0.050		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Potassium (K)-Total	0.406		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Rubidium (Rb)-Total	0.00118		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Selenium (Se)-Total	0.000056		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Silicon (Si)-Total	2.18		0.10	mg/L	20-MAY-21	20-MAY-21	R5460543
Silver (Ag)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Sodium (Na)-Total	1.97		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2590096-7 KL-4 Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Total Metals							
Strontium (Sr)-Total	0.0229		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Sulfur (S)-Total	0.69		0.50	mg/L	20-MAY-21	20-MAY-21	R5460543
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Thorium (Th)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Tin (Sn)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Titanium (Ti)-Total	<0.0020	DLUI	0.0020	mg/L	20-MAY-21	20-MAY-21	R5460543
Tungsten (W)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Uranium (U)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Vanadium (V)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Zinc (Zn)-Total	0.0034		0.0030	mg/L	20-MAY-21	20-MAY-21	R5460543
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
L2590096-8 KL-4 (2) Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0075		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
L2590096-9 KL-5 Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	<0.010		0.010	mg/L		21-MAY-21	R5463069
Chloride (Cl)	2.57		0.50	mg/L		25-MAY-21	R5469497
Nitrate (as N)	0.067		0.020	mg/L		25-MAY-21	R5469497
Nitrite (as N)	<0.010		0.010	mg/L		25-MAY-21	R5469497
Total Kjeldahl Nitrogen	0.350		0.050	mg/L	21-MAY-21	25-MAY-21	R5468480
Total Nitrogen	0.417		0.050	mg/L		26-MAY-21	
Phosphorus (P)-Total	0.0071		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
Bacteriological Tests							
E. Coli	1		0	CFU/100mL		21-MAY-21	R5463712
Total Metals							
Aluminum (Al)-Total	0.0819		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Arsenic (As)-Total	0.00019		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Barium (Ba)-Total	0.0104		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Boron (B)-Total	<0.010		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Cadmium (Cd)-Total	0.0000080		0.0000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Calcium (Ca)-Total	2.67		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2590096-9 KL-5 Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Total Metals							
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Copper (Cu)-Total	0.00062		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Iron (Fe)-Total	0.310		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Lead (Pb)-Total	0.000113		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Lithium (Li)-Total	<0.0010		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Magnesium (Mg)-Total	0.752		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Manganese (Mn)-Total	0.0143		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Phosphorus (P)-Total	<0.050		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Potassium (K)-Total	0.412		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Rubidium (Rb)-Total	0.00124		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Selenium (Se)-Total	0.000076		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Silicon (Si)-Total	2.17		0.10	mg/L	20-MAY-21	20-MAY-21	R5460543
Silver (Ag)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Sodium (Na)-Total	1.97		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Strontium (Sr)-Total	0.0226		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Sulfur (S)-Total	0.72		0.50	mg/L	20-MAY-21	20-MAY-21	R5460543
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Thorium (Th)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Tin (Sn)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Titanium (Ti)-Total	0.00111		0.00030	mg/L	20-MAY-21	20-MAY-21	R5460543
Tungsten (W)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Uranium (U)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Vanadium (V)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Zinc (Zn)-Total	0.0032		0.0030	mg/L	20-MAY-21	20-MAY-21	R5460543
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
L2590096-10 KL-5 (2) Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0069		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
L2590096-11 KL-6 Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	<0.010		0.010	mg/L		21-MAY-21	R5463069
Chloride (Cl)	2.42		0.50	mg/L		25-MAY-21	R5469497
Nitrate (as N)	0.099		0.020	mg/L		25-MAY-21	R5469497
Nitrite (as N)	<0.010		0.010	mg/L		25-MAY-21	R5469497
Total Kjeldahl Nitrogen	0.370		0.050	mg/L	21-MAY-21	25-MAY-21	R5468480

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2590096-11 KL-6 Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Total Nitrogen	0.469		0.050	mg/L		26-MAY-21	
Phosphorus (P)-Total	0.0062		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
Bacteriological Tests							
E. Coli	0		0	CFU/100mL		21-MAY-21	R5463712
Total Metals							
Aluminum (Al)-Total	0.0820		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Arsenic (As)-Total	0.00023		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Barium (Ba)-Total	0.0100		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Boron (B)-Total	<0.010		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Cadmium (Cd)-Total	0.0000080		0.0000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Calcium (Ca)-Total	2.63		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Copper (Cu)-Total	0.00066		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Iron (Fe)-Total	0.298		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Lead (Pb)-Total	0.000103		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Lithium (Li)-Total	<0.0010		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Magnesium (Mg)-Total	0.738		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Manganese (Mn)-Total	0.0143		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Phosphorus (P)-Total	<0.050		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Potassium (K)-Total	0.392		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Rubidium (Rb)-Total	0.00122		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Selenium (Se)-Total	0.000077		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Silicon (Si)-Total	2.22		0.10	mg/L	20-MAY-21	20-MAY-21	R5460543
Silver (Ag)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Sodium (Na)-Total	1.84		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Strontium (Sr)-Total	0.0223		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Sulfur (S)-Total	0.73		0.50	mg/L	20-MAY-21	20-MAY-21	R5460543
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Thorium (Th)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Tin (Sn)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Titanium (Ti)-Total	0.00111		0.00030	mg/L	20-MAY-21	20-MAY-21	R5460543
Tungsten (W)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Uranium (U)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2590096-11 KL-6 Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Total Metals							
Vanadium (V)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Zinc (Zn)-Total	0.0035		0.0030	mg/L	20-MAY-21	20-MAY-21	R5460543
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
L2590096-12 KL-6 (2) Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0063		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
L2590096-13 KL-7 Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	<0.010		0.010	mg/L		21-MAY-21	R5463069
Chloride (Cl)	2.40		0.50	mg/L		25-MAY-21	R5469497
Nitrate (as N)	0.074		0.020	mg/L		25-MAY-21	R5469497
Nitrite (as N)	<0.010		0.010	mg/L		25-MAY-21	R5469497
Total Kjeldahl Nitrogen	0.390		0.050	mg/L	21-MAY-21	25-MAY-21	R5468480
Total Nitrogen	0.464		0.050	mg/L		26-MAY-21	
Phosphorus (P)-Total	0.0138		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
Bacteriological Tests							
E. Coli	1		0	CFU/100mL		20-MAY-21	R5462477
Total Metals							
Aluminum (Al)-Total	0.0810		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Arsenic (As)-Total	0.00020		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Barium (Ba)-Total	0.0103		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Boron (B)-Total	<0.010		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Cadmium (Cd)-Total	0.0000091		0.0000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Calcium (Ca)-Total	2.65		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Copper (Cu)-Total	0.00071		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Iron (Fe)-Total	0.356		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Lead (Pb)-Total	0.000125		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Lithium (Li)-Total	<0.0010		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Magnesium (Mg)-Total	0.738		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Manganese (Mn)-Total	0.0150		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2590096-13 KL-7 Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Total Metals							
Phosphorus (P)-Total	<0.050		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Potassium (K)-Total	0.408		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Rubidium (Rb)-Total	0.00115		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Selenium (Se)-Total	0.000075		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Silicon (Si)-Total	2.24		0.10	mg/L	20-MAY-21	20-MAY-21	R5460543
Silver (Ag)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Sodium (Na)-Total	1.86		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Strontium (Sr)-Total	0.0225		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Sulfur (S)-Total	0.75		0.50	mg/L	20-MAY-21	20-MAY-21	R5460543
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Thorium (Th)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Tin (Sn)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Titanium (Ti)-Total	<0.0010	DLUI	0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Tungsten (W)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Uranium (U)-Total	0.000011		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Vanadium (V)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Zinc (Zn)-Total	0.0044		0.0030	mg/L	20-MAY-21	20-MAY-21	R5460543
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
L2590096-14 KL-7 (2) Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0069		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
L2590096-15 KL-8 Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	<0.010		0.010	mg/L		21-MAY-21	R5463069
Chloride (Cl)	2.41		0.50	mg/L		25-MAY-21	R5469497
Nitrate (as N)	0.085		0.020	mg/L		25-MAY-21	R5469497
Nitrite (as N)	<0.010		0.010	mg/L		25-MAY-21	R5469497
Total Kjeldahl Nitrogen	0.360		0.050	mg/L	21-MAY-21	25-MAY-21	R5468480
Total Nitrogen	0.445		0.050	mg/L		26-MAY-21	
Phosphorus (P)-Total	0.0076		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
Bacteriological Tests							
E. Coli	0		0	CFU/100mL		21-MAY-21	R5463712
Total Metals							
Aluminum (Al)-Total	0.0842		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Arsenic (As)-Total	0.00025		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Barium (Ba)-Total	0.0101		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2590096-15 KL-8 Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Total Metals							
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Boron (B)-Total	<0.010		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Cadmium (Cd)-Total	0.0000111		0.0000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Calcium (Ca)-Total	2.66		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Copper (Cu)-Total	0.00256		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Iron (Fe)-Total	0.313		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Lead (Pb)-Total	0.000118		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Lithium (Li)-Total	<0.0010		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Magnesium (Mg)-Total	0.740		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Manganese (Mn)-Total	0.0161		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Phosphorus (P)-Total	<0.050		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Potassium (K)-Total	0.396		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Rubidium (Rb)-Total	0.00118		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Selenium (Se)-Total	0.000071		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Silicon (Si)-Total	2.18		0.10	mg/L	20-MAY-21	20-MAY-21	R5460543
Silver (Ag)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Sodium (Na)-Total	1.88		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Strontium (Sr)-Total	0.0226		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Sulfur (S)-Total	0.76		0.50	mg/L	20-MAY-21	20-MAY-21	R5460543
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Thorium (Th)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Tin (Sn)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Titanium (Ti)-Total	0.00114		0.00030	mg/L	20-MAY-21	20-MAY-21	R5460543
Tungsten (W)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Uranium (U)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Vanadium (V)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Zinc (Zn)-Total	0.0045		0.0030	mg/L	20-MAY-21	20-MAY-21	R5460543
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
L2590096-16 KL-8 (2) Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0072		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
L2590096-17 KL-9 Sampled By: CLIENT on 19-MAY-21							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2590096-17 KL-9 Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	0.012	SP	0.010	mg/L		02-JUN-21	R5477491
Chloride (Cl)	2.39		0.50	mg/L		25-MAY-21	R5469497
Nitrate (as N)	0.306		0.020	mg/L		25-MAY-21	R5469497
Nitrite (as N)	<0.010		0.010	mg/L		25-MAY-21	R5469497
Total Kjeldahl Nitrogen	0.410		0.050	mg/L	02-JUN-21	03-JUN-21	R5477934
Total Nitrogen	0.716		0.050	mg/L		03-JUN-21	
Phosphorus (P)-Total	0.0088		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
Bacteriological Tests							
E. Coli	4		0	CFU/100mL		21-MAY-21	R5463712
Total Metals							
Aluminum (Al)-Total	0.0857		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Arsenic (As)-Total	0.00022		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Barium (Ba)-Total	0.0102		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Boron (B)-Total	<0.010		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Cadmium (Cd)-Total	0.0000093		0.0000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Calcium (Ca)-Total	2.67		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Copper (Cu)-Total	0.00117		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Iron (Fe)-Total	0.312		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Lead (Pb)-Total	0.000113		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Lithium (Li)-Total	<0.0010		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Magnesium (Mg)-Total	0.740		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Manganese (Mn)-Total	0.0164		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Phosphorus (P)-Total	<0.050		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Potassium (K)-Total	0.398		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Rubidium (Rb)-Total	0.00119		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Selenium (Se)-Total	0.000067		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Silicon (Si)-Total	2.19		0.10	mg/L	20-MAY-21	20-MAY-21	R5460543
Silver (Ag)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Sodium (Na)-Total	1.85		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Strontium (Sr)-Total	0.0225		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Sulfur (S)-Total	0.70		0.50	mg/L	20-MAY-21	20-MAY-21	R5460543
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2590096-17 KL-9 Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Total Metals							
Thorium (Th)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Tin (Sn)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Titanium (Ti)-Total	0.00125		0.00030	mg/L	20-MAY-21	20-MAY-21	R5460543
Tungsten (W)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Uranium (U)-Total	0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Vanadium (V)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Zinc (Zn)-Total	0.0037		0.0030	mg/L	20-MAY-21	20-MAY-21	R5460543
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
L2590096-18 KL-9 (2) Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0077		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
L2590096-19 KL-10 Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	<0.010		0.010	mg/L		21-MAY-21	R5463069
Chloride (Cl)	2.35		0.50	mg/L		25-MAY-21	R5469497
Nitrate (as N)	0.122		0.020	mg/L		25-MAY-21	R5469497
Nitrite (as N)	<0.010		0.010	mg/L		25-MAY-21	R5469497
Total Kjeldahl Nitrogen	0.350		0.050	mg/L	21-MAY-21	25-MAY-21	R5468480
Total Nitrogen	0.472		0.050	mg/L		26-MAY-21	
Phosphorus (P)-Total	0.0073		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
Bacteriological Tests							
E. Coli	1		0	CFU/100mL		21-MAY-21	R5463712
Total Metals							
Aluminum (Al)-Total	0.0832		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Arsenic (As)-Total	0.00023		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Barium (Ba)-Total	0.00994		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Boron (B)-Total	<0.010		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Cadmium (Cd)-Total	0.0000119		0.0000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Calcium (Ca)-Total	2.63		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Copper (Cu)-Total	0.00070		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Iron (Fe)-Total	0.304		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Lead (Pb)-Total	0.000108		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2590096-19 KL-10 Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Total Metals							
Lithium (Li)-Total	<0.0010		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Magnesium (Mg)-Total	0.731		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Manganese (Mn)-Total	0.0156		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Phosphorus (P)-Total	<0.050		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Potassium (K)-Total	0.387		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Rubidium (Rb)-Total	0.00114		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Selenium (Se)-Total	0.000070		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Silicon (Si)-Total	2.21		0.10	mg/L	20-MAY-21	20-MAY-21	R5460543
Silver (Ag)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Sodium (Na)-Total	1.82		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Strontium (Sr)-Total	0.0224		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Sulfur (S)-Total	0.72		0.50	mg/L	20-MAY-21	20-MAY-21	R5460543
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Thorium (Th)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Tin (Sn)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Titanium (Ti)-Total	0.00120		0.00030	mg/L	20-MAY-21	20-MAY-21	R5460543
Tungsten (W)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Uranium (U)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Vanadium (V)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Zinc (Zn)-Total	0.0037		0.0030	mg/L	20-MAY-21	20-MAY-21	R5460543
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
L2590096-20 KL-10 (2) Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0072		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
L2590096-21 KL-11 Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	<0.010		0.010	mg/L		21-MAY-21	R5463069
Chloride (Cl)	2.32		0.50	mg/L		25-MAY-21	R5469497
Nitrate (as N)	0.268		0.020	mg/L		25-MAY-21	R5469497
Nitrite (as N)	<0.010		0.010	mg/L		25-MAY-21	R5469497
Total Kjeldahl Nitrogen	0.450		0.050	mg/L	21-MAY-21	25-MAY-21	R5468480
Total Nitrogen	0.718		0.050	mg/L		26-MAY-21	
Phosphorus (P)-Total	0.0085		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
Bacteriological Tests							
E. Coli	0		0	CFU/100mL		21-MAY-21	R5463712

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2590096-21 KL-11 Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Bacteriological Tests							
Total Metals							
Aluminum (Al)-Total	0.0864		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Arsenic (As)-Total	0.00021		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Barium (Ba)-Total	0.0102		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Boron (B)-Total	<0.010		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Cadmium (Cd)-Total	0.0000091		0.0000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Calcium (Ca)-Total	2.65		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Copper (Cu)-Total	0.00085		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Iron (Fe)-Total	0.323		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Lead (Pb)-Total	0.000115		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Lithium (Li)-Total	<0.0010		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Magnesium (Mg)-Total	0.739		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Manganese (Mn)-Total	0.0184		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Phosphorus (P)-Total	<0.050		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Potassium (K)-Total	0.393		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Rubidium (Rb)-Total	0.00115		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Selenium (Se)-Total	0.000066		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Silicon (Si)-Total	2.26		0.10	mg/L	20-MAY-21	20-MAY-21	R5460543
Silver (Ag)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Sodium (Na)-Total	1.81		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Strontium (Sr)-Total	0.0222		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Sulfur (S)-Total	0.70		0.50	mg/L	20-MAY-21	20-MAY-21	R5460543
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Thorium (Th)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Tin (Sn)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Titanium (Ti)-Total	0.00133		0.00030	mg/L	20-MAY-21	20-MAY-21	R5460543
Tungsten (W)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Uranium (U)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Vanadium (V)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Zinc (Zn)-Total	0.0031		0.0030	mg/L	20-MAY-21	20-MAY-21	R5460543
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
L2590096-22 KL-11 (2)							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2590096-22 KL-11 (2) Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0090		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
L2590096-23 KL-12 Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	<0.010		0.010	mg/L		26-MAY-21	R5468459
Chloride (Cl)	2.30		0.50	mg/L		25-MAY-21	R5469497
Nitrate (as N)	0.125		0.020	mg/L		25-MAY-21	R5469497
Nitrite (as N)	<0.010		0.010	mg/L		25-MAY-21	R5469497
Total Kjeldahl Nitrogen	0.340		0.050	mg/L	28-MAY-21	01-JUN-21	R5476377
Total Nitrogen	0.465		0.050	mg/L		01-JUN-21	
Phosphorus (P)-Total	0.0084		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
Bacteriological Tests							
E. Coli	0		0	CFU/100mL		21-MAY-21	R5463712
Total Metals							
Aluminum (Al)-Total	0.0847		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Arsenic (As)-Total	0.00022		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Barium (Ba)-Total	0.0103		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Boron (B)-Total	<0.010		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Cadmium (Cd)-Total	0.0000082		0.0000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Calcium (Ca)-Total	2.64		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Copper (Cu)-Total	0.00067		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Iron (Fe)-Total	0.316		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Lead (Pb)-Total	0.000095		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Lithium (Li)-Total	<0.0010		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Magnesium (Mg)-Total	0.748		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Manganese (Mn)-Total	0.0169		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Phosphorus (P)-Total	<0.050		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Potassium (K)-Total	0.396		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Rubidium (Rb)-Total	0.00119		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Selenium (Se)-Total	0.000063		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Silicon (Si)-Total	2.29		0.10	mg/L	20-MAY-21	20-MAY-21	R5460543
Silver (Ag)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Sodium (Na)-Total	1.83		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2590096-23 KL-12 Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Total Metals							
Strontium (Sr)-Total	0.0224		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Sulfur (S)-Total	0.68		0.50	mg/L	20-MAY-21	20-MAY-21	R5460543
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Thorium (Th)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Tin (Sn)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Titanium (Ti)-Total	0.00112		0.00030	mg/L	20-MAY-21	20-MAY-21	R5460543
Tungsten (W)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Uranium (U)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Vanadium (V)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Zinc (Zn)-Total	<0.0030		0.0030	mg/L	20-MAY-21	20-MAY-21	R5460543
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
L2590096-24 KL-12 (2) Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0085		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
L2590096-25 KL-13 Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	<0.010		0.010	mg/L		26-MAY-21	R5468459
Chloride (Cl)	2.29		0.50	mg/L		25-MAY-21	R5469497
Nitrate (as N)	0.096		0.020	mg/L		25-MAY-21	R5469497
Nitrite (as N)	<0.010		0.010	mg/L		25-MAY-21	R5469497
Total Kjeldahl Nitrogen	0.350		0.050	mg/L	28-MAY-21	28-MAY-21	R5474889
Total Nitrogen	0.446		0.050	mg/L		28-MAY-21	
Phosphorus (P)-Total	0.0100		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
Bacteriological Tests							
E. Coli	1		0	CFU/100mL		21-MAY-21	R5463712
Total Metals							
Aluminum (Al)-Total	0.0865		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Arsenic (As)-Total	0.00021		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Barium (Ba)-Total	0.0102		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Boron (B)-Total	<0.010		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Cadmium (Cd)-Total	0.0000108		0.0000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Calcium (Ca)-Total	2.64		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2590096-25 KL-13 Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Total Metals							
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Copper (Cu)-Total	0.00089		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Iron (Fe)-Total	0.313		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Lead (Pb)-Total	0.000099		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Lithium (Li)-Total	<0.0010		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Magnesium (Mg)-Total	0.759		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Manganese (Mn)-Total	0.0172		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Phosphorus (P)-Total	<0.050		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Potassium (K)-Total	0.394		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Rubidium (Rb)-Total	0.00121		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Selenium (Se)-Total	0.000065		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Silicon (Si)-Total	2.27		0.10	mg/L	20-MAY-21	20-MAY-21	R5460543
Silver (Ag)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Sodium (Na)-Total	1.84		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Strontium (Sr)-Total	0.0222		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Sulfur (S)-Total	0.71		0.50	mg/L	20-MAY-21	20-MAY-21	R5460543
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Thorium (Th)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Tin (Sn)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Titanium (Ti)-Total	0.00111		0.00030	mg/L	20-MAY-21	20-MAY-21	R5460543
Tungsten (W)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Uranium (U)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Vanadium (V)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Zinc (Zn)-Total	0.0050		0.0030	mg/L	20-MAY-21	20-MAY-21	R5460543
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
L2590096-26 KL-13 (2) Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0103		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
L2590096-27 KL-14 Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	<0.010		0.010	mg/L		26-MAY-21	R5468459
Chloride (Cl)	2.34		0.50	mg/L		25-MAY-21	R5469497
Nitrate (as N)	0.126		0.020	mg/L		25-MAY-21	R5469497
Nitrite (as N)	<0.010		0.010	mg/L		25-MAY-21	R5469497
Total Kjeldahl Nitrogen	0.380		0.050	mg/L	28-MAY-21	01-JUN-21	R5476377

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2590096-27 KL-14 Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Total Nitrogen	0.506		0.050	mg/L		01-JUN-21	
Phosphorus (P)-Total	0.0097		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
Bacteriological Tests							
E. Coli	0		0	CFU/100mL		21-MAY-21	R5463712
Total Metals							
Aluminum (Al)-Total	0.0908		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Arsenic (As)-Total	0.00022		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Barium (Ba)-Total	0.0102		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Boron (B)-Total	<0.010		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Cadmium (Cd)-Total	0.0000073		0.0000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Calcium (Ca)-Total	2.65		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Copper (Cu)-Total	0.00063		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Iron (Fe)-Total	0.306		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Lead (Pb)-Total	0.000086		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Lithium (Li)-Total	<0.0010		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Magnesium (Mg)-Total	0.741		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Manganese (Mn)-Total	0.0157		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Phosphorus (P)-Total	<0.050		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Potassium (K)-Total	0.385		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Rubidium (Rb)-Total	0.00113		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Selenium (Se)-Total	0.000063		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Silicon (Si)-Total	2.14		0.10	mg/L	20-MAY-21	20-MAY-21	R5460543
Silver (Ag)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Sodium (Na)-Total	1.84		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Strontium (Sr)-Total	0.0220		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Sulfur (S)-Total	0.64		0.50	mg/L	20-MAY-21	20-MAY-21	R5460543
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Thorium (Th)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Tin (Sn)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Titanium (Ti)-Total	0.00112		0.00030	mg/L	20-MAY-21	20-MAY-21	R5460543
Tungsten (W)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Uranium (U)-Total	0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2590096-27 KL-14 Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Total Metals							
Vanadium (V)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Zinc (Zn)-Total	0.0044		0.0030	mg/L	20-MAY-21	20-MAY-21	R5460543
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
L2590096-28 KL-14 (2) Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0139		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
L2590096-29 KL-15 Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	<0.010		0.010	mg/L		26-MAY-21	R5468459
Chloride (Cl)	2.58		0.50	mg/L		25-MAY-21	R5469497
Nitrate (as N)	0.044		0.020	mg/L		25-MAY-21	R5469497
Nitrite (as N)	<0.010		0.010	mg/L		25-MAY-21	R5469497
Total Kjeldahl Nitrogen	0.360		0.050	mg/L	28-MAY-21	01-JUN-21	R5476377
Total Nitrogen	0.404		0.050	mg/L		01-JUN-21	
Phosphorus (P)-Total	0.0140		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
Bacteriological Tests							
E. Coli	0		0	CFU/100mL		21-MAY-21	R5463712
Total Metals							
Aluminum (Al)-Total	0.116		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Arsenic (As)-Total	0.00021		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Barium (Ba)-Total	0.0110		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Boron (B)-Total	<0.010		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Cadmium (Cd)-Total	0.0000120		0.0000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Calcium (Ca)-Total	2.67		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Copper (Cu)-Total	0.00080		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Iron (Fe)-Total	0.334		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Lead (Pb)-Total	0.000113		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Lithium (Li)-Total	<0.0010		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Magnesium (Mg)-Total	0.755		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Manganese (Mn)-Total	0.0157		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2590096-29 KL-15 Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Total Metals							
Phosphorus (P)-Total	<0.050		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Potassium (K)-Total	0.355		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Rubidium (Rb)-Total	0.00105		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Selenium (Se)-Total	0.000076		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Silicon (Si)-Total	1.72		0.10	mg/L	20-MAY-21	20-MAY-21	R5460543
Silver (Ag)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Sodium (Na)-Total	2.07		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Strontium (Sr)-Total	0.0234		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Sulfur (S)-Total	0.72		0.50	mg/L	20-MAY-21	20-MAY-21	R5460543
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Thorium (Th)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Tin (Sn)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Titanium (Ti)-Total	0.00171		0.00030	mg/L	20-MAY-21	20-MAY-21	R5460543
Tungsten (W)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Uranium (U)-Total	0.000014		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Vanadium (V)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Zinc (Zn)-Total	0.0043		0.0030	mg/L	20-MAY-21	20-MAY-21	R5460543
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
L2590096-30 KL-15 (2) Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0142		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
L2590096-31 KL-16 Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	<0.010		0.010	mg/L		26-MAY-21	R5468459
Chloride (Cl)	2.58		0.50	mg/L		25-MAY-21	R5469497
Nitrate (as N)	0.057		0.020	mg/L		25-MAY-21	R5469497
Nitrite (as N)	<0.010		0.010	mg/L		25-MAY-21	R5469497
Total Kjeldahl Nitrogen	0.370		0.050	mg/L	28-MAY-21	01-JUN-21	R5476377
Total Nitrogen	0.427		0.050	mg/L		01-JUN-21	
Phosphorus (P)-Total	0.0147		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
Bacteriological Tests							
E. Coli	2		0	CFU/100mL		21-MAY-21	R5463712
Total Metals							
Aluminum (Al)-Total	0.116		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Arsenic (As)-Total	0.00022		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Barium (Ba)-Total	0.0108		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2590096-31 KL-16 Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Total Metals							
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Boron (B)-Total	<0.010		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Cadmium (Cd)-Total	0.0000125		0.0000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Calcium (Ca)-Total	2.67		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Copper (Cu)-Total	0.00065		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Iron (Fe)-Total	0.327		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Lead (Pb)-Total	0.000124		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Lithium (Li)-Total	<0.0010		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Magnesium (Mg)-Total	0.741		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Manganese (Mn)-Total	0.0154		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Phosphorus (P)-Total	<0.050		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Potassium (K)-Total	0.349		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Rubidium (Rb)-Total	0.00107		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Selenium (Se)-Total	0.000062		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Silicon (Si)-Total	1.66		0.10	mg/L	20-MAY-21	20-MAY-21	R5460543
Silver (Ag)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Sodium (Na)-Total	2.05		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Strontium (Sr)-Total	0.0232		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Sulfur (S)-Total	0.68		0.50	mg/L	20-MAY-21	20-MAY-21	R5460543
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Thorium (Th)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Tin (Sn)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Titanium (Ti)-Total	0.00191		0.00030	mg/L	20-MAY-21	20-MAY-21	R5460543
Tungsten (W)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Uranium (U)-Total	0.000013		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Vanadium (V)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Zinc (Zn)-Total	<0.0030		0.0030	mg/L	20-MAY-21	20-MAY-21	R5460543
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
L2590096-32 KL-16 (2) Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0141		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
L2590096-33 KL-17 Sampled By: CLIENT on 19-MAY-21							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2590096-33 KL-17 Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	<0.010		0.010	mg/L		26-MAY-21	R5468459
Chloride (Cl)	2.72		0.50	mg/L		25-MAY-21	R5469497
Nitrate (as N)	<0.020		0.020	mg/L		25-MAY-21	R5469497
Nitrite (as N)	<0.010		0.010	mg/L		25-MAY-21	R5469497
Total Kjeldahl Nitrogen	0.410		0.050	mg/L	28-MAY-21	01-JUN-21	R5476377
Total Nitrogen	0.410		0.050	mg/L		01-JUN-21	
Phosphorus (P)-Total	0.0176		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
Bacteriological Tests							
E. Coli	4		0	CFU/100mL		21-MAY-21	R5463712
Total Metals							
Aluminum (Al)-Total	0.129		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Arsenic (As)-Total	0.00023		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Barium (Ba)-Total	0.0117		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Boron (B)-Total	<0.010		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Cadmium (Cd)-Total	0.0000115		0.0000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Calcium (Ca)-Total	2.68		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cobalt (Co)-Total	0.00013		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Copper (Cu)-Total	0.00072		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Iron (Fe)-Total	0.412		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Lead (Pb)-Total	0.000128		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Lithium (Li)-Total	<0.0010		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Magnesium (Mg)-Total	0.782		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Manganese (Mn)-Total	0.0299		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Phosphorus (P)-Total	<0.050		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Potassium (K)-Total	0.338		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Rubidium (Rb)-Total	0.00102		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Selenium (Se)-Total	0.000067		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Silicon (Si)-Total	1.29		0.10	mg/L	20-MAY-21	20-MAY-21	R5460543
Silver (Ag)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Sodium (Na)-Total	2.24		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Strontium (Sr)-Total	0.0242		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Sulfur (S)-Total	0.68		0.50	mg/L	20-MAY-21	20-MAY-21	R5460543
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2590096-33 KL-17 Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Total Metals							
Thorium (Th)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Tin (Sn)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Titanium (Ti)-Total	0.00243		0.00030	mg/L	20-MAY-21	20-MAY-21	R5460543
Tungsten (W)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Uranium (U)-Total	0.000014		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Vanadium (V)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Zinc (Zn)-Total	0.0034		0.0030	mg/L	20-MAY-21	20-MAY-21	R5460543
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
L2590096-34 KL-17 (2) Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0167		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
L2590096-35 KL-18 Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	<0.010		0.010	mg/L		26-MAY-21	R5468459
Chloride (Cl)	2.31		0.50	mg/L		25-MAY-21	R5469497
Nitrate (as N)	0.079		0.020	mg/L		25-MAY-21	R5469497
Nitrite (as N)	<0.010		0.010	mg/L		25-MAY-21	R5469497
Total Kjeldahl Nitrogen	0.370		0.050	mg/L	28-MAY-21	01-JUN-21	R5476377
Total Nitrogen	0.449		0.050	mg/L		01-JUN-21	
Phosphorus (P)-Total	0.0097		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
Bacteriological Tests							
E. Coli	0		0	CFU/100mL		21-MAY-21	R5463712
Total Metals							
Aluminum (Al)-Total	0.0888		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Arsenic (As)-Total	0.00021		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Barium (Ba)-Total	0.00999		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Boron (B)-Total	<0.010		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Cadmium (Cd)-Total	0.0000087		0.0000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Calcium (Ca)-Total	2.57		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Copper (Cu)-Total	0.00064		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Iron (Fe)-Total	0.299		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Lead (Pb)-Total	0.000086		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2590096-35 KL-18 Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Total Metals							
Lithium (Li)-Total	<0.0010		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Magnesium (Mg)-Total	0.729		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Manganese (Mn)-Total	0.0148		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Phosphorus (P)-Total	<0.050		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Potassium (K)-Total	0.384		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Rubidium (Rb)-Total	0.00115		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Selenium (Se)-Total	0.000064		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Silicon (Si)-Total	2.15		0.10	mg/L	20-MAY-21	20-MAY-21	R5460543
Silver (Ag)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Sodium (Na)-Total	1.83		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Strontium (Sr)-Total	0.0219		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Sulfur (S)-Total	0.67		0.50	mg/L	20-MAY-21	20-MAY-21	R5460543
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Thorium (Th)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Tin (Sn)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Titanium (Ti)-Total	0.00124		0.00030	mg/L	20-MAY-21	20-MAY-21	R5460543
Tungsten (W)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Uranium (U)-Total	0.000011		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Vanadium (V)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Zinc (Zn)-Total	<0.0030		0.0030	mg/L	20-MAY-21	20-MAY-21	R5460543
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
L2590096-36 KL-18 (2) Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0091		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
L2590096-37 KL-19 Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	<0.010	SP	0.010	mg/L		02-JUN-21	R5477491
Chloride (Cl)	2.29		0.50	mg/L		25-MAY-21	R5469497
Nitrate (as N)	0.250		0.020	mg/L		25-MAY-21	R5469497
Nitrite (as N)	<0.010		0.010	mg/L		25-MAY-21	R5469497
Total Kjeldahl Nitrogen	0.370		0.050	mg/L	02-JUN-21	03-JUN-21	R5477934
Total Nitrogen	0.620		0.050	mg/L		03-JUN-21	
Phosphorus (P)-Total	0.0081		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
Bacteriological Tests							
E. Coli	0		0	CFU/100mL		21-MAY-21	R5463712

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2590096-37 KL-19 Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Bacteriological Tests							
Total Metals							
Aluminum (Al)-Total	0.0792		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Arsenic (As)-Total	0.00021		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Barium (Ba)-Total	0.00993		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Boron (B)-Total	<0.010		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Cadmium (Cd)-Total	0.0000086		0.0000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Calcium (Ca)-Total	2.60		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Copper (Cu)-Total	0.00075		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Iron (Fe)-Total	0.293		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Lead (Pb)-Total	0.000103		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Lithium (Li)-Total	<0.0010		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Magnesium (Mg)-Total	0.728		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Manganese (Mn)-Total	0.0129		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Phosphorus (P)-Total	<0.050		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Potassium (K)-Total	0.386		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Rubidium (Rb)-Total	0.00122		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Selenium (Se)-Total	0.000073		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Silicon (Si)-Total	2.13		0.10	mg/L	20-MAY-21	20-MAY-21	R5460543
Silver (Ag)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Sodium (Na)-Total	1.78		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Strontium (Sr)-Total	0.0229		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Sulfur (S)-Total	0.69		0.50	mg/L	20-MAY-21	20-MAY-21	R5460543
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Thorium (Th)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Tin (Sn)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Titanium (Ti)-Total	0.00096		0.00030	mg/L	20-MAY-21	20-MAY-21	R5460543
Tungsten (W)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Uranium (U)-Total	0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Vanadium (V)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Zinc (Zn)-Total	0.0032		0.0030	mg/L	20-MAY-21	20-MAY-21	R5460543
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
L2590096-38 KL-19 (2)							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2590096-38 KL-19 (2) Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0084		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
L2590096-39 KL-20 Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	<0.010		0.010	mg/L		26-MAY-21	R5468459
Chloride (Cl)	2.61		0.50	mg/L		25-MAY-21	R5469497
Nitrate (as N)	0.064		0.020	mg/L		25-MAY-21	R5469497
Nitrite (as N)	<0.010		0.010	mg/L		25-MAY-21	R5469497
Total Kjeldahl Nitrogen	0.330		0.050	mg/L	28-MAY-21	01-JUN-21	R5476377
Total Nitrogen	0.394		0.050	mg/L		01-JUN-21	
Phosphorus (P)-Total	0.0077		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
Bacteriological Tests							
E. Coli	2		0	CFU/100mL		21-MAY-21	R5463712
Total Metals							
Aluminum (Al)-Total	0.0802		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Arsenic (As)-Total	0.00021		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Barium (Ba)-Total	0.0104		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Boron (B)-Total	<0.010		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Cadmium (Cd)-Total	0.0000101		0.0000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Calcium (Ca)-Total	2.74		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Copper (Cu)-Total	0.00124		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Iron (Fe)-Total	0.315		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Lead (Pb)-Total	0.000114		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Lithium (Li)-Total	<0.0010		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Magnesium (Mg)-Total	0.756		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Manganese (Mn)-Total	0.0145		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Phosphorus (P)-Total	<0.050		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Potassium (K)-Total	0.399		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Rubidium (Rb)-Total	0.00121		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Selenium (Se)-Total	0.000056		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Silicon (Si)-Total	2.13		0.10	mg/L	20-MAY-21	20-MAY-21	R5460543
Silver (Ag)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Sodium (Na)-Total	2.00		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2590096-39 KL-20 Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Total Metals							
Strontium (Sr)-Total	0.0232		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Sulfur (S)-Total	0.69		0.50	mg/L	20-MAY-21	20-MAY-21	R5460543
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Thorium (Th)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Tin (Sn)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Titanium (Ti)-Total	<0.0020	DLUI	0.0020	mg/L	20-MAY-21	20-MAY-21	R5460543
Tungsten (W)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Uranium (U)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Vanadium (V)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Zinc (Zn)-Total	0.0050		0.0030	mg/L	20-MAY-21	20-MAY-21	R5460543
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
L2590096-40 KL-20 (2) Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0074		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
L2590096-41 KM-SH Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	<0.010		0.010	mg/L		26-MAY-21	R5468459
Chloride (Cl)	2.34		0.50	mg/L		25-MAY-21	R5469497
Nitrate (as N)	0.074		0.020	mg/L		25-MAY-21	R5469497
Nitrite (as N)	<0.010		0.010	mg/L		25-MAY-21	R5469497
Total Kjeldahl Nitrogen	0.340		0.050	mg/L	28-MAY-21	01-JUN-21	R5476377
Total Nitrogen	0.414		0.050	mg/L		01-JUN-21	
Phosphorus (P)-Total	0.0084		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
Total Metals							
Aluminum (Al)-Total	0.0965		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Arsenic (As)-Total	0.00023		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Barium (Ba)-Total	0.0107		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Boron (B)-Total	<0.010		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Cadmium (Cd)-Total	0.0000119		0.0000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Calcium (Ca)-Total	2.65		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Copper (Cu)-Total	0.00054		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2590096-41 KM-SH Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Total Metals							
Iron (Fe)-Total	0.316		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Lead (Pb)-Total	0.000092		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Lithium (Li)-Total	<0.0010		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Magnesium (Mg)-Total	0.750		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Manganese (Mn)-Total	0.0171		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Phosphorus (P)-Total	<0.050		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Potassium (K)-Total	0.396		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Rubidium (Rb)-Total	0.00116		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Selenium (Se)-Total	0.000085		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Silicon (Si)-Total	2.26		0.10	mg/L	20-MAY-21	20-MAY-21	R5460543
Silver (Ag)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Sodium (Na)-Total	1.92		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Strontium (Sr)-Total	0.0225		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Sulfur (S)-Total	0.76		0.50	mg/L	20-MAY-21	20-MAY-21	R5460543
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Thorium (Th)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Tin (Sn)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Titanium (Ti)-Total	<0.0020	DLUI	0.0020	mg/L	20-MAY-21	20-MAY-21	R5460543
Tungsten (W)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Uranium (U)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Vanadium (V)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Zinc (Zn)-Total	<0.0030		0.0030	mg/L	20-MAY-21	20-MAY-21	R5460543
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
L2590096-42 KM-SH (2) Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0061		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
L2590096-43 KM-D Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	<0.010		0.010	mg/L		26-MAY-21	R5468459
Chloride (Cl)	2.32		0.50	mg/L		25-MAY-21	R5469497
Nitrate (as N)	0.071		0.020	mg/L		25-MAY-21	R5469497
Nitrite (as N)	<0.010		0.010	mg/L		25-MAY-21	R5469497
Total Kjeldahl Nitrogen	0.330		0.050	mg/L	28-MAY-21	01-JUN-21	R5476377
Total Nitrogen	0.401		0.050	mg/L		01-JUN-21	
Phosphorus (P)-Total	0.0084		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2590096-43 KM-D Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Total Metals							
Aluminum (Al)-Total	0.0931		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Arsenic (As)-Total	0.00022		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Barium (Ba)-Total	0.0104		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Boron (B)-Total	<0.010		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Cadmium (Cd)-Total	0.0000141		0.0000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Calcium (Ca)-Total	2.61		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Copper (Cu)-Total	0.00054		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Iron (Fe)-Total	0.305		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Lead (Pb)-Total	0.000093		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Lithium (Li)-Total	<0.0010		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Magnesium (Mg)-Total	0.726		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Manganese (Mn)-Total	0.0173		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Phosphorus (P)-Total	<0.050		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Potassium (K)-Total	0.380		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Rubidium (Rb)-Total	0.00114		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Selenium (Se)-Total	0.000081		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Silicon (Si)-Total	2.13		0.10	mg/L	20-MAY-21	20-MAY-21	R5460543
Silver (Ag)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Sodium (Na)-Total	1.82		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Strontium (Sr)-Total	0.0222		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Sulfur (S)-Total	0.65		0.50	mg/L	20-MAY-21	20-MAY-21	R5460543
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Thorium (Th)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Tin (Sn)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Titanium (Ti)-Total	0.00127		0.00030	mg/L	20-MAY-21	20-MAY-21	R5460543
Tungsten (W)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Uranium (U)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Vanadium (V)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Zinc (Zn)-Total	0.0030		0.0030	mg/L	20-MAY-21	20-MAY-21	R5460543
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
L2590096-44 KM-D (2)							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2590096-44 KM-D (2) Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0069		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
L2590096-45 KG-SH Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	<0.010		0.010	mg/L		26-MAY-21	R5468459
Chloride (Cl)	2.24		0.50	mg/L		25-MAY-21	R5469497
Nitrate (as N)	0.075		0.020	mg/L		25-MAY-21	R5469497
Nitrite (as N)	<0.010		0.010	mg/L		25-MAY-21	R5469497
Total Kjeldahl Nitrogen	0.290		0.050	mg/L	28-MAY-21	01-JUN-21	R5476377
Total Nitrogen	0.365		0.050	mg/L		01-JUN-21	
Phosphorus (P)-Total	0.0042		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
Total Metals							
Aluminum (Al)-Total	0.0821		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Arsenic (As)-Total	0.00020		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Barium (Ba)-Total	0.00999		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Boron (B)-Total	<0.010		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Cadmium (Cd)-Total	0.0000107		0.0000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Calcium (Ca)-Total	2.62		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Copper (Cu)-Total	0.00065		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Iron (Fe)-Total	0.297		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Lead (Pb)-Total	0.000100		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Lithium (Li)-Total	<0.0010		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Magnesium (Mg)-Total	0.739		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Manganese (Mn)-Total	0.0139		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Phosphorus (P)-Total	<0.050		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Potassium (K)-Total	0.389		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Rubidium (Rb)-Total	0.00115		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Selenium (Se)-Total	0.000064		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Silicon (Si)-Total	2.15		0.10	mg/L	20-MAY-21	20-MAY-21	R5460543
Silver (Ag)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Sodium (Na)-Total	1.79		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Strontium (Sr)-Total	0.0228		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Sulfur (S)-Total	0.70		0.50	mg/L	20-MAY-21	20-MAY-21	R5460543

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2590096-45 KG-SH Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Total Metals							
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Thorium (Th)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Tin (Sn)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Titanium (Ti)-Total	0.00107		0.00030	mg/L	20-MAY-21	20-MAY-21	R5460543
Tungsten (W)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Uranium (U)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Vanadium (V)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Zinc (Zn)-Total	0.0035		0.0030	mg/L	20-MAY-21	20-MAY-21	R5460543
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
L2590096-46 KG- SH (2) Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0042		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
L2590096-47 KG-D Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	<0.010		0.010	mg/L		26-MAY-21	R5468459
Chloride (Cl)	2.27		0.50	mg/L		25-MAY-21	R5469497
Nitrate (as N)	0.077		0.020	mg/L		25-MAY-21	R5469497
Nitrite (as N)	<0.010		0.010	mg/L		25-MAY-21	R5469497
Total Kjeldahl Nitrogen	0.280		0.050	mg/L	28-MAY-21	01-JUN-21	R5476377
Total Nitrogen	0.357		0.050	mg/L		01-JUN-21	
Phosphorus (P)-Total	0.0054		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
Total Metals							
Aluminum (Al)-Total	0.0817		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Arsenic (As)-Total	0.00019		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Barium (Ba)-Total	0.0102		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Boron (B)-Total	<0.010		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Cadmium (Cd)-Total	0.0000132		0.0000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Calcium (Ca)-Total	2.67		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Copper (Cu)-Total	0.00069		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Iron (Fe)-Total	0.307		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Lead (Pb)-Total	0.000117		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2590096-47 KG-D Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Total Metals							
Lithium (Li)-Total	<0.0010		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Magnesium (Mg)-Total	0.738		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Manganese (Mn)-Total	0.0146		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Phosphorus (P)-Total	<0.050		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Potassium (K)-Total	0.386		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Rubidium (Rb)-Total	0.00116		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Selenium (Se)-Total	0.000066		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Silicon (Si)-Total	2.21		0.10	mg/L	20-MAY-21	20-MAY-21	R5460543
Silver (Ag)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Sodium (Na)-Total	1.79		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Strontium (Sr)-Total	0.0230		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Sulfur (S)-Total	0.71		0.50	mg/L	20-MAY-21	20-MAY-21	R5460543
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Thorium (Th)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Tin (Sn)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Titanium (Ti)-Total	0.00117		0.00030	mg/L	20-MAY-21	20-MAY-21	R5460543
Tungsten (W)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Uranium (U)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Vanadium (V)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Zinc (Zn)-Total	0.0036		0.0030	mg/L	20-MAY-21	20-MAY-21	R5460543
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
L2590096-48 KG-D (2) Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0047		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
L2590096-49 KD-1 Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	<0.010		0.010	mg/L		26-MAY-21	R5468459
Chloride (Cl)	2.53		0.50	mg/L		25-MAY-21	R5469497
Nitrate (as N)	0.065		0.020	mg/L		25-MAY-21	R5469497
Nitrite (as N)	<0.010		0.010	mg/L		25-MAY-21	R5469497
Total Kjeldahl Nitrogen	0.320		0.050	mg/L	28-MAY-21	01-JUN-21	R5476377
Total Nitrogen	0.385		0.050	mg/L		01-JUN-21	
Phosphorus (P)-Total	0.0049		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382
Bacteriological Tests							
E. Coli	1		0	CFU/100mL		21-MAY-21	R5463712

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2590096-49 KD-1 Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Bacteriological Tests							
Total Metals							
Aluminum (Al)-Total	0.0811		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Arsenic (As)-Total	0.00020		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Barium (Ba)-Total	0.0104		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Boron (B)-Total	<0.010		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Cadmium (Cd)-Total	0.0000088		0.0000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Calcium (Ca)-Total	2.68		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Copper (Cu)-Total	0.00064		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Iron (Fe)-Total	0.317		0.010	mg/L	20-MAY-21	20-MAY-21	R5460543
Lead (Pb)-Total	0.000108		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Lithium (Li)-Total	<0.0010		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Magnesium (Mg)-Total	0.758		0.0050	mg/L	20-MAY-21	20-MAY-21	R5460543
Manganese (Mn)-Total	0.0145		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Phosphorus (P)-Total	<0.050		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Potassium (K)-Total	0.401		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Rubidium (Rb)-Total	0.00117		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Selenium (Se)-Total	0.000082		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Silicon (Si)-Total	2.23		0.10	mg/L	20-MAY-21	20-MAY-21	R5460543
Silver (Ag)-Total	<0.000050		0.000050	mg/L	20-MAY-21	20-MAY-21	R5460543
Sodium (Na)-Total	1.98		0.050	mg/L	20-MAY-21	20-MAY-21	R5460543
Strontium (Sr)-Total	0.0228		0.0010	mg/L	20-MAY-21	20-MAY-21	R5460543
Sulfur (S)-Total	0.76		0.50	mg/L	20-MAY-21	20-MAY-21	R5460543
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Thorium (Th)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Tin (Sn)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Titanium (Ti)-Total	0.00108		0.00030	mg/L	20-MAY-21	20-MAY-21	R5460543
Tungsten (W)-Total	<0.00010		0.00010	mg/L	20-MAY-21	20-MAY-21	R5460543
Uranium (U)-Total	0.000010		0.000010	mg/L	20-MAY-21	20-MAY-21	R5460543
Vanadium (V)-Total	<0.00050		0.00050	mg/L	20-MAY-21	20-MAY-21	R5460543
Zinc (Zn)-Total	0.0039		0.0030	mg/L	20-MAY-21	20-MAY-21	R5460543
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	20-MAY-21	20-MAY-21	R5460543
L2590096-50 KD-1 (2)							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2590096-50 KD-1 (2) Sampled By: CLIENT on 19-MAY-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0056		0.0010	mg/L	30-MAY-21	31-MAY-21	R5476382

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	E. Coli	DUP-H,J	L2590096-13
Matrix Spike	Calcium (Ca)-Total	MS-B	L2590096-41, -43, -45, -47, -49
Matrix Spike	Calcium (Ca)-Total	MS-B	L2590096-1, -11, -13, -15, -17, -19, -21, -23, -25, -27, -29, -3, -31, -33, -35, -37, -39, -5, -7, -9
Matrix Spike	Iron (Fe)-Total	MS-B	L2590096-41, -43, -45, -47, -49
Matrix Spike	Iron (Fe)-Total	MS-B	L2590096-1, -11, -13, -15, -17, -19, -21, -23, -25, -27, -29, -3, -31, -33, -35, -37, -39, -5, -7, -9
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2590096-41, -43, -45, -47, -49
Matrix Spike	Manganese (Mn)-Total	MS-B	L2590096-41, -43, -45, -47, -49
Matrix Spike	Manganese (Mn)-Total	MS-B	L2590096-1, -11, -13, -15, -17, -19, -21, -23, -25, -27, -29, -3, -31, -33, -35, -37, -39, -5, -7, -9
Matrix Spike	Silicon (Si)-Total	MS-B	L2590096-41, -43, -45, -47, -49
Matrix Spike	Silicon (Si)-Total	MS-B	L2590096-1, -11, -13, -15, -17, -19, -21, -23, -25, -27, -29, -3, -31, -33, -35, -37, -39, -5, -7, -9
Matrix Spike	Sodium (Na)-Total	MS-B	L2590096-41, -43, -45, -47, -49
Matrix Spike	Strontium (Sr)-Total	MS-B	L2590096-41, -43, -45, -47, -49
Matrix Spike	Strontium (Sr)-Total	MS-B	L2590096-1, -11, -13, -15, -17, -19, -21, -23, -25, -27, -29, -3, -31, -33, -35, -37, -39, -5, -7, -9
Matrix Spike	Sulfur (S)-Total	MS-B	L2590096-41, -43, -45, -47, -49
Matrix Spike	Ammonia, Total (as N)	MS-B	L2590096-11, -13, -15, -19, -21, -5, -7, -9

Sample Parameter Qualifier key listed:

Qualifier	Description
DLUI	Detection Limit Raised: Unknown Interference generated an apparent false positive test result.
DUP-H,J	Duplicate results outside ALS DQO, due to sample heterogeneity. Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
SP	Sample was Preserved at the laboratory

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
CL-IC-N-WT	Water	Chloride by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

EC-MF-WT	Water	E. coli	SM 9222D

A 100 mL volume of sample is filtered through a membrane, the membrane is placed on mFC-BCIG agar and incubated at 44.5 –0 .2 °C for 24 – 2 h.
Method ID: WT-TM-1200

EC-SCREEN-WT	Water	Conductivity Screen (Internal Use Only)	APHA 2510

Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.

ETL-N-TOT-WT	Water	Calculate from NO2 + NO3+TKN	CALCULATION
MET-T-CCMS-WT	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

NH3-F-WT	Water	Ammonia in Water by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

Reference Information

NO2-IC-WT	Water	Nitrite in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-IC-WT	Water	Nitrate in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

P-T-L-COL-ED	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

TKN-F-WT	Water	TKN in Water by Fluorescence	J. ENVIRON. MONIT., 2005,7,37-42,RSC

Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA
ED	ALS ENVIRONMENTAL - EDMONTON, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid weight of sample
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L2590096 Report Date: 08-NOV-21

Client: Cash Clients - Ottawa
1099 Oak Road
Kilworthy ON POE 1G0
Contact: Ron Pearson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-IC-N-WT	**Water**							
Batch R5469497								
WG3541041-10 DUP		**WG3541041-8**						
Chloride (Cl)		2.28	2.30		mg/L	0.8	20	25-MAY-21
WG3541041-4 DUP		**WG3541041-3**						
Chloride (Cl)		4.94	4.88		mg/L	1.2	20	25-MAY-21
WG3541041-2 LCS								
Chloride (Cl)			101.2		%		90-110	25-MAY-21
WG3541041-7 LCS								
Chloride (Cl)			100.5		%		90-110	25-MAY-21
WG3541041-1 MB								
Chloride (Cl)			<0.50		mg/L		0.5	25-MAY-21
WG3541041-6 MB								
Chloride (Cl)			<0.50		mg/L		0.5	25-MAY-21
WG3541041-5 MS		**WG3541041-3**						
Chloride (Cl)			102.5		%		75-125	25-MAY-21
WG3541041-9 MS		**WG3541041-8**						
Chloride (Cl)			102.5		%		75-125	25-MAY-21
EC-MF-WT	**Water**							
Batch R5462477								
WG3538657-3 DUP		**L2590240-3**						
E. Coli		2	0	DUP-H,J	CFU/100mL	2	2	20-MAY-21
WG3538657-1 MB								
E. Coli			0		CFU/100mL		1	20-MAY-21
Batch R5463712								
WG3539175-4 DUP		**L2590548-1**						
E. Coli		0	0		CFU/100mL	0.0	65	21-MAY-21
WG3539175-1 MB								
E. Coli			0		CFU/100mL		1	21-MAY-21
MET-T-CCMS-WT	**Water**							
Batch R5460543								
WG3538213-4 DUP		**WG3538213-3**						
Aluminum (Al)-Total		0.0831	0.0884		mg/L	6.1	20	20-MAY-21
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	20-MAY-21
Arsenic (As)-Total		0.00102	0.00109		mg/L	6.1	20	20-MAY-21
Barium (Ba)-Total		0.00957	0.00999		mg/L	4.3	20	20-MAY-21
Beryllium (Be)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	20-MAY-21
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	20-MAY-21
Boron (B)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	20-MAY-21

Quality Control Report

Client: Cash Clients - Ottawa
1099 Oak Road
Kilworthy ON POE 1G0
Contact: Ron Pearson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5460543								
WG3538213-4 DUP		**WG3538213-3**						
Cadmium (Cd)-Total		0.0000517	0.0000611		mg/L	17	20	20-MAY-21
Calcium (Ca)-Total		25.8	26.0		mg/L	0.8	20	20-MAY-21
Chromium (Cr)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	20-MAY-21
Cesium (Cs)-Total		0.000053	0.000052		mg/L	0.8	20	20-MAY-21
Cobalt (Co)-Total		0.00011	0.00012		mg/L	10	20	20-MAY-21
Copper (Cu)-Total		0.00273	0.00280		mg/L	2.3	20	20-MAY-21
Iron (Fe)-Total		0.167	0.171		mg/L	2.6	20	20-MAY-21
Lead (Pb)-Total		0.00166	0.00168		mg/L	1.4	20	20-MAY-21
Lithium (Li)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	20-MAY-21
Magnesium (Mg)-Total		2.87	2.97		mg/L	3.2	20	20-MAY-21
Manganese (Mn)-Total		0.0288	0.0302		mg/L	4.5	20	20-MAY-21
Molybdenum (Mo)-Total		0.000724	0.000724		mg/L	0.0	20	20-MAY-21
Nickel (Ni)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	20-MAY-21
Phosphorus (P)-Total		<0.050	<0.050	RPD-NA	mg/L	N/A	20	20-MAY-21
Potassium (K)-Total		0.575	0.589		mg/L	2.4	20	20-MAY-21
Rubidium (Rb)-Total		0.00136	0.00145		mg/L	6.6	20	20-MAY-21
Selenium (Se)-Total		0.000147	0.000159		mg/L	8.0	20	20-MAY-21
Silicon (Si)-Total		1.15	1.13		mg/L	1.9	20	20-MAY-21
Silver (Ag)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	20-MAY-21
Sodium (Na)-Total		3.77	3.89		mg/L	3.1	20	20-MAY-21
Strontium (Sr)-Total		0.103	0.103		mg/L	0.1	20	20-MAY-21
Sulfur (S)-Total		8.30	8.28		mg/L	0.2	20	20-MAY-21
Thallium (Tl)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	20-MAY-21
Tellurium (Te)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	20-MAY-21
Thorium (Th)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	20-MAY-21
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	20-MAY-21
Titanium (Ti)-Total		0.00209	0.00229		mg/L	9.4	20	20-MAY-21
Tungsten (W)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	20-MAY-21
Uranium (U)-Total		0.000236	0.000237		mg/L	0.3	20	20-MAY-21
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	20-MAY-21
Zinc (Zn)-Total		0.0033	0.0033		mg/L	1.5	20	20-MAY-21
Zirconium (Zr)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	20-MAY-21
WG3538217-4 DUP		**WG3538217-3**						

Quality Control Report

Client: Cash Clients - Ottawa
1099 Oak Road
Kilworthy ON POE 1G0
Contact: Ron Pearson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5460543								
WG3538217-4 DUP		**WG3538217-3**						
Aluminum (Al)-Total		0.0815	0.0802		mg/L	1.6	20	20-MAY-21
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	20-MAY-21
Arsenic (As)-Total		0.00018	0.00021		mg/L	12	20	20-MAY-21
Barium (Ba)-Total		0.0104	0.0106		mg/L	1.3	20	20-MAY-21
Beryllium (Be)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	20-MAY-21
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	20-MAY-21
Boron (B)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	20-MAY-21
Cadmium (Cd)-Total		0.0000135	0.0000097	J	mg/L	0.0000038	0.00001	20-MAY-21
Calcium (Ca)-Total		2.76	2.73		mg/L	1.3	20	20-MAY-21
Chromium (Cr)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	20-MAY-21
Cesium (Cs)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	20-MAY-21
Cobalt (Co)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	20-MAY-21
Copper (Cu)-Total		0.00123	0.00160	J	mg/L	0.00037	0.001	20-MAY-21
Iron (Fe)-Total		0.317	0.317		mg/L	0.3	20	20-MAY-21
Lead (Pb)-Total		0.000160	0.000109	J	mg/L	0.000051	0.0001	20-MAY-21
Lithium (Li)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	20-MAY-21
Magnesium (Mg)-Total		0.749	0.759		mg/L	1.3	20	20-MAY-21
Manganese (Mn)-Total		0.0144	0.0149		mg/L	3.2	20	20-MAY-21
Molybdenum (Mo)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	20-MAY-21
Nickel (Ni)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	20-MAY-21
Phosphorus (P)-Total		<0.050	<0.050	RPD-NA	mg/L	N/A	20	20-MAY-21
Potassium (K)-Total		0.402	0.406		mg/L	0.8	20	20-MAY-21
Rubidium (Rb)-Total		0.00119	0.00120		mg/L	0.8	20	20-MAY-21
Selenium (Se)-Total		0.000073	0.000062		mg/L	15	20	20-MAY-21
Silicon (Si)-Total		2.17	2.18		mg/L	0.6	20	20-MAY-21
Silver (Ag)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	20-MAY-21
Sodium (Na)-Total		1.99	2.01		mg/L	1.2	20	20-MAY-21
Strontium (Sr)-Total		0.0233	0.0230		mg/L	1.1	20	20-MAY-21
Sulfur (S)-Total		0.71	0.71		mg/L	0.1	20	20-MAY-21
Thallium (Tl)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	20-MAY-21
Tellurium (Te)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	20-MAY-21
Thorium (Th)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	20-MAY-21
Tin (Sn)-Total		<0.00010	<0.00010		mg/L			20-MAY-21

Quality Control Report

Client: Cash Clients - Ottawa
1099 Oak Road
Kilworthy ON POE 1G0
Contact: Ron Pearson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5460543								
WG3538217-4 DUP		**WG3538217-3**						
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	20-MAY-21
Titanium (Ti)-Total		0.00103	0.00152	J	mg/L	0.00049	0.0006	20-MAY-21
Tungsten (W)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	20-MAY-21
Uranium (U)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	20-MAY-21
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	20-MAY-21
Zinc (Zn)-Total		0.0046	0.0034	J	mg/L	0.0012	0.006	20-MAY-21
Zirconium (Zr)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	20-MAY-21
WG3538213-2 LCS								
Aluminum (Al)-Total			103.2		%		80-120	20-MAY-21
Antimony (Sb)-Total			106.2		%		80-120	20-MAY-21
Arsenic (As)-Total			105.0		%		80-120	20-MAY-21
Barium (Ba)-Total			105.0		%		80-120	20-MAY-21
Beryllium (Be)-Total			100.7		%		80-120	20-MAY-21
Bismuth (Bi)-Total			103.8		%		80-120	20-MAY-21
Boron (B)-Total			95.3		%		80-120	20-MAY-21
Cadmium (Cd)-Total			103.0		%		80-120	20-MAY-21
Calcium (Ca)-Total			101.3		%		80-120	20-MAY-21
Chromium (Cr)-Total			101.0		%		80-120	20-MAY-21
Cesium (Cs)-Total			106.2		%		80-120	20-MAY-21
Cobalt (Co)-Total			102.1		%		80-120	20-MAY-21
Copper (Cu)-Total			100.6		%		80-120	20-MAY-21
Iron (Fe)-Total			98.9		%		80-120	20-MAY-21
Lead (Pb)-Total			104.3		%		80-120	20-MAY-21
Lithium (Li)-Total			97.9		%		80-120	20-MAY-21
Magnesium (Mg)-Total			105.4		%		80-120	20-MAY-21
Manganese (Mn)-Total			101.5		%		80-120	20-MAY-21
Molybdenum (Mo)-Total			99.3		%		80-120	20-MAY-21
Nickel (Ni)-Total			100.1		%		80-120	20-MAY-21
Phosphorus (P)-Total			111.1		%		70-130	20-MAY-21
Potassium (K)-Total			104.1		%		80-120	20-MAY-21
Rubidium (Rb)-Total			105.8		%		80-120	20-MAY-21
Selenium (Se)-Total			103.8		%		80-120	20-MAY-21
Silicon (Si)-Total			104.6		%		60-140	20-MAY-21

Quality Control Report

Client: Cash Clients - Ottawa
1099 Oak Road
Kilworthy ON POE 1G0
Contact: Ron Pearson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5460543								
WG3538213-2 LCS								
Silver (Ag)-Total			104.0		%		80-120	20-MAY-21
Sodium (Na)-Total			103.5		%		80-120	20-MAY-21
Strontium (Sr)-Total			105.2		%		80-120	20-MAY-21
Sulfur (S)-Total			99.0		%		80-120	20-MAY-21
Thallium (Tl)-Total			104.3		%		80-120	20-MAY-21
Tellurium (Te)-Total			104.6		%		80-120	20-MAY-21
Thorium (Th)-Total			105.1		%		80-120	20-MAY-21
Tin (Sn)-Total			102.6		%		80-120	20-MAY-21
Titanium (Ti)-Total			97.5		%		80-120	20-MAY-21
Tungsten (W)-Total			100.5		%		80-120	20-MAY-21
Uranium (U)-Total			106.4		%		80-120	20-MAY-21
Vanadium (V)-Total			101.6		%		80-120	20-MAY-21
Zinc (Zn)-Total			107.0		%		80-120	20-MAY-21
Zirconium (Zr)-Total			99.3		%		80-120	20-MAY-21
WG3538217-2 LCS								
Aluminum (Al)-Total			102.7		%		80-120	20-MAY-21
Antimony (Sb)-Total			109.4		%		80-120	20-MAY-21
Arsenic (As)-Total			110.0		%		80-120	20-MAY-21
Barium (Ba)-Total			104.7		%		80-120	20-MAY-21
Beryllium (Be)-Total			101.8		%		80-120	20-MAY-21
Bismuth (Bi)-Total			104.3		%		80-120	20-MAY-21
Boron (B)-Total			92.8		%		80-120	20-MAY-21
Cadmium (Cd)-Total			106.3		%		80-120	20-MAY-21
Calcium (Ca)-Total			98.1		%		80-120	20-MAY-21
Chromium (Cr)-Total			102.8		%		80-120	20-MAY-21
Cesium (Cs)-Total			106.6		%		80-120	20-MAY-21
Cobalt (Co)-Total			100.9		%		80-120	20-MAY-21
Copper (Cu)-Total			99.9		%		80-120	20-MAY-21
Iron (Fe)-Total			99.1		%		80-120	20-MAY-21
Lead (Pb)-Total			103.7		%		80-120	20-MAY-21
Lithium (Li)-Total			92.8		%		80-120	20-MAY-21
Magnesium (Mg)-Total			103.8		%		80-120	20-MAY-21
Manganese (Mn)-Total			101.2		%		80-120	20-MAY-21
Molybdenum (Mo)-Total			100.5		%		80-120	20-MAY-21

Quality Control Report

Client: Cash Clients - Ottawa
1099 Oak Road
Kilworthy ON POE 1G0
Contact: Ron Pearson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5460543								
WG3538217-2 LCS								
Nickel (Ni)-Total			99.6		%		80-120	20-MAY-21
Phosphorus (P)-Total			112.2		%		70-130	20-MAY-21
Potassium (K)-Total			102.9		%		80-120	20-MAY-21
Rubidium (Rb)-Total			106.0		%		80-120	20-MAY-21
Selenium (Se)-Total			112.5		%		80-120	20-MAY-21
Silicon (Si)-Total			104.1		%		60-140	20-MAY-21
Silver (Ag)-Total			104.1		%		80-120	20-MAY-21
Sodium (Na)-Total			101.8		%		80-120	20-MAY-21
Strontium (Sr)-Total			105.7		%		80-120	20-MAY-21
Sulfur (S)-Total			99.9		%		80-120	20-MAY-21
Thallium (Tl)-Total			104.2		%		80-120	20-MAY-21
Tellurium (Te)-Total			106.4		%		80-120	20-MAY-21
Thorium (Th)-Total			103.6		%		80-120	20-MAY-21
Tin (Sn)-Total			103.0		%		80-120	20-MAY-21
Titanium (Ti)-Total			99.4		%		80-120	20-MAY-21
Tungsten (W)-Total			100.0		%		80-120	20-MAY-21
Uranium (U)-Total			109.6		%		80-120	20-MAY-21
Vanadium (V)-Total			101.5		%		80-120	20-MAY-21
Zinc (Zn)-Total			113.0		%		80-120	20-MAY-21
Zirconium (Zr)-Total			99.1		%		80-120	20-MAY-21
WG3538213-1 MB								
Aluminum (Al)-Total			<0.0050		mg/L		0.005	20-MAY-21
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	20-MAY-21
Arsenic (As)-Total			<0.00010		mg/L		0.0001	20-MAY-21
Barium (Ba)-Total			<0.00010		mg/L		0.0001	20-MAY-21
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	20-MAY-21
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	20-MAY-21
Boron (B)-Total			<0.010		mg/L		0.01	20-MAY-21
Cadmium (Cd)-Total			<0.000005(		mg/L		0.000005	20-MAY-21
Calcium (Ca)-Total			<0.050		mg/L		0.05	20-MAY-21
Chromium (Cr)-Total			<0.00050		mg/L		0.0005	20-MAY-21
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	20-MAY-21
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	20-MAY-21
Copper (Cu)-Total			<0.00050		mg/L		0.0005	20-MAY-21

Quality Control Report

Client: Cash Clients - Ottawa
1099 Oak Road
Kilworthy ON POE 1G0
Contact: Ron Pearson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5460543								
WG3538213-1 MB								
Iron (Fe)-Total			<0.010		mg/L		0.01	20-MAY-21
Lead (Pb)-Total			<0.000050		mg/L		0.00005	20-MAY-21
Lithium (Li)-Total			<0.0010		mg/L		0.001	20-MAY-21
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	20-MAY-21
Manganese (Mn)-Total			<0.00050		mg/L		0.0005	20-MAY-21
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	20-MAY-21
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	20-MAY-21
Phosphorus (P)-Total			<0.050		mg/L		0.05	20-MAY-21
Potassium (K)-Total			<0.050		mg/L		0.05	20-MAY-21
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	20-MAY-21
Selenium (Se)-Total			<0.000050		mg/L		0.00005	20-MAY-21
Silicon (Si)-Total			<0.10		mg/L		0.1	20-MAY-21
Silver (Ag)-Total			<0.000050		mg/L		0.00005	20-MAY-21
Sodium (Na)-Total			<0.050		mg/L		0.05	20-MAY-21
Strontium (Sr)-Total			<0.0010		mg/L		0.001	20-MAY-21
Sulfur (S)-Total			<0.50		mg/L		0.5	20-MAY-21
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	20-MAY-21
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	20-MAY-21
Thorium (Th)-Total			<0.00010		mg/L		0.0001	20-MAY-21
Tin (Sn)-Total			<0.00010		mg/L		0.0001	20-MAY-21
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	20-MAY-21
Tungsten (W)-Total			<0.00010		mg/L		0.0001	20-MAY-21
Uranium (U)-Total			<0.000010		mg/L		0.00001	20-MAY-21
Vanadium (V)-Total			<0.00050		mg/L		0.0005	20-MAY-21
Zinc (Zn)-Total			<0.0030		mg/L		0.003	20-MAY-21
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	20-MAY-21
WG3538217-1 MB								
Aluminum (Al)-Total			<0.0050		mg/L		0.005	20-MAY-21
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	20-MAY-21
Arsenic (As)-Total			<0.00010		mg/L		0.0001	20-MAY-21
Barium (Ba)-Total			<0.00010		mg/L		0.0001	20-MAY-21
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	20-MAY-21
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	20-MAY-21
Boron (B)-Total			<0.010		mg/L		0.01	20-MAY-21

Quality Control Report

Client: Cash Clients - Ottawa
1099 Oak Road
Kilworthy ON POE 1G0
Contact: Ron Pearson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5460543								
WG3538217-1 MB								
Cadmium (Cd)-Total			<0.000005(		mg/L		0.000005	20-MAY-21
Calcium (Ca)-Total			<0.050		mg/L		0.05	20-MAY-21
Chromium (Cr)-Total			<0.00050		mg/L		0.0005	20-MAY-21
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	20-MAY-21
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	20-MAY-21
Copper (Cu)-Total			<0.00050		mg/L		0.0005	20-MAY-21
Iron (Fe)-Total			<0.010		mg/L		0.01	20-MAY-21
Lead (Pb)-Total			<0.000050		mg/L		0.00005	20-MAY-21
Lithium (Li)-Total			<0.0010		mg/L		0.001	20-MAY-21
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	20-MAY-21
Manganese (Mn)-Total			<0.00050		mg/L		0.0005	20-MAY-21
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	20-MAY-21
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	20-MAY-21
Phosphorus (P)-Total			<0.050		mg/L		0.05	20-MAY-21
Potassium (K)-Total			<0.050		mg/L		0.05	20-MAY-21
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	20-MAY-21
Selenium (Se)-Total			<0.000050		mg/L		0.00005	20-MAY-21
Silicon (Si)-Total			<0.10		mg/L		0.1	20-MAY-21
Silver (Ag)-Total			<0.000050		mg/L		0.00005	20-MAY-21
Sodium (Na)-Total			<0.050		mg/L		0.05	20-MAY-21
Strontium (Sr)-Total			<0.0010		mg/L		0.001	20-MAY-21
Sulfur (S)-Total			<0.50		mg/L		0.5	20-MAY-21
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	20-MAY-21
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	20-MAY-21
Thorium (Th)-Total			<0.00010		mg/L		0.0001	20-MAY-21
Tin (Sn)-Total			<0.00010		mg/L		0.0001	20-MAY-21
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	20-MAY-21
Tungsten (W)-Total			<0.00010		mg/L		0.0001	20-MAY-21
Uranium (U)-Total			<0.000010		mg/L		0.00001	20-MAY-21
Vanadium (V)-Total			<0.00050		mg/L		0.0005	20-MAY-21
Zinc (Zn)-Total			<0.0030		mg/L		0.003	20-MAY-21
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	20-MAY-21
WG3538213-5 MS		**WG3538213-3**						
Aluminum (Al)-Total			101.4		%		70-130	20-MAY-21

Quality Control Report

Client: Cash Clients - Ottawa
1099 Oak Road
Kilworthy ON POE 1G0
Contact: Ron Pearson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5460543								
WG3538213-5 MS		**WG3538213-3**						
Antimony (Sb)-Total			106.3		%		70-130	20-MAY-21
Arsenic (As)-Total			104.7		%		70-130	20-MAY-21
Barium (Ba)-Total			98.6		%		70-130	20-MAY-21
Beryllium (Be)-Total			97.5		%		70-130	20-MAY-21
Bismuth (Bi)-Total			102.7		%		70-130	20-MAY-21
Boron (B)-Total			96.9		%		70-130	20-MAY-21
Cadmium (Cd)-Total			100.2		%		70-130	20-MAY-21
Calcium (Ca)-Total			N/A	MS-B	%		-	20-MAY-21
Chromium (Cr)-Total			102.4		%		70-130	20-MAY-21
Cesium (Cs)-Total			108.7		%		70-130	20-MAY-21
Cobalt (Co)-Total			102.9		%		70-130	20-MAY-21
Copper (Cu)-Total			99.2		%		70-130	20-MAY-21
Iron (Fe)-Total			N/A	MS-B	%		-	20-MAY-21
Lead (Pb)-Total			104.2		%		70-130	20-MAY-21
Lithium (Li)-Total			97.1		%		70-130	20-MAY-21
Magnesium (Mg)-Total			N/A	MS-B	%		-	20-MAY-21
Manganese (Mn)-Total			N/A	MS-B	%		-	20-MAY-21
Molybdenum (Mo)-Total			102.2		%		70-130	20-MAY-21
Nickel (Ni)-Total			101.1		%		70-130	20-MAY-21
Phosphorus (P)-Total			115.0		%		70-130	20-MAY-21
Potassium (K)-Total			105.0		%		70-130	20-MAY-21
Rubidium (Rb)-Total			110.6		%		70-130	20-MAY-21
Selenium (Se)-Total			100.6		%		70-130	20-MAY-21
Silicon (Si)-Total			N/A	MS-B	%		-	20-MAY-21
Silver (Ag)-Total			103.7		%		70-130	20-MAY-21
Sodium (Na)-Total			N/A	MS-B	%		-	20-MAY-21
Strontium (Sr)-Total			N/A	MS-B	%		-	20-MAY-21
Sulfur (S)-Total			N/A	MS-B	%		-	20-MAY-21
Thallium (Tl)-Total			104.8		%		70-130	20-MAY-21
Tellurium (Te)-Total			99.6		%		70-130	20-MAY-21
Thorium (Th)-Total			108.2		%		70-130	20-MAY-21
Tin (Sn)-Total			103.1		%		70-130	20-MAY-21
Titanium (Ti)-Total			100.5		%		70-130	20-MAY-21

Quality Control Report

Client: Cash Clients - Ottawa
1099 Oak Road
Kilworthy ON POE 1G0
Contact: Ron Pearson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5460543								
WG3538213-5 MS		**WG3538213-3**						
Tungsten (W)-Total			102.9		%		70-130	20-MAY-21
Uranium (U)-Total			112.4		%		70-130	20-MAY-21
Vanadium (V)-Total			104.2		%		70-130	20-MAY-21
Zinc (Zn)-Total			102.0		%		70-130	20-MAY-21
Zirconium (Zr)-Total			100.8		%		70-130	20-MAY-21
WG3538217-5 MS		**WG3538217-6**						
Aluminum (Al)-Total			97.6		%		70-130	20-MAY-21
Antimony (Sb)-Total			105.0		%		70-130	20-MAY-21
Arsenic (As)-Total			102.2		%		70-130	20-MAY-21
Barium (Ba)-Total			97.2		%		70-130	20-MAY-21
Beryllium (Be)-Total			95.0		%		70-130	20-MAY-21
Bismuth (Bi)-Total			104.5		%		70-130	20-MAY-21
Boron (B)-Total			92.8		%		70-130	20-MAY-21
Cadmium (Cd)-Total			101.5		%		70-130	20-MAY-21
Calcium (Ca)-Total			N/A	MS-B	%		-	20-MAY-21
Chromium (Cr)-Total			102.6		%		70-130	20-MAY-21
Cesium (Cs)-Total			106.5		%		70-130	20-MAY-21
Cobalt (Co)-Total			101.9		%		70-130	20-MAY-21
Copper (Cu)-Total			100.8		%		70-130	20-MAY-21
Iron (Fe)-Total			N/A	MS-B	%		-	20-MAY-21
Lead (Pb)-Total			104.9		%		70-130	20-MAY-21
Lithium (Li)-Total			90.9		%		70-130	20-MAY-21
Magnesium (Mg)-Total			101.6		%		70-130	20-MAY-21
Manganese (Mn)-Total			N/A	MS-B	%		-	20-MAY-21
Molybdenum (Mo)-Total			100.6		%		70-130	20-MAY-21
Nickel (Ni)-Total			100.4		%		70-130	20-MAY-21
Phosphorus (P)-Total			103.3		%		70-130	20-MAY-21
Potassium (K)-Total			101.4		%		70-130	20-MAY-21
Rubidium (Rb)-Total			106.0		%		70-130	20-MAY-21
Selenium (Se)-Total			99.1		%		70-130	20-MAY-21
Silicon (Si)-Total			N/A	MS-B	%		-	20-MAY-21
Silver (Ag)-Total			103.1		%		70-130	20-MAY-21
Sodium (Na)-Total			95.8		%		70-130	20-MAY-21
Strontium (Sr)-Total			N/A	MS-B	%		-	20-MAY-21

Quality Control Report

Client: Cash Clients - Ottawa
1099 Oak Road
Kilworthy ON POE 1G0
Contact: Ron Pearson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5460543								
WG3538217-5 MS		**WG3538217-6**						
Sulfur (S)-Total			96.2		%		70-130	20-MAY-21
Thallium (Tl)-Total			104.6		%		70-130	20-MAY-21
Tellurium (Te)-Total			95.4		%		70-130	20-MAY-21
Thorium (Th)-Total			104.8		%		70-130	20-MAY-21
Tin (Sn)-Total			102.8		%		70-130	20-MAY-21
Titanium (Ti)-Total			98.8		%		70-130	20-MAY-21
Tungsten (W)-Total			99.9		%		70-130	20-MAY-21
Uranium (U)-Total			110.2		%		70-130	20-MAY-21
Vanadium (V)-Total			102.0		%		70-130	20-MAY-21
Zinc (Zn)-Total			100.7		%		70-130	20-MAY-21
Zirconium (Zr)-Total			95.4		%		70-130	20-MAY-21
NH3-F-WT	**Water**							
Batch R5463069								
WG3538836-3 DUP		**L2589314-2**						
Ammonia, Total (as N)		<0.010	<0.010	RPD-NA	mg/L	N/A	20	21-MAY-21
WG3539265-3 DUP		**WG3539265-5**						
Ammonia, Total (as N)		0.458	0.458		mg/L	0.0	20	21-MAY-21
WG3538836-2 LCS								
Ammonia, Total (as N)			107.8		%		85-115	21-MAY-21
WG3539265-2 LCS								
Ammonia, Total (as N)			106.4		%		85-115	21-MAY-21
WG3538836-1 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	21-MAY-21
WG3539265-1 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	21-MAY-21
WG3538836-4 MS		**L2589314-2**						
Ammonia, Total (as N)			107.5		%		75-125	21-MAY-21
WG3539265-4 MS		**WG3539265-5**						
Ammonia, Total (as N)			N/A	MS-B	%		-	25-MAY-21
Batch R5468459								
WG3540935-3 DUP		**L2590096-29**						
Ammonia, Total (as N)		<0.010	<0.010	RPD-NA	mg/L	N/A	20	26-MAY-21
WG3540935-2 LCS								
Ammonia, Total (as N)			108.5		%		85-115	26-MAY-21
WG3540935-1 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	26-MAY-21

Quality Control Report

Client: Cash Clients - Ottawa
1099 Oak Road
Kilworthy ON POE 1G0
Contact: Ron Pearson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-F-WT	**Water**							
Batch R5468459								
WG3540935-4 MS		**L2590096-29**						
Ammonia, Total (as N)			105.7		%		75-125	26-MAY-21
Batch R5477491								
WG3546289-3 DUP		**L2592530-10**						
Ammonia, Total (as N)		<0.010	<0.010	RPD-NA	mg/L	N/A	20	02-JUN-21
WG3546289-2 LCS								
Ammonia, Total (as N)			113.3		%		85-115	02-JUN-21
WG3546289-1 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	02-JUN-21
WG3546289-4 MS		**L2592530-10**						
Ammonia, Total (as N)			93.2		%		75-125	02-JUN-21
NO2-IC-WT	**Water**							
Batch R5469497								
WG3541041-10 DUP		**WG3541041-8**						
Nitrite (as N)		<0.010	<0.010	RPD-NA	mg/L	N/A	20	25-MAY-21
WG3541041-4 DUP		**WG3541041-3**						
Nitrite (as N)		<0.010	<0.010	RPD-NA	mg/L	N/A	20	25-MAY-21
WG3541041-2 LCS								
Nitrite (as N)			100.5		%		90-110	25-MAY-21
WG3541041-7 LCS								
Nitrite (as N)			101.5		%		90-110	25-MAY-21
WG3541041-1 MB								
Nitrite (as N)			<0.010		mg/L		0.01	25-MAY-21
WG3541041-6 MB								
Nitrite (as N)			<0.010		mg/L		0.01	25-MAY-21
WG3541041-5 MS		**WG3541041-3**						
Nitrite (as N)			103.1		%		75-125	25-MAY-21
WG3541041-9 MS		**WG3541041-8**						
Nitrite (as N)			104.0		%		75-125	25-MAY-21
NO3-IC-WT	**Water**							
Batch R5469497								
WG3541041-10 DUP		**WG3541041-8**						
Nitrate (as N)		0.250	0.253		mg/L	1.1	20	25-MAY-21
WG3541041-4 DUP		**WG3541041-3**						
Nitrate (as N)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	25-MAY-21
WG3541041-2 LCS								
Nitrate (as N)			100.8		%		90-110	25-MAY-21

Quality Control Report

Client: Cash Clients - Ottawa
1099 Oak Road
Kilworthy ON POE 1G0
Contact: Ron Pearson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-IC-WT	**Water**							
Batch R5469497								
WG3541041-7 LCS								
Nitrate (as N)			99.98		%		90-110	25-MAY-21
WG3541041-1 MB								
Nitrate (as N)			<0.020		mg/L		0.02	25-MAY-21
WG3541041-6 MB								
Nitrate (as N)			<0.020		mg/L		0.02	25-MAY-21
WG3541041-5 MS		**WG3541041-3**						
Nitrate (as N)			99.6		%		75-125	25-MAY-21
WG3541041-9 MS		**WG3541041-8**						
Nitrate (as N)			102.3		%		75-125	25-MAY-21
P-T-L-COL-ED	**Water**							
Batch R5476382								
WG3544040-14 DUP		**L2590096-21**						
Phosphorus (P)-Total		0.0085	0.0082		mg/L	3.6	20	31-MAY-21
WG3544040-15 DUP		**L2590096-41**						
Phosphorus (P)-Total		0.0084	0.0083		mg/L	1.2	20	31-MAY-21
WG3544040-3 DUP		**L2590096-1**						
Phosphorus (P)-Total		0.0083	0.0074		mg/L	11	20	31-MAY-21
WG3544040-10 LCS								
Phosphorus (P)-Total			101.6		%		80-120	31-MAY-21
WG3544040-2 LCS								
Phosphorus (P)-Total			103.0		%		80-120	31-MAY-21
WG3544040-6 LCS								
Phosphorus (P)-Total			101.6		%		80-120	31-MAY-21
WG3544040-1 MB								
Phosphorus (P)-Total			<0.0010		mg/L		0.001	31-MAY-21
WG3544040-5 MB								
Phosphorus (P)-Total			<0.0010		mg/L		0.001	31-MAY-21
WG3544040-9 MB								
Phosphorus (P)-Total			<0.0010		mg/L		0.001	31-MAY-21
WG3544040-12 MS		**L2590096-41**						
Phosphorus (P)-Total			108.0		%		70-130	31-MAY-21
WG3544040-4 MS		**L2590096-1**						
Phosphorus (P)-Total			109.5		%		70-130	31-MAY-21
WG3544040-8 MS		**L2590096-21**						
Phosphorus (P)-Total			109.7		%		70-130	31-MAY-21
TKN-F-WT	**Water**							

Quality Control Report

Client: Cash Clients - Ottawa
1099 Oak Road
Kilworthy ON POE 1G0
Contact: Ron Pearson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-F-WT	**Water**							
Batch R5466019								
WG3538837-3 DUP		**L2589314-4**						
Total Kjeldahl Nitrogen		0.180	0.200		mg/L	11	20	21-MAY-21
WG3538837-2 LCS								
Total Kjeldahl Nitrogen			103.0		%		75-125	21-MAY-21
WG3538837-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-MAY-21
WG3538837-4 MS		**L2589314-4**						
Total Kjeldahl Nitrogen			110.4		%		70-130	21-MAY-21
Batch R5468480								
WG3539273-3 DUP		**L2590096-5**						
Total Kjeldahl Nitrogen		0.380	0.360		mg/L	5.4	20	25-MAY-21
WG3539273-2 LCS								
Total Kjeldahl Nitrogen			109.8		%		75-125	25-MAY-21
WG3539273-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-MAY-21
WG3539273-4 MS		**L2590096-5**						
Total Kjeldahl Nitrogen			106.8		%		70-130	25-MAY-21
Batch R5474889								
WG3542846-3 DUP		**L2590096-25**						
Total Kjeldahl Nitrogen		0.350	0.360		mg/L	2.8	20	28-MAY-21
WG3542846-2 LCS								
Total Kjeldahl Nitrogen			102.5		%		75-125	28-MAY-21
WG3542846-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-MAY-21
WG3542846-4 MS		**L2590096-25**						
Total Kjeldahl Nitrogen			106.4		%		70-130	28-MAY-21
Batch R5476377								
WG3542843-3 DUP		**L2590096-23**						
Total Kjeldahl Nitrogen		0.340	0.330		mg/L	3.0	20	01-JUN-21
WG3542843-2 LCS								
Total Kjeldahl Nitrogen			99.5		%		75-125	01-JUN-21
WG3542843-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-JUN-21
WG3542843-4 MS		**L2590096-23**						
Total Kjeldahl Nitrogen			100.8		%		70-130	01-JUN-21

Quality Control Report

Client: Cash Clients - Ottawa
1099 Oak Road
Kilworthy ON POE 1G0
Contact: Ron Pearson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-F-WT	**Water**							
Batch R5477934								
WG3546247-3 DUP		**L2593487-22**						
Total Kjeldahl Nitrogen		0.580	0.540		mg/L	7.1	20	03-JUN-21
WG3546247-2 LCS								
Total Kjeldahl Nitrogen			103.0		%		75-125	03-JUN-21
WG3546247-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-JUN-21
WG3546247-4 MS		**L2593487-22**						
Total Kjeldahl Nitrogen			105.8		%		70-130	03-JUN-21

Quality Control Report

Workorder: L2590096 Report Date: 08-NOV-21

Client: Cash Clients - Ottawa
1099 Oak Road
Kilworthy ON POE 1G0
Contact: Ron Pearson

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
DUP-H,J	Duplicate results outside ALS DQO, due to sample heterogeneity. Duplicate results and limits are expressed in terms of absolute difference.
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

ALS www.alsglobal.com

Chain of Custody

L2590096-COFC

COC Number: 20 - [illegible]

Page 1 of 5

Report To	Contact and company name below will appear on the final report
Company:	Cash Clients - Ottawa (21841)
Contact:	Ron Pearson, Kahshe Lake Ratepayers' Association
Phone:	416-843-2805
	Company address below will appear on the final report
Street:	1099 Oak Road
City/Province:	Kilworthy, ON
Postal Code:	P0E 1G0
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	
Contact:	

Reports / Recipients

Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)
Merge QC/QCI Reports with COA ☑ YES ☐ NO ☐ N/A
☐ Compare Results to Criteria on Report - provide details below if box checked
Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax ron.pearson.pics@gmail.com
Email 2
Email 3

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax ron.pearson.pics@gmail.com
Email 2

Turnaround Time (TAT) Requested

☑ Routine [R] if received by 3pm M-F - no surcharges apply
☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum
☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum
☐ Same day [E2] if received by 10am M-S - 200% rush surcharge. Additional fees may apply to rush requests on weekends, statutory holidays and non-routine tests

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm am/pm

For all tests with rush TATs requested, please contact your AM to confirm availability.

Project Information

ALS Account # / Quote #: 21841 / Q83246
Job #:
PO / AFE:
LSD:

Oil and Gas Required Fields (client use)

AFE/Cost Center: PO#
Major/Minor Code: Routing Code:
Requisitioner:
Location:

ALS Lab Work Order # (ALS use only): L2590096

ALS Contact: Costas Farassoglou Sampler:

Analysis Request

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Chloride (CL-IC-N-WT)	Total Nitrogen (N-TOT-WT)	Nitrate (NO3-IC-WT)	Ammonia (NH3-F-WT)	E. Coli (EC-MF-WT)	Total Metals (MET-T-CCMS-WT)	Total P (P-T-L-COL-ED)	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	KL-1	19-MAY-21		WATER	4	X	X	X	X	X	X	X			
	KL-1(2)			WATER	1							X			
	KL-2			WATER	4	X	X	X	X	X	X	X			
	KL-2(2)			WATER	1							X			
	KL-3			WATER	4	X	X	X	X	X	X	X			
	KL-3(2)			WATER	1							X			
	KL-4			WATER	4	X	X	X	X	X	X	X			
	KL-4(2)			WATER	1							X			
	KL-5			WATER	4	X	X	X	X	X	X	X			
	KL-5(2)			WATER	1	[illegible]						X			
	KL-6			WATER	4	X	X	X	X	X	X	X			
	KL-6(2)			WATER	1							X			

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO
Are samples for human consumption/ use? ☐ YES ☐ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

LOGIN: Please send Total P to EDMONTON for Analysis

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☑ ICE PACKS ☐ FROZEN ☒ COOLING INITIATED
Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO
Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
14.4				11.8	9.8	14.2	

SHIPMENT RELEASE (client use)

Released by: [signature] Date: May 19/21 Time: 2:35 pm

INITIAL SHIPMENT RECEPTION (ALS use only)

Received by: [signature] Date: May 19/21 Time: 14:35

FINAL SHIPMENT RECEPTION (ALS use only)

Received by: [signature] Date: 5/19/21 Time: 17:20

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

14.4, 13.3, 13.0 12.9, 13.7

Chain of Cu

L2590096-COFC

COC Number: 20 -

Page 2 of 15

www.alsglobal.com

Report To	Contact and company name below will appear on the final report
Company:	Cash Clients - Ottawa (21841)
Contact:	Ron Pearson, Kahshe Lake Ratepayers' Association
Phone:	416-843-2805
	Company address below will appear on the final report
Street:	1099 Oak Road
City/Province:	Kilworthy, ON
Postal Code:	P0E 1G0
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	
Contact:	

Reports / Recipients

Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)
Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A
☐ Compare Results to Criteria on Report - provide details below if box checked
Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax ron.pearson.pics@gmail.com
Email 2
Email 3

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax ron.pearson.pics@gmail.com
Email 2

Turnaround Time (TAT) Requested

☐ Routine [R] if received by 3pm M-F - no surcharges apply
☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum
☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum
☐ Same day [E2] if received by 10am M-S - 200% rush surcharge. Additional fees may apply to rush requests on weekends, statutory holidays and non-routine tests

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm am/pm

For all tests with rush TATs requested, please contact your AM to confirm availability.

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Project Information

ALS Account # / Quote #: 21841 / Q83246
Job #:
PO / AFE:
LSD:

Oil and Gas Required Fields (client use)

AFE/Cost Center: PO#
Major/Minor Code: Routing Code:
Requisitioner:
Location:

ALS Lab Work Order # (ALS use only): L2590096
ALS Contact: Costas Farassoglou
Sampler:

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Chloride (CL-IC-N-WT)	Total Nitrogen (N-TOT-WT)	Nitrate (NO3-IC-WT)	Ammonia (NH3-F-WT)	E. Coli (EC-MF-WT)	Total Metals (MET-T-CCMS-WT)	Total P (P-T-L-COL-ED)	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	KL-7	MAY 19/21		WATER	4	X	X	X	X	X	X	X			
	KL-7(2)			WATER	1							X			
	KL-8			WATER	4	X	X	X	X	X	X	X			
	KL-8(2)			WATER	1							X			
	KL-9			WATER	4	X	X	X	X	X	X	X			
	KL-9(2)			WATER	1							X			
	KL-10			WATER	4	X	X	X	X	X	X	X			
	KL-10(2)			WATER	1							X			
	KL-11			WATER	4	X	X	X	X	X	X	X			
	KL-11(2)			WATER	1							X			
	KL-12			WATER	4	X	X	X	X	X	X	X			
	KL-12(2)			WATER								X			

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO
Are samples for human consumption/ use? ☐ YES ☐ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

LOGIN: Please send Total P to EDMONTON for Analysis

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☑ ICE PACKS ☐ FROZEN ☑ COOLING INITIATED
Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO
Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C		
14.4				11.8	9.8	14.2

SHIPMENT RELEASE (client use)

Released by: Date: May 19/21 Time: 2:35

INITIAL SHIPMENT RECEPTION (ALS use only)

Received by: Date: May 19/21 Time: 14:35

FINAL SHIPMENT RECEPTION (ALS use only)

Received by: Date: 5/19/21 Time: 17:20

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

ALS www.alsglobal.com

Chain of C L2590096-COFC

COC Number: 20 - 44

Page 3 of 25

Report To	Contact and company name below will appear on the final report
Company:	Cash Clients - Ottawa (21841)
Contact:	Ron Pearson, Kahshe Lake Ratepayers' Association
Phone:	416-843-2805
	Company address below will appear on the final report
Street:	1099 Oak Road
City/Province:	Kilworthy, ON
Postal Code:	P0E 1G0
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	
Contact:	

Project Information

ALS Account # / Quote #:	21841 / Q83246
Job #:	
PO / AFE:	
LSD:	

ALS Lab Work Order # (ALS use only): L2590096

Reports / Recipients

Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)

Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A

☐ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: ron.pearson.pics@gmail.com

Email 2:

Email 3:

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: ron.pearson.pics@gmail.com

Email 2:

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Contact: Costas Farassoglou **Sampler:**

Turnaround Time (TAT) Requested

☐ Routine [R] if received by 3pm M-F - no surcharges apply

☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum

☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum

☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum

☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum

☐ Same day [E2] if received by 10am M-S - 200% rush surcharge. Additional fees may apply to rush requests on weekends, statutory holidays and non-routine tests

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm am/pm

For all tests with rush TATs requested, please contact your AM to confirm availability.

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Chloride (Cl-IC-N-WT)	Total Nitrogen (N-TOT-WT)	Nitrate (NO3-IC-WT)	Ammonia (NH3-F-WT)	E. Coli (EC-MF-WT)	Total Metals (MET-T-CCMS-WT)	Total P (P-T-L-COL-ED)	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	KL-13	MAY 19		WATER	4	x	x	x	x	x	x	x			
	KL-13 (2)			WATER	1							x			
	KL-14			WATER	4	x	x	x	x	x	x	x			
	KL-14 (2)			WATER	1							x			
	KL-15			WATER	4	x	x	x	x	x	x	x			
	KL-15 (2)			WATER	1							x			
	KL-16			WATER	4	x	x	x	x	x	x	x			
	KL-16 (2)			WATER	1							x			
	KL-17			WATER	4	x	x	x	x	x	x	x			
	KL-17 (2)			WATER	1							x			
	KL-18			WATER	4	x	x	x	x	x	x	x			
	KL-18 (2)			WATER	1							x			

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human consumption/ use? ☐ YES ☐ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

LOGIN: Please send Total P to EDMONTON for Analysis

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☑ ICE PACKS ☐ FROZEN ☑ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
14.4				14.2	11.8	9.8	

SHIPMENT RELEASE (client use)

Released by: [signature] Date: May 19/21 Time: 2:35

INITIAL SHIPMENT RECEPTION (ALS use only)

Received by: [signature] Date: May 19/21 Time: 14:35

FINAL SHIPMENT RECEPTION (ALS use only)

Received by: [signature] Date: 5/19/21 Time: 17:20

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

Ch: L2590096-COFC rm

COC Number: 20 - 44

Page 4 of 25

www.alsglobal.com

Report To	Contact and company name below will appear on the final report
Company:	Cash Clients - Ottawa (21841)
Contact:	Ron Pearson, Kahshe Lake Ratepayers' Association
Phone:	416-843-2805
	Company address below will appear on the final report
Street:	1099 Oak Road
City/Province:	Kilworthy, ON
Postal Code:	P0E 1G0
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	
Contact:	

Reports / Recipients

Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)

Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A

☐ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax ron.pearson.pics@gmail.com

Email 2

Email 3

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax ron.pearson.pics@gmail.com

Email 2

Turnaround Time (TAT) Requested

☐ Routine [R] if received by 3pm M-F - no surcharges apply

☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum

☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum

☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum

☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum

☐ Same day [E2] if received by 10am M-S - 200% rush surcharge. Additional fees may apply to rush requests on weekends, statutory holidays and non-routine tests

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm am/pm

For all tests with rush TATs requested, please contact your AM to confirm availability.

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Project Information

ALS Account # / Quote #: 21841 / Q83246

Job #:

PO / AFE:

LSD:

Oil and Gas Required Fields (client use)

AFE/Cost Center: PO#

Major/Minor Code: Routing Code:

Requisitioner:

Location:

ALS Lab Work Order # (ALS use only): L2590096

ALS Contact: Costas Farassoglou **Sampler:**

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Chloride (Cl-IC-N-WT)	Total Nitrogen (N-TOT-WT)	Nitrate (NO3-IC-WT)	Ammonia (NH3-F-WT)	E. Coli (EC-MF-WT)	Total Metals (MET-T-CCMS-WT)	Total P (P-T-L-COL-ED)	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	KL-19	MAY 19/21		WATER	4	X	X	X	X	X	X	X			
	KL-19 (2)			WATER	1							X			
	KL-20			WATER	4	X	X	X	X	X	X	X			
	KL-20 (2)			WATER	1							X			
	KM-SH			WATER	3	X	X	X	X		X	X			
	KM-SH (2)			WATER	1							X			
	KM-D			WATER	3	X	X	X	X		X	X			
	KM-D (2)			WATER	1							X			
	KG-SH			WATER	3	X	X	X	X		X	X			
	KG-SH (2)			WATER	1							X			
	KG-D			WATER	3	X	X	X	X		X	X			
	KG-D (2)	✓		WATER	1							X			

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human consumption/ use? ☐ YES ☐ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

LOGIN: Please send Total P to EDMONTON for Analysis

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☑ ICE PACKS ☐ FROZEN ☒ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
14.1			14.2	11.8	9.8

SHIPMENT RELEASE (client use)

Released by: Date: May 19/21 Time: 2:35 pm

INITIAL SHIPMENT RECEPTION (ALS use only)

Received by: Date: May 19/21 Time: 14:39

FINAL SHIPMENT RECEPTION (ALS use only)

Received by: Date: 5/19/21 Time: 17:20

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

Chain of Custod

Cana

L2590096-COFC

COC Number: 20 -

Page 5 of 25

www.alsglobal.com

Report To	Contact and company name below will appear on the final report
Company:	Cash Clients - Ottawa (21841)
Contact:	Ron Pearson, Kahshe Lake Ratepayers' Association
Phone:	416-843-2805
	Company address below will appear on the final report
Street:	1099 Oak Road
City/Province:	Kilworthy, ON
Postal Code:	P0E 1G0
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	
Contact:	

Reports / Recipients

Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)

Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A

☐ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax ron.pearson.pics@gmail.com

Email 2

Email 3

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax ron.pearson.pics@gmail.com

Email 2

Turnaround Time (TAT) Requested

☐ Routine [R] if received by 3pm M-F - no surcharges apply

☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum

☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum

☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum

☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum

☐ Same day [E2] if received by 10am M-S - 200% rush surcharge. Additional fees may apply to rush requests on weekends, statutory holidays and non-routine tests

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm am/pm

For all tests with rush TATs requested, please contact your AM to confirm availability.

Project Information

ALS Account # / Quote #:	21841 / Q83246
Job #:	
PO / AFE:	
LSD:	

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (ALS use only): L2590096

ALS Contact: Costas Farassoglou

Sampler:

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Chloride (CL-IC-N-WT)	Total Nitrogen (N-TOT-WT)	Nitrate (NO3-IC-WT)	Ammonia (NH3-F-WT)	E. Coli (EC-MF-WT)	Total Metals (MET-T-CCMS-WT)	Total P (P-T-L-COL-ED)	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	KD-1	May 19/21		WATER	4	X	X	X	X	X	X	X			
	KD-1 (2)	↓		WATER	1							X			
				WATER											
				WATER											
				WATER											
				WATER											
				WATER											
				WATER											
				WATER											
				WATER											
				WATER											
				WATER											

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human consumption/ use? ☐ YES ☐ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

LOGIN: Please send Total P to EDMONTON for Analysis

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☑ ICE PACKS ☐ FROZEN ☑ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
14.4				14.2	11.8	9.8	

SHIPMENT RELEASE (client use)

Released by: Date: May 19/21 Time: 2:35

INITIAL SHIPMENT RECEPTION (ALS use only)

Received by: Date: May 19/21 Time: 14:3

FINAL SHIPMENT RECEPTION (ALS use only)

Received by: Date: 5/19/21 Time: 17:20

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

A-3 Certificate of Analysis for July 29, 2021 Analysis

Cash Clients - Ottawa
ATTN: Ron Pearson
1099 Oak Road
Kilworthy ON POE 1G0

Date Received: 29-JUL-21
Report Date: 16-AUG-21 08:01 (MT)
Version: FINAL

Client Phone: 416-843-2805

Certificate of Analysis

Lab Work Order #: L2620657

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers:
Legal Site Desc:

Costas Farassoglou
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2620657-1 KL-1 Sampled By: CLIENT on 29-JUL-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	<0.010		0.010	mg/L		03-AUG-21	R5540236
Chloride (Cl)	2.52		0.50	mg/L		30-JUL-21	R5539676
Nitrate (as N)	<0.020		0.020	mg/L		30-JUL-21	R5539676
Nitrite (as N)	<0.010		0.010	mg/L		30-JUL-21	R5539676
Total Kjeldahl Nitrogen	0.440		0.050	mg/L	04-AUG-21	05-AUG-21	R5544817
Total Nitrogen	0.440		0.050	mg/L		06-AUG-21	
Phosphorus, Total	0.0116		0.0030	mg/L	05-AUG-21	06-AUG-21	R5545727
Bacteriological Tests							
E. Coli	1		0	CFU/100mL		30-JUL-21	R5537216
Total Metals							
Aluminum (Al)-Total	0.0419		0.0050	mg/L	30-JUL-21	30-JUL-21	R5537917
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Arsenic (As)-Total	0.00022		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Barium (Ba)-Total	0.00948		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Boron (B)-Total	<0.010		0.010	mg/L	30-JUL-21	30-JUL-21	R5537917
Cadmium (Cd)-Total	0.0000076		0.0000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Calcium (Ca)-Total	2.88		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	30-JUL-21	30-JUL-21	R5537917
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Copper (Cu)-Total	0.00073		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Iron (Fe)-Total	0.272		0.010	mg/L	30-JUL-21	30-JUL-21	R5537917
Lead (Pb)-Total	0.000073		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Lithium (Li)-Total	<0.0010		0.0010	mg/L	30-JUL-21	30-JUL-21	R5537917
Magnesium (Mg)-Total	0.819		0.0050	mg/L	30-JUL-21	30-JUL-21	R5537917
Manganese (Mn)-Total	0.0340		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Phosphorus (P)-Total	<0.050		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Potassium (K)-Total	0.365		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Rubidium (Rb)-Total	0.00121		0.00020	mg/L	30-JUL-21	30-JUL-21	R5537917
Selenium (Se)-Total	0.000103		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Silicon (Si)-Total	1.24		0.10	mg/L	30-JUL-21	30-JUL-21	R5537917
Silver (Ag)-Total	<0.000050		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Sodium (Na)-Total	2.01		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Strontium (Sr)-Total	0.0241		0.0010	mg/L	30-JUL-21	30-JUL-21	R5537917
Sulfur (S)-Total	0.83		0.50	mg/L	30-JUL-21	30-JUL-21	R5537917
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	30-JUL-21	30-JUL-21	R5537917
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	30-JUL-21	30-JUL-21	R5537917

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2620657-1 KL-1 Sampled By: CLIENT on 29-JUL-21 Matrix: WATER							
Total Metals							
Thorium (Th)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Tin (Sn)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Titanium (Ti)-Total	0.00059		0.00030	mg/L	30-JUL-21	30-JUL-21	R5537917
Tungsten (W)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Uranium (U)-Total	<0.000010		0.000010	mg/L	30-JUL-21	30-JUL-21	R5537917
Vanadium (V)-Total	<0.00050		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Zinc (Zn)-Total	0.0032		0.0030	mg/L	30-JUL-21	30-JUL-21	R5537917
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	30-JUL-21	30-JUL-21	R5537917
L2620657-2 KL-1 (2) Sampled By: CLIENT on 29-JUL-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0102		0.0010	mg/L	10-AUG-21	12-AUG-21	R5549229
L2620657-3 KL-3 Sampled By: CLIENT on 29-JUL-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	0.013		0.010	mg/L		03-AUG-21	R5540236
Chloride (Cl)	2.29		0.50	mg/L		30-JUL-21	R5539676
Nitrate (as N)	<0.020		0.020	mg/L		30-JUL-21	R5539676
Nitrite (as N)	<0.010		0.010	mg/L		30-JUL-21	R5539676
Total Kjeldahl Nitrogen	0.470		0.050	mg/L	04-AUG-21	05-AUG-21	R5544817
Total Nitrogen	0.470		0.050	mg/L		06-AUG-21	
Phosphorus, Total	0.0098		0.0030	mg/L	05-AUG-21	06-AUG-21	R5545727
Bacteriological Tests							
E. Coli	4		0	CFU/100mL		30-JUL-21	R5537216
Total Metals							
Aluminum (Al)-Total	0.0461		0.0050	mg/L	30-JUL-21	30-JUL-21	R5537917
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Arsenic (As)-Total	0.00023		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Barium (Ba)-Total	0.00978		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Boron (B)-Total	<0.010		0.010	mg/L	30-JUL-21	30-JUL-21	R5537917
Cadmium (Cd)-Total	0.0000073		0.0000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Calcium (Ca)-Total	2.87		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	30-JUL-21	30-JUL-21	R5537917
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Copper (Cu)-Total	0.00076		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Iron (Fe)-Total	0.264		0.010	mg/L	30-JUL-21	30-JUL-21	R5537917
Lead (Pb)-Total	0.000092		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2620657-3 KL-3 Sampled By: CLIENT on 29-JUL-21 Matrix: WATER							
Total Metals							
Lithium (Li)-Total	<0.0010		0.0010	mg/L	30-JUL-21	30-JUL-21	R5537917
Magnesium (Mg)-Total	0.805		0.0050	mg/L	30-JUL-21	30-JUL-21	R5537917
Manganese (Mn)-Total	0.0310		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Phosphorus (P)-Total	<0.050		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Potassium (K)-Total	0.374		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Rubidium (Rb)-Total	0.00126		0.00020	mg/L	30-JUL-21	30-JUL-21	R5537917
Selenium (Se)-Total	0.000091		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Silicon (Si)-Total	1.35		0.10	mg/L	30-JUL-21	30-JUL-21	R5537917
Silver (Ag)-Total	<0.000050		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Sodium (Na)-Total	1.95		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Strontium (Sr)-Total	0.0238		0.0010	mg/L	30-JUL-21	30-JUL-21	R5537917
Sulfur (S)-Total	0.75		0.50	mg/L	30-JUL-21	30-JUL-21	R5537917
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	30-JUL-21	30-JUL-21	R5537917
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	30-JUL-21	30-JUL-21	R5537917
Thorium (Th)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Tin (Sn)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Titanium (Ti)-Total	0.00070		0.00030	mg/L	30-JUL-21	30-JUL-21	R5537917
Tungsten (W)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Uranium (U)-Total	<0.000010		0.000010	mg/L	30-JUL-21	30-JUL-21	R5537917
Vanadium (V)-Total	<0.00050		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Zinc (Zn)-Total	0.0053		0.0030	mg/L	30-JUL-21	30-JUL-21	R5537917
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	30-JUL-21	30-JUL-21	R5537917
L2620657-4 KL-3 (2) Sampled By: CLIENT on 29-JUL-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0060		0.0010	mg/L	10-AUG-21	12-AUG-21	R5549229
L2620657-5 KL-5 Sampled By: CLIENT on 29-JUL-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	0.016		0.010	mg/L		03-AUG-21	R5540236
Chloride (Cl)	2.24		0.50	mg/L		30-JUL-21	R5539676
Nitrate (as N)	<0.020		0.020	mg/L		30-JUL-21	R5539676
Nitrite (as N)	<0.010		0.010	mg/L		30-JUL-21	R5539676
Total Kjeldahl Nitrogen	0.450		0.050	mg/L	04-AUG-21	05-AUG-21	R5544817
Total Nitrogen	0.450		0.050	mg/L		06-AUG-21	
Phosphorus, Total	0.0088		0.0030	mg/L	05-AUG-21	06-AUG-21	R5545727
Bacteriological Tests							
E. Coli	6		0	CFU/100mL		30-JUL-21	R5537216

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2620657-5 KL-5 Sampled By: CLIENT on 29-JUL-21 Matrix: WATER							
Bacteriological Tests							
Total Metals							
Aluminum (Al)-Total	0.0479		0.0050	mg/L	30-JUL-21	30-JUL-21	R5537917
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Arsenic (As)-Total	0.00021		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Barium (Ba)-Total	0.00983		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Boron (B)-Total	<0.010		0.010	mg/L	30-JUL-21	30-JUL-21	R5537917
Cadmium (Cd)-Total	0.0000054		0.0000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Calcium (Ca)-Total	2.88		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	30-JUL-21	30-JUL-21	R5537917
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Copper (Cu)-Total	0.00068		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Iron (Fe)-Total	0.251		0.010	mg/L	30-JUL-21	30-JUL-21	R5537917
Lead (Pb)-Total	0.000075		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Lithium (Li)-Total	<0.0010		0.0010	mg/L	30-JUL-21	30-JUL-21	R5537917
Magnesium (Mg)-Total	0.808		0.0050	mg/L	30-JUL-21	30-JUL-21	R5537917
Manganese (Mn)-Total	0.0293		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Phosphorus (P)-Total	<0.050		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Potassium (K)-Total	0.375		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Rubidium (Rb)-Total	0.00125		0.00020	mg/L	30-JUL-21	30-JUL-21	R5537917
Selenium (Se)-Total	0.000069		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Silicon (Si)-Total	1.27		0.10	mg/L	30-JUL-21	30-JUL-21	R5537917
Silver (Ag)-Total	<0.000050		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Sodium (Na)-Total	1.91		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Strontium (Sr)-Total	0.0242		0.0010	mg/L	30-JUL-21	30-JUL-21	R5537917
Sulfur (S)-Total	0.95		0.50	mg/L	30-JUL-21	30-JUL-21	R5537917
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	30-JUL-21	30-JUL-21	R5537917
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	30-JUL-21	30-JUL-21	R5537917
Thorium (Th)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Tin (Sn)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Titanium (Ti)-Total	0.00063		0.00030	mg/L	30-JUL-21	30-JUL-21	R5537917
Tungsten (W)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Uranium (U)-Total	<0.000010		0.000010	mg/L	30-JUL-21	30-JUL-21	R5537917
Vanadium (V)-Total	<0.00050		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Zinc (Zn)-Total	<0.0030		0.0030	mg/L	30-JUL-21	30-JUL-21	R5537917
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	30-JUL-21	30-JUL-21	R5537917
L2620657-6 KL-5 (2)							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2620657-6 KL-5 (2) Sampled By: CLIENT on 29-JUL-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0098		0.0010	mg/L	10-AUG-21	12-AUG-21	R5549229
L2620657-7 KL-7 Sampled By: CLIENT on 29-JUL-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	<0.010		0.010	mg/L		03-AUG-21	R5540236
Chloride (Cl)	2.25		0.50	mg/L		30-JUL-21	R5539676
Nitrate (as N)	<0.020		0.020	mg/L		30-JUL-21	R5539676
Nitrite (as N)	<0.010		0.010	mg/L		30-JUL-21	R5539676
Total Kjeldahl Nitrogen	0.450		0.050	mg/L	04-AUG-21	05-AUG-21	R5544817
Total Nitrogen	0.450		0.050	mg/L		06-AUG-21	
Phosphorus, Total	0.0126		0.0030	mg/L	05-AUG-21	06-AUG-21	R5545727
Bacteriological Tests							
E. Coli	5		0	CFU/100mL		30-JUL-21	R5537216
Total Metals							
Aluminum (Al)-Total	0.0538		0.0050	mg/L	30-JUL-21	30-JUL-21	R5537917
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Arsenic (As)-Total	0.00022		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Barium (Ba)-Total	0.0102		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Boron (B)-Total	<0.010		0.010	mg/L	30-JUL-21	30-JUL-21	R5537917
Cadmium (Cd)-Total	<0.0000050		0.0000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Calcium (Ca)-Total	2.84		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	30-JUL-21	30-JUL-21	R5537917
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Copper (Cu)-Total	0.00073		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Iron (Fe)-Total	0.261		0.010	mg/L	30-JUL-21	30-JUL-21	R5537917
Lead (Pb)-Total	0.000077		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Lithium (Li)-Total	<0.0010		0.0010	mg/L	30-JUL-21	30-JUL-21	R5537917
Magnesium (Mg)-Total	0.795		0.0050	mg/L	30-JUL-21	30-JUL-21	R5537917
Manganese (Mn)-Total	0.0258		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Phosphorus (P)-Total	<0.050		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Potassium (K)-Total	0.375		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Rubidium (Rb)-Total	0.00120		0.00020	mg/L	30-JUL-21	30-JUL-21	R5537917
Selenium (Se)-Total	0.000091		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Silicon (Si)-Total	1.30		0.10	mg/L	30-JUL-21	30-JUL-21	R5537917
Silver (Ag)-Total	<0.000050		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Sodium (Na)-Total	1.86		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2620657-7 KL-7 Sampled By: CLIENT on 29-JUL-21 Matrix: WATER							
Total Metals							
Strontium (Sr)-Total	0.0239		0.0010	mg/L	30-JUL-21	30-JUL-21	R5537917
Sulfur (S)-Total	0.89		0.50	mg/L	30-JUL-21	30-JUL-21	R5537917
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	30-JUL-21	30-JUL-21	R5537917
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	30-JUL-21	30-JUL-21	R5537917
Thorium (Th)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Tin (Sn)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Titanium (Ti)-Total	0.00088		0.00030	mg/L	30-JUL-21	30-JUL-21	R5537917
Tungsten (W)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Uranium (U)-Total	<0.000010		0.000010	mg/L	30-JUL-21	30-JUL-21	R5537917
Vanadium (V)-Total	<0.00050		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Zinc (Zn)-Total	0.0034		0.0030	mg/L	30-JUL-21	30-JUL-21	R5537917
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	30-JUL-21	30-JUL-21	R5537917
L2620657-8 KL-7 (2) Sampled By: CLIENT on 29-JUL-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0109		0.0010	mg/L	10-AUG-21	12-AUG-21	R5549229
L2620657-9 KL-9 Sampled By: CLIENT on 29-JUL-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	<0.010		0.010	mg/L		03-AUG-21	R5540236
Chloride (Cl)	2.23		0.50	mg/L		30-JUL-21	R5539676
Nitrate (as N)	<0.020		0.020	mg/L		30-JUL-21	R5539676
Nitrite (as N)	<0.010		0.010	mg/L		30-JUL-21	R5539676
Total Kjeldahl Nitrogen	0.480		0.050	mg/L	04-AUG-21	05-AUG-21	R5544817
Total Nitrogen	0.480		0.050	mg/L		06-AUG-21	
Phosphorus, Total	0.0124		0.0030	mg/L	05-AUG-21	06-AUG-21	R5545727
Bacteriological Tests							
E. Coli	15		0	CFU/100mL		30-JUL-21	R5537144
Total Metals							
Aluminum (Al)-Total	0.0567		0.0050	mg/L	30-JUL-21	30-JUL-21	R5537917
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Arsenic (As)-Total	0.00024		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Barium (Ba)-Total	0.0103		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Boron (B)-Total	<0.010		0.010	mg/L	30-JUL-21	30-JUL-21	R5537917
Cadmium (Cd)-Total	0.0000077		0.0000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Calcium (Ca)-Total	2.96		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	30-JUL-21	30-JUL-21	R5537917
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2620657-9 KL-9 Sampled By: CLIENT on 29-JUL-21 Matrix: WATER							
Total Metals							
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Copper (Cu)-Total	0.00080		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Iron (Fe)-Total	0.267		0.010	mg/L	30-JUL-21	30-JUL-21	R5537917
Lead (Pb)-Total	0.000092		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Lithium (Li)-Total	<0.0010		0.0010	mg/L	30-JUL-21	30-JUL-21	R5537917
Magnesium (Mg)-Total	0.815		0.0050	mg/L	30-JUL-21	30-JUL-21	R5537917
Manganese (Mn)-Total	0.0249		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Phosphorus (P)-Total	<0.050		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Potassium (K)-Total	0.376		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Rubidium (Rb)-Total	0.00123		0.00020	mg/L	30-JUL-21	30-JUL-21	R5537917
Selenium (Se)-Total	0.000060		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Silicon (Si)-Total	1.33		0.10	mg/L	30-JUL-21	30-JUL-21	R5537917
Silver (Ag)-Total	<0.000050		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Sodium (Na)-Total	1.88		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Strontium (Sr)-Total	0.0246		0.0010	mg/L	30-JUL-21	30-JUL-21	R5537917
Sulfur (S)-Total	0.82		0.50	mg/L	30-JUL-21	30-JUL-21	R5537917
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	30-JUL-21	30-JUL-21	R5537917
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	30-JUL-21	30-JUL-21	R5537917
Thorium (Th)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Tin (Sn)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Titanium (Ti)-Total	0.00098		0.00030	mg/L	30-JUL-21	30-JUL-21	R5537917
Tungsten (W)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Uranium (U)-Total	0.000010		0.000010	mg/L	30-JUL-21	30-JUL-21	R5537917
Vanadium (V)-Total	<0.00050		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Zinc (Zn)-Total	0.0059		0.0030	mg/L	30-JUL-21	30-JUL-21	R5537917
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	30-JUL-21	30-JUL-21	R5537917
L2620657-10 KL-9 (2) Sampled By: CLIENT on 29-JUL-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0109		0.0010	mg/L	10-AUG-21	12-AUG-21	R5549229
L2620657-11 KL-11 Sampled By: CLIENT on 29-JUL-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	<0.010		0.010	mg/L		03-AUG-21	R5540236
Chloride (Cl)	2.14		0.50	mg/L		30-JUL-21	R5539676
Nitrate (as N)	<0.020		0.020	mg/L		30-JUL-21	R5539676
Nitrite (as N)	<0.010		0.010	mg/L		30-JUL-21	R5539676
Total Kjeldahl Nitrogen	1.50	DLM	0.50	mg/L	04-AUG-21	05-AUG-21	R5544817

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2620657-11 KL-11 Sampled By: CLIENT on 29-JUL-21 Matrix: WATER							
Anions and Nutrients							
Total Nitrogen	1.50		0.50	mg/L		06-AUG-21	
Phosphorus, Total	0.0143		0.0030	mg/L	06-AUG-21	10-AUG-21	R5547454
Bacteriological Tests							
E. Coli	1		0	CFU/100mL		30-JUL-21	R5537216
Total Metals							
Aluminum (Al)-Total	0.0557		0.0050	mg/L	30-JUL-21	30-JUL-21	R5537917
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Arsenic (As)-Total	0.00024		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Barium (Ba)-Total	0.0101		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Boron (B)-Total	<0.010		0.010	mg/L	30-JUL-21	30-JUL-21	R5537917
Cadmium (Cd)-Total	0.0000092		0.0000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Calcium (Ca)-Total	2.91		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	30-JUL-21	30-JUL-21	R5537917
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Copper (Cu)-Total	0.00085		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Iron (Fe)-Total	0.265		0.010	mg/L	30-JUL-21	30-JUL-21	R5537917
Lead (Pb)-Total	0.000093		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Lithium (Li)-Total	<0.0010		0.0010	mg/L	30-JUL-21	30-JUL-21	R5537917
Magnesium (Mg)-Total	0.806		0.0050	mg/L	30-JUL-21	30-JUL-21	R5537917
Manganese (Mn)-Total	0.0237		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Phosphorus (P)-Total	<0.050		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Potassium (K)-Total	0.375		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Rubidium (Rb)-Total	0.00119		0.00020	mg/L	30-JUL-21	30-JUL-21	R5537917
Selenium (Se)-Total	0.000075		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Silicon (Si)-Total	1.28		0.10	mg/L	30-JUL-21	30-JUL-21	R5537917
Silver (Ag)-Total	<0.000050		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Sodium (Na)-Total	1.86		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Strontium (Sr)-Total	0.0242		0.0010	mg/L	30-JUL-21	30-JUL-21	R5537917
Sulfur (S)-Total	0.84		0.50	mg/L	30-JUL-21	30-JUL-21	R5537917
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	30-JUL-21	30-JUL-21	R5537917
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	30-JUL-21	30-JUL-21	R5537917
Thorium (Th)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Tin (Sn)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Titanium (Ti)-Total	0.00082		0.00030	mg/L	30-JUL-21	30-JUL-21	R5537917
Tungsten (W)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Uranium (U)-Total	<0.000010		0.000010	mg/L	30-JUL-21	30-JUL-21	R5537917

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2620657-11 KL-11 Sampled By: CLIENT on 29-JUL-21 Matrix: WATER							
Total Metals							
Vanadium (V)-Total	<0.00050		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Zinc (Zn)-Total	0.0035		0.0030	mg/L	30-JUL-21	30-JUL-21	R5537917
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	30-JUL-21	30-JUL-21	R5537917
L2620657-12 KL-11 (2) Sampled By: CLIENT on 29-JUL-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0104		0.0010	mg/L	10-AUG-21	12-AUG-21	R5549229
L2620657-13 KL-13 Sampled By: CLIENT on 29-JUL-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	0.019		0.010	mg/L		03-AUG-21	R5540236
Chloride (Cl)	2.11		0.50	mg/L		30-JUL-21	R5539676
Nitrate (as N)	<0.020		0.020	mg/L		30-JUL-21	R5539676
Nitrite (as N)	<0.010		0.010	mg/L		30-JUL-21	R5539676
Total Kjeldahl Nitrogen	0.450		0.050	mg/L	04-AUG-21	05-AUG-21	R5544817
Total Nitrogen	0.450		0.050	mg/L		06-AUG-21	
Phosphorus, Total	0.0096		0.0030	mg/L	05-AUG-21	06-AUG-21	R5545727
Bacteriological Tests							
E. Coli	5		0	CFU/100mL		30-JUL-21	R5537216
Total Metals							
Aluminum (Al)-Total	0.0567		0.0050	mg/L	30-JUL-21	30-JUL-21	R5537917
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Arsenic (As)-Total	0.00024		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Barium (Ba)-Total	0.0100		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Boron (B)-Total	<0.010		0.010	mg/L	30-JUL-21	30-JUL-21	R5537917
Cadmium (Cd)-Total	0.0000059		0.0000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Calcium (Ca)-Total	2.84		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	30-JUL-21	30-JUL-21	R5537917
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Copper (Cu)-Total	0.00116		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Iron (Fe)-Total	0.248		0.010	mg/L	30-JUL-21	30-JUL-21	R5537917
Lead (Pb)-Total	0.000068		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Lithium (Li)-Total	<0.0010		0.0010	mg/L	30-JUL-21	30-JUL-21	R5537917
Magnesium (Mg)-Total	0.796		0.0050	mg/L	30-JUL-21	30-JUL-21	R5537917
Manganese (Mn)-Total	0.0178		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2620657-13 KL-13 Sampled By: CLIENT on 29-JUL-21 Matrix: WATER							
Total Metals							
Phosphorus (P)-Total	<0.050		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Potassium (K)-Total	0.372		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Rubidium (Rb)-Total	0.00123		0.00020	mg/L	30-JUL-21	30-JUL-21	R5537917
Selenium (Se)-Total	0.000074		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Silicon (Si)-Total	1.28		0.10	mg/L	30-JUL-21	30-JUL-21	R5537917
Silver (Ag)-Total	<0.000050		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Sodium (Na)-Total	1.84		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Strontium (Sr)-Total	0.0238		0.0010	mg/L	30-JUL-21	30-JUL-21	R5537917
Sulfur (S)-Total	0.82		0.50	mg/L	30-JUL-21	30-JUL-21	R5537917
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	30-JUL-21	30-JUL-21	R5537917
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	30-JUL-21	30-JUL-21	R5537917
Thorium (Th)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Tin (Sn)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Titanium (Ti)-Total	0.00102		0.00030	mg/L	30-JUL-21	30-JUL-21	R5537917
Tungsten (W)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Uranium (U)-Total	<0.000010		0.000010	mg/L	30-JUL-21	30-JUL-21	R5537917
Vanadium (V)-Total	<0.00050		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Zinc (Zn)-Total	0.0042		0.0030	mg/L	30-JUL-21	30-JUL-21	R5537917
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	30-JUL-21	30-JUL-21	R5537917
L2620657-14 KL-13 (2) Sampled By: CLIENT on 29-JUL-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0104		0.0010	mg/L	10-AUG-21	12-AUG-21	R5549229
L2620657-15 KL-14 Sampled By: CLIENT on 29-JUL-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	0.020		0.010	mg/L		03-AUG-21	R5540236
Chloride (Cl)	2.15		0.50	mg/L		30-JUL-21	R5539676
Nitrate (as N)	<0.020		0.020	mg/L		30-JUL-21	R5539676
Nitrite (as N)	<0.010		0.010	mg/L		30-JUL-21	R5539676
Total Kjeldahl Nitrogen	0.490		0.050	mg/L	04-AUG-21	05-AUG-21	R5544817
Total Nitrogen	0.490		0.050	mg/L		06-AUG-21	
Phosphorus, Total	0.0122		0.0030	mg/L	05-AUG-21	06-AUG-21	R5545727
Bacteriological Tests							
E. Coli	1		0	CFU/100mL		30-JUL-21	R5537216
Total Metals							
Aluminum (Al)-Total	0.0756		0.0050	mg/L	30-JUL-21	30-JUL-21	R5537917
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Arsenic (As)-Total	0.00027		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Barium (Ba)-Total	0.0113		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2620657-15 KL-14 Sampled By: CLIENT on 29-JUL-21 Matrix: WATER							
Total Metals							
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Boron (B)-Total	<0.010		0.010	mg/L	30-JUL-21	30-JUL-21	R5537917
Cadmium (Cd)-Total	0.0000090		0.0000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Calcium (Ca)-Total	2.96		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	30-JUL-21	30-JUL-21	R5537917
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Copper (Cu)-Total	0.00104		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Iron (Fe)-Total	0.359		0.010	mg/L	30-JUL-21	30-JUL-21	R5537917
Lead (Pb)-Total	0.000070		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Lithium (Li)-Total	<0.0010		0.0010	mg/L	30-JUL-21	30-JUL-21	R5537917
Magnesium (Mg)-Total	0.853		0.0050	mg/L	30-JUL-21	30-JUL-21	R5537917
Manganese (Mn)-Total	0.0206		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Phosphorus (P)-Total	<0.050		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Potassium (K)-Total	0.388		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Rubidium (Rb)-Total	0.00132		0.00020	mg/L	30-JUL-21	30-JUL-21	R5537917
Selenium (Se)-Total	0.000077		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Silicon (Si)-Total	1.38		0.10	mg/L	30-JUL-21	30-JUL-21	R5537917
Silver (Ag)-Total	<0.000050		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Sodium (Na)-Total	1.93		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Strontium (Sr)-Total	0.0257		0.0010	mg/L	30-JUL-21	30-JUL-21	R5537917
Sulfur (S)-Total	0.93		0.50	mg/L	30-JUL-21	30-JUL-21	R5537917
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	30-JUL-21	30-JUL-21	R5537917
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	30-JUL-21	30-JUL-21	R5537917
Thorium (Th)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Tin (Sn)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Titanium (Ti)-Total	0.00116		0.00030	mg/L	30-JUL-21	30-JUL-21	R5537917
Tungsten (W)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Uranium (U)-Total	0.000011		0.000010	mg/L	30-JUL-21	30-JUL-21	R5537917
Vanadium (V)-Total	<0.00050		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Zinc (Zn)-Total	0.0031		0.0030	mg/L	30-JUL-21	30-JUL-21	R5537917
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	30-JUL-21	30-JUL-21	R5537917
L2620657-16 KL-14 (2) Sampled By: CLIENT on 29-JUL-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0129		0.0010	mg/L	10-AUG-21	12-AUG-21	R5549229
L2620657-17 KL-15 Sampled By: CLIENT on 29-JUL-21							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2620657-17 KL-15 Sampled By: CLIENT on 29-JUL-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	0.037		0.010	mg/L		03-AUG-21	R5540236
Chloride (Cl)	2.43		0.50	mg/L		30-JUL-21	R5539676
Nitrate (as N)	<0.020		0.020	mg/L		30-JUL-21	R5539676
Nitrite (as N)	<0.010		0.010	mg/L		30-JUL-21	R5539676
Total Kjeldahl Nitrogen	0.720		0.050	mg/L	04-AUG-21	05-AUG-21	R5544817
Total Nitrogen	0.720		0.050	mg/L		06-AUG-21	
Phosphorus, Total	0.0223		0.0030	mg/L	05-AUG-21	06-AUG-21	R5545727
Bacteriological Tests							
E. Coli	11		0	CFU/100mL		30-JUL-21	R5537216
Total Metals							
Aluminum (Al)-Total	0.140		0.0050	mg/L	30-JUL-21	30-JUL-21	R5537917
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Arsenic (As)-Total	0.00035		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Barium (Ba)-Total	0.0143		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Boron (B)-Total	<0.010		0.010	mg/L	30-JUL-21	30-JUL-21	R5537917
Cadmium (Cd)-Total	0.0000150		0.0000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Calcium (Ca)-Total	3.41		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	30-JUL-21	30-JUL-21	R5537917
Chromium (Cr)-Total	0.00074		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Cobalt (Co)-Total	0.00014		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Copper (Cu)-Total	0.00154		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Iron (Fe)-Total	0.945		0.010	mg/L	30-JUL-21	30-JUL-21	R5537917
Lead (Pb)-Total	0.000178		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Lithium (Li)-Total	<0.0010		0.0010	mg/L	30-JUL-21	30-JUL-21	R5537917
Magnesium (Mg)-Total	0.922		0.0050	mg/L	30-JUL-21	30-JUL-21	R5537917
Manganese (Mn)-Total	0.0431		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Molybdenum (Mo)-Total	0.000065		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Nickel (Ni)-Total	0.00065		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Phosphorus (P)-Total	<0.050		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Potassium (K)-Total	0.377		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Rubidium (Rb)-Total	0.00133		0.00020	mg/L	30-JUL-21	30-JUL-21	R5537917
Selenium (Se)-Total	0.000079		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Silicon (Si)-Total	1.50		0.10	mg/L	30-JUL-21	30-JUL-21	R5537917
Silver (Ag)-Total	<0.000050		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Sodium (Na)-Total	2.10		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Strontium (Sr)-Total	0.0305		0.0010	mg/L	30-JUL-21	30-JUL-21	R5537917
Sulfur (S)-Total	0.84		0.50	mg/L	30-JUL-21	30-JUL-21	R5537917
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	30-JUL-21	30-JUL-21	R5537917
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	30-JUL-21	30-JUL-21	R5537917

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2620657-17 KL-15 Sampled By: CLIENT on 29-JUL-21 Matrix: WATER							
Total Metals							
Thorium (Th)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Tin (Sn)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Titanium (Ti)-Total	0.00230		0.00030	mg/L	30-JUL-21	30-JUL-21	R5537917
Tungsten (W)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Uranium (U)-Total	0.000017		0.000010	mg/L	30-JUL-21	30-JUL-21	R5537917
Vanadium (V)-Total	0.00059		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Zinc (Zn)-Total	0.0050		0.0030	mg/L	30-JUL-21	30-JUL-21	R5537917
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	30-JUL-21	30-JUL-21	R5537917
L2620657-18 KL-15 (2) Sampled By: CLIENT on 29-JUL-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0261		0.0010	mg/L	10-AUG-21	12-AUG-21	R5549229
L2620657-19 KL-16 Sampled By: CLIENT on 29-JUL-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	0.036		0.010	mg/L		03-AUG-21	R5540236
Chloride (Cl)	2.45		0.50	mg/L		30-JUL-21	R5539676
Nitrate (as N)	<0.020		0.020	mg/L		30-JUL-21	R5539676
Nitrite (as N)	<0.010		0.010	mg/L		30-JUL-21	R5539676
Total Kjeldahl Nitrogen	0.750		0.050	mg/L	04-AUG-21	05-AUG-21	R5544817
Total Nitrogen	0.750		0.050	mg/L		06-AUG-21	
Phosphorus, Total	0.0281		0.0030	mg/L	05-AUG-21	06-AUG-21	R5545727
Bacteriological Tests							
E. Coli	40		0	CFU/100mL		30-JUL-21	R5537216
Total Metals							
Aluminum (Al)-Total	0.234		0.0050	mg/L	30-JUL-21	30-JUL-21	R5537917
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Arsenic (As)-Total	0.00039		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Barium (Ba)-Total	0.0179		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Boron (B)-Total	<0.010		0.010	mg/L	30-JUL-21	30-JUL-21	R5537917
Cadmium (Cd)-Total	0.0000288		0.0000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Calcium (Ca)-Total	3.46		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Cesium (Cs)-Total	0.000014		0.000010	mg/L	30-JUL-21	30-JUL-21	R5537917
Chromium (Cr)-Total	0.00072		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Cobalt (Co)-Total	0.00028		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Copper (Cu)-Total	0.00119		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Iron (Fe)-Total	1.02		0.010	mg/L	30-JUL-21	30-JUL-21	R5537917
Lead (Pb)-Total	0.000436		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2620657-19 KL-16 Sampled By: CLIENT on 29-JUL-21 Matrix: WATER							
Total Metals							
Lithium (Li)-Total	<0.0010		0.0010	mg/L	30-JUL-21	30-JUL-21	R5537917
Magnesium (Mg)-Total	0.953		0.0050	mg/L	30-JUL-21	30-JUL-21	R5537917
Manganese (Mn)-Total	0.102		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Nickel (Ni)-Total	0.00076		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Phosphorus (P)-Total	<0.050		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Potassium (K)-Total	0.409		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Rubidium (Rb)-Total	0.00144		0.00020	mg/L	30-JUL-21	30-JUL-21	R5537917
Selenium (Se)-Total	0.000097		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Silicon (Si)-Total	1.57		0.10	mg/L	30-JUL-21	30-JUL-21	R5537917
Silver (Ag)-Total	<0.000050		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Sodium (Na)-Total	2.12		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Strontium (Sr)-Total	0.0307		0.0010	mg/L	30-JUL-21	30-JUL-21	R5537917
Sulfur (S)-Total	0.78		0.50	mg/L	30-JUL-21	30-JUL-21	R5537917
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	30-JUL-21	30-JUL-21	R5537917
Thallium (Tl)-Total	0.000010		0.000010	mg/L	30-JUL-21	30-JUL-21	R5537917
Thorium (Th)-Total	0.00070		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Tin (Sn)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Titanium (Ti)-Total	0.00710		0.00030	mg/L	30-JUL-21	30-JUL-21	R5537917
Tungsten (W)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Uranium (U)-Total	0.000052		0.000010	mg/L	30-JUL-21	30-JUL-21	R5537917
Vanadium (V)-Total	0.00084		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Zinc (Zn)-Total	0.0062		0.0030	mg/L	30-JUL-21	30-JUL-21	R5537917
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	30-JUL-21	30-JUL-21	R5537917
L2620657-20 KL-16 (2) Sampled By: CLIENT on 29-JUL-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0444		0.0010	mg/L	10-AUG-21	12-AUG-21	R5549229
L2620657-21 KL-17 Sampled By: CLIENT on 29-JUL-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	0.018		0.010	mg/L		03-AUG-21	R5540236
Chloride (Cl)	2.59		0.50	mg/L		30-JUL-21	R5539676
Nitrate (as N)	<0.020		0.020	mg/L		30-JUL-21	R5539676
Nitrite (as N)	<0.010		0.010	mg/L		30-JUL-21	R5539676
Total Kjeldahl Nitrogen	0.750		0.050	mg/L	04-AUG-21	05-AUG-21	R5544817
Total Nitrogen	0.750		0.050	mg/L		06-AUG-21	
Phosphorus, Total	0.0319		0.0030	mg/L	05-AUG-21	06-AUG-21	R5545727
Bacteriological Tests							
E. Coli	18		0	CFU/100mL		30-JUL-21	R5537216

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2620657-21 KL-17 Sampled By: CLIENT on 29-JUL-21 Matrix: WATER							
Bacteriological Tests							
Total Metals							
Aluminum (Al)-Total	0.173		0.0050	mg/L	30-JUL-21	30-JUL-21	R5537917
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Arsenic (As)-Total	0.00043		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Barium (Ba)-Total	0.0161		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Boron (B)-Total	<0.010		0.010	mg/L	30-JUL-21	30-JUL-21	R5537917
Cadmium (Cd)-Total	0.0000121		0.0000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Calcium (Ca)-Total	3.59		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Cesium (Cs)-Total	0.000010		0.000010	mg/L	30-JUL-21	30-JUL-21	R5537917
Chromium (Cr)-Total	0.00069		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Cobalt (Co)-Total	0.00021		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Copper (Cu)-Total	0.00069		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Iron (Fe)-Total	1.51		0.010	mg/L	30-JUL-21	30-JUL-21	R5537917
Lead (Pb)-Total	0.000225		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Lithium (Li)-Total	<0.0010		0.0010	mg/L	30-JUL-21	30-JUL-21	R5537917
Magnesium (Mg)-Total	0.985		0.0050	mg/L	30-JUL-21	30-JUL-21	R5537917
Manganese (Mn)-Total	0.0585		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Molybdenum (Mo)-Total	0.000062		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Nickel (Ni)-Total	0.00072		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Phosphorus (P)-Total	<0.050		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Potassium (K)-Total	0.379		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Rubidium (Rb)-Total	0.00133		0.00020	mg/L	30-JUL-21	30-JUL-21	R5537917
Selenium (Se)-Total	0.000098		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Silicon (Si)-Total	1.95		0.10	mg/L	30-JUL-21	30-JUL-21	R5537917
Silver (Ag)-Total	<0.000050		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Sodium (Na)-Total	2.23		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Strontium (Sr)-Total	0.0337		0.0010	mg/L	30-JUL-21	30-JUL-21	R5537917
Sulfur (S)-Total	0.75		0.50	mg/L	30-JUL-21	30-JUL-21	R5537917
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	30-JUL-21	30-JUL-21	R5537917
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	30-JUL-21	30-JUL-21	R5537917
Thorium (Th)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Tin (Sn)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Titanium (Ti)-Total	0.00317		0.00030	mg/L	30-JUL-21	30-JUL-21	R5537917
Tungsten (W)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Uranium (U)-Total	0.000020		0.000010	mg/L	30-JUL-21	30-JUL-21	R5537917
Vanadium (V)-Total	0.00083		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Zinc (Zn)-Total	0.0038		0.0030	mg/L	30-JUL-21	30-JUL-21	R5537917
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	30-JUL-21	30-JUL-21	R5537917
L2620657-22 KL-17 (2)							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2620657-22 KL-17 (2) Sampled By: CLIENT on 29-JUL-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0325		0.0010	mg/L	10-AUG-21	12-AUG-21	R5549229
L2620657-23 KL-20 Sampled By: CLIENT on 29-JUL-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	<0.010		0.010	mg/L		03-AUG-21	R5540236
Chloride (Cl)	3.09		0.50	mg/L		30-JUL-21	R5539676
Nitrate (as N)	<0.020		0.020	mg/L		30-JUL-21	R5539676
Nitrite (as N)	<0.010		0.010	mg/L		30-JUL-21	R5539676
Total Kjeldahl Nitrogen	0.460		0.050	mg/L	04-AUG-21	05-AUG-21	R5544817
Total Nitrogen	0.460		0.050	mg/L		06-AUG-21	
Phosphorus, Total	0.0084		0.0030	mg/L	05-AUG-21	06-AUG-21	R5545727
Bacteriological Tests							
E. Coli	1		0	CFU/100mL		30-JUL-21	R5537216
Total Metals							
Aluminum (Al)-Total	0.0394		0.0050	mg/L	30-JUL-21	30-JUL-21	R5537917
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Arsenic (As)-Total	0.00024		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Barium (Ba)-Total	0.00905		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Boron (B)-Total	<0.010		0.010	mg/L	30-JUL-21	30-JUL-21	R5537917
Cadmium (Cd)-Total	<0.0000050		0.0000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Calcium (Ca)-Total	2.95		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	30-JUL-21	30-JUL-21	R5537917
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Copper (Cu)-Total	0.00095		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Iron (Fe)-Total	0.324		0.010	mg/L	30-JUL-21	30-JUL-21	R5537917
Lead (Pb)-Total	0.000083		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Lithium (Li)-Total	<0.0010		0.0010	mg/L	30-JUL-21	30-JUL-21	R5537917
Magnesium (Mg)-Total	0.807		0.0050	mg/L	30-JUL-21	30-JUL-21	R5537917
Manganese (Mn)-Total	0.0284		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Phosphorus (P)-Total	<0.050		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Potassium (K)-Total	0.360		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Rubidium (Rb)-Total	0.00115		0.00020	mg/L	30-JUL-21	30-JUL-21	R5537917
Selenium (Se)-Total	0.000067		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Silicon (Si)-Total	1.18		0.10	mg/L	30-JUL-21	30-JUL-21	R5537917
Silver (Ag)-Total	<0.000050		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Sodium (Na)-Total	2.43		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2620657-23 KL-20 Sampled By: CLIENT on 29-JUL-21 Matrix: WATER							
Total Metals							
Strontium (Sr)-Total	0.0252		0.0010	mg/L	30-JUL-21	30-JUL-21	R5537917
Sulfur (S)-Total	0.74		0.50	mg/L	30-JUL-21	30-JUL-21	R5537917
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	30-JUL-21	30-JUL-21	R5537917
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	30-JUL-21	30-JUL-21	R5537917
Thorium (Th)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Tin (Sn)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Titanium (Ti)-Total	0.00053		0.00030	mg/L	30-JUL-21	30-JUL-21	R5537917
Tungsten (W)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Uranium (U)-Total	<0.000010		0.000010	mg/L	30-JUL-21	30-JUL-21	R5537917
Vanadium (V)-Total	<0.00050		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Zinc (Zn)-Total	0.0034		0.0030	mg/L	30-JUL-21	30-JUL-21	R5537917
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	30-JUL-21	30-JUL-21	R5537917
L2620657-24 KL-20 (2) Sampled By: CLIENT on 29-JUL-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0119		0.0010	mg/L	10-AUG-21	12-AUG-21	R5549229
L2620657-25 KD-2 Sampled By: CLIENT on 29-JUL-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	<0.010		0.010	mg/L		03-AUG-21	R5540236
Chloride (Cl)	2.33		0.50	mg/L		30-JUL-21	R5539676
Nitrate (as N)	<0.020		0.020	mg/L		30-JUL-21	R5539676
Nitrite (as N)	<0.010		0.010	mg/L		30-JUL-21	R5539676
Total Kjeldahl Nitrogen	0.410		0.050	mg/L	04-AUG-21	05-AUG-21	R5544817
Total Nitrogen	0.410		0.050	mg/L		06-AUG-21	
Phosphorus, Total	0.0121		0.0030	mg/L	05-AUG-21	06-AUG-21	R5545727
Bacteriological Tests							
E. Coli	3		0	CFU/100mL		30-JUL-21	R5537216
Total Metals							
Aluminum (Al)-Total	0.0409		0.0050	mg/L	30-JUL-21	30-JUL-21	R5537917
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Arsenic (As)-Total	0.00023		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Barium (Ba)-Total	0.00940		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Boron (B)-Total	<0.010		0.010	mg/L	30-JUL-21	30-JUL-21	R5537917
Cadmium (Cd)-Total	0.0000050		0.0000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Calcium (Ca)-Total	2.86		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	30-JUL-21	30-JUL-21	R5537917
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2620657-25 KD-2 Sampled By: CLIENT on 29-JUL-21 Matrix: WATER							
Total Metals							
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Copper (Cu)-Total	0.00068		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Iron (Fe)-Total	0.261		0.010	mg/L	30-JUL-21	30-JUL-21	R5537917
Lead (Pb)-Total	0.000069		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Lithium (Li)-Total	<0.0010		0.0010	mg/L	30-JUL-21	30-JUL-21	R5537917
Magnesium (Mg)-Total	0.804		0.0050	mg/L	30-JUL-21	30-JUL-21	R5537917
Manganese (Mn)-Total	0.0332		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Phosphorus (P)-Total	<0.050		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Potassium (K)-Total	0.366		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Rubidium (Rb)-Total	0.00130		0.00020	mg/L	30-JUL-21	30-JUL-21	R5537917
Selenium (Se)-Total	0.000065		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Silicon (Si)-Total	1.25		0.10	mg/L	30-JUL-21	30-JUL-21	R5537917
Silver (Ag)-Total	<0.000050		0.000050	mg/L	30-JUL-21	30-JUL-21	R5537917
Sodium (Na)-Total	1.99		0.050	mg/L	30-JUL-21	30-JUL-21	R5537917
Strontium (Sr)-Total	0.0241		0.0010	mg/L	30-JUL-21	30-JUL-21	R5537917
Sulfur (S)-Total	0.86		0.50	mg/L	30-JUL-21	30-JUL-21	R5537917
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	30-JUL-21	30-JUL-21	R5537917
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	30-JUL-21	30-JUL-21	R5537917
Thorium (Th)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Tin (Sn)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Titanium (Ti)-Total	0.00050		0.00030	mg/L	30-JUL-21	30-JUL-21	R5537917
Tungsten (W)-Total	<0.00010		0.00010	mg/L	30-JUL-21	30-JUL-21	R5537917
Uranium (U)-Total	<0.000010		0.000010	mg/L	30-JUL-21	30-JUL-21	R5537917
Vanadium (V)-Total	<0.00050		0.00050	mg/L	30-JUL-21	30-JUL-21	R5537917
Zinc (Zn)-Total	0.0047		0.0030	mg/L	30-JUL-21	30-JUL-21	R5537917
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	30-JUL-21	30-JUL-21	R5537917
L2620657-26 KD-2 (2) Sampled By: CLIENT on 29-JUL-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0116		0.0010	mg/L	10-AUG-21	12-AUG-21	R5549229

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Magnesium (Mg)-Total	B	L2620657-1, -11, -13, -15, -17, -19, -21, -23, -25, -3, -5, -7, -9
Matrix Spike	Calcium (Ca)-Total	MS-B	L2620657-1, -11, -13, -15, -17, -19, -21, -23, -25, -3, -5, -7, -9
Matrix Spike	Iron (Fe)-Total	MS-B	L2620657-1, -11, -13, -15, -17, -19, -21, -23, -25, -3, -5, -7, -9
Matrix Spike	Manganese (Mn)-Total	MS-B	L2620657-1, -11, -13, -15, -17, -19, -21, -23, -25, -3, -5, -7, -9
Matrix Spike	Silicon (Si)-Total	MS-B	L2620657-1, -11, -13, -15, -17, -19, -21, -23, -25, -3, -5, -7, -9
Matrix Spike	Strontium (Sr)-Total	MS-B	L2620657-1, -11, -13, -15, -17, -19, -21, -23, -25, -3, -5, -7, -9
Matrix Spike	Phosphorus (P)-Total	MS-B	L2620657-10, -12, -14, -16, -18, -2, -20, -22, -24, -26, -4, -6, -8

Sample Parameter Qualifier key listed:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
CL-IC-N-WT	Water	Chloride by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

EC-MF-WT	Water	E. coli	SM 9222D

A 100 mL volume of sample is filtered through a membrane, the membrane is placed on mFC-BCIG agar and incubated at 44.5 –0 .2 °C for 24 – 2 h. Method ID: WT-TM-1200

EC-SCREEN-WT	Water	Conductivity Screen (Internal Use Only)	APHA 2510

Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.

ETL-N-TOT-WT	Water	Calculate from NO2 + NO3+TKN	CALCULATION
MET-T-CCMS-WT	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

NH3-F-WT	Water	Ammonia in Water by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-IC-WT	Water	Nitrite in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-IC-WT	Water	Nitrate in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

P-T-COL-WT	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is deteremined colourimetrically

Reference Information

after persulphate digestion of the sample.

P-T-L-COL-ED	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

TKN-F-WT	Water	TKN in Water by Fluorescence	J. ENVIRON. MONIT., 2005,7,37-42,RSC

Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA
ED	ALS ENVIRONMENTAL - EDMONTON, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid weight of sample
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L2620657 Report Date: 16-AUG-21

Client: Cash Clients - Ottawa
1099 Oak Road
Kilworthy ON POE 1G0
Contact: Ron Pearson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-IC-N-WT	**Water**							
Batch R5539676								
WG3587583-13 DUP		**L2620657-5**						
Chloride (Cl)		2.24	2.21		mg/L	1.4	20	30-JUL-21
WG3587583-12 LCS								
Chloride (Cl)			99.5		%		90-110	30-JUL-21
WG3587583-11 MB								
Chloride (Cl)			<0.50		mg/L		0.5	30-JUL-21
WG3587583-14 MS		**L2620657-5**						
Chloride (Cl)			104.3		%		75-125	30-JUL-21
EC-MF-WT	**Water**							
Batch R5537144								
WG3587393-1 MB								
E. Coli			0		CFU/100mL		1	30-JUL-21
Batch R5537216								
WG3587591-3 DUP		**L2620657-5**						
E. Coli		6	5		CFU/100mL	18	65	30-JUL-21
WG3587591-1 MB								
E. Coli			0		CFU/100mL		1	30-JUL-21
MET-T-CCMS-WT	**Water**							
Batch R5537917								
WG3587305-4 DUP		**WG3587305-3**						
Aluminum (Al)-Total		0.0419	0.0410		mg/L	2.2	20	30-JUL-21
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	30-JUL-21
Arsenic (As)-Total		0.00022	0.00022		mg/L	0.7	20	30-JUL-21
Barium (Ba)-Total		0.00948	0.00954		mg/L	0.6	20	30-JUL-21
Beryllium (Be)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	30-JUL-21
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	30-JUL-21
Boron (B)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	30-JUL-21
Cadmium (Cd)-Total		0.0000076	<0.000005(	RPD-NA	mg/L	N/A	20	30-JUL-21
Calcium (Ca)-Total		2.88	2.87		mg/L	0.1	20	30-JUL-21
Chromium (Cr)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	30-JUL-21
Cesium (Cs)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	30-JUL-21
Cobalt (Co)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	30-JUL-21
Copper (Cu)-Total		0.00073	0.00070		mg/L	4.5	20	30-JUL-21
Iron (Fe)-Total		0.272	0.267		mg/L	1.8	20	30-JUL-21
Lead (Pb)-Total		0.000073	0.000074		mg/L	2.0	20	30-JUL-21

Quality Control Report

Client: Cash Clients - Ottawa
1099 Oak Road
Kilworthy ON POE 1G0
Contact: Ron Pearson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5537917								
WG3587305-4 DUP		**WG3587305-3**						
Lithium (Li)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	30-JUL-21
Magnesium (Mg)-Total		0.819	0.806		mg/L	1.6	20	30-JUL-21
Manganese (Mn)-Total		0.0340	0.0335		mg/L	1.3	20	30-JUL-21
Molybdenum (Mo)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	30-JUL-21
Nickel (Ni)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	30-JUL-21
Phosphorus (P)-Total		<0.050	<0.050	RPD-NA	mg/L	N/A	20	30-JUL-21
Potassium (K)-Total		0.365	0.357		mg/L	2.2	20	30-JUL-21
Rubidium (Rb)-Total		0.00121	0.00113		mg/L	6.9	20	30-JUL-21
Selenium (Se)-Total		0.000103	0.000069	J	mg/L	0.000034	0.0001	30-JUL-21
Silicon (Si)-Total		1.24	1.28		mg/L	3.2	20	30-JUL-21
Silver (Ag)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	30-JUL-21
Sodium (Na)-Total		2.01	1.97		mg/L	1.9	20	30-JUL-21
Strontium (Sr)-Total		0.0241	0.0240		mg/L	0.1	20	30-JUL-21
Sulfur (S)-Total		0.83	0.83		mg/L	0.4	20	30-JUL-21
Thallium (Tl)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	30-JUL-21
Tellurium (Te)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	30-JUL-21
Thorium (Th)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	30-JUL-21
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	30-JUL-21
Titanium (Ti)-Total		0.00059	0.00060		mg/L	2.6	20	30-JUL-21
Tungsten (W)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	30-JUL-21
Uranium (U)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	30-JUL-21
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	30-JUL-21
Zinc (Zn)-Total		0.0032	0.0032		mg/L	1.7	20	30-JUL-21
Zirconium (Zr)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	30-JUL-21
WG3587305-2 LCS								
Aluminum (Al)-Total			102.9		%		80-120	30-JUL-21
Antimony (Sb)-Total			100.8		%		80-120	30-JUL-21
Arsenic (As)-Total			101.0		%		80-120	30-JUL-21
Barium (Ba)-Total			102.2		%		80-120	30-JUL-21
Beryllium (Be)-Total			104.1		%		80-120	30-JUL-21
Bismuth (Bi)-Total			100.3		%		80-120	30-JUL-21
Boron (B)-Total			98.6		%		80-120	30-JUL-21
Cadmium (Cd)-Total			102.0		%		80-120	30-JUL-21

Quality Control Report

Client: Cash Clients - Ottawa
1099 Oak Road
Kilworthy ON POE 1G0
Contact: Ron Pearson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5537917								
WG3587305-2 LCS								
Calcium (Ca)-Total			98.9		%		80-120	30-JUL-21
Chromium (Cr)-Total			101.6		%		80-120	30-JUL-21
Cesium (Cs)-Total			100.2		%		80-120	30-JUL-21
Cobalt (Co)-Total			99.8		%		80-120	30-JUL-21
Copper (Cu)-Total			100.1		%		80-120	30-JUL-21
Iron (Fe)-Total			100.2		%		80-120	30-JUL-21
Lead (Pb)-Total			100.8		%		80-120	30-JUL-21
Lithium (Li)-Total			108.5		%		80-120	30-JUL-21
Magnesium (Mg)-Total			104.2		%		80-120	30-JUL-21
Manganese (Mn)-Total			101.3		%		80-120	30-JUL-21
Molybdenum (Mo)-Total			99.5		%		80-120	30-JUL-21
Nickel (Ni)-Total			99.7		%		80-120	30-JUL-21
Phosphorus (P)-Total			105.3		%		70-130	30-JUL-21
Potassium (K)-Total			101.6		%		80-120	30-JUL-21
Rubidium (Rb)-Total			101.7		%		80-120	30-JUL-21
Selenium (Se)-Total			101.4		%		80-120	30-JUL-21
Silicon (Si)-Total			99.1		%		60-140	30-JUL-21
Silver (Ag)-Total			99.0		%		80-120	30-JUL-21
Sodium (Na)-Total			103.8		%		80-120	30-JUL-21
Strontium (Sr)-Total			98.7		%		80-120	30-JUL-21
Sulfur (S)-Total			112.8		%		80-120	30-JUL-21
Thallium (Tl)-Total			102.6		%		80-120	30-JUL-21
Tellurium (Te)-Total			99.2		%		80-120	30-JUL-21
Thorium (Th)-Total			98.1		%		80-120	30-JUL-21
Tin (Sn)-Total			100.5		%		80-120	30-JUL-21
Titanium (Ti)-Total			100.4		%		80-120	30-JUL-21
Tungsten (W)-Total			99.8		%		80-120	30-JUL-21
Uranium (U)-Total			100.2		%		80-120	30-JUL-21
Vanadium (V)-Total			102.0		%		80-120	30-JUL-21
Zinc (Zn)-Total			99.0		%		80-120	30-JUL-21
Zirconium (Zr)-Total			97.3		%		80-120	30-JUL-21
WG3587305-1 MB								
Aluminum (Al)-Total			<0.0050		mg/L		0.005	30-JUL-21
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	30-JUL-21

Quality Control Report

Client: Cash Clients - Ottawa
1099 Oak Road
Kilworthy ON POE 1G0
Contact: Ron Pearson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5537917								
WG3587305-1 MB								
Arsenic (As)-Total			<0.00010		mg/L		0.0001	30-JUL-21
Barium (Ba)-Total			<0.00010		mg/L		0.0001	30-JUL-21
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	30-JUL-21
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	30-JUL-21
Boron (B)-Total			<0.010		mg/L		0.01	30-JUL-21
Cadmium (Cd)-Total			<0.000005C		mg/L		0.000005	30-JUL-21
Calcium (Ca)-Total			<0.050		mg/L		0.05	30-JUL-21
Chromium (Cr)-Total			<0.00050		mg/L		0.0005	30-JUL-21
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	30-JUL-21
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	30-JUL-21
Copper (Cu)-Total			<0.00050		mg/L		0.0005	30-JUL-21
Iron (Fe)-Total			<0.010		mg/L		0.01	30-JUL-21
Lead (Pb)-Total			<0.000050		mg/L		0.00005	30-JUL-21
Lithium (Li)-Total			<0.0010		mg/L		0.001	30-JUL-21
Magnesium (Mg)-Total			0.0081	B	mg/L		0.005	30-JUL-21
Manganese (Mn)-Total			<0.00050		mg/L		0.0005	30-JUL-21
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	30-JUL-21
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	30-JUL-21
Phosphorus (P)-Total			<0.050		mg/L		0.05	30-JUL-21
Potassium (K)-Total			<0.050		mg/L		0.05	30-JUL-21
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	30-JUL-21
Selenium (Se)-Total			<0.000050		mg/L		0.00005	30-JUL-21
Silicon (Si)-Total			<0.10		mg/L		0.1	30-JUL-21
Silver (Ag)-Total			<0.000050		mg/L		0.00005	30-JUL-21
Sodium (Na)-Total			<0.050		mg/L		0.05	30-JUL-21
Strontium (Sr)-Total			<0.0010		mg/L		0.001	30-JUL-21
Sulfur (S)-Total			<0.50		mg/L		0.5	30-JUL-21
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	30-JUL-21
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	30-JUL-21
Thorium (Th)-Total			<0.00010		mg/L		0.0001	30-JUL-21
Tin (Sn)-Total			<0.00010		mg/L		0.0001	30-JUL-21
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	30-JUL-21
Tungsten (W)-Total			<0.00010		mg/L		0.0001	30-JUL-21

Quality Control Report

Client: Cash Clients - Ottawa
1099 Oak Road
Kilworthy ON POE 1G0
Contact: Ron Pearson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5537917								
WG3587305-1 MB								
Uranium (U)-Total			<0.000010		mg/L		0.00001	30-JUL-21
Vanadium (V)-Total			<0.00050		mg/L		0.0005	30-JUL-21
Zinc (Zn)-Total			<0.0030		mg/L		0.003	30-JUL-21
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	30-JUL-21
WG3587305-5 MS		**WG3587305-3**						
Aluminum (Al)-Total			96.6		%		70-130	30-JUL-21
Antimony (Sb)-Total			99.96		%		70-130	30-JUL-21
Arsenic (As)-Total			98.3		%		70-130	30-JUL-21
Barium (Ba)-Total			91.7		%		70-130	30-JUL-21
Beryllium (Be)-Total			101.3		%		70-130	30-JUL-21
Bismuth (Bi)-Total			97.8		%		70-130	30-JUL-21
Boron (B)-Total			99.5		%		70-130	30-JUL-21
Cadmium (Cd)-Total			101.6		%		70-130	30-JUL-21
Calcium (Ca)-Total			N/A	MS-B	%		-	30-JUL-21
Chromium (Cr)-Total			100.4		%		70-130	30-JUL-21
Cesium (Cs)-Total			99.5		%		70-130	30-JUL-21
Cobalt (Co)-Total			98.3		%		70-130	30-JUL-21
Copper (Cu)-Total			99.2		%		70-130	30-JUL-21
Iron (Fe)-Total			N/A	MS-B	%		-	30-JUL-21
Lead (Pb)-Total			97.6		%		70-130	30-JUL-21
Lithium (Li)-Total			103.3		%		70-130	30-JUL-21
Magnesium (Mg)-Total			101.0		%		70-130	30-JUL-21
Manganese (Mn)-Total			N/A	MS-B	%		-	30-JUL-21
Molybdenum (Mo)-Total			98.5		%		70-130	30-JUL-21
Nickel (Ni)-Total			97.7		%		70-130	30-JUL-21
Phosphorus (P)-Total			93.2		%		70-130	30-JUL-21
Potassium (K)-Total			96.7		%		70-130	30-JUL-21
Rubidium (Rb)-Total			95.2		%		70-130	30-JUL-21
Selenium (Se)-Total			101.8		%		70-130	30-JUL-21
Silicon (Si)-Total			N/A	MS-B	%		-	30-JUL-21
Silver (Ag)-Total			98.1		%		70-130	30-JUL-21
Sodium (Na)-Total			96.8		%		70-130	30-JUL-21
Strontium (Sr)-Total			N/A	MS-B	%		-	30-JUL-21
Sulfur (S)-Total			101.6		%		70-130	30-JUL-21

Quality Control Report

Client: Cash Clients - Ottawa
1099 Oak Road
Kilworthy ON POE 1G0
Contact: Ron Pearson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5537917								
WG3587305-5 MS		**WG3587305-3**						
Thallium (Tl)-Total			98.8		%		70-130	30-JUL-21
Tellurium (Te)-Total			98.8		%		70-130	30-JUL-21
Thorium (Th)-Total			93.4		%		70-130	30-JUL-21
Tin (Sn)-Total			98.5		%		70-130	30-JUL-21
Titanium (Ti)-Total			94.9		%		70-130	30-JUL-21
Tungsten (W)-Total			97.7		%		70-130	30-JUL-21
Uranium (U)-Total			98.5		%		70-130	30-JUL-21
Vanadium (V)-Total			99.5		%		70-130	30-JUL-21
Zinc (Zn)-Total			94.8		%		70-130	30-JUL-21
Zirconium (Zr)-Total			92.6		%		70-130	30-JUL-21
NH3-F-WT	**Water**							
Batch R5540236								
WG3587292-12 DUP		**WG3587292-14**						
Ammonia, Total (as N)		0.016	0.016		mg/L	1.9	20	03-AUG-21
WG3587549-3 DUP		**L2619421-8**						
Ammonia, Total (as N)		<0.010	<0.010	RPD-NA	mg/L	N/A	20	03-AUG-21
WG3587292-11 LCS								
Ammonia, Total (as N)			103.9		%		85-115	03-AUG-21
WG3587549-2 LCS								
Ammonia, Total (as N)			104.9		%		85-115	03-AUG-21
WG3587292-10 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	03-AUG-21
WG3587549-1 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	03-AUG-21
WG3587292-13 MS		**WG3587292-14**						
Ammonia, Total (as N)			94.2		%		75-125	03-AUG-21
WG3587549-4 MS		**L2619421-8**						
Ammonia, Total (as N)			101.8		%		75-125	03-AUG-21
NO2-IC-WT	**Water**							
Batch R5539676								
WG3587583-13 DUP		**L2620657-5**						
Nitrite (as N)		<0.010	<0.010	RPD-NA	mg/L	N/A	20	30-JUL-21
WG3587583-12 LCS								
Nitrite (as N)			100.3		%		90-110	30-JUL-21
WG3587583-11 MB								
Nitrite (as N)			<0.010		mg/L		0.01	30-JUL-21

Quality Control Report

Client: Cash Clients - Ottawa
1099 Oak Road
Kilworthy ON POE 1G0
Contact: Ron Pearson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-IC-WT	**Water**							
Batch R5539676								
WG3587583-14 MS		**L2620657-5**						
Nitrite (as N)			104.4		%		75-125	30-JUL-21
NO3-IC-WT	**Water**							
Batch R5539676								
WG3587583-13 DUP		**L2620657-5**						
Nitrate (as N)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	30-JUL-21
WG3587583-12 LCS								
Nitrate (as N)			98.7		%		90-110	30-JUL-21
WG3587583-11 MB								
Nitrate (as N)			<0.020		mg/L		0.02	30-JUL-21
WG3587583-14 MS		**L2620657-5**						
Nitrate (as N)			103.3		%		75-125	30-JUL-21
P-T-COL-WT	**Water**							
Batch R5545727								
WG3590469-3 DUP		**L2620657-25**						
Phosphorus, Total		0.0121	0.0093	J	mg/L	0.0028	0.006	06-AUG-21
WG3590469-2 LCS								
Phosphorus, Total			100.3		%		80-120	06-AUG-21
WG3590469-1 MB								
Phosphorus, Total			<0.0030		mg/L		0.003	06-AUG-21
WG3590469-4 MS		**L2620657-25**						
Phosphorus, Total			92.7		%		70-130	06-AUG-21
Batch R5547454								
WG3591341-3 DUP		**L2623125-6**						
Phosphorus, Total		0.0219	0.0270	J	mg/L	0.0052	0.006	10-AUG-21
WG3591341-2 LCS								
Phosphorus, Total			100.5		%		80-120	10-AUG-21
WG3591341-1 MB								
Phosphorus, Total			<0.0030		mg/L		0.003	10-AUG-21
WG3591341-4 MS		**L2623125-6**						
Phosphorus, Total			94.2		%		70-130	10-AUG-21
P-T-L-COL-ED	**Water**							
Batch R5549229								
WG3594207-3 DUP		**L2621362-1**						
Phosphorus (P)-Total		0.441	0.433		mg/L	2.0	20	12-AUG-21
WG3594207-2 LCS								

Quality Control Report

Client: Cash Clients - Ottawa
1099 Oak Road
Kilworthy ON POE 1G0
Contact: Ron Pearson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-L-COL-ED	**Water**							
Batch R5549229								
WG3594207-2 LCS								
Phosphorus (P)-Total			108.4		%		80-120	11-AUG-21
WG3594207-1 MB								
Phosphorus (P)-Total			<0.0010		mg/L		0.001	11-AUG-21
WG3594207-4 MS		**L2621362-1**						
Phosphorus (P)-Total			N/A	MS-B	%		-	12-AUG-21
TKN-F-WT	**Water**							
Batch R5544817								
WG3587302-3 DUP		**L2620685-1**						
Total Kjeldahl Nitrogen		0.750	0.770		mg/L	2.6	20	05-AUG-21
WG3587561-3 DUP		**L2620744-3**						
Total Kjeldahl Nitrogen		0.240	0.230		mg/L	4.3	20	05-AUG-21
WG3589590-3 DUP		**L2619968-5**						
Total Kjeldahl Nitrogen		0.130	0.160	J	mg/L	0.030	0.1	05-AUG-21
WG3587302-2 LCS								
Total Kjeldahl Nitrogen			95.5		%		75-125	05-AUG-21
WG3587561-2 LCS								
Total Kjeldahl Nitrogen			99.8		%		75-125	05-AUG-21
WG3589590-2 LCS								
Total Kjeldahl Nitrogen			105.0		%		75-125	05-AUG-21
WG3587302-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-AUG-21
WG3587561-1 MB								
Total Kjeldahl Nitrogen			0.050		mg/L		0.05	05-AUG-21
WG3589590-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-AUG-21
WG3587302-4 MS		**L2620685-1**						
Total Kjeldahl Nitrogen			100.2		%		70-130	05-AUG-21
WG3587561-4 MS		**L2620744-3**						
Total Kjeldahl Nitrogen			97.4		%		70-130	05-AUG-21
WG3589590-4 MS		**L2619968-5**						
Total Kjeldahl Nitrogen			106.2		%		70-130	05-AUG-21

Quality Control Report

Workorder: L2620657 Report Date: 16-AUG-21

Client: Cash Clients - Ottawa
1099 Oak Road
Kilworthy ON POE 1G0
Contact: Ron Pearson

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Chain of Cus t Form

L2620657-COFC

COC Number: 20 -

Page 2 of 3

www.alsglobal.com

Report To	Contact and company name below will appear on the final report
Company:	Cash Clients - Ottawa (21841)
Contact:	Ron Pearson, Kahshe Lake Ratepayers' Association
Phone:	416-843-2805
	Company address below will appear on the final report
Street:	1099 Oak Road
City/Province:	Kilworthy, ON
Postal Code:	P0E 1G0
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	
Contact:	

Project Information

ALS Account # / Quote #:	21841 / Q83246
Job #:	
PO / AFE:	
LSD:	
ALS Lab Work Order # (ALS use only):	L2620657

Reports / Recipients

Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)

Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A

☐ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: ron.pearson.pics@gmail.com

Email 2:

Email 3:

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: ron.pearson.pics@gmail.com

Email 2:

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Contact: Costas Farassoglou | Sampler:

Turnaround Time (TAT) Requested

☐ Routine [R] if received by 3pm M-F - no surcharges apply
☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum
☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum
Same day [E2] if received by 10am M-S - 200% rush surcharge. Additional fees may apply to rush requests on weekends, statutory holidays and non-routine tests

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm am/pm

For all tests with rush TATs requested, please contact your AM to confirm availability.

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Chloride (CL-IC-N-WT)	Total Nitrogen (N-TOT-WT)	Nitrate (NO3-IC-WT)	Ammonia (NH3-F-WT) P	E. Coli (EC-MF-WT) P	Total Metals (MET-T-CCMS-WT) P	Total P (P-T-L-COL-ED) P	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	KL-13	29-JUL-21		WATER	4	X	X	X	X	X	X	X			
	KL-13 (2)	↓		WATER	1							X			
	KL-14			WATER	4	X	X	X	X	X	X	X			
	KL-14 (2)			WATER	1							X			
	KL-15			WATER	4	X	X	X	X	X	X	X			
	KL-15 (2)			WATER	1							X			
	KL-16			WATER	4	X	X	X	X	X	X	X			
	KL-16 (2)			WATER	1							X			
	KL-17			WATER	4	X	X	X	X	X	X	X			
	KL-17 (2)			WATER	1							X			
	KL-20			WATER	4	X	X	X	X	X	X	X			
	KL-20 (2)			WATER	1							X			

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human consumption/ use? ☐ YES ☐ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

LOGIN: Please send Total P to EDMONTON for Analysis

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☑ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C	FINAL COOLER TEMPERATURES °C
10.0	6.4

SHIPMENT RELEASE (client use)

Released by: | Date: July 29/21 | Time: 1:55 pm

INITIAL SHIPMENT RECEPTION (ALS use only)

Received by: | Date: July 29/21 | Time: 13:50

FINAL SHIPMENT RECEPTION (ALS use only)

Received by: | Date: July 29 | Time: 18

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 FRONT

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form.**

Chain of

L2620657-COFC

COC Number: 20 -

Page 1 of 3

www.alsglobal.com

Report To	Contact and company name below will appear on the final report
Company:	Cash Clients - Ottawa (21841)
Contact:	Ron Pearson, Kahshe Lake Ratepayers' Association
Phone:	416-843-2805
	Company address below will appear on the final report
Street:	1099 Oak Road
City/Province:	Kilworthy, ON
Postal Code:	P0E 1G0
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	
Contact:	

Project Information

ALS Account # / Quote #:	21841 / Q83246
Job #:	
PO / AFE:	
LSD:	

ALS Lab Work Order # (ALS use only): L2620657

Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)

Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A

☐ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: ron.pearson.pics@gmail.com

Email 2:

Email 3:

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: ron.pearson.pics@gmail.com

Email 2:

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Contact: Costas Farassoglou **Sampler:**

Turnaround Time (TAT) Requested

☑ Routine [R] if received by 3pm M-F - no surcharges apply

☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum

☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum

☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum

☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum

Same day [E2] if received by 10am M-S - 200% rush surcharge. Additional fees may apply to rush requests on weekends, statutory holidays and non-routine tests

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm am/pm

For all tests with rush TATs requested, please contact your AM to confirm availability.

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Chloride (CL-IC-N-WT)	Total Nitrogen (N-TOT-WT)	Nitrate (NO3-IC-WT)	Ammonia (NH3-F-WT) P	E. Coli (EC-MF-WT) P	Total Metals (MET-T-CCMS-WT) P	Total P (P-T-L-COL-ED) P	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	KL-1	29-JUL-21		WATER	4	X	X	X	X	X	X	X			
	KL-1 (2)			WATER	1							X			
	KL-3			WATER	4	X	X	X	X	X	X	X			
	KL-3 (2)			WATER	1							X			
	KL-5			WATER	4	X	X	X	X	X	X	X			
	KL-5 (2)			WATER	1							X			
	KL-7			WATER	4	X	X	X	X	X	X	X			
	KL-7 (2)			WATER	1							X			
	KL-9			WATER	4	X	X	X	X	X	X	X			
	KL-9 (2)			WATER	1							X			
	KL-11			WATER	4	X	X	X	X	X	X	X			
	KL-11 (2)			WATER	1							X			

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human consumption/ use? ☐ YES ☐ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

LOGIN: Please send Total P to EDMONTON for Analysis

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☑ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
10.0				6.5			

SHIPMENT RELEASE (client use)

Released by: | Date: Jul 29/21 | Time: 1:55 PM

INITIAL SHIPMENT RECEPTION (ALS use only)

Received by: | Date: July 29/21 | Time: 13:50

FINAL SHIPMENT RECEPTION (ALS use only)

Received by: | Date: July 29 | Time: 16

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 FRONT

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

9.5, 8.1, 10.0

A-3 Certificate of Analysis for September 30, 2021 Analysis

Cash Clients - Ottawa
ATTN: Ron Pearson
1099 Oak Road
Kilworthy ON POE 1G0

Date Received: 01-OCT-21
Report Date: 29-OCT-21 10:25 (MT)
Version: FINAL REV. 2

Client Phone: 416-843-2805

Certificate of Analysis

Lab Work Order #: L2646296

Project P.O. #: 201808-00760
Job Reference:
C of C Numbers:
Legal Site Desc:

Comments: ADDITIONAL 20-OCT-21 08:25

Costas Farassoglou
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2646296-1 KL-1 Sampled By: CLIENT on 30-SEP-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	0.044		0.010	mg/L		06-OCT-21	R5613754
Chloride (Cl)	2.60		0.50	mg/L		05-OCT-21	R5609338
Nitrate (as N)	<0.020		0.020	mg/L		05-OCT-21	R5609338
Nitrite (as N)	<0.010		0.010	mg/L		05-OCT-21	R5609338
Total Kjeldahl Nitrogen	0.600		0.050	mg/L	07-OCT-21	07-OCT-21	R5614477
Total Nitrogen	0.600		0.050	mg/L		08-OCT-21	
Phosphorus (P)-Total	0.0110		0.0010	mg/L	27-OCT-21	28-OCT-21	R5632151
Bacteriological Tests							
E. Coli	5		0	CFU/100mL		02-OCT-21	R5606881
Total Metals							
Aluminum (Al)-Total	0.0329		0.0050	mg/L	03-OCT-21	04-OCT-21	R5607181
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Arsenic (As)-Total	0.00022		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Barium (Ba)-Total	0.00924		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Boron (B)-Total	<0.010		0.010	mg/L	03-OCT-21	04-OCT-21	R5607181
Cadmium (Cd)-Total	<0.0000050		0.0000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Calcium (Ca)-Total	2.97		0.050	mg/L	03-OCT-21	04-OCT-21	R5607181
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	03-OCT-21	04-OCT-21	R5607181
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Copper (Cu)-Total	0.00066		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Iron (Fe)-Total	0.333		0.010	mg/L	03-OCT-21	04-OCT-21	R5607181
Lead (Pb)-Total	0.000084		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Lithium (Li)-Total	<0.0010		0.0010	mg/L	03-OCT-21	04-OCT-21	R5607181
Magnesium (Mg)-Total	0.742		0.0050	mg/L	03-OCT-21	04-OCT-21	R5607181
Manganese (Mn)-Total	0.0370		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Phosphorus (P)-Total	<0.050		0.050	mg/L	03-OCT-21	04-OCT-21	R5607181
Potassium (K)-Total	0.334		0.050	mg/L	03-OCT-21	04-OCT-21	R5607181
Rubidium (Rb)-Total	0.00120		0.00020	mg/L	03-OCT-21	04-OCT-21	R5607181
Selenium (Se)-Total	0.000071		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Silicon (Si)-Total	1.22		0.10	mg/L	03-OCT-21	04-OCT-21	R5607181
Silver (Ag)-Total	<0.000050		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Sodium (Na)-Total	1.94		0.050	mg/L	03-OCT-21	04-OCT-21	R5607181
Strontium (Sr)-Total	0.0261		0.0010	mg/L	03-OCT-21	04-OCT-21	R5607181
Sulfur (S)-Total	0.69		0.50	mg/L	03-OCT-21	04-OCT-21	R5607181
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	03-OCT-21	04-OCT-21	R5607181
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	03-OCT-21	04-OCT-21	R5607181

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2646296-1 KL-1 Sampled By: CLIENT on 30-SEP-21 Matrix: WATER							
Total Metals							
Thorium (Th)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Tin (Sn)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Titanium (Ti)-Total	0.00052		0.00030	mg/L	03-OCT-21	04-OCT-21	R5607181
Tungsten (W)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Uranium (U)-Total	<0.000010		0.000010	mg/L	03-OCT-21	04-OCT-21	R5607181
Vanadium (V)-Total	<0.00050		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Zinc (Zn)-Total	0.0033		0.0030	mg/L	03-OCT-21	04-OCT-21	R5607181
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	03-OCT-21	04-OCT-21	R5607181
L2646296-2 KL-1 (2) Sampled By: CLIENT on 30-SEP-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0106		0.0010	mg/L	16-OCT-21	17-OCT-21	R5624311
L2646296-3 KL-3 Sampled By: CLIENT on 30-SEP-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	0.042		0.010	mg/L		06-OCT-21	R5613754
Chloride (Cl)	2.57		0.50	mg/L		05-OCT-21	R5609338
Nitrate (as N)	<0.020		0.020	mg/L		05-OCT-21	R5609338
Nitrite (as N)	<0.010		0.010	mg/L		05-OCT-21	R5609338
Total Kjeldahl Nitrogen	0.490		0.050	mg/L	07-OCT-21	07-OCT-21	R5614477
Total Nitrogen	0.490		0.050	mg/L		08-OCT-21	
Phosphorus (P)-Total	0.0107		0.0010	mg/L	27-OCT-21	28-OCT-21	R5632151
Bacteriological Tests							
E. Coli	3		0	CFU/100mL		02-OCT-21	R5606881
Total Metals							
Aluminum (Al)-Total	0.0342		0.0050	mg/L	03-OCT-21	04-OCT-21	R5607181
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Arsenic (As)-Total	0.00023		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Barium (Ba)-Total	0.00920		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Boron (B)-Total	<0.010		0.010	mg/L	03-OCT-21	04-OCT-21	R5607181
Cadmium (Cd)-Total	<0.0000050		0.0000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Calcium (Ca)-Total	2.94		0.050	mg/L	03-OCT-21	04-OCT-21	R5607181
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	03-OCT-21	04-OCT-21	R5607181
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Copper (Cu)-Total	0.00062		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Iron (Fe)-Total	0.378		0.010	mg/L	03-OCT-21	04-OCT-21	R5607181
Lead (Pb)-Total	0.000085		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2646296-3 KL-3 Sampled By: CLIENT on 30-SEP-21 Matrix: WATER							
Total Metals							
Lithium (Li)-Total	<0.0010		0.0010	mg/L	03-OCT-21	04-OCT-21	R5607181
Magnesium (Mg)-Total	0.768		0.0050	mg/L	03-OCT-21	04-OCT-21	R5607181
Manganese (Mn)-Total	0.0450		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Phosphorus (P)-Total	<0.050		0.050	mg/L	03-OCT-21	04-OCT-21	R5607181
Potassium (K)-Total	0.344		0.050	mg/L	03-OCT-21	04-OCT-21	R5607181
Rubidium (Rb)-Total	0.00123		0.00020	mg/L	03-OCT-21	04-OCT-21	R5607181
Selenium (Se)-Total	0.000073		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Silicon (Si)-Total	1.26		0.10	mg/L	03-OCT-21	04-OCT-21	R5607181
Silver (Ag)-Total	<0.000050		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Sodium (Na)-Total	1.98		0.050	mg/L	03-OCT-21	04-OCT-21	R5607181
Strontium (Sr)-Total	0.0263		0.0010	mg/L	03-OCT-21	04-OCT-21	R5607181
Sulfur (S)-Total	0.72		0.50	mg/L	03-OCT-21	04-OCT-21	R5607181
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	03-OCT-21	04-OCT-21	R5607181
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	03-OCT-21	04-OCT-21	R5607181
Thorium (Th)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Tin (Sn)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Titanium (Ti)-Total	0.00057		0.00030	mg/L	03-OCT-21	04-OCT-21	R5607181
Tungsten (W)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Uranium (U)-Total	<0.000010		0.000010	mg/L	03-OCT-21	04-OCT-21	R5607181
Vanadium (V)-Total	<0.00050		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Zinc (Zn)-Total	<0.0030		0.0030	mg/L	03-OCT-21	04-OCT-21	R5607181
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	03-OCT-21	04-OCT-21	R5607181
L2646296-4 KL-3 (2) Sampled By: CLIENT on 30-SEP-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0104		0.0010	mg/L	16-OCT-21	17-OCT-21	R5624311
L2646296-5 KL-6 Sampled By: CLIENT on 30-SEP-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	0.032		0.010	mg/L		06-OCT-21	R5613754
Chloride (Cl)	2.33		0.50	mg/L		05-OCT-21	R5609338
Nitrate (as N)	<0.020		0.020	mg/L		05-OCT-21	R5609338
Nitrite (as N)	<0.010		0.010	mg/L		05-OCT-21	R5609338
Total Kjeldahl Nitrogen	0.540		0.050	mg/L	07-OCT-21	07-OCT-21	R5614477
Total Nitrogen	0.540		0.050	mg/L		08-OCT-21	
Phosphorus (P)-Total	0.0106		0.0010	mg/L	27-OCT-21	28-OCT-21	R5632151
Bacteriological Tests							
E. Coli	4		0	CFU/100mL		02-OCT-21	R5606881

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2646296-5 KL-6 Sampled By: CLIENT on 30-SEP-21 Matrix: WATER							
Bacteriological Tests							
Total Metals							
Aluminum (Al)-Total	0.0356		0.0050	mg/L	03-OCT-21	04-OCT-21	R5607181
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Arsenic (As)-Total	0.00025		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Barium (Ba)-Total	0.00909		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Boron (B)-Total	<0.010		0.010	mg/L	03-OCT-21	04-OCT-21	R5607181
Cadmium (Cd)-Total	<0.0000050		0.0000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Calcium (Ca)-Total	2.86		0.050	mg/L	03-OCT-21	04-OCT-21	R5607181
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	03-OCT-21	04-OCT-21	R5607181
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Copper (Cu)-Total	0.00068		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Iron (Fe)-Total	0.367		0.010	mg/L	03-OCT-21	04-OCT-21	R5607181
Lead (Pb)-Total	0.000088		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Lithium (Li)-Total	<0.0010		0.0010	mg/L	03-OCT-21	04-OCT-21	R5607181
Magnesium (Mg)-Total	0.754		0.0050	mg/L	03-OCT-21	04-OCT-21	R5607181
Manganese (Mn)-Total	0.0531		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Phosphorus (P)-Total	<0.050		0.050	mg/L	03-OCT-21	04-OCT-21	R5607181
Potassium (K)-Total	0.336		0.050	mg/L	03-OCT-21	04-OCT-21	R5607181
Rubidium (Rb)-Total	0.00122		0.00020	mg/L	03-OCT-21	04-OCT-21	R5607181
Selenium (Se)-Total	0.000087		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Silicon (Si)-Total	1.30		0.10	mg/L	03-OCT-21	04-OCT-21	R5607181
Silver (Ag)-Total	<0.000050		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Sodium (Na)-Total	1.84		0.050	mg/L	03-OCT-21	04-OCT-21	R5607181
Strontium (Sr)-Total	0.0260		0.0010	mg/L	03-OCT-21	04-OCT-21	R5607181
Sulfur (S)-Total	0.72		0.50	mg/L	03-OCT-21	04-OCT-21	R5607181
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	03-OCT-21	04-OCT-21	R5607181
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	03-OCT-21	04-OCT-21	R5607181
Thorium (Th)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Tin (Sn)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Titanium (Ti)-Total	0.00081		0.00030	mg/L	03-OCT-21	04-OCT-21	R5607181
Tungsten (W)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Uranium (U)-Total	<0.000010		0.000010	mg/L	03-OCT-21	04-OCT-21	R5607181
Vanadium (V)-Total	<0.00050		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Zinc (Zn)-Total	<0.0030		0.0030	mg/L	03-OCT-21	04-OCT-21	R5607181
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	03-OCT-21	04-OCT-21	R5607181
L2646296-6 KL-6 (2)							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2646296-6 KL-6 (2) Sampled By: CLIENT on 30-SEP-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0100		0.0010	mg/L	16-OCT-21	17-OCT-21	R5624311
L2646296-7 KL-7 Sampled By: CLIENT on 30-SEP-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	0.045		0.010	mg/L		06-OCT-21	R5613754
Chloride (Cl)	2.31		0.50	mg/L		05-OCT-21	R5609338
Nitrate (as N)	<0.020		0.020	mg/L		05-OCT-21	R5609338
Nitrite (as N)	<0.010		0.010	mg/L		05-OCT-21	R5609338
Total Kjeldahl Nitrogen	0.530		0.050	mg/L	07-OCT-21	07-OCT-21	R5614477
Total Nitrogen	0.530		0.050	mg/L		08-OCT-21	
Phosphorus (P)-Total	0.0100		0.0010	mg/L	27-OCT-21	28-OCT-21	R5632151
Bacteriological Tests							
E. Coli	3		0	CFU/100mL		02-OCT-21	R5606881
Total Metals							
Aluminum (Al)-Total	0.0368		0.0050	mg/L	03-OCT-21	04-OCT-21	R5607181
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Arsenic (As)-Total	0.00023		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Barium (Ba)-Total	0.00904		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Boron (B)-Total	<0.010		0.010	mg/L	03-OCT-21	04-OCT-21	R5607181
Cadmium (Cd)-Total	0.0000052		0.0000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Calcium (Ca)-Total	2.89		0.050	mg/L	03-OCT-21	04-OCT-21	R5607181
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	03-OCT-21	04-OCT-21	R5607181
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Copper (Cu)-Total	0.00063		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Iron (Fe)-Total	0.376		0.010	mg/L	03-OCT-21	04-OCT-21	R5607181
Lead (Pb)-Total	0.000086		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Lithium (Li)-Total	<0.0010		0.0010	mg/L	03-OCT-21	04-OCT-21	R5607181
Magnesium (Mg)-Total	0.771		0.0050	mg/L	03-OCT-21	04-OCT-21	R5607181
Manganese (Mn)-Total	0.0565		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Phosphorus (P)-Total	<0.050		0.050	mg/L	03-OCT-21	04-OCT-21	R5607181
Potassium (K)-Total	0.339		0.050	mg/L	03-OCT-21	04-OCT-21	R5607181
Rubidium (Rb)-Total	0.00122		0.00020	mg/L	03-OCT-21	04-OCT-21	R5607181
Selenium (Se)-Total	0.000076		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Silicon (Si)-Total	1.31		0.10	mg/L	03-OCT-21	04-OCT-21	R5607181
Silver (Ag)-Total	<0.000050		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Sodium (Na)-Total	1.89		0.050	mg/L	03-OCT-21	04-OCT-21	R5607181

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2646296-7 KL-7 Sampled By: CLIENT on 30-SEP-21 Matrix: WATER							
Total Metals							
Strontium (Sr)-Total	0.0270		0.0010	mg/L	03-OCT-21	04-OCT-21	R5607181
Sulfur (S)-Total	0.68		0.50	mg/L	03-OCT-21	04-OCT-21	R5607181
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	03-OCT-21	04-OCT-21	R5607181
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	03-OCT-21	04-OCT-21	R5607181
Thorium (Th)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Tin (Sn)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Titanium (Ti)-Total	0.00061		0.00030	mg/L	03-OCT-21	04-OCT-21	R5607181
Tungsten (W)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Uranium (U)-Total	<0.000010		0.000010	mg/L	03-OCT-21	04-OCT-21	R5607181
Vanadium (V)-Total	<0.00050		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Zinc (Zn)-Total	<0.0030		0.0030	mg/L	03-OCT-21	04-OCT-21	R5607181
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	03-OCT-21	04-OCT-21	R5607181
L2646296-8 KL-7 (2) Sampled By: CLIENT on 30-SEP-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0099		0.0010	mg/L	16-OCT-21	17-OCT-21	R5624311
L2646296-9 KL-9 Sampled By: CLIENT on 30-SEP-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	0.019		0.010	mg/L		06-OCT-21	R5613754
Chloride (Cl)	2.34		0.50	mg/L		05-OCT-21	R5609338
Nitrate (as N)	<0.020		0.020	mg/L		05-OCT-21	R5609338
Nitrite (as N)	<0.010		0.010	mg/L		05-OCT-21	R5609338
Total Kjeldahl Nitrogen	0.430		0.050	mg/L	07-OCT-21	07-OCT-21	R5614477
Total Nitrogen	0.430		0.050	mg/L		08-OCT-21	
Phosphorus (P)-Total	0.0109		0.0010	mg/L	27-OCT-21	28-OCT-21	R5632151
Bacteriological Tests							
E. Coli	6		0	CFU/100mL		02-OCT-21	R5606881
Total Metals							
Aluminum (Al)-Total	0.0376		0.0050	mg/L	03-OCT-21	04-OCT-21	R5607181
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Arsenic (As)-Total	0.00025		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Barium (Ba)-Total	0.00924		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Boron (B)-Total	<0.010		0.010	mg/L	03-OCT-21	04-OCT-21	R5607181
Cadmium (Cd)-Total	0.0000060		0.0000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Calcium (Ca)-Total	2.95		0.050	mg/L	03-OCT-21	04-OCT-21	R5607181
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	03-OCT-21	04-OCT-21	R5607181
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2646296-9 KL-9 Sampled By: CLIENT on 30-SEP-21 Matrix: WATER							
Total Metals							
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Copper (Cu)-Total	0.00064		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Iron (Fe)-Total	0.381		0.010	mg/L	03-OCT-21	04-OCT-21	R5607181
Lead (Pb)-Total	0.000093		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Lithium (Li)-Total	<0.0010		0.0010	mg/L	03-OCT-21	04-OCT-21	R5607181
Magnesium (Mg)-Total	0.779		0.0050	mg/L	03-OCT-21	04-OCT-21	R5607181
Manganese (Mn)-Total	0.0594		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Phosphorus (P)-Total	<0.050		0.050	mg/L	03-OCT-21	04-OCT-21	R5607181
Potassium (K)-Total	0.345		0.050	mg/L	03-OCT-21	04-OCT-21	R5607181
Rubidium (Rb)-Total	0.00123		0.00020	mg/L	03-OCT-21	04-OCT-21	R5607181
Selenium (Se)-Total	0.000080		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Silicon (Si)-Total	1.31		0.10	mg/L	03-OCT-21	04-OCT-21	R5607181
Silver (Ag)-Total	<0.000050		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Sodium (Na)-Total	1.89		0.050	mg/L	03-OCT-21	04-OCT-21	R5607181
Strontium (Sr)-Total	0.0261		0.0010	mg/L	03-OCT-21	04-OCT-21	R5607181
Sulfur (S)-Total	0.77		0.50	mg/L	03-OCT-21	04-OCT-21	R5607181
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	03-OCT-21	04-OCT-21	R5607181
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	03-OCT-21	04-OCT-21	R5607181
Thorium (Th)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Tin (Sn)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Titanium (Ti)-Total	0.00073		0.00030	mg/L	03-OCT-21	04-OCT-21	R5607181
Tungsten (W)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Uranium (U)-Total	<0.000010		0.000010	mg/L	03-OCT-21	04-OCT-21	R5607181
Vanadium (V)-Total	<0.00050		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Zinc (Zn)-Total	0.0060		0.0030	mg/L	03-OCT-21	04-OCT-21	R5607181
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	03-OCT-21	04-OCT-21	R5607181
L2646296-10 KL-9 (2) Sampled By: CLIENT on 30-SEP-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0100		0.0010	mg/L	16-OCT-21	17-OCT-21	R5624311
L2646296-11 KL-11 Sampled By: CLIENT on 30-SEP-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	0.031		0.010	mg/L		06-OCT-21	R5613754
Chloride (Cl)	2.29		0.50	mg/L		05-OCT-21	R5609338
Nitrate (as N)	<0.020		0.020	mg/L		05-OCT-21	R5609338
Nitrite (as N)	<0.010		0.010	mg/L		05-OCT-21	R5609338
Total Kjeldahl Nitrogen	0.510		0.050	mg/L	07-OCT-21	07-OCT-21	R5614477

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2646296-11 KL-11 Sampled By: CLIENT on 30-SEP-21 Matrix: WATER							
Anions and Nutrients							
Total Nitrogen	0.510		0.050	mg/L		08-OCT-21	
Phosphorus (P)-Total	0.0107		0.0010	mg/L	27-OCT-21	28-OCT-21	R5632151
Bacteriological Tests							
E. Coli	4		0	CFU/100mL		02-OCT-21	R5606881
Total Metals							
Aluminum (Al)-Total	0.0382		0.0050	mg/L	03-OCT-21	04-OCT-21	R5607181
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Arsenic (As)-Total	0.00025		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Barium (Ba)-Total	0.00928		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Boron (B)-Total	<0.010		0.010	mg/L	03-OCT-21	04-OCT-21	R5607181
Cadmium (Cd)-Total	<0.0000050		0.0000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Calcium (Ca)-Total	2.80		0.050	mg/L	03-OCT-21	04-OCT-21	R5607181
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	03-OCT-21	04-OCT-21	R5607181
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Copper (Cu)-Total	0.00065		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Iron (Fe)-Total	0.385		0.010	mg/L	03-OCT-21	04-OCT-21	R5607181
Lead (Pb)-Total	0.000091		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Lithium (Li)-Total	<0.0010		0.0010	mg/L	03-OCT-21	04-OCT-21	R5607181
Magnesium (Mg)-Total	0.773		0.0050	mg/L	03-OCT-21	04-OCT-21	R5607181
Manganese (Mn)-Total	0.0631		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Phosphorus (P)-Total	<0.050		0.050	mg/L	03-OCT-21	04-OCT-21	R5607181
Potassium (K)-Total	0.341		0.050	mg/L	03-OCT-21	04-OCT-21	R5607181
Rubidium (Rb)-Total	0.00126		0.00020	mg/L	03-OCT-21	04-OCT-21	R5607181
Selenium (Se)-Total	0.000076		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Silicon (Si)-Total	1.32		0.10	mg/L	03-OCT-21	04-OCT-21	R5607181
Silver (Ag)-Total	<0.000050		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Sodium (Na)-Total	1.89		0.050	mg/L	03-OCT-21	04-OCT-21	R5607181
Strontium (Sr)-Total	0.0253		0.0010	mg/L	03-OCT-21	04-OCT-21	R5607181
Sulfur (S)-Total	0.76		0.50	mg/L	03-OCT-21	04-OCT-21	R5607181
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	03-OCT-21	04-OCT-21	R5607181
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	03-OCT-21	04-OCT-21	R5607181
Thorium (Th)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Tin (Sn)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Titanium (Ti)-Total	0.00076		0.00030	mg/L	03-OCT-21	04-OCT-21	R5607181
Tungsten (W)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Uranium (U)-Total	<0.000010		0.000010	mg/L	03-OCT-21	04-OCT-21	R5607181

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2646296-11 KL-11 Sampled By: CLIENT on 30-SEP-21 Matrix: WATER							
Total Metals							
Vanadium (V)-Total	<0.00050		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Zinc (Zn)-Total	<0.0030		0.0030	mg/L	03-OCT-21	04-OCT-21	R5607181
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	03-OCT-21	04-OCT-21	R5607181
L2646296-12 KL-11 (2) Sampled By: CLIENT on 30-SEP-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0095		0.0010	mg/L	16-OCT-21	17-OCT-21	R5624311
L2646296-13 KL-14 Sampled By: CLIENT on 30-SEP-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	0.027		0.010	mg/L		06-OCT-21	R5613754
Chloride (Cl)	2.24		0.50	mg/L		05-OCT-21	R5609338
Nitrate (as N)	0.056		0.020	mg/L		05-OCT-21	R5609338
Nitrite (as N)	<0.010		0.010	mg/L		05-OCT-21	R5609338
Total Kjeldahl Nitrogen	0.480		0.050	mg/L	07-OCT-21	07-OCT-21	R5614477
Total Nitrogen	0.536		0.050	mg/L		08-OCT-21	
Phosphorus (P)-Total	0.0127		0.0010	mg/L	27-OCT-21	28-OCT-21	R5632151
Bacteriological Tests							
E. Coli	2		0	CFU/100mL		02-OCT-21	R5606881
Total Metals							
Aluminum (Al)-Total	0.0471		0.0050	mg/L	03-OCT-21	04-OCT-21	R5607181
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Arsenic (As)-Total	0.00025		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Barium (Ba)-Total	0.0146		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	03-OCT-21	05-OCT-21	R5607181
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Boron (B)-Total	<0.010		0.010	mg/L	03-OCT-21	05-OCT-21	R5607181
Cadmium (Cd)-Total	0.0000083		0.0000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Calcium (Ca)-Total	2.92		0.050	mg/L	03-OCT-21	04-OCT-21	R5607181
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	03-OCT-21	04-OCT-21	R5607181
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Copper (Cu)-Total	0.00069		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Iron (Fe)-Total	0.485		0.010	mg/L	03-OCT-21	04-OCT-21	R5607181
Lead (Pb)-Total	0.000086		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Lithium (Li)-Total	<0.0010		0.0010	mg/L	03-OCT-21	04-OCT-21	R5607181
Magnesium (Mg)-Total	0.777		0.0050	mg/L	03-OCT-21	04-OCT-21	R5607181
Manganese (Mn)-Total	0.0738		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Molybdenum (Mo)-Total	0.000050		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2646296-13 KL-14 Sampled By: CLIENT on 30-SEP-21 Matrix: WATER							
Total Metals							
Phosphorus (P)-Total	<0.050		0.050	mg/L	03-OCT-21	04-OCT-21	R5607181
Potassium (K)-Total	0.339		0.050	mg/L	03-OCT-21	04-OCT-21	R5607181
Rubidium (Rb)-Total	0.00123		0.00020	mg/L	03-OCT-21	04-OCT-21	R5607181
Selenium (Se)-Total	0.000077		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Silicon (Si)-Total	1.34		0.10	mg/L	03-OCT-21	04-OCT-21	R5607181
Silver (Ag)-Total	<0.000050		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Sodium (Na)-Total	1.86		0.050	mg/L	03-OCT-21	04-OCT-21	R5607181
Strontium (Sr)-Total	0.0264		0.0010	mg/L	03-OCT-21	04-OCT-21	R5607181
Sulfur (S)-Total	0.69		0.50	mg/L	03-OCT-21	04-OCT-21	R5607181
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	03-OCT-21	04-OCT-21	R5607181
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	03-OCT-21	04-OCT-21	R5607181
Thorium (Th)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Tin (Sn)-Total	0.00012		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Titanium (Ti)-Total	0.00332		0.00030	mg/L	03-OCT-21	04-OCT-21	R5607181
Tungsten (W)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Uranium (U)-Total	<0.000010		0.000010	mg/L	03-OCT-21	04-OCT-21	R5607181
Vanadium (V)-Total	<0.00050		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Zinc (Zn)-Total	0.0034		0.0030	mg/L	03-OCT-21	04-OCT-21	R5607181
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	03-OCT-21	04-OCT-21	R5607181
L2646296-14 KL-14 (2) Sampled By: CLIENT on 30-SEP-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0114		0.0010	mg/L	16-OCT-21	17-OCT-21	R5624311
L2646296-15 KL-15 Sampled By: CLIENT on 30-SEP-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	0.047		0.010	mg/L		06-OCT-21	R5613754
Chloride (Cl)	2.27		0.50	mg/L		05-OCT-21	R5609338
Nitrate (as N)	0.121		0.020	mg/L		05-OCT-21	R5609338
Nitrite (as N)	<0.010		0.010	mg/L		05-OCT-21	R5609338
Total Kjeldahl Nitrogen	0.660		0.050	mg/L	07-OCT-21	07-OCT-21	R5614477
Total Nitrogen	0.781		0.050	mg/L		08-OCT-21	
Phosphorus (P)-Total	0.0227		0.0010	mg/L	27-OCT-21	28-OCT-21	R5632151
Bacteriological Tests							
E. Coli	4		0	CFU/100mL		02-OCT-21	R5606881
Total Metals							
Aluminum (Al)-Total	0.0836		0.0050	mg/L	03-OCT-21	04-OCT-21	R5607181
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Arsenic (As)-Total	0.00029		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Barium (Ba)-Total	0.0123		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2646296-15 KL-15 Sampled By: CLIENT on 30-SEP-21 Matrix: WATER							
Total Metals							
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	03-OCT-21	05-OCT-21	R5607181
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Boron (B)-Total	<0.010		0.010	mg/L	03-OCT-21	05-OCT-21	R5607181
Cadmium (Cd)-Total	0.0000064		0.0000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Calcium (Ca)-Total	3.20		0.050	mg/L	03-OCT-21	04-OCT-21	R5607181
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	03-OCT-21	04-OCT-21	R5607181
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Cobalt (Co)-Total	0.00014		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Copper (Cu)-Total	0.00069		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Iron (Fe)-Total	1.06		0.010	mg/L	03-OCT-21	04-OCT-21	R5607181
Lead (Pb)-Total	0.000146		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Lithium (Li)-Total	<0.0010		0.0010	mg/L	03-OCT-21	04-OCT-21	R5607181
Magnesium (Mg)-Total	0.823		0.0050	mg/L	03-OCT-21	04-OCT-21	R5607181
Manganese (Mn)-Total	0.0627		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Molybdenum (Mo)-Total	0.000052		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Phosphorus (P)-Total	<0.050		0.050	mg/L	03-OCT-21	04-OCT-21	R5607181
Potassium (K)-Total	0.384		0.050	mg/L	03-OCT-21	04-OCT-21	R5607181
Rubidium (Rb)-Total	0.00140		0.00020	mg/L	03-OCT-21	04-OCT-21	R5607181
Selenium (Se)-Total	0.000084		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Silicon (Si)-Total	1.65		0.10	mg/L	03-OCT-21	04-OCT-21	R5607181
Silver (Ag)-Total	<0.000050		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Sodium (Na)-Total	1.79		0.050	mg/L	03-OCT-21	04-OCT-21	R5607181
Strontium (Sr)-Total	0.0297		0.0010	mg/L	03-OCT-21	04-OCT-21	R5607181
Sulfur (S)-Total	0.70		0.50	mg/L	03-OCT-21	04-OCT-21	R5607181
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	03-OCT-21	04-OCT-21	R5607181
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	03-OCT-21	04-OCT-21	R5607181
Thorium (Th)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Tin (Sn)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Titanium (Ti)-Total	0.00194		0.00030	mg/L	03-OCT-21	04-OCT-21	R5607181
Tungsten (W)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Uranium (U)-Total	0.000014		0.000010	mg/L	03-OCT-21	04-OCT-21	R5607181
Vanadium (V)-Total	<0.00050		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Zinc (Zn)-Total	<0.0030		0.0030	mg/L	03-OCT-21	04-OCT-21	R5607181
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	03-OCT-21	04-OCT-21	R5607181
L2646296-16 KL-15 (2) Sampled By: CLIENT on 30-SEP-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0203		0.0010	mg/L	16-OCT-21	17-OCT-21	R5624311
L2646296-17 KL-16 Sampled By: CLIENT on 30-SEP-21							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2646296-17 KL-16 Sampled By: CLIENT on 30-SEP-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	0.071		0.010	mg/L		06-OCT-21	R5613754
Chloride (Cl)	2.32		0.50	mg/L		05-OCT-21	R5609338
Nitrate (as N)	0.020		0.020	mg/L		05-OCT-21	R5609338
Nitrite (as N)	<0.010		0.010	mg/L		05-OCT-21	R5609338
Total Kjeldahl Nitrogen	0.660		0.050	mg/L	07-OCT-21	07-OCT-21	R5614477
Total Nitrogen	0.680		0.050	mg/L		08-OCT-21	
Phosphorus (P)-Total	0.0249		0.0010	mg/L	27-OCT-21	28-OCT-21	R5632151
Bacteriological Tests							
E. Coli	10		0	CFU/100mL		02-OCT-21	R5606881
Total Metals							
Aluminum (Al)-Total	0.106		0.0050	mg/L	03-OCT-21	04-OCT-21	R5607181
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Arsenic (As)-Total	0.00034		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Barium (Ba)-Total	0.0131		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	03-OCT-21	05-OCT-21	R5607181
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Boron (B)-Total	<0.010		0.010	mg/L	03-OCT-21	05-OCT-21	R5607181
Cadmium (Cd)-Total	0.0000101		0.0000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Calcium (Ca)-Total	3.24		0.050	mg/L	03-OCT-21	04-OCT-21	R5607181
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	03-OCT-21	04-OCT-21	R5607181
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Cobalt (Co)-Total	0.00016		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Copper (Cu)-Total	0.00081		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Iron (Fe)-Total	1.21		0.010	mg/L	03-OCT-21	04-OCT-21	R5607181
Lead (Pb)-Total	0.000169		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Lithium (Li)-Total	<0.0010		0.0010	mg/L	03-OCT-21	04-OCT-21	R5607181
Magnesium (Mg)-Total	0.860		0.0050	mg/L	03-OCT-21	04-OCT-21	R5607181
Manganese (Mn)-Total	0.0704		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Phosphorus (P)-Total	<0.050		0.050	mg/L	03-OCT-21	04-OCT-21	R5607181
Potassium (K)-Total	0.398		0.050	mg/L	03-OCT-21	04-OCT-21	R5607181
Rubidium (Rb)-Total	0.00146		0.00020	mg/L	03-OCT-21	04-OCT-21	R5607181
Selenium (Se)-Total	0.000086		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Silicon (Si)-Total	1.68		0.10	mg/L	03-OCT-21	04-OCT-21	R5607181
Silver (Ag)-Total	<0.000050		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Sodium (Na)-Total	1.88		0.050	mg/L	03-OCT-21	04-OCT-21	R5607181
Strontium (Sr)-Total	0.0297		0.0010	mg/L	03-OCT-21	04-OCT-21	R5607181
Sulfur (S)-Total	0.70		0.50	mg/L	03-OCT-21	04-OCT-21	R5607181
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	03-OCT-21	04-OCT-21	R5607181
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	03-OCT-21	04-OCT-21	R5607181

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2646296-17 KL-16 Sampled By: CLIENT on 30-SEP-21 Matrix: WATER							
Total Metals							
Thorium (Th)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Tin (Sn)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Titanium (Ti)-Total	0.00246		0.00030	mg/L	03-OCT-21	04-OCT-21	R5607181
Tungsten (W)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Uranium (U)-Total	0.000015		0.000010	mg/L	03-OCT-21	04-OCT-21	R5607181
Vanadium (V)-Total	0.00056		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Zinc (Zn)-Total	<0.0030		0.0030	mg/L	03-OCT-21	04-OCT-21	R5607181
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	03-OCT-21	04-OCT-21	R5607181
L2646296-18 KL-16 (2) Sampled By: CLIENT on 30-SEP-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0225		0.0010	mg/L	16-OCT-21	17-OCT-21	R5624311
L2646296-19 KL-17 Sampled By: CLIENT on 30-SEP-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	0.046		0.010	mg/L		06-OCT-21	R5613754
Chloride (Cl)	1.99		0.50	mg/L		05-OCT-21	R5609338
Nitrate (as N)	0.113		0.020	mg/L		05-OCT-21	R5609338
Nitrite (as N)	<0.010		0.010	mg/L		05-OCT-21	R5609338
Total Kjeldahl Nitrogen	0.710		0.050	mg/L	07-OCT-21	07-OCT-21	R5614477
Total Nitrogen	0.823		0.050	mg/L		08-OCT-21	
Phosphorus (P)-Total	0.0277		0.0010	mg/L	27-OCT-21	28-OCT-21	R5632151
Bacteriological Tests							
E. Coli	15		0	CFU/100mL		02-OCT-21	R5606881
Total Metals							
Aluminum (Al)-Total	0.153		0.0050	mg/L	03-OCT-21	04-OCT-21	R5607181
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Arsenic (As)-Total	0.00029		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Barium (Ba)-Total	0.0142		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	03-OCT-21	05-OCT-21	R5607181
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Boron (B)-Total	<0.010		0.010	mg/L	03-OCT-21	05-OCT-21	R5607181
Cadmium (Cd)-Total	0.0000116		0.0000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Calcium (Ca)-Total	2.98		0.050	mg/L	03-OCT-21	04-OCT-21	R5607181
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	03-OCT-21	04-OCT-21	R5607181
Chromium (Cr)-Total	0.00055		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Cobalt (Co)-Total	0.00022		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Copper (Cu)-Total	0.00066		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Iron (Fe)-Total	1.10		0.010	mg/L	03-OCT-21	04-OCT-21	R5607181
Lead (Pb)-Total	0.000215		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2646296-19 KL-17 Sampled By: CLIENT on 30-SEP-21 Matrix: WATER							
Total Metals							
Lithium (Li)-Total	<0.0010		0.0010	mg/L	03-OCT-21	04-OCT-21	R5607181
Magnesium (Mg)-Total	0.828		0.0050	mg/L	03-OCT-21	04-OCT-21	R5607181
Manganese (Mn)-Total	0.0509		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Nickel (Ni)-Total	0.00054		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Phosphorus (P)-Total	<0.050		0.050	mg/L	03-OCT-21	04-OCT-21	R5607181
Potassium (K)-Total	0.401		0.050	mg/L	03-OCT-21	04-OCT-21	R5607181
Rubidium (Rb)-Total	0.00140		0.00020	mg/L	03-OCT-21	04-OCT-21	R5607181
Selenium (Se)-Total	0.000076		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Silicon (Si)-Total	2.01		0.10	mg/L	03-OCT-21	04-OCT-21	R5607181
Silver (Ag)-Total	<0.000050		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Sodium (Na)-Total	1.70		0.050	mg/L	03-OCT-21	04-OCT-21	R5607181
Strontium (Sr)-Total	0.0295		0.0010	mg/L	03-OCT-21	04-OCT-21	R5607181
Sulfur (S)-Total	0.72		0.50	mg/L	03-OCT-21	04-OCT-21	R5607181
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	03-OCT-21	04-OCT-21	R5607181
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	03-OCT-21	04-OCT-21	R5607181
Thorium (Th)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Tin (Sn)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Titanium (Ti)-Total	0.00328		0.00030	mg/L	03-OCT-21	04-OCT-21	R5607181
Tungsten (W)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Uranium (U)-Total	0.000017		0.000010	mg/L	03-OCT-21	04-OCT-21	R5607181
Vanadium (V)-Total	0.00065		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Zinc (Zn)-Total	0.0035		0.0030	mg/L	03-OCT-21	04-OCT-21	R5607181
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	03-OCT-21	04-OCT-21	R5607181
L2646296-20 KL-17 (2) Sampled By: CLIENT on 30-SEP-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0252		0.0010	mg/L	16-OCT-21	17-OCT-21	R5624311
L2646296-21 KL-21 Sampled By: CLIENT on 30-SEP-21 Matrix: WATER							
Anions and Nutrients							
Ammonia, Total (as N)	0.050		0.010	mg/L		06-OCT-21	R5613754
Chloride (Cl)	2.26		0.50	mg/L		05-OCT-21	R5609338
Nitrate (as N)	0.046		0.020	mg/L		05-OCT-21	R5609338
Nitrite (as N)	<0.010		0.010	mg/L		05-OCT-21	R5609338
Total Kjeldahl Nitrogen	0.640		0.050	mg/L	08-OCT-21	08-OCT-21	R5615743
Total Nitrogen	0.686		0.050	mg/L		12-OCT-21	
Phosphorus (P)-Total	0.0234		0.0010	mg/L	27-OCT-21	28-OCT-21	R5632151
Bacteriological Tests							
E. Coli	5		0	CFU/100mL		02-OCT-21	R5606881

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2646296-21 KL-21 Sampled By: CLIENT on 30-SEP-21 Matrix: WATER							
Bacteriological Tests							
Total Metals							
Aluminum (Al)-Total	0.0944		0.0050	mg/L	03-OCT-21	04-OCT-21	R5607181
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Arsenic (As)-Total	0.00030		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Barium (Ba)-Total	0.0126		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	03-OCT-21	05-OCT-21	R5607181
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Boron (B)-Total	<0.010		0.010	mg/L	03-OCT-21	05-OCT-21	R5607181
Cadmium (Cd)-Total	0.0000089		0.0000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Calcium (Ca)-Total	3.19		0.050	mg/L	03-OCT-21	04-OCT-21	R5607181
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	03-OCT-21	04-OCT-21	R5607181
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Cobalt (Co)-Total	0.00015		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Copper (Cu)-Total	0.00074		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Iron (Fe)-Total	1.15		0.010	mg/L	03-OCT-21	04-OCT-21	R5607181
Lead (Pb)-Total	0.000152		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Lithium (Li)-Total	<0.0010		0.0010	mg/L	03-OCT-21	04-OCT-21	R5607181
Magnesium (Mg)-Total	0.853		0.0050	mg/L	03-OCT-21	04-OCT-21	R5607181
Manganese (Mn)-Total	0.0632		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Molybdenum (Mo)-Total	0.000058		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Phosphorus (P)-Total	<0.050		0.050	mg/L	03-OCT-21	04-OCT-21	R5607181
Potassium (K)-Total	0.402		0.050	mg/L	03-OCT-21	04-OCT-21	R5607181
Rubidium (Rb)-Total	0.00142		0.00020	mg/L	03-OCT-21	04-OCT-21	R5607181
Selenium (Se)-Total	0.000082		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Silicon (Si)-Total	1.70		0.10	mg/L	03-OCT-21	04-OCT-21	R5607181
Silver (Ag)-Total	<0.000050		0.000050	mg/L	03-OCT-21	04-OCT-21	R5607181
Sodium (Na)-Total	1.87		0.050	mg/L	03-OCT-21	04-OCT-21	R5607181
Strontium (Sr)-Total	0.0306		0.0010	mg/L	03-OCT-21	04-OCT-21	R5607181
Sulfur (S)-Total	0.70		0.50	mg/L	03-OCT-21	04-OCT-21	R5607181
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	03-OCT-21	04-OCT-21	R5607181
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	03-OCT-21	04-OCT-21	R5607181
Thorium (Th)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Tin (Sn)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Titanium (Ti)-Total	0.00236		0.00030	mg/L	03-OCT-21	04-OCT-21	R5607181
Tungsten (W)-Total	<0.00010		0.00010	mg/L	03-OCT-21	04-OCT-21	R5607181
Uranium (U)-Total	0.000014		0.000010	mg/L	03-OCT-21	04-OCT-21	R5607181
Vanadium (V)-Total	0.00052		0.00050	mg/L	03-OCT-21	04-OCT-21	R5607181
Zinc (Zn)-Total	<0.0030		0.0030	mg/L	03-OCT-21	04-OCT-21	R5607181
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	03-OCT-21	04-OCT-21	R5607181
L2646296-22 KL-21 (2)							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2646296-22 KL-21 (2) Sampled By: CLIENT on 30-SEP-21 Matrix: WATER							
Anions and Nutrients							
Phosphorus (P)-Total	0.0207		0.0010	mg/L	16-OCT-21	17-OCT-21	R5624311

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Magnesium (Mg)-Total	B	L2646296-1, -11, -13, -15, -17, -19, -21, -3, -5, -7, -9
Duplicate	E. Coli	DUP-H,J	L2646296-1, -11, -13, -15, -17, -19, -21, -3, -5, -7, -9
Matrix Spike	Barium (Ba)-Total	MS-B	L2646296-1, -11, -13, -15, -17, -19, -21, -3, -5, -7, -9
Matrix Spike	Calcium (Ca)-Total	MS-B	L2646296-1, -11, -13, -15, -17, -19, -21, -3, -5, -7, -9
Matrix Spike	Copper (Cu)-Total	MS-B	L2646296-1, -11, -13, -15, -17, -19, -21, -3, -5, -7, -9
Matrix Spike	Iron (Fe)-Total	MS-B	L2646296-1, -11, -13, -15, -17, -19, -21, -3, -5, -7, -9
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2646296-1, -11, -13, -15, -17, -19, -21, -3, -5, -7, -9
Matrix Spike	Manganese (Mn)-Total	MS-B	L2646296-1, -11, -13, -15, -17, -19, -21, -3, -5, -7, -9
Matrix Spike	Phosphorus (P)-Total	MS-B	L2646296-1, -11, -13, -15, -17, -19, -21, -3, -5, -7, -9
Matrix Spike	Potassium (K)-Total	MS-B	L2646296-1, -11, -13, -15, -17, -19, -21, -3, -5, -7, -9
Matrix Spike	Rubidium (Rb)-Total	MS-B	L2646296-1, -11, -13, -15, -17, -19, -21, -3, -5, -7, -9
Matrix Spike	Silicon (Si)-Total	MS-B	L2646296-1, -11, -13, -15, -17, -19, -21, -3, -5, -7, -9
Matrix Spike	Sodium (Na)-Total	MS-B	L2646296-1, -11, -13, -15, -17, -19, -21, -3, -5, -7, -9
Matrix Spike	Strontium (Sr)-Total	MS-B	L2646296-1, -11, -13, -15, -17, -19, -21, -3, -5, -7, -9
Matrix Spike	Sulfur (S)-Total	MS-B	L2646296-1, -11, -13, -15, -17, -19, -21, -3, -5, -7, -9
Matrix Spike	Zinc (Zn)-Total	MS-B	L2646296-1, -11, -13, -15, -17, -19, -21, -3, -5, -7, -9

Sample Parameter Qualifier key listed:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
DUP-H,J	Duplicate results outside ALS DQO, due to sample heterogeneity. Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
CL-IC-N-WT	Water	Chloride by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

EC-MF-WT	Water	E. coli	SM 9222D

A 100 mL volume of sample is filtered through a membrane, the membrane is placed on mFC-BCIG agar and incubated at 44.5 –0 .2 °C for 24 – 2 h.
Method ID: WT-TM-1200

EC-SCREEN-WT	Water	Conductivity Screen (Internal Use Only)	APHA 2510

Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.

ETL-N-TOT-WT	Water	Calculate from NO2 + NO3+TKN	CALCULATION
MET-T-CCMS-WT	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

NH3-F-WT	Water	Ammonia in Water by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-IC-WT	Water	Nitrite in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

Reference Information

NO3-IC-WT	Water	Nitrate in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

P-T-L-COL-ED	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

TKN-F-WT	Water	TKN in Water by Fluorescence	J. ENVIRON. MONIT., 2005,7,37-42,RSC

Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA
ED	ALS ENVIRONMENTAL - EDMONTON, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid weight of sample
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L2646296 Report Date: 29-OCT-21

Client: Cash Clients - Ottawa
1099 Oak Road
Kilworthy ON POE 1G0
Contact: Ron Pearson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-IC-N-WT	**Water**							
Batch R5609338								
WG3631545-10 DUP		**WG3631545-8**						
Chloride (Cl)		2.28	2.27		mg/L	0.3	20	05-OCT-21
WG3631545-7 LCS								
Chloride (Cl)			100.7		%		90-110	05-OCT-21
WG3631545-6 MB								
Chloride (Cl)			<0.50		mg/L		0.5	05-OCT-21
WG3631545-9 MS		**WG3631545-8**						
Chloride (Cl)			99.6		%		75-125	05-OCT-21
EC-MF-WT	**Water**							
Batch R5606881								
WG3630021-3 DUP		**L2646296-9**						
E. Coli		6	6		CFU/100mL	0.0	65	02-OCT-21
WG3630021-4 DUP		**L2646296-11**						
E. Coli		4	1	DUP-H,J	CFU/100mL	3	2	02-OCT-21
WG3630021-1 MB								
E. Coli			0		CFU/100mL		1	02-OCT-21
MET-T-CCMS-WT	**Water**							
Batch R5607181								
WG3630394-4 DUP		**WG3630394-3**						
Aluminum (Al)-Total		0.126	0.114		mg/L	9.9	20	04-OCT-21
Antimony (Sb)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	04-OCT-21
Arsenic (As)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	04-OCT-21
Barium (Ba)-Total		0.0283	0.0286		mg/L	0.8	20	04-OCT-21
Beryllium (Be)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	04-OCT-21
Bismuth (Bi)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	04-OCT-21
Boron (B)-Total		<0.10	<0.10	RPD-NA	mg/L	N/A	20	04-OCT-21
Cadmium (Cd)-Total		0.000083	0.000097		mg/L	16	20	04-OCT-21
Calcium (Ca)-Total		22.8	22.8		mg/L	0.4	20	04-OCT-21
Chromium (Cr)-Total		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	04-OCT-21
Cesium (Cs)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	04-OCT-21
Cobalt (Co)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	04-OCT-21
Copper (Cu)-Total		0.265	0.269		mg/L	1.8	20	04-OCT-21
Iron (Fe)-Total		0.83	0.81		mg/L	1.5	20	04-OCT-21
Lead (Pb)-Total		0.00524	0.00518		mg/L	1.2	20	04-OCT-21
Lithium (Li)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	04-OCT-21

Quality Control Report

Client: Cash Clients - Ottawa
1099 Oak Road
Kilworthy ON POE 1G0
Contact: Ron Pearson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5607181								
WG3630394-4 DUP		**WG3630394-3**						
Magnesium (Mg)-Total		6.65	6.72		mg/L	1.0	20	04-OCT-21
Manganese (Mn)-Total		0.0345	0.0353		mg/L	2.3	20	04-OCT-21
Molybdenum (Mo)-Total		0.00516	0.00486		mg/L	6.0	20	04-OCT-21
Nickel (Ni)-Total		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	04-OCT-21
Phosphorus (P)-Total		7.51	7.73		mg/L	2.9	20	04-OCT-21
Potassium (K)-Total		20.8	20.9		mg/L	0.5	20	04-OCT-21
Rubidium (Rb)-Total		0.0214	0.0213		mg/L	0.6	20	04-OCT-21
Selenium (Se)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	04-OCT-21
Silicon (Si)-Total		4.6	4.7		mg/L	0.9	20	04-OCT-21
Silver (Ag)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	04-OCT-21
Sodium (Na)-Total		71.9	74.8		mg/L	3.9	20	04-OCT-21
Strontium (Sr)-Total		0.173	0.174		mg/L	0.6	20	04-OCT-21
Sulfur (S)-Total		27.3	27.0		mg/L	1.1	20	04-OCT-21
Thallium (Tl)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	04-OCT-21
Tellurium (Te)-Total		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	04-OCT-21
Thorium (Th)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	04-OCT-21
Tin (Sn)-Total		0.0020	0.0020		mg/L	0.7	20	04-OCT-21
Titanium (Ti)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	04-OCT-21
Tungsten (W)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	04-OCT-21
Uranium (U)-Total		0.00015	0.00014		mg/L	5.8	20	04-OCT-21
Vanadium (V)-Total		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	04-OCT-21
Zinc (Zn)-Total		0.200	0.206		mg/L	2.8	20	04-OCT-21
Zirconium (Zr)-Total		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	04-OCT-21
WG3630394-2 LCS								
Aluminum (Al)-Total			90.0		%		80-120	04-OCT-21
Antimony (Sb)-Total			102.1		%		80-120	04-OCT-21
Arsenic (As)-Total			96.1		%		80-120	04-OCT-21
Barium (Ba)-Total			92.3		%		80-120	04-OCT-21
Beryllium (Be)-Total			88.6		%		80-120	04-OCT-21
Bismuth (Bi)-Total			100.3		%		80-120	04-OCT-21
Boron (B)-Total			85.6		%		80-120	04-OCT-21
Cadmium (Cd)-Total			91.6		%		80-120	04-OCT-21
Calcium (Ca)-Total			94.8		%		80-120	04-OCT-21

Quality Control Report

Client: Cash Clients - Ottawa
1099 Oak Road
Kilworthy ON POE 1G0
Contact: Ron Pearson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5607181								
WG3630394-2 LCS								
Chromium (Cr)-Total			93.2		%		80-120	04-OCT-21
Cesium (Cs)-Total			99.2		%		80-120	04-OCT-21
Cobalt (Co)-Total			94.2		%		80-120	04-OCT-21
Copper (Cu)-Total			94.0		%		80-120	04-OCT-21
Iron (Fe)-Total			93.9		%		80-120	04-OCT-21
Lead (Pb)-Total			96.9		%		80-120	04-OCT-21
Lithium (Li)-Total			84.3		%		80-120	04-OCT-21
Magnesium (Mg)-Total			98.2		%		80-120	04-OCT-21
Manganese (Mn)-Total			94.1		%		80-120	04-OCT-21
Molybdenum (Mo)-Total			97.7		%		80-120	04-OCT-21
Nickel (Ni)-Total			94.0		%		80-120	04-OCT-21
Phosphorus (P)-Total			103.4		%		70-130	04-OCT-21
Potassium (K)-Total			88.3		%		80-120	04-OCT-21
Rubidium (Rb)-Total			98.8		%		80-120	04-OCT-21
Selenium (Se)-Total			96.8		%		80-120	04-OCT-21
Silicon (Si)-Total			88.4		%		60-140	04-OCT-21
Silver (Ag)-Total			97.4		%		80-120	04-OCT-21
Sodium (Na)-Total			98.8		%		80-120	04-OCT-21
Strontium (Sr)-Total			96.7		%		80-120	04-OCT-21
Sulfur (S)-Total			101.8		%		80-120	04-OCT-21
Thallium (Tl)-Total			102.7		%		80-120	04-OCT-21
Tellurium (Te)-Total			95.2		%		80-120	04-OCT-21
Thorium (Th)-Total			100.4		%		80-120	04-OCT-21
Tin (Sn)-Total			91.5		%		80-120	04-OCT-21
Titanium (Ti)-Total			90.1		%		80-120	04-OCT-21
Tungsten (W)-Total			93.0		%		80-120	04-OCT-21
Uranium (U)-Total			99.96		%		80-120	04-OCT-21
Vanadium (V)-Total			94.6		%		80-120	04-OCT-21
Zinc (Zn)-Total			94.8		%		80-120	04-OCT-21
Zirconium (Zr)-Total			93.2		%		80-120	04-OCT-21
WG3630394-1 MB								
Aluminum (Al)-Total			<0.0050		mg/L		0.005	04-OCT-21
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	04-OCT-21
Arsenic (As)-Total			<0.00010		mg/L		0.0001	04-OCT-21

Quality Control Report

Client: Cash Clients - Ottawa
1099 Oak Road
Kilworthy ON POE 1G0
Contact: Ron Pearson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5607181								
WG3630394-1 MB								
Barium (Ba)-Total			<0.00010		mg/L		0.0001	04-OCT-21
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	04-OCT-21
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	04-OCT-21
Boron (B)-Total			<0.010		mg/L		0.01	04-OCT-21
Cadmium (Cd)-Total			<0.000005(		mg/L		0.000005	04-OCT-21
Calcium (Ca)-Total			<0.050		mg/L		0.05	04-OCT-21
Chromium (Cr)-Total			<0.00050		mg/L		0.0005	04-OCT-21
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	04-OCT-21
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	04-OCT-21
Copper (Cu)-Total			<0.00050		mg/L		0.0005	04-OCT-21
Iron (Fe)-Total			<0.010		mg/L		0.01	04-OCT-21
Lead (Pb)-Total			<0.000050		mg/L		0.00005	04-OCT-21
Lithium (Li)-Total			<0.0010		mg/L		0.001	04-OCT-21
Magnesium (Mg)-Total			0.0149	B	mg/L		0.005	04-OCT-21
Manganese (Mn)-Total			<0.00050		mg/L		0.0005	04-OCT-21
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	04-OCT-21
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	04-OCT-21
Phosphorus (P)-Total			<0.050		mg/L		0.05	04-OCT-21
Potassium (K)-Total			<0.050		mg/L		0.05	04-OCT-21
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	04-OCT-21
Selenium (Se)-Total			<0.000050		mg/L		0.00005	04-OCT-21
Silicon (Si)-Total			<0.10		mg/L		0.1	04-OCT-21
Silver (Ag)-Total			<0.000050		mg/L		0.00005	04-OCT-21
Sodium (Na)-Total			<0.050		mg/L		0.05	04-OCT-21
Strontium (Sr)-Total			<0.0010		mg/L		0.001	04-OCT-21
Sulfur (S)-Total			<0.50		mg/L		0.5	04-OCT-21
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	04-OCT-21
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	04-OCT-21
Thorium (Th)-Total			<0.00010		mg/L		0.0001	04-OCT-21
Tin (Sn)-Total			<0.00010		mg/L		0.0001	04-OCT-21
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	04-OCT-21
Tungsten (W)-Total			<0.00010		mg/L		0.0001	04-OCT-21
Uranium (U)-Total			<0.000010		mg/L		0.00001	04-OCT-21

Quality Control Report

Client: Cash Clients - Ottawa
1099 Oak Road
Kilworthy ON POE 1G0
Contact: Ron Pearson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5607181								
WG3630394-1 MB								
Vanadium (V)-Total			<0.00050		mg/L		0.0005	04-OCT-21
Zinc (Zn)-Total			<0.0030		mg/L		0.003	04-OCT-21
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	04-OCT-21
WG3630394-5 MS		**WG3630394-6**						
Aluminum (Al)-Total			91.4		%		70-130	04-OCT-21
Antimony (Sb)-Total			99.7		%		70-130	04-OCT-21
Arsenic (As)-Total			100.3		%		70-130	04-OCT-21
Barium (Ba)-Total			N/A	MS-B	%		-	04-OCT-21
Beryllium (Be)-Total			94.7		%		70-130	04-OCT-21
Bismuth (Bi)-Total			100.5		%		70-130	04-OCT-21
Boron (B)-Total			83.6		%		70-130	04-OCT-21
Cadmium (Cd)-Total			94.8		%		70-130	04-OCT-21
Calcium (Ca)-Total			N/A	MS-B	%		-	04-OCT-21
Chromium (Cr)-Total			100.5		%		70-130	04-OCT-21
Cesium (Cs)-Total			102.6		%		70-130	04-OCT-21
Cobalt (Co)-Total			97.6		%		70-130	04-OCT-21
Copper (Cu)-Total			N/A	MS-B	%		-	04-OCT-21
Iron (Fe)-Total			N/A	MS-B	%		-	04-OCT-21
Lead (Pb)-Total			98.9		%		70-130	04-OCT-21
Magnesium (Mg)-Total			N/A	MS-B	%		-	04-OCT-21
Manganese (Mn)-Total			N/A	MS-B	%		-	04-OCT-21
Molybdenum (Mo)-Total			100.5		%		70-130	04-OCT-21
Nickel (Ni)-Total			97.1		%		70-130	04-OCT-21
Phosphorus (P)-Total			N/A	MS-B	%		-	04-OCT-21
Potassium (K)-Total			N/A	MS-B	%		-	04-OCT-21
Rubidium (Rb)-Total			N/A	MS-B	%		-	04-OCT-21
Selenium (Se)-Total			100.5		%		70-130	04-OCT-21
Silicon (Si)-Total			N/A	MS-B	%		-	04-OCT-21
Silver (Ag)-Total			100.2		%		70-130	04-OCT-21
Sodium (Na)-Total			N/A	MS-B	%		-	04-OCT-21
Strontium (Sr)-Total			N/A	MS-B	%		-	04-OCT-21
Sulfur (S)-Total			N/A	MS-B	%		-	04-OCT-21
Thallium (Tl)-Total			99.3		%		70-130	04-OCT-21
Tellurium (Te)-Total			91.5		%		70-130	04-OCT-21

Quality Control Report

Client: Cash Clients - Ottawa
1099 Oak Road
Kilworthy ON POE 1G0
Contact: Ron Pearson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5607181								
WG3630394-5 MS		**WG3630394-6**						
Titanium (Ti)-Total			88.0		%		70-130	04-OCT-21
Tungsten (W)-Total			93.3		%		70-130	04-OCT-21
Uranium (U)-Total			104.1		%		70-130	04-OCT-21
Vanadium (V)-Total			98.7		%		70-130	04-OCT-21
Zinc (Zn)-Total			N/A	MS-B	%		-	04-OCT-21
NH3-F-WT	**Water**							
Batch R5613754								
WG3630558-3 DUP		**L2646296-1**						
Ammonia, Total (as N)		0.044	0.044		mg/L	0.2	20	06-OCT-21
WG3630735-3 DUP		**WG3630735-5**						
Ammonia, Total (as N)		0.025	0.026		mg/L	2.0	20	06-OCT-21
WG3630558-2 LCS								
Ammonia, Total (as N)			102.3		%		85-115	06-OCT-21
WG3630735-2 LCS								
Ammonia, Total (as N)			103.1		%		85-115	06-OCT-21
WG3630558-1 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	06-OCT-21
WG3630735-1 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	06-OCT-21
WG3630558-4 MS		**L2646296-1**						
Ammonia, Total (as N)			103.7		%		75-125	06-OCT-21
WG3630735-4 MS		**WG3630735-5**						
Ammonia, Total (as N)			94.6		%		75-125	06-OCT-21
NO2-IC-WT	**Water**							
Batch R5609338								
WG3631545-10 DUP		**WG3631545-8**						
Nitrite (as N)		<0.010	<0.010	RPD-NA	mg/L	N/A	20	05-OCT-21
WG3631545-7 LCS								
Nitrite (as N)			98.9		%		90-110	05-OCT-21
WG3631545-6 MB								
Nitrite (as N)			<0.010		mg/L		0.01	05-OCT-21
WG3631545-9 MS		**WG3631545-8**						
Nitrite (as N)			99.1		%		75-125	05-OCT-21
NO3-IC-WT	**Water**							

Quality Control Report

Client: Cash Clients - Ottawa
1099 Oak Road
Kilworthy ON POE 1G0
Contact: Ron Pearson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-IC-WT	**Water**							
Batch R5609338								
WG3631545-10 DUP		**WG3631545-8**						
Nitrate (as N)		0.122	0.122		mg/L	0.1	20	05-OCT-21
WG3631545-7 LCS								
Nitrate (as N)			99.1		%		90-110	05-OCT-21
WG3631545-6 MB								
Nitrate (as N)			<0.020		mg/L		0.02	05-OCT-21
WG3631545-9 MS		**WG3631545-8**						
Nitrate (as N)			98.8		%		75-125	05-OCT-21
P-T-L-COL-ED	**Water**							
Batch R5624311								
WG3639200-3 DUP		**L2647037-1**						
Phosphorus (P)-Total		0.0507	0.0582		mg/L	14	20	17-OCT-21
WG3639200-2 LCS								
Phosphorus (P)-Total			101.4		%		80-120	17-OCT-21
WG3639200-1 MB								
Phosphorus (P)-Total			<0.0010		mg/L		0.001	17-OCT-21
WG3639200-4 MS		**L2647037-1**						
Phosphorus (P)-Total			110.7		%		70-130	17-OCT-21
Batch R5632151								
WG3647010-3 DUP		**L2646296-1**						
Phosphorus (P)-Total		0.0110	0.0110		mg/L	0.0	20	28-OCT-21
WG3647010-2 LCS								
Phosphorus (P)-Total			107.4		%		80-120	28-OCT-21
WG3647010-1 MB								
Phosphorus (P)-Total			<0.0010		mg/L		0.001	28-OCT-21
WG3647010-4 MS		**L2646296-1**						
Phosphorus (P)-Total			104.4		%		70-130	28-OCT-21
TKN-F-WT	**Water**							
Batch R5614477								
WG3632839-3 DUP		**L2646296-9**						
Total Kjeldahl Nitrogen		0.430	0.440		mg/L	2.3	20	07-OCT-21
WG3632839-2 LCS								
Total Kjeldahl Nitrogen			103.8		%		75-125	07-OCT-21
WG3632839-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	07-OCT-21
WG3632839-4 MS		**L2646296-9**						
Total Kjeldahl Nitrogen			104.8		%		70-130	07-OCT-21

Quality Control Report

Client: Cash Clients - Ottawa
1099 Oak Road
Kilworthy ON POE 1G0
Contact: Ron Pearson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-F-WT	**Water**							
Batch R5615743								
WG3634176-3 DUP		**L2648826-1**						
Total Kjeldahl Nitrogen		0.260	0.240		mg/L	8.0	20	08-OCT-21
WG3634176-2 LCS								
Total Kjeldahl Nitrogen			90.3		%		75-125	08-OCT-21
WG3634176-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-OCT-21
WG3634176-4 MS		**L2648826-1**						
Total Kjeldahl Nitrogen			99.6		%		70-130	08-OCT-21

Quality Control Report

Workorder: L2646296 Report Date: 29-OCT-21

Client: Cash Clients - Ottawa
1099 Oak Road
Kilworthy ON POE 1G0
Contact: Ron Pearson

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
DUP-H,J	Duplicate results outside ALS DQO, due to sample heterogeneity. Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

www.alsglobal.com

L2646296-COFC

...t Form

COC Number: 20 -

Page 1 of 2

Report To	Contact and company name below will appear on the final report
Company:	Cash Clients - Ottawa (21841)
Contact:	Ron Pearson, Kahshe Lake Ratepayers' Association
Phone:	416-843-2805
	Company address below will appear on the final report
Street:	1099 Oak Road
City/Province:	Kilworthy, ON
Postal Code:	P0E 1G0
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	
Contact:	

Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)
Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A
☐ Compare Results to Criteria on Report - provide details below if box checked
Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax ron.pearson.pics@gmail.com
Email 2
Email 3

Invoice Recipients
Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax ron.pearson.pics@gmail.com
Email 2

Turnaround Time (TAT) Requested
☐ Routine [R] if received by 3pm M-F - no surcharges apply
☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum
☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum
☐ Same day [E2] if received by 10am M-S - 200% rush surcharge. Additional fees may apply to rush requests on weekends, statutory holidays and non-routine tests

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm am/pm

For all tests with rush TATs requested, please contact your AM to confirm availability.

Project Information

ALS Account # / Quote #:	21841 / Q83246
Job #:	
PO / AFE:	
LSD:	

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (ALS use only): L2646296 | ALS Contact: Costas Farassoglou | Sampler:

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Chloride (CL-IC-N-WT)	Total Nitrogen (N-TOT-WT)	Nitrate (NO3-IC-WT)	Ammonia (NH3-F-WT) P	E. Coli (EC-MF-WT) P	Total Metals (MET-T-CCMS-WT) P	Total P (P-T-L-COL-ED) P	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
-1	KL-1			WATER	4	X	X	X	X	X	X	X			
-2	KL-1 (2)			WATER	1							X			
-3	KL-3			WATER	4	X	X	X	X	X	X	X			
-4	KL-3 (2)			WATER	1							X			
-5	KL-6			WATER	4	X	X	X	X	X	X	X			
-6	KL-6 (2)			WATER	1							X			
-7	KL-7			WATER	4	X	X	X	X	X	X	X			
-8	KL-7 (2)			WATER	1							X			
-9	KL-9			WATER	4	X	X	X	X	X	X	X			
-10	KL-9 (2)			WATER	1							X			
-11	KL-11			WATER	4	X	X	X	X	X	X	X			
-12	KL-11 (2)			WATER	1							X			

Drinking Water (DW) Samples[1] (client use)
Are samples taken from a Regulated DW System? ☐ YES ☑ NO
Are samples for human consumption/ use? ☐ YES ☐ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

LOGIN: Please send Total P to EDMONTON for Analysis

SAMPLE RECEIPT DETAILS (ALS use only)
Cooling Method: ☐ NONE ☐ ICE ☑ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED
Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO
Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
9.3				8.3			

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
Released by:	Date: Sep 30/21	Time: 3:10	Received by:	Date: Sep 30/21	Time: 15:10	Received by:	Date: 10/11/21	Time: 11:00

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY AUG 2020 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

9.3 6.8