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Evaluating a Change from Daily to Weekly Water Quality Testing at the City of Ottawa's Beaches

Prepared by Ottawa Riverkeeper
September 2025

Background

At the outset of the 2025 swim season, Ottawa Public Health (OPH) announced their decision to reduce recreational water quality sampling in the City of Ottawa at the five supervised City beaches from seven days per week (daily) to one day per week (weekly)[1]. Between 2014-2024, recreational water quality testing was completed by OPH on a daily basis.

Purpose

The purpose of this report is to determine if a more limited data set is sufficient to: 1) adequately inform residents of potential risks to swimmers; 2) analyse long-term trends; and 3) inform the management of beaches.

This report uses historical daily data collected by Ottawa Public Health at five City-run beaches from 2014 to 2024 to evaluate potential risks associated with the change to weekly sampling [2]. It also uses data collected throughout the 2025 swim season for all five beaches from OPH, as well as data for three beaches (i.e., Mooney's Bay, Petrie River, and Petrie East Bay) sampled two additional days per week by Ottawa Riverkeeper.

In 2025, OPH also made sweeping changes to the ways in which they communicate recreational water quality sampling results to the public. This report does not comment on those practices, though it is worth noting that Ottawa Riverkeeper has raised concerns regarding these changes and the tools provided for assessing water qualities for residents by OPH.

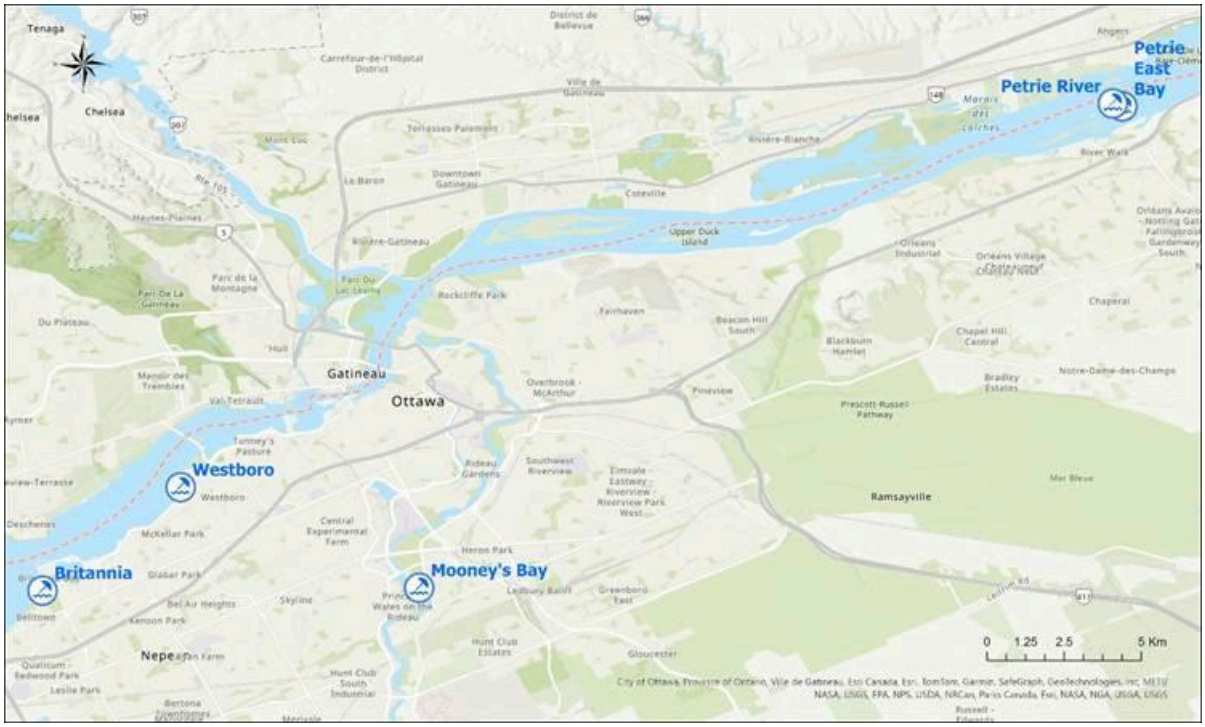


Figure 1. Locations of Public Beaches in Ottawa where Ottawa Public Health has been testing recreational water quality

Risks associated with swimming at beaches with poor recreational water quality

Recreational activities that involve direct or indirect contact with water can expose people to health risks when recreational water quality is poor. Primary contact activities (e.g., swimming, bathing, wading, windsurfing, waterskiing) and secondary contact activities (e.g., canoeing, fishing) become riskier when fecal contamination (*E. coli)* levels are elevated, as this significantly increases the likelihood of illness. *E. coli* is commonly used as an indicator of fecal contamination in recreational water quality as its presence indicates that other bacterium, viruses, and pathogens may also be present. Some strains of bacterium associated with *E. coli* have been shown to cause gastrointestinal illness, urinary tract infections, and, in rare cases, severe conditions such as hemorrhagic colitis, hemolytic uremic syndrome, and kidney failure [4].

In Canada, studies on recreational waterborne outbreaks are limited. However, research from the United States has documented an increase in such outbreaks in

recent years, linked to the growing popularity of recreational water use and increased exposure to poor recreational water quality [6].

Canada, known for its many lakes and rivers, has a strong culture of recreational water activities. A 2014–2015 study reported that approximately 13% of Canadians had gone swimming or visited a water body in the past seven days, with participation rising in recent years due to the expansion of recreational water facilities [7]. Importantly, the study also found that children aged 0–9 years experienced the highest levels of exposure, with more than 32% reporting swimming or visiting a water body within the past week. Children not only spend more time in the water but are also more likely to swallow it, further increasing their risk of enteric illness. Consequently, they are considered the most vulnerable population to waterborne diseases [7].

Recreational water use in conditions with poor recreational water quality poses health risks, yet illness is significantly underreported: "Recreational water illness (RWI) is under-reported and under-diagnosed in Canada, as those with self-limiting illness may not seek medical attention or submit samples for diagnosis, and illnesses may be misattributed to food-borne exposures. These illnesses have a significant burden and cost to society. Although we lack RWI burden data in Canada, approximately 90 million cases are estimated to occur in the US each year, costing US$2.2–3.7 billion annually (DeFlorio-Barker et al., 2018b)." [8]

False Negatives and False Positives – Retrospective Analysis

Recreational water quality in urban areas can change from day to day, due to a number of different factors, including combined sewer overflows, stormwater runoff, and the presence of wildlife. Many urban beaches are located in bays, and the flow of water in the rivers, as well as water levels, can change throughout the swim season. An evaluation of weekly testing at City-run beaches is necessary to determine if this reduction in sampling frequency accurately captures the true status of the water and the risk to swimmers.

When beaches are tested weekly and the results of this sample are extrapolated across the entire week, the test could potentially fail in two ways: the actual recreational water quality on a given day may fail, but the weekly result passes (a **false negative**), or a daily test may pass, but the weekly test fails (a **false positive**). This report uses historical data to simulate these scenarios for the five City-run beaches in Ottawa.

The failure results using weekly testing are shown in Figure 2 below. The average failure rate is lowest at Britannia, at 9.8%, and highest at Petrie East Bay, at 21%. The rates at Mooney's Bay, Petrie River, and Westboro are 14.9%, 16.7%, and 16.6%, respectively.

The most concerning issue is false negatives, cases where weekly testing indicates a pass (based on one sample per week), but daily testing shows actual failure. Petrie East Bay has the highest false negative rate at nearly 12%, while Britannia has the lowest at 5%. This is problematic because it suggests recreational water quality is below the recreational water quality guideline when it is not, potentially putting swimmers at risk.

Another consideration is that the rate of accuracy for the weekly testing is reflective of the recreational water quality at each of these beaches. Britannia has some of the best recreational water quality of the City-run beaches (Figure 5), whereas Petrie East Bay recreational water quality is, on average, poorer than the other beaches.

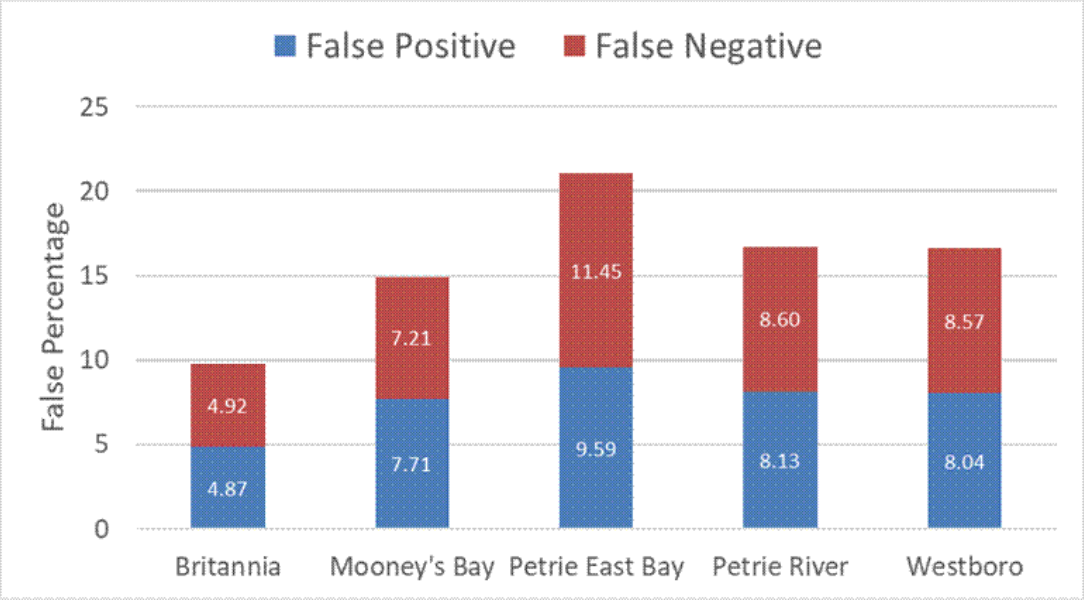


Figure 2. False Positives and False Negatives test weekly vs daily test (2014-2024)

Current recreational water quality guidelines

The current threshold used across the National Capital Region for a beach to pass the recreational water quality requires five samples taken at an equidistance across

the width of the swim area. Once the analysis for these samples is completed, an *E. coli* geomean concentration is calculated. The threshold for swimming is less than 200 cfu/100 mL. This is the threshold currently being followed, and for this reason this threshold is used in this evaluation.

It should be noted that in February of 2023, Health Canada released an updated *Guidelines for Canadian Recreational Water Quality* with a threshold of 235 cfu/100mL. Additional guidelines were provided should the geomean *E. coli* concentrations remain at or above 126 cfu/100mL for extended periods of time [3]. These new guidelines have not yet been adopted by provincial nor regional health authorities.

Consecutive recreational water quality failures

Recreational water quality at Ottawa beaches is generally good overall, but the data shows a concerning trend of declining recreational water quality that needs attention. Figure 3, below, illustrates the number of times each beach experienced two or more consecutive days of failing to meet recreational water quality standards. This number has increased in recent years, with all monitored beaches recording more than two such occurrences in the 2024 season alone (excluding Westboro Beach, which had no sampling data from 2022-24 due to renovations at this location). Notably, Petrie East Bay had six multi-day failures in three of the past five years.

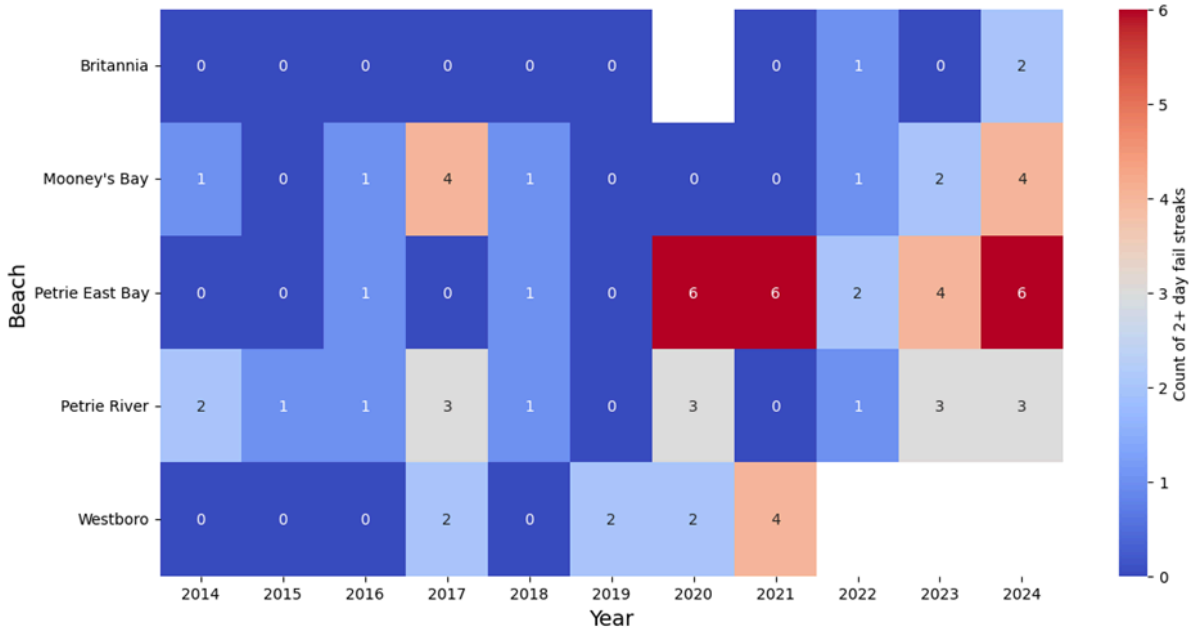


Figure 3. Number of multi-day recreational water quality failures (≥ 2 consecutive days)

The concern deepens when examining the maximum duration of consecutive failures at each beach, as shown in Figure 4. These failure streaks have been getting longer in recent years, with Petrie East Bay recording the longest with 14 consecutive days in 2020, and nearly a full week in 2024. These findings highlight the importance of daily recreational water quality monitoring at Ottawa beaches to help protect public health and ensure clarity regarding swimming conditions.

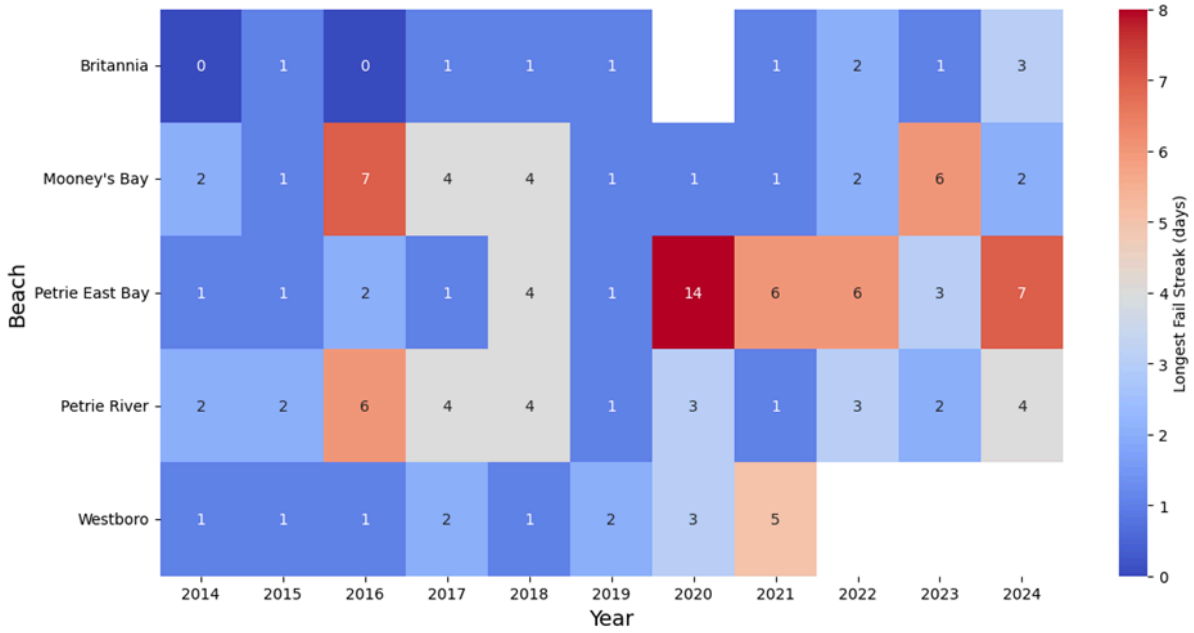


Figure 4. Maximum consecutive days of recreational water quality failures

Long-term trends in recreational water quality data

While Ontario's Operational Approaches for Recreational Water Guideline (2018) requires weekly sampling at a minimum, Health Canada's Guidelines for Canadian Recreational Water Quality (Third Edition) explains that: "[a]s a result of the significant day-to-day variation in faecal indicator counts that can be observed, even daily monitoring will not necessarily improve the ability of the current day's microbiological results to predict the next day's recreational water quality. However, the additional information provided by increasing the number of samples will allow the responsible authorities to more easily observe recreational water quality trends and to make more informed decisions regarding the area's overall suitability for recreation."

However, Figure 5 below shows an increasing trend of *E. coli* at all five City-run beaches. Under the City of Ottawa's approach of weekly testing in 2025, the data showed a noticeable change, with higher annual *E. coli* averages for most beaches, particularly at Petrie East Bay, where the average level is significantly higher than historical data, exceeding 500 cfu/100 ml. Similarly, the pass rate decreases below their historical average for all beaches, Figure 6 (all data). Surprisingly, the pass rate

for Petrie East Bay falls below 35% in 2025, less than half of the beach's average pass rate from 2014 to 2024.

The question is whether the recreational water quality at this beach is actually worsening, whether this is affected by the decreased testing frequency, or whether both factors are contributing. It is extremely challenging to draw effective conclusions when data is reduced from thirty results per month to four. Such a dramatic decrease in data means that results may skew high or low, leaving beach operators and the public without the critical mass of information needed to make informed decisions. Monitoring the poor recreational water quality frequently at Petrie East Bay, for example, will provide important data that can help understand what is occurring at this beach.

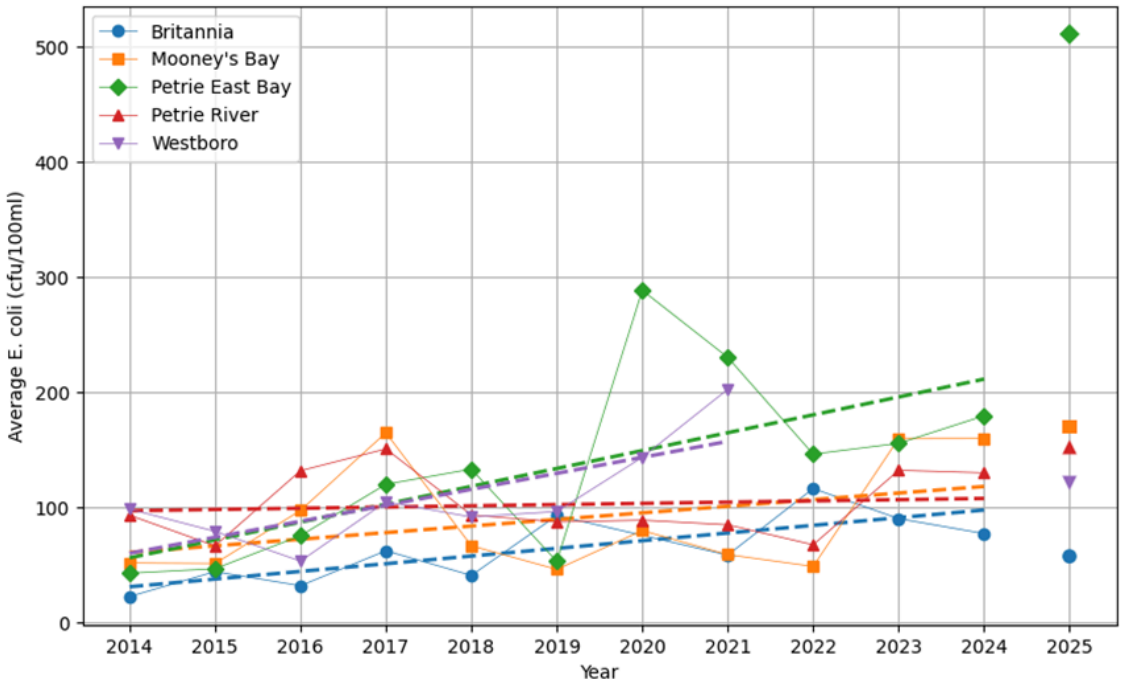
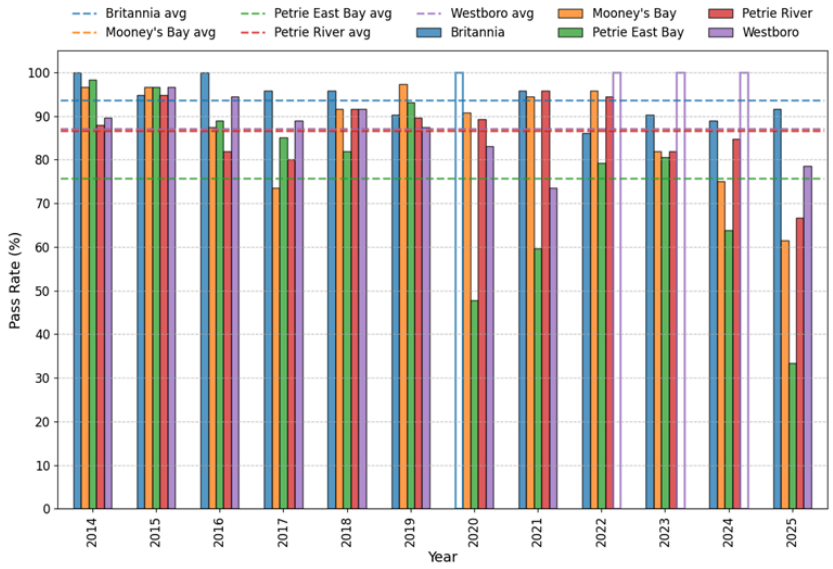


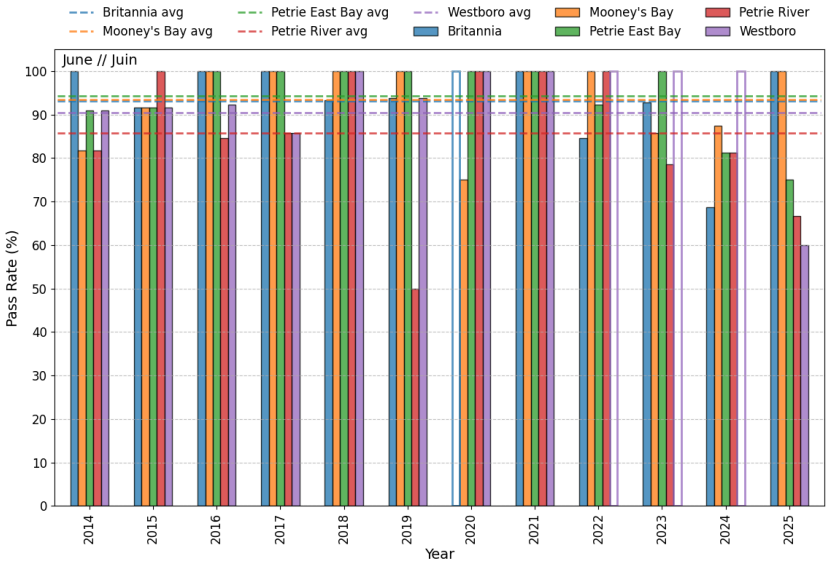
Figure 5: Average annual *E. coli* at five beaches from 2014 to 2025. Results from 2025 are based on weekly testing results, whereas results from 2014-2024 are based on daily recreational water quality testing.

Averaging the data for a full swim season doesn't allow for changes through the season to be properly captured. Below, in Figure 6, the pass rates for each beach using the data available from OPH have been charted. First, all the data for the whole year for each beach, followed by the same chart but for each month of the swim

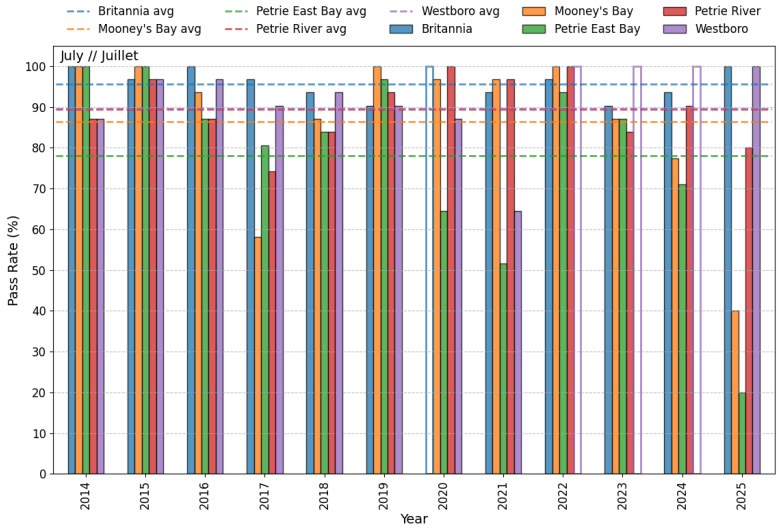
season. Based on the average pass rates for the beaches, the average pass rate drops as the season progresses, with a higher pass rate in June compared to August for all beaches.



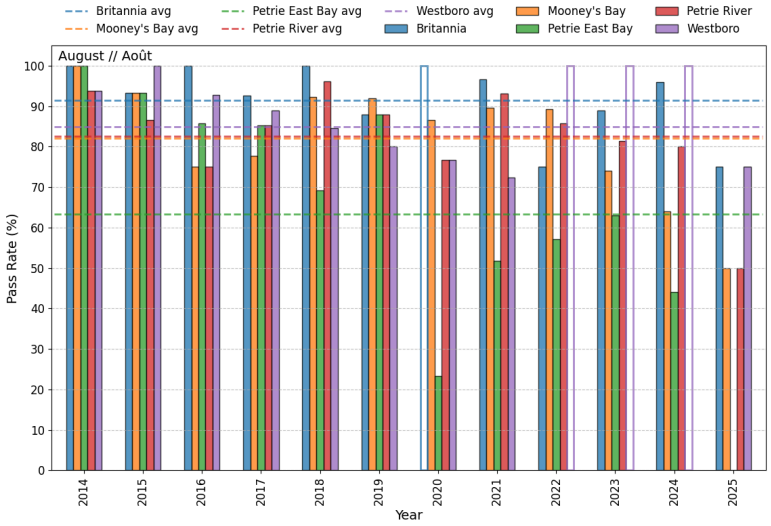
All data



June



July



August (Note: 0% pass for Petrie East Bay in 2025)

Figure 6: Annual pass rate at five beaches from 2014 to 2025 based on the data available from Ottawa Public Health for all years, and then for each month. Note: no-fill bars indicate beach closure for that year.

Comparing daily and weekly testing

In addition to weekly testing on Wednesdays by OPH, Ottawa Riverkeeper conducted sampling on two additional days per week at three beaches: Mooney's Bay, Petrie East Bay, and Petrie River. These beaches were selected due to the variability in recreational water quality captured through previous years of data collection. The results are shown in Figure 7 below and summarized in Table 4. The *E. coli* levels vary by beach, with Ottawa Riverkeeper data showing lower levels at Mooney's Bay and Petrie River and higher levels at Petrie East Bay compared to OPH data. Notably, Ottawa Riverkeeper testing also recorded several extreme values.

The data also show significant differences in pass rates. OPH results indicate a higher fail rate, especially at Mooney's Bay, where Ottawa Riverkeeper data were regularly much better than the recreational water quality results OPH had collected a few days earlier. These findings suggest that less frequent sampling may not fully capture or accurately reflect the true recreational water quality at these beaches. A summary of these results, Table 4, includes results for July and August in a separate column to reflect the same period of time during which samples were collected by Ottawa Riverkeeper.

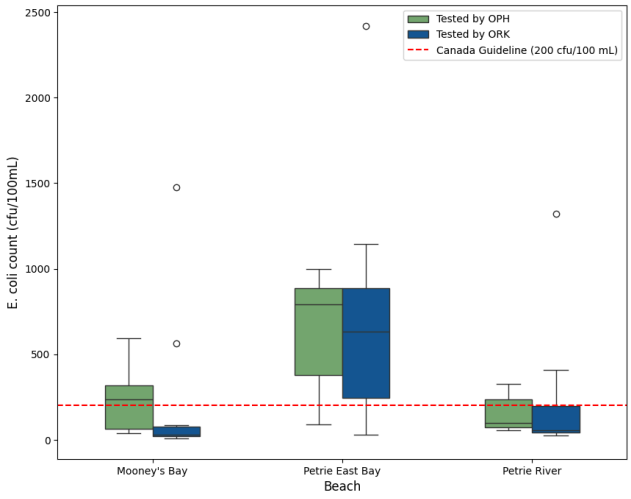


Figure 7. Results of E. coli monitoring by Ottawa Public Health (green) and Ottawa Riverkeeper (ORK) (blue) in 2025. These comparisons utilized July and August data to reflect when sampling occurred by both organizations

Table 4. Summary of results tested by OPH and ORK for 2025

Beach	Average (cfu/100ml)			Maximum (cfu/100ml)		Pass Rate (%)			
	OPH June - August	**OPH July & August**	**ORK July & August**	OPH	ORK	OPH June - August	**OPH July & August**	**ORK July & August**	**All data July & August**
Mooney's Bay	171	**258**	**159**	594	1,475	61.5%	**37.5%**	**87.5%**	**70.8%**
Petrie East Bay	511	**655**	**663**	1000*	>2,420	33.3%	**12.5%**	**20.0%**	**17.4%**
Petrie River	122	**165**	**191**	326	1,320	66.7%	**62.5**	**73.3%**	**69.6%**

**OPH maximum value appears to be capped at 1000 cfu/100ml*

Daily variability in recreational water quality

As mentioned earlier, recreational water quality can change daily depending on a variety of influences. Of note is how often recreational water quality is suitable for swimming at the beaches in the City of Ottawa. Figure 8 below includes some of these influences and the variability in the test results, where red indicates a daily test failure and blue indicates a daily test pass. Data for all other years can be found in Appendix A for a year-to-year comparison at each beach, while the daily variation is provided in Appendix B at the end of this report.

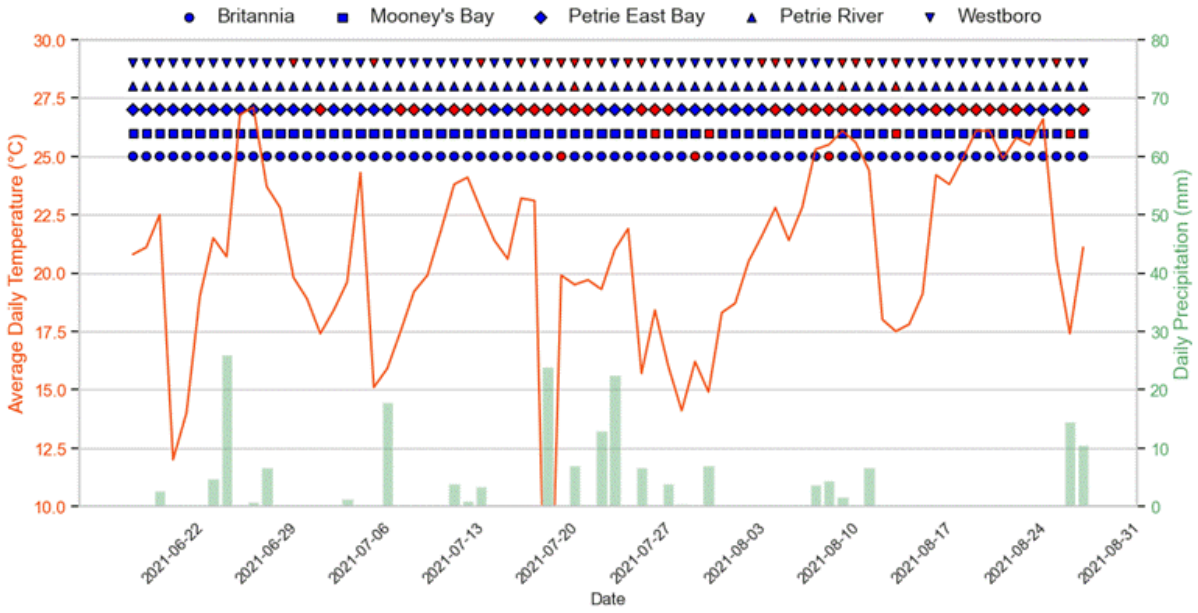


Figure 8. 2021 Recreational water quality test results: **Red** indicates a fail, **Blue** indicates a pass.

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Conclusions

The analysis of historical data from 2014 to 2024 demonstrates that recreational water quality at Ottawa's beaches can fluctuate significantly from day to day. Weekly sampling is not sufficient to capture these changes, nor is it sufficient when considering trends for each of the five City-run beaches.

Although City of Ottawa beaches tend to have good recreational water quality on average across historical data compared to other urban locations, the analysis also demonstrates that recreational water quality is, overall, decreasing at all five City-run beaches. This is a concerning finding. Ottawa Riverkeeper does not recommend reducing data collection at a time when recreational water quality is on a downward trend. Reinstating daily monitoring will prove to be a useful tool to determine the reasons for this trend and to inform decision-makers who are responsible for managing the City of Ottawa's beaches.

The strength of daily monitoring lies in providing better risk assessments, increased public trust in the system, and the ability to detect long-term patterns. Weekly testing cannot provide the same level of insight or responsiveness. Based on our analysis, Ottawa Riverkeeper believes that reducing the sampling frequency from daily to weekly compromises public health protection, removes valuable data that can support decision-making for City-run beaches, and does not properly support residents accessing the water for recreational use. Despite the limitations inherent in recreational water quality monitoring, daily results provide critical information that weekly results cannot.

To protect public health and maintain confidence in recreational water quality management, Ottawa Riverkeeper recommends that Ottawa Public Health reinstate daily recreational water quality testing at City-run beaches using an evidence-based approach.

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References

[1]. Going to the beach? Information to help you and your family stay safe, City of Ottawa
https://www.ottawa.ca/en/city-hall/city-news/newsroom/going-beach-information-help-you-and-your-family-stay-safe

[2]. Beach Water Sampling, Open Ottawa
https://open.ottawa.ca/documents/beach-water-sampling/about

[3]. Guidelines for Canadian Recreational Water Quality, Health Canada
https://www.canada.ca/content/dam/hc-sc/documents/services/publications/healthy-living/recreational-water-quality-guidelines-indicators-fecal-contamination/recreational-water-quality-guidelines-indicators-fecal-contamination.pdf

[4]. Guidelines for Canadian Recreational Water Quality: Indicators of Fecal Contamination,
https://www.canada.ca/en/health-canada/programs/consultation-guidelines-recreational-water-quality-fecal-contamination/document.html#_Toc59004937

[5]. Belgian Olympic team bows out of triathlon as teammate falls ill after swim in the Seine,
https://www.npr.org/2024/08/04/g-s1-15326/belgian-olympic-swimmer-seine-e-coli-triathlet#:~:text=Heavy%20rains%20can%20overwhelm%20the,%2C%20%22we%20did%20it!%22

[6]. Craun, G. F., Calderon, R. L. & Craun, M. F. Outbreaks associated with recreational water in the United States. International Journal of Environmental Health Research 15 (4), 243–262.

[7]. Janicki R, Thomas KM, Pintar K, Fleury M, Nesbitt A. Drinking and recreational water exposures among Canadians: Foodbook study 2014–2015. Journal of Water and Health. 2018;16(2):197–211. doi: 10.2166/wh.2018.261.

[8]. Young I, Sanchez JJ, Tustin J. Recreational water illness in Canada: a changing risk landscape in the context of climate change. Canadian Journal of Public Health. 2022;113(6):940–943. doi: 10.17269/s41997-022-00688-8.

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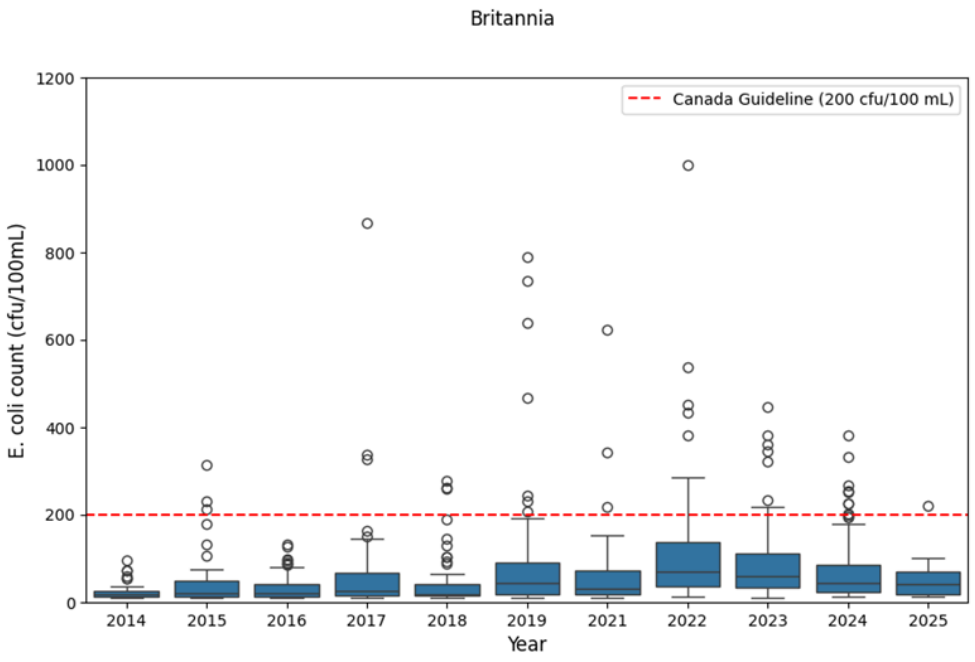
Appendix A: Boxplot of E. coli results at City of Ottawa Public beaches 2014 to 2025, Ottawa Public Health Data

How to read a boxplot

In this report, the boxplot has been frequently employed as an effective tool to display and compare results. In a box plot, the box represents the interquartile range (IQR), covering the middle 50% of the dataset from the 25th to the 75th percentile. The line inside the box denotes the median (50th percentile) of the entire dataset. Outliers, marked with black circles, are values considered significantly larger or smaller than the rest of the data. The advantage of using a boxplot is that it displays the entire dataset along with key statistical measures such as the median, quartiles, and outliers, making it easy to compare between multiple datasets or groups.



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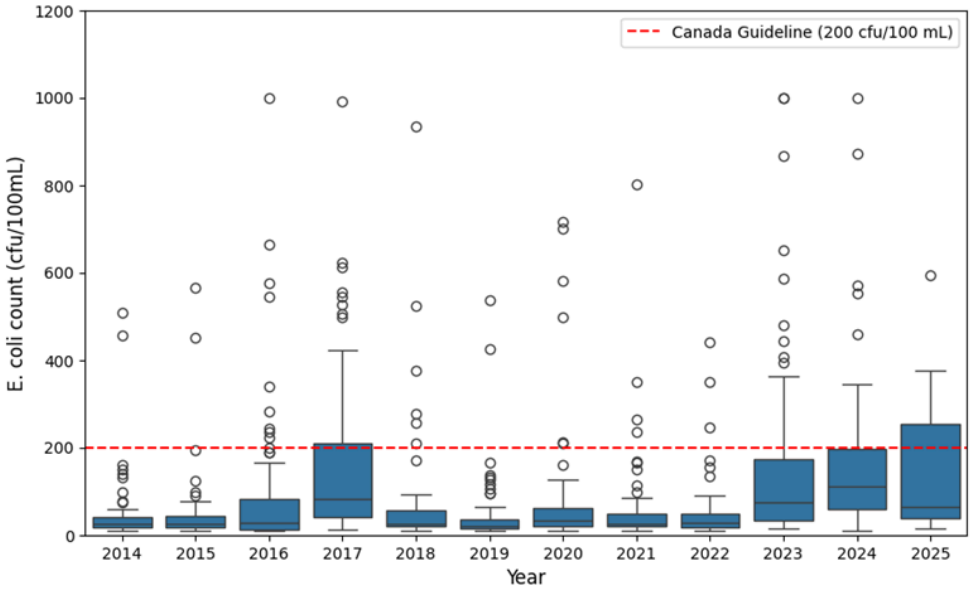
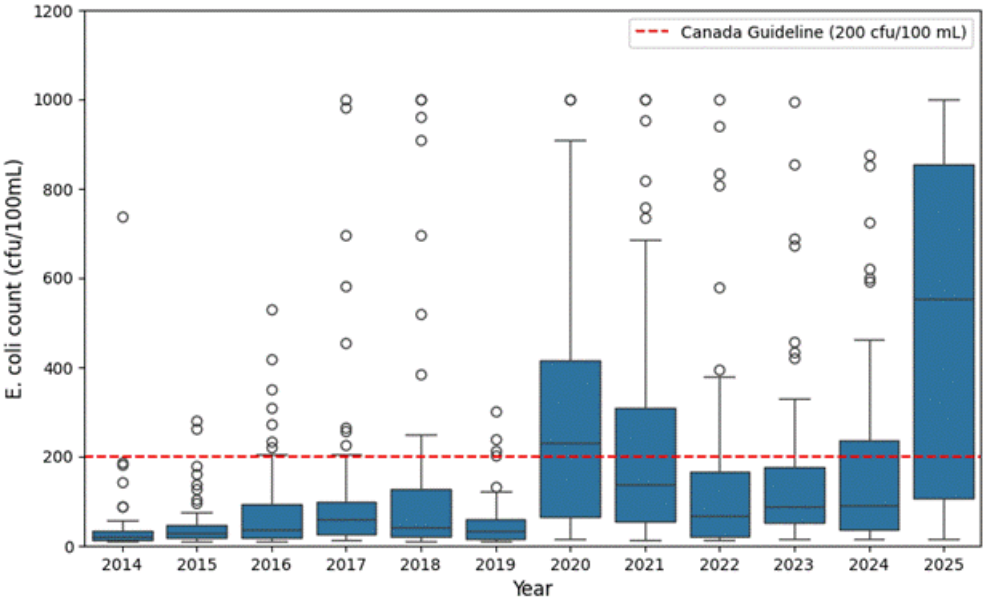
Mooney's Bay



Petrie East Bay



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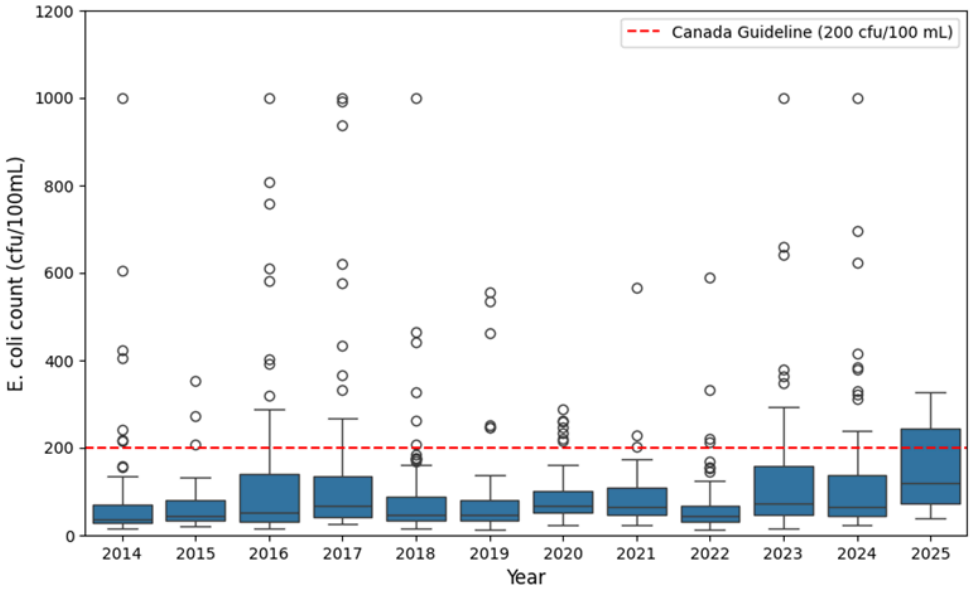
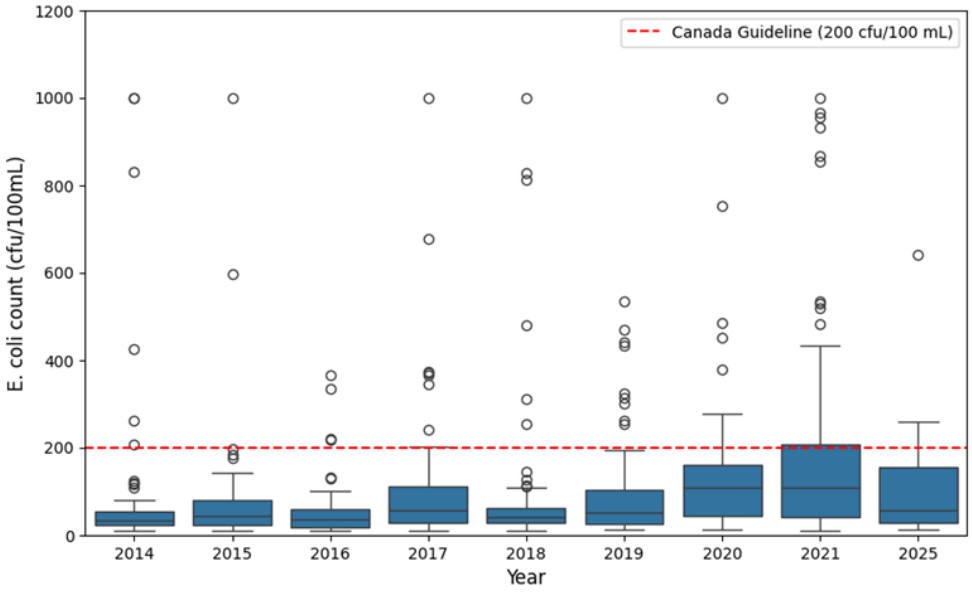
Petrie River



Westboro



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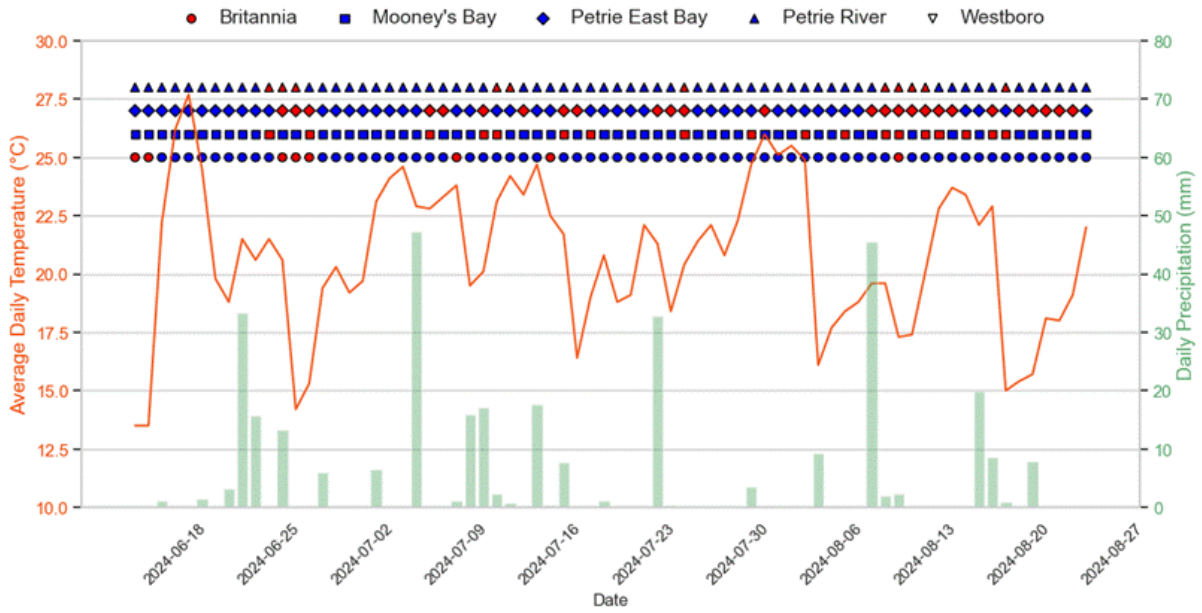
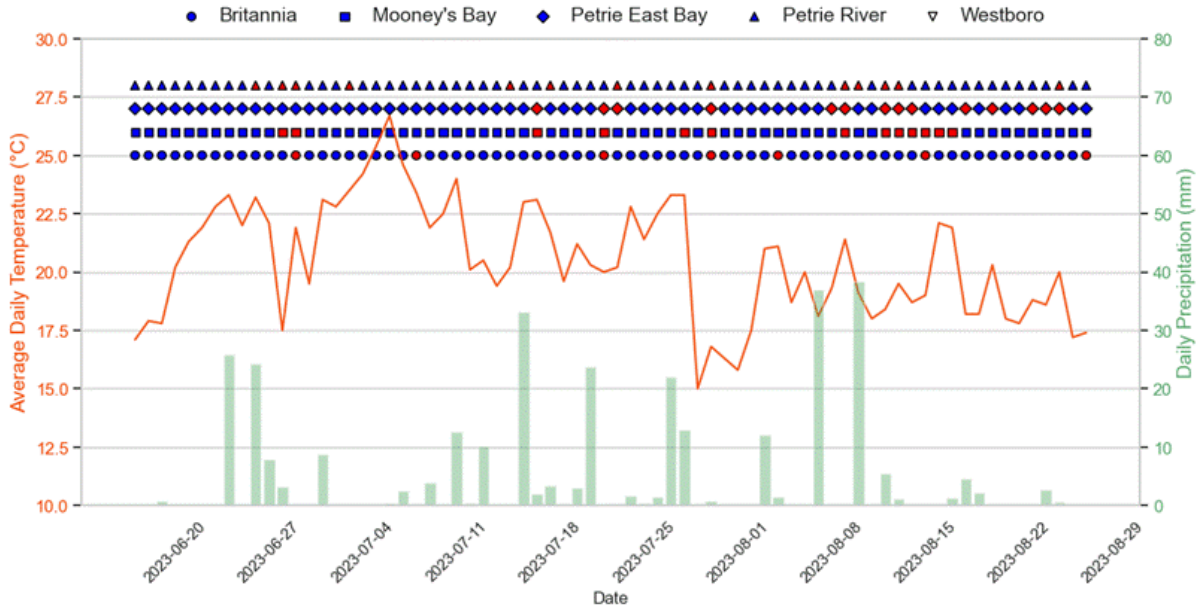
Appendix B: Recreational Water Quality Test Results from 2014 to 2024 (Red indicates a fail, blue indicates a pass)





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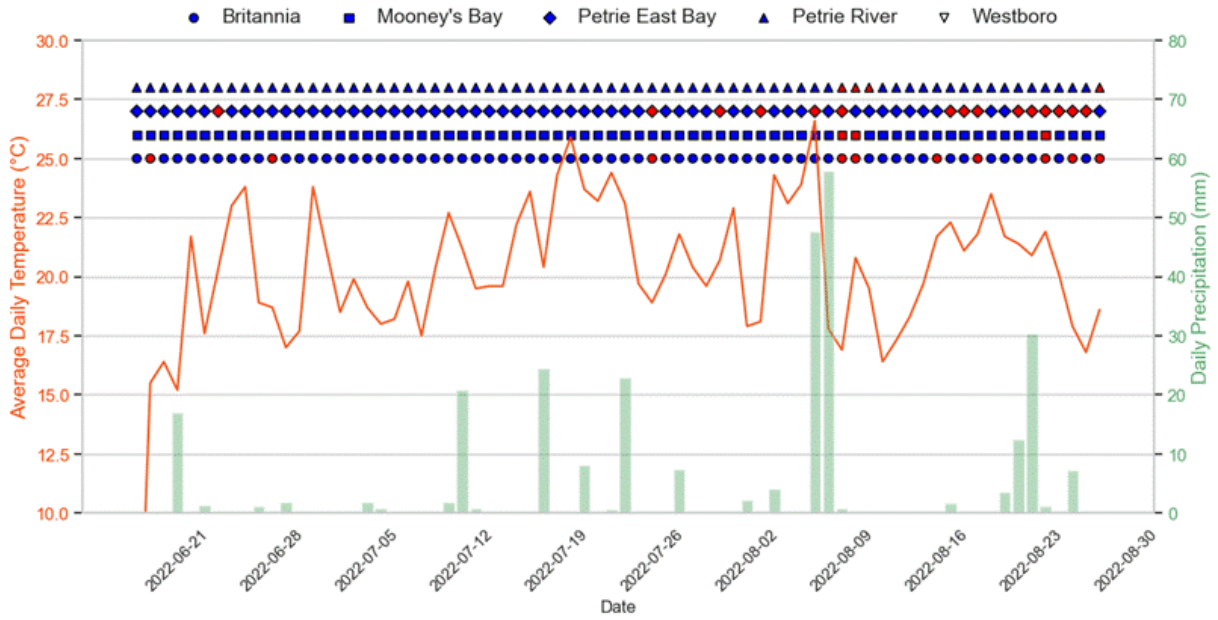

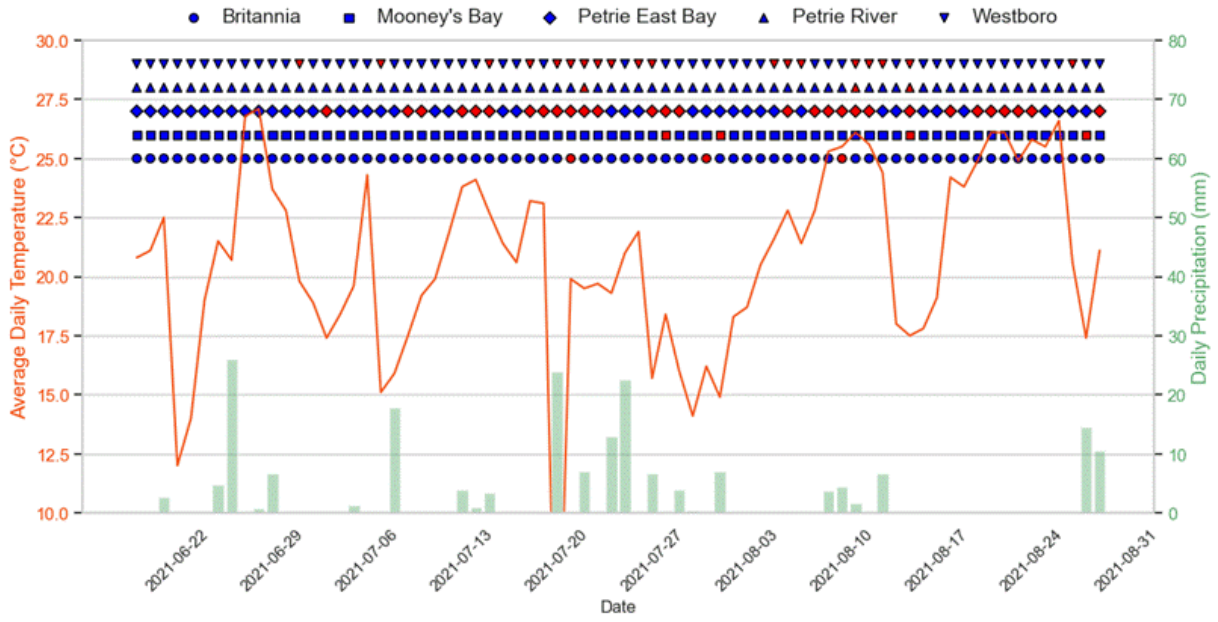

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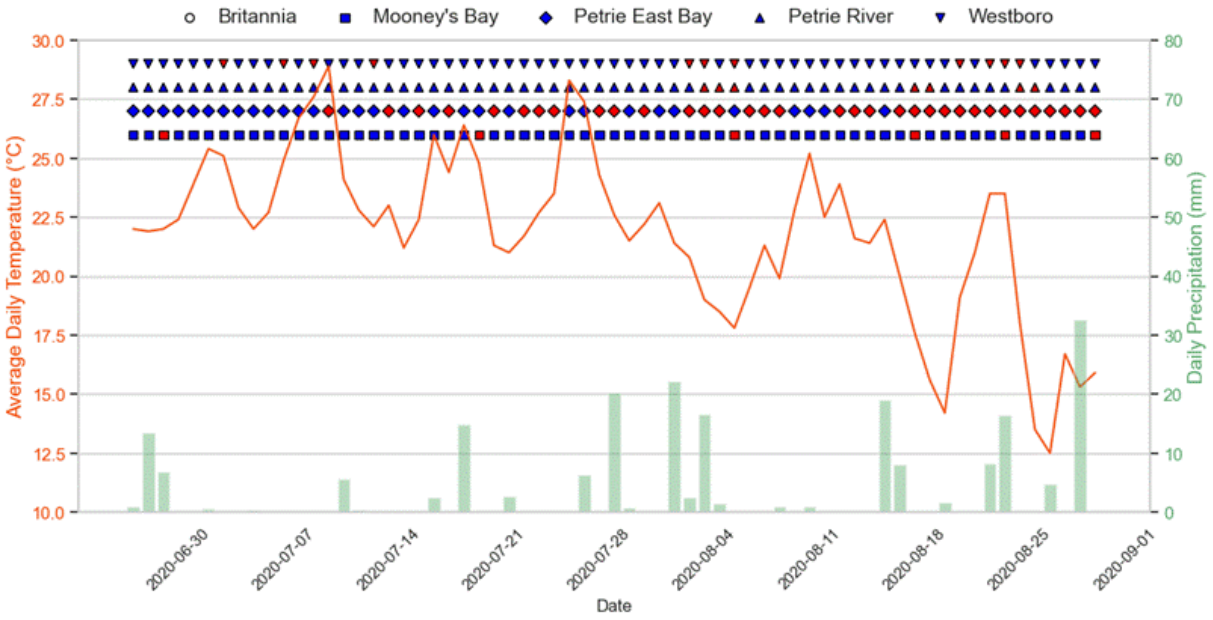

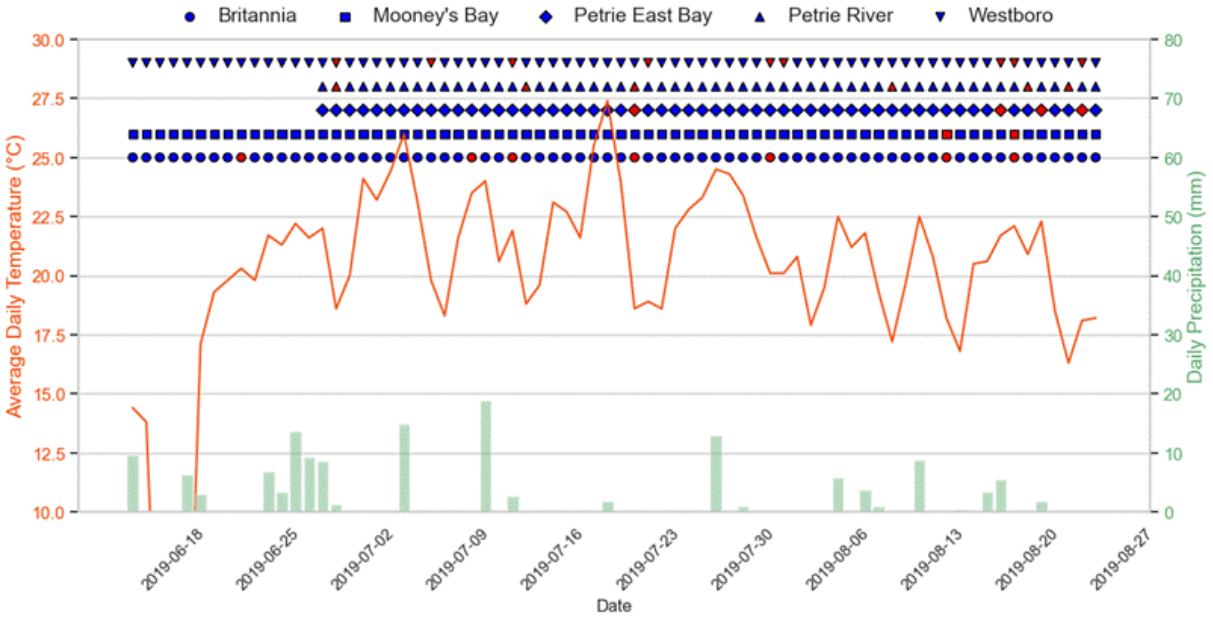

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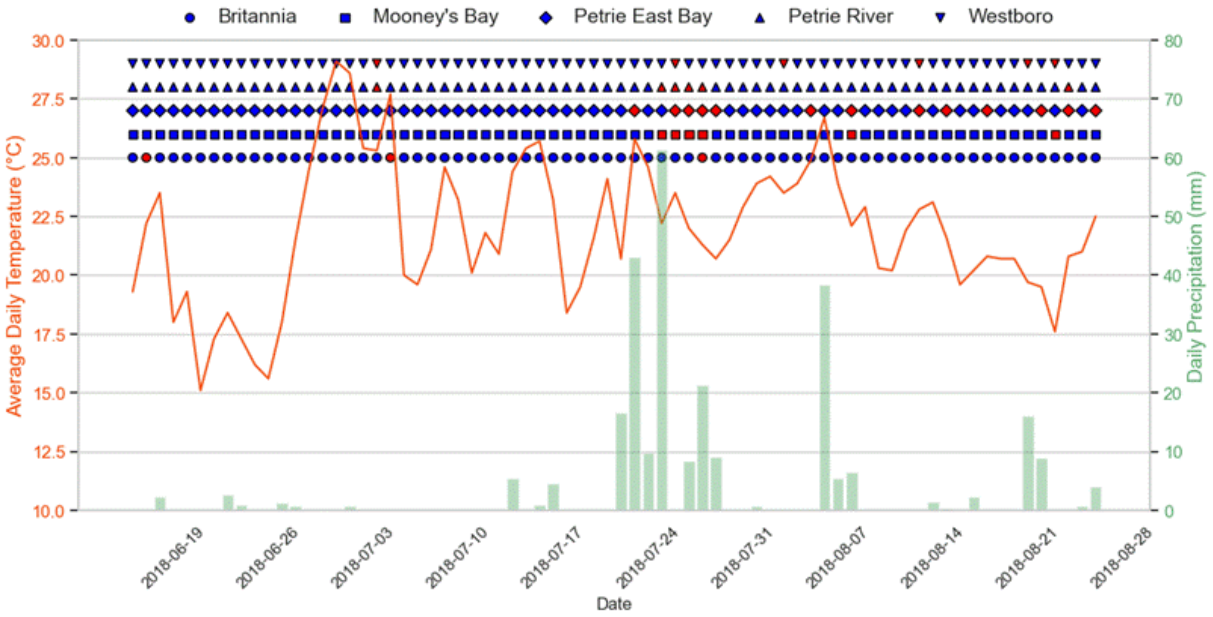

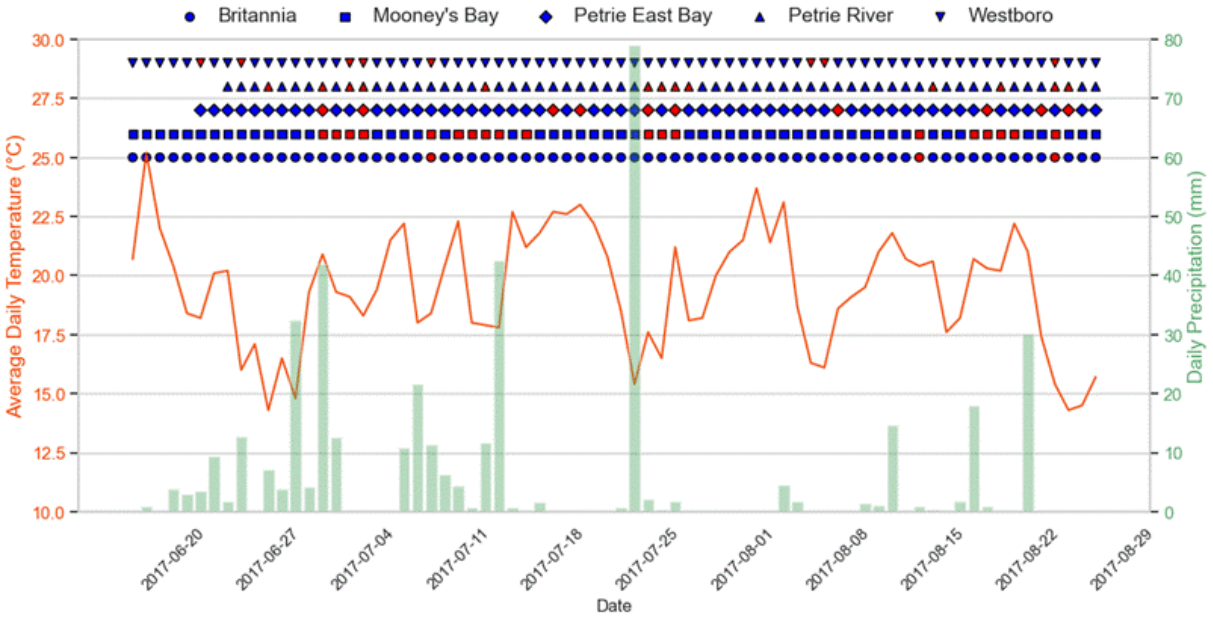

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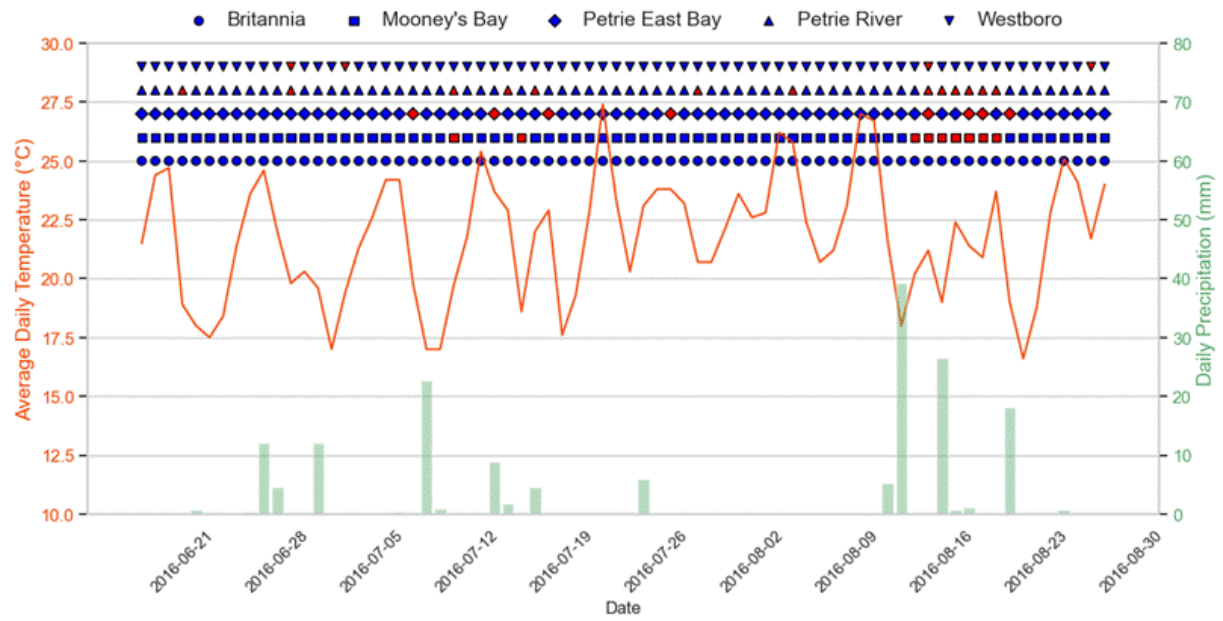

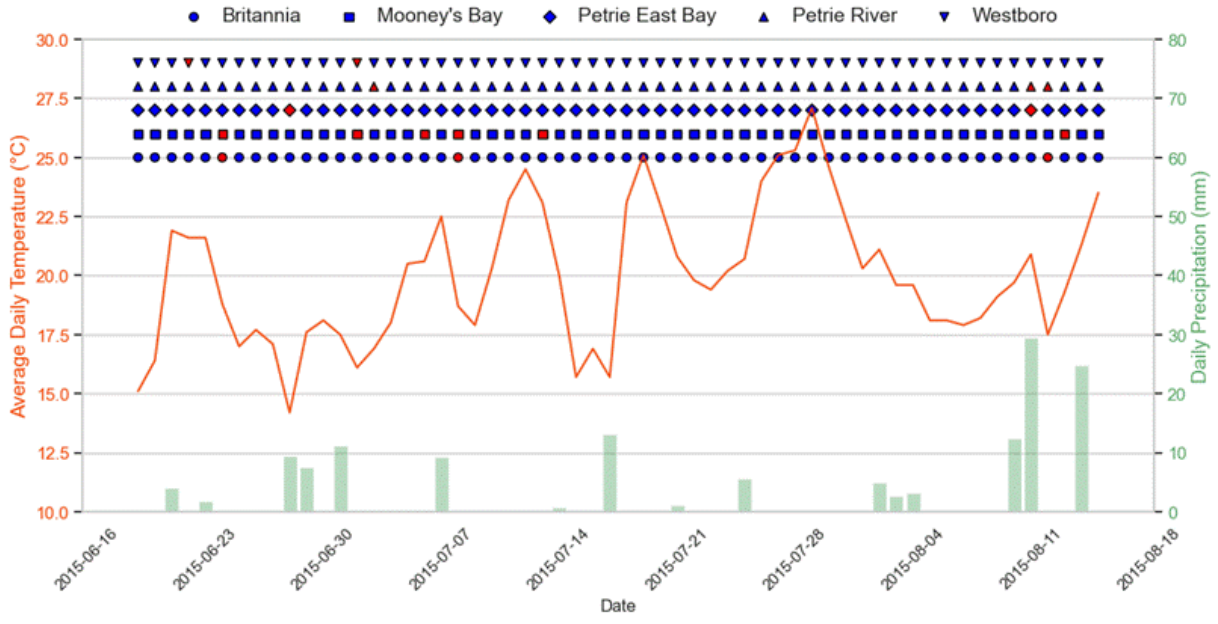

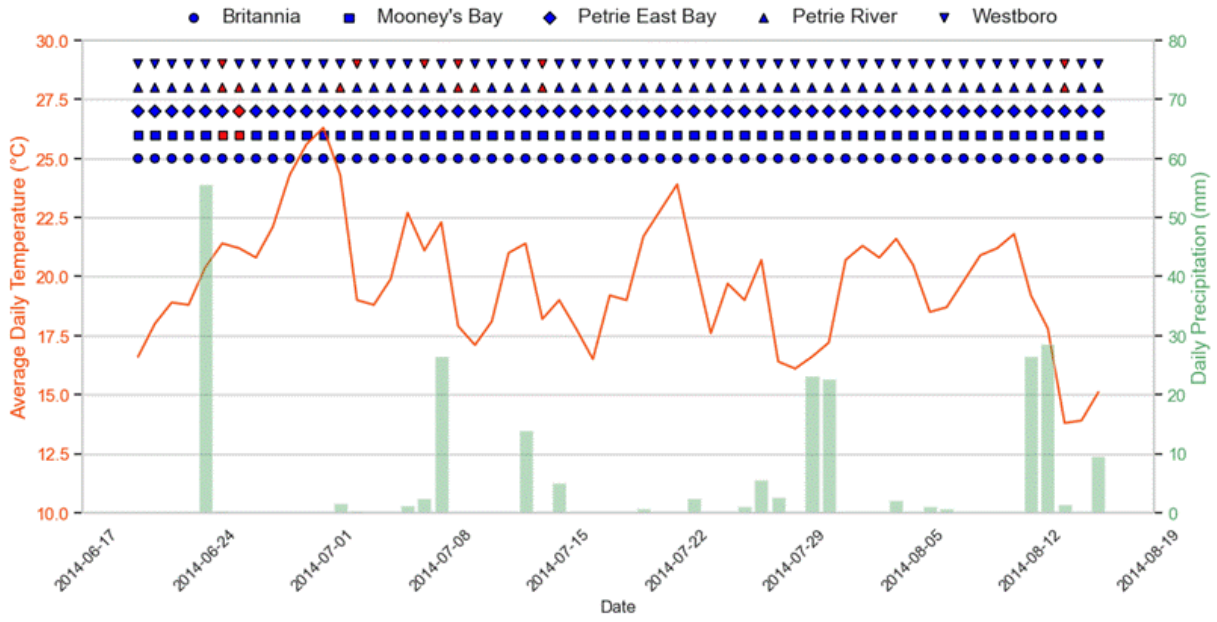
Britannia
Mooney's Bay
Petrie East Bay
Petrie River
Westboro
Average Daily Temperature (°C)
Daily Precipitation (mm)
Date
30.0
27.5
25.0
22.5
20.0
17.5
15.0
12.5
10.0
80
70
60
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2014-07-01
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2014-07-15
2014-07-22
2014-07-29
2014-08-05
2014-08-12
2014-08-19