

# Water Services' Summary Report

**January 1, 2023, to December 31, 2023**

## **Guelph Drinking Water System**

Corporation of the City of Guelph

## **Gazer Mooney Subdivision Distribution System**

Township of Guelph/Eramosa



**Water Services**

**Environmental Services Department**

Last Revision: 1

As per the Accessibility for Ontarians with Disabilities Act (AODA), this document is available in an alternate format by e-mailing [waterservices@guelph.ca](mailto:waterservices@guelph.ca) or by calling 519-837-5627; TTY: 519-837-5688 or text 226-821-2132.

This page left intentionally blank.

Contents

January 1, 2023, to December 31, 2023 ..... 0

    Water Services ..... 0

    Environmental Services Department ..... 0

List of Tables ..... ii

List of Figures ..... ii

Water Services’ Summary Report ..... 1

    Purpose ..... 1

    Scope ..... 1

    Notice ..... 2

Systems Overview ..... 2

    Guelph Drinking Water System ..... 2

        Water Distribution System ..... 3

        Guelph Source Water and Treatment Facilities ..... 3

    Gazer Mooney Subdivision Distribution System ..... 5

Quality Management System ..... 6

    Management Review ..... 6

Regulatory Compliance ..... 7

    Compliance with Terms and Conditions of System Approval and Other Orders ..... 7

    Guelph Drinking Water System ..... 8

    Gazer Mooney Subdivision Distribution System ..... 8

Operational Performance ..... 10

    2023 Totalized Pumpages and Instantaneous Flows ..... 10

    Water Production, Consumption and Population ..... 12

Appendix A: Management Review Minutes ..... 16

Appendix B: Total Water Pumped and Instantaneous Flows ..... 24

    City of Guelph Water Services – Treated Water Pumpages, January 1, 2023 – December 31, 2023 ..... 25

    City of Guelph Water Services – Permit-to-Take-Water Raw Pumpages, January 1, 2023 – December 31, 2023 ..... 27

    City of Guelph Water Services – Permit-to-Take-Water Instantaneous Flows, January 1, 2023 – December 31, 2023 ..... 31

## List of Tables

|   |    |
|---|----|
| Table 1 Summary of Non-Compliance events and actions taken .....                        | 9  |
| Table 2: Permitted Rates and Point of Entry Firm Capacities of Water Supply Wells ..... | 14 |
| Table 3: Treated Water Pumpages, 2023 .....   | 25 |
| Table 4: Permit-To-Take-Water Raw Pumpages, 2023 .....                                  | 27 |
| Table 5: Permit-to-Take-Water Raw Pumpages, 2023 .....                                  | 29 |
| Table 6: Permit-to-Take-Water Instantaneous Flows, 2023 .....                           | 31 |
| Table 7: City of Guelph - Instantaneous Flow Summary, 2023 .....                        | 33 |

## List of Figures

|   |    |
|---|----|
| Figure 1: Guelph Drinking Water System .....  | 4  |
| Figure 2: Gazer Mooney Subdivision Distribution System .....                            | 6  |
| Figure 3: Totalized Treated Water Pumpages, 2021-2023 .....                             | 11 |
| Figure 4: Guelph Water Production vs. Water Consumption vs. Population, 2013-2022 ..... | 13 |

# Water Services' Summary Report

## Purpose

This report is intended to provide Guelph City Council, as “Owners” of the drinking water system, an understanding of the status of the City of Guelph’s Drinking Water System for the reporting period of January 1, 2023, to December 31, 2023.

Second, the Safe Drinking Water Act (SDWA) (2002) mandates that it is the responsibility of the municipality to:

- Recognize that the people of Ontario are entitled to expect their drinking water to be safe; and,
- Provide for the protection of human health and the prevention of drinking water health hazards through the control and regulation of drinking water systems and drinking water testing.

Finally, this report has also been prepared to satisfy the requirements of Schedule 22, O. Reg. 170/03 (Summary Reports for Municipalities).

For the 2023 reporting period, a separate Annual Report, which contains data related to annual testing and sampling parameters, was prepared to fulfill Section 11 of O. Reg. 170/03. This report will be posted on the City’s website by February 28, 2024.

## Scope

This Water Services Summary Report includes information from both the **Guelph Drinking Water System** and the **Gazer Mooney Subdivision Distribution System** for the period of January 1, 2023 to December 31, 2023, unless otherwise noted. The information is required to be reported to the following:

- the Drinking Water System Owners:
  - Guelph City Council
  - Township of Guelph/Eramosa (Council and CAO).
- Senior officials of Guelph Environmental Services and Township of Guelph/Eramosa; and
- the general public and interested stakeholders.

A copy of this report is available for viewing at:

- **Online** at [guelph.ca/water-testing](http://guelph.ca/water-testing)

- <https://guelph.ca/plans-and-strategies/performance-reporting/>

"Please consider the environment - review the digital copy of the report, instead of printing it.

Any inquiries can be made to:

- City of Guelph Water Services by e-mailing [waterservices@guelph.ca](mailto:waterservices@guelph.ca) or by calling 519-837-5627.
- Township of Guelph/Eramosa Public Works – Water / Wastewater by e-mailing [general@get.on.ca](mailto:general@get.on.ca) or by calling 519-856-9596.

## **Notice**

Please note that every reasonable effort is made to ensure the accuracy of this report. This report is published with the best available information at the time of publication. In the event that errors or omissions occur, the online report will be updated. Please refer to the online version of the report for the most current version.

## **Systems Overview**

### **Guelph Drinking Water System**

Water Services at the City of Guelph is committed to providing consumers with a safe, consistent supply of high-quality drinking water while meeting or exceeding, and continually improving on legal, operational, and quality management system requirements. Water Services strives to provide reliable and cost-effective water treatment and distribution systems for the safe production and delivery of high-quality water. Established in 1879, Water Services is a municipally owned and operated water utility.

The Guelph Drinking Water System is classified as a Class II Water Treatment Subsystem and a Class IV Water Distribution Subsystem. All necessary licences have been obtained by staff to operate the Guelph Drinking Water System. As of December 31, 2023, 26 team members held drinking water certificates to operate and maintain the water system.

In 2023, Water Services maintained full accreditation to the DWQMS Version 2.0 after a successful on-site verification audit, conducted by the third-party accreditation body - NSF International Strategic Registrations. This accreditation satisfies part of the requirements under the Municipal Drinking Water Licensing Program.

## Water Distribution System

The distribution system (including watermains, valves, fire hydrants, water services, and meters) serves a population of approximately 146,175<sup>1</sup> within the City of Guelph. All new system components meet NSF 61<sup>2</sup> and NSF 372<sup>3</sup> requirements, or approved equivalents, and are installed and maintained in accordance with approved industry standards. Water system customers are fully metered and billed in accordance with the Water and Wastewater Customer Rates and Charges by-law. For more information on water rates, please refer to [My water bill and rates](#) on the City of Guelph website.

The Guelph Drinking Water System distribution system is comprised of the following infrastructure:

- 6.47 kilometres of a 900-1,050 mm diameter water supply aqueduct,
- five underground storage reservoirs with a combined approximate capacity of 48,000 cubic metres (48 million litres),
- three water towers with a combined approximate capacity of 11,200 cubic metres (11.2 million litres),
- approximately 563.0 kilometres of in service buried watermain with a diameter < 900 mm,
- 4,316 watermain valves,
- 2,868 fire hydrants; and
- approximately 47,762 water services connections and water meters.

## Guelph Source Water and Treatment Facilities

The source of Guelph's drinking water is a series of 21 operational groundwater wells and a shallow groundwater collector system. The drinking water sources consist primarily of true groundwater, with some "groundwater under the direct influence of surface water with effective in-situ filtration" (GUDI-WEF) sources. The GUDI-WEF sources include Carter Well 1 and 2; Arkell 1; Arkell 15; and the Arkell Springs Glen Collector System.

Figure 1: Guelph Drinking Water System shows the locations of the Guelph Drinking Water System facilities as of January 2024.

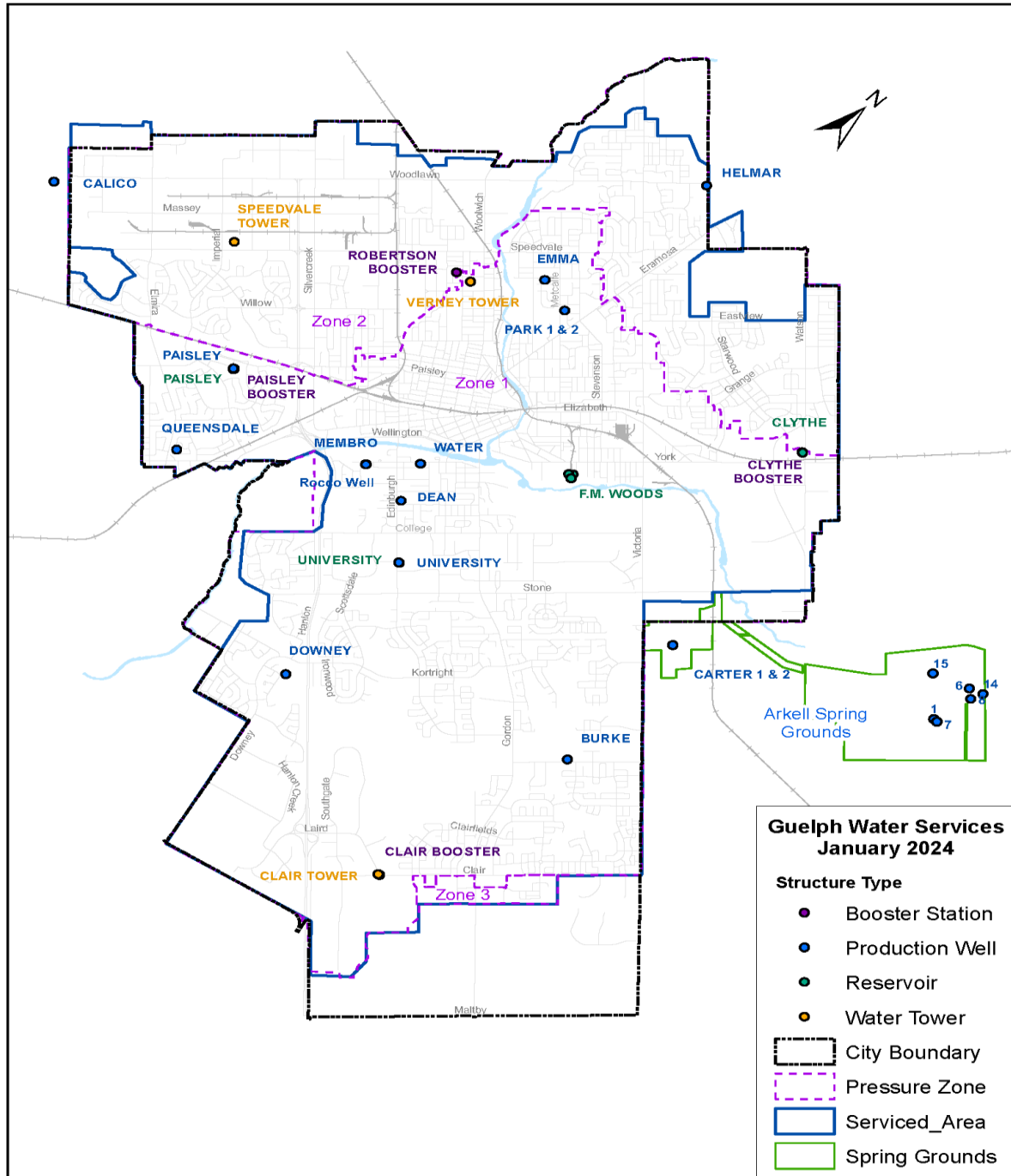
---

<sup>1</sup> City of Guelph census equivalent population estimate for end of year in 2022.

<sup>2</sup> NSF/ANSI Standard 61: Drinking Water System Components – Health Effects

<sup>3</sup> NSF/ANSI Standard 372: Drinking Water System Components – Lead Content

Figure 1: Guelph Drinking Water System





## Gazer Mooney Subdivision Distribution System

The Gazer Mooney Subdivision Distribution System is a Class 1 Distribution Subsystem that serves approximately 209<sup>4</sup> people and is owned by the Township of Guelph/Eramosa. The system is operated by Guelph Water Services through a legal agreement that was signed by representatives of the City of Guelph and the Township of Guelph/Eramosa. The current agreement came into effect on March 1, 2019 and will continue until February 29, 2024 and will be automatically renewed and extended to February 28, 2029, unless terminated earlier.

All of the water for the Gazer Mooney Subdivision Distribution System is supplied from the Guelph Drinking Water System. All water is treated to provincial standards in the Guelph Drinking Water System and no further treatment chemicals are added to the Gazer Mooney Subdivision Distribution System.

The Gazer Mooney Subdivision Distribution System is comprised of the following infrastructure:

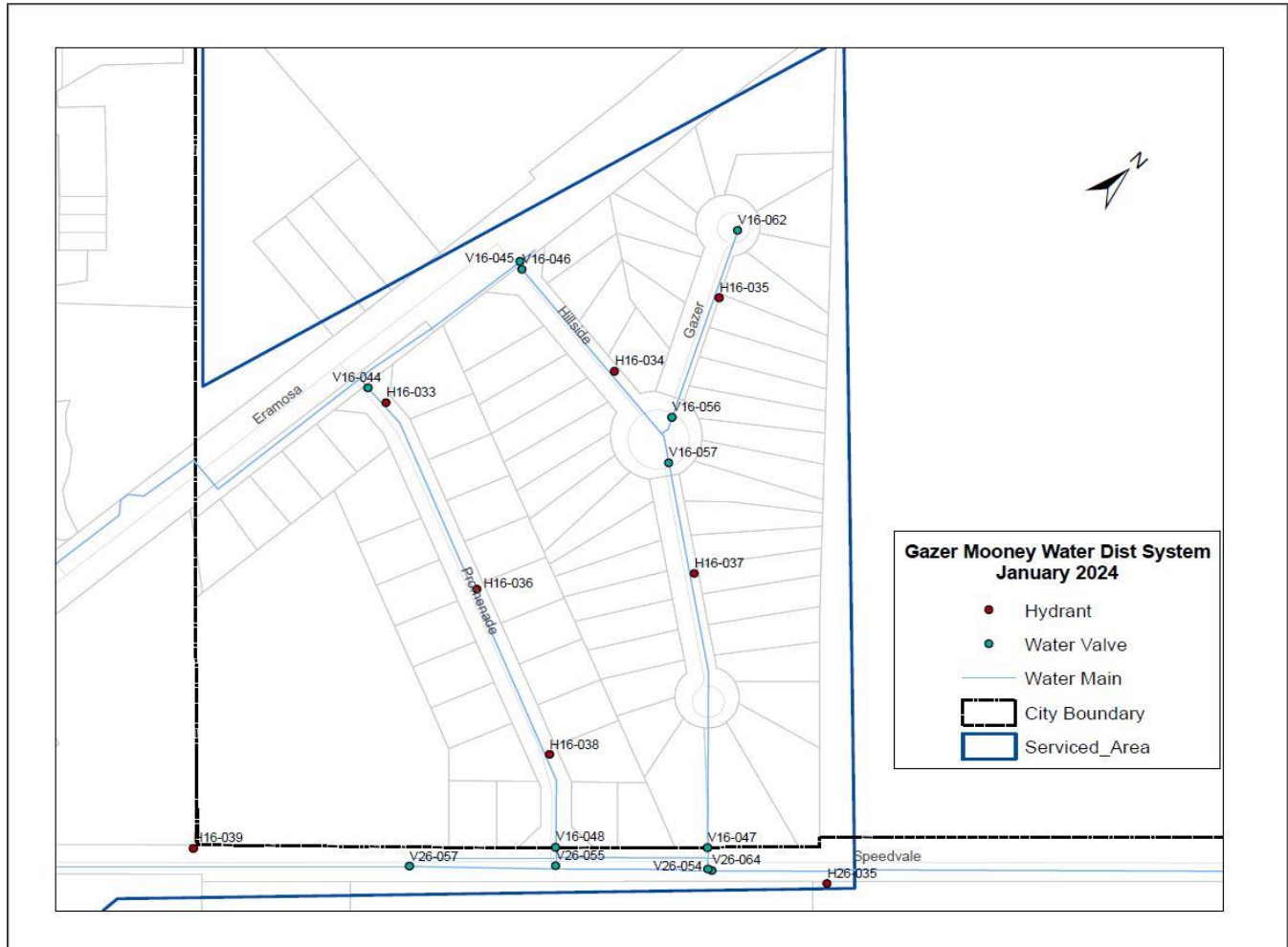
- approximately 650 metres of 200mm diameter watermain;
- approximately 600 metres of 150mm diameter watermain;
- six watermain valves;
- six fire hydrants;
- one sampling station; and
- approximately 72 water services and water meters.

An overview of the Gazer Mooney Subdivision Distribution System is illustrated in [Figure 2: Gazer Mooney Subdivision Distribution System](#).

---

<sup>4</sup> Estimated, based on 72 water connections multiplied by 2.9 people per household (as per Statistics Canada for low density residential).

**Figure 2: Gazer Mooney Subdivision Distribution System**



## Quality Management System

### Management Review

At least once every calendar year, Water Services’ Management and other key members from Water Services’ support teams meet to evaluate the adequacy and effectiveness of Water Services’ Quality Management System (QMS). Key information reviewed at the meeting, includes, but is not limited to incidences of regulatory non-compliance and corrective actions taken. The results of the meeting, including decisions or action items to prompt changes and improvements in Water Services’ QMS are communicated to City of Guelph (owner of the Guelph Drinking Water System) and Township of Guelph/Eramosa

Council (owner of the Gazer Mooney Subdivision Distribution System) by inclusion in this report, see [Appendix A: Management Review Minutes](#).

The review provides evidence of continued endorsement and commitment to the QMS from Water Services Management and other key members from Water Services' support teams.

## **Regulatory Compliance**

### **Compliance with Terms and Conditions of System Approval and Other Orders**

The City of Guelph fulfilled the requirements of the Safe Drinking Water Act, its regulations and the terms and conditions of the Municipal Drinking Water Licences and Drinking Water Works Permit for the Guelph Drinking Water System and the Gazer Mooney Subdivision Distribution System; exceptions, if any, are detailed in Table 1: Summary of non-compliance events and actions taken.

As the Operating Authority for both the Guelph Drinking Water System and the Gazer Mooney Subdivision Distribution System, Guelph Water Services' is inspected annually by the Ministry of the Environment, Conservation and Parks (Ministry) for compliance with regulatory requirements.

Table 1: Summary of Non-compliance events and actions taken, includes non-compliance events that were identified by the Ministry in the 2022-2023 drinking water inspection of the Guelph Drinking Water System and Gazer Mooney Subdivision Distribution System (see Table 1 below) the table includes a non-compliance event that was self identified by Water Services in 2023 (see item 1 in Table 1 below).

The annual MECP Inspection for the Guelph Drinking Water System which began November 6, 2023 was still in-progress at the time of this report. Any updates related to regulatory compliance, coming out of the Inspection Reports (once received), will be captured in the 2024 Water Services Summary Report. Gazer Mooney Subdivision Distribution System inspection was completed and MECP issued a report on January 18, 2024.

Table 1: Summary of Non-compliance events and actions taken, excludes any non-compliance events that were previously reported in the 2022 Water Services Summary Report.

## **Guelph Drinking Water System**

There was one (1) incident of non-compliance associated with the Guelph DWS in 2023. For details, please refer to [Table 1: Summary of Non-compliance events and actions taken.](#)

## **Gazer Mooney Subdivision Distribution System**

There were zero (0) incidents of non-compliance in the Gazer Mooney SDS in 2023.

**Table 1 Summary of Non-Compliance events and actions taken**

| # | Drinking Water System        | Legislative Requirement   | Statement of Non-compliance   | Corrective Action  |
|---|------------------------------|---|---|--|
| 1 | Guelph Drinking Water System | <p>All parts of the drinking water system in contact with drinking water that are added, modified, replaced, extended shall be disinfected in accordance with a procedure approved by the Director or in accordance with the applicable provisions of the ministry’s 2020 Watermain Disinfection Procedure, that is referred in city’s Municipal Drinking Water Works Permit (DWWP) under section 2.0- Alterations to the Drinking Water System</p> <p>Operating Authorities shall use Certified Operators for activities that must be performed by a Certified Operator.</p> <p>Activities performed on Isolated watermains are not required to be</p> | <p>May 16, 2023 a city contractor preformed wet tap on the city’s watermain that was not isolated from rest of the drinking water subsystem, the person that performed the wet tap on the watermain was not a Ministry of Environment, Conservation and Parks (MECP) certified operator. There was no other certified drinking water operator on site directly supervising the wet tap.</p> | <p>Ministry of Environment, Conservation and Parks (MECP) informed of the non-compliance that was identified by city’s water services.</p> <p>An internal memo was sent to Engineering and Transportation Services outlining the regulatory requirements to have a certified operator on site for performing operational activities on city’s live watermain.</p> <p>A training course on ‘New Watermain Commissioning’ is scheduled for March 26 and March 27,2024 for staff responsible for installation and replacement watermains</p> <p>A letter from Engineering and Transportation Services has been sent to the contractor informing</p> |

| # | Drinking Water System | Legislative Requirement          | Statement of Non-compliance | Corrective Action   |
|---|-----------------------|----------------------------------|-----------------------------|---|
|   |                       | performed by Certified Operators |                             | them of the non-compliance, the contractor has been advised to ensure a MECP certified city's drinking water operator is on site supervising live wet taps. |

## Operational Performance

The following section describes Operational Performance statistics of Guelph's Water Services that includes:

- 2023 Totalized Pumpages as per the Municipal Drinking Water Licence and Permits to Take Water;
- 2023 Instantaneous Flows as per Permit to Take Water;
- Water Production, Consumption and Population;
- Water Supply Capacity.

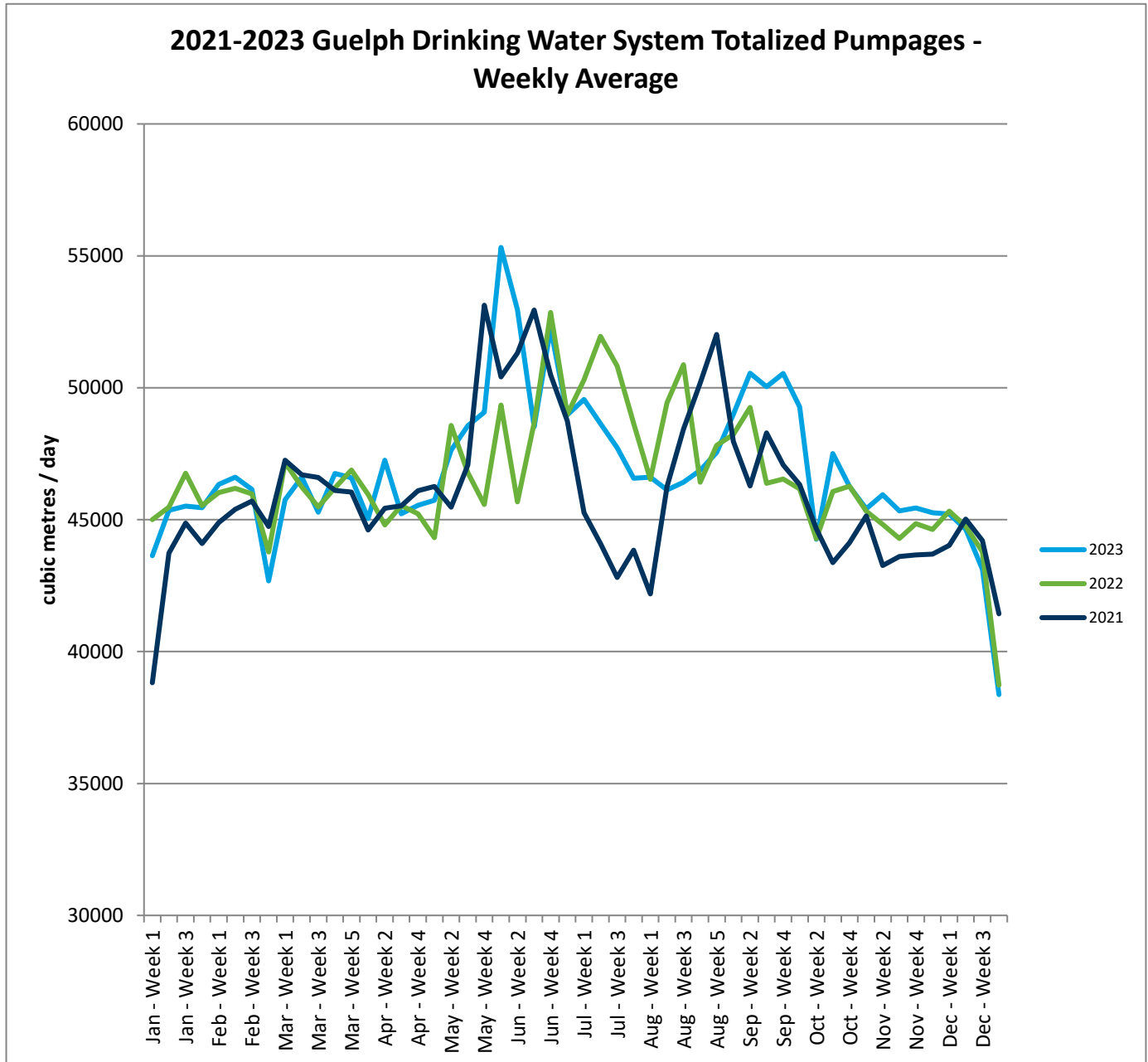
## 2023 Totalized Pumpages and Instantaneous Flows

The Ontario Water Resources Act and the Safe Drinking Water Act, each require that operating authorities record and report both water takings as governed by Permits to Take-Water and treated water supplied to the City of Guelph.

Summaries of total water pumped, instantaneous flows and capacity (flows and volumes compared to rated capacities) by the City of Guelph can be found in [Appendix B: Total Water Pumped and Instantaneous Flows](#).

Figure 3: Totalized Treated Water Pumpages, depicts the Guelph Drinking Water System treated water pumpages in cubic metres as a weekly average. Using a weekly average allows for less data points resulting in a simplified graph for the purpose of this report.

**Figure 3: Totalized Treated Water Pumpages, 2021-2023**



Water Services processed 17,095,721 cubic metres (17.095 billion litres) of water to the distribution system in 2023. This represents 0.63 per cent more water being supplied to the distribution system in 2023 as compared to 2022 and 1.84 per cent more water than in 2021.

The 2023 average daily water demand was 46,837 cubic metres (46.83 million litres). The maximum daily production of water in 2023 was 59,234 cubic metres (59.24 million litres) and occurred on May 31, 2023. The minimum daily production of water in 2023 was 34,364 cubic metres (34.32 million litres) and occurred on December 25, 2023.

## **Water Production, Consumption and Population**

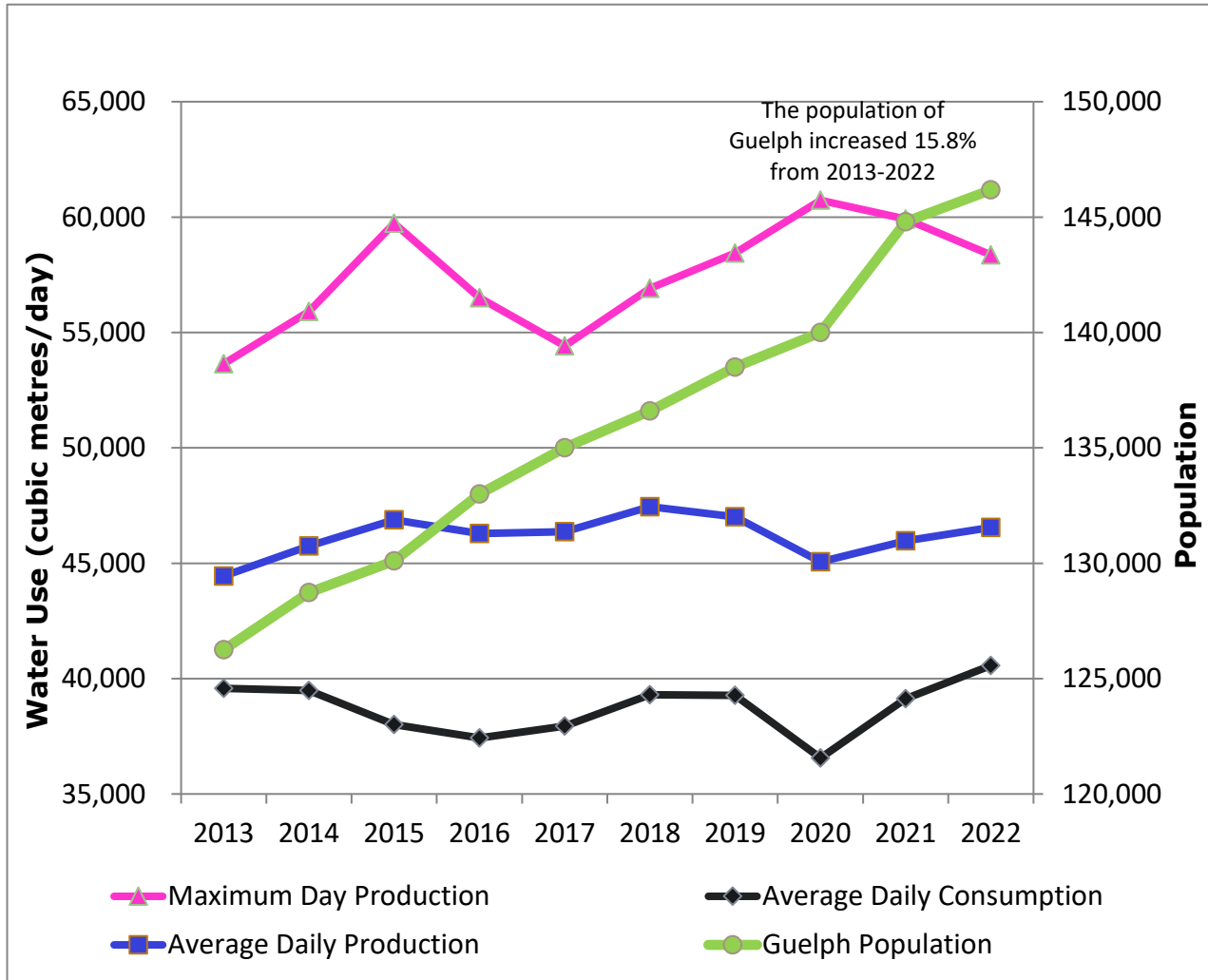
Figure 4: Guelph Water Production vs. Water Consumption vs. Population, 2012 - 2022, below, shows the City of Guelph's annual average daily water production, annual average daily consumption, annual peak day demand, and population from 2012 to 2022<sup>5</sup>.

From 2013 to 2022 Guelph's population increased by 15.8%, whereas the annual average consumption increased by 2.4%.

Fluctuation in water production and consumption is anticipated to occur, year to year, based on a number of factors, including seasonal temperatures and annual precipitation, system demands (including planned and unplanned maintenance) and steady population growth; however, the steady to reduced water consumption (and production) rates year over year are attributed to Guelph's Water Efficiency Strategy, Water Loss Management Plan, and resulting programming, as described later in this section. Further, the impacts to consumption (and production) across sectors varied throughout the 2020 year, which can likely be attributed to changes in societal behaviour as a result of the pandemic. While residential consumption increased through 2020 across all three residential sectors (low, medium and high-density), industrial, commercial and institutional consumption had decreased. A significant portion of the precipitous drop in 2020 can be attributed to these changes. The increase in consumption based on 2022 population potentially signify activities including business returning to near normal.



**Figure 4: Guelph Water Production vs. Water Consumption vs. Population, 2013-2022<sup>5</sup>**



**Water Supply Capacity**

Water Services staff uses source specific calculated firm capacity values in order to aid planning of scheduled shutdowns and maintenance of the water supply wells. Staff hold monthly meetings to review project and programming activities that affect firm capacity. The purpose of the monthly meetings are to ensure adequate servicing capacity is available

<sup>5</sup> 2023 Consumption and Population data was not available when Figure 4: Guelph Water Production vs. Water Consumption vs. Population, 2012 – 2023 was prepared.

to meet the City’s water demands while maintenance and capital upgrades are undertaken to ensure the operates in a fit state of repair.

Values used for permitted pumping rate and firm capacity calculations by well are provided below in Table 2: Permitted Rates and Point of Entry Firm Capacities of Water Supply Wells (includes only wells that were in-use for production/supply in 2023). The permitted pumping rate is the rate of pumping allowed as identified in the Permits to Take Water. The firm capacity rate is the actual rate of pumping that can be sustainably achieved at each well.

**Table 2: Permitted Rates and Point of Entry Firm Capacities of Water Supply Wells**

| Well Name   | Permitted Daily Maximum (m3/day) | Permitted Rate (L/s) | Point of Entry Firm Capacity <sup>6</sup> (m3/day) | Point of Entry Firm Capacity <sup>6</sup> (L/s) |
|---|----------------------------------|----------------------|--|---|
| <b>Arkell 1</b>                                     | 3,273                            | 37.9                 | 1,640  | 19.0  |
| <b>Arkell Springs Wellfield<sup>7</sup></b>         | 28,800                           | 333.3                | 28,800   | 333.3   |
| <b>Arkell Infiltration Gallery (Glen Collector)</b> | 25,000                           | 290                  | 5,908  | 59  |
| <b>Burke</b>  | 6,546                            | 75.8                 | 5,790  | 60.0  |
| <b>Carter 1 and Carter 2</b>                        | 7,855                            | 75.8                 | 5,184  | 60.0  |
| <b>Membro</b>                                       | 6,050                            | 78.0                 | 3,200  | 37.0  |
| <b>Water St.</b>                                    | 3,400                            | 44.4                 | 1,702  | 19.7  |
| <b>Dean</b>   | 2,300                            | 34.6                 | 1,500  | 17.4  |

<sup>6</sup> The firm capacity rate is the actual rate of pumping that can be achieved at each well.

<sup>7</sup> The Arkell Springs Wellfield consists of five (5) municipal drinking water production wells: Arkell 6, Arkell 7, Arkell 8, Arkell 14 and Arkell 15. All of the aforementioned Arkell Wells are contained within the same Permit to Take Water. Notwithstanding the specified maximum permitted taken per day, any combination of these wells can be used to obtain the permitted rate.

| Well Name                | Permitted Daily Maximum (m3/day) | Permitted Rate (L/s) | Point of Entry Firm Capacity <sup>6</sup> (m3/day) | Point of Entry Firm Capacity <sup>6</sup> (L/s) |
|--------------------------|----------------------------------|----------------------|--|---|
| <b>University</b>        | 3,300                            | 38.2                 | 1,500  | 17.4  |
| <b>Downey</b>            | 5,237                            | 60.6                 | 2,592  | 30.0  |
| <b>Park 1 and Park 2</b> | 10,300                           | 119.2                | 9,500  | 110.0   |
| <b>Emma</b>              | 3,100                            | 35.9                 | 2,330  | 27.0  |
| <b>Helmar</b>            | 3,273                            | 37.9                 | 804  | 9.3   |
| <b>Paisley</b>           | 3,200                            | 37.0                 | 804  | 9.3   |
| <b>Calico</b>            | 5,237                            | 60.6                 | 1,040  | 12.0  |
| <b>Queensdale</b>        | 5,237                            | 60.6                 | 501  | 5.8   |

Note: Wells Admiral, Edinburgh, Sacco and Smallfield are currently not connected to the drinking water system, Calico and Helmar are not in service. All of these wells have been issued a Permit to Take Water.

## Appendix A: Management Review Minutes

|          |  |
|----------|--|
| Meeting  | <b>Management Review for 2023-year</b>   |
| Date     | February 12, 2024  |
| Time     | 9:00 a.m. – 11:30 a.m.   |
| Location | WS Boardroom and MS Teams (Hybrid option)  |
| Present  | Kelly Beirnes, Matt Bender, Ryan Costello, Liana D’Andrea, Wayne Galliher, Dawn Hamilton, Shawna Hughes, Kewal Kharbanda, Deigh Madejski, Mathew Newman, Kristin Pressey, Nathan Siniowski, Tim Spence, Emily Stahl, Heather Yates |

| Item # | Discussion Items  | Actions / Decisions (for deficiencies or recommendations) |
|--------|---|---|
| 1.     | Introduction<br>- Reviewed purpose of Management Review.  | - None.   |
| 2.     | a) Incidents of regulatory non-compliance<br>- Reviewed any new incidences of non-compliance since the last Management Review in February 2023 (number of incidents reviewed was two). Reviewed immediate actions taken and confirmed root cause analysis was completed for each incident.  | - None.   |
| 3.     | b) Incidents of Adverse Drinking Water Tests<br>- There were no incidents of adverse drinking water tests since the last Management Review in February 2023.  | - None.   |
| 4.     | c) Deviations from Critical Control Point (CCP) and limits (CCL) and response actions<br>- There were no deviations for Critical Control Limits (CCLs) in 2023.<br>- Discussed improvement opportunities for defining CCLs and recording deviations from CCLs and noted that improvements will be considered/implemented in 2024. | - None.   |

|    |  |         |
|----|--|---------|
| 5. | <p>d)The effectiveness of the risk assessment process</p> <ul style="list-style-type: none"> <li>- Annual risk assessment was completed by respective risk assessment teams in September 2023 and October 2023.</li> <li>- Top Management reviewed the risk assessment outcomes, made minor changes to it and approved it on October 30, 2023.</li> </ul>  | - None. |
| 6. | <p>e)Internal and external DWQMS audit results</p> <ul style="list-style-type: none"> <li>- Reviewed internal/external DWQMS audit results, including number of non-conformances, corrective actions opened, opportunities for improvement, staff suggestions, system strengths, interviewees and auditors.</li> <li>- Confirmed that all items of continual improvement raised in internal/external DWQMS audits have been entered into the continual improvement tracker.</li> </ul>   | - None. |
| 7. | <p>f) Results of emergency response testing</p> <ul style="list-style-type: none"> <li>- An emergency test exercise was conducted on November 13, 2023. The objective of the test exercise was met (to have a facilitated discussion on emergency response, clarify roles and responsibilities in an emergency, validate an existing emergency response action plan for the drinking water system and identify strengths and weaknesses of the test exercise).</li> <li>- Eight (8) opportunities for improvement for emergency management were identified through the completion of the test exercise. Confirmed that the items of continual improvement have been entered into the continual improvement tracker.</li> </ul> | - None. |
| 8. | <p>g)Operational performance.</p> <p>The following data was reviewed and considered:</p> <ul style="list-style-type: none"> <li>- most recent Ministry of the Environment, Conservation and Parks (MECP)</li> </ul>  | - None. |

|           |  |                |
|-----------|--|----------------|
|           | <p>Inspection Ratings for the systems (Guelph Drinking Water System (DWS) and Gazer Mooney Subdivision Distribution System (DS)).</p> <ul style="list-style-type: none"> <li>- Treated water production statistics for the Guelph DWS (e.g., total production, maximum day production for 2023). Flow rate trends for the most three-year period illustrated that demand is higher in summer months compared to winter months (as expected).</li> <li>- Water Production, consumption and population data for 2013 – 2022. Data illustrated City of Guelph population increased 16% and annual average drinking water system consumption increased by 5%.</li> <li>- Summary of maintenance activities completed in 2023 for distribution subsystem, water treatment subsystem and SCADA, including number of pre-authorized minor modifications that were made.</li> <li>- It was noted that the list of number and types of installation of backflow preventers (e.g., new permits), which had been provided in previous Management Reviews was removed from this year’s discussion since the City’s backflow prevention program is administered by another department within the City.</li> </ul> |                |
| <p>9.</p> | <p>h) Raw water supply and drinking water quality trends.</p> <p>Data was reviewed for 2021, 2022 and 2023.</p> <p>Guelph Drinking Water System:</p> <ul style="list-style-type: none"> <li>- Microbiological and chemical parameters (O. Reg. 170/03 Schedule 23 inorganic parameters, O. Reg. 170/03 Schedule 24 organic parameters, nitrates, nitrites and fluoride) for treated water samples consistently met the Ontario Drinking Water Quality Standards (i.e., there were no instances of adverse test results).</li> </ul>  | <p>- None.</p> |

|     |   |         |
|-----|---|---------|
|     | <ul style="list-style-type: none"> <li>- Sodium concentrations in raw water typically exceeded 20 mg/L. Although there is no health-based standard for sodium in the Ontario Drinking Water Quality Standards, the operating authority for the drinking water system must notify the Ministry of the Environment, Conservation and Parks and public health unit when test results exceed 20 mg/L (the notification is only required once every 5 years). Public Health uses the information to help keep anyone on a strict sodium-reduced diet informed.</li> <li>- Chemical parameters (total trihalomethanes and haloacetic acids) in distribution system samples consistently met the Ontario Drinking Water Quality Standards (i.e., there were no instances of adverse test results).</li> </ul> <p>Gazer Mooney Subdivision Distribution System:</p> <ul style="list-style-type: none"> <li>- Microbiological and chemical parameters (total trihalomethanes and haloacetic acids) in distribution samples consistently met the Ontario Drinking Water Quality Standards (i.e., there were no instances of adverse test results).</li> </ul> |         |
| 10. | <p>i) Follow-up action items from previous Management Reviews</p> <ul style="list-style-type: none"> <li>- There were twelve (12) action items raised in the previous Management Review. Six (6) items are complete. Three (3) items are pending, meaning they are ideas to keep open (i.e., they are items for future implementation), but no due date needs to be assigned. Three (3) items remain open:             <ol style="list-style-type: none"> <li>1. Improving staff suggestion process (work has started and continues to be in-progress).</li> <li>2. Ensuring personnel from the Water Services Technical Services team are provided with an opportunity to participate in the operational sampling planning for the system (action item</li> </ol> </li> </ul>  | - None. |

|     |  |         |
|-----|--|---------|
|     | <p>has been tied in with additional sampling planning initiatives, which are set for completion in 2024).</p> <p>3. Determining if additional raw and treated water quality trends should be included in Management Review (additional trends were added for current Management Review. However, item remains open as Technical Services team should be consulted for any additional inputs on trends to be included at Management Review).</p> <ul style="list-style-type: none"> <li>- All items have been entered into the continual improvement tracker.</li> <li>- There are no additional items open from Management Reviews held prior to 2023.</li> </ul>  |         |
| 11. | <p>j) The status of management action items identified between reviews</p> <p>Continual improvement is on-going:</p> <ul style="list-style-type: none"> <li>- There were seventy-seven (77) continual improvement items opened since the last Management Review.</li> <li>- For items opened since last Management Review, reviewed pie chart illustrating percentage of items open and closed and rationale for any items open and past due (only two items are open and past due).</li> <li>- Considered total number of continual improvement action items open, including actions items opened prior to 2023 (items open = 105) and total number actions items closed since last Management Review, regardless of date opened was 44.</li> </ul> | - None. |
| 12. | <p>k) Changes that could affect the drinking water system and the quality management system</p> <p>Considered and discussed a number of changes that could affect the Quality Management System (QMS), including:</p> <ul style="list-style-type: none"> <li>- New issue of Municipal Drinking Water Licence (MDWL) and Drinking Water Works Permit (DWWP) for Guelph</li> </ul>   | - None. |



|  |   |  |
|--|---|--|
|  | <p>Drinking Water system to be issued in 2024. New issues could mean new conditions.</p> <ul style="list-style-type: none"> <li>- New issue of Permit To Take Water (PTTW). There are two (2) PTTW for the Guelph Drinking Water System that will need to be renewed in 2024. New issue could mean new conditions.</li> <li>- Ministry of the Environment, Conservation and Parks working group has been established for developing new procedure for disinfection (replacing AWWA C652, AWWA C653 and AWWA C654). Future publication of the procedures may require new in-house procedures or revision to existing procedures and training for staff.</li> <li>- Proposed updates to the Ministry of the Environment, Conservation and Parks documents:             <ul style="list-style-type: none"> <li>o <i>Protocol of Accepted Drinking Water Testing Methods</i>. Document is used by accredited laboratories. However, if our lab uses alternative testing methods, it may impact our ability to compare results year over year.</li> <li>o <i>Practices for the Collection and Handling of Drinking Water Samples</i>. If proposed changes are published, document could serve as a source of best management practices.</li> <li>o Future publication of <i>Drinking Water Benchmarks List</i>. If proposed changes are published, document could serve as a source of best management practices.</li> <li>o <i>GUDI Terms of Reference</i> (draft). May impact drinking water system requirements and subsequently the QMS.</li> </ul> </li> <li>- Updates to Health Canada’s <i>Guidelines for Drinking Water Quality</i>. Internal working group established to monitor changes and determine impact.</li> <li>- The Ministry of the Environment, Conservation and Parks Drinking Water/Wastewater Operator Workforce Assessment. The outcome of the</li> </ul> |  |
|--|---|--|

|     |  |         |
|-----|--|---------|
|     | <p>assessment could benefit human resources needed to maintain the QMS.</p> <ul style="list-style-type: none"> <li>- Transition from hard copy to electronic record keeping. Prior to implementation need for procedure creation or update and staff training should be considered.</li> <li>- Potential use of new sample planning software. Prior to implementation need for procedure creation or update and staff training should be considered.</li> <li>- Changes to the organizational structure (e.g., addition of new roles). Procedure creation or update may be required when new roles are added or existing roles removed.</li> <li>- Changes to source of raw water supply (e.g., addition of new well, removal of existing well). If changes are needed, new Ministry of the Environment, Conservation and Parks approvals may be required, which could mean new conditions for the drinking water system.</li> </ul> |         |
| 13. | <p>l) Consumer Feedback</p> <ul style="list-style-type: none"> <li>- Reviewed number and type of services requests received at Water Services in 2021, 2022 and 2023.</li> </ul>   | - None. |
| 14. | <p>m) Resources needed to the maintain the quality management system</p> <ul style="list-style-type: none"> <li>- The resources needed to maintain the QMS continue to be the same as previous years. For example: <ul style="list-style-type: none"> <li>o On-going commitment from Top Management, including participation in Management Review, risk assessment outcomes, internal and third-party DWQMS audits, root cause analyses, infrastructure reviews, ensuring staff follow procedures.</li> <li>o Procedures that direct and control the organization with respect to quality.</li> <li>o Trained personnel on procedures.</li> <li>o An effective document control system.</li> </ul> </li> </ul>   | - None. |

|            |   |                |
|------------|---|----------------|
| <p>15.</p> | <p>n) Results of the infrastructure review</p> <ul style="list-style-type: none"> <li>- Confirmed that infrastructure review occurs annually and is on-going.</li> <li>- Vertical infrastructure review is captured under the Capital Needs Assessment Report for Water Facilities, prepared by GM BluePlan Engineering, dated July 2022 and updated every five years. Meeting to administer process for review state of fit repair based on facility works and those that can be accelerated from timing noted in the Capital Needs Assessment Report is conducted annually. Meeting held on April 24, 2023.</li> <li>- Water Distribution linear infrastructure review was conducted on April 28, 2023. Linear infrastructure needs from previous year (2022) were reviewed and updated (e.g., new projects added, existing projects removed or modified if completed, and scoring used to rank priorities updated where necessary).</li> </ul> | <p>- None.</p> |
| <p>16.</p> | <p>o) Operational plan currency, content and updates</p> <ul style="list-style-type: none"> <li>- The Operational Plan, which documents the quality management system was last updated on April 25, 2023, and it was last endorsed by the drinking water system owners in 2023 (due to newly elected Council) and Top Management in 2024 (due to change in Top Management).</li> </ul>  | <p>- None.</p> |
| <p>17.</p> | <p>p) Staff suggestions</p> <ul style="list-style-type: none"> <li>- Figure illustrating number of staff suggestions by year from 2016 to 2023 was reviewed.</li> <li>- There is an open continual improvement action item to revisit the staff suggestion process.</li> </ul>  | <p>- None.</p> |

## Appendix B: Total Water Pumped and Instantaneous Flows

This section summarizes the total volume of treated water pumped to the distribution system as well as raw water pumped and corresponding instantaneous flows for all in-service sources in 2023.

Capacity is calculated by comparing the average pumped or flow value against the Municipal Drinking Water Licence (MDWL) allowable volume or Permit to Take Water (PTTW) flow. Capacity is representative of the conditions of pumping for that year which may be influenced by other testing programs, maintenance or special operational conditions. Additionally, the actual capacity of the source may not be achievable due to well performance and/or current infrastructure. Optimization efforts are included as a component of the Water Supply Master Plan, with the intent to match the actual capacity of the water source with the appropriate infrastructure, where possible.

## City of Guelph Water Services – Treated Water Pumpages, January 1, 2023 – December 31, 2023

Table 3 below shows the amount of treated water in cubic metres pumped to the distribution system from each facility in 2023.

**Table 3: Treated Water Pumpages, 2023**

| Facility         |              | Burke          | Calico         | Dean           | Downey         | Emma           | Helmar         | Membro         | Paisley Net    | Park           | Queensdale     | University Net | Water Street   | F.M. Woods     | Total System Discharge |
|------------------|--------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|------------------------|
| Units            |              | m <sup>3</sup> | m <sup>3</sup> | m <sup>3</sup> | m <sup>3</sup> | m <sup>3</sup> | m <sup>3</sup> | m <sup>3</sup> | m <sup>3</sup> | m <sup>3</sup> | m <sup>3</sup> | m <sup>3</sup> | m <sup>3</sup> | m <sup>3</sup> | m <sup>3</sup>         |
| Regulatory Limit |              | 6,546          | 5,237          | 2,300          | 5,237          | 3,100          | 3,273          | 6,050          | 13,738         | 10,300         | 5,273          | 5,108          | 3,400          | 65,000         | n/a                    |
| Jan              | Average      | 5,317          | 0              | 1,326          | 3,341          | 2,432          | 0              | 2,311          | 0              | 1,917          | 473            | 1,648          | 1,471          | 24,781         | 45,017                 |
|                  | Maximum      | 5,497          | 0              | 1,393          | 3,442          | 2,521          | 0              | 2,765          | 0              | 4,059          | 483            | 2,184          | 1,542          | 28,529         | 48,156                 |
|                  | <b>Total</b> | <b>164,841</b> | <b>0</b>       | <b>41,105</b>  | <b>103,565</b> | <b>75,387</b>  | <b>0</b>       | <b>71,649</b>  | <b>0</b>       | <b>59,417</b>  | <b>14,675</b>  | <b>51,085</b>  | <b>45,592</b>  | <b>768,224</b> | <b>1,395,541</b>       |
| Feb              | Average      | 5,475          | 0              | 1,283          | 3,361          | 2,426          | 0              | 2,756          | 0              | 2,080          | 461            | 1,715          | 1,454          | 24,516         | 45,527                 |
|                  | Maximum      | 5,507          | 0              | 1,396          | 3,408          | 2,501          | 0              | 2,765          | 0              | 6,315          | 468            | 2,009          | 1,506          | 28,126         | 49,159                 |
|                  | <b>Total</b> | <b>153,288</b> | <b>0</b>       | <b>35,921</b>  | <b>94,108</b>  | <b>67,919</b>  | <b>0</b>       | <b>77,181</b>  | <b>0</b>       | <b>58,229</b>  | <b>12,918</b>  | <b>48,028</b>  | <b>40,717</b>  | <b>686,444</b> | <b>1,274,753</b>       |
| Mar              | Average      | 5,437          | 0              | 1,195          | 2,868          | 2,448          | 0              | 2,752          | 0              | 1,751          | 375            | 1,637          | 1,244          | 26,544         | 46,249                 |
|                  | Maximum      | 5,481          | 0              | 1,388          | 3,352          | 2,524          | 0              | 2,766          | 0              | 3,593          | 499            | 2,012          | 1,456          | 31,593         | 50,836                 |
|                  | <b>Total</b> | <b>168,554</b> | <b>0</b>       | <b>37,030</b>  | <b>88,902</b>  | <b>75,873</b>  | <b>0</b>       | <b>85,303</b>  | <b>0</b>       | <b>54,293</b>  | <b>11,614</b>  | <b>50,732</b>  | <b>38,566</b>  | <b>822,856</b> | <b>1,433,724</b>       |
| Apr              | Average      | 5,440          | 0              | 1,086          | 2,523          | 2,466          | 0              | 2,730          | 0              | 1,630          | 487            | 891            | 1,420          | 26,936         | 45,609                 |
|                  | Maximum      | 5,481          | 0              | 1,097          | 2,564          | 2,554          | 0              | 2,765          | 0              | 2,662          | 539            | 1,768          | 1,534          | 31,419         | 50,359                 |
|                  | <b>Total</b> | <b>163,201</b> | <b>0</b>       | <b>32,585</b>  | <b>75,699</b>  | <b>73,995</b>  | <b>0</b>       | <b>81,894</b>  | <b>0</b>       | <b>48,895</b>  | <b>14,623</b>  | <b>26,729</b>  | <b>42,591</b>  | <b>808,072</b> | <b>1,368,284</b>       |
| May              | Average      | 5,403          | 0              | 1,204          | 2,511          | 2,447          | 0              | 2,749          | 0              | 1,761          | 469            | 621            | 1,180          | 30,542         | 48,887                 |
|                  | Maximum      | 5,442          | 0              | 1,385          | 2,564          | 2,547          | 0              | 2,765          | 0              | 5,701          | 519            | 2,427          | 1,507          | 36,192         | 59,234                 |
|                  | <b>Total</b> | <b>167,500</b> | <b>0</b>       | <b>37,319</b>  | <b>77,829</b>  | <b>75,868</b>  | <b>0</b>       | <b>85,214</b>  | <b>0</b>       | <b>54,605</b>  | <b>14,544</b>  | <b>19,236</b>  | <b>36,588</b>  | <b>946,790</b> | <b>1,515,492</b>       |
| Jun              | Average      | 5,393          | 0              | 968            | 2,270          | 2,419          | 0              | 1,376          | 0              | 3,009          | 470            | 1,345          | 1,149          | 32,951         | 51,348                 |
|                  | Maximum      | 5,430          | 0              | 1,026          | 2,539          | 2,520          | 0              | 2,765          | 0              | 5,905          | 557            | 2,444          | 1,405          | 37,813         | 58,991                 |
|                  | <b>Total</b> | <b>161,792</b> | <b>0</b>       | <b>29,041</b>  | <b>68,090</b>  | <b>72,564</b>  | <b>0</b>       | <b>41,282</b>  | <b>0</b>       | <b>90,258</b>  | <b>14,087</b>  | <b>40,337</b>  | <b>34,456</b>  | <b>988,527</b> | <b>1,540,433</b>       |
| Jul              | Average      | 5,334          | 0              | 978            | 2,714          | 2,458          | 0              | 2,595          | 0              | 2,129          | 461            | 1,747          | 1,334          | 28,035         | 47,784                 |
|                  | Maximum      | 5,378          | 0              | 1,017          | 3,138          | 2,533          | 0              | 2,765          | 0              | 6,010          | 528            | 1,867          | 1,528          | 36,495         | 58,435                 |
|                  | <b>Total</b> | <b>165,363</b> | <b>0</b>       | <b>30,304</b>  | <b>84,144</b>  | <b>76,183</b>  | <b>0</b>       | <b>80,457</b>  | <b>0</b>       | <b>65,986</b>  | <b>14,285</b>  | <b>54,145</b>  | <b>41,356</b>  | <b>869,081</b> | <b>1,481,305</b>       |

| Facility  | Units                    | Burke          | Calico         | Dean           | Downey         | Emma           | Helmar         | Membro         | Paisley Net    | Park           | Queensdale     | University Net | Water Street   | F.M. Woods     | Total System Discharge |
|-----------|--------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|------------------------|
|           | Regulatory Limit         | m <sup>3</sup> | m <sup>3</sup> | m <sup>3</sup> | m <sup>3</sup> | m <sup>3</sup> | m <sup>3</sup> | m <sup>3</sup> | m <sup>3</sup> | m <sup>3</sup> | m <sup>3</sup> | m <sup>3</sup> | m <sup>3</sup> | m <sup>3</sup> | m <sup>3</sup>         |
|           |                          | 6,546          | 5,237          | 2,300          | 5,237          | 3,100          | 3,273          | 6,050          | 13,738         | 10,300         | 5,273          | 5,108          | 3,400          | 65,000         | n/a                    |
|           |                          |                |                |                |                |                |                |                |                |                |                |                |                |                |                        |
| Aug       | Average                  | 5,267          | 0              | 951            | 2,906          | 2,340          | 0              | 1,200          | 0              | 2,008          | 404            | 1,677          | 565            | 29,515         | 46,833                 |
|           | Maximum                  | 5,362          | 0              | 1,001          | 3,042          | 2,550          | 0              | 2,765          | 0              | 2,554          | 496            | 1,879          | 1,187          | 36,869         | 53,554                 |
|           | Total                    | 163,288        | 0              | 29,488         | 90,082         | 72,541         | 0              | 37,199         | 0              | 62,261         | 12,509         | 51,979         | 17,505         | 914,968        | 1,451,819              |
| Sep       | Average                  | 5,213          | 0              | 1,185          | 2,935          | 2,463          | 0              | 3,243          | 0              | 1,807          | 434            | 1,736          | 0              | 30,777         | 49,794                 |
|           | Maximum                  | 5,243          | 0              | 1,280          | 3,000          | 2,542          | 0              | 4,320          | 0              | 2,617          | 487            | 1,858          | 0              | 34,757         | 54,510                 |
|           | Total                    | 156,383        | 0              | 35,559         | 88,065         | 73,891         | 0              | 97,289         | 0              | 54,220         | 13,009         | 52,093         | 0              | 923,316        | 1,493,825              |
| Oct       | Average                  | 5,140          | 0              | 1,245          | 2,809          | 2,371          | 0              | 3,322          | 30             | 1,503          | 411            | 1,707          | 715            | 27,353         | 46,606                 |
|           | Maximum                  | 5,197          | 0              | 1,281          | 2,976          | 2,546          | 0              | 3,456          | 466            | 2,178          | 475            | 1,832          | 1,626          | 32,271         | 51,962                 |
|           | Total                    | 159,327        | 0              | 38,601         | 87,080         | 73,503         | 0              | 102,993        | 931            | 46,607         | 12,745         | 52,917         | 22,150         | 847,930        | 1,444,785              |
| Nov       | Average                  | 4,626          | 0              | 1,230          | 2,227          | 2,056          | 0              | 2,868          | 728            | 1,411          | 391            | 1,630          | 1,466          | 27,044         | 45,677                 |
|           | Maximum                  | 5,307          | 0              | 1,256          | 2,730          | 2,152          | 0              | 3,118          | 792            | 1,721          | 434            | 1,870          | 1,565          | 30,954         | 48,993                 |
|           | Total                    | 138,772        | 0              | 36,890         | 66,802         | 61,691         | 0              | 86,028         | 21,851         | 42,328         | 11,735         | 48,907         | 43,987         | 811,324        | 1,370,314              |
| Dec       | Average                  | 5,047          | 0              | 1,217          | 2,365          | 2,022          | 0              | 1,359          | 704            | 1,331          | 130            | 1,943          | 1,511          | 25,129         | 42,756                 |
|           | Maximum                  | 5,149          | 0              | 1,242          | 2,726          | 2,079          | 0              | 2,938          | 789            | 2,069          | 422            | 2,291          | 1,577          | 29,815         | 47,682                 |
|           | Total                    | 156,455        | 0              | 37,719         | 73,306         | 62,667         | 0              | 42,133         | 21,838         | 41,258         | 4,018          | 60,220         | 46,836         | 778,994        | 1,325,445              |
| 2023 Year | Average                  | 5,258          | 0              | 1,156          | 2,736          | 2,362          | 0              | 2,438          | 122            | 1,861          | 414            | 1,525          | 1,126          | 27,843         | 46,841                 |
|           | Maximum                  | 5,507          | 0              | 1,396          | 3,442          | 2,554          | 0              | 4,320          | 792            | 6,315          | 557            | 2,444          | 1,626          | 37,813         | 59,234                 |
|           | Total                    | 1,918,763      | 0              | 421,561        | 997,672        | 862,082        | 0              | 888,623        | 44,621         | 678,357        | 150,764        | 556,407        | 410,346        | 10,166,525     | 17,095,721             |
|           | Average Process Capacity | 80%            | 0%             | 50%            | 52%            | 76%            | 0%             | 40%            | 4%             | 18%            | 8%             | 46%            | 33%            | 43%            | n/a                    |

## City of Guelph Water Services – Permit-to-Take-Water Raw Pumpages, January 1, 2023 – December 31, 2023

Table 4 and Table 5 presented below, outline the Permit to Take Water Pumpages for 2023. Table 4 includes the following sources: Arkell Well 1, Arkell Well 6, Arkell Well 7, Arkell Well 8, Arkell Well 14, Arkell Well 15, Arkell Recharge Pump, Arkell Springs Glen Collector System, Burke Well, Calico Well, and Carter Well 1 and 2. Table 5 includes the following sources: Dean Well, Downey Well, Emma Well, Helmar Well, Membro Well, Paisley Well, Park Wells 1 and 2, Queensdale Well, University Well and Water Street Well.

**Table 4: Permit-To-Take-Water Raw Pumpages, 2023**

| Facility Units          | Arkell Well #1 m <sup>3</sup> | Arkell Well #6 m <sup>3</sup> | Arkell Well #7 m <sup>3</sup> | Arkell Well #8 m <sup>3</sup> | Arkell Well #14 m <sup>3</sup> | Arkell Well #15 m <sup>3</sup> | Arkell Wellfield (#6, 7, 8, 14, 15) Total m <sup>3</sup> | Arkell - Recharge Pump m <sup>3</sup> | Arkell Springs Glen Collector System m <sup>3</sup> | Burke Well m <sup>3</sup> | Calico Well m <sup>3</sup> | Carter Wells #1 & #2 m <sup>3</sup> |                |
|-------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|--------------------------------|--------------------------------|--|---------------------------------------|---|---------------------------|----------------------------|-------------------------------------|----------------|
| <b>Regulatory limit</b> | <b>3,273</b>                  | <b>9,600</b>                  | <b>9,600</b>                  | <b>9,600</b>                  | <b>9,600</b>                   | <b>9,600</b>                   | <b>28,800</b>  | <b>9,092</b>                          | <b>25,000</b>                                       | <b>6,546</b>              | <b>5,237</b>               | <b>6,547</b>                        |                |
| <b>Jan</b>              | <b>Average</b>                | 0                             | 5,540                         | 6,129                         | 1,918                          | 2,262                          | 4,666  | 20,515                                | 0   | 4,385                     | 5,584                      | 0                                   | 0              |
|                         | <b>Maximum</b>                | 0                             | 7,757                         | 7,625                         | 4,963                          | 5,169                          | 6,788  | 23,978                                | 0   | 4,650                     | 5,776                      | 0                                   | 0              |
|                         | <b>Total</b>                  | <b>0</b>                      | <b>171,740</b>                | <b>190,006</b>                | <b>59,454</b>                  | <b>70,108</b>                  | <b>144,648</b>   | <b>635,957</b>                        | <b>0</b>  | <b>135,923</b>            | <b>173,105</b>             | <b>0</b>                            | <b>0</b>       |
| <b>Feb</b>              | <b>Average</b>                | 0                             | 7,314                         | 5,466                         | 1,107                          | 3,656                          | 3,417  | 20,960                                | 0   | 4,088                     | 5,753                      | 0                                   | 0              |
|                         | <b>Maximum</b>                | 0                             | 7,850                         | 6,616                         | 7,138                          | 5,577                          | 5,466  | 25,098                                | 0   | 4,181                     | 5,779                      | 0                                   | 0              |
|                         | <b>Total</b>                  | <b>0</b>                      | <b>204,789</b>                | <b>153,049</b>                | <b>31,007</b>                  | <b>102,367</b>                 | <b>95,677</b>  | <b>586,889</b>                        | <b>0</b>  | <b>114,461</b>            | <b>161,073</b>             | <b>0</b>                            | <b>0</b>       |
| <b>Mar</b>              | <b>Average</b>                | 0                             | 7,439                         | 5,734                         | 1,456                          | 3,816                          | 3,981  | 22,426                                | 0   | 4,125                     | 5,715                      | 0                                   | 560            |
|                         | <b>Maximum</b>                | 0                             | 7,781                         | 7,054                         | 6,573                          | 6,836                          | 5,936  | 27,564                                | 0   | 4,865                     | 5,760                      | 0                                   | 4,990          |
|                         | <b>Total</b>                  | <b>0</b>                      | <b>230,618</b>                | <b>177,748</b>                | <b>45,143</b>                  | <b>118,298</b>                 | <b>123,404</b>   | <b>695,211</b>                        | <b>0</b>  | <b>127,890</b>            | <b>177,172</b>             | <b>0</b>                            | <b>17,371</b>  |
| <b>Apr</b>              | <b>Average</b>                | 0                             | 7,562                         | 4,305                         | 184                            | 3,755                          | 1,208  | 17,014                                | 3,535   | 6,860                     | 5,718                      | 0                                   | 3,183          |
|                         | <b>Maximum</b>                | 0                             | 8,022                         | 5,771                         | 3,776                          | 5,170                          | 5,531  | 21,269                                | 8,437   | 9,169                     | 5,759                      | 0                                   | 3,763          |
|                         | <b>Total</b>                  | <b>0</b>                      | <b>226,874</b>                | <b>129,136</b>                | <b>5,508</b>                   | <b>112,658</b>                 | <b>36,233</b>  | <b>510,409</b>                        | <b>106,044</b>                                      | <b>205,810</b>            | <b>171,548</b>             | <b>0</b>                            | <b>95,488</b>  |
| <b>May</b>              | <b>Average</b>                | 0                             | 7,030                         | 4,680                         | 665                            | 3,264                          | 1,384  | 17,024                                | 8,231   | 10,156                    | 5,681                      | 0                                   | 3,466          |
|                         | <b>Maximum</b>                | 0                             | 8,037                         | 6,944                         | 7,015                          | 5,946                          | 7,331  | 21,319                                | 8,449   | 10,848                    | 5,717                      | 0                                   | 4,215          |
|                         | <b>Total</b>                  | <b>0</b>                      | <b>217,933</b>                | <b>145,076</b>                | <b>20,626</b>                  | <b>101,191</b>                 | <b>42,913</b>  | <b>527,739</b>                        | <b>255,161</b>                                      | <b>314,836</b>            | <b>176,107</b>             | <b>0</b>                            | <b>107,443</b> |
| <b>Jun</b>              | <b>Average</b>                | 0                             | 7,659                         | 5,404                         | 620                            | 3,087                          | 1,811  | 18,581                                | 7,947   | 11,493                    | 5,673                      | 0                                   | 3,009          |
|                         | <b>Maximum</b>                | 0                             | 7,931                         | 6,698                         | 3,456                          | 5,474                          | 4,135  | 22,361                                | 8,060   | 11,916                    | 5,705                      | 0                                   | 4,478          |
|                         | <b>Total</b>                  | <b>0</b>                      | <b>229,757</b>                | <b>162,126</b>                | <b>18,602</b>                  | <b>92,603</b>                  | <b>54,344</b>  | <b>557,433</b>                        | <b>238,410</b>                                      | <b>344,784</b>            | <b>170,180</b>             | <b>0</b>                            | <b>90,273</b>  |
| <b>Average</b>          | 0                             | 7,606                         | 4,042                         | 474                           | 2,110                          | 496                            | 14,728   | 7,787                                 | 12,414  | 5,610                     | 0                          | 1,818                               |                |

| Facility Units   |                | Arkell Well #1<br>m <sup>3</sup> | Arkell Well #6<br>m <sup>3</sup> | Arkell Well #7<br>m <sup>3</sup> | Arkell Well #8<br>m <sup>3</sup> | Arkell Well #14<br>m <sup>3</sup> | Arkell Well #15<br>m <sup>3</sup> | Arkell Wellfield<br>(#6, 7, 8,<br>14, 15)<br>Total<br>m <sup>3</sup> | Arkell -<br>Recharge<br>Pump<br>m <sup>3</sup> | Arkell<br>Springs<br>Glen<br>Collector<br>System<br>m <sup>3</sup> | Burke<br>Well<br>m <sup>3</sup> | Calico<br>Well<br>m <sup>3</sup> | Carter<br>Wells<br>#1 & #2<br>m <sup>3</sup> |
|------------------|----------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|-----------------------------------|-----------------------------------|--|--|--|---------------------------------|----------------------------------|--|
| Regulatory limit |                | 3,273                            | 9,600                            | 9,600                            | 9,600                            | 9,600                             | 9,600                             | 28,800   | 9,092  | 25,000   | 6,546                           | 5,237                            | 6,547  |
| Jul              | Maximum        | 0                                | 8,044                            | 6,890                            | 5,399                            | 6,511                             | 3,179                             | 27,841   | 7,859  | 13,231   | 5,663                           | 0                                | 3,883  |
|                  | Total          | 0                                | 235,785                          | 125,288                          | 14,698                           | 65,415                            | 15,380                            | 456,566  | 241,405  | 384,844  | 173,921                         | 0                                | 56,344                                       |
| Aug              | Average        | 0                                | 7,780                            | 4,730                            | 177                              | 2,275                             | 778                               | 15,740   | 7,221  | 12,793   | 5,547                           | 0                                | 1,170  |
|                  | Maximum        | 0                                | 8,046                            | 6,744                            | 3,434                            | 5,211                             | 4,382                             | 22,832   | 7,772  | 13,308   | 5,634                           | 0                                | 2,469  |
|                  | Total          | 0                                | 241,193                          | 146,644                          | 5,477                            | 70,519                            | 24,114                            | 487,947  | 223,845  | 396,592  | 171,951                         | 0                                | 36,269                                       |
| Sep              | Average        | 0                                | 7,678                            | 5,125                            | 1,416                            | 2,584                             | 530                               | 17,331   | 6,997  | 12,112   | 5,493                           | 0                                | 1,472  |
|                  | Maximum        | 0                                | 7,882                            | 7,426                            | 6,535                            | 5,180                             | 3,551                             | 20,756   | 7,420  | 12,432   | 5,515                           | 0                                | 2,324  |
|                  | Total          | 0                                | 230,330                          | 153,745                          | 42,468                           | 77,510                            | 15,890                            | 519,942  | 209,921  | 363,359  | 164,783                         | 0                                | 44,161                                       |
| Oct              | Average        | 0                                | 5,910                            | 4,775                            | 1,090                            | 1,626                             | 1,885                             | 15,287   | 7,023  | 11,709   | 5,421                           | 0                                | 1,105  |
|                  | Maximum        | 0                                | 8,044                            | 7,596                            | 5,422                            | 4,575                             | 5,517                             | 23,835   | 7,235  | 12,049   | 5,478                           | 0                                | 1,932  |
|                  | Total          | 0                                | 183,217                          | 148,010                          | 33,796                           | 50,415                            | 58,448                            | 473,884  | 217,711  | 362,966  | 168,049                         | 0                                | 34,249                                       |
| Nov              | Average        | 0                                | 7,444                            | 4,204                            | 1,338                            | 3,085                             | 1,530                             | 17,602   | 3,086  | 9,194  | 4,899                           | 0                                | 945  |
|                  | Maximum        | 0                                | 7,948                            | 6,715                            | 5,355                            | 6,250                             | 3,787                             | 26,374   | 7,146  | 11,656   | 5,598                           | 0                                | 1,913  |
|                  | Total          | 0                                | 223,314                          | 126,126                          | 40,143                           | 92,565                            | 45,915                            | 528,062  | 92,591   | 275,808  | 146,980                         | 0                                | 28,342                                       |
| Dec              | Average        | 0                                | 6,974                            | 5,183                            | 1,995                            | 3,553                             | 1,674                             | 19,378   | 0  | 5,898  | 5,336                           | 0                                | 0  |
|                  | Maximum        | 0                                | 7,899                            | 7,455                            | 4,504                            | 5,973                             | 5,015                             | 24,226   | 0  | 6,434  | 5,432                           | 0                                | 0  |
|                  | Total          | 0                                | 216,191                          | 160,660                          | 61,856                           | 110,134                           | 51,885                            | 600,726  | 0  | 182,823  | 165,416                         | 0                                | 0  |
| 2023             | Average        | 0                                | 7,161                            | 4,981                            | 1,037                            | 2,923                             | 1,947                             | 18,049   | 4,319  | 8,769  | 5,536                           | 0                                | 1,394  |
|                  | Maximum        | 0                                | 8,046                            | 7,625                            | 7,138                            | 6,836                             | 7,331                             | 27,841   | 8,449  | 13,308   | 5,779                           | 0                                | 4,990  |
| Year             | Total          | 0                                | 2,611,739                        | 1,817,613                        | 378,776                          | 1,063,783                         | 708,854                           | 6,580,765  | 1,585,088                                      | 3,210,094  | 2,020,285                       | 0                                | 509,941                                      |
|                  | Average Pumped | 0%                               | 75%                              | 52%                              | 11%                              | 30%                               | 20%                               | 63%  | 81%  | 35%  | 85%                             | 0%                               | 21%  |



Table 5: Permit-to-Take-Water Raw Pumpages, 2023

| Facility         | Dean Well      | Downey Well    | Emma Well      | Helmar Well    | Membro Well    | Paisley Well   | Park Wells #1 and #2 | Queensdale Well | University Well | Water Street Well |               |
|------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------------|-----------------|-----------------|-------------------|---------------|
| Units            | m <sup>3</sup> | m <sup>3</sup> | m <sup>3</sup> | m <sup>3</sup> | m <sup>3</sup> | m <sup>3</sup> | m <sup>3</sup>       | m <sup>3</sup>  | m <sup>3</sup>  | m <sup>3</sup>    |               |
| Regulatory limit | 2,300          | 5,273          | 3,100          | 3,273          | 6,050          | 3,200          | 10,300               | 5,237           | 3,300           | 3,400             |               |
| Jan              | Average        | 1,326          | 3,402          | 2,432          | 0              | 2,279          | 0                    | 1,911           | 480             | 1,648             | 1,471         |
|                  | Maximum        | 1,420          | 3,506          | 2,521          | 0              | 2,725          | 0                    | 4,236           | 524             | 2,184             | 1,542         |
|                  | <b>Total</b>   | <b>41,117</b>  | <b>105,453</b> | <b>75,387</b>  | <b>0</b>       | <b>70,654</b>  | <b>0</b>             | <b>59,228</b>   | <b>14,875</b>   | <b>51,085</b>     | <b>45,592</b> |
| Feb              | Average        | 1,281          | 3,426          | 2,426          | 0              | 2,716          | 0                    | 2,074           | 476             | 1,715             | 1,454         |
|                  | Maximum        | 1,415          | 3,468          | 2,501          | 0              | 2,724          | 0                    | 6,299           | 506             | 2,009             | 1,506         |
|                  | <b>Total</b>   | <b>35,865</b>  | <b>95,936</b>  | <b>67,919</b>  | <b>0</b>       | <b>76,041</b>  | <b>0</b>             | <b>58,084</b>   | <b>13,317</b>   | <b>48,028</b>     | <b>40,717</b> |
| Mar              | Average        | 5,715          | 1,177          | 2,448          | 0              | 2,711          | 0                    | 1,759           | 381             | 1,637             | 1,244         |
|                  | Maximum        | 5,760          | 1,403          | 2,524          | 0              | 2,725          | 0                    | 3,566           | 539             | 2,012             | 1,456         |
|                  | <b>Total</b>   | <b>177,172</b> | <b>36,475</b>  | <b>75,873</b>  | <b>0</b>       | <b>84,048</b>  | <b>0</b>             | <b>54,516</b>   | <b>11,814</b>   | <b>50,732</b>     | <b>38,566</b> |
| Apr              | Average        | 1,085          | 2,576          | 2,466          | 0              | 2,698          | 0                    | 1,641           | 487             | 891               | 1,420         |
|                  | Maximum        | 1,120          | 2,609          | 2,554          | 2              | 2,733          | 0                    | 2,653           | 539             | 1,768             | 1,534         |
|                  | <b>Total</b>   | <b>32,538</b>  | <b>77,266</b>  | <b>73,995</b>  | <b>2</b>       | <b>80,936</b>  | <b>0</b>             | <b>49,217</b>   | <b>14,623</b>   | <b>26,729</b>     | <b>42,591</b> |
| May              | Average        | 1,205          | 2,555          | 2,447          | 0              | 2,716          | 0                    | 1,910           | 469             | 621               | 1,180         |
|                  | Maximum        | 1,411          | 2,605          | 2,547          | 2              | 2,734          | 0                    | 5,680           | 519             | 2,427             | 1,507         |
|                  | <b>Total</b>   | <b>37,347</b>  | <b>79,212</b>  | <b>75,868</b>  | <b>2</b>       | <b>84,196</b>  | <b>0</b>             | <b>59,211</b>   | <b>14,544</b>   | <b>19,236</b>     | <b>36,588</b> |
| Jun              | Average        | 969            | 2,361          | 2,419          | 0              | 1,369          | 0                    | 2,995           | 470             | 1,345             | 1,149         |
|                  | Maximum        | 1,058          | 2,587          | 2,520          | 2              | 2,734          | 0                    | 5,878           | 557             | 2,444             | 1,405         |
|                  | <b>Total</b>   | <b>29,055</b>  | <b>70,824</b>  | <b>72,564</b>  | <b>12</b>      | <b>41,071</b>  | <b>0</b>             | <b>89,841</b>   | <b>14,087</b>   | <b>40,337</b>     | <b>34,456</b> |
| Jul              | Average        | 976            | 2,761          | 2,458          | 1              | 2,565          | 0                    | 2,012           | 461             | 1,747             | 1,334         |
|                  | Maximum        | 1,038          | 3,178          | 2,533          | 4              | 2,739          | 0                    | 5,416           | 528             | 1,867             | 1,528         |
|                  | <b>Total</b>   | <b>30,268</b>  | <b>85,584</b>  | <b>76,183</b>  | <b>18</b>      | <b>79,523</b>  | <b>0</b>             | <b>62,368</b>   | <b>14,285</b>   | <b>54,145</b>     | <b>41,356</b> |

| Facility         |                | Dean Well      | Downey Well    | Emma Well      | Helmar Well    | Membro Well    | Paisley Well   | Park Wells #1 and #2 | Queensdale Well | University Well | Water Street Well |
|------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------------|-----------------|-----------------|-------------------|
| Units            |                | m <sup>3</sup> | m <sup>3</sup> | m <sup>3</sup> | m <sup>3</sup> | m <sup>3</sup> | m <sup>3</sup> | m <sup>3</sup>       | m <sup>3</sup>  | m <sup>3</sup>  | m <sup>3</sup>    |
| Regulatory limit |                | 2,300          | 5,273          | 3,100          | 3,273          | 6,050          | 3,200          | 10,300               | 5,237           | 3,300           | 3,400             |
| Aug              | Average        | 952            | 2,976          | 2,341          | 0              | 1,189          | 0              | 1,997                | 404             | 1,677           | 567               |
|                  | Maximum        | 1,019          | 3,111          | 2,550          | 1              | 2,736          | 0              | 2,539                | 496             | 1,879           | 1,187             |
|                  | <b>Total</b>   | <b>29,517</b>  | <b>92,251</b>  | <b>72,576</b>  | <b>7</b>       | <b>36,871</b>  | <b>0</b>       | <b>61,896</b>        | <b>12,509</b>   | <b>51,979</b>   | <b>17,575</b>     |
| Sep              | Average        | 1,187          | 3,011          | 2,463          | 0              | 3,170          | 0              | 1,796                | 434             | 1,736           | 0                 |
|                  | Maximum        | 1,298          | 3,078          | 2,542          | 1              | 4,190          | 0              | 2,547                | 487             | 1,858           | 0                 |
|                  | <b>Total</b>   | <b>35,599</b>  | <b>90,345</b>  | <b>73,901</b>  | <b>5</b>       | <b>95,109</b>  | <b>0</b>       | <b>53,868</b>        | <b>13,009</b>   | <b>52,093</b>   | <b>0</b>          |
| Oct              | Average        | 1,246          | 2,882          | 2,371          | 0              | 3,248          | 30             | 1,491                | 411             | 1,707           | 715               |
|                  | Maximum        | 1,306          | 3,052          | 2,546          | 1              | 3,378          | 466            | 2,164                | 475             | 1,832           | 1,626             |
|                  | <b>Total</b>   | <b>38,616</b>  | <b>89,343</b>  | <b>73,504</b>  | <b>2</b>       | <b>100,674</b> | <b>931</b>     | <b>46,210</b>        | <b>12,745</b>   | <b>52,917</b>   | <b>22,150</b>     |
| Nov              | Average        | 1,233          | 2,281          | 2,057          | 0              | 2,818          | 728            | 1,388                | 391             | 1,630           | 1,466             |
|                  | Maximum        | 1,257          | 2,797          | 2,152          | 0              | 3,059          | 792            | 1,712                | 434             | 1,870           | 1,565             |
|                  | <b>Total</b>   | <b>36,990</b>  | <b>68,426</b>  | <b>61,720</b>  | <b>0</b>       | <b>84,544</b>  | <b>21,851</b>  | <b>41,647</b>        | <b>11,735</b>   | <b>48,907</b>   | <b>43,987</b>     |
| Dec              | Average        | 1,220          | 2,426          | 2,022          | 0              | 1,335          | 704            | 1,318                | 130             | 1,943           | 1,511             |
|                  | Maximum        | 1,254          | 2,794          | 2,079          | 0              | 2,877          | 789            | 2,041                | 422             | 2,291           | 1,577             |
|                  | <b>Total</b>   | <b>37,822</b>  | <b>75,219</b>  | <b>62,678</b>  | <b>0</b>       | <b>41,373</b>  | <b>21,838</b>  | <b>40,849</b>        | <b>4,018</b>    | <b>60,220</b>   | <b>46,836</b>     |
| 2023 Year        | Average        | 1,533          | 2,653          | 2,363          | 0              | 2,401          | 122            | 1,857                | 416             | 1,525           | 1,126             |
|                  | Maximum        | 5,760          | 3,506          | 2,554          | 4              | 4,190          | 792            | 6,299                | 557             | 2,444           | 1,626             |
|                  | <b>Total</b>   | <b>561,906</b> | <b>966,333</b> | <b>862,168</b> | <b>48</b>      | <b>875,040</b> | <b>44,621</b>  | <b>676,935</b>       | <b>151,562</b>  | <b>556,407</b>  | <b>410,416</b>    |
|                  | Average Pumped | 67%            | 51%            | 76%            | 0%             | 40%            | 4%             | 18%                  | 8%              | 46%             | 33%               |

## City of Guelph Water Services – Permit-to-Take-Water Instantaneous Flows, January 1, 2023 – December 31, 2023

Table 6 and Table 7 presented below, outline the Instantaneous Flow Summary for 2022. Table 6 includes the following sources: Arkell Well 1, Arkell Well 6, Arkell Well 7, Arkell Well 8, Arkell Well 14, Arkell Well 15, Arkell Recharge Pump, Arkell Springs Glen Collector System, Burke Well, Calico Well, Carter Wells 1 and 2. Table 7 includes the following sources: Dean Well, Downey Well, Emma Well, Helmar Well, Membro Well, Paisley Well, Park Wells 1 and 2, Queensdale Well, University Well and Water Street Well.

**Table 6: Permit-to-Take-Water Instantaneous Flows, 2023**

| Facility         |         | Arkell Well #1 | Arkell Well #6 | Arkell Well #7 | Arkell Well #8 | Arkell Well #14 | Arkell Well #15 | Arkell - Recharge System | Arkell Springs Glen Collector System | Burke Well | Calico Well | Carter Wells |
|------------------|---------|----------------|----------------|----------------|----------------|-----------------|-----------------|--------------------------|--------------------------------------|------------|-------------|--------------|
| Units            |         | L/s            | L/s            | L/s            | L/s            | L/s             | L/s             | L/s                      | L/s                                  | L/s        | L/s         | L/s          |
| Regulatory limit |         | 37.9           | 111.0          | 111.0          | 111.0          | 111.0           | 111.0           | 157.8                    | 290.0                                | 75.8       | 60.6        | 75.8         |
| Jan              | Average | 0.0            | 64.3           | 70.7           | 22.2           | 26.2            | 54.0            | 0.0                      | 50.7                                 | 64.6       | 0.0         | 0.0          |
|                  | Maximum | 0.0            | 93.3           | 90.6           | 86.9           | 90.6            | 89.2            | 0.0                      | 55.5                                 | 67.5       | 0.0         | 0.0          |
| Feb              | Average | 0.0            | 85.1           | 63.0           | 12.9           | 42.3            | 39.8            | 0.0                      | 42.0                                 | 66.6       | 0.0         | 0.0          |
|                  | Maximum | 0.0            | 92.7           | 90.8           | 87.6           | 91.0            | 87.4            | 0.0                      | 50.0                                 | 67.9       | 0.0         | 0.0          |
| Mar              | Average | 0.0            | 86.7           | 66.0           | 16.9           | 44.2            | 46.1            | 0.0                      | 47.7                                 | 66.2       | 0.0         | 6.5          |
|                  | Maximum | 0.0            | 92.9           | 90.8           | 85.7           | 90.6            | 86.8            | 0.0                      | 58.1                                 | 67.8       | 0.0         | 58.6         |
| Apr              | Average | 0.0            | 87.8           | 49.9           | 2.1            | 43.5            | 14.0            | 40.9                     | 79.1                                 | 66.2       | 0.0         | 36.4         |
|                  | Maximum | 0.0            | 93.6           | 92.8           | 87.2           | 93.4            | 89.0            | 114.6                    | 108.8                                | 68.0       | 0.0         | 58.7         |
| May              | Average | 0.0            | 81.7           | 54.2           | 7.7            | 37.8            | 16.0            | 95.3                     | 117.4                                | 65.7       | 0.0         | 40.2         |
|                  | Maximum | 0.0            | 93.2           | 91.9           | 87.6           | 92.2            | 88.8            | 98.4                     | 128.1                                | 67.4       | 0.0         | 58.4         |
| Jun              | Average | 0.0            | 88.8           | 62.5           | 7.2            | 35.8            | 21.0            | 92.0                     | 133.0                                | 65.7       | 0.0         | 35.0         |
|                  | Maximum | 0.0            | 92.3           | 90.6           | 86.5           | 89.7            | 85.6            | 93.4                     | 141.1                                | 67.1       | 0.0         | 59.0         |
| Jul              | Average | 0.0            | 87.6           | 47.1           | 5.5            | 24.7            | 5.8             | 90.2                     | 135.6                                | 64.9       | 0.0         | 21.2         |
|                  | Maximum | 0.0            | 92.8           | 91.4           | 85.7           | 91.7            | 85.1            | 91.2                     | 158.3                                | 66.6       | 0.0         | 57.5         |

| Facility         |         | Arkell Well #1 | Arkell Well #6 | Arkell Well #7 | Arkell Well #8 | Arkell Well #14 | Arkell Well #15 | Arkell - Recharge System | Arkell Springs Glen Collector System | Burke Well | Calico Well | Carter Wells |
|------------------|---------|----------------|----------------|----------------|----------------|-----------------|-----------------|--------------------------|--------------------------------------|------------|-------------|--------------|
| Units            |         | L/s            | L/s            | L/s            | L/s            | L/s             | L/s             | L/s                      | L/s                                  | L/s        | L/s         | L/s          |
| Regulatory limit |         | 37.9           | 111.0          | 111.0          | 111.0          | 111.0           | 111.0           | 157.8                    | 290.0                                | 75.8       | 60.6        | 75.8         |
| Aug              | Average | 0.0            | 89.9           | 54.9           | 2.0            | 26.4            | 9.0             | 83.6                     | 148.0                                | 64.2       | 0.0         | 13.6         |
|                  | Maximum | 0.0            | 93.6           | 91.0           | 86.7           | 90.4            | 86.8            | 90.6                     | 158.9                                | 65.8       | 0.0         | 57.4         |
| Sep              | Average | 0.0            | 89.3           | 59.2           | 16.4           | 29.9            | 6.1             | 81.0                     | 140.0                                | 63.6       | 0.0         | 17.1         |
|                  | Maximum | 0.0            | 92.3           | 90.3           | 86.7           | 89.4            | 83.3            | 86.5                     | 147.9                                | 64.8       | 0.0         | 57.1         |
| Oct              | Average | 0.0            | 68.4           | 55.2           | 12.6           | 18.8            | 21.8            | 81.3                     | 128.8                                | 62.8       | 0.0         | 12.9         |
|                  | Maximum | 0.0            | 92.4           | 90.3           | 87.4           | 91.7            | 86.3            | 84.1                     | 143.3                                | 64.5       | 0.0         | 50.0         |
| Nov              | Average | 0.0            | 86.2           | 48.4           | 15.3           | 35.4            | 17.6            | 36.3                     | 100.3                                | 56.6       | 0.0         | 11.2         |
|                  | Maximum | 0.0            | 92.3           | 90.5           | 87.0           | 90.6            | 86.0            | 82.6                     | 134.1                                | 65.5       | 0.0         | 25.1         |
| Dec              | Average | 0.0            | 80.9           | 60.1           | 23.1           | 41.5            | 19.4            | 0.0                      | 68.4                                 | 61.8       | 0.0         | 0.0          |
|                  | Maximum | 0.0            | 92.2           | 90.5           | 86.1           | 91.3            | 85.9            | 0.0                      | 76.7                                 | 63.7       | 0.0         | 0.0          |

Table 7: City of Guelph - Instantaneous Flow Summary, 2023

| Facility         |         | Dean Well | Downey Well | Emma Well | Helmar Well | Membro Well | Paisley Well | Park Wells | Queensdale Well | University Well | Water Street Well |
|------------------|---------|-----------|-------------|-----------|-------------|-------------|--------------|------------|-----------------|-----------------|-------------------|
| Units            |         | L/s       | L/s         | L/s       | L/s         | L/s         | L/s          | L/s        | L/s             | L/s             | L/s               |
| Regulatory limit |         | 34.6      | 60.6        | 40.9      | 37.9        | 78.0        | 42.5         | 127.2      | 60.6            | 46.2            | 44.4              |
| Jan              | Average | 15.4      | 39.5        | 28.2      | 0.0         | 26.4        | 0.0          | 22.4       | 5.6             | 19.1            | 17.0              |
|                  | Maximum | 24.2      | 45.1        | 30.5      | 0.0         | 51.4        | 0.0          | 113.2      | 11.3            | 27.8            | 21.5              |
| Feb              | Average | 14.9      | 39.7        | 28.2      | 0.0         | 31.4        | 0.0          | 24.2       | 5.5             | 19.8            | 16.9              |
|                  | Maximum | 20.4      | 41.2        | 30.6      | 0.0         | 52.4        | 0.0          | 106.8      | 11.1            | 37.3            | 22.6              |
| Mar              | Average | 13.7      | 34.1        | 28.6      | 0.0         | 31.4        | 0.0          | 20.4       | 4.7             | 19.0            | 14.4              |
|                  | Maximum | 19.9      | 42.8        | 30.7      | 0.0         | 56.4        | 0.0          | 106.4      | 25.4            | 27.6            | 20.6              |
| Apr              | Average | 12.6      | 30.0        | 28.8      | 0.0         | 31.2        | 0.0          | 18.7       | 5.7             | 10.3            | 16.5              |
|                  | Maximum | 16.3      | 42.4        | 30.8      | 0.0         | 49.1        | 0.0          | 106.4      | 11.4            | 20.8            | 25.0              |
| May              | Average | 14.0      | 29.9        | 28.9      | 0.0         | 31.4        | 0.0          | 20.3       | 5.5             | 7.2             | 13.7              |
|                  | Maximum | 30.2      | 44.1        | 31.1      | 0.0         | 38.7        | 0.0          | 106.1      | 11.1            | 28.7            | 21.9              |
| Jun              | Average | 11.1      | 28.1        | 28.3      | 0.0         | 15.9        | 0.0          | 34.6       | 5.5             | 15.6            | 13.5              |
|                  | Maximum | 17.4      | 44.3        | 30.8      | 0.0         | 62.2        | 0.0          | 105.2      | 10.4            | 28.8            | 22.4              |
| Jul              | Average | 11.4      | 32.9        | 28.6      | 0.0         | 29.7        | 0.0          | 24.5       | 5.4             | 20.2            | 16.7              |
|                  | Maximum | 18.0      | 42.7        | 30.9      | 0.0         | 52.4        | 0.0          | 105.5      | 50.0            | 21.9            | 22.3              |
| Aug              | Average | 11.1      | 35.5        | 27.3      | 0.0         | 14.4        | 0.0          | 23.1       | 4.7             | 19.4            | 6.8               |
|                  | Maximum | 19.6      | 37.8        | 32.3      | 0.0         | 55.4        | 0.0          | 105.2      | 12.9            | 22.3            | 16.6              |
| Sep              | Average | 13.8      | 35.4        | 28.8      | 0.0         | 35.9        | 0.0          | 20.7       | 5.1             | 20.1            | 0.0               |
|                  | Maximum | 20.5      | 37.1        | 31.0      | 0.0         | 62.2        | 0.0          | 105.2      | 11.6            | 21.8            | 0.0               |

| Facility         |         | Dean Well | Downey Well | Emma Well | Helmar Well | Membro Well | Paisley Well | Park Wells | Queensdale Well | University Well | Water Street Well |
|------------------|---------|-----------|-------------|-----------|-------------|-------------|--------------|------------|-----------------|-----------------|-------------------|
| Units            |         | L/s       | L/s         | L/s       | L/s         | L/s         | L/s          | L/s        | L/s             | L/s             | L/s               |
| Regulatory limit |         | 34.6      | 60.6        | 40.9      | 37.9        | 78.0        | 42.5         | 127.2      | 60.6            | 46.2            | 44.4              |
| Oct              | Average | 14.5      | 34.5        | 28.9      | 0.0         | 37.7        | 0.3          | 17.5       | 4.9             | 19.8            | 8.6               |
|                  | Maximum | 18.5      | 36.4        | 31.1      | 0.0         | 57.6        | 10.6         | 105.4      | 10.3            | 21.7            | 32.6              |
| Nov              | Average | 14.8      | 29.4        | 28.8      | 0.0         | 32.6        | 8.4          | 17.6       | 5.0             | 18.8            | 17.7              |
|                  | Maximum | 17.5      | 41.3        | 31.0      | 0.0         | 58.2        | 10.0         | 105.2      | 10.1            | 21.7            | 27.1              |
| Dec              | Average | 14.6      | 29.9        | 28.7      | 0.0         | 15.7        | 8.2          | 16.7       | 1.7             | 22.5            | 18.6              |
|                  | Maximum | 17.3      | 35.6        | 30.9      | 0.0         | 60.2        | 10.5         | 104.9      | 9.1             | 27.4            | 28.3              |