REPORT

Analysis of the City of Merritt Groundwater-Surface Water Data - Fall 2021

Groundwater-Surface Water Interaction Study

Submitted to:

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Executive Summary

This report provides an updated analysis of groundwater-surface water interaction within the City of Merritt and includes an analysis of the effect of pumping at the municipal wells and sources of recharge to the Upper Merritt aquifer. This analysis was primarily based on data from the fall 2021 field program conducted by Ministry of Forests, Lands and Natural Resource Operations and Rural Development (FLNRORD) that consisted of the collection of water level, water temperature, and water chemistry data, streamflow measurements, and obtaining daily pumping rates from city's production wells over June through December 2021.

The initial assessment of groundwater-surface water interaction in the City of Merritt was based on groundwater level and water chemistry data collected by FLNRORD in fall 2020. Golder's analysis of this data, documented in Golder (2021), included several recommendations to improve the understanding of groundwater-surface water interaction. FLNRORD completed the second field program during fall 2021 to further the assessment. The fall 2021 program incorporated most of the recommendations from the 2020 assessment and included additional items such as the installation of mini-piezometers within the rivers.

The analysis of data from the fall 2021 field program provides multiple lines of evidence demonstrating a hydraulic connection between the unconfined Upper Merritt aquifer and the two rivers flowing through the City of Merritt. The additional data also advances the conceptual hydrogeological model for the Merritt Area. The analysis of continual monitoring data during pumping of the municipal wells suggests that the Coldwater River does not act like a hydraulic boundary (recharge boundary) in the area of Voght Park and that leakage from the river is lower than the pumping rate in the nearby production wells (Colletteville Well and Voght Park Wells 1 & 2).

The primary update to the conceptual model is that there are multiple sources of recharge to the Upper Merritt aquifer including Coldwater River losses, Nicola River losses, local precipitation, upgradient shallow groundwater inflow (from the Coldwater River valley and Nicola River / Nicola Lake valley) and upwelling of groundwater from the underlying confined aquifer, and that the contribution from each of these sources varies across the aquifer. This update is primarily based on the analysis of natural isotopes in groundwater and surface water and the water level data for the aquifers and rivers.

Although the analysis afforded a qualitative assessment of groundwater-surface water interaction, a quantitative assessment proved inconclusive. Several approaches for obtaining quantitative estimates are recommended.

Study Limitations

This report was prepared for the exclusive use of the Fraser Basin Council and the Ministry of Forests, Lands and Natural Resource Operations and Rural Development. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Golder Associates Ltd. (Golder) accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

The report is based on data and information collected during investigations conducted by the Ministry of Forests, Lands and Natural Resource Operations and Rural Development and provided to Golder and is based solely on the condition of the Site at the time of the investigations as described in this report, supplemented by historical data provided to Golder as described in this report. Golder has relied in good faith on information provided by third parties. We accept no responsibility for any deficiency, misstatements, or inaccuracies contained in this report as a result of omissions, misinterpretations, or fraudulent or negligent acts of others.

The assessment of environmental conditions at this Site has been made using the results of chemical analysis of discrete groundwater and surface water samples from a limited number of locations. The data presented in this report represent groundwater conditions encountered at the time of monitoring and sampling during this time period. Groundwater conditions may vary with location, depth, time, sampling methodology, analytical techniques and other factors. The Site conditions between sampling locations have been inferred based on conditions observed at monitoring well locations. Subsurface conditions may vary from these sample locations. Additional study, including further subsurface investigation, can reduce the inherent uncertainties associated with this type of study.

Golder makes no warranty, expressed or implied, and assumes no liability with respect to the use of the information contained in this report at the subject Site, or any other site, for other than its intended purpose.

If new information is discovered during future work or other studies, Golder should be requested to re-evaluate the conclusions of this report and provide amendments as required prior to any reliance upon the information presented herein.

The services performed as described in this report were conducted in a manner consistent with that level of care and skill normally exercised by other members of the engineering and science professions currently practicing under similar conditions, subject to the time limits and financial and physical constraints applicable to the services.

Table of Contents

1.0 INTRODUCTION 1

2.0 BACKGROUND 1

3.0 DATASET FROM 2021 FIELD PROGRAM 1

4.0 SCOPE OF WORK 2

5.0 MONITORING LOCATIONS 3

5.1 Monitoring Well Locations 3

5.2 Mini-piezometer Locations 4

5.3 Production Wells 6

5.4 Stream Flow Monitoring 6

6.0 RESULTS 6

6.1 Analysis of Water Levels 7

6.1.1 Water Table Elevation and Shallow Groundwater Flow Direction 7

6.1.2 Water Levels and Vertical Hydraulic Gradients 8

6.1.2.1 Nicola River 8

6.1.2.2 Coldwater River 10

6.1.2.3 Vertical Hydraulic Gradient between Aquifers 11

6.2 Comparison of Water Temperature Trends near Rivers 12

6.2.1 Nicola River 12

6.2.2 Coldwater River 14

6.3 Influence of Pumping at Production Wells 14

6.3.1 Fairley Park Well 15

6.3.2 Colletteville Well 16

6.3.3 Voght Park 17

6.3.4 Kengard 18

6.4 Analysis of Stream Flows 18

6.4.1 Pumping during Streamflow Survey 19

6.4.2 Licenced Surface Water Abstractions during Streamflow Survey 19

6.4.3 Baseflow Estimates and Associated Uncertainties 20
6.5 Water Chemistry 23
6.5.1 Piper Diagram 23
6.5.2 Isotope Analysis 24
6.5.3 Groundwater Mixing Analysis 27
7.0 CONCLUSIONS 27
8.0 RECOMMENDATIONS 30
9.0 CLOSURE 31
10.0 REFERENCES 32

TABLES

Table 1: Summary of City of Merritt Nested Monitoring Wells 3
Table 2: Paired Mini-piezometer Locations and Closest Shallow Groundwater Monitoring Well 5
Table 3: Production Well Installation Details 6
Table 4: Nicola River Water Level Comparison 9
Table 5: Coldwater River Water Level Comparison 10
Table 6: Vertical Hydraulic Gradient at Nested Monitoring Wells 11
Table 7: Summary of 2021 Production Well Data 15
Table 8: Current Surface Water Licences in City of Merritt 19
Table 9: Changes in Stream Flow in the Coldwater River 20
Table 10: Changes in Stream Flow in the Nicola River 22

FIGURES

Figure 1: Study Area, Monitoring Locations and Local Aquifers 33
Figure 2: Water Table Elevation, September 2021 33
Figure 3: River Level and Upper Merritt Aquifer Level (OW296) vs Precipitation 33
Figure 4: Water Levels and Vertical Hydraulic Gradients, September 2021 33
Figure 5: River Level vs Shallow Groundwater Levels over Time - Nicola River 33
Figure 6: River Level vs Shallow Groundwater Levels over Time - Coldwater River 33
Figure 7: Nicola River, Mini-piezometer and Monitoring Well Temperature Profiles 33
Figure 8: Coldwater River and Monitoring Well Temperature Profiles 33

Figure 9: Fairley Park Well - Daily Pumping Rates vs nearby Groundwater Levels 33
Figure 10: Colletteville Well - Daily Pumping Rates and nearby Groundwater Levels 33
Figure 11: Voght Park Well Daily Pumping Rate (m^3/day) and Monitoring Well Groundwater Level (masl) 33
Figure 12: Kengard Well Daily Pumping Rate (m^3/day) and Monitoring Well Groundwater Level (masl).....33
Figure 13: Streamflow Measurements.....33
Figure 14: Production Well Daily Pumping Rates and River Flow September 2021.....33
Figure 15: Geochemical Analysis - Piper Plot; Sampled September 2021 33
Figure 16: H2O Isotope Fractionation Analysis; Sampled September 2021.....33

APPENDICES

APPENDIX A
Merritt Water System – Daily Water Volumes

APPENDIX B
Well Data from FLNRORD

APPENDIX C
Water Quality Data from FLNRORD

APPENDIX D
Photos From 2021 Field Program

1.0 INTRODUCTION

Golder Associates Ltd. (Golder) was retained by the Ministry of Forests, Lands and Natural Resource Operations and Rural Development (FLNRORD) and the Fraser Basin Council (FBC) to update the assessment of the groundwater-surface water interaction in the vicinity of the City of Merritt, BC as part of the "Nicola/Coldwater Surface Water/Groundwater Interaction Study". This assessment is in follow-up to Golder's initial assessment entitled "*Analysis of City of Merritt Groundwater-Surface Water Data from Fall 2020" (Golder 2021).* The updated assessment is based on the groundwater and surface water data set from fall 2021 provided by FLNRORD.

2.0 BACKGROUND

The first field program for the assessment of groundwater-surface water interaction in the City of Merritt was completed in fall 2020 by FLNRORD and consisted of the collection of groundwater level data and water chemistry data. The study goals were to find evidence of groundwater-surface water interaction in the Merritt Area and sources of recharge to the Upper Merritt aquifer. Golder's assessment of this data is documented in Golder (2021). This assessment included several recommendations to improve the understanding of groundwater-surface water interaction. These recommendations included items such as the installation of surface water monitoring points, use of instrumentation (pressure transducers with data loggers) to obtain continuous water level and temperature records for groundwater and surface water, streamflow monitoring, amalgamation of groundwater extraction records and repeat water quality sampling to target summer low flow and peak groundwater usage period.

FLNRORD completed a second field program in Merritt during fall 2021 to further the assessment groundwater-surface water interaction within the City of Merritt. The fall 2021program followed most of the recommendations from the 2020 assessment (Golder 2021) and included additional items such as the installation of mini-piezometers within the rivers. An overview of the data collected from this field program is provided in the following section.

3.0 DATASET FROM 2021 FIELD PROGRAM

The following data were collected by FLNRORD as part of the fall 2021 field program and provided to Golder for this assessment:

- Manual water level measurements recorded from monitoring points within the Coldwater and Nicola rivers (mini-piezometers installed by FLNRORD) and from monitoring wells on intermittent dates between March 2021 and December 2021. Most monitoring wells had at least one manual measurement recorded in early to mid September 2021 whereas most mini-piezometers had at least one manual measurement recorded between late September and early October 2021.
- Geodetic survey results including elevations for mini-piezometers on 9 November 2021.
- Water quality and isotope analyses of water samples collected between 7 September 2021 and 4 October 2021 from:
  - 9 surface water sites
    - 4 along the Nicola River
    - 5 along the Coldwater River

  - 6 hyporheic zone sites (mini-piezometers installed in riverbed)
    - 3 along the Nicola River
    - 3 along the Coldwater River
  - 24 groundwater monitoring wells
  - 2 provincial groundwater observation wells
  - 4 municipal production wells
- Hourly water level and temperature data between June 2021 to December 2021 from pressure transducers deployed at:
  - 19 groundwater monitoring wells
  - 3 surface water stations along the Nicola River
  - 2 hyporheic zone mini-piezometers along the Nicola River
  - 2 provincial groundwater observation wells
- Streamflow measurements on two events:16 September and 23 September 2021.
  - 6 sites on the Coldwater River
  - 4 sites on the Nicola River
- Pumping data from five City of Merritt production wells from June through December 2021

As a result of the southern British Columbia atmospheric river event on 14 November 2021, the City of Merritt was flooded by the Coldwater River breaching its banks. A number of the monitoring locations with data loggers along the Coldwater River were destroyed prior to the data being downloaded. As a result, continuous water level data was not available for any of the Coldwater River monitoring points including the mini-piezometers along the Coldwater River with the exception of data collected at the Water Survey of Canada (WSC) hydrometric station 08LG010 located in proximity to Voght Park. Manual water level measurements were available for the Coldwater monitoring locations prior to 14 November 2021.

4.0 SCOPE OF WORK

The work scope for this phase of the project was to analyze the dataset provided by FLNRORD to:

- Compare the water level and temperature data from pressure transducers and evaluate trends/ hydraulic responses between groundwater and surface water.
- Estimate the magnitude and direction of vertical gradients in the vicinity of the Nicola and Coldwater Rivers using water level elevations from paired surface water/mini-piezometers and shallow nested monitoring wells.
- Evaluate the influence of the pumping wells on the water level trends, river levels and river flow.

- Assess changes in stream flows in the Coldwater River and Nicola River between the incremental flow measurement locations and WSC stations to evaluate gaining and losing stream reaches.
- Prepare graphical plots of the major ion chemistry (i.e., on a Piper Diagram) and stable isotopes on a δ2H / δ18O cross-plot for the surface water and groundwater samples.
- Compare the results of the 2021 Field program to the results obtained in 2020.

5.0 MONITORING LOCATIONS

The following sections provide details on the locations utilized for groundwater and surface water monitoring and sample collection for the 2021 field program. These locations include the municipal production wells, provincial observation wells, monitoring wells, mini-piezometers installed in the rivers (paired surface water and shallow groundwater locations) and stream flow monitoring locations.

The locations of all groundwater and surface water monitoring and sampling sites along with the mapped aquifers (Gorski et.al. 2018) around the City of Merritt are shown on Figure 1. The well information and water level measurement spreadsheet provided by FLNRORD is provided in APPENDIX B. The data set from FLNRORD includes survey results (UTM co-ordinates and geodetic elevations) for the monitoring wells, municipal production wells and the mini-piezometers.

5.1 Monitoring Well Locations

The City of Merritt groundwater monitoring well network includes a total of 11 nested monitoring wells. Four of the nested monitoring wells are alongside the Coldwater River and three are alongside the Nicola River. Of the remaining four locations, two are located in the vicinity for the City of Merritt Kengard production well and the City of Merritt Fairley Park production well, and the other two are situated on the west side of the Coldwater River upgradient and downgradient of the City of Merritt's water treatment rapid infiltration basins (RIBs).

A summary of the monitoring well details is provided in Table 1. Borehole logs for the MW04 and MW07 series monitoring wells are provided in BCGW (2006) and BCGW (2011) respectively. As described in the proceeding section, several of these nested monitoring wells were equipped with pressure transducers to provide a continuous record of groundwater level and temperature.

Table 1: Summary of City of Merritt Nested Monitoring Wells

Well Name	Depth (mbgs)	Screened Formation	Aquifer Name	Approx. Distance to Nearest Surface Water (m)
MW04-1S	4.8	Sand & Gravel	Upper Merritt (unconfined)	Coldwater R (15 m)
MW04-1D	8.5	Gravel	Upper Merritt (unconfined)	Coldwater R (15 m)
MW04-2S	5.5	Silty Gravel	Upper Merritt (unconfined)	Coldwater R (8 m)
MW04-2D	9.2	Clay	Aquitard	Coldwater R (8 m)
MW04-3S	6.2	Gravel	Upper Merritt (unconfined)	Coldwater R (25 m)
MW04-3D	11.2	Gravel	Upper Merritt (unconfined)	Coldwater R (25 m)

Well Name	Depth (mbgs)	Screened Formation	Aquifer Name	Approx. Distance to Nearest Surface Water (m)
MW04-4S	5.3	Silty Gravel	Upper Merritt (unconfined)	Nicola R (35 m)
MW04-4D	9.2	Clay	Aquitard	Nicola R (35 m)
MW04-5S	5.4	Sand & Gravel	Upper Merritt (unconfined)	Nicola R (23 m)
MW04-5D	9.9	Gravel	Upper Merritt (unconfined)	Nicola R (23 m)
MW04-6S	4.6	Sand	Upper Merritt (unconfined)	Nicola R (35 m)
MW04-6D	9.4	Clay	Aquitard	Nicola R (35 m)
MW-3S	5.5	Not Detemined[1]	Likely Upper Merritt[2]	Nicola R (185 m) RIB (70 m)
MW-3D	11.0	Not Determined	Likely Upper Merritt	Nicola R (185 m) RIB (70 m)
MW-4S	5.2	Not Determined[1]	Likely Upper Merritt[2]	Coldwater R (17 m)
MW-4D	9.6	Not Determined	Likely Upper Merritt	Coldwater R (17 m)
MW-5S	5.2	Not Determined[1]	Likely Upper Merritt[2]	Coldwater R (210 m)
MW-5D	9.9	Not Determined	Likely Upper Merritt	Coldwater R (210 m)
MW07-1S	57	Sand & Gravel	Middle Merritt (confined)	Nicola R (295 m)
MW07-1M	86	Sand & Gravel	Lower Merritt (confined)	Nicola R (295 m)
MW07-1D	131	Sand & Gravel	Lower Merritt (confined)	Nicola R (295 m)
MW07-2S	30	Sand & Gravel	Upper Merritt (unconfined)	Coldwater R (390 m) Nicola R (285 m)
MW07-2M	58	Sand & Gravel	Middle Merritt (confined)	Coldwater R (390 m) Nicola R (285 m)
MW07-2D	132	Sand & Gravel	Lower Merritt (confined)	Coldwater R (390 m) Nicola R (285 m)

Table Notes:

1. Borehole log is not available to confirm lithology of screened interval.

2. The nearby wastewater rapid infiltration basins would require an underlying highly permeable sand and gravel formation, inferred to be the Upper Merritt aquifer, to effectively infiltrate treated wastewater.

5.2 Mini-piezometer Locations

As part of the 2021 field program, six drive-point mini-piezometer were installed within the rivers (3 in the Coldwater River and 4 3 in the Nicola River) with the screened intervals installed approximately 0.5 m to 1.3 m below the river bottom. Each were instrumented with a pressure transducer to record groundwater level and had a PVC pipe attached to the outside of it, acting as a stilling well to house a separate pressure transducer to record river levels (see photos in APPENDIX D. These paired mini-piezometer/stilling wells were implemented to:

- collect paired surface water and shallow groundwater samples in the hyporheic zone
- monitor paired river levels and shallow groundwater levels below the riverbed beneath the river level monitoring points to assess the vertical gradient as evidence of gaining or losing river conditions

A pre-existing stilling well, designed to monitor in the Nicola River upstream of its confluence with the Coldwater River, was also included in the field program and instrumented with a pressure transducer (location referred to as 'Nicola R u/s Coldwater (Norgaard)'.

Pressure transducers installed in the paired mini-piezometer/surface water stilling wells were set to monitor hourly changes in water levels and temperature (Table 2). Unfortunately, all the mini-piezometers and associated instrumentation installed in the Coldwater River were lost during the November flood event (on 14 November 2022) prior to the data being downloaded from the pressure transducers. Furthermore, pressure transducers at the Nicola River N'Kwala Bridge mini-piezometer location were lost due to vandalism. Consequently, continuous records of water level and temperature data are only available for two mini-piezometer locations: the Nicola River at Kengard and the Nicola River at Spring Granite. However, manual water level measurements were recorded at all mini-piezometer locations.

The six mini-piezometer pairs were installed in close proximity to existing nested monitoring wells situated near the riverbanks, as shown in Figure 1. This arrangement allowed for the direct comparison of geochemistry and water level elevations at these locations with respect to surface water, the hyporheic zone, and the shallow groundwater. A summary of the pairing of mini-piezometers and their nearest monitoring well nest is presented in Table 2. This table includes a description of the continuous water level monitoring records available at each paired location.

Table 2: Paired Mini-piezometer Locations and Closest Shallow Groundwater Monitoring Well

River Name	Nested Monitoring Well Location	Paired Mini-piezometer / Surface Water Locations	Hourly Water Level Data*
Nicola River	MW04-6 S/D (Kengard)	Nicola R Piezo (Kengard) Nicola R at Kengard	Available for MW04-6 S/D, Nicola River & Piezo
	MW04-5 S/D (N'Kwala Park)	Nicola R Piezo (N'Kwala Bridge) Nicola R at N'Kwala Bridge	Available for MW04-5 D. Instrument in MW04-5S failed and instruments in River & Piezo both lost due to vandalism
	MW04-4 S/D (Spring & Granite)	Nicola R Piezo (Spring & Granite) Nicola R at Spring & Granite	Available for MW04-4 S/D, Nicola River & Piezo
Coldwater River	MW04-3 S/D (May St)	Coldwater R Piezo (May St) Coldwater R at May St	Available for MW04-3 S/D. Instrumentation in River & Piezo both lost due to flood
	MW04-2 S/D (Claybanks)	Coldwater R Piezo (Claybanks) Coldwater R at Claybanks	All instrumentation lost due to flood
	MW04-1 S/D (Voght Park)	Coldwater U/S of Voght Park Piezo Coldwater R at Voght Park	Available for MW04-1 S/D, Instrumentation in River & Piezo both lost due to flood

Table Notes:

S – Shallow monitoring well of nested pair
D – Deep monitoring well of nested pair
*Monitoring wells listed had at least one manual measurement recorded in early to mid September 2021. Mini-piezometers had at least one manual measurement recorded between late September and early October 2021. All manual water level measurements provided in Appendix B.

5.3 Production Wells

Within the City of Merritt there are five production wells (Figure 1) that draw water from the Upper and Lower Merritt aquifers. Four of the production wells (Fairley Park, Colletteville, Voght Park Well #1 and #2) are screened in the unconfined Upper Merritt aquifer and the Kengard production well is screened in the confined Lower Merritt aquifer. The well information and distance from the rivers is summarized below in Table 3.

Table 3: Production Well Installation Details

Well Name	Well Depth (m)	Aquifer Name	Approx. Distance to Nearest Surface Water (m)
Fairley Park (WTN 38902)	25	Upper Merritt (unconfined)	Coldwater R (390 m) Nicola R (285 m)
Colletteville (WTN 40069)	45	Upper Merritt (unconfined)	Coldwater R (13 m)
Voght Park Well #2 [Voght VFD] (WTN 34180)	34	Upper Merritt (unconfined)	Coldwater R (34 m)
Voght Park Well #1 [Voght GE] (WTN 114668)	30	Upper Merritt (unconfined)	Coldwater R (58 m)
Kengard Well (WTN 97218)	139	Lower Merritt (confined)	Nicola R (250 m)

Tabulated 2021 daily water volumes and pump run-times for each of municipal well supplied by FLNRORD is provided in APPENDIX A.

5.4 Stream Flow Monitoring

Water Survey of Canada (WSC) hydrometric station 08LG010 is located on the Coldwater River at Voght Park in Merritt. WSC Station 08LG065 is located on the Nicola River at the outlet of Nicola Lake. Both locations provide hourly discharge, temperature, and water level information. Station 08LG065 is located significantly upstream of the study area and in close proximity to the dam at the outlet of Nicola Lake (Figure 1).

In addition to the WSC stations, streamflow was measured by FLNRORD on 16 and 23 September 2021 at six locations along the Coldwater River and four locations along the Nicola River. The streamflow measurement points (referred to as “measurement stations”) are also shown in Figure 1.

6.0 RESULTS

The results of the fall 2021 investigation are described in the subsections below. The following general terms are used characterize the type of exchange or interaction occurring between groundwater and surface water where applicable based on the results:

1) Gaining conditions: These conditions are applicable to stream reaches where groundwater upwelling occurs (i.e., stream is receiving groundwater).

2) Losing conditions: These conditions are applicable to stream reaches where surface water leaks out through the bed or bank to recharge groundwater.

3) Flow-through conditions: This term is used to describe conditions where water is entering and exiting a surface water body at multiple locations.

4) Zero-exchange conditions: This term, also known as parallel flow conditions, is used to describe streams embedded in a groundwater system in which no exchange is occurring between groundwater and the stream.

6.1 Analysis of Water Levels

The following subsections provide an analysis of surface water level elevations in the Coldwater and Nicola Rivers and shallow groundwater level elevations below the rivers and adjacent to the rivers within the unconfined Upper Merritt aquifer within the City of Merritt. An analysis of the vertical hydraulic gradients between the nested monitoring wells screened in the Upper, Middle and Lower Merritt aquifers is also presented below.

6.1.1 Water Table Elevation and Shallow Groundwater Flow Direction

The static water table elevation across the unconfined Upper Merritt aquifer within the City of Merritt was estimated from the dataset of shallow groundwater level elevations and river water level elevations recorded mostly in September 2021. The water levels and inferred water table elevation contours are presented on Figure 2. The water table contours were generated based on the assumption that the river is directly connected to the saturated groundwater zone (i.e., no unsaturated zone underlies the river) based on the permeable nature of the riverbed materials (sand, gravel, cobbles; see photos in Appendix D) and the lack of data indicating a continuous confining unit separating the river from the Upper Merritt aquifer. The water table contours in this figure are considered to reflect typical low water table conditions characteristic of the dry season. These contours also illustrate the following:

- The overall direction of groundwater flow in the unconfined Upper Merritt aquifer is west-northwesterly towards the Coldwater-Nicola River confluence.
- The average horizontal gradient in late fall 2021 was approximately 0.005 m/m across the aquifer.
- In the southern Merritt area between the Houston Street Bridge and Claybanks, the Coldwater River is inferred to have losing conditions or flow-through conditions where the river channel flows perpendicularly or tangentially to the direction of groundwater flow. Under flow-through conditions, the river is gaining on the upgradient (southeast) side of the channel and losing on the downgradient (northwest side of the channel. Flow-through conditions are also inferred in the Coldwater River downstream of Voght Park to near its confluence with the Nicola River. In between these locations, the river stretch from approximately Collett Bridge at Voght Park to Claybanks is inferred to vary between losing conditions, flow-through conditions and zero-exchange (parallel flow) conditions. In the Claybanks area, negligible surface water- groundwater exchange is inferred based on the surficial geology underlying the riverbed which consists of low permeability silts (BCGW 2006 – MW04-2 borehole log).
- The Nicola River is inferred to have losing conditions and/or zero-exchange (parallel flow) conditions downstream of Spring Granite to near its confluence with the Coldwater River and upstream of the river between Kengard and K'Kwala Park; however, because of the concave bend in the stretch of river between K'Kwala Park and Spring & Granite, this stretch is tangential to the groundwater flow direction; therefore, the river it is inferred to have gaining conditions within this stretch.

The plot in Figure 3 provides the groundwater level trend in the central area of the Upper Merritt aquifer at provincial Observation Well 296, the surface water level in the Coldwater River at Voght Park (WSC Station 08LG010) and the daily precipitation in Merritt from June through December 2021. The data on this figure illustrate that:

- The Coldwater River stage is more correlated to snowmelt and precipitation in the greater Coldwater River watershed than to precipitation events in Merritt. This is supported by the analysis of the natural isotopes in surface water samples from the Coldwater River discussed in Section 6.5.2.
- The water level in the Upper Merritt aquifer follows the general trend of the Coldwater River, receding following freshet and rising in the fall, with notable recharge occurring during the November 2021 flood event in the Coldwater River.
- Flow and associated river stage in the Coldwater River have a greater influence than precipitation in Merritt, on the water level in the Upper Merritt aquifer.

6.1.2 Water Levels and Vertical Hydraulic Gradients

There are three paired surface water and shallow groundwater locations along both the Nicola River and the Coldwater River Figure 4.

Elevations of the Nicola River at Kengard and Spring & Granite were determined from surveyed elevations, manual water level measurements and continuous water level monitoring.

The mini-piezometer at N'Kwala Park was destroyed prior to the collection of survey information and prior to the download of continuous water level and temperature measurements. Therefore, manual surface and groundwater level measurements at the mini-piezometer were used to compare the head difference between the Nicola River and shallow groundwater in the riverbed. Due to the lack of survey information, the elevation of the Nicola River at N'Kwala Park is unknown and can not be compared to the shallow groundwater at the onshore nested groundwater monitoring wells.

Surface water level elevations for the Coldwater River at the three mini-piezometer locations were based on manual measurements from 9 November 2021 before the flood event. As indicated previously in Section 5.2, continuous water level records are not available at these locations because of the loss of these monitoring points and associated instrumentation during the flood.

The following subsections provide an analysis of the difference between water level elevations in the rivers and the nearest shallow monitoring wells. These results are summarized in Table 4 and Table 5 for the Nicola and Coldwater rivers, respectively. These tables also provide the vertical hydraulic gradient between the river and underlying hyporheic zone based on mini-piezometer data.

6.1.2.1 Nicola River

The results for the Nicola River (Table 4) indicate a vertically downward hydraulic gradient below the river at Kengard and at N'Kwala Park, and a lower water table elevation (relative to the river level) next to the river at Kengard (data not available at N'Kwala Park), suggesting losing conditions (i.e., river recharging the unconfined aquifer) at these locations during the period of monitoring.

Opposing conditions were observed in the Spring & Granite area where there was an upward hydraulic gradient between the riverbed and the river at the mini-piezometer, but a downward gradient between the Nicola River and the water table in Upper Merritt aquifer at MW04-4. These results are likely related to the ”U” shaped bend in the Nicola River at the Spring & Granite location. Monitoring well MW04-4S is more westerly and therefore downgradient of the river at this bend i.e., the river discharges to the aquifer, whereas the mini-piezometer within the river bend is positioned downgradient of the unconfined aquifer, a location where the aquifer discharges to the river as shown on Figure 2.

Table 4: Nicola River Water Level Comparison

Location	Date/Time	River Level Elevation (masl)	Mini-piezometer Water Level Elevation (masl)	Vertical Gradient between River and Mini-piezometer	Water Table Elevation at Nearest MW (masl)	Difference between River Level and Water Table (aquifer) Elevation Positive value = gaining river Negative value = losing river
MW04-6 S (Kengard)	09-Nov-21 11:05	592.663	592.461	-0.257	592.332	-0.331 (River to MW04-6S)
	02-Dec-21 13:05	592.663	592.508	-0.197	592.372	-0.291 (River to MW04-6S)
MW04-5 S (N’Kwala Park)	17-Sept-21 11:55	0.973 m below top of pipe	1.475 m below top of pipe	-0.771	590.010	Elevation of River unknown due to vandalism of instrument prior to survey
MW04-4 S (Spring & Granite)	09-Nov-21 12:15	587.144	587.157	0.020	586.723	-0.421 (River to MW04-4S)
	02-Dec-21 13:25	587.141	587.171	0.046	587.044	-0.097 (River to MW04-4S)

Table Notes:

1. Water Level measurements taken prior to November 2021 flood event
2. RED – Downward hydraulic gradient, GREEN – Upward hydraulic gradient
3. masl = meters above sea level

The record of continuous water levels in the Nicola River and in the shallow monitoring wells at Kengard, N’Kwala Park and Spring & Granite, from October to December 2021, are plotted on Figure 5. As shown on this figure, the surface water level in the Nicola River was consistently higher than the water table at Kengard and at Spring & Granite. Also, based on the mini-piezometer data, the river level was consistently higher than the groundwater level below the river at Kengard, indicating continual losing conditions at this location during this period. Conversely, the river level was, most of the time, lower than the groundwater level below the river at Spring & Granite during this period, with a couple of short intervals (late September and mid November, just before the flood) when the river level and the underlying groundwater level were equal, indicating overall gaining conditions with short transitional intervals of zero-exchange conditions at this location. Although the river level and mini-piezometer data for N’Kwala Park is limited to four manual measurements in September-October 2021, these data were consistent and indicated losing conditions during this monitoring period.

The results in Table 4 and Figure 5 generally support the assessment of losing conditions in the Nicola River between Kengard and N’Kwala Park and downstream of Spring & Granite to the confluence with Coldwater River, and gaining conditions between K’Kwala Park and Spring & Granite, based on the analysis of the water table contours (discussed in Section 6.1.1).

6.1.2.2 Coldwater River

The results for the Coldwater River (Table 5) indicate a vertically downward hydraulic gradient between the river and the riverbed, and between the river and the Upper Merritt aquifer. The data show losing conditions (i.e., river recharging the unconfined aquifer) at these locations during the period of monitoring.

Table 5: Coldwater River Water Level Comparison

Location	Date/Time	River Level Elevation (masl)	Mini-piezometer Water Level Elevation (masl)	Vertical Gradient between River and Mini-piezometer	Water Table Elevation at Nearest MW (masl)	Difference between River Level and Water Table (aquifer) Elevation (m) Positive value = gaining river Negative value = losing river
MW04-3 S (May St)	09-Nov-21 10:40	596.311	595.973	-0.431	594.373	-1.938 (River to MW04-3 S)
MW04- 2S (Claybanks)	09-Nov-21 10:25	592.481	592.397	-0.129	592.332	-0.149 (River to MW04-2S)
MW04-1 S (Voght Park)	09-Nov-21 12:35	588.623	588.596	-0.021	586.946	-1.677 (River to MW04-1S)

Notes:

1. Water Level measurements taken prior to November 2021 flood event
2. RED – Downward hydraulic gradient, GREEN – Upward hydraulic gradient
3. Streamflow in the Coldwater River at Voght Park (WSC station 08LG010) on 9 November 2021 was 4.40 m^3/s
4. masl = meters above sea level

The continuous water levels in the Coldwater River and in the shallow monitoring wells at Voght Park, Claybanks and May Street, from June 2021 to December 2021, are plotted on Figure 6. The river level elevations at these locations were calculated from the linear correlations reported in MOE 2009b, where the 2007/2008 manual water level elevation measurements at Voght Park, Claybanks and May Street were correlated to the river stage at WSC Station 08LG010. FLNRORD's manually surveyed river level elevations from September, October and November 2021 are also shown as data points (circles) on the plots. Based on the May Street manual survey data, the MOE 2009b correlation equation for the river level elevation at this location was modified slightly; however, the Claybanks and Voght Park equations did not require modification to fit to the 2021 survey data.

As shown on Figure 6, the surface water level in the Coldwater River was consistently higher than the water table elevation at Voght Park and May Street indicating continual losing conditions over the 7-month monitoring period. The water table data for Claybanks is limited to two manual measurements, one in September 2021 and the other in November 2021 and show a downward gradient between the river water table characteristic of losing conditions. The only exception to the observation of continual losing conditions in the Coldwater River was during flood event on 14 November 2021. During this event, the water table at May Street (MW04-3S) rose above the river level for a brief period following the peak river level, possibly due to aquifer recharge upgradient of the May Street monitoring location and an associated rise in the groundwater table.

The results in Table 4 and Figure 6 generally support the overall assessment of losing and/or flow-through conditions in the Coldwater River between May Street and its confluence with the Nicola River based on the analysis of the water table contours (discussed in Section 6.1.1).

Water level elevation results from the 2021 field program are consistent with the year long study in 2007 and 2008 (MOE, 2009b) whereby the Coldwater River at May Street and Voght Park was consistently higher than the adjacent water table throughout the year.

6.1.2.3 Vertical Hydraulic Gradient between Aquifers

The direction and magnitude of vertical hydraulic gradient at the nested monitoring wells completed in the Upper, Middle and Lower Merritt aquifers is shown in Table 6 below. The vertical gradients in September 2021 are shown on Figure 4.

Table 6: Vertical Hydraulic Gradient at Nested Monitoring Wells

Locations	Aquifer	Vertical Hydraulic Gradient (m/m)		
		September	November[1]	December
MW04-1 S/D (Voght Park)	Upper Merritt	-0.030	-0.013	-0.014
MW04-2 S/D (Claybanks)	Upper Merritt / Underlying Aquitard	-0.002	-0.105	-
MW04-3 S/D (May St)	Upper Merritt	0	-0.002	-0.006
MW04-4 S/D (Spring Granite)	Upper Merritt / Underlying Aquitard	-0.024	-0.034	-0.046
MW04-5 S/D (N'Kwala Park)	Upper Merritt	-0.003	-	-0.002
MW04-6 S/D (Kengard)	Upper Merritt / Underlying Aquitard	-0.002	0.001	-0.045
MW 3 S/D	Upper Merritt	-0.006	-	-
MW 4 S/D	Upper Merritt	0.027	-	-
MW 5 S/D (Collett Hicks)	Upper Merritt	-0.007	-	-0.002
MW07-1 S/M (Kengard)	Middle Merritt / Lower Merritt	0	-	0.001
MW07-1 M/D (Kengard)	Lower Merritt	-0.004	-	-0.003
MW07-2 S/M (Fairley Park)	Upper Merritt / Middle Merritt	-0.016	-0.042	-0.029
MW07-2 D (Fairley Park)	Lower Merritt	Flowing Well		

Notes:

1. Water Level measurements taken prior to November 2021 flood event
2. RED – Downward hydraulic gradient, GREEN – Upward hydraulic gradient

Figure 4 and Table 6 illustrate the following:

- An overall downward gradient within the Upper Merritt aquifer, with the exception of MW 4 S/D located near the Coldwater-Nicola River confluence where the Upper Merritt aquifer is inferred to thin out and terminate on the north side of the confluence.
- In Fall 2021, a downward gradient at Fairley Park (MW07-2S/M) existed from the Upper Merritt aquifer (unconfined) to the Middle Merritt aquifer (confined) with the potential for leakage from the overlying Upper Merritt aquifer to recharge the Middle Merritt aquifer at this location. However, in fall 2020, an upward gradient was recorded at this monitoring well nest (Golder 2021), which indicates that the direction of the gradient varies and there is potential for periodic recharge to the unconfined aquifer by upwelling groundwater from the underlying confined aquifer.
- As the Fairley Park monitoring well nest is the only one completed in both the Middle Merritt and Upper Merritt aquifers, water level data to assess whether the unconfined aquifer is recharged by the underlying confined aquifer at other locations is not available.
- The Fairley Park monitoring well MW07-2D completed in the Lower Merritt aquifer is a flowing well indicating that an upward gradient exists across the confining layer separating the Middle and Lower Merritt aquifers.
- A negligible to small upward vertical gradient is observed between the Lower Merritt aquifer and the Middle Merritt aquifer at Kengard (MW07-1S/M). The Middle Merritt (and Lower Merritt) aquifers are inferred to receive recharge from regional groundwater flow originating in the upland areas around Merritt.

6.2 Comparison of Water Temperature Trends near Rivers

In addition to continuous water level measurements, the pressure transducers deployed at the mini-piezometers and monitoring wells provided a continuous record of water temperature over the period of monitoring. The trends in surface water temperatures were compared to the trends in shallow groundwater temperature at the three sets of paired monitoring locations on the Nicola and Coldwater rivers. This provides another line of evidence on the nature of groundwater-surface water interaction at these locations. The following subsections describe the temperature trends observed and the interaction inferred from these results.

6.2.1 Nicola River

The record of continuous water temperatures at the paired monitoring locations along the Nicola River, from September to December 2021 at the mini-piezometers, and from June to December 2021 at the monitoring wells, are plotted on Figure 7. This figure also includes the water temperature trend in the Nicola River at the WSC Station 08LG065, located upstream of Merritt and close to the outlet of Nicola Lake (see location in Figure 1), for the same period as the monitoring wells (from June to December 2021).

The trends on Figure 7 illustrate that:

- The temperatures in the river at the WSC Station 08LG065 closely match the river water temperatures at the downstream mini-piezometer locations where continuous data are available (i.e., at Kengard and Spring & Granite), except for the period following the November 2021 flood event at the Spring & Granite location

(i.e., flood waters from the Coldwater River impacted the Nicola River at Spring & Granite location causing the surface water temperature trend at this location to diverge from the upstream river temperatures). Therefore, the river temperature trend at WSC 08LG065 can be used to represent the river temperature everywhere in the Nicola River, providing a longer period of record, but excluding the period following the November 2021 flood event at Spring & Granite.

- At Kengard, the groundwater temperature below the riverbed measured in the mini-piezometer closely follows the surface water trend with only a slight delay between the trends. The groundwater temperature in the unconfined aquifer at MW04-6S appears to have a delayed seasonal response, by about 2.5 months, and a more muted temperature change, relative to temperature trend within and below the Nicola River. Conversely, the temperature trend in the deeper monitoring well, MW04-6 D, screened in the underlying aquitard layer (low permeable silts and clays), was relatively stable and uninfluenced by the trends in the river and unconfined aquifer.
- At N'Kwala Park, pressure transducer data is not available for the nearest shallow monitoring well, MW04-05S, and pressure transducer data was lost at the mini-piezometer location (discussed in Section 5.2). Comparison of the temperature trend between the river and the deeper monitoring well completed in the unconfined aquifer, MW04-5D, does not provide evidence of river water mixing with groundwater or strongly losing conditions. The groundwater temperature profile at MW04-5D correlates well with the temperature profile at provincial observation well OW296, located in the central portion of the Upper Merritt aquifer.
- At Spring & Granite, the groundwater temperature below the river measured in the mini-piezometer appears be uninfluenced by river temperature, and more closely follows the trend in the unconfined aquifer (at MW04-4S) except for a short period from 17-Sept to 22-Sept-2021 when the trend closely follows the river trend (during this time, the difference in the water level between the River and the mini-piezometer was only approximately 3 cm). These trends directly correspond with the increases and reductions in the downward vertical gradient below the river at this location shown in Figure 5 and discussed previous in Section 6.1.2.1, except for the reduced vertical gradient period observed in mid-November just before the flood. The temperatures at MW04-4 S/D are similar for entire monitoring period (except during the November flood) and are also similar to the provincial observation well and MW04-5D at N'Kwala Park.

The results outlined above support the assessment of losing river conditions at Kengard, with river water recharging the unconfined aquifer. The temperature trends are considered inconclusive with respect to confirming losing or gaining conditions at N'Kwala Park whereby the river either recharges the unconfined aquifer or receives water from the unconfined aquifer. The temperature trends support mostly gaining conditions at Spring & Granite, with intermittent periods of losing or zero-exchange conditions.

The surface water temperatures recorded at the stilling well 'Nicola R u/s of Coldwater' (bottom graph in Figure 7) are considered to be non-representative based on the large discrepancy between these results and those for the Nicola River at WSC 08LG065. This discrepancy may be a result of the stilling well design (see photo of stilling well in Appendix D)

6.2.2 Coldwater River

The mini-piezometers and associated instrumentation along the Coldwater River were destroyed in the November 2021 flood. Therefore, the water temperature trend in the Coldwater River from the WSC station 08LG010 located in the vicinity of Voght Park was compared to groundwater temperature trends from the nearby shallow monitoring wells. The continuous record of temperatures from these locations between June and December 2021 are plotted on Figure 8.

The trends on Figure 8 illustrate that:

- At May Street, the groundwater temperatures in the unconfined aquifer at MW04-3S/D appear to have a delayed seasonal response, by about 1 month for the shallow well MW04-3S, and about 1.5 months for the deeper well MW04-3D. In addition, groundwater trends are more muted and do not fluctuate daily like the river trend does. Both of the well screens at this monitoring location are completed in the unconfined Upper Merritt Aquifer.
- At Voght Park, the temperature change in the unconfined aquifer at MW04-1S shows a faster response to river temperature changes as compared to that seen at May Street. The delay in the temperature response is shorter (less than 1 month) relative to May Street, and there are some fluctuations in the shallow groundwater trend as a result of pumping at the adjacent Voght Park production wells (see Figure 11). The correlation between river temperature and groundwater temperature in the deeper well, MW04-1D, is less pronounced and only apparent until mid July after which the Voght Park well were generally offline (Figure 11) due to mechanical problems with one of the wells and the Colletteville well was pumped at a minimum rate.
  From August onwards, the temperature profile follows the profile of the Upper Merritt aquifer illustrated by the provincial observation well 296 temperature profile that displays a slow and steady increasing trend.
  A stronger seasonal correlation of groundwater temperature to river temperature was observed at MW04-1D in the year long data set presented in the MOE (2009b); during the monitoring period, the Voght Park wells were operating and utilized as lead wells for the water system particularly in the summer period.

The results outlined above support the assessment of losing conditions at May Street and Voght Park, with river water recharging the unconfined aquifer. A comparison of the temperature data from Voght Park from 2007/2008 (MOE 2009b) with 2021 data show that operation of the Voght Park wells increases the downward gradient within the Upper Merritt aquifer as evidenced by mixing of river water with groundwater in monitoring well MW04-1D in 2007/2008. Under average conditions, MW04-1S monitors temperature within the top 1.5 m of the water table and MW 04-1D monitors conditions at 4 to 5 m below the water table.

6.3 Influence of Pumping at Production Wells

The City of Merritt (COM) Fairley Park, Colletteville, Voght Park Well #1 and #2 production wells draw water from the unconfined Upper Merritt aquifer. The COM Kengard production well draws water from the confined Lower Merritt aquifer. The 2021 annual production volumes, pumping hours and water levels at the pumping well supplied by FLNRORD are provided in APPENDIX A.

Golder understands that the Voght Park wells are typically the primary wells utilized by the COM water system. However, the Voght Park Well #1 2 has been offline for repairs since mid July 2021 and as a result, the use of the Colletteville Well and the Kengard Well increased in 2021. A summary of the production totals is provided in Table 7.

Table 7: Summary of 2021 Production Well Data

Well Name	Avg Daily Pumping Volume (m^3/d)[1]	Range of Daily Pumping Volumes (m^3/d)	Annual Volume Pumped (m^3)
Fairley Park (WTN 38902)	2,290	0 – 4,810	687,180
Colletteville (WTN 40069)	1,770	0 – 4,150	546,220
Voght Park Well #1 [Voght GE] (WTN 114668)	2,720	0 – 9,170	356,660
Voght Park Well #2 [Voght VFD] (WTN 34180)	3,275	0 – 8,830	117,845
Kengard Well (WTN 97218)	3,475	0 – 4,320	437,930

Table Notes:

1. Daily average pumping volume is based on the total annual volume and number of days of pumping

Data associated with each production well were plotted in separate figures, with each figure showing the following information over the monitoring period from June to December 2021:

- Plan map showing the location of the production well, the nearest river and the nearest multi-level monitoring wells
- Table providing a summary of the well depths, the aquifers intercepted by the well screens and the distance of the wells from the Coldwater River.
- Top Plot: daily pumping rates over time in the production well, the continuous record of piezometric elevations in the nearby multi-level monitoring wells screened in the Upper Merritt aquifer, manual water level measurements in these monitoring wells, and the water level elevation in the Coldwater River at Voght Park (WSC Station 08LG010).
- Bottom Plot: daily pumping rates over time in the production well, the continuous record of groundwater temperature in same nearby multi-level monitoring wells screened in the Upper Merritt aquifer, and the surface water temperature in the Coldwater River at Voght Park (WSC Station 08LG010).

The above information for Fairley Park, Colletteville, Voght Park and Kengard production wells are provided in Figure 9, Figure 10, Figure 11 and Figure 12 respectively. The trends shown on these figures are discussed in the following subsections.

6.3.1 Fairley Park Well

The nearest multi-level monitoring well, MW07-2S/M, is situated 10 m northwest of the Fairley Park production well. The shallow well, MW07-2S, is screened in the unconfined Upper Merritt aquifer and the deeper well, MW07-2M, is screened in the Middle Merritt aquifer.

The trend plots on Figure 9 illustrate the following:

- Seasonal trends and major changes in river level, such as a receding river level in June and July following freshet and the November flood event, is mirrored in the Upper Merritt aquifer and the Middle Merritt aquifer. This is inferred to be due to the hydraulic connection between the Coldwater River and the Upper Merritt aquifer, and the consequential pressure response in the Middle Merritt aquifer from changes in head in the Upper Merritt aquifer.
- Pumping at the Fairley Park Well does not produce an observable response in the Coldwater River stage. Changes in river stage are more correlated to precipitation events within the Coldwater River watershed.
- Pumping the Fairley Park well, screened in the Upper Merritt aquifer, produces a drawdown response in monitoring well MW07-2S, also screened in the Upper Merritt aquifer.
- Pumping the Fairley Park well did not produce a notable drawdown response in monitoring well MW07-2M screened in the Middle Merritt aquifer. The Middle Merritt aquifer is inferred to be well confined (not leaky) at Fairley Park.
- The water temperature in the Upper Merritt aquifer at Fairley Park is not influenced by the operation of the Fairley Park Well. The monitoring well is 390 m from the Coldwater River and would not be expected to be influenced by river temperature from this distance.

6.3.2 Colletteville Well

The Colletteville production well is the only pumping well located on the west side of the Coldwater River. The nearest multi-level monitoring wells are in Voght Park (MW04-1S/D), screened in the Upper Merritt aquifer and located across the Coldwater River approximately 100 m and slightly upgradient from the Colletteville Well. The Collette-Hicks nested monitoring well (MW-5S/D) is also screened in the Upper Merritt aquifer and is located 410 m downgradient (northwest) of the Colletteville Well. Figure 10 also includes the combined daily pumping rate for the Voght Park Wells (#1 and 2) in the plots considering their proximity to the Colletteville well.

The trend plots on Figure 10 illustrate the following:

- Seasonal trends and major changes in river level, such as a receding river level in June and July following freshet and the November flood event, is mirrored in the water level trends in the Upper Merritt aquifer monitoring wells. This is inferred to be due to the hydraulic connection of the Coldwater River to the Upper Merritt aquifer.
- Pumping at the Colletteville Well does not produce an observable response in the river stage.
- Pumping the Colletteville Well screened in the Upper Merritt aquifer produced a very small drawdown response at the downgradient Collette-Hicks MW-5S/D. This response is easiest to detect in the water level trends during November prior to the flood when the Voght Park Wells were off.
- Similar to the Collette-Hicks water level trends, a small but distinct drawdown response in the Voght Park monitoring wells, MW04-1 S/D, is detected when the Voght Park Wells were off. The Voght Park monitoring wells are screened in the Upper Merritt aquifer across the river from the Colletteville Well. The drawdown at Voght Park suggests that the Coldwater River is not a hydraulic boundary and that leakage from the river within the inferred capture zone of the Colletteville Well was lower than the Colletteville Well pumping rate of 500 m^3/day.

- There is a downward gradient in the Upper Merritt aquifer based on the water level elevations in the shallow versus deep monitoring wells; however, the downward gradient does not appear to increase under increased pumping conditions in the Colletteville Well.
- The water temperatures in the shallow and deep monitoring wells at MW-5S/D located west of the Colletteville Well, and MW04-1S/D located across the river from the Colletteville Well, don't appear to be influenced by the operation of the Colletteville Well. The groundwater temperature in the shallow monitoring well MW-5S, is warmer than the groundwater temperature in the deeper monitoring well MW-5D. That shallow groundwater temperature also fluctuates almost daily; it is unclear if the fluctuation is related to wastewater disposal at the City of Merritt Rapid Infiltration Basins (RIBs) or river loss upgradient of the monitoring location.

6.3.3 Voght Park

The nearest multi-level monitoring well in Voght Park is MW04-1S/D which is screened in the Upper Merritt aquifer and located approximately 75m and ~~75~~ 55m downgradient from Voght Park Well #1 and Voght Park Well #2 respectively. Figure 11 shows the combined daily pumping rates in the Voght Park Wells (#1 and #2) and also shows the daily pumping rate for the Colletteville Well considering its proximity to the Voght Park Wells.

The trend plots on Figure 11 illustrate the following:

- Seasonal trends and major changes in river level, such as a receding river level in June and July following freshet and the November flood event, is mirrored in the water levels in the Upper Merritt aquifer monitoring wells. This is inferred to be due to the hydraulic connection of the Coldwater River to the Upper Merritt aquifer in the area of Voght Park.
- The water level in the Upper Merritt aquifer was below the adjacent river level elevation throughout the monitoring period.
- Pumping at the Voght Park wells do not produce an observable change in the river stage.
- Pumping the Voght Park wells, both screened in the Upper Merritt aquifer, produced an obvious drawdown response in the Voght Park monitoring wells.
- There is a downward gradient in the Upper Merritt aquifer based on the water level elevations in the shallow versus deep monitoring well, and this downward gradient increased under higher pumping rates in the Voght Park Wells.
- During the summer months, the temperature in the shallow groundwater at MW04-01 S follows the river temperature trend more closely when the Voght Park Wells are pumping. The data (not shown) from 2007/2008 (MOE 2009b) illustrate mixing of river water deeper in the aquifer under higher volume and sustained pumping conditions. Under low pumping conditions as occurred in mid summer and fall 2021, the temperature profile of MW04-1 D follows the profile at the provincial observation well OW296 which represents temperature in a broader area of the Upper Merritt aquifer.
- Pumping at the Voght Park Wells results in an increase in the downward gradient in the unconfined aquifer, promoting river seepage to the water table, as evidenced by the similar temperature profile of the Coldwater River and MW04-1S.

6.3.4 Kengard

The Kengard Well is the only municipal production well that is screened in the confined Lower Merritt aquifer. The plan map in Figure 12 shows the location of a licenced irrigation well close to the nearest (Kengard) multi-level monitoring well MW07-1 S/M/D. This irrigation well is closer to the monitoring well than the Kengard production well. The irrigation well and the Kengard Well are completed in the same aquifer (Lower Merritt aquifer). The middle and deeper monitoring well screens, MW07-1 M/D are also complete Lower Merritt aquifer, while the shallow monitoring well screen, MW07-1 S is completed in the confined Middle Merritt aquifer.

The trend plots on Figure 12 illustrate the following:

- The water level trends in the multi-level monitoring well MW07-1 indicate that pumping at the irrigation well causes more drawdown at MW07-1 than pumping at the Kengard Well.
- Pumping the irrigation well or the Kengard Well produces drawdown in the pumped aquifer (Lower Merritt aquifer – MW07-1 M/D) and in the Middle Merritt aquifer (MW07-1 S). This suggests that confining layer between the two wells is discontinuous or leaky, or there is groundwater movement outside of the pumping well or monitoring well casings.
- The Middle and Lower Merritt aquifers show a similar post freshet receding trend in piezometric elevations relative to the water table decline in the Upper Merritt aquifer at Kengard (MW04-6S). The water table in the Upper Merritt aquifer is interpreted to primarily follow trends in the Coldwater River.
- The cause of the rapid rise and fall in the piezometric elevation in the confined Middle and Lower Merritt aquifers at monitoring well MW07-1 during and following the November 2021 flood event is suspected to be the consequence of the hydraulic connection between the Coldwater River and the Upper Merritt aquifer, and the consequential propagation of the pressure response in the Middle and Lower Merritt aquifer from the rapid change in head in the Upper Merritt aquifer downgradient of Kengard within the flooded area of Merritt.
- The non pumping piezometric elevation in the Middle and Lower Merritt aquifers at MW07-1 in mid June and from October onwards plots roughly 0.2 m above piezometric elevation of MW04-6 S in the Upper Merritt aquifer; however, the two monitoring locations are 250 m apart and it is unclear if an upward gradient from the confined aquifer into the Upper Merritt aquifer actually exists.

6.4 Analysis of Stream Flows

Changes in stream flow between flow measurement stations were used to assess possible gaining, losing and ‘minimal interaction' reaches within sections of the Coldwater and Nicola Rivers. Stream flows were measured by FLNRORD during two survey events, 16 and 23 September 2021, at five measurement stations along the Coldwater River and four stations along the Nicola River. Figure 13 shows the locations of the streamflow measurement stations and provides a summary of the streamflow measurements recorded at the measurement stations during both events. In addition, this figure includes plots of the differences in stream flows (i.e., the baseflows) between consecutive stations for both events.

6.4.1 Pumping during Streamflow Survey

A plot of the average daily pumping rates from the Upper Merritt aquifer and river flow in the Coldwater and Nicola Rivers for the month of September 2021 is provided on Figure 14. The plot illustrates that:

- During the river flow survey on 16 September 2021, the Fairley Park Well was pumping 1,400 m^3/day, the Colletteville Well was pumping 220 m^3/day, the Voght Park wells did not pump, flow in the Coldwater River was 62,000 m^3/day and flow in the Nicola River was 181,000 m^3/day.
- On 16 September 2021, combined pumping from the Fairley Park and Colletteville wells was about 3% of flow in the Coldwater River.
- A spike in flow in the Coldwater River occurred over the period of September 18 to 20 during which time total rainfall was 112.5 mm in Hope BC and 10.8 mm in Merritt. The Environment Canada weather station at Hope is the closest weather station that would approximate precipitation in the upper watershed of the Coldwater River.
- During the river flow survey on 23 September 2021, the Fairley Park Well was pumping 1,800 m^3/day, the Colletteville Well and Voght Park wells did not pump, flow in the Coldwater River was 140,000 m^3/day and flow in the Nicola River was 164,000 m^3/day.
- On 23 September 2021, pumping from the Fairley Park Well was about 1% of flow in the Coldwater River.

6.4.2 Licenced Surface Water Abstractions during Streamflow Survey

Table 8 summarises the current surface water licenses within the City of Merritt, and Figure 13 shows the locations of these licensed abstractions. According to FLNRORD, no licensed surface water abstractions were likely from the surveyed portions of the Coldwater River and the Nicola River during both events.

Table 8: Current Surface Water Licences in City of Merritt

River	Licence No.	Label ID on Figure 13	Owner/Use Type	Licensed Annual Extraction	
				m^3/s	m^3/d
Nicola R.	C129778	POD 1	Ready-Mix Cement Plant	0.001	114
	502000	POD 2	Golf Course	0.004	399
	C131936	POD 3	Irrigation	0.003	322
	C132156	POD 4	Irrigation	0.018	1 855
Coldwater R.	C026589 C025311 C030750 C030751	POD 5	City of Merritt	0.203	21 053
	C120570	POD 6	Avanlee Farm / Irrigation	0.026 (Apr 1 to Sept. 30)	2,701 (Apr 1 to Sept. 30)

The licensed annual extraction volumes or the maximum rate of extraction is known for some locations; however, the actual period of water extraction and the actual rate of extraction remains unknown. Streamflow estimates would be influenced by surface water extraction. Given that only small changes in streamflow were recorded between stations, surface water extraction data would be needed to accurately determine gaining and losing conditions.

6.4.3 Baseflow Estimates and Associated Uncertainties

Table 9 and Table 10 provide the average flows and the difference in flows (baseflow or net change in flow) between consecutive stations for the Coldwater River and Nicola River respectively. Values in red font indicate a measured decrease in flow (i.e., river loss) and changes in green in indicate a measured increase in flow (i.e., river gain). Bold font indicates a measured differences exceeding 15% of the average flow rate in the reach.

The higher flow rates in the Coldwater River compared to the relatively constant flows in the Nicola River for the second survey event when compared to the first survey event can be explained by the difference in the source of water to the rivers. The headwaters of the Coldwater River are in the coast mountains; therefore, flows in the Coldwater River are affected by precipitation events in this distant upland area. Conversely, flows in the Nicola River are regulated by the dam at the outfall of Nicola Lake.

The BC hydrometric standards manual (MOE 2009a) provides 6 grades of discharge data ranging from a control structure with an “A/RS” grade to unknown data quality with a “U” grade. The discharge rating accuracy for a A/RS structure is ±5%, grade A data accuracy at ±7%, grade B data accuracy at ±15% and grade C data accuracy at ±25%. Accuracy is not provided for grade E and grade U data. Based on the provisions in the hydrometric standards manual, the flow measurements are considered to be grade B to grade C data. Assuming the flow measurements are grade B data, the uncertainty in the flow measurements is considered to be ±15% of flow. Therefore, calculated differences in flow rates between stations which are less than the uncertainty threshold of ±15% of flow are considered to have a higher degree of uncertainty.

Table 9: Changes in Stream Flow in the Coldwater River

Event Date	Streamflow Reach (Station to Station)	Avg Flow in Reach (m^3/s)	Baseflow (Change in Flow) Positive value = gaining river Negative value = losing river	
			m^3/s	Change as% of Avg Flow
16-Sept-2021	CLD B - CLD A	0.70	-0.04	-6
	CLD C - CLD B	0.73	-0.02	-3
	CLD D - CLD C	0.66	**+0.16**	**+24**
	CLD E – CLD D	0.69	**-0.22**	**-32**
	CLD F - CLD E	0.79	+0.02	+3
	CLD F - CLD A	0.72	-0.10	-14
23-Sept-2021	CLD B - CLD A	1.65	+0.08	+5
	CLD C - CLD B	1.62	-0.01	-1
	CLD D - CLD C	1.67	-0.09	-5

Event Date	Streamflow Reach (Station to Station)	Avg Flow in Reach (m^3/s)	Baseflow (Change in Flow) Positive value = gaining river Negative value = losing river	
			m^3/s	Change as% of Avg Flow
	CLD E – CLD D	1.62	+0.18	+11
	CLD F - CLD E	1.63	-0.19	-12
	CLD F - CLD A	1.65	-0.03	-2

Water Survey Canada mean flow for September is 1.18 m^3/s (Historical Hydrometric Data Search - Water Level and Flow - Environment Canada (ec.gc.ca)

The streamflow measurement and baseflow calculations for the Coldwater River (Table 9 and Figure 13) indicate that:

- The only changes in flow that exceed the 15% uncertainty threshold are the 16 September 2021 measured flows in reach CLD D to CLD C (near Houston Bridge to May St) and CLD E to CLD D (May St to Claybanks). The remaining measured differences in flow on both measurement dates are considered to be unverifiable within the context of uncertainty in flow.
- The change in flow in reach CLD D to CLD C on 16 September indicated a gain of 0.16 m^3/s, which was 24% of the average flow in the reach.
  - The river level elevation at May Street remained above the water table (observed at May Street monitoring well MW04-3S) as shown on Figure 6. Furthermore, the isotopic signature of the Coldwater River and the May Street monitoring well nest (MW04-3S/D) were similar (see Section 6.5.2), suggesting recharge of the shallow aquifer by river losses. These water level elevation data and chemical signatures contradict the strongly gaining conditions calculated from the flow measurements.
  - There was no verifiable flow difference in reach CLD D to CLD C one week later, on 23 September 2021 (i.e., the measured difference, a 5% loss in flow, was below the uncertainty threshold of ±15% of flow).
- The change in flow in reach CLD E to CLD D on 16 September indicated a loss of 0.22 m^3/s which was 32% of the average flow in the reach. There was no verifiable change in flow in reach CLD E to CLD D one week later, on 23 September 2021 (i.e., the measured change, an 11% gain, was below the uncertainty threshold of ±15% of flow).
- On 16 September 2021, the change in flow over the entire surveyed section of the Coldwater River (CLD F - CLD A) indicated a loss of 0.10 m^3/s, which was 14% of the average flow in the river. Although this difference lies within the threshold of uncertainty in flows, this calculated overall losing condition is supported by water level elevation data whereby the Coldwater River level is consistently above the water table based on river levels and the shallow groundwater levels in monitoring wells at May Street, Claybanks and Voght Park shown on Figure 6. However, there was no verifiable difference in flow over the entire surveyed section of the Coldwater River (CLD F - CLD A) on 23 September 2021 (i.e., the measured change, a 2% loss in flow, was below the uncertainty threshold of ±15% of flow).

Table 10: Changes in Stream Flow in the Nicola River

Event Date	Streamflow Reach (Station to Station)	Avg Flow in Reach (m^3/s)	Baseflow (Change in Flow) Positive value = gaining river Negative value = losing river	
			m^3/s	Change as% of Avg Flow
16-Sept-2021	NIC B – NIC A	2.06	-0.20	-10
	NIC C – NIC B	2.13	+0.07	+3
	NIC D – NIC C	2.05	+0.09	+4
	NIC D – NIC A	1.98	-0.05	-3
23-Sept-2021	NIC B2 – NIC A	1.92	+0.05	+3
	NIC C – NIC B2	1.91	-0.08	-4
	NIC D2 – NIC C	1.89	+0.06	+3
	NIC D – NIC A	1.90	-0.03	-2

The Nicola River flow measurement and baseflow calculations (Table 10 and Figure 13) indicate that:

- There are no verifiable differences in flow and associated river gain or loss in any of the surveyed reaches of the Nicola River for either event in September 2021.
- Although the baseflow results are not verifiable, the results from the two survey events are consistent in indicating losing conditions between K'Kwala Park and Spring & Granite and gaining conditions downstream of Spring & Granite to the confluence with the Coldwater River.

Overall, there is a high degree of uncertainty in the calculated baseflows between measurement stations. This uncertainty is most obvious where there is inconsistency in the calculated river conditions (i.e., gaining vs losing) over the two measurement events which are only one week apart. This inconsistency was evident in most of reaches of the Coldwater River.

An alternative approach is required to reduce the uncertainty in flow measurement so that reliable estimates of the magnitude and location of gaining and losing conditions within the Coldwater and Nicola rivers may be obtained. One approach is to conduct repeated stream flow measurements (at least 3 sets of measurements per station) as part of one survey event, and to utilize at least two separate field crew to conduct these measurements. This approach is expected to reduce any bias and to permit an evaluation of the reproducibility of the flow measurements, thereby improving the accuracy of the measurements overall. In addition, surface water license owners within the City of Merritt should be requested to either not extract surface water during planned stream flow survey events or to provide surface water extraction information for the period of water use that coincides with planned survey events (i.e., flow rates and durations, start/end time and daily volume).

6.5 Water Chemistry

Water samples were collected by FLNRORD between 7 September and 4 October 2021, from 10 surface water monitoring locations (includes samples from the six paired mini-piezometers), 15 groundwater monitoring locations and 4 municipal wells. The samples were analysed for the following parameters:

- Field parameters: specific conductivity, dissolved oxygen (DO), pH, redox potential, and temperature
- General parameters: total and speciated alkalinity, hardness, total dissolved solids (TDS), turbidity
- Anions and nutrients: Kjeldahl nitrogen, total ammonia, chloride, fluoride, total nitrogen, nitrate, nitrite, total phosphorous, sulphate
- Dissolved metals scan
- Natural isotopes of water: deuterium and oxygen

The sampling locations are shown on Figure 1 and the table of surface water and groundwater chemistry data provided by FLNRORD is included in APPENDIX C.

6.5.1 Piper Diagram

The major ion distribution for the water sample results provided by FLNRORD are plotted on the Piper Diagram in Figure 15. A piper diagram is a graphical method to represent the distribution of major ions for a water sample. The percentage of cations (calcium, sodium, magnesium and potassium) and anions (chloride, bicarbonate alkalinity and sulphate) for any sample are used to define its ionic composition or ‘chemical signature’ on the piper diagram so that it can be readily compared to the chemical signature of other samples. It should be noted that because relative percentages are plotted, waters with much different total ion concentrations may plot similarly on the piper diagram. The regions of different water types are shown on the piper diagram as calcium-sulphate type (Ca-SO4), calcium-carbonate type (Ca HCO3), sodium-bicarbonate type (Na-HCO3) and sodium-chloride type (NaCl). Surface water and groundwater samples are colour grouped based origin, aquifer type or purpose.

Figure 15 illustrates the following water classifications within the Merritt sampling area:

- **Calcium-bicarbonate type water**: Surface waters from the Coldwater River and Nicola River, groundwater from the mini-piezometers (all installed below the rivers), groundwater from most of the unconfined Upper Merritt aquifer wells including the Voght Park and Fairley Park municipal wells (but excluding wells MW-3S/D), groundwater from MW04-4D (Spring Granite) completed in the shallow clay alongside the Nicola River and groundwater MW07-1S/1M (Kengard RR), completed in the confined Middle Merritt and Lower Merritt aquifer respectively, plotted as calcium-bicarbonate type waters. However, the results for MW07-1S/M are slightly skewed towards calcium-magnesium-sulphate type waters compared to the other samples described above. MW-3S/D is likely influenced by the adjacent wastewater rapid infiltration basins (RIBs) and this is supported by the higher proportion of chloride in these samples relative to most of the other water samples.
- **Calcium-sulphate type water**: Groundwater from most of the Middle Merritt and Lower Merritt aquifer wells, including the Kengard municipal well but excluding MW07-1S/1M (Kengard RR), and groundwater from MW04-6D completed in shallow clay alongside the Nicola River, plotted as calcium-sulphate type waters. The mineralogy of the clay could be influencing the outlier MW04-6D (completed in shallow clay).

- **Sodium-bicarbonate** and **sodium-chloride type waters**: None of the surface water or groundwater samples were sodium-bicarbonate or sodium-chloride type waters.
- **No dominant water type:** Groundwater from MW-3S/D, completed in the Upper Merritt aquifer near the Merritt RIBs, plotted as not having a dominant water type. As indicated in the first bullet, MW-3S/D is likely influenced by the adjacent wastewater rapid infiltration basins (RIBs) and this is supported by the higher proportion of chloride in these samples relative to most of the other water samples.

  The water chemistry results outlined above are generally consistent with the results from the previous year (October-November 2020) documented in Golder (2021) with the following exceptions:

- In the previous year (Oct-Nov 2020) the shallow monitoring well near the RIBs (MW-3S) plotted as calcium-bicarbonate water type while the deeper monitoring well at this location (MW-3D) had results that indicated the influence of the RIBs, primarily because of the higher chloride content. The results from September 2021 suggest that both the shallow and deep well at this well pair location were affected by the RIBs, primarily because of the higher chloride content in MW-3S in September 2021. Results for the deeper well MW-3D were consistent between 2020 and 2021.

Groundwater is typically found to chemically evolve from bicarbonate-type to sulphate-type to chloride-type waters with increasing flow path lengths in the subsurface. The bicarbonate-type groundwaters in the unconfined Upper Merritt aquifer suggests shorter groundwater flow paths (residences times) than the calcium-sulphate type waters in the Middle and Lower Merritt aquifers where longer flow paths and residence times represent mountain front recharge (MFR) and mountain block recharge (MBR) through the valley sides into the deep valley sediments.

Piper diagrams can provide an indication of water mixing, where differing mixtures of two different waters will plot along a straight line between end members representative of each individual water type. For example, the calcium-bicarbonate type surface waters from the Coldwater and Nicola Rivers could be considered one end member representative of river loss recharge to the Upper Merritt aquifer. Groundwater from the Middle and Lower Merritt aquifers form an end member representative of waters that reflect longer residence times in the subsurface. The groundwater samples from the four Merritt Municipal Wells drawing from the Upper Merritt aquifer group midway between these two end members, with their water compositions being a blend of each water type. This supports the concept that the Upper Merritt aquifer is recharged by both river loss and by mountain front recharge (MFR) and MBR through lateral recharge from the valley sides and upward groundwater flow from the Middle Merritt aquifer into the Upper Merritt aquifer (based on Fall 2020 results reported in Golder 2021).

6.5.2 Isotope Analysis

Within the water molecule, there are two stable isotopes of hydrogen: ^{2}H and ^{1}H, and three stable isotopes of oxygen: ^{16}O, ^{17}O and ^{18}O. These stable isotopes serve as conservative groundwater tracers and often carry a signature that indicates the source of groundwater recharge and relative residence times of groundwater in the subsurface.

The stable isotopes of hydrogen and oxygen are measured as the ratio of the two most abundant isotopes of a given element (for oxygen, these are ^{16}O and ^{18}O) (Clark and Fritz 1997). Water isotope results are reported relative to Vienna Standard Mean Ocean Water (VSMOW)-Standard Light Antarctic Precipitation (SLAP), and expressed in the δ (‰) ("del") notation (Clark and Fritz 1997), as follows for $\delta^{18}O$:

$$\partial^{18}O = \left(\frac{(^{18}O/^{16}O)_{sample} - (^{18}O/^{16}O)_{smow}}{(^{18}O/^{16}O)_{smow}} \right) x1000$$

where:

$(^{18}O/^{16}O)_{sample}$ is the light to heavy isotope ratio for the oxygen in the sample.

$(^{18}O/^{16}O)_{smow}$ is the light to heavy isotope ratio for the oxygen in a standard.

Similarly, the value of δD is calculated by replacing the ratio of $^{18}O/^{16}O$ with $^{2}H/^{1}H$ in the above equation.

The δ2H and δ18O values of groundwater samples collected by FLNRORD are shown on the δ2H δ18O cross-plot on Figure 16. The δ2H and δ18O values of these samples are shown relative to the Global Meteoric Water Line (GMWL; Craig 1961). The GMWL is based on unevaporated precipitation data from locations around the globe and shows the linear relationship between δ2H and δ18O values of precipitation. The GWML has an equation of δ2H = 8 δ18O + 10. Although the slope of the GMWL is nearly constant globally, both the slope and the intercept of local waters can vary considerably, reflecting local meteorological, topographic and seasonal conditions (i.e., resulting in local meteoric water lines). The Okanagan Meteoric Water Line (OMWL – Wassenaar et al. 2011) of δ2H = 6.6 δ18O – 22.7 is also included in Figure 6 and was developed for the Okanagan Valley. Precipitation local to Merritt may differ slightly from the OMWL. The OMWL falls to the right of the GMWL which reflects evaporative processes occurring in the dry interior climate.

In general, natural groundwaters that are recharged by the infiltration of precipitation originating at higher elevations and colder temperatures (i.e., snow and/or early spring or late fall rains), where little to no evaporation of the precipitation occurs before infiltration into the ground, will have a more-depleted isotopic signature (i.e., more negative δ2H and δ18O values) and will plot at the bottom left-hand corner of a δ2H δ18O plot. Groundwaters with a more-enriched isotopic signature (i.e., more positive δ2H and δ18O values) are generally indicative of a source of recharge that is either different or lower in elevation, that has been altered through evaporation and/or through mixing with different sources of water. The following interpretation of the isotope data is provided below (Figure 16):

- The δ2H and δ18O values of the Nicola River and the shallow Nicola River monitoring well at Kengard, MW04-6S, plot in the top right corner of the δ2H-δ18O plot and exhibit the most isotopically enriched signature relative to other waters. The δ2H and δ18O isotopic composition of the Nicola River samples fall on or just below (to the right) of the OMWL and do not show evidence of evaporative enrichment (more positive $\delta^{18}O$ values) that might be expected due to the river's origin in Nicola Lake, as they do not deviate very far from the OMWL. The recharge of the shallow groundwater at Kengard by the Nicola River is apparent in the similarity between the isotopic signature at MW04-6S and the Nicola River.
- The δ2H and δ18O values of the Coldwater River differ from that of the Nicola River in that they are more depleted in δ18O, plotting closer to the GMWL than the OMWL. This may be due to the headwaters of the Coldwater River being in the coastal mountains where humidity is higher (Golder 2016).

- The δ2H and δ18O values of groundwater samples from the Lower and Middle Merritt aquifers generally plot in the bottom left corner of the δ2H-δ18O plot and exhibit the most isotopically depleted signature relative to other waters. The δ2H and δ18O values of groundwater from the confined aquifers falls along the OMWL. The isotopic signature of the groundwater samples from the confined aquifers suggests recharge from a more distant, higher elevation, regional water source, and is typical of deep (regional) MBR.
- The shallow and deep monitoring well nest at May Street (MW04-3S/D) had isotopic signatures that were close to the Coldwater River sample at May Street which is indicative of recharge by the river.
- The assembly of monitoring wells screened in the Upper Merritt aquifer have varied isotopic signatures (Figure 16). Monitoring wells located along the Coldwater River were more isotopically similar to, but more depleted than the Coldwater River water (plotting closer to the GWML), while monitoring wells located along the Nicola River were more isotopically enriched, plotting closer to the OMWL and closer to the 'Nicola River Upstream of Coldwater' sample. Monitoring wells screened in the Upper Merritt aquifer further from the river were slightly more depleted in δ18O than most of the samples from monitoring wells along the rivers. These results suggest multiple sources of water to the Upper Merritt aquifer including recharge from Coldwater River losses, recharge from Nicola River losses, recharge from local precipitation, groundwater inflow from shallow aquifers upgradient of the Upper Merritt aquifer and upwelling of groundwater from the confined aquifers, and that the contribution from each of these sources varies across the aquifer.
- The δ2H and δ18O values of the municipal wells pumping from the Upper Merritt aquifer cluster between the confined aquifer samples end member (Middle/Lower Merritt aquifers) and the Coldwater River end member, although closer to the Coldwater River signature. This suggests that the Upper Merritt aquifer may be recharged by both surface water infiltration and by upward flowing groundwater from the underlying confined Middle Merritt aquifer. However, a significant contribution of groundwater to the pumping wells may also come from shallow groundwater inflow from upgradient of the City of Merritt, including contributions from the shallow alluvial deposits along the Coldwater River valley. The isotopic signature of this water is not defined.

The isotope results outlined above are generally consistent with the results from the previous year (October-November 2020) documented in Golder (2021) with the following exceptions:

- In the previous year (Oct-Nov 2020) the Coldwater River results were more enriched, plotting further to the top right relative to results from September 2021. There is insufficient information to infer the cause of this variability.
- In the previous year (Oct-Nov 2020), the results for the municipal wells completed in the Upper Merritt aquifer varied as follows: Voght Park Well #1 and Fairley Park Well were slightly more depleted whereas Collette Well was slightly more enriched relative to results from September 2021. There is insufficient information to infer the cause of this variability.
- Unexplained outliers in the previous year's results (sampled Oct-Nov 2020) were no longer outliers in results from September 2021. Specifically:
  - Fairley Park MW07-02M, completed in the Middle Merritt aquifer, plotted anomalously similar to the Coldwater River samples in 2020 (enriched), whereas in 2021 both samples from this well plotted similarly to the other confined aquifer wells (depleted) as expected.
  - The nested monitoring well at Voght Park, MW04-1D plotted anomalously closer to the Nicola River signature in 2020, whereas in 2021, this well plotted closer to the Coldwater River signature as expected.

6.5.3 Groundwater Mixing Analysis

Estimates of the proportion of river water and groundwater from the confined aquifers in selected samples from the unconfined Upper Merritt aquifer were attempted using a linear mixing model. The groundwater samples from the municipal wells (Colletteville Well, Voght Park Well #1 and Fairley Park Well) and the provincial observation well (OW296) installed in the Upper Merritt aquifer were selected for this analysis. Water quality parameters typically indicative of mixing from different water sources, and the natural isotope results, were used to make these estimates. However, the unconfined aquifer in the Merritt Basin is also recharged by three other water sources: upgradient groundwater inflow originating from the Coldwater River Valley, upgradient groundwater inflow originating from the Nicola River / Nicola Lake Valley, and precipitation recharge. Water quality parameters that are uniquely indicative of these other sources were not available and would have been required to make reasonable estimates. Therefore, estimation of the proportion of river water and confined aquifer groundwater in the samples from the Upper Merritt aquifer could not be conducted.

7.0 CONCLUSIONS

This report provides an updated analysis of groundwater-surface water interaction within the City of Merritt and includes an analysis of the effect of pumping at the municipal wells and sources of recharge to the Upper Merritt aquifer. This analysis was primarily based on data from fall 2021 provided by FLNRORD that consisted of water level, water temperature, and water chemistry data, and streamflow measurements. Daily pumping rates from the City of Merritt production wells over 2021 were also provided. Based on this analysis, the following conclusions are made.

Groundwater-Surface Water Interaction

- This analysis afforded a qualitative assessment of groundwater-surface water interaction using multiple lines of evidence; however, a quantitative assessment, although attempted based on stream-flow measurements, proved inconclusive. The given uncertainty in the single set of streamflow measurements did not afford conclusive quantitative estimates of river-groundwater exchange. Several approaches for obtaining quantitative estimates are provided in the recommendations section of the report.
- With respect to the **Nicola River**:
  - Multiple lines of evidence indicate losing and/or zero exchange (parallel flow) conditions between Kengard and N'Kwala Park and downstream of Spring & Granite to near its the confluence with the Coldwater River. Conversely, mostly gaining conditions (i.e., groundwater discharge to the river) were inferred between K'Kwala Park and Spring & Granite, with intermittent short periods of losing or zero-exchange conditions.
  - Throughout the monitoring period, the river level was at or above the elevation of the water table in the unconfined aquifer at Kengard and at Spring & Granite, and downward hydraulic gradients were measured at the mini-piezometer installed in the riverbed at Kengard and N'Kwala Park.
  - An upward hydraulic gradient was measured at the mini-piezometer installed in the riverbed over most of the monitoring period at Spring & Granite while the surface water level elevation at this location was at or above the water table in the unconfined aquifer at the nearest monitoring well located slightly to the west. The conflicting results at Spring & Granite are likely related to the "U" shaped bend in the Nicola River at this location which results in gaining conditions on the upgradient side of the bend and losing conditions on the downgradient side of the bend.

  - Water quality and isotope analyses of the Nicola River and the shallow groundwater beneath and beside the river generally have a similar chemical signature and are indicative of losing or flow-through conditions. The isotope signature in groundwater at the Spring & Granite mini-piezometer is more depleted than, surface water at that location, which supports the upward gradient and gaining conditions at this location.
  - The natural isotopic signature of the Nicola River water exhibits the most isotopically enriched signature relative to other waters in this study and follows the Okanagan Meteoric Water Line (OMWL). The isotopic enrichment is inferred to be due to the lower elevation precipitation recharge in the Nicola watershed rather than enrichment by evaporation in Nicola Lake.

- With respect to the **Coldwater River**:
  - Between Houston Street Bridge and Claybanks, multiple lines of evidence indicate losing conditions (recharging the aquifer) and flow-through conditions where the river flow is tangential to the direction of groundwater flow. Flow-through conditions are also inferred downstream of Voght Park to the confluence with the Nicola River. In between these locations, from Collett Bridge and Claybanks, conditions are inferred to vary between losing, flow-through and zero-exchange (parallel flow) conditions.
  - Throughout the monitoring period, the Coldwater River level was at or above the elevation of the water table in the unconfined aquifer, and downward hydraulic gradients were measured at the mini-piezometers installed in the riverbed.
  - Water quality and isotope analyses indicated a very similar chemical signature between the shallow groundwater along the Coldwater River and the river itself.
  - The natural isotopic signature of the Coldwater River differs from that of the Nicola River in that the Coldwater River is more depleted in δ18O and plots closer to the Global Meteoric Water Line (GMWL) than the Okanagan Meteoric Water Line (OMWL). This may be due to the headwaters of the Coldwater River being in the coastal mountains where humidity is higher (Golder 2016).

Interaction between Merritt Aquifers

- The inferred direction of groundwater flow in the unconfined Upper Merritt aquifer is west-northwesterly toward the Coldwater-Nicola River confluence. The vertical hydraulic gradient within this aquifer is downward except area near the Coldwater-Nicola River confluence where an upward gradient was measured (at MW4S/D). It is inferred that gaining conditions exist at the river confluence which is located near the northern margin of the Upper Merritt aquifer.
- In Fall 2021, a downward gradient at Fairley Park (MW07-2S/M) existed from the Upper Merritt aquifer (unconfined) to the Middle Merritt aquifer (confined) with the potential for leakage from the overlying Upper Merritt aquifer to recharge the Middle Merritt aquifer at this location. However, in fall 2020, an upward gradient was recorded at this monitoring well nest (Golder 2021), which indicates that the direction of the gradient varies and there is potential for periodic recharge to the unconfined aquifer by upwelling groundwater from the underlying confined aquifer.

- A negligible to weak upward vertical gradient was observed between the confined Lower Merritt aquifer and the confined Middle Merritt aquifer at Kengard (MW07-1S/M). These aquifers are inferred to receive recharge from regional groundwater flow originating in the upland areas around Merritt.
- The natural isotopic signature of groundwater from the Lower and Middle Merritt aquifers are similar and generally plots in the bottom left corner of the δ2H-δ18O plot and exhibit the most isotopically depleted signature relative to other waters in this study. This isotopic signature suggests recharge to the confined aquifers is from a more distant, higher elevation, regional water source, and is typical of deep (regional) mountain block recharge (MBR).

Effect of Pumping at the Production Wells

- Pumping at the production wells withdrawing from the Upper Merritt aquifer did not produce an obvious response in the stage of the Coldwater River. The combined flows from the production wells during the September streamflow measurements were only about 1% to 3% of the flow in the Coldwater River (based on flows measured 16 Sept. and 23 Sept. 2021).
- Pumping at the Colletteville Well, the only production well situated on the west side of the Coldwater River, resulted in a small drawdown response on the opposite side of the Coldwater River in a nearby monitoring well completed in the same aquifer (Upper Merritt aquifer). This suggests that the Coldwater River is not a hydraulic boundary (recharge boundary) and that leakage from the river within the Colletteville Well capture zone was lower than the Colletteville Well pumping rate. These data also suggest that an increase in pumping from the Voght Park/Colletteville Well area may not result in an equivalent volumetric increase in the rate of river loss.
- Pumping at Fairley Park Well produced a drawdown response in the Upper Merritt aquifer (at MW07-2S), but no notable drawdown response was observed in the Middle Merritt aquifer (at MW07-2M). The Middle Merritt aquifer is inferred to be well confined (not leaky) at Fairley Park.
- Pumping at the Voght Park Wells was observed to increase the downward vertical gradient in the unconfined aquifer, promoting river seepage to the water table (based on monitoring data at MW04-1S).
- Pumping at the Kengard Well produces drawdown in the pumped aquifer (confined Lower Merritt aquifer; MW07-1 M/D) and in the confined Middle Merritt aquifer (MW07-1 S). This suggests that the confining layer between the two aquifers at Kengard is discontinuous or leaky, or there is groundwater movement outside of the pumping well or monitoring well casings.

The results of this analysis provide multiple lines of evidence demonstrating hydraulic connectivity and the nature of this connectivity between the unconfined Upper Merritt aquifer and the two rivers flowing through the City of Merritt, thus refining the conceptual hydrogeological model for the Merritt Area.

The primary update to the conceptual model is that there are multiple sources of recharge to the Upper Merritt aquifer including Coldwater River losses, Nicola River losses, local precipitation, upgradient shallow groundwater inflow (from the Coldwater River valley and Nicola River / Nicola Lake valley) and upwelling of groundwater from the underlying confined aquifer, and that the contribution from each of these sources varies across the aquifer. This update is primarily based on the analysis of natural isotopes in groundwater and surface water and the water level data for the aquifers and rivers.

8.0 RECOMMENDATIONS

The updated conceptual model described in this report together with the water level dataset from the monitoring wells and the vertical gradients observed in these wells could be used to update the existing numerical groundwater flow model for the Nicola Valley, improve the steady-state calibration of this model in the Merritt area and provide some of the groundwater data necessary for calibrating the model to transient conditions. Alternatively (or in addition), the results from this analysis could be used to develop an integrated groundwater-surface water flow model of the Study area using HydroGeoSphere (HGS) that was proposed previously by Golder (Phase 3 Groundwater-Surface Water Interaction Study, Coldwater River; proposal dated 20 November 2019). These models could be to use to predict the effects on streamflow and groundwater from additional groundwater abstraction (i.e., additional production wells and/or higher pumping rates), thus providing a decision-support tool for proposed new wells.

The following recommendations may reduce the uncertainty in stream flow measurements, thereby providing more reliable estimates of the magnitude and location of gaining and losing stream reaches within both the rivers:

- Complete at least two survey events within the dry season (August or September) utilizing, at a minimum, the same measurement stations as described in this report.
- Conduct repeat stream flow measurements at each station (at least 3 sets of measurements per station on the same day) as part of one survey event.
- Utilize at least two separate field crews to conduct these measurements for each survey event whereby the second field crew would independently repeat the measurements made by the first crew.
- Notify surface water license owners within the City of Merritt of the survey event and request them to either abstain from utilizing surface water during the stream flow survey events or to provide daily surface water extraction information for period of water use that coincides with the survey events (i.e., flow rates and durations, start and end times and volumes).

The approach outlined above is expected to reduce any bias and permit an evaluation of the reproducibility of the flow measurements, thereby improving the accuracy of the measurements overall.

9.0 CLOSURE

We trust this information is sufficient for your needs at this time. Should you have any questions or concerns, please do not hesitate to contact the undersigned.

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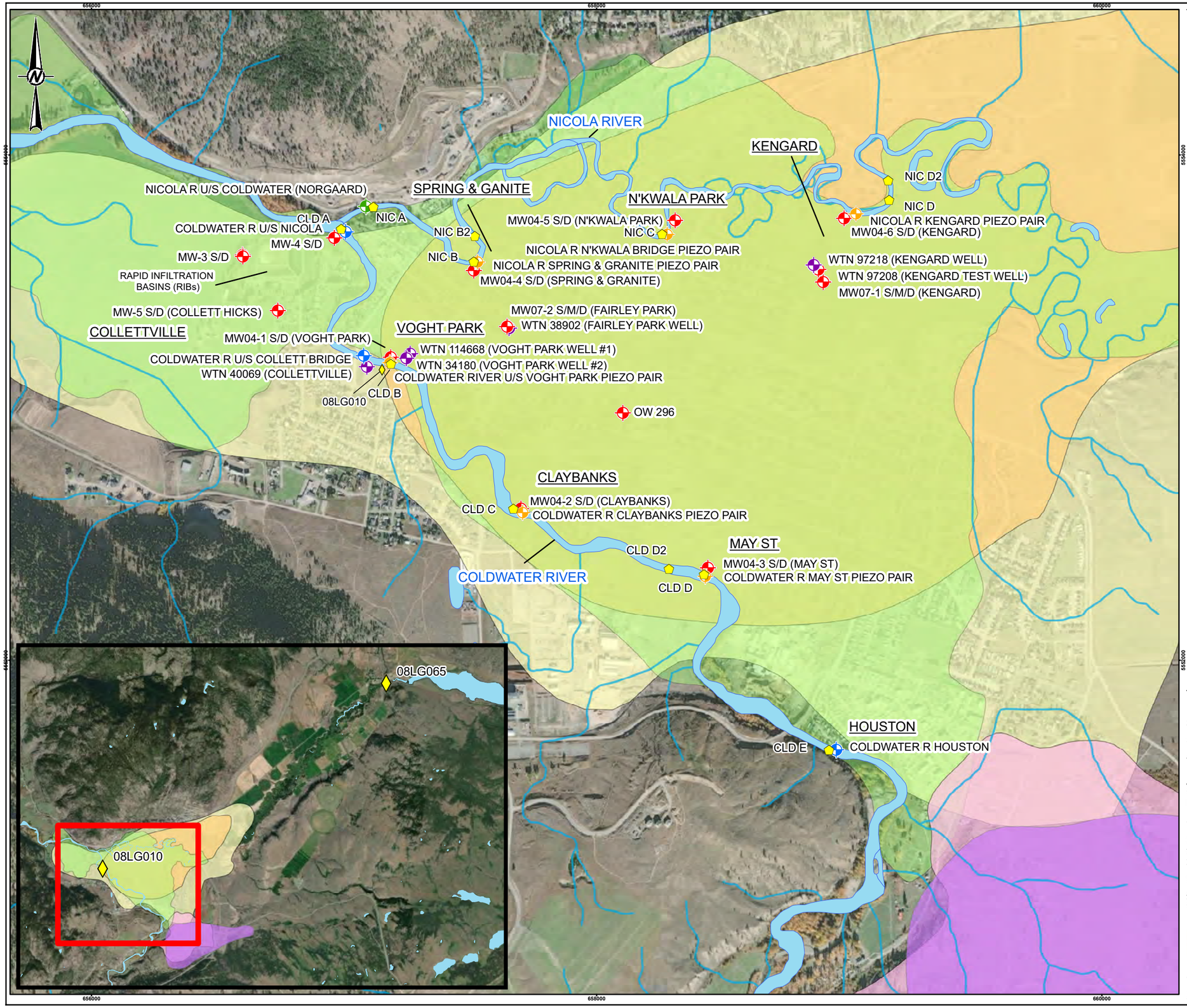


LEGEND

- LAKE
- WATERCOURSE
- DEEP JOEYASKA AQUIFER
- SHALLOW JOEYASKA AQUIFER
- UPPER MERRITT AQUIFER
- LOWER MERRITT AQUIFER
- MIDDLE MERRITT AQUIFER
- WSC HYDROMETRIC STATION
- STREAMFLOW LOCATION

MONITORING LOCATION

- PAIRED GROUNDWATER-SURFACE WATER MINI-PIEZOMETER
- GROUNDWATER WELL
- PRODUCTION WELL
- STILLING WELL
- SURFACE WATER SAMPLE LOCATION

AQUIFER	WELL NAME
Upper Merritt Aquifer	MW04-1 S/D (VOGHT PARK)
	MW04-2 S/D (CLAYBANKS)
	MW04-3 S/D (MAY ST)
	MW04-4 S (SPRING GRANITE)
	MW04-5 S/D (N'KWALA PARK)
	MW04-6 S (KENGARD RR)
	MW-3 S/D*
	MW-4 S/D*
	MW-5 S/D (COLLETT HICKS)
	MW07-2S (FAIRLEY PARK)
	WTN 38902 (FAIRLEY PARK WELL)
	WTN 40069 (COLLETTVILLE WELL)
	WTN 114668 (VOGHT PARK WELL #1)
	WTN 34180 (VOGHT PARK WELL #2)
	OW 296
Clay Unit	MW04-6 D (KENGARD RR)
	MW04-4 D (SPRING GRANITE)
Middle Merritt Aquifer	MW07-1 S (KENGARD RR)
	MW07-2M (FAIRLEY PARK)
	OW 494
Lower Merritt Aquifer	MW07-1 M/D (KENGARD RR)
	WTN 97208 (KENGARD TEST WELL)
	WTN 97218 (KENGARD WELL)
	MW07-2D (FAIRLEY PARK)

*COMPLETION IN AQUIFER WAS ASSUMED. WELL LOG NOT AVAILABLE.

0 500 1,000

1:15,000 METRES

NOTE(S)

1. WATERCOURSES, WATERBODIES OBTAINED FROM THE BC FRESH WATER ATLAS THROUGH DATA BC
2. IMAGERY COPYRIGHT ESRI AND ITS LICENSORS. SOURCE: DITIGAL GLOBE. USED UNDER LICENSE, ALL RIGHTS RESERVED. IMAGERY DATE:20110826
3. GROUNDWATER WELLS, SURFACE WATER AND PAIRED PIPEZOMETER LOCATIONS PROVIDED BY FLNRORD
4. HYDROMETRIC STATIONS OBTAINED FROM THE WATER SURVEY OF CANADA.

CLIENT
FRASER BASIN COUNCIL

PROJECT
CITY OF MERRITT GROUNDWATER-SURFACE WATER INTERACTION STUDY

TITLE
STUDY AREA, MONITORING LOCATIONS AND LOCAL AQUIFERS

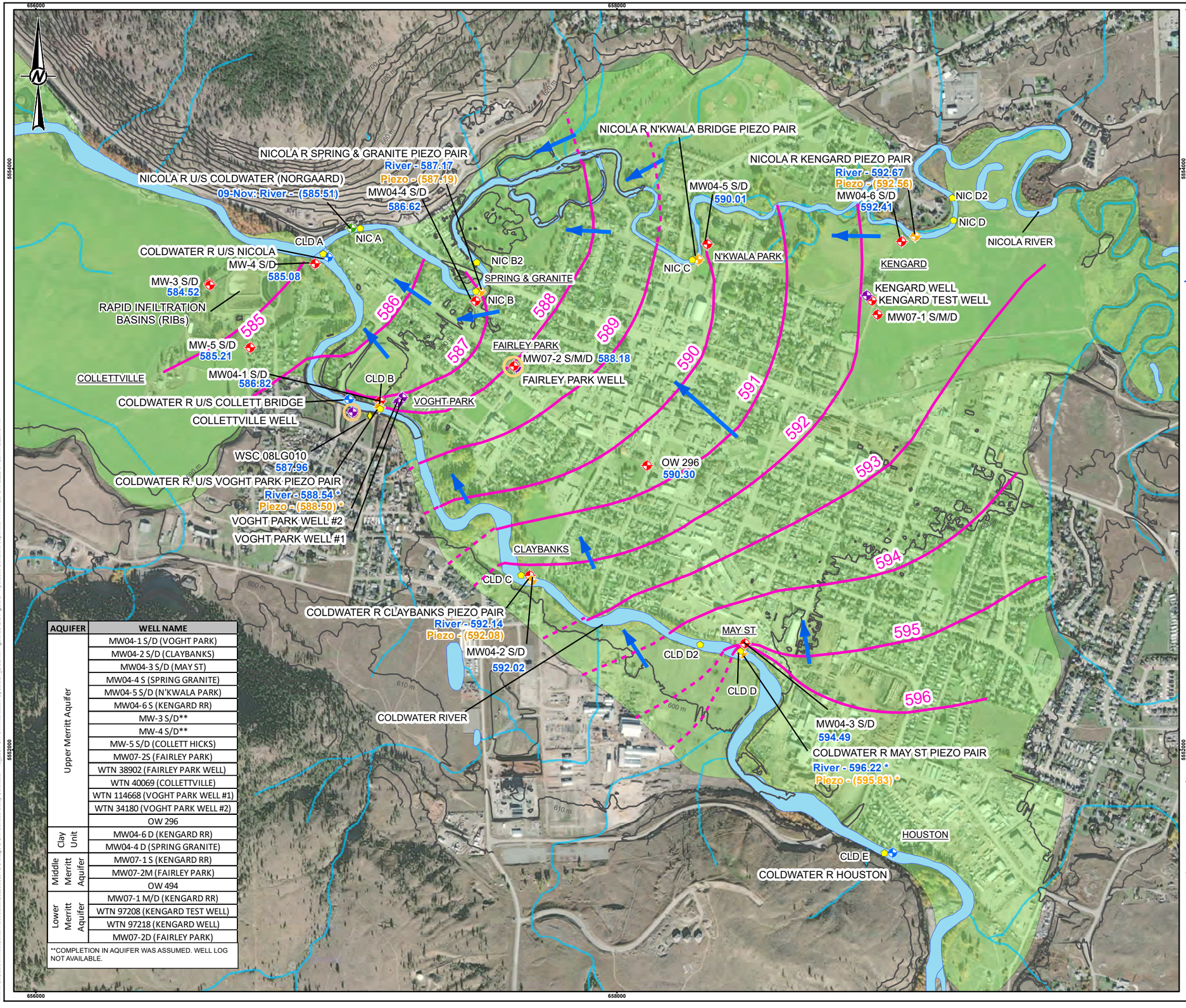
CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-04-12
DESIGNED	RKS
PREPARED	RKS
REVIEWED	KAB
APPROVED	CR

PROJECT NO.	CONTROL	REV.	FIGURE
20253005	8000	0	1

PATH: C:\Users\RWilkie\Golder Associates\20253005, FBC Stage 2 GW Surface Study Coldwater - 10_2021 GW-SW Interaction Update\07_Data for Figure\03 GIS\Figure 1 - Study Area and Local Aquifers ZOOMED.mxd PRINTED ON: 2022-04-26 AT: 2:35:21 PM

25mm



AQUIFER	WELL NAME
Upper Merritt Aquifer	MW04-1 S/D (VOGHT PARK)
	MW04-2 S/D (CLAYBANKS)
	MW04-3 S/D (MAY ST)
	MW04-4 S (SPRING GRANITE)
	MW04-5 S/D (N'KWALA PARK)
	MW04-6 S (KENGARD RR)
	MW-3 S/D**
	MW-4 S/D**
	MW-5 S/D (COLLETT HICKS)
	MW07-2S (FAIRLEY PARK)
	WTN 38902 (FAIRLEY PARK WELL)
	WTN 40069 (COLLETTVILLE)
	WTN 114668 (VOGHT PARK WELL #1)
	WTN 34180 (VOGHT PARK WELL #2)
	OW 296
Clay Unit	MW04-6 D (KENGARD RR)
	MW04-4 D (SPRING GRANITE)
Middle Merritt Aquifer	MW07-1 S (KENGARD RR)
	MW07-2M (FAIRLEY PARK)
	OW 494
Lower Merritt Aquifer	MW07-1 M/D (KENGARD RR)
	WTN 97208 (KENGARD TEST WELL)
	WTN 97218 (KENGARD WELL)
	MW07-2D (FAIRLEY PARK)

**COMPLETION IN AQUIFER WAS ASSUMED. WELL LOG NOT AVAILABLE.

LEGEND

- RIVER/LAKE
- WATERCOURSE
- UPPER MERRITT AQUIFER
- WSC HYDROMETRIC STATION
- STREAMFLOW LOCATION

MONITORING LOCATION

- PAIRED GROUNDWATER-SURFACE WATER MINI-PIEZOMETER
- GROUNDWATER WELL
- PRODUCTION WELL
- STILLING WELL
- SURFACE WATER SAMPLE LOCATION
- WATER TABLE ELEVATION CONTOUR (masl)
- 590.01 WATER LEVEL ELEVATION (masl) (USED TO GENERATE WATER TABLE CONTOURS)
- 590.01 WATER LEVEL ELEVATION (masl) (FOR INFORMATION PURPOSES)
- INFERRED SAHLLOW GROUNDWATER FLOW DIRECTION
- ACTIVE PUMPING CONDITIONS DURING MONIOTIRNG PERIOD

0 200 400

1:13,000 METRES

NOTE(S)

* WATER LEVELS RECORDED ON 4 OCTOBER 2021.
1. SURFACE WATER AND GROUNDWATER LEVELS FROM MINI-PIEZOMETERS MEASURED 15-17 SEPT. 2021 EXCEPT FOR TWO LOCATIONS ON COLDWATER RIVER (MAY ST AND VOGHT PARK) WHICH WERE MEASURED 4 OCT. 2021. [NOTE: THERE IS ONLY A 20 CM DIFFERENCE IN COLDWATER R. LEVELS BETWEEN 7 SEPT. 2021 AND 4 OCT. 2021 BASED ON THE CONTINUOUS RECORD AT THE WSC STATION (08LG010)]
2. GROUNDWATER LEVELS FROM MONITORING WELLS MEASURED DURING MONITORING PERIOD 1-15 SEPTEMBER 2021.
3. MINI-PIEZOMETER LOCATIONS WERE SHIFTED TO THE CENTERLINE OF THE RIVERS TO MINIMIZE OVERLAPPING LOCATION SYMBOLS
4. WATER TABLE CONTOURS WERE ESTIMATED MANUALLY, WITH SOME INPUT FROM INTERPOLATION SOFTWARE.
5. WATERCOURSES, WATERBODIES OBTAINED FROM THE BC FRESH WATER ATLAS THROUGH DATA BC
6. IMAGERY COPYRIGHT ESRI AND ITS LICENSORS. SOURCE: DITIGAL GLOBE. USED UNDER LICENSE, ALL RIGHTS RESERVED. IMAGERY DATE:20110826
7. GROUNDWATER WELLS, SURFACE WATER AND PAIRED PIPEZOMETER LOCATIONS PROVIDED BY FLNRORD
8. HYDROMETRIC STATIONS OBTAINED FROM THE WATER SURVEY OF CANADA.

COORDINATE SYSTEM: UTM ZONE 10

CLIENT
FRASER BASIN COUNCIL

PROJECT
CITY OF MERRRITT GROUNDATER-SURFACE WATER INTERACTION STUDY - FALL 2021

TITLE
WATER TABLE ELEVATION, SEPTEMBER 2021

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-04-12
DESIGNED	RKS
PREPARED	RKS
REVIEWED	KAB
APPROVED	CR

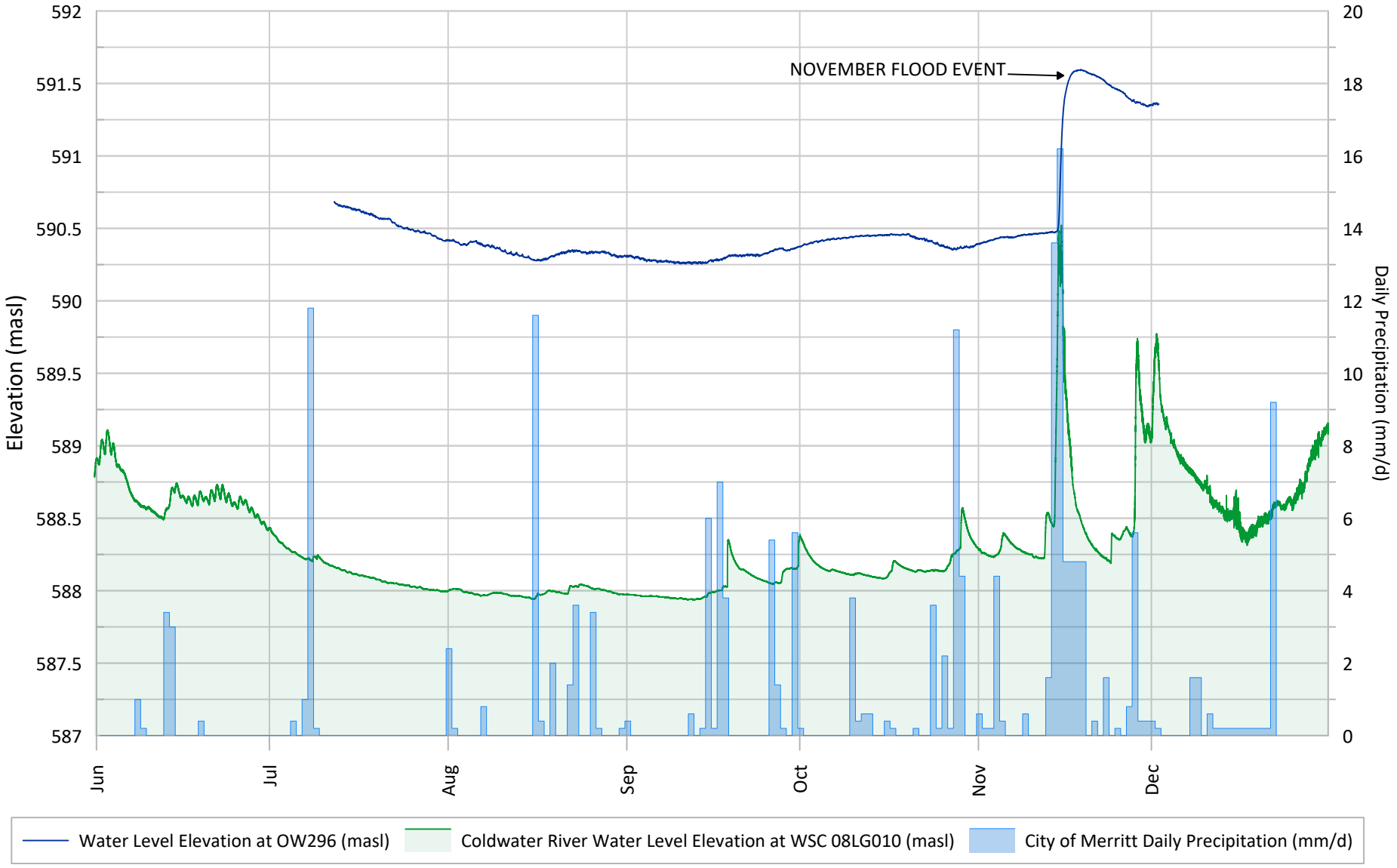
PROJECT NO.	CONTROL	REV.	FIGURE
20253005	8000	0	2

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

25mm

0

PATH: C:\Users\RWilde\Golder Associates\20253005, FBC Stage 2 GW Surface Study Coldwater - 10_2021 GW-SW Interaction Update\07. Data for Figure\03 GIS\Figure 2 - Hydraulic Contours Sept.mxd PRINTED ON: 2022-04-26 AT: 2:23:13 PM



CLIENT
FRASER BASIN COUNCIL

PROJECT
CITY OF MERRITT GROUNDWATER-SURFACE WATER INTERACTION STUDY - FALL 2021

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-04-12
PREPARED	RKS
DESIGN	RKS
REVIEW	KAB
APPROVED	CR

TITLE
RIVER LEVEL AND UPPER MERRITT AQUIFER LEVEL (OW296) VS PRECIPITATION

PROJECT No.	PHASE	Rev.	FIG
20253005	8000	0	3

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B
0 1in

656000
658000
5554000
5552000

NICOLA RIVER
NICOLA R U/S COLDWATER PIEZO
COLDWATER R U/S NICOLA
MW-4 S/D
S - 585.08
D - 585.20
MW-3 S/D
S - 584.52
D - 584.48
SPRING & GANITE
NICOLA R SPRING & GRANITE PIEZO PAIR
MW04-4 S/D
S - 586.62
D - 586.53
River - 587.17
Piezo - 587.19
MW04-5 S/D
S - 590.01
D - 590.00
NICOLA R N'KWALA BRIDGE PIEZO PAIR
GRADIENT BASED ON DIFFERENCE IN WATER LEVEL ONLY
N'KWALA PARK
MW04-6 S/D
S - 592.41
D - 592.40
NICOLA R KENGARD PIEZO PAIR
River - 592.67
Piezo - 592.56
KENGARD
KENGARD WELL
KENGARD TEST WELL 591.73
MW07-1 S/M/D
S - 591.86
M - 591.85
D - 591.70
MW07-2 S/M/D
S - 588.18
D - 587.74
FAIRLEY PARK WELL
FAIRLEY PARK
MW04-1 S/D
S - 586.82
D - 586.71
VOGHT PARK
VOGHT PARK WELL #1
VOGHT PARK WELL #2
MW-5 S/D
S - 585.21
D - 585.18
COLLETTVILLE
COLDWATER R U/S COLLETT BRIDGE
COLLETTVILLE WELL
COLDWATER R. U/S VOGHT PARK PIEZO PAIR
River - 588.54 *
Piezo - 588.50 *
OW 296
CLAYBANKS
MW04-2 S/D
S - 592.02
D - 592.01
COLDWATER R CLAYBANKS PIEZO PAIR
River - 592.14
Piezo - 592.08
MAY ST
MW04-3 S/D
S - 594.49
D - 594.49
COLDWATER R MAY ST PIEZO PAIR
River - 596.22 *
Piezo - 595.83 *
COLDWATER RIVER
HOUSTON
COLDWATER R HOUSTON

AQUIFER	WELL NAME
Upper Merritt Aquifer	MW04-1 S/D (VOGHT PARK)
	MW04-2 S/D (CLAYBANKS)
	MW04-3 S/D (MAY ST)
	MW04-4 S (SPRING GRANITE)
	MW04-5 S/D (N'KWALA PARK)
	MW04-6 S (KENGARD RR)
	MW-3 S/D**
	MW-4 S/D**
	MW-5 S/D (COLLETT HICKS)
	MW07-2S (FAIRLEY PARK)
	WTN 38902 (FAIRLEY PARK WELL)
	WTN 40069 (COLLETTVILLE)
	WTN 114668 (VOGHT PARK WELL #1)
	WTN 34180 (VOGHT PARK WELL #2)
	OW 296
Clay Unit	MW04-6 D (KENGARD RR)
	MW04-4 D (SPRING GRANITE)
Middle Merritt Aquifer	MW07-1 S (KENGARD RR)
	MW07-2M (FAIRLEY PARK)
	OW 494
Lower Merritt Aquifer	MW07-1 M/D (KENGARD RR)
	WTN 97208 (KENGARD TEST WELL)
	WTN 97218 (KENGARD WELL)
	MW07-2D (FAIRLEY PARK)

**COMPLETION IN AQUIFER WAS ASSUMED. WELL LOG NOT AVAILABLE.

LEGEND

- RIVER/LAKE
- WATERCOURSE
- SURFACE ELEVATION CONTOURS (MASL)
- UPPER MERRITT AQUIFER
- WSC HYDROMETRIC STATION
- STREAMFLOW LOCATION

MONITORING LOCATION

- PAIRED GROUNDWATER-SURFACE WATER MINI-PIEZOMETER
- GROUNDWATER WELL
- PRODUCTION WELL
- SURFACE WATER SAMPLE LOCATION
- DOWNWARD HYDRAULIC GRADIENT
- UPWARD HYDRAULIC GRADIENT
- ZERO HYDRAULIC GRADIENT
- 580 WATER LEVEL ELEVATION (MASL)

0 200 400
1:13,000 METRES

NOTE(S)

* WATER LEVELS RECORDED ON 4 OCTOBER 2021.
1. SURFACE WATER AND GROUNDWATER LEVELS FROM MINI-PIEZOMETERS MEASURED 15-17 SEPT. 2021 EXCEPT FOR TWO LOCATIONS ON COLDWATER RIVER (MAY ST AND VOGHT PARK) WHICH WERE MEASURED 4 OCT. 2021. [NOTE: THERE IS ONLY A 20 CM DIFFERENCE IN COLDWATER R. LEVELS BETWEEN 7 SEPT. 2021 AND 4 OCT. 2021 BASED ON THE CONTINUOUS RECORD AT THE WSC STATION (08LG010)]
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3. MINI-PIEZOMETER LOCATIONS WERE SHIFTED TO THE CENTERLINE OF THE RIVERS TO MINIMIZE OVERLAPPING LOCATION SYMBOLS
4. WATERCOURSES, WATERBODIES OBTAINED FROM THE BC FRESH WATER ATLAS THROUGH DATA BC
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6. GROUNDWATER WELLS, SURFACE WATER AND PAIRED PIPEZOMETER LOCATIONS PROVIDED BY FLNRORD
7. HYDROMETRIC STATIONS OBTAINED FROM THE WATER SURVEY OF CANADA.

CLIENT
FRASER BASIN COUNCIL

PROJECT
CITY OF MERRITT GROUNDWATER-SURFACE WATER INTERACTION STUDY - FALL 2021

TITLE
WATER LEVELS AND VERTICAL HYDRAULIC GRADIENTS, SEPTEMBER 2021

CONSULTANT
WSP GOLDER

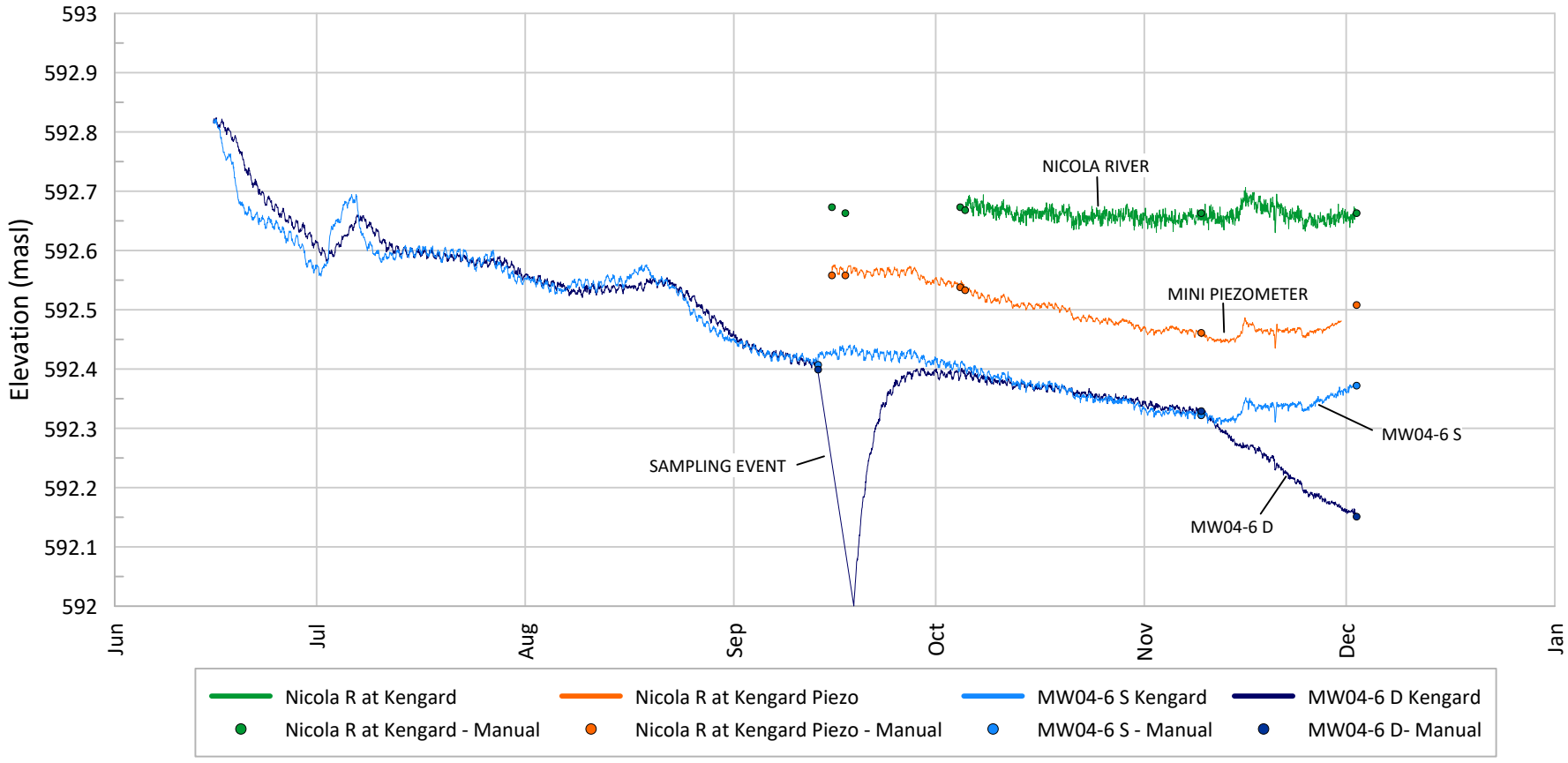
YYYY-MM-DD	2022-04-12
DESIGNED	RKS
PREPARED	RKS
REVIEWED	KAB
APPROVED	CR

PROJECT NO.	CONTROL	REV.	FIGURE
20253005	8000	0	4

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

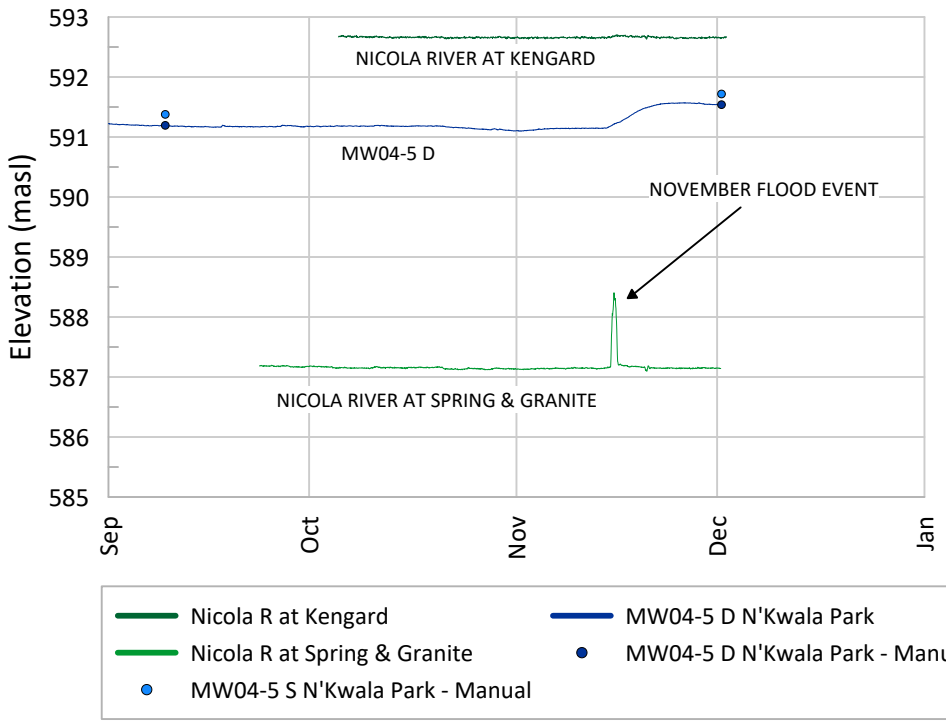
PATH: C:\Users\RWillis\Golder Associates\20253005_FBC Stage 2 GW Surface Study Coldwater - 10_2021 GW-SW Interaction Update\07_Data for Figure\03 GIS\Figure 4 - Water Levels and Gradients.mxd PRINTED ON: 2022-04-12 AT: 9:59:01 AM

Nicola R. at Kengard

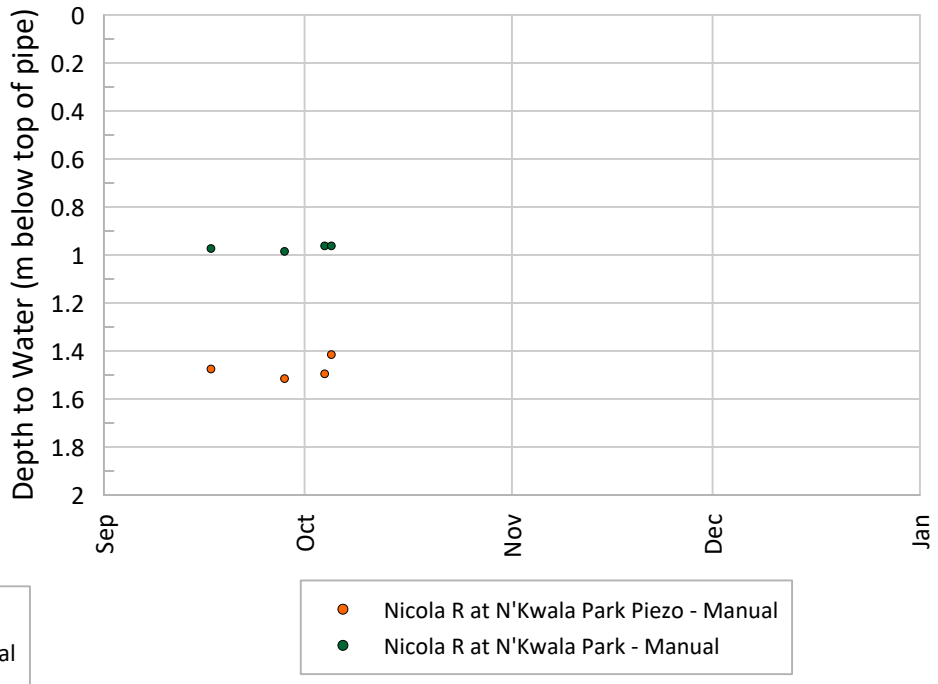


Nicola R. at N'Kwala Park

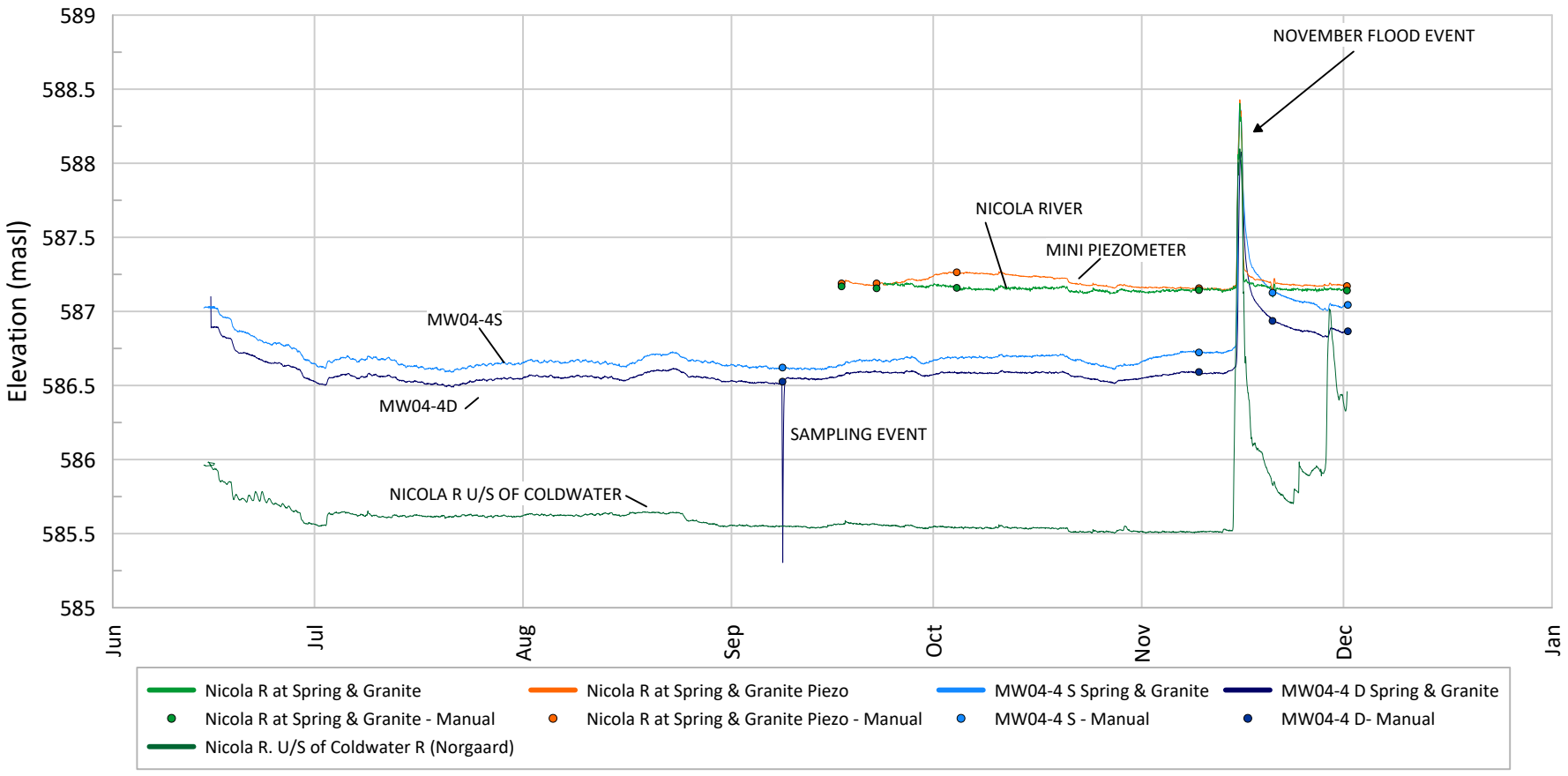
Water Level Elevation



Depth to Water



Nicola R. at Spring & Granite



NOTE
LINE COLOURS ON PLOTS INDCATE THE MONITORING LOCATION TYPE
GREEN - SURFACE WATER
ORANGE - MINI PIEZOMETER
BLUE - GROUNDWATER

CLIENT
FRASER BASIN COUNCIL

PROJECT
CITY OF MERRITT GROUNDWATER-SURFACE WATER INTERACTION STUDY - FALL 2021

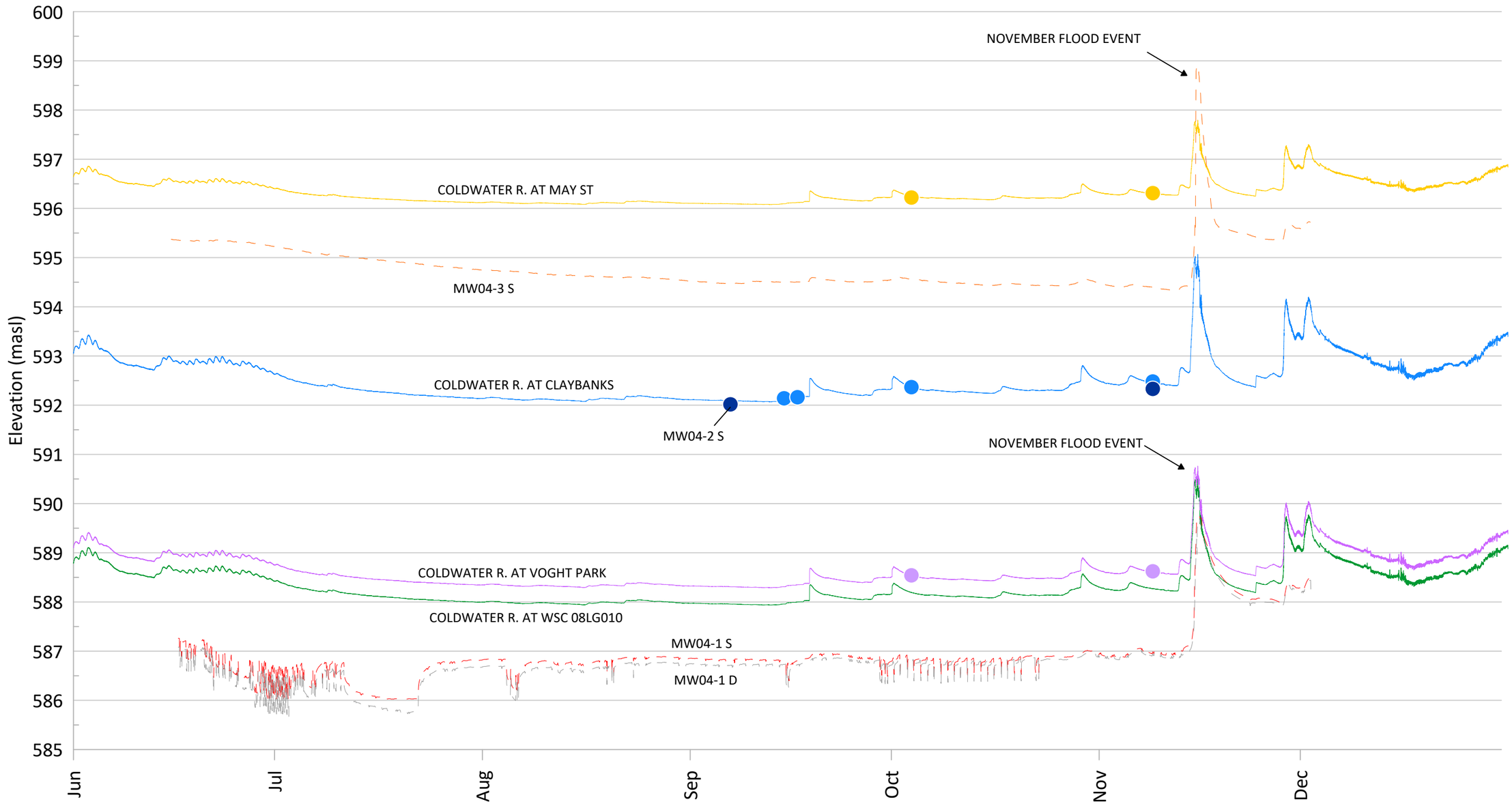
CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-04-12
PREPARED	RKS
DESIGN	RKS
REVIEW	KAB
APPROVED	CR

TITLE
RIVER LEVEL VS SHALLOW GROUNDWATER LEVELS OVER TIME - NICOLA RIVER

PROJECT No.	PHASE	Rev.	FIG
20253005	8000	0	5

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B
1 in
0



NOTE
SOLID LINE - SURFACE WATER
DASHED LINE - GROUNDWATER

- Coldwater R at May Street
- Coldwater R at May St. (Manual)
- MW04-3S (May St.)
- Coldwater R at Claybanks
- Coldwater R at Claybanks (Manual)
- MW04-2 S (Claybanks)
- Coldwater R at Voght Park
- Coldwater R at Voght Park (Manual)
- MW04-1 S (Voght Park)
- MW04-1 D (Voght Park)
- Coldwater R at WSC 08LG010

CLIENT
FRASER BASIN COUNCIL

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-04-12
PREPARED	RKS
DESIGN	RKS
REVIEW	KAB
APPROVED	CR

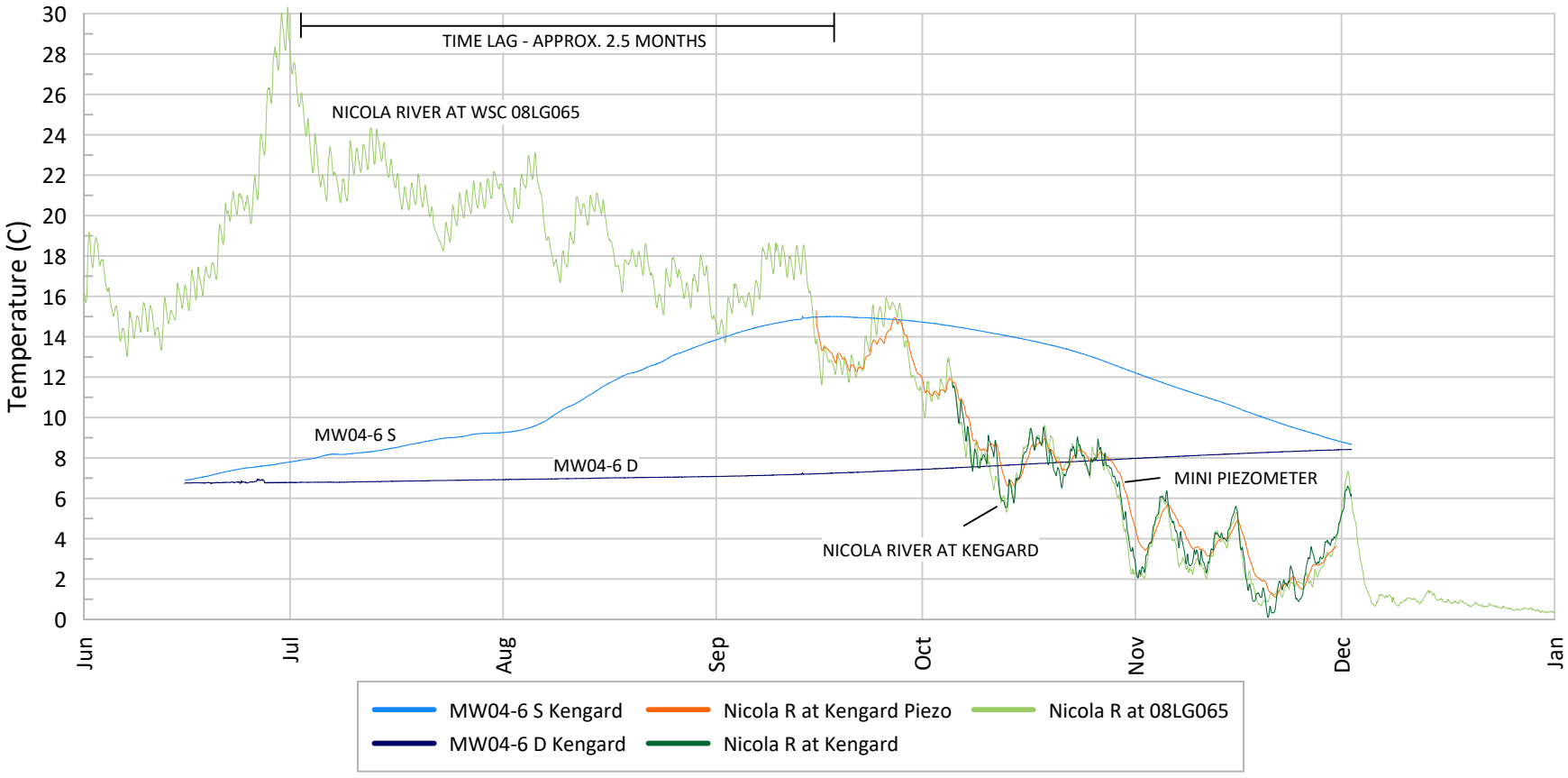
PROJECT
CITY OF MERRITT GROUNDWATER-SURFACE WATER INTERACTION STUDY - FALL 2021

TITLE
RIVER LEVEL VS SHALLOW GROUNDWATER LEVELS OVER TIME - COLDWATER RIVER

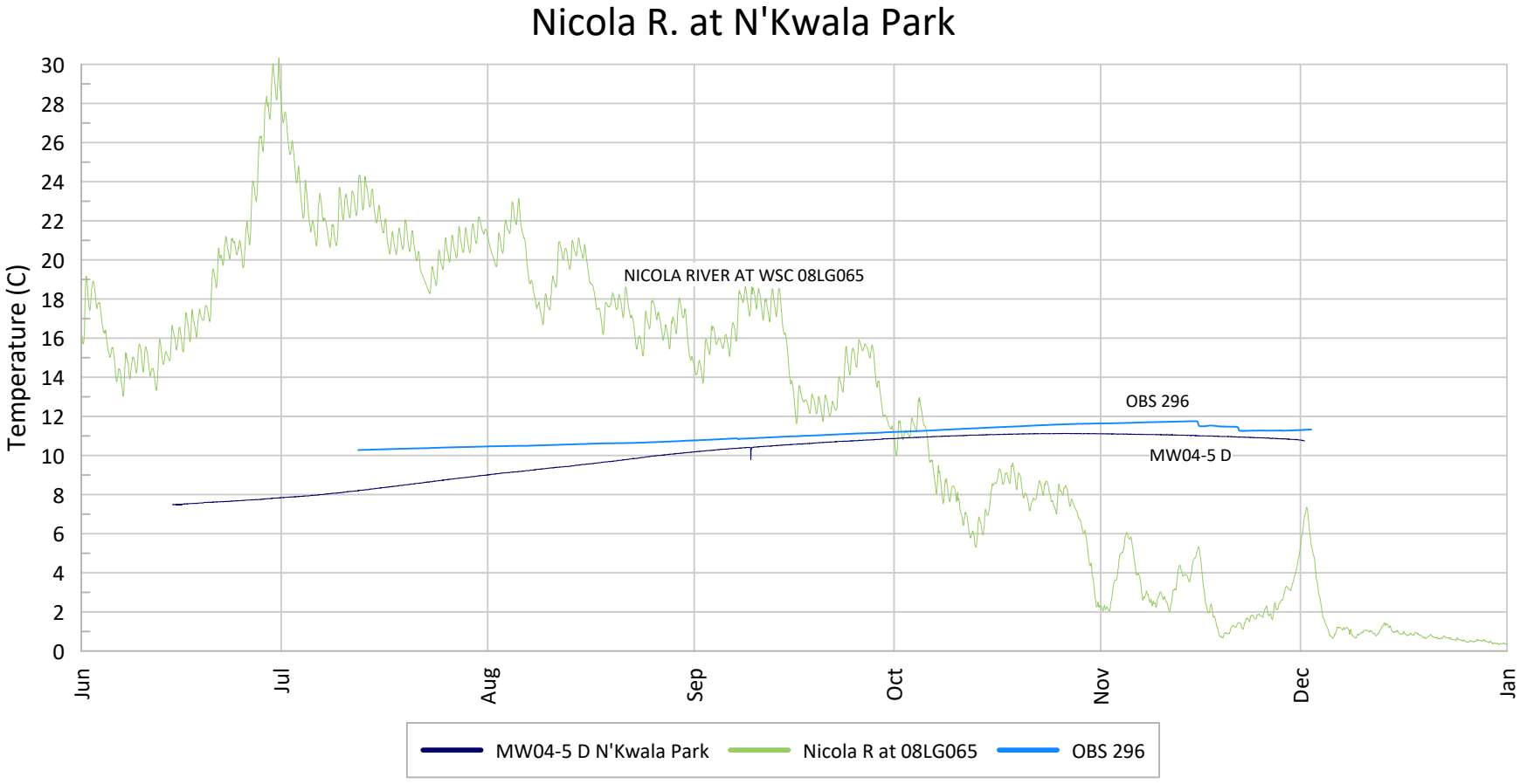
PROJECT No.	PHASE	Rev.	FIG
20253005	8000	0	6

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B
0 1in

Nicola R. at Kengard



Nicola R. at N'Kwala Park



Nicola R. at Spring & Granite

NOTE
LINE COLOURS ON PLOTS INDCATE THE MONITORING LOCATION TYPE
GREEN - SURFACE WATER
ORANGE - MINI PIEZOMETER
BLUE - GROUNDWATER

CLIENT
FRASER BASIN COUNCIL

PROJECT
CITY OF MERRITT GROUNDWATER-SURFACE WATER INTERACTION STUDY - FALL 2021

CONSULTANT
GOLDER

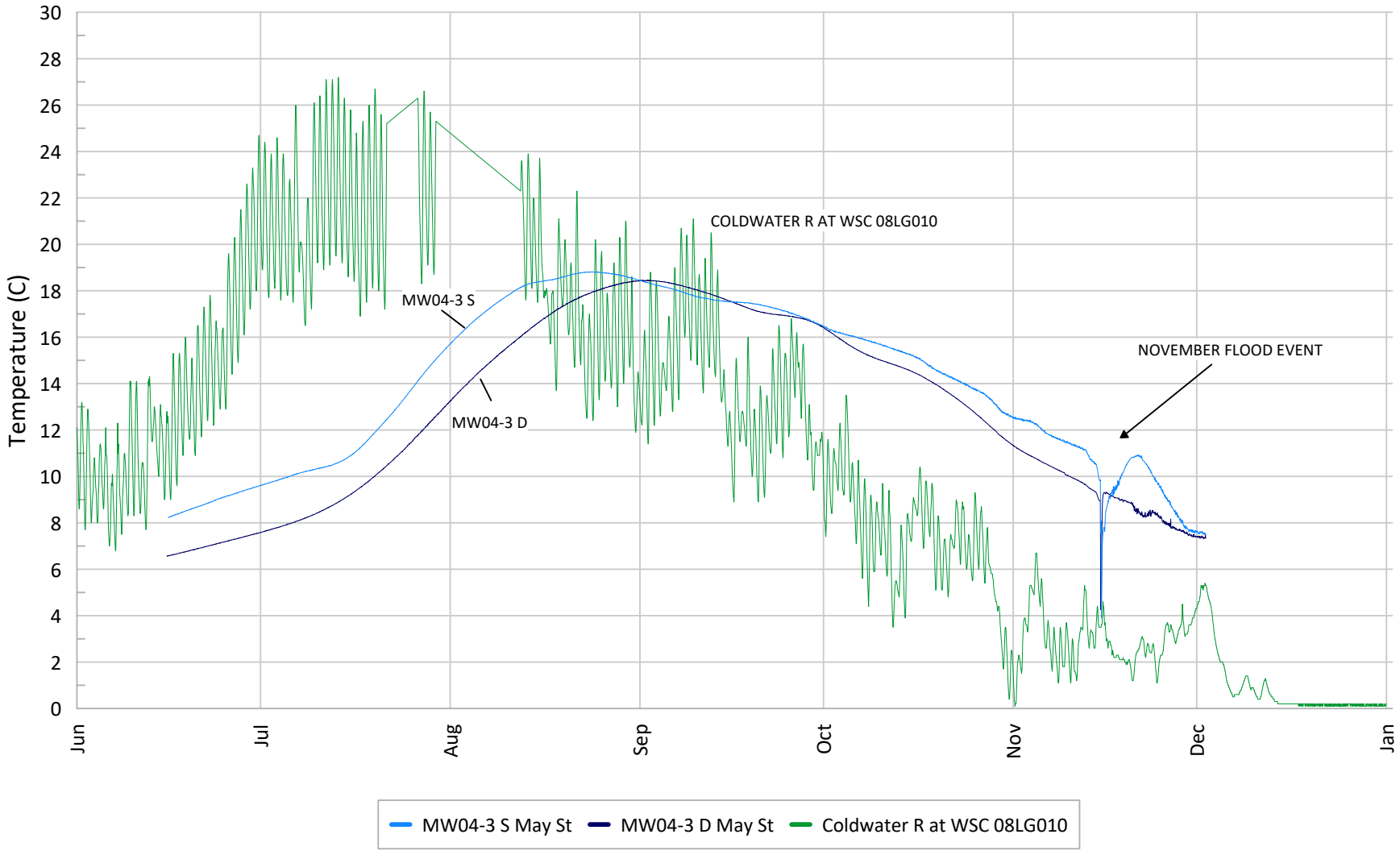
YYYY-MM-DD	2022-04-12
PREPARED	RKS
DESIGN	RKS
REVIEW	KAB
APPROVED	CR

TITLE
NICOLA RIVER, MINI-PIEZOMETER AND MONITORING WELL TEMPERATURE PROFILES

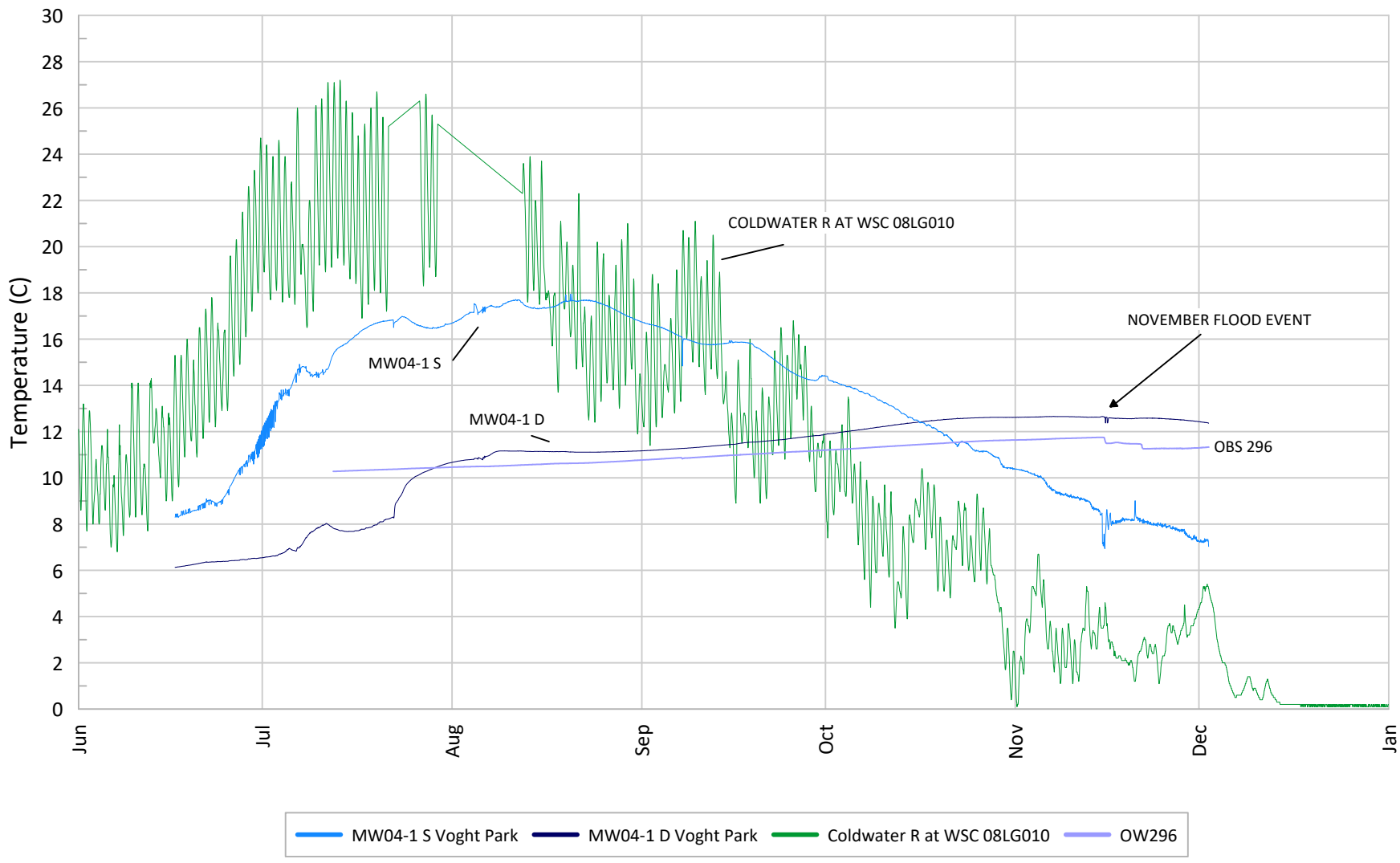
PROJECT No.	PHASE	Rev.	FIG
20253005	8000	0	7

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Coldwater R. at May St.



Coldwater R. at Voght Park



NOTE
LINE COLOURS ON PLOTS INDCATE THE MONITORING LOCATION TYPE
GREEN - SURFACE WATER
ORANGE - MINI PIEZOMETER
BLUE - GROUNDWATER

CLIENT
FRASER BASIN COUNCIL

CONSULTANT
GOLDER

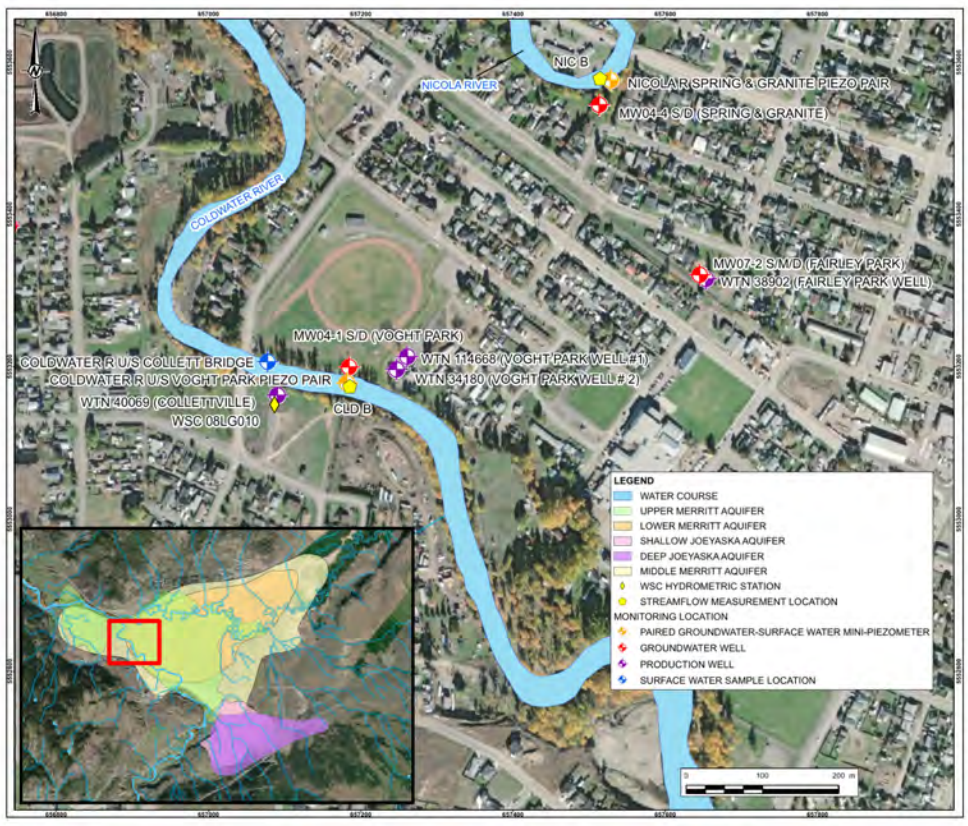
YYYY-MM-DD	2022-04-25
PREPARED	RKS
DESIGN	RKS
REVIEW	KAB
APPROVED	CR

PROJECT
CITY OF MERRITT GROUNDWATER-SURFACE WATER INTERACTION STUDY - FALL 2021

TITLE
COLDWATER RIVER AND MONITORING WELL TEMPERATURE PROFILES

PROJECT No.	PHASE	Rev.	FIG
20253005	8000	0	8

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B
0 1 in



Aquifer	Well Location	Well Depth (mbgs)	Distance from Coldwater River (m)
Upper Merritt Aquifer	MW04-1 S (VOGHT PARK)	4.8	15
	MW04-1 D (VOGHT PARK)	8.5	15
	WTN 40069 (COLLETTVILLE)	45	13
	WTN 114668 (VOGHT PARK WELL #1)	30	34
	WTN 34180 (VOGHT PARK WELL #2)	34	58
	MW07-2S (FAIRLEY PARK)	30	390
	WTN 38902 (FAIRLEY PARK WELL)	25	395
Middle Merritt Aquifer	MW07-2M (FAIRLEY PARK)	58	390
Lower Merritt Aquifer	MW07-2D (FAIRLEY PARK)	86	390

Note: The specific time period of pump operation within a day was not available for the current dataset; data presented above represents the total pumped volume for a 24hr period.

REFERENCES (S)
1. WATERCOURSES, WATERBODIES OBTAINED FROM THE BC FRESH WATER ATLAS THROUGH DATA BC
2. IMAGERY COPYRIGHT ESRI AND ITS LICENSORS. SOURCE: DITIGAL GLOBE. USED UNDER LICENSE, ALL RIGHTS RESERVED. IMAGERY DATE 20110826.
3. GROUNDWATER WELLS, SURFACE WATER AND PAIRED PIPEZOMETER LOCATIONS PROVIDED BY FLNROD
4. HYDROMETRIC STATIONS OBTAINED FROM THE WATER SURVEY OF CANADA.

CLIENT
FRASER BASIN COUNCIL

CONSULTANT
GOLDER

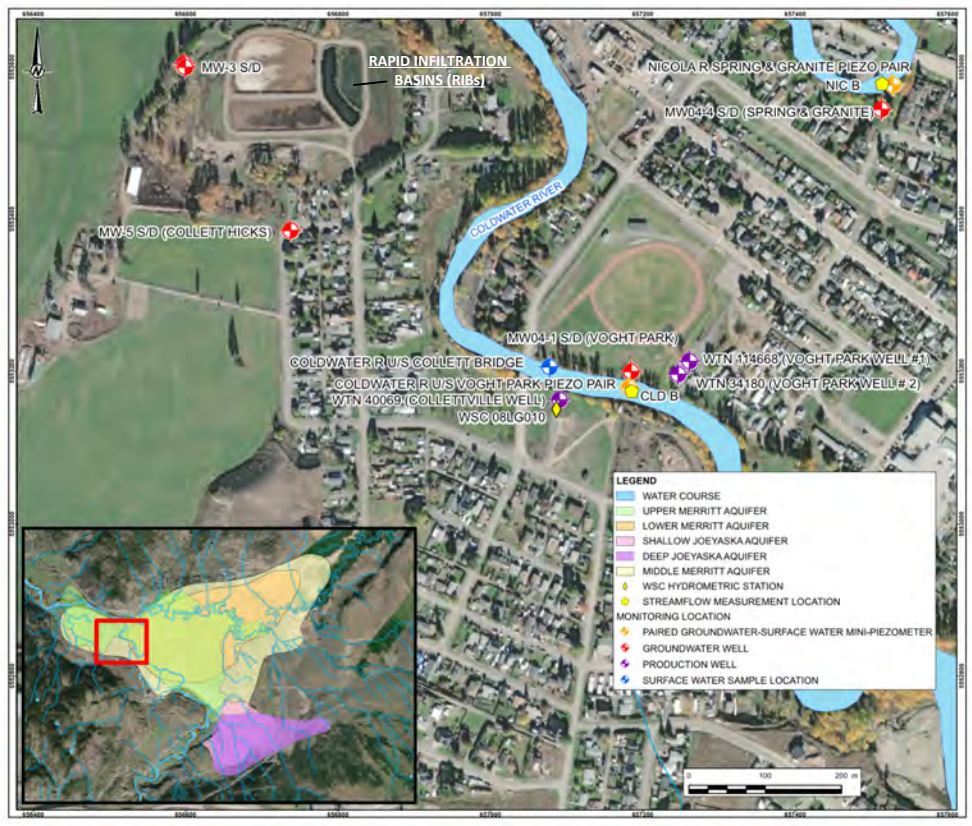
YYYY-MM-DD	2022-04-12
PREPARED	RKS
DESIGN	RKS
REVIEW	KAB
APPROVED	CR

PROJECT
CITY OF MERRITT GROUNDWATER-SURFACE WATER INTERACTION STUDY - FALL 2021

TITLE
FAIRLEY PARK WELL DAILY PUMPING RATE (m^3/d) AND MONITORING WELL GROUNDWATER LEVEL (MASL)

PROJECT No.	PHASE	Rev.	FIG
20253005	8000	0	9

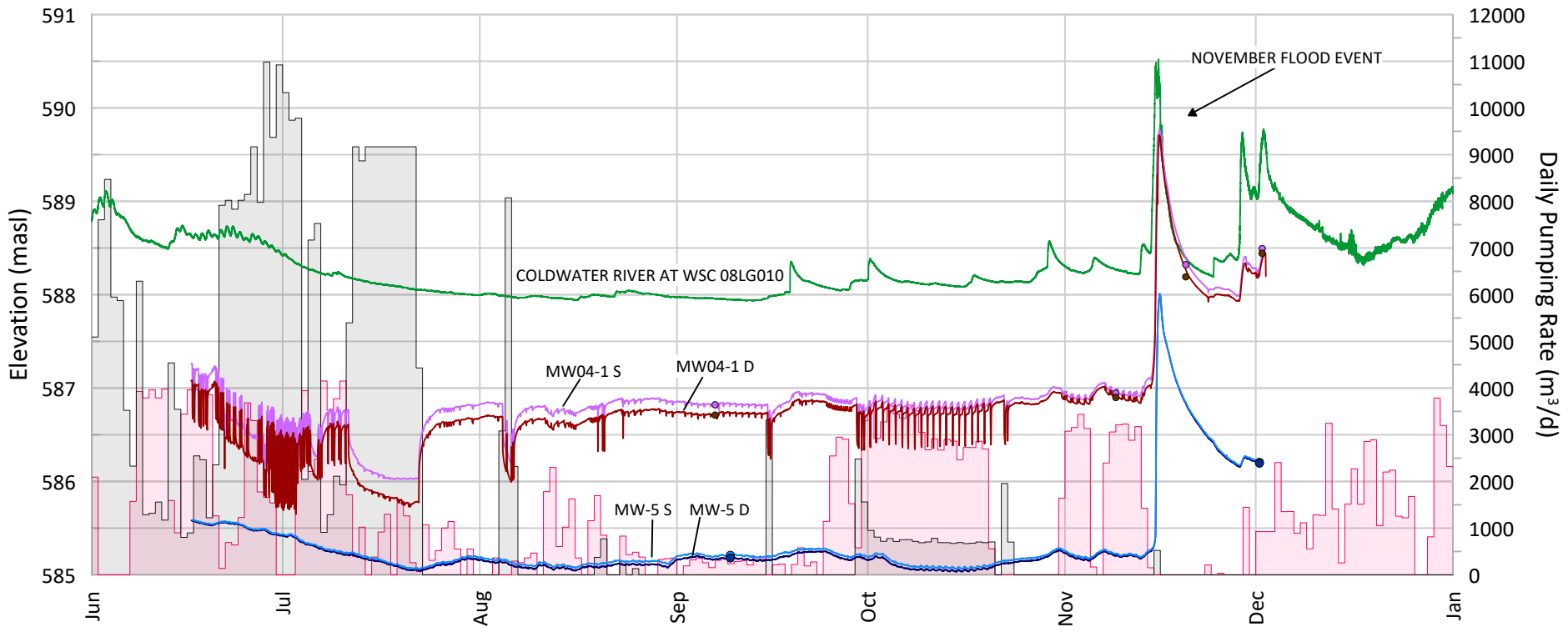
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B



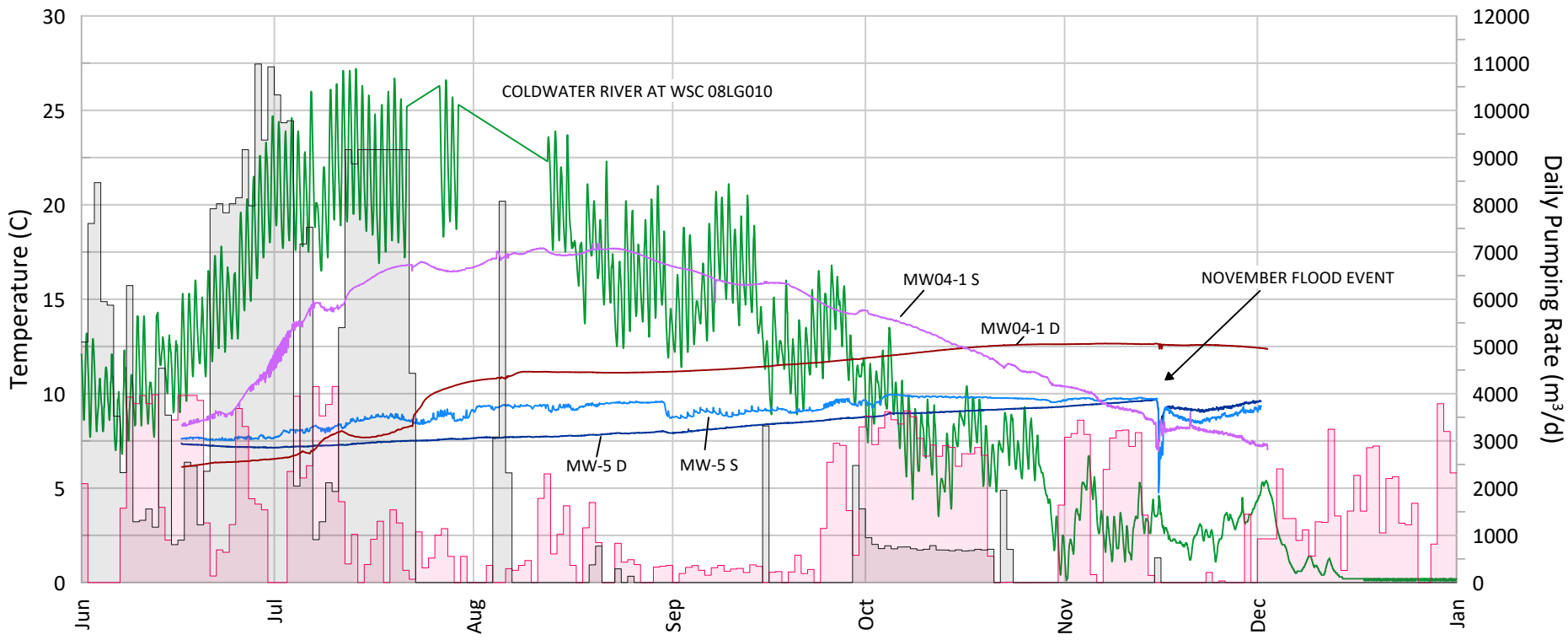
Aquifer	Well Location	Well Depth (mbgs)	Distance from Coldwater River (m)
Upper Merritt Aquifer	MW-4 S	5.5	17
	MW-4 D	11.0	17
	MW-5 S (COLLETT HICKS)	5.2	210
	MW-5 D (COLLETT HICKS)	9.9	210
	WTN 40069 (COLLETTVILLE)	45	13
	MW04-1 S (VOGHT PARK)	4.8	15
	WTN 114668 (VOGHT PARK WELL #1)	30	34
	WTN 34180 (VOGHT PARK WELL #2)	34	58

MW-5 S Collett Hicks
MW-5 D Collett Hicks
MW04-1 S Voght Park
MW04-1 D Voght Park
Coldwater R at WSC 08LG010
Voght Park Wells (#1, #2) Combined Pumping Rate
MW-5 S - Manual
MW-5 D - Manual
MW04-1 S - Manual
MW04-1 D - Manual
Collettville Well Pumping Rate

Water Level Elevation vs Pumping Rate



Water Temperature vs Pumping Rate



Note: The specific time period of pump operation within a day was not available for the current dataset; data presented above represents the total pumped volume for a 24hr period.

REFERENCES (S)
1. WATERCOURSES, WATERBODIES OBTAINED FROM THE BC FRESH WATER ATLAS THROUGH DATA BC
2. IMAGERY COPYRIGHT ESRI AND ITS LICENSORS. SOURCE: DITIGAL GLOBE. USED UNDER LICENSE, ALL RIGHTS RESERVED. IMAGERY DATE 20110826.
3. GROUNDWATER WELLS, SURFACE WATER AND PAIRED PIPEZOMETER LOCATIONS PROVIDED BY FLNRORD

CLIENT
FRASER BASIN COUNCIL

CONSULTANT
WSP GOLDER

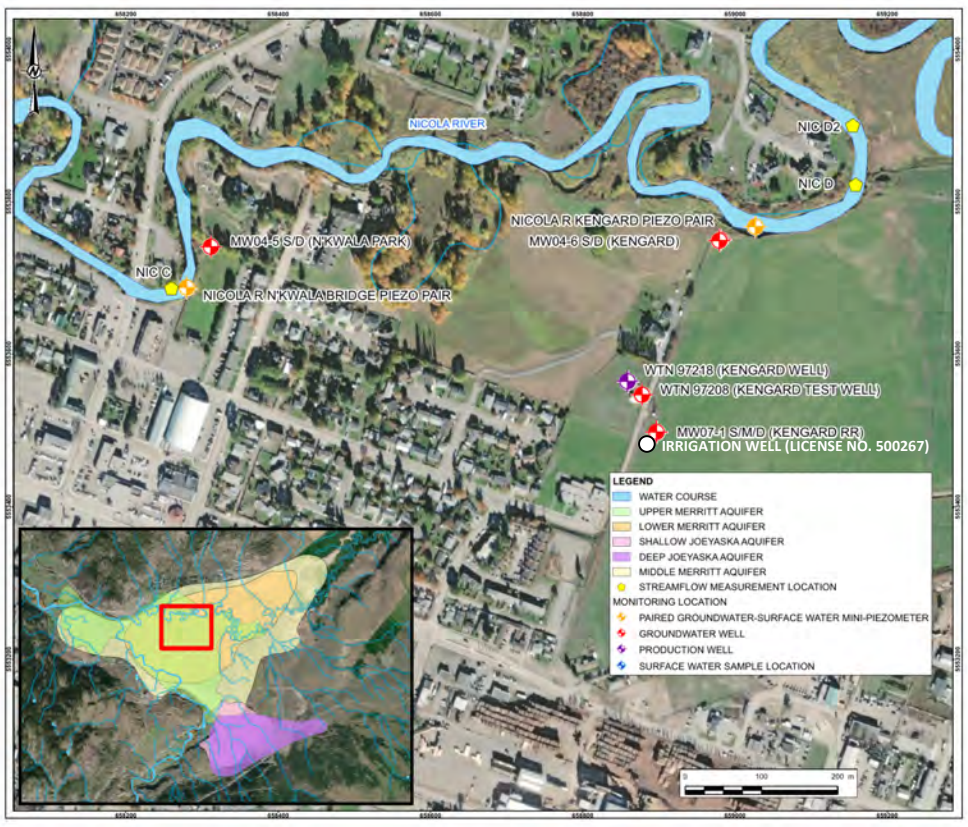
YYYY-MM-DD	2022-04-12
PREPARED	RKS
DESIGN	RKS
REVIEW	KAB
APPROVED	CR

PROJECT
CITY OF MERRITT GROUNDWATER-SURFACE WATER INTERACTION STUDY - FALL 2021

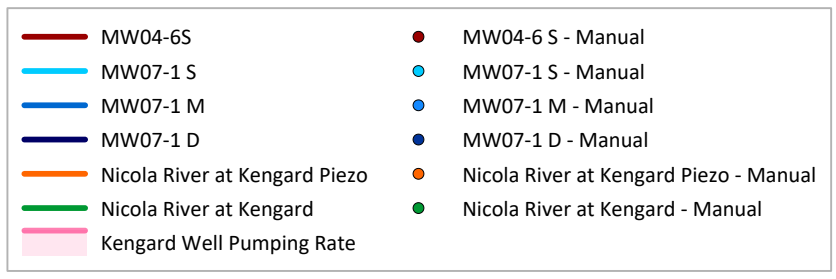
TITLE
COLLETTVILLE WELL DAILY PUMPING RATE (m3/d) AND MONITORING WELL GROUNDWATER LEVEL (MASL)

PROJECT No.	PHASE	Rev.	FIG
20253005	8000	0	10

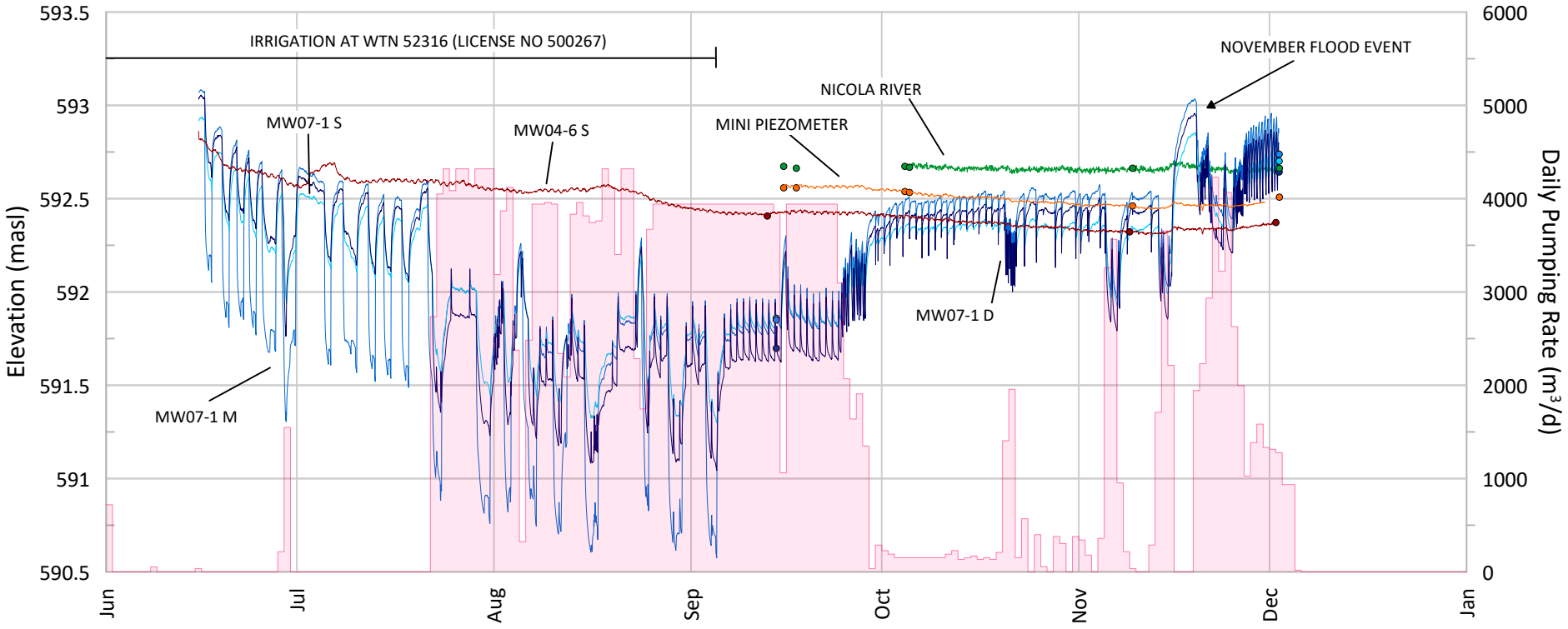
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B



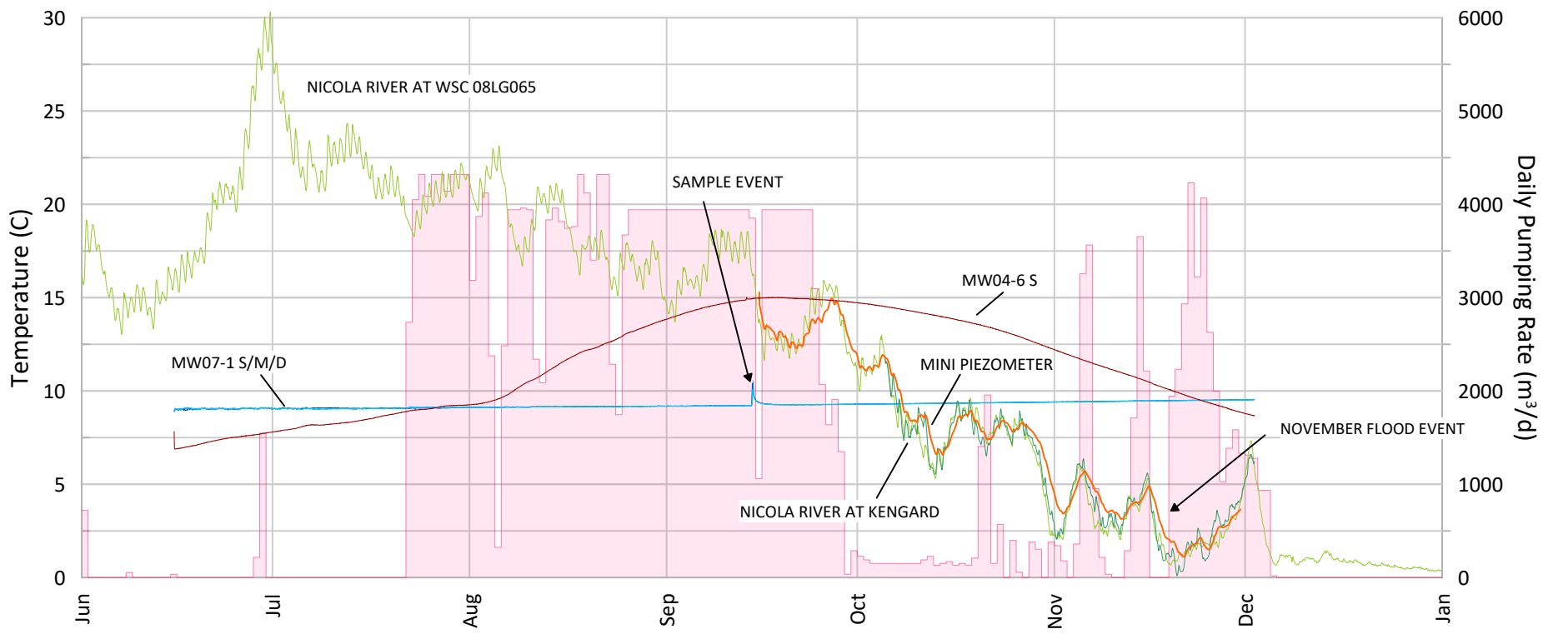
Aquifer Name	Well Name	Well Depth (mbgs)	Distance from Nicola River (m)
Upper Merritt Aquifer	MW04-5 S (N'KWALA PARK)	5.4	23
	MW04-5 D (N'KWALA PARK)	9.9	23
	MW04-6 S (KENGARD)	4.6	35
Aquitard	MW04-6 D (KENGARD)	9.4	35
Middle Merritt Aquifer	MW07-1 S (KENGARD)	57	295
Lower Merritt Aquifer	MW07-1 M (KENGARD)	86	295
	MW07-1 D (KENGARD)	131	295
	WTN 97208 (KENGARD TEST WELL)	Unknown	252
	WTN 97218 (KENGARD WELL)	139	250



Water Level Elevation vs Pumping Rate



Water Temperature vs Pumping Rate



Note: The specific time period of pump operation within a day was not available for the current dataset; data presented above represents the total pumped volume for a 24hr period.

REFERENCES (S)
1. WATERCOURSES, WATERBODIES OBTAINED FROM THE BC FRESH WATER ATLAS THROUGH DATA BC
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3. GROUNDWATER WELLS, SURFACE WATER AND PAIRED PIPEZOMETER LOCATIONS PROVIDED BY FLNRORD

CLIENT
FRASER BASIN COUNCIL

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-04-12
PREPARED	RKS
DESIGN	RKS
REVIEW	KAB
APPROVED	CR

PROJECT
CITY OF MERRITT GROUNDWATER-SURFACE WATER INTERACTION STUDY - FALL 2021

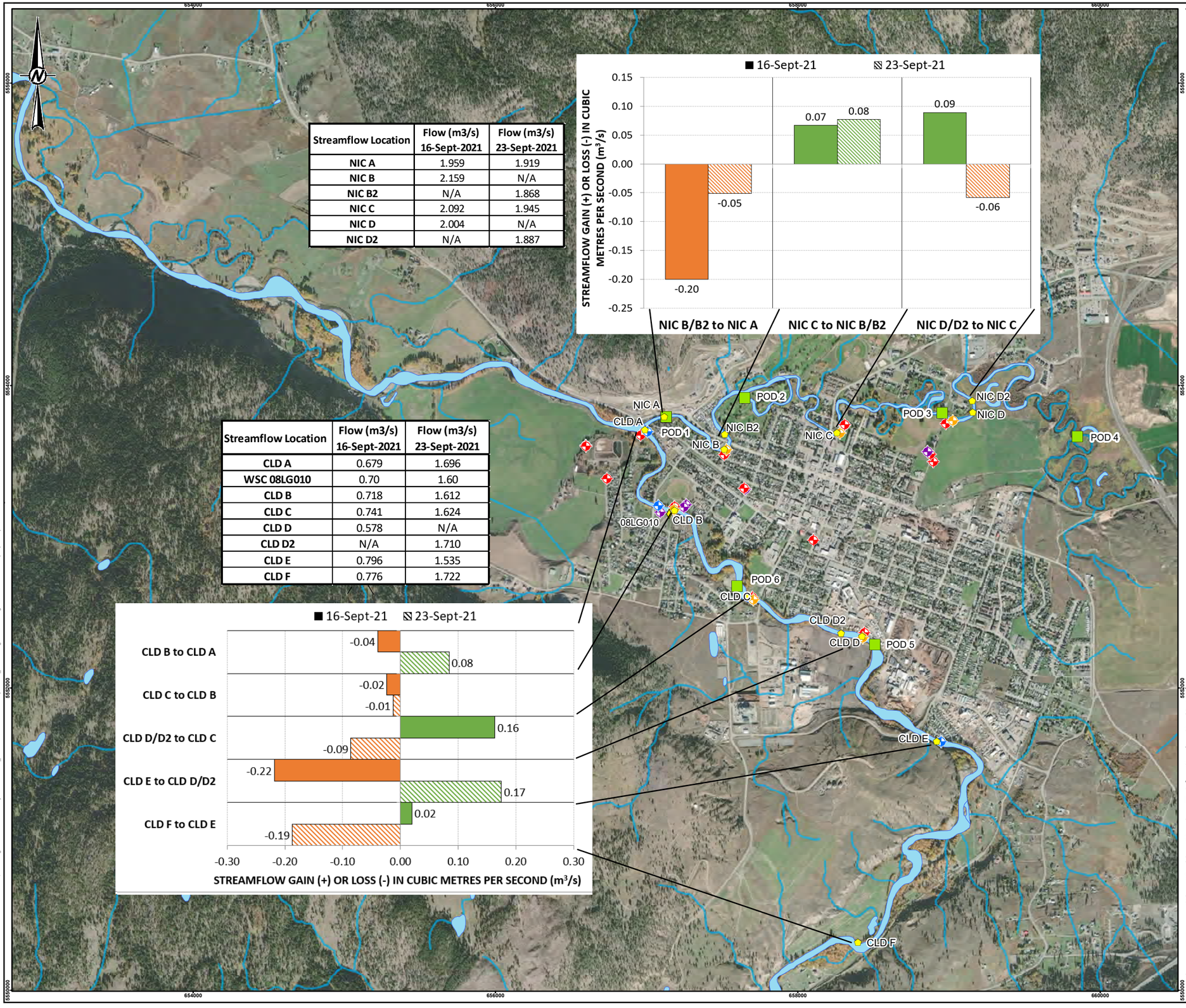
TITLE
KENGARD WELL DAILY PUMPING RATE (m³/d) AND MONITORING WELL GROUNDWATER LEVEL (MASL)

PROJECT No.	PHASE	Rev.	FIG
20253005	8000	0	12

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B
1 in
0

Streamflow Location	Flow (m3/s) 16-Sept-2021	Flow (m3/s) 23-Sept-2021
NIC A	1.959	1.919
NIC B	2.159	N/A
NIC B2	N/A	1.868
NIC C	2.092	1.945
NIC D	2.004	N/A
NIC D2	N/A	1.887

Streamflow Location	Flow (m3/s) 16-Sept-2021	Flow (m3/s) 23-Sept-2021
CLD A	0.679	1.696
WSC 08LG010	0.70	1.60
CLD B	0.718	1.612
CLD C	0.741	1.624
CLD D	0.578	N/A
CLD D2	N/A	1.710
CLD E	0.796	1.535
CLD F	0.776	1.722



LEGEND

- WATERBODY/WATERCOURSE
- WSC HYDROMETRIC STATION
- STREAMFLOW LOCATION

WATER RIGHTS LICENSE - SURFACE WATER POINT OF DIVERSION

- ACTIVE

MONITORING LOCATION

- PAIRED GROUNDWATER-SURFACE WATER MINI-PIEZOMETER
- GROUNDWATER WELL
- PRODUCTION WELL
- SURFACE WATER SAMPLE LOCATION

AQUIFER	WELL NAME
Upper Merritt Aquifer	MW04-1 S/D (VOGHT PARK)
	MW04-2 S/D (CLAYBANKS)
	MW04-3 S/D (MAY ST)
	MW04-4 S (SPRING GRANITE)
	MW04-5 S/D (N'KWALA PARK)
	MW04-6 S (KENGARD RR)
	MW-3 S/D**
	MW-4 S/D**
	MW-5 S/D (COLLETT HICKS)
	MW07-2S (FAIRLEY PARK)
	WTN 38902 (FAIRLEY PARK WELL)
	WTN 40069 (COLLETTVILLE)
	WTN 114668 (VOGHT PARK WELL #1)
	WTN 34180 (VOGHT PARK WELL #2)
	OW 296
Clay Unit	MW04-6 D (KENGARD RR)
	MW04-4 D (SPRING GRANITE)
Middle Merritt Aquifer	MW07-1 S (KENGARD RR)
	MW07-2M (FAIRLEY PARK)
	OW494
Lower Merritt Aquifer	MW07-1 M/D (KENGARD RR)
	WTN 97208 (KENGARD TEST WELL)
	WTN 97218 (KENGARD WELL)
	MW07-2D (FAIRLEY PARK)

**COMPLETION IN AQUIFER WAS ASSUMED. WELL LOG NOT AVAILABLE.

0 500 1,000

1:25,000 METRES

NOTE(S)

1. STREMFLOW DATA PROVIDED FOR STATIONS BY FLNRORD
2. WATERCOURSES, WATERBODIES OBTAINED FROM THE BC FRESH WATER ATLAS THROUGH DATA BC
3. IMAGERY COPYRIGHT ESRI AND ITS LICENSORS. SOURCE: DITIGAL GLOBE. USED UNDER LICENSE, ALL RIGHTS RESERVED. IMAGERY DATE:20110826
4. GROUNDWATER WELLS, SURFACE WATER AND PAIRED PIPEZOMETER LOCATIONS PROVIDED BY FLNRORD
5. HYDROMETRIC STATIONS OBTAINED FROM THE WATER SURVEY OF CANADA.

CLIENT
FRASER BASIN COUNCIL

PROJECT
CITY OF MERRITT GROUNDWATER-SURFACE WATER INTERACTION STUDY - FALL 2021

TITLE
STREMFLOW MEASUREMENTS

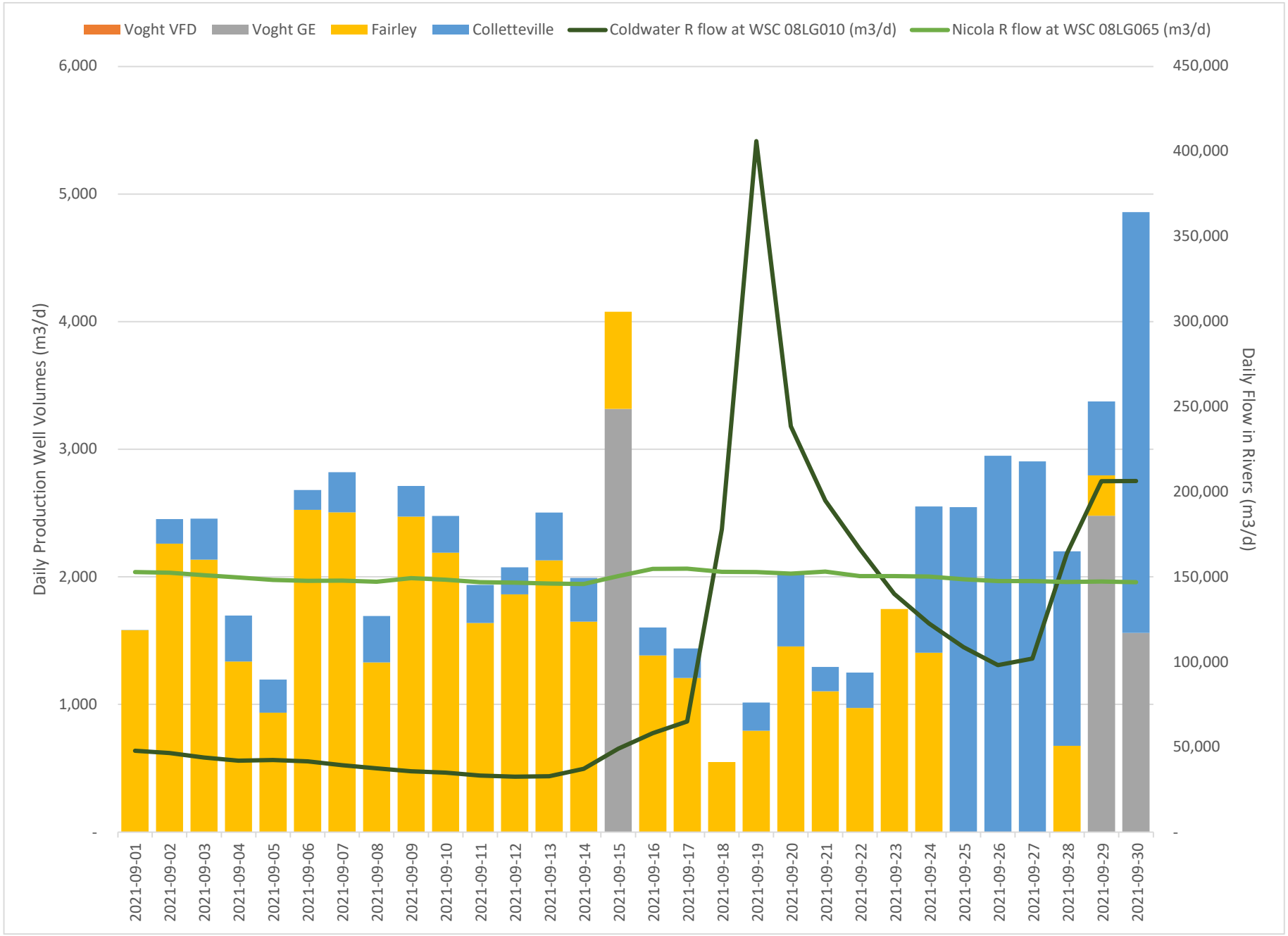
CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-04-12
DESIGNED	RKS
PREPARED	RKS
REVIEWED	KAB
APPROVED	CR

PROJECT NO.	CONTROL	REV.	FIGURE
20253005	8000	0	13

PATH: C:\Users\RWillis\Golder Associates\20253005, FBC Stage 2 GW Surface Study Coldwater - 10_2021 GW-SW Interaction Update\07_Data for Figure\03 GIS\Figure 13 - Streamflows (m3perSec).mxd PRINTED ON: 2022-04-12 AT: 10:19:24 AM
IF THIS REPRESENTATION DOES NOT FIT WITH THE SHEET SIZE, THIS SHEET WAS MODIFIED FROM ANSI D

Figure 14: Production Well Daily Pumping Rates and River Flow September 2021



APPENDIX A

Merritt Water System – Daily Water Volumes

Merritt Water System
Well Water Totals Report

Month: Jan-21

	Voght Park				Fairley		Collettville		Res Min Levels		City Totals			
Date	VFD Pump		GE Pump		Well Pump		Well Pump		Grimmett	Nicola	RainFall	Temp	Pmp Total	Flow Total
	Hrs	Cubic Meters	Hrs	Cubic Meters	Hrs	Cubic Meters	Hrs	Cubic Meters	%	%	mm	Mean C	Hours	Cubic Meters
01-Jan-21	0.0	0.0	0.0	0.0	16.6	3365.6	1.4	242.7	85.1	79.5	4.3	2.3	18.0	3608
02-Jan-21	0.0	0.0	0.4	204.1	18.0	3642.7	1.3	205.5	83.9	77.1	2.5	5.8	19.6	4052
03-Jan-21	0.0	0.0	0.0	0.0	17.8	3627.1	1.6	288.0	84.9	78.8	0.0	2.3	19.4	3915
04-Jan-21	0.0	0.0	0.0	0.0	18.1	3702.2	0.9	145.4	84.2	76.6	1.0	1.1	19.0	3848
05-Jan-21	0.0	0.0	0.5	276.9	18.1	3663.4	1.4	247.1	82.4	74.7	0.0	1.2	20.0	4187
06-Jan-21	0.0	0.0	0.0	0.0	10.0	2038.1	9.6	1672.6	85.3	78.1	0.0	2.9	19.6	3711
07-Jan-21	1.0	648.6	0.0	0.0	0.0	0.0	18.2	3178.0	84.7	78.2	0.0	-3.7	19.2	3827
08-Jan-21	1.0	632.9	0.0	0.0	0.0	0.0	19.1	3331.6	85.0	78.7	0.3	-4.4	20.1	3965
09-Jan-21	1.0	504.2	0.0	0.0	11.9	2429.7	6.1	1064.7	86.3	81.0	0.0	-3.9	19.0	3999
10-Jan-21	1.0	473.2	0.0	0.0	18.2	3696.1	1.4	234.6	87.0	77.3	0.0	0.3	20.6	4404
11-Jan-21	0.0	0.0	0.8	311.5	17.5	3536.1	2.1	361.0	83.6	76.3	0.0	3.8	20.4	4209
12-Jan-21	0.0	0.0	0.0	0.0	17.3	3505.3	2.9	499.2	84.3	77.3	1.6	3.6	20.1	4004
13-Jan-21	0.0	0.0	0.6	209.5	17.3	3499.4	1.2	214.5	83.9	77.1	11.6	5.1	19.1	3923
14-Jan-21	0.0	0.0	0.6	226.1	16.3	3292.8	1.3	214.4	83.6	76.8	0.0	-2.2	18.2	3733
15-Jan-21	0.0	0.0	0.0	0.0	18.3	3710.8	1.4	242.8	85.8	78.7	0.0	-1.8	19.7	3954
16-Jan-21	0.0	0.0	0.0	0.0	17.2	3488.3	1.3	215.8	86.1	81.3	0.0	-2.5	18.5	3704
17-Jan-21	0.0	0.0	0.0	0.0	17.8	3614.0	1.3	223.0	85.8	82.1	0.0	2.1	19.1	3837
18-Jan-21	0.0	0.0	0.8	284.4	17.2	3488.7	1.6	271.5	83.0	75.3	0.0	-2.9	19.6	4045
19-Jan-21	0.0	0.0	0.6	215.3	16.1	3258.4	1.3	214.5	83.7	77.1	0.0	0.1	18.0	3688
20-Jan-21	0.0	0.0	0.6	215.1	16.3	3314.6	0.1	21.1	84.9	77.2	0.0	-1.6	17.0	3551
21-Jan-21	0.0	0.0	1.0	384.8	16.7	3360.9	0.9	144.4	84.4	77.2	0.0	-3.2	18.6	3890
22-Jan-21	0.0	0.0	1.0	370.5	6.0	1197.1	11.7	2048.0	84.9	79.7	0.0	-9.6	18.7	3616
23-Jan-21	0.0	0.0	0.0	0.0	1.2	225.0	17.6	3053.0	86.5	81.8	0.0	-10.6	18.8	3278
24-Jan-21	0.0	0.0	0.0	0.0	1.1	222.1	17.9	3128.8	86.3	83.2	0.0	-6.7	19.0	3351
25-Jan-21	0.0	0.0	0.0	0.0	1.7	329.3	17.8	3115.4	84.5	77.0	1.3	-4.6	19.5	3445
26-Jan-21	0.0	0.0	0.0	0.0	1.3	261.4	18.7	3270.4	86.1	79.2	0.0	-6.9	20.0	3532
27-Jan-21	3.0	1550.8	0.0	0.0	1.6	305.0	10.2	1778.7	85.1	77.7	0.8	-4.6	14.8	3634
28-Jan-21	5.1	2482.2	0.0	0.0	2.1	418.9	6.7	1162.8	87.8	76.1	0.3	-5.0	13.9	4064
29-Jan-21	5.1	2480.2	0.0	0.0	1.0	190.2	7.9	1363.4	84.4	76.1	0.0	-4.5	13.9	4034
30-Jan-21	0.0	0.0	0.0	0.0	1.3	253.9	18.6	3244.9	86.7	79.3	0.0	-3.8	19.9	3499
31-Jan-21	0.0	0.0	0.0	0.0	1.4	281.7	18.5	3227.5	86.5	80.2	6.3	1.7	19.9	3509
Total	17.2	8772.1	6.8	2698.2	335.1	67918.6	222.0	38625.5	------	------	30.0	------	581	118014
Average	0.6	283.0	0.2	87.0	10.8	2190.9	7.2	1246.0	85.1	78.3	1.0	-1.6	19	3807
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.1	21.1	82.4	74.7	0.0	-10.6	14	3278
Max	5.1	2482.2	1.0	384.8	18.3	3710.8	19.1	3331.6	87.8	83.2	11.6	5.8	21	4404

Merritt Water System **Month:** Jan-21

Water System Information Sheet #2

Date	Production Well Turbidity				Production Well Levels				Grimmett Reservoir		
	Voght VFD	Voght GE	Fairley Park	Collettville	Voght VFD	Voght GE	Fairley Park	Collettville	Chlorine Residual	PH	Water Temp
	ntu	ntu	ntu	ntu	Feet	Feet	Feet	Feet	Mg/l	------	ºC
01-Jan-21	0.44	0.33	0.19		76.0	70.0	39.2	0.0	0.56	7.5	8.4
02-Jan-21	0.49	0.20	0.19		76.0	69.3	38.9	0.0	0.56	7.4	8.1
03-Jan-21	0.49	0.15	0.19		76.3	70.2	37.5	0.0	0.54	7.4	8.1
04-Jan-21	0.42	0.26	0.19		76.2	70.2	38.0	0.0	0.54	7.5	8.1
05-Jan-21	0.44	0.18	0.19		75.9	69.1	38.5	0.0	0.55	7.4	8.0
06-Jan-21	0.45	0.14	0.19		75.8	69.9	45.6	0.0	0.53	7.5	8.1
07-Jan-21	0.21	0.27	0.19		73.0	69.5	54.4	0.0	0.52	7.4	7.7
08-Jan-21	0.10	0.30	0.19		72.9	69.3	54.5	0.0	0.55	7.4	7.5
09-Jan-21	0.10	0.30	0.19		73.3	69.3	43.0	0.0	0.55	7.4	7.4
10-Jan-21	0.10	0.30	0.19		73.4	69.3	38.8	0.0	0.61	7.3	7.5
11-Jan-21	0.18	0.18	0.19		75.1	68.3	38.1	0.0	0.58	7.4	7.5
12-Jan-21	0.37	0.15	0.19		75.2	69.2	39.0	0.0	0.60	7.3	7.5
13-Jan-21	0.32	0.15	0.19		75.0	68.6	38.6	0.0	0.56	7.4	7.7
14-Jan-21	0.29	0.09	0.19		75.1	68.6	38.7	0.0	0.56	7.4	7.8
15-Jan-21	0.26	0.15	0.19		75.2	69.4	37.6	0.0	0.53	7.5	8.0
16-Jan-21	0.27	0.25	0.19		75.1	69.3	38.7	0.0	0.51	7.5	7.8
17-Jan-21	0.32	0.29	0.19		75.0	69.2	38.4	0.0	0.50	7.5	7.5
18-Jan-21	0.34	0.16	0.19		74.8	68.1	38.7	0.0	0.51	7.4	7.5
19-Jan-21	0.32	0.09	0.19		74.8	68.3	39.0	0.0	0.51	7.5	7.6
20-Jan-21	0.29	0.10	0.19		74.7	68.2	39.5	0.0	0.49	7.5	7.6
21-Jan-21	0.27	0.09	0.19		74.6	67.6	38.7	0.0	0.48	7.5	7.4
22-Jan-21	0.27	0.09	0.19		74.5	67.5	48.6	0.0	0.48	7.5	7.2
23-Jan-21	0.43	0.21	0.19		74.5	68.7	52.9	0.0	0.45	7.6	7.2
24-Jan-21	0.52	0.43	0.19		74.5	68.7	53.0	0.0	0.47	7.6	6.9
25-Jan-21	0.46	0.42	0.19		74.5	68.7	52.6	0.0	0.47	7.6	7.0
26-Jan-21	0.43	0.42	0.19		74.4	68.6	53.0	0.0	0.48	7.6	7.0
27-Jan-21	0.32	0.41	0.19		68.1	68.0	52.8	0.0	0.46	7.6	6.9
28-Jan-21	0.07	0.38	0.19		64.4	68.0	52.2	0.0	0.46	7.6	6.9
29-Jan-21	0.07	0.30	0.19		64.2	67.8	53.2	0.0	0.48	7.6	6.9
30-Jan-21	0.10	0.24	0.19		74.2	68.5	52.9	0.0	0.47	7.6	6.9
31-Jan-21	0.21	0.27	0.19		74.3	68.5	52.8	0.0	0.47	7.6	6.8
Total	------	------	------	------	------	------	------	------	------	------	------
Average	0.30	0.24	0.19	#DIV/0!	73.9	68.8	44.4	0.0	0.52	7.5	7.5
Min	0.07	0.09	0.19	0.00	64.2	67.5	37.5	0.0	0.45	7.3	6.8
Max	0.52	0.43	0.19	0.00	76.3	70.2	54.5	0.0	0.61	7.6	8.4

Merritt Water System **Month:** Feb-21

Well Water Totals Report

	Voght Park				Fairley		Collettville		Res Min Levels		City Totals			
Date	VFD Pump		GE Pump		Well Pump		Well Pump		Grimmett	Nicola	RainFall	Temp	Pmp Total	Flow Total
	Hrs	Cubic Meters	Hrs	Cubic Meters	Hrs	Cubic Meters	Hrs	Cubic Meters	%	%	mm	Mean C	Hours	Cubic Meters
01-Feb-21	0.0	0.0	0.0	0.0	2.0	403.6	18.5	3221.8	83.3	73.9	8.9	-0.2	20.5	3625
02-Feb-21	0.0	0.0	3.9	1586.5	2.0	390.0	13.0	2243.9	83.9	74.1	1.0	3.4	13.1	4017
03-Feb-21	0.0	0.0	1.9	772.9	1.9	370.0	16.5	2861.0	85.3	72.5	0.0	-2.7	16.5	3786
04-Feb-21	0.0	0.0	0.0	0.0	1.8	352.9	19.9	3486.4	85.3	73.1	0.0	-2.8	19.9	3839
05-Feb-21	0.0	0.0	0.0	0.0	1.8	355.9	19.6	3424.3	85.3	74.0	0.0	-1.1	19.6	3780
06-Feb-21	0.0	0.0	0.0	0.0	2.9	563.1	18.6	3239.5	84.3	75.7	0.3	0.2	18.7	3803
07-Feb-21	0.0	0.0	0.0	0.0	2.7	538.2	18.6	3237.7	85.0	76.8	0.3	-4.1	18.7	3776
08-Feb-21	0.0	0.0	0.0	0.0	2.1	420.0	18.6	3239.6	84.4	73.9	0.0	-11.3	18.7	3660
09-Feb-21	1.7	758.0	0.0	0.0	4.0	790.9	13.7	2389.9	84.2	73.8	0.0	-21.3	13.8	3899
10-Feb-21	0.0	0.0	0.0	0.0	3.2	637.8	18.6	3248.7	83.0	71.9	0.0	-16.8	18.7	3887
11-Feb-21	0.0	0.0	0.0	0.0	8.9	1816.4	12.3	2149.1	83.2	72.8	0.0	-23.4	12.4	3966
12-Feb-21	0.0	0.0	0.0	0.0	18.3	3726.6	2.0	338.5	84.7	74.5	0.0	-24.4	2.3	4066
13-Feb-21	0.0	0.0	0.0	0.0	18.3	3724.0	2.4	418.8	82.6	72.1	0.0	-14.8	2.7	4144
14-Feb-21	0.0	0.0	0.0	0.0	19.8	4043.3	1.9	321.3	86.0	77.3	0.5	-8.6	2.2	4366
15-Feb-21	0.0	0.0	0.0	0.0	18.3	3719.7	2.4	418.2	82.2	71.8	0.3	-6.9	2.7	4139
16-Feb-21	0.0	0.0	0.0	0.0	18.6	3784.8	2.5	425.5	82.1	71.5	0.3	-7.2	2.8	4212
17-Feb-21	0.0	0.0	0.0	0.0	5.9	1184.6	15.1	2646.8	82.1	72.4	0.5	-4.8	15.2	3833
18-Feb-21	0.0	0.0	1.2	488.2	1.9	357.5	22.0	3825.2	82.0	74.3	0.0	-8.9	22.1	4645
19-Feb-21	0.0	0.0	0.0	0.0	12.1	2465.9	12.4	2166.3	84.2	74.8	0.0	-8.7	12.6	4634
20-Feb-21	0.0	0.0	0.0	0.0	18.2	3713.6	3.1	530.0	85.3	76.0	0.0	-3.7	3.4	4246
21-Feb-21	0.0	0.0	0.0	0.0	18.2	3707.3	4.8	836.8	85.1	76.7	0.0	7.1	5.1	4546
22-Feb-21	0.0	0.0	0.0	0.0	21.5	4368.5	7.6	1316.9	79.5	71.1	0.0	7.0	8.0	5688
23-Feb-21	0.0	0.0	0.0	0.0	18.1	3683.9	6.0	1030.3	82.2	71.1	0.0	0.6	6.3	4717
24-Feb-21	0.0	0.0	0.0	0.0	18.4	3736.0	3.8	665.4	83.8	72.5	0.0	-7.4	4.1	4404
25-Feb-21	0.0	0.0	0.0	0.0	18.1	3690.0	4.2	726.8	82.9	72.5	0.0	-0.5	4.5	4420
26-Feb-21	0.0	0.0	0.0	0.0	18.2	3702.5	4.5	764.1	82.2	70.9	0.0	-3.5	4.8	4470
27-Feb-21	0.0	0.0	1.3	528.8	17.8	3595.6	3.3	562.7	81.5	72.5	0.0	-3.2	3.6	4613
28-Feb-21	0.0	0.0	2.9	1179.7	1.2	241.9	15.5	2699.2	81.5	72.5	0.0	2.5	3.6	4613
Total	1.7	758	11.2	4556	295.9	60084	301.4	52435	------	------	12.1	------	295	117791
Average	0.1	27	0.4	163	10.6	2146	10.8	1873	83.5	73.5	0.4	-5.9	11	4207
Min	0.0	0	0.0	0	1.2	242	1.9	321	79.5	70.9	0.0	-24.4	2	3625
Max	1.7	758	3.9	1587	21.5	4369	22.0	3825	86.0	77.3	8.9	7.1	22	5688

Merritt Water System **Month:** Feb-21

Water System Information Sheet #2

Date	Production Well Turbidity				Production Well Levels				Grimmett Reservoir		
	Voght VFD	Voght GE	Fairley Park	Collettville	Voght VFD	Voght GE	Fairley Park	Collettville	Chlorine Residual	PH	Water Temp
	ntu	ntu	ntu	ntu	Feet	Feet	Feet	Feet	Mg/l	------	°C
01-Feb-21	0.27	0.32	0.19		74.3	68.5	52.4	0.0	0.49	7.6	7.1
02-Feb-21	0.31	0.24	0.19		74.0	63.7	52.5	0.0	0.48	7.6	7.1
03-Feb-21	0.27	0.10	0.19		74.1	66.6	52.5	0.0	0.47	7.7	7.0
04-Feb-21	0.30	0.16	0.19		74.3	68.6	52.6	0.0	0.46	7.7	7.0
05-Feb-21	0.33	0.27	0.19		74.3	68.6	52.6	0.0	0.47	7.7	7.1
06-Feb-21	0.35	0.35	0.19		74.3	68.5	51.8	0.0	0.48	7.7	7.1
07-Feb-21	0.36	0.39	0.19		74.3	68.5	51.8	0.0	0.50	7.7	7.1
08-Feb-21	0.37	0.42	0.15		74.2	68.6	52.1	0.0	0.47	7.7	6.9
09-Feb-21	0.20	0.41	0.13		71.3	68.4	50.7	0.0	0.48	7.7	6.8
10-Feb-21	0.14	0.40	0.12		74.1	68.5	51.3	0.0	0.45	7.7	6.8
11-Feb-21	0.27	0.32	0.12		74.1	68.5	45.5	0.0	0.49	7.7	7.0
12-Feb-21	0.31	0.33	0.11		74.2	68.5	37.9	0.0	0.45	7.8	6.4
13-Feb-21	0.34	0.38	0.12		74.2	68.4	37.7	0.0	0.45	7.8	6.6
14-Feb-21	0.36	0.39	0.12		74.2	68.4	36.2	0.0	0.45	7.7	6.5
15-Feb-21	0.36	0.40	0.12		74.2	68.4	37.6	0.0	0.45	7.7	6.6
16-Feb-21	0.37	0.39	0.12		74.2	68.5	37.3	0.0	0.44	7.7	6.8
17-Feb-21	0.37	0.38	0.13		74.1	68.5	49.1	0.0	0.42	7.7	6.6
18-Feb-21	0.39	0.20	0.15		74.0	66.8	52.2	0.0	0.44	7.6	6.5
19-Feb-21	0.35	0.14	0.13		74.2	68.4	42.6	0.0	0.52	7.6	6.5
20-Feb-21	0.37	0.29	0.12		74.3	68.6	37.9	0.0	0.44	7.6	6.4
21-Feb-21	0.39	0.35	0.14		74.3	68.5	37.9	0.0	0.46	7.6	6.5
22-Feb-21	0.40	0.36	0.14		74.2	68.5	34.9	0.0	0.46	7.5	6.6
23-Feb-21	0.38	0.37	0.13		74.3	68.6	37.8	0.0	0.49	7.5	6.6
24-Feb-21	0.34	0.39	0.12		74.3	68.6	37.6	0.0	0.45	7.5	6.4
25-Feb-21	0.32	0.40	0.17		74.3	68.5	37.7	0.0	0.46	7.5	6.4
26-Feb-21	0.31	0.41	0.15		74.2	68.5	37.7	0.0	0.47	7.4	6.4
27-Feb-21	0.31	0.20	0.13		74.0	66.9	38.1	0.0	0.49	7.4	6.4
28-Feb-21	0.31	0.20	0.13		74.0	66.9	38.1	0.0	0.49	7.4	6.4
Total	------	------	------	------	------	------	------	------	------	------	------
Average	0.33	0.32	0.15	#DIV/0!	74.1	68.1	44.1	0.0	0.47	7.6	6.7
Min	0.14	0.10	0.11	0.00	71.3	63.7	34.9	0.0	0.42	7.4	6.4
Max	0.40	0.42	0.19	0.00	74.3	68.6	52.6	0.0	0.52	7.8	7.1

Merritt Water System **Month:** Mar-21

Well Water Totals Report Sheet #1

	Voght Park				Fairley		Collettville		Res Min Levels		City Totals			
Date	VFD Pump		GE Pump		Well Pump		Well Pump		Grimmett	Nicola	RainFall	Temp	Pmp Total	Flow Total
	Hrs	Cubic Meters	Hrs	Cubic Meters	Hrs	Cubic Meters	Hrs	Cubic Meters	%	%	mm	Mean C	Hours	Cubic Meters
01-Mar-21	0.00	0.0	2.18	832.8	0.52	91.0	19.7	3408.1	81.8	73.7	0.5	-6.0	22.4	4332
02-Mar-21	0.00	0.0	2.23	851.9	0.00	0.0	19.8	3425.4	81.4	73.1	0.0	-10.4	22.0	4277
03-Mar-21	0.00	0.0	2.15	821.3	0.00	0.0	20.5	3546.5	82.3	74.8	0.0	-14.7	22.7	4368
04-Mar-21	0.00	0.0	2.23	851.9	0.00	0.0	19.2	3321.6	81.8	74.1	0.0	-16.0	21.5	4174
05-Mar-21	0.00	0.0	2.23	851.9	0.00	0.0	19.9	3442.7	81.7	74.4	0.0	-13.6	22.1	4295
06-Mar-21	0.00	0.0	2.37	905.3	0.00	0.0	18.6	3217.8	82.4	71.9	0.0	-6.2	20.9	4123
07-Mar-21	0.00	0.0	2.18	832.8	0.00	0.0	19.0	3287.0	82.7	72.1	0.8	-0.6	21.2	4120
08-Mar-21	0.00	0.0	2.25	859.5	0.00	0.0	18.8	3252.4	81.9	71.9	0.0	-7.1	21.1	4112
09-Mar-21	0.00	0.0	1.86	710.5	0.00	0.0	19.1	3304.3	82.1	87.5	0.0	-3.4	21.0	4015
10-Mar-21	0.00	0.0	1.70	649.4	0.00	0.0	18.3	3165.9	82.8	79.7	0.0	-4.2	20.0	3815
11-Mar-21	0.00	0.0	2.44	932.1	0.00	0.0	15.8	2733.4	82.9	80.6	0.0	4.8	18.2	3666
12-Mar-21	0.00	0.0	1.85	706.7	0.00	0.0	18.4	3183.2	82.5	79.3	0.0	2.2	20.2	3890
13-Mar-21	0.00	0.0	2.17	828.9	0.00	0.0	17.8	3079.4	81.9	80.9	0.0	-0.1	20.0	3908
14-Mar-21	0.00	0.0	1.80	687.6	0.00	0.0	16.8	2906.4	82.9	81.4	0.0	2.5	18.6	3594
15-Mar-21	0.00	0.0	1.65	630.3	0.00	0.0	17.9	3096.7	82.9	81.6	0.0	3.0	19.6	3727
16-Mar-21	0.00	0.0	1.82	695.2	0.00	0.0	17.1	2958.3	82.8	81.0	0.0	2.9	18.9	3654
17-Mar-21	0.00	0.0	1.82	695.2	0.00	0.0	19.1	3304.3	82.9	80.8	0.0	3.2	20.9	4000
18-Mar-21	0.00	0.0	1.75	668.5	0.00	0.0	18.0	3114.0	82.9	81.8	0.0	3.3	19.8	3783
19-Mar-21	0.00	0.0	1.77	676.1	0.00	0.0	18.0	3114.0	82.8	81.8	0.0	4.2	19.8	3790
20-Mar-21	0.00	0.0	2.17	828.9	0.00	0.0	18.1	3131.3	82.7	83.7	0.0	5.2	20.3	3960
21-Mar-21	0.00	0.0	1.50	573.0	0.00	0.0	17.6	3044.8	82.9	83.3	0.0	6.2	19.1	3618
22-Mar-21	0.00	0.0	1.60	611.2	0.00	0.0	16.8	2906.4	82.9	81.8	0.0	7.2	18.4	3518
23-Mar-21	4.20	1873.2	1.83	699.1	0.00	0.0	8.9	1539.7	82.9	77.1	0.0	8.9	15.0	4112
24-Mar-21	4.50	2007.0	0.00	0.0	0.00	0.0	13.4	2318.2	81.4	78.4	1.5	4.6	17.9	4325
25-Mar-21	2.77	1235.4	1.58	603.6	0.00	0.0	12.0	2076.0	78.0	73.7	1.0	4.7	16.4	3915
26-Mar-21	1.18	526.3	0.00	0.0	1.22	213.5	17.9	3096.7	81.2	79.1	0.0	6.4	20.3	3836
27-Mar-21	0.00	0.0	0.00	0.0	3.77	659.8	16.1	2785.3	81.9	80.8	0.0	4.6	19.9	3445
28-Mar-21	0.00	0.0	0.00	0.0	2.20	385.0	17.5	3027.5	81.9	81.8	0.0	4.8	19.7	3413
29-Mar-21	0.00	0.0	0.00	0.0	2.52	441.0	17.9	3096.7	81.8	77.9	0.0	4.8	20.4	3538
30-Mar-21	0.00	0.0	0.00	0.0	2.60	455.0	18.3	3165.9	81.8	78.2	0.0	6.1	20.9	3621
31-Mar-21	0.00	0.0	0.00	0.0	2.30	402.5	18.3	3165.9	81.5	79.0	0.0	7.3	20.6	3568
Total	12.7	5642	47.1	18004	15.1	2648	548.1	95318	------	------	3.8	------	619	120509
Average	0.4	182	1.5	581	0.5	85	17.7	3075	82.1	78.6	0.1	0.5	20	3887
Min	0.0	0	0.0	0	0.0	0	9.2	1594	78.0	71.9	0.0	-16.0	15	3413
Max	4.5	2007	2.4	932	3.8	660	20.6	3586	82.9	87.5	1.5	8.9	23	4368

Merritt Water System **Month:** Mar-21

Water System Information Sheet #2

Date	Production Well Turbidity					Production Well pH				Production Well Levels				Grimmett Reservoir		
	Voght VFD	Voght GE	Kengard	Fairley Park	Collettville	Voght UV	Kengard	Fairley Park	Collettville	Voght VFD	Voght GE	Fairley Park	Collettville	Chlorine Residual	PH	Water Temp
	ntu	ntu	ntu	ntu	ntu	pH	pH	pH	pH	Feet	Feet	Feet	Feet	Mg/l	------	°C
01-Mar-21	0.26	0.10	0.35	0.44	0.05			7.5	7.1	73.7	65.2	53.2		0.46	7.4	6.4
02-Mar-21	0.23	0.10	0.39	0.12	0.05			7.5	7.1	73.7	65.1	53.7		0.47	7.5	6.4
03-Mar-21	0.22	0.10	0.42	0.12	0.05			7.5	7.1	73.8	65.3	53.8		0.48	7.5	6.4
04-Mar-21	0.22	0.10	0.30	0.12	0.06			7.5	7.1	73.8	65.3	53.9		0.47	7.5	6.4
05-Mar-21	0.21	0.10	0.30	0.12	0.05			7.5	7.1	73.8	65.2	53.9		0.48	7.5	6.4
06-Mar-21	0.21	0.10	0.28	0.12	0.05			7.5	7.1	73.9	65.1	54.0		0.49	7.4	6.5
07-Mar-21	0.21	0.10	0.26	0.12	0.04			7.5	7.1	73.9	65.4	54.0		0.49	7.5	6.5
08-Mar-21	0.21	0.09	2.13	0.12	0.06			7.5	7.1	73.9	65.2	54.0		0.50	7.5	6.5
09-Mar-21	0.20	0.10	5.10	0.12	0.05			7.5	7.1	74.0	65.8	54.1		0.52	7.5	6.6
10-Mar-21	0.21	0.10	2.01	0.12	0.04			7.5	7.1	74.1	66.1	54.1		0.50	7.5	6.5
11-Mar-21	0.21	0.10	0.38	0.13	0.13			7.5	7.1	74.0	64.9	54.1		0.49	7.5	6.4
12-Mar-21	0.20	0.10	0.82	0.15	0.04			7.5	7.2	74.1	65.9	54.1		0.49	7.5	6.6
13-Mar-21	0.21	0.10	0.93	0.20	0.07			7.5	7.2	74.1	65.5	54.1		0.49	7.5	6.7
14-Mar-21	0.20	0.10	1.05	0.28	0.08			7.5	7.2	74.1	65.8	54.2		0.49	7.5	6.6
15-Mar-21	0.21	0.10	0.75	0.42	0.07			7.5	7.2	74.2	66.3	54.2		0.48	7.5	6.6
16-Mar-21	0.21	0.10	0.52	0.48	0.04			7.5	7.2	74.2	66.2	54.2		0.47	7.5	6.6
17-Mar-21	0.21	0.11	1.05	0.44	0.04			7.5	7.2	74.2	66.1	54.2		0.47	7.6	6.6
18-Mar-21	0.20	0.11	1.33	0.43	0.08			7.5	7.2	74.2	66.1	54.2		0.46	7.5	6.6
19-Mar-21	0.21	0.11	0.96	0.41	0.08			7.5	7.2	74.2	66.1	54.2		0.45	7.5	6.7
20-Mar-21	0.20	0.11	0.40	0.40	0.08			7.5	7.2	74.1	65.6	54.2		0.46	7.5	6.8
21-Mar-21	0.20	0.11	0.36	0.41	0.08			7.5	7.2	74.2	66.4	54.2		0.46	7.5	6.7
22-Mar-21	0.21	0.11	0.29	0.42	0.08			7.6	7.2	74.2	66.4	54.2		0.45	7.5	6.7
23-Mar-21	0.18	0.11	0.37	0.44	0.17			7.5	7.2	67.5	65.7	54.1		0.45	7.5	6.7
24-Mar-21	0.10	0.13	0.61	0.48	0.27			7.5	7.2	65.7	67.9	54.0		0.43	7.5	6.8
25-Mar-21	0.10	0.12	0.49	2.69	0.09			7.5	7.2	69.6	66.2	54.0		0.42	7.5	6.9
26-Mar-21	0.10	0.15	0.53	0.55	0.10			7.5	7.2	72.2	68.5	53.0		0.43	7.6	7.0
27-Mar-21	0.14	0.20	0.66	0.38	0.10			7.6	7.2	74.4	68.7	50.9		0.46	7.5	7.2
28-Mar-21	0.18	0.25	0.67	0.41	0.08			7.6	7.2	74.4	68.7	52.2		0.40	7.6	7.2
29-Mar-21	0.20	0.27	0.61	0.30	0.08			7.6	7.2	74.5	68.8	51.9		0.44	7.6	7.2
30-Mar-21	0.21	0.27	0.55	0.30	0.07			7.6	7.2	74.5	68.8	51.8		0.42	7.6	7.4
31-Mar-21	0.22	0.27	0.54	0.34	0.07			7.6	7.2	74.5	68.8	52.1		0.43	7.6	7.7
Total	------	------	------	------	------			------	------	------	------	------	------	------	------	------
Average	0.20	0.13	0.82	0.37	0.08			7.5	7.2	73.4	66.4	53.6	#DIV/0!	0.46	7.5	6.7
Min	0.10	0.09	0.26	0.12	0.04			7.5	7.1	65.7	64.9	50.9	0.0	0.40	7.4	6.4
Max	0.26	0.27	5.10	2.69	0.27			7.6	7.2	74.5	68.8	54.2	0.0	0.52	7.6	7.7

Merritt Water System **Month:** Apr-21

Well Water Totals Report

	Voght Park				Fairley		Collettville		Res Min Levels		City Totals			
Date	VFD Pump		GE Pump		Well Pump		Well Pump		Grimmett	Nicola	RainFall	Temp	Pmp Total	Flow Total
	Hrs	Cubic Meters	Hrs	Cubic Meters	Hrs	Cubic Meters	Hrs	Cubic Meters	%	%	mm	Mean C	Hours	Cubic Meters
01-Apr-21	0.00	0.0	0.00	0.0	4.68	819.0	13.4	2318.2	81.8	80.0	0.0	6.0	18.1	3137
02-Apr-21	0.00	0.0	0.00	0.0	3.48	609.0	16.0	2768.0	81.8	84.6	0.0	5.9	19.5	3377
03-Apr-21	0.00	0.0	0.00	0.0	2.50	437.5	17.2	2975.6	82.9	84.6	0.0	7.9	19.7	3413
04-Apr-21	0.00	0.0	0.00	0.0	3.75	656.3	17.2	2975.6	82.9	84.5	0.0	10.5	21.0	3632
05-Apr-21	0.00	0.0	0.00	0.0	4.20	735.0	17.1	2958.3	82.9	84.8	1.3	9.4	21.3	3693
06-Apr-21	0.00	0.0	0.00	0.0	2.20	385.0	18.9	3269.7	82.9	81.0	0.3	6.0	21.1	3655
07-Apr-21	0.00	0.0	0.00	0.0	2.05	358.8	19.4	3356.2	82.9	81.8	0.0	7.6	21.5	3715
08-Apr-21	0.00	0.0	0.00	0.0	2.20	385.0	19.1	3304.3	82.7	79.8	0.0	-0.1	21.3	3689
09-Apr-21	0.00	0.0	0.00	0.0	2.25	393.8	18.1	3131.3	82.7	80.0	13.2	7.7	20.4	3525
10-Apr-21	0.00	0.0	0.00	0.0	2.42	423.5	17.3	2992.9	82.1	81.8	0.0	6.7	19.7	3416
11-Apr-21	0.00	0.0	0.00	0.0	3.87	677.3	17.8	3079.4	83.3	84.5	1.0	4.9	21.7	3757
12-Apr-21	0.00	0.0	0.00	0.0	4.42	773.5	17.7	3062.1	82.9	81.4	0.2	7.8	22.1	3836
13-Apr-21	0.00	0.0	0.00	0.0	5.98	1046.5	19.1	3304.3	82.5	79.5	0.0	10.1	25.1	4351
14-Apr-21	0.00	0.0	0.00	0.0	12.78	2236.5	13.9	2404.7	82.9	80.6	0.0	5.4	26.7	4641
15-Apr-21	0.00	0.0	0.00	0.0	18.58	3251.5	10.5	1816.5	81.4	78.2	0.0	5.4	29.1	5068
16-Apr-21	0.00	0.0	0.00	0.0	19.15	3351.3	10.7	1851.1	80.1	79.4	0.0	5.2	29.9	5202
17-Apr-21	0.00	0.0	0.00	0.0	19.15	3351.3	13.0	2249.0	81.4	76.4	0.0	10.2	32.2	5600
18-Apr-21	0.00	0.0	0.00	0.0	19.90	3482.5	13.4	2318.2	81.6	80.1	0.0	12.7	33.3	5801
19-Apr-21	0.00	0.0	0.00	0.0	20.08	3514.0	11.1	1920.3	80.1	73.1	2.3	10.1	31.2	5434
20-Apr-21	0.00	0.0	9.03	3449.5	10.53	1842.8	4.7	813.1	79.9	73.2	0.0	7.8	24.3	6105
21-Apr-21	0.00	0.0	15.82	6043.2	0.85	148.8	1.5	259.5	78.8	67.9	0.0	7.7	18.2	6451
22-Apr-21	0.00	0.0	17.45	6665.9	0.48	84.0	1.1	190.3	78.9	69.8	0.0	10.7	19.0	6940
23-Apr-21	0.00	0.0	13.85	5290.7	0.55	96.3	1.3	224.9	82.7	71.7	0.0	11.5	15.7	5612
24-Apr-21	0.00	0.0	16.33	6238.1	0.00	0.0	1.4	242.2	85.4	78.2	0.0	7.8	17.7	6480
25-Apr-21	0.00	0.0	16.68	6371.8	0.00	0.0	1.2	207.6	84.3	78.9	0.0	8.3	17.9	6579
26-Apr-21	0.00	0.0	17.15	6551.3	0.95	166.3	1.7	294.1	79.6	67.0	0.0	8.9	19.8	7012
27-Apr-21	0.00	0.0	16.78	6410.0	1.52	266.0	0.3	51.9	84.4	76.7	3.0	4.9	18.6	6728
28-Apr-21	0.00	0.0	16.52	6310.6	1.93	337.8	1.1	190.3	81.6	69.2	0.0	5.7	19.6	6839
29-Apr-21	0.00	0.0	10.63	4060.7	8.80	1540.0	2.2	380.6	82.1	70.4	0.0	4.7	21.6	5981
30-Apr-21	0.00	0.0	0.00	0.0	17.03	2980.3	4.2	726.6	83.0	67.3	0.0	6.5	21.2	3707
Total	0.0	0	150.2	57392	196.3	34349	321.6	55637	------	------	21.3	------	668	147377
Average	0.0	0	5.0	1913	6.5	1145	10.7	1855	82.1	77.5	0.7	7.5	22	4913
Min	0.0	0	0.0	0	0.0	0	0.3	52	78.8	67.0	0.0	-0.1	16	3137
Max	0.0	0	17.5	6666	20.1	3514	19.4	3356	85.4	84.8	13.2	12.7	33	7012

Merritt Water System **Month:** Apr-21

Water System Information Sheet #2

Date	Production Well Turbidity					Production Well pH				Production Well Levels				Grimmett Reservoir		
	Voght VFD	Voght GE	Kengard	Fairley Park	Collettville	Voght UV	Kengard	Fairley Park	Collettville	Voght VFD	Voght GE	Fairley Park	Collettville	Chlorine Residual	PH	Water Temp
	ntu	ntu	ntu	ntu	ntu	pH	pH	pH	pH	Feet	Feet	Feet	Feet	Mg/l	------	°C
01-Apr-21	0.22	0.27	0.53	0.30	0.10			7.6	7.2	74.5	68.7	50.1		0.43	7.7	8.0
02-Apr-21	0.22	0.27	0.52	0.30	0.08			7.6	7.2	74.5	68.8	51.1		0.44	7.6	7.8
03-Apr-21	0.22	0.26	0.50	0.30	0.07			7.6	7.2	74.5	68.8	51.9		0.44	7.6	7.8
04-Apr-21	0.23	0.26	0.51	0.26	0.07			7.6	7.2	74.6	68.8	50.9		0.49	7.6	7.9
05-Apr-21	0.23	0.26	0.53	0.25	0.06			7.6	7.2	74.6	68.9	50.6		0.46	7.6	7.9
06-Apr-21	0.23	0.26	0.50	0.29	0.06			7.6	7.2	74.6	68.8	52.2		0.47	7.6	8.0
07-Apr-21	0.23	0.26	0.43	0.23	0.03			7.6	7.2	74.6	68.8	52.3		0.46	7.6	8.1
08-Apr-21	0.23	0.26	0.37	0.19	0.04			7.6	7.2	74.6	68.9	52.2		0.48	7.6	8.1
09-Apr-21	0.23	0.25	0.40	0.21	0.04			7.6	7.2	74.6	68.9	52.2		0.46	7.6	8.1
10-Apr-21	0.23	0.25	0.48	0.19	0.04			7.6	7.2	74.6	68.9	52.1		0.49	7.6	8.5
11-Apr-21	0.24	0.25	0.51	0.18	0.05			7.6	7.2	74.6	68.9	50.8		0.45	7.6	8.2
12-Apr-21	0.23	0.25	0.54	0.39	0.05			7.6	7.2	74.5	68.9	50.3		0.43	7.7	8.2
13-Apr-21	0.24	0.25	0.67	0.17	0.04			7.6	7.2	74.5	68.8	49.0		0.44	7.6	8.3
14-Apr-21	0.24	0.25	0.75	0.15	0.05			7.6	7.2	74.5	68.7	43.3		0.43	7.6	8.5
15-Apr-21	0.24	0.25	2.57	0.13	0.09			7.1	7.2	74.5	68.7	38.2		0.43	7.6	8.8
16-Apr-21	0.24	0.25	2.13	0.13	0.09			7.1	7.2	74.5	68.7	37.4		0.48	7.6	9.2
17-Apr-21	0.24	0.24	0.50	0.13	0.09			7.1	7.2	74.5	68.8	37.2		0.46	7.5	9.3
18-Apr-21	0.23	0.23	0.46	0.13	0.08			7.1	7.2	74.6	68.8	37.5		0.45	7.5	9.4
19-Apr-21	0.23	0.24	0.42	0.13	0.08			7.1	7.2	74.8	69.0	36.3		0.44	7.5	9.4
20-Apr-21	0.23	0.19	0.39	0.14	0.11			7.3	7.2	73.9	56.1	44.1		0.46	7.5	9.5
21-Apr-21	0.22	0.11	0.32	0.18	0.12			7.1	7.2	72.8	45.9	52.9		0.43	7.4	9.5
22-Apr-21	0.15	0.11	0.43	0.19	0.12			7.1	7.2	72.8	45.2	53.3		0.48	7.4	9.5
23-Apr-21	0.14	0.11	0.51	0.17	0.11			7.1	7.2	73.1	48.3	53.3		0.47	7.4	9.4
24-Apr-21	0.13	0.11	0.96	0.20	0.11			7.1	7.2	73.0	45.5	53.9		0.48	7.3	9.4
25-Apr-21	0.13	0.11	0.72	0.20	0.09			7.1	7.2	72.9	44.8	54.0		0.47	7.3	9.5
26-Apr-21	0.13	0.11	0.55	0.18	0.10			7.1	7.2	72.8	44.0	53.3		0.49	7.3	9.6
27-Apr-21	0.12	0.11	0.32	0.18	0.45			7.1	7.2	72.8	44.8	52.8	0.0	0.40	7.3	9.6
28-Apr-21	0.12	0.11	1.34	0.18	0.37			7.1	7.2	72.9	45.1	52.5	0.0	0.44	7.3	9.5
29-Apr-21	0.12	0.11	1.92	0.17	0.08			7.1	7.2	73.5	53.3	46.6	0.0	0.40	7.3	9.7
30-Apr-21	0.16	0.12	0.16	0.13	0.09			7.1	7.2	75.2	69.4	39.4	0.0	0.43	7.6	10.5
Total	------	------	------	------	------			------	------	------	------	------	------	------	------	------
Average	0.20	0.20	0.70	0.20	0.10			7.3	7.2	74.1	61.7	48.4	0.0	0.45	7.5	8.8
Min	0.12	0.11	0.16	0.13	0.03			7.1	7.2	72.8	44.0	36.3	0.0	0.40	7.3	7.8
Max	0.24	0.27	2.57	0.39	0.45			7.6	7.2	75.2	69.4	54.0	0.0	0.49	7.7	10.5

Merritt Water System **Month:** **May-21**

Well Water Totals Report

	Voght Park				Fairley		Collettville		Res Min Levels		City Totals			
Date	VFD Pump		GE Pump		Well Pump		Well Pump		Grimmett	Nicola	RainFall	Temp	Pmp Total	Flow Total
	Hrs	Cubic Meters	Hrs	Cubic Meters	Hrs	Cubic Meters	Hrs	Cubic Meters	%	%	mm	Mean C	Hours	Cubic Meters
01-May-21	0.00	0.0	0.00	0.0	11.85	3487.0	1.2	207.6	88.0	73.3	0.0	11.7	13.1	3695
02-May-21	0.00	0.0	0.00	0.0	12.09	2454.1	0.0	0.0	88.2	74.8	0.0	13.1	12.1	2454
03-May-21	0.00	0.0	0.00	0.0	14.31	2912.3	1.6	276.8	87.4	72.6	0.0	14.1	15.9	3189
04-May-21	0.00	0.0	0.00	0.0	18.40	3743.1	2.7	467.1	86.9	73.7	0.0	14.8	21.1	4210
05-May-21	0.00	0.0	0.00	0.0	18.40	3743.1	1.8	311.4	86.9	69.4	0.0	13.6	20.2	4055
06-May-21	0.00	0.0	0.00	0.0	16.84	3434.2	0.0	0.0	87.1	73.7	0.0	15.6	16.8	3434
07-May-21	0.00	0.0	0.00	0.0	16.11	3282.7	1.4	242.2	86.9	69.3	0.0	16.9	17.5	3525
08-May-21	0.00	0.0	0.00	0.0	8.42	1711.2	1.8	311.4	86.9	75.2	0.0	16.4	10.2	2023
09-May-21	0.00	0.0	0.00	0.0	7.89	1601.7	0.0	0.0	87.9	74.9	1.3	13.8	7.9	1602
10-May-21	0.00	0.0	0.00	0.0	15.14	3088.4	1.5	259.5	86.9	68.4	3.3	9.8	16.6	3348
11-May-21	0.00	0.0	0.00	0.0	17.92	3647.7	3.2	553.6	86.9	70.6	0.3	13.1	21.1	4201
12-May-21	0.00	0.0	0.00	0.0	18.02	3669.8	3.8	657.4	87.8	73.2	0.0	15.6	21.8	4327
13-May-21	1.77	789.4	0.00	0.0	9.94	2030.1	8.1	1401.3	85.7	70.5	0.0	17.1	19.8	4221
14-May-21	2.43	1083.8	0.00	0.0	17.50	3547.9	0.0	0.0	85.6	69.3	0.0	18.6	19.9	4632
15-May-21	0.00	0.0	0.00	0.0	22.87	4691.0	0.0	0.0	83.8	72.9	0.0	18.7	22.9	4691
16-May-21	0.00	0.0	0.00	0.0	22.99	4716.2	0.0	0.0	85.5	74.6	0.0	18.3	23.0	4716
17-May-21	1.25	557.5	0.00	0.0	20.91	4279.8	0.1	17.3	82.1	66.7	1.0	17.3	22.3	4855
18-May-21	1.78	793.9	0.00	0.0	17.39	3527.8	0.2	34.6	83.8	71.3	0.0	16.2	19.4	4356
19-May-21	0.00	0.0	0.00	0.0	17.51	3552.8	1.0	173.0	88.0	73.6	0.5	14.4	18.5	3726
20-May-21	0.00	0.0	0.00	0.0	13.66	2787.1	4.2	726.6	87.6	75.3	0.0	14.5	17.9	3514
21-May-21	0.00	0.0	0.00	0.0	12.88	2605.8	5.5	951.5	86.8	71.4	0.0	15.8	18.4	3557
22-May-21	0.00	0.0	0.00	0.0	15.34	3110.9	6.8	1176.4	86.7	69.9	0.0	17.8	22.1	4287
23-May-21	0.00	0.0	0.00	0.0	15.47	3135.8	3.0	519.0	86.9	71.3	0.0	20.2	18.5	3655
24-May-21	0.00	0.0	0.00	0.0	15.66	3172.8	7.5	1297.5	86.8	66.8	0.0	20.3	23.2	4470
25-May-21	0.00	0.0	0.00	0.0	18.21	3690.1	10.0	1730.0	84.6	67.8	0.0	16.4	28.2	5420
26-May-21	9.78	4361.9	0.00	0.0	18.33	3715.2	7.5	1297.5	83.5	73.2	0.0	13.6	35.6	9375
27-May-21	19.80	8830.8	0.00	0.0	10.93	2219.8	4.1	709.3	79.0	85.3	0.0	16.3	34.8	11760
28-May-21	12.07	5383.2	0.00	0.0	8.81	1763.1	8.1	1401.3	80.9	72.4	0.0	16.1	29.0	8548
29-May-21	0.00	0.0	3.77	1440.1	22.85	4549.4	21.0	3633.0	83.8	78.5	0.0	12.1	47.6	9623
30-May-21	0.00	0.0	0.00	0.0	22.97	4616.3	13.6	2352.8	88.9	81.7	0.0	11.2	36.6	6969
31-May-21	3.08	1373.7	1.83	699.1	22.98	4641.6	20.5	3546.5	83.7	77.1	0.0	4.7	48.4	10261
Total	52.0	23174	5.6	2139	507.9	103129	140.2	24255	------	------	6.4	------	700	152697
Average	1.7	748	0.2	69	16.2	3327	4.5	782	85.9	72.9	0.2	15.1	23	4926
Min	0.0	0	0.0	0	7.9	1602	0.0	0	79.0	66.7	0.0	4.7	8	1602
Max	19.8	8831	3.8	1440	23.0	4716	21.0	3633	88.9	85.3	3.3	20.3	48	11760

Merritt Water System **Month:** May-21

Water System Information Sheet #2

Date	Production Well Turbidity					Production Well pH				Production Well Levels				Grimmett Reservoir		
	Voght VFD	Voght GE	Kengard	Fairley Park	Collettville	Voght UV	Kengard	Fairley Park	Collettville	Voght VFD	Voght GE	Fairley Park	Collettville	Chlorine Residual	PH	Water Temp
	ntu	ntu	ntu	ntu	ntu	pH	pH	pH	pH	Feet	Feet	Feet	Feet	Mg/l	------	°C
01-May-21	0.20	0.14	0.14	0.13	0.10			7.5	7.2	75.6	69.7	44.0	0.0	0.39	7.5	10.3
02-May-21	0.21	0.22	0.14	0.13	0.07			7.9	7.0	76.0	70.0	46.6	0.0	0.42	7.5	10.2
03-May-21	0.21	0.25	0.12	0.13	0.09			7.1	7.2	76.1	70.1	42.4	0.0	0.41	7.6	10.4
04-May-21	0.22	0.28	0.12	0.12	0.10			7.1	7.2	76.0	70.1	38.7	0.0	0.49	7.6	10.6
05-May-21	0.21	0.29	0.11	0.13	0.10			7.1	7.2	76.1	70.2	40.2	0.0	0.49	7.7	10.7
06-May-21	0.21	0.29	0.12	0.13	0.38			7.5	7.2	76.1	70.2	40.6	0.0	0.49	7.7	10.8
07-May-21	0.21	0.30	0.10	0.14	0.12			7.9	7.2	76.2	70.3	47.6	0.0	0.50	7.7	10.7
08-May-21	0.21	0.30	0.08	0.14	0.09			7.9	7.2	76.3	70.4	48.8	0.0	0.56	7.8	10.8
09-May-21	0.21	0.30	0.07	0.14	0.10			7.9	7.0	76.4	70.5	48.5	0.0	0.53	7.8	10.9
10-May-21	0.21	0.30	0.07	0.13	0.10			7.1	7.2	76.3	70.4	42.1	0.0	0.56	7.8	11.0
11-May-21	0.21	0.31	0.07	0.14	0.10			7.1	7.2	76.2	70.3	39.6		0.54	7.8	11.1
12-May-21	0.20	0.30	0.10	0.13	0.11			7.4	7.4	76.2	70.3	46.3	0.0	0.55	7.8	11.1
13-May-21	0.18	0.31	0.13	0.13	0.63			7.5	7.4	73.1	70.0	46.9	0.0	0.59	7.8	11.3
14-May-21	0.08	0.31	0.13	0.12	1.23			7.1	7.3	71.7	69.8	40.1	0.0	0.61	7.8	11.5
15-May-21	0.16	0.24	0.13	0.12	0.94			7.1	7.0	76.3	70.3	34.7	0.0	0.60	7.9	11.6
16-May-21	0.19	0.31	0.13	0.13	0.54			7.1	7.0	76.4	70.5	36.4	0.0	0.60	7.9	11.6
17-May-21	0.12	0.30	0.13	0.13	0.63			7.2	7.2	74.4	70.3	40.3	0.0	0.58	7.8	11.7
18-May-21	0.10	0.26	0.11	0.13	1.03			7.2	7.3	73.4	70.3	40.2	0.0	0.60	7.9	11.6
19-May-21	0.15	0.25	0.11	0.35	0.29			7.4	7.3	76.7	70.7	43.2	0.0	0.63	7.9	11.6
20-May-21	0.19	0.29	0.11	0.13	0.23			7.5	7.3	76.6	70.6	45.1	0.0	0.64	7.9	11.6
21-May-21	0.21	0.29	0.10	0.13	0.20			7.5	7.3	76.5	70.6	44.3	0.0	0.64	8.0	11.7
22-May-21	0.21	0.29	0.11	0.13	0.16			7.2	7.3	76.4	70.5	42.1	0.0	0.65	8.0	11.9
23-May-21	0.22	0.28	0.12	0.13	0.25			7.2	7.3	76.5	70.5	46.1	0.0	0.64	8.0	12.0
24-May-21	0.22	0.28	0.11	0.13	0.17			7.4	7.3	76.5	70.5	41.9	0.0	0.64	8.0	11.9
25-May-21	0.22	0.28	0.12	0.12	0.17			7.1	7.3	76.4	70.5	39.5	0.0	0.78	8.0	12.0
26-May-21	0.15	0.28	0.38	0.13	0.17			7.2	7.3	59.2	68.7	45.6	0.0	1.81	7.9	12.0
27-May-21	0.09	0.24	0.99	0.16	0.24			7.2	7.3	41.3	66.3	55.4	0.0	1.77	7.7	11.5
28-May-21	0.09	0.21	1.37	0.15	0.17			7.2	7.3	54.1	67.5	47.7	20.9	1.60	7.6	11.5
29-May-21	0.11	0.12	0.71	0.12	0.07			7.1	7.4	75.2	64.4	35.3	76.3	1.62	7.5	11.4
30-May-21	0.13	0.11	0.65	0.12	0.09			7.1	7.4	75.7	69.8	34.7	131.8	1.55	7.5	11.7
31-May-21	0.14	0.11	2.45	0.13	0.08			7.1	7.3	70.1	66.5	35.3	187.2	1.54	7.4	11.6
Total	------	------	------	------	------			------	------	------	------	------	------	------	------	------
Average	0.18	0.26	0.30	0.14	0.28			7.3	7.2	73.2	69.7	42.6	13.9	0.78	7.8	11.3
Min	0.08	0.11	0.07	0.12	0.07			7.1	7.0	41.3	64.4	34.7	0.0	0.39	7.4	10.2
Max	0.22	0.31	2.45	0.35	1.23			7.9	7.4	76.7	70.7	55.4	187.2	1.81	8.0	12.0

Merritt Water System **Month:** Jun-21

Well Water Totals Report

	Voght Park				Fairley		Collettville		Res Min Levels		City Totals			
Date	VFD Pump		GE Pump		Well Pump		Well Pump		Grimmett	Nicola	RainFall	Temp	Pmp Total	Flow Total
	Hrs	Cubic Meters	Hrs	Cubic Meters	Hrs	Cubic Meters	Hrs	Cubic Meters	%	%	mm	Mean C	Hours	Cubic Meters
01-Jun-21	11.42	5093.3	0.00	0.0	22.67	3967.3	12.1	2093.3	0.0	71.7	0.0	12.1	46.2	11154
02-Jun-21	17.05	7604.3	0.00	0.0	23.00	4024.0	0.0	0.0	76.8	67.0	0.0	16.9	40.1	11628
03-Jun-21	12.62	5628.5	6.65	2840.3	23.17	4054.8	0.0	0.0	79.1	74.7	0.0	15.4	42.4	12524
04-Jun-21	8.80	3924.8	5.30	2024.6	23.00	4024.0	0.0	0.0	79.8	70.7	0.0	11.5	37.1	9973
05-Jun-21	13.17	5873.8	0.00	0.0	24.00	4200.0	0.0	0.0	77.4	66.1	0.0	11.1	37.2	10074
06-Jun-21	7.90	3523.4	0.00	0.0	24.00	4200.0	0.0	0.0	79.7	73.4	0.0	14.7	31.9	7723
07-Jun-21	5.22	2328.1	0.00	0.0	24.00	4200.0	9.1	1574.3	79.8	78.4	0.0	17.8	38.3	8102
08-Jun-21	9.99	4455.5	4.80	1833.6	23.00	4024.0	22.7	3927.1	79.6	74.9	0.0	16.8	60.5	14240
09-Jun-21	0.00	0.0	3.37	1287.3	23.00	4024.0	21.9	3788.7	85.2	79.3	0.0	16.6	48.3	9100
10-Jun-21	0.00	0.0	3.45	1317.9	23.00	4024.0	22.9	3961.7	79.8	74.7	0.0	13.7	49.4	9304
11-Jun-21	0.00	0.0	4.08	1558.6	23.00	4024.0	21.9	3788.7	79.8	77.3	0.0	12.8	49.0	9371
12-Jun-21	0.00	0.0	3.07	1172.7	23.00	4024.0	23.0	3979.0	79.8	78.5	0.0	12.6	49.1	9176
13-Jun-21	0.00	0.0	11.88	4538.2	10.33	1807.8	9.2	1591.6	80.7	75.4	1.2	14.0	31.4	7938
14-Jun-21	0.00	0.0	9.28	3545.0	15.08	2639.0	5.2	899.6	83.6	85.4	1.0	14.0	29.6	7084
15-Jun-21	0.00	0.0	2.10	802.2	23.00	4024.0	19.9	3442.7	78.8	80.3	1.0	16.3	45.0	8269
16-Jun-21	0.00	0.0	2.35	897.7	24.00	4200.0	22.9	3961.7	78.8	76.4	0.0	18.3	49.3	9059
17-Jun-21	0.00	0.0	6.67	2547.9	23.00	4024.0	22.9	3961.7	78.5	75.9	0.0	19.5	52.6	10534
18-Jun-21	0.00	0.0	6.45	2463.9	23.00	4024.0	22.9	3961.7	78.9	74.1	0.0	21.6	52.4	10450
19-Jun-21	0.00	0.0	3.20	1222.4	23.00	4024.0	22.3	3857.9	78.8	75.7	0.0	23.6	48.5	9104
20-Jun-21	0.00	0.0	6.17	2356.9	23.00	4024.0	7.3	1262.9	86.8	83.1	0.0	22.6	36.5	7644
21-Jun-21	1.62	722.5	18.83	7193.1	23.00	4024.0	0.8	138.4	76.8	72.1	13.7	18.6	44.3	12078
22-Jun-21	0.00	0.0	21.00	8022.0	24.00	4200.0	4.0	692.0	78.0	75.1	1.0	17.1	49.0	12914
23-Jun-21	0.00	0.0	20.50	7831.0	23.25	4068.8	3.7	640.1	79.7	71.1	0.3	18.7	47.5	12540
24-Jun-21	0.00	0.0	21.00	8022.0	23.15	4051.3	7.1	1228.3	79.8	79.1	0.0	20.6	51.3	13302
25-Jun-21	0.00	0.0	21.33	8148.1	7.50	1312.5	21.3	3684.9	78.8	72.6	6.1	14.4	50.1	13145
26-Jun-21	0.00	0.0	24.00	9168.0	7.73	1352.8	19.1	3304.3	77.9	81.1	0.0	13.4	50.8	13825
27-Jun-21	12.32	5494.7	6.50	2483.0	15.55	2721.3	6.5	1774.5	78.0	74.7	0.0	13.8	40.9	12473
28-Jun-21	17.90	7983.4	7.85	2998.7	22.50	3937.5	9.6	1660.8	74.8	75.5	2.5	13.8	57.9	16580
29-Jun-21	13.30	5931.8	9.00	3438.0	23.25	4068.8	8.9	1539.7	79.2	67.2	2.3	14.2	54.5	14978
30-Jun-21	13.25	5909.5	13.12	5011.8	24.00	4200.0	0.0	0.0	84.5	70.0	0.0	14.4	50.4	15121
Total	144.6	64474	242.0	92725	637.2	111494	347.2	60716	------	------	29.1	------	1371	329408
Average	4.8	2149	8.1	3091	21.2	3716	11.6	2024	77.0	75.0	1.0	16.0	46	10980
Min	0.0	0	0.0	0	7.5	1313	0.0	0	0.0	66.1	0.0	11.1	30	7084
Max	17.9	7983	24.0	9168	24.0	4200	23.0	3979	86.8	85.4	13.7	23.6	60	16580

Merritt Water System **Month:** Jun-21

Water System Information Sheet #2

Date	Production Well Turbidity					Production Well pH				Production Well Levels				Grimmett Reservoir		
	Voght VFD	Voght GE	Kengard	Fairley Park	Collettville	Voght UV	Kengard	Fairley Park	Collettville	Voght VFD	Voght GE	Fairley Park	Collettville	Chlorine Residual	PH	Water Temp
	ntu	ntu	ntu	ntu	ntu	pH	pH	pH	pH	Feet	Feet	Feet	Feet	Mg/l	------	°C
01-Jun-21	1.85	1.21	1.79	32.62	0.12			7.0	7.3	79.3	91.6	30.8	139.2	4.23	39.0	42.7
02-Jun-21	0.09	0.21	0.94	0.15	0.22			7.0	6.9	45.6	66.7	34.6	0.0	1.61	7.3	11.7
03-Jun-21	0.08	0.15	1.97	0.13	0.16			7.0	6.9	53.1	58.5	34.7	0.0	1.59	7.3	11.7
04-Jun-21	0.08	0.11	1.09	0.13	0.14			7.0	6.8	59.5	61.0	34.2	0.0	1.55	7.2	11.5
05-Jun-21	0.09	0.15	0.61	0.12	0.13			7.0	6.8	52.3	68.1	33.2	0.0	1.56	7.2	11.4
06-Jun-21	0.08	0.18	0.56	0.12	0.12			7.1	6.8	60.3	68.6	33.1	0.0	1.51	7.2	11.4
07-Jun-21	0.08	0.23	0.37	0.12	0.22			7.1	7.2	62.1	68.4	32.9	0.0	1.51	7.2	11.4
08-Jun-21	0.10	0.11	0.56	0.12	0.07			7.1	7.3	74.3	62.3	34.1	0.0	1.27	7.2	11.3
09-Jun-21	0.13	0.11	1.26	0.12	0.07			7.1	7.3	74.8	69.0	33.8	0.0	1.00	7.2	11.4
10-Jun-21	0.14	0.11	1.34	0.13	0.06			7.1	7.2	74.4	64.1	33.8	0.0	0.97	7.2	11.4
11-Jun-21	0.14	0.11	0.85	0.12	0.06			7.1	7.2	74.2	63.1	33.9	0.0	1.03	7.2	11.3
12-Jun-21	0.15	0.11	0.50	0.13	0.07			7.1	7.2	74.3	64.6	33.8	0.0	0.97	7.2	11.4
13-Jun-21	0.16	0.12	0.49	0.16	0.15			7.0	7.2	73.4	51.9	44.6	0.0	0.97	7.1	11.6
14-Jun-21	0.12	0.12	0.47	0.15	0.27			7.0	7.2	73.5	55.1	40.9	0.0	0.92	7.1	11.7
15-Jun-21	0.13	0.12	0.57	0.12	0.14			7.1	7.2	74.6	66.1	33.9	0.0	0.96	7.2	11.6
16-Jun-21	0.17	0.20	1.04	0.13	0.07			7.1	7.2	74.7	65.9	32.8	0.0	0.92	7.1	11.7
17-Jun-21	0.15	0.12	1.24	0.13	0.07			7.1	7.2	74.0	59.5	34.0	0.0	0.95	7.2	11.7
18-Jun-21	0.13	0.13	0.89	0.13	0.07			7.0	7.2	73.8	59.7	33.9	0.0	0.92	7.2	11.8
19-Jun-21	0.12	0.14	0.51	0.16	0.07			7.0	7.2	74.1	64.2	33.6	0.0	0.94	7.1	11.7
20-Jun-21	0.16	0.15	0.50	0.13	0.44			7.0	7.2	74.1	60.2	33.5	0.0	0.89	7.1	11.9
21-Jun-21	0.13	0.15	0.49	0.21	0.85			7.0	7.1	69.9	42.0	33.8	0.0	0.90	7.1	12.0
22-Jun-21	0.08	0.21	0.49	0.26	0.79			7.0	7.1	71.7	38.5	32.6	0.0	0.88	7.1	12.0
23-Jun-21	0.09	0.27	0.47	0.25	0.18			7.0	7.1	71.6	38.9	33.1	0.0	0.90	7.1	12.0
24-Jun-21	0.09	0.20	0.38	0.20	0.15			7.0	7.1	71.4	38.3	38.4	0.0	0.88	7.1	12.0
25-Jun-21	0.09	0.21	0.28	0.42	0.10			7.3	7.1	71.2	37.8	46.6	0.0	0.91	7.1	12.1
26-Jun-21	0.09	0.25	0.27	0.58	0.10			7.1	7.2	70.7	33.8	46.8	0.0	0.85	7.1	12.3
27-Jun-21	0.09	0.22	0.27	0.38	0.22			7.1	7.2	51.7	56.7	38.7	0.0	0.80	7.1	12.5
28-Jun-21	0.09	0.15	0.33	0.91	0.41			7.0	7.2	43.5	55.7	34.1	0.0	0.82	7.1	12.4
29-Jun-21	0.09	0.27	0.38	0.65	0.21			7.0	7.1	51.1	54.7	33.2	0.0	0.82	7.2	12.9
30-Jun-21	0.09	0.42	1.05	0.16	0.20			7.0	6.7	51.0	48.4	32.4	0.0	0.77	7.1	12.7
Total	------	------	------	------	------			------	------	------	------	------	------	------	------	------
Average	0.17	0.21	0.73	1.31	0.20			7.1	7.1	66.7	57.8	35.3	4.6	1.16	8.2	12.8
Min	0.08	0.11	0.27	0.12	0.06			7.0	6.7	43.5	33.8	30.8	0.0	0.77	7.1	11.3
Max	1.85	1.21	1.97	32.62	0.85			7.3	7.3	79.3	91.6	46.8	139.2	4.23	39.0	42.7

Merritt Water System **Month:** Jul-21

Well Water Totals Report

	Voght Park				Fairley		Collettville		Res Min Levels		City Totals			
Date	VFD Pump		GE Pump		Well Pump		Well Pump		Grimmett	Nicola	RainFall	Temp	Pmp Total	Flow Total
	Hrs	Cubic Meters	Hrs	Cubic Meters	Hrs	Cubic Meters	Hrs	Cubic Meters	%	%	mm	Mean C	Hours	Cubic Meters
01-Jul-21	13.06	5200.9	13.42	5126.4	22.23	3890.3	0.0	0.0	84.4	72.3	0.0	14.2	48.7	14218
02-Jul-21	13.13	5153.6	12.00	4584.0	24.00	4200.0	0.0	0.0	84.6	71.2	5.8	11.6	49.1	13938
03-Jul-21	4.20	4671.3	13.37	5107.3	24.00	4200.0	13.6	2352.8	83.7	73.7	0.0	9.4	55.2	16331
04-Jul-21	0.00	0.0	5.35	2043.7	23.00	4025.0	22.8	3944.4	85.9	79.4	0.0	18.2	51.2	10013
05-Jul-21	0.00	0.0	18.77	7170.1	13.70	2397.5	12.8	2214.4	84.9	77.3	0.0	23.5	45.3	11782
06-Jul-21	0.00	0.0	19.70	7525.4	16.99	2973.3	14.3	2473.9	80.4	79.8	0.4	23.2	51.0	12973
07-Jul-21	0.00	0.0	2.38	909.2	24.00	4200.0	24.0	4152.0	84.8	77.0	0.6	20.2	50.4	9261
08-Jul-21	0.00	0.0	3.37	1287.3	20.04	3507.0	20.4	3529.2	84.9	79.6	0.0	20.1	43.8	8324
09-Jul-21	0.00	0.0	5.53	2112.5	21.06	3685.5	21.8	3771.4	85.8	74.9	0.0	20.6	48.4	9569
10-Jul-21	0.00	0.0	5.05	1929.1	24.00	4200.0	24.0	4152.0	85.7	79.1	3.8	19.5	53.1	10281
11-Jul-21	0.00	0.0	14.13	5397.7	11.76	2058.0	9.9	1712.7	84.9	86.7	0.0	18.5	35.8	9168
12-Jul-21	0.00	0.0	24.00	9168.0	14.74	2579.5	5.4	394.2	78.4	77.8	0.0	27.6	44.1	12142
13-Jul-21	0.00	0.0	23.21	8866.2	17.03	2980.3	5.9	1020.7	79.1	80.2	0.0	22.6	46.1	12867
14-Jul-21	0.00	0.0	24.00	9168.0	11.03	1908.2	0.0	0.0	85.9	86.8	0.0	20.8	35.0	11076
15-Jul-21	0.00	0.0	24.00	9168.0	9.59	1678.3	2.2	380.6	84.9	84.7	0.0	21.7	35.8	11227
16-Jul-21	0.00	0.0	24.00	9168.0	11.23	1965.3	5.3	916.9	84.9	78.5	0.0	23.7	40.5	12050
17-Jul-21	0.00	0.0	24.00	9168.0	13.99	2448.3	7.5	1297.5	82.5	85.8	0.0	23.8	45.5	12914
18-Jul-21	0.00	0.0	24.00	9168.0	5.94	1039.5	0.0	0.0	85.9	85.9	0.0	23.5	29.9	10208
19-Jul-21	0.00	0.0	24.00	9168.0	14.77	2584.8	8.9	1539.7	80.0	86.2	0.0	19.5	47.7	13292
20-Jul-21	0.00	0.0	24.00	9168.0	16.42	2873.5	7.3	1262.9	82.9	86.3	1.3	14.3	47.7	13304
21-Jul-21	0.00	0.0	24.00	9168.0	6.06	1060.5	1.5	259.5	85.0	86.0	0.0	13.6	31.6	10488
22-Jul-21	0.00	0.0	11.60	4431.2	12.29	921.8	0.4	69.2	86.3	86.2	0.0	18.7	24.3	5422
23-Jul-21	0.00	0.0	0.00	0.0	21.99	3848.3	6.2	1072.6	87.9	78.2	0.0	20.4	28.2	4921
24-Jul-21	0.00	0.0	0.00	0.0	23.95	4191.3	1.8	311.4	88.0	85.9	0.0	21.5	25.8	4503
25-Jul-21	0.00	0.0	0.00	0.0	22.64	3962.0	3.0	519.0	88.0	77.3	0.0	21.1	25.6	4481
26-Jul-21	0.00	0.0	0.00	0.0	23.95	4191.3	5.8	1003.4	87.9	85.3	0.0	21.9	29.8	5195
27-Jul-21	0.00	0.0	0.00	0.0	23.95	4191.3	6.6	1141.8	87.8	85.3	0.0	21.4	30.6	5333
28-Jul-21	0.00	0.0	0.00	0.0	22.83	3995.3	3.2	553.6	87.7	85.8	0.0	22.5	26.0	4549
29-Jul-21	0.00	0.0	0.00	0.0	23.98	4196.5	0.0	0.0	88.9	86.2	0.0	23.5	24.0	4197
30-Jul-21	0.00	0.0	0.00	0.0	23.95	4191.3	3.2	553.6	86.0	85.2	0.0	16.7	27.2	4745
31-Jul-21	0.00	0.0	0.00	0.0	24.00	4200.0	0.0	0.0	86.1	85.8	0.0	28.0	24.0	4200
Total	30.4	15026	363.9	139002	569.1	98343	237.8	40599	------	------	11.9	------	1201	292971
Average	1.0	485	11.7	4484	18.4	3172	7.7	1310	85.0	81.6	0.4	20.2	39	9451
Min	0.0	0	0.0	0	5.9	922	0.0	0	78.4	71.2	0.0	9.4	24	4197
Max	13.1	5201	24.0	9168	24.0	4200	24.0	4152	88.9	86.8	5.8	28.0	55	16331

Merritt Water System **Month:** Jul-21

Water System Information Sheet #2

Date	Production Well Turbidity					Production Well pH				Production Well Levels				Grimmett Reservoir		
	Voght VFD	Voght GE	Kengard	Fairley Park	Collettville	Voght UV	Kengard	Fairley Park	Collettville	Voght VFD	Voght GE	Fairley Park	Collettville	Chlorine Residual	PH	Water Temp
	ntu	ntu	ntu	ntu	ntu	pH	pH	pH	pH	Feet	Feet	Feet	Feet	Mg/l	------	°C
01-Jul-21	0.08	0.45	1.45	0.17	0.19			7.0	6.7	52.1	49.4	33.8	0.0	0.79	7.1	12.7
02-Jul-21	0.08	0.18	1.61	0.11	0.18			7.0	6.7	53.0	50.2	32.1	0.0	0.82	7.1	12.5
03-Jul-21	0.09	0.12	1.49	0.09	0.14			7.0	7.1	63.8	48.4	31.7	0.0	0.89	7.1	12.5
04-Jul-21	0.09	0.11	0.90	0.06	0.10			7.0	7.1	72.3	59.8	32.4	0.0	0.83	7.1	12.5
05-Jul-21	0.09	0.11	0.59	0.05	0.14			7.0	7.1	70.9	41.1	40.4	0.0	0.88	7.1	12.5
06-Jul-21	0.09	0.11	0.58	0.06	0.14			7.2	7.1	70.4	39.3	37.9		0.84	7.1	12.6
07-Jul-21	0.11	0.12	0.55	0.08	0.09			7.0	7.1	72.4	63.3	31.1	0.0	0.87	7.1	12.8
08-Jul-21	0.12	0.11	0.53	0.04	0.10			7.0	7.1	72.7	62.7	34.8	0.0	0.86	7.1	12.6
09-Jul-21	0.12	0.11	0.52	0.04	0.10			7.0	7.1	72.5	59.7	34.1	0.0	0.92	7.1	12.7
10-Jul-21	0.12	0.12	0.49	0.07	0.09			7.0	7.1	72.4	59.1	31.4	0.0	0.87	7.1	12.9
11-Jul-21	0.12	0.11	0.47	0.06	0.14			7.0	7.1	71.5	47.3	41.7	0.0	0.87	7.1	13.0
12-Jul-21	0.10	0.11	0.45	0.03	0.18			7.1	7.1	69.9	32.9	39.8	0.0	0.89	7.1	12.9
13-Jul-21	0.09	0.11	0.44	0.04	0.11			7.0	7.1	69.6	32.8	37.3	0.0	0.93	7.1	13.0
14-Jul-21	0.08	0.11	0.43	0.05	0.11			7.0	7.1	69.5	32.3	42.4	0.0	0.94	7.1	13.1
15-Jul-21	0.08	0.11	0.41	0.03	0.17			7.0	7.1	69.4	32.3	43.7	0.0	0.91	7.1	13.1
16-Jul-21	0.08	0.11	0.40	0.02	0.18			7.0	7.1	69.3	32.2	42.3	0.0	0.88	7.1	13.1
17-Jul-21	0.09	0.11	0.38	0.02	0.17			7.0	7.1	69.2	32.3	39.8	0.0	0.90	7.1	13.0
18-Jul-21	0.09	0.11	0.37	0.02	0.16			7.0	7.1	69.1	31.9	46.6	0.0	0.85	7.1	13.1
19-Jul-21	0.09	0.11	0.36	0.03	0.15			7.0	7.1	69.0	32.1	39.1	0.0	0.85	7.1	13.1
20-Jul-21	0.08	0.11	0.36	0.03	0.16			7.0	7.1	68.9	32.1	37.6	0.0	0.82	7.1	13.1
21-Jul-21	0.08	0.11	0.35	0.02	0.20			7.0	7.0	68.9	31.7	46.2	0.0	0.84	7.0	13.1
22-Jul-21	0.08	0.12	0.22	0.02	0.24			7.0	7.0	70.5	49.4	40.6	0.0	0.82	7.3	13.1
23-Jul-21	0.12	0.20	0.13	0.02	0.18			7.0	7.0	72.5	67.0	31.9	0.0	0.84	7.5	13.2
24-Jul-21	0.17	0.25	0.13	0.04	0.18			7.0	7.0	72.8	67.3	30.1	0.0	0.71	7.4	13.4
25-Jul-21	0.19	0.28	0.13	0.05	0.19			7.0	7.0	73.0	67.4	31.4	0.0	0.71	7.4	13.5
26-Jul-21	0.20	0.31	0.12	0.06	0.17			7.1	7.0	73.1	67.5	30.2	0.0	0.71	7.4	13.5
27-Jul-21	0.20	0.34	0.13	0.06	0.15			7.0	7.0	73.1	67.5	30.2	0.0	0.75	7.4	13.6
28-Jul-21	0.20	0.34	0.13	0.06	0.19			7.0	7.0	73.2	67.6	31.2	0.0	0.71	7.4	13.8
29-Jul-21	0.20	0.34	0.12	0.07	0.19			7.0	7.0	73.2	67.6	30.1	0.0	0.74	7.4	14.0
30-Jul-21	0.20	0.35	0.13	0.07	0.17			7.0	7.0	73.2	67.6	30.0	0.0	0.73	7.5	13.9
31-Jul-21	0.20	0.35	0.13	0.10	0.19			7.0	7.0	73.2	67.6	30.0	0.0	0.75	7.6	13.8
Total	------	------	------	------	------			------	------	------	------	------	------	------	------	------
Average	0.12	0.18	0.47	0.05	0.16			7.0	7.0	69.8	50.3	35.9	0.0	0.83	7.2	13.1
Min	0.08	0.11	0.12	0.02	0.09			7.0	6.7	52.1	31.7	30.0	0.0	0.71	7.0	12.5
Max	0.20	0.45	1.61	0.17	0.24			7.2	7.1	73.2	67.6	46.6	0.0	0.94	7.6	14.0

Merritt Water System **Month:** **Aug-21**

Well Water Totals Report

	Voght Park				Fairley		Collettville		Res Min Levels		City Totals			
Date	**VFD Pump**		**GE Pump**		**Well Pump**		**Well Pump**		**Grimmett**	**Nicola**	**RainFall**	**Temp**	**Pmp Total**	**Flow Total**
	Hrs	Cubic Meters	Hrs	Cubic Meters	Hrs	Cubic Meters	Hrs	Cubic Meters	%	%	mm	Mean C	Hours	Cubic Meters
01-Aug-21	0.00	0.0	0.00	0.0	17.68	3094.0	0.0	0.0	89.7	85.8	0	26.5	17.7	3094
02-Aug-21	0.00	0.0	0.00	0.0	21.53	3767.8	0.0	0.0	89.7	85.8	0	22.1	21.5	3768
03-Aug-21	0.00	0.0	0.00	0.0	22.94	4014.5	2.1	363.3	86.0	85.8	0.4	19.8	25.0	4378
04-Aug-21	0.00	0.0	8.07	3082.7	13.24	2317.0	0.0	0.0	86.6	86.1	0.4	20.0	21.3	5400
05-Aug-21	0.00	0.0	21.14	8075.5	0.00	0.0	0.0	0.0	83.1	81.0	3	22.6	21.1	8075
06-Aug-21	0.00	0.0	6.08	2322.6	12.09	2115.8	1.7	294.1	80.0	69.5	0	23.3	19.9	4732
07-Aug-21	0.00	0.0	0.00	0.0	14.97	2619.8	1.5	259.5	81.7	70.4	0	23.4	16.5	2879
08-Aug-21	0.00	0.0	0.00	0.0	12.84	2247.0	2.1	363.3	83.7	71.3	0	25.4	14.9	2610
09-Aug-21	0.00	0.0	0.00	0.0	18.23	3190.3	2.7	467.1	81.5	69.7	0	27.0	20.9	3657
10-Aug-21	0.00	0.0	0.00	0.0	21.98	3846.5	0.0	0.0	85.3	72.6	0	25.3	22.0	3847
11-Aug-21	0.00	0.0	0.00	0.0	20.87	3652.3	10.3	1781.9	83.0	67.2	0	26.2	31.2	5434
12-Aug-21	0.00	0.0	0.00	0.0	20.98	3671.5	13.3	2300.9	84.2	76.3	14	19.8	34.3	5972
13-Aug-21	0.00	0.0	0.00	0.0	21.04	3682.0	3.5	605.5	84.4	69.6	0	16.8	24.5	4288
14-Aug-21	0.00	0.0	0.00	0.0	21.99	3848.3	5.9	1020.7	81.9	72.9	0	16.7	27.9	4869
15-Aug-21	0.00	0.0	0.00	0.0	21.17	3704.8	9.4	1626.2	83.5	70.8	0	21.3	30.6	5331
16-Aug-21	0.00	0.0	0.00	0.0	21.04	3682.0	2.1	363.3	90.9	81.6	0	22.7	23.1	4045
17-Aug-21	0.00	0.0	0.00	0.0	13.04	2282.0	0.0	0.0	88.9	76.5	0	22.0	13.0	2282
18-Aug-21	0.00	0.0	0.00	0.0	5.85	1023.8	6.7	1159.1	88.8	74.6	0	18.6	12.6	2183
19-Aug-21	0.00	0.0	0.98	374.4	1.92	336.0	9.8	1695.4	89.8	76.6	0	17.8	12.7	2406
20-Aug-21	0.00	0.0	2.02	771.6	7.34	1284.5	4.9	847.7	80.3	75.8	0	19.3	14.3	2904
21-Aug-21	0.00	0.0	0.00	0.0	10.77	1884.8	0.0	0.0	87.9	80.2	0	19.8	10.8	1885
22-Aug-21	0.00	0.0	0.00	0.0	6.84	1197.0	0.0	0.0	87.7	79.9	0	21.9	6.8	1197
23-Aug-21	0.00	0.0	0.76	290.3	13.98	2446.5	4.8	830.4	87.1	76.9	0	18.0	19.5	3567
24-Aug-21	0.00	0.0	0.00	0.0	18.69	3270.8	2.5	432.5	88.9	75.0	0	16.3	21.2	3703
25-Aug-21	0.00	0.0	0.35	133.7	8.86	1550.5	2.8	484.4	83.7	71.2	1.8	11.4	12.0	2169
26-Aug-21	0.00	0.0	0.00	0.0	6.53	1142.8	2.2	380.6	82.4	70.8	2.8	11.1	8.7	1523
27-Aug-21	0.00	0.0	0.00	0.0	9.56	1673.0	0.0	0.0	88.1	75.6	0	14.6	9.6	1673
28-Aug-21	0.00	0.0	0.00	0.0	8.36	1463.0	0.0	0.0	88.1	76.8	0	18.4	8.4	1463
29-Aug-21	0.00	0.0	0.00	0.0	8.41	1471.8	1.9	328.7	83.8	73.4	1.3	15.7	10.3	1800
30-Aug-21	0.00	0.0	0.00	0.0	10.35	1811.3	2.0	346.0	83.8	71.9	0.3	12.4	12.4	2157
31-Aug-21	0.00	0.0	0.00	0.0	5.87	1027.3	2.1	363.3	82.7	71.2	0.0	13.7	8.0	1391
Total	0.0	0	39.4	15051	419.0	73318	94.3	16314	------	------	0.3	------	553	104683
Average	0.0	0	1.3	486	13.5	2365	3.0	526	85.4	75.6	0.2	19.7	18	3377
Min	0.0	0	0.0	0	0.0	0	0.0	0	80.0	67.2	0.0	11.1	7	1197
Max	0.0	0	21.1	8075	22.9	4015	13.3	2301	90.9	86.1	0.3	27.0	34	8075

Merritt Water System **Month:** Aug-21

Water System Information Sheet #2

Date	Production Well Turbidity					Production Well pH				Production Well Levels				Grimmett Reservoir		
	Voght VFD	Voght GE	Kengard	Fairley Park	Collettville	Voght UV	Kengard	Fairley Park	Collettville	Voght VFD	Voght GE	Fairley Park	Collettville	Chlorine Residual	PH	Water Temp
	ntu	ntu	ntu	ntu	ntu	pH	pH	pH	pH	Feet	Feet	Feet	Feet	Mg/l	------	°C
01-Aug-21	0.20	0.33	0.15	0.03	0.18			7.0	6.7	73.3	67.7	36.0	0.0	0.65	7.6	13.8
02-Aug-21	0.19	0.38	0.15	0.04	0.18			7.0	6.7	73.4	67.7	32.5	0.0	0.69	7.6	13.9
03-Aug-21	0.21	0.35	0.14	0.06	0.29			7.0	7.0	73.3	67.7	31.2	0.0	0.67	7.7	13.8
04-Aug-21	0.20	0.28	0.21	0.10	0.19			7.0	7.0	72.3	55.5	39.9	0.0	0.60	7.5	14.3
05-Aug-21	0.13	0.12	0.47	0.03	0.17			7.0	6.5	70.2	35.5	51.9	0.0	0.67	7.3	14.0
06-Aug-21	0.10	0.12	0.42	0.09	0.17			7.0	7.0	71.8	57.9	41.2	0.0	0.70	7.4	14.2
07-Aug-21	0.13	0.14	0.16	0.12	0.15			7.0	6.9	73.0	67.3	38.4	0.0	0.68	7.5	14.2
08-Aug-21	0.15	0.19	0.15	0.12	0.16			7.1	6.9	73.2	67.5	40.5	0.0	0.73	7.6	14.0
09-Aug-21	0.17	0.22	0.15	0.12	0.16			7.7	7.0	73.2	67.6	35.5	0.0	0.69	7.7	13.8
10-Aug-21	0.18	0.25	0.16	0.18	0.30			7.1	6.6	73.2	67.6	32.0	0.0	0.68	7.7	13.8
11-Aug-21	0.18	0.27	0.22	0.29	0.14			7.0	7.0	73.1	67.5	33.0	0.0	0.62	7.7	14.0
12-Aug-21	0.17	0.27	0.40	0.32	0.12			7.1	7.0	73.0	67.4	33.0	0.0	0.66	7.4	14.1
13-Aug-21	0.17	0.27	0.18	0.22	0.32			7.1	7.0	73.1	67.5	32.7	0.0	0.67	7.6	14.2
14-Aug-21	0.18	0.27	0.17	0.26	0.33			7.1	7.0	73.1	67.4	31.8	0.0	0.69	7.5	14.2
15-Aug-21	0.17	0.28	0.19	0.37	0.14			7.0	7.0	73.0	67.4	32.6	0.0	0.70	7.6	14.3
16-Aug-21	0.17	0.26	0.18	0.40	0.33			7.1	7.0	73.0	67.3	32.5	0.0	0.71	7.6	14.2
17-Aug-21	0.17	0.27	0.17	0.12	0.13			7.6	6.6	73.1	67.5	39.9	0.0	0.69	7.6	14.2
18-Aug-21	0.18	0.26	0.17	0.13	0.11			7.7	7.0	73.2	67.6	46.7	0.0	0.71	7.6	14.2
19-Aug-21	0.20	0.22	0.18	0.14	0.08			7.5	7.0	73.2	67.1	50.7	0.0	0.70	7.6	14.3
20-Aug-21	0.16	0.12	0.19	0.14	0.08			7.5	7.0	73.1	64.7	46.3	0.0	0.74	7.5	14.2
21-Aug-21	0.13	0.13	0.18	0.13	0.18			7.8	6.9	73.4	67.8	42.6	0.0	0.73	7.6	14.2
22-Aug-21	0.18	0.20	0.17	0.13	0.14			7.8	6.7	73.5	67.8	46.2	0.0	0.73	7.6	14.2
23-Aug-21	0.18	0.16	0.25	0.12	0.10			7.7	6.9	73.5	66.9	40.0	0.0	0.77	7.6	13.9
24-Aug-21	0.16	0.12	0.42	0.12	0.11			7.3	6.9	73.5	67.8	35.3	0.0	0.74	7.5	14.1
25-Aug-21	0.17	0.16	0.20	0.14	0.11			7.9	6.9	73.5	67.4	44.3	0.0	0.76	7.6	14.0
26-Aug-21	0.17	0.13	0.20	0.13	0.13			7.8	6.9	73.5	67.9	46.6	0.0	0.78	7.6	14.0
27-Aug-21	0.19	0.19	0.19	0.12	0.15			7.6	6.8	73.6	67.9	43.8	0.0	0.79	7.6	13.9
28-Aug-21	0.20	0.22	0.20	0.12	0.13			7.6	6.7	73.6	68.0	44.9	0.0	0.82	7.6	14.0
29-Aug-21	0.20	0.25	0.21	0.13	0.12			7.9	6.8	73.6	67.9	44.9	0.0	0.84	7.6	14.0
30-Aug-21	0.19	0.26	0.21	0.12	0.12			7.5	6.8	73.5	67.8	43.0	0.0	0.88	7.6	14.0
31-Aug-21	0.19	0.25	0.21	0.12	0.12			7.6	6.8	73.5	67.8	47.1	0.0	0.84	7.6	13.9
Total	------	------	------	------	------			------	------	------	------	------	------	------	------	------
Average	0.17	0.22	0.21	0.15	0.17			7.4	6.9	73.1	65.8	39.9	0.0	0.72	7.6	14.1
Min	0.10	0.12	0.14	0.03	0.08			7.0	6.5	70.2	35.5	31.2	0.0	0.60	7.3	13.8
Max	0.21	0.38	0.47	0.40	0.33			7.9	7.0	73.6	68.0	51.9	0.0	0.88	7.7	14.3

Merritt Water System **Month:** Sep-21

Well Water Totals Report

	Voght Park				Fairley		Collettville		Res Min Levels		City Totals			
Date	VFD Pump		GE Pump		Well Pump		Well Pump		Grimmett	Nicola	RainFall	Temp	Pmp Total	Flow Total
	Hrs	Cubic Meters	Hrs	Cubic Meters	Hrs	Cubic Meters	Hrs	Cubic Meters	%	%	mm	Mean C	Hours	Cubic Meters
01-Sep-21	0.00	0.0	0.00	0.0	7.89	1580.9	0.1	1.2	88.3	75.6	0.0	18.6	8.0	1582
02-Sep-21	0.00	0.0	0.00	0.0	11.29	2259.4	1.1	192.5	87.6	75.3	0.0	17.9	12.4	2452
03-Sep-21	0.00	0.0	0.00	0.0	10.70	2134.5	1.9	320.9	85.0	72.2	0.5	17.5	12.6	2455
04-Sep-21	0.00	0.0	0.00	0.0	6.73	1335.7	2.1	360.0	82.6	71.4	0.0	18.3	8.8	1696
05-Sep-21	0.00	0.0	0.00	0.0	4.71	934.7	1.5	259.9	84.8	73.8	0.0	18.2	6.2	1195
06-Sep-21	0.00	0.0	0.00	0.0	12.62	2524.8	0.9	155.0	88.0	74.2	0.0	20.8	13.5	2680
07-Sep-21	0.00	0.0	0.00	0.0	12.55	2505.5	1.9	313.8	84.9	73.3	9.7	17.0	14.5	2819
08-Sep-21	0.00	0.0	0.00	0.0	6.69	1328.5	2.1	363.8	83.6	71.6	3.8	14.9	8.8	1692
09-Sep-21	0.00	0.0	0.00	0.0	12.37	2471.8	1.4	239.8	87.0	74.3	0.0	14.2	13.8	2712
10-Sep-21	0.00	0.0	0.00	0.0	10.97	2189.9	1.7	286.9	85.2	73.0	13.2	13.8	12.7	2477
11-Sep-21	0.00	0.0	0.00	0.0	8.23	1637.5	1.7	299.8	84.4	73.3	0.0	15.2	9.9	1937
12-Sep-21	0.00	0.0	0.00	0.0	9.33	1862.2	1.3	212.1	86.7	74.3	0.0	15.4	10.6	2074
13-Sep-21	0.00	0.0	0.00	0.0	10.69	2128.4	2.1	375.2	83.8	70.8	0.0	15.9	13.7	2504
14-Sep-21	0.00	0.0	0.00	0.0	8.29	1649.6	2.0	342.2	84.5	73.0	0.0	16.1	11.3	1992
15-Sep-21	0.00	0.0	8.06	3316.3	3.79	760.4	0.0	0.0	83.7	73.2	3.8	13.0	11.9	4078
16-Sep-21	0.00	0.0	0.00	0.0	6.97	1384.2	1.3	218.0	86.6	74.7	0.0	11.1	8.3	1602
17-Sep-21	0.00	0.0	0.00	0.0	6.08	1206.9	1.4	232.0	86.4	71.9	2.0	11.0	7.5	1439
18-Sep-21	0.00	0.0	0.00	0.0	2.74	548.8	0.0	0.0	89.0	77.5	3.6	11.6	2.7	550
19-Sep-21	0.00	0.0	0.00	0.0	4.01	793.1	1.3	222.3	85.5	75.3	0.3	10.9	5.3	1015
20-Sep-21	0.00	0.0	0.00	0.0	7.32	1454.1	3.4	579.4	85.3	74.3	0.8	13.4	10.7	2112
21-Sep-21	0.00	0.0	0.00	0.0	5.52	1103.3	1.1	190.5	87.7	74.4	0.0	12.8	6.6	1294
22-Sep-21	0.00	0.0	0.00	0.0	4.90	973.2	1.6	276.7	84.9	73.5	0.5	13.5	6.5	1250
23-Sep-21	0.00	0.0	0.00	0.0	8.73	1747.8	0.0	0.0	88.4	75.9	0.5	10.8	8.7	1749
24-Sep-21	0.00	0.0	0.00	0.0	7.00	1405.4	6.6	1145.8	87.9	73.8	0.0	13.3	13.6	2551
25-Sep-21	0.00	0.0	0.00	0.0	0.00	0.0	14.7	2546.8	88.0	76.4	0.0	10.4	14.7	2547
26-Sep-21	0.00	0.0	0.00	0.0	0.00	0.0	17.1	2948.9	85.1	76.1	2.5	11.4	17.4	2949
27-Sep-21	0.00	0.0	0.00	0.0	0.00	0.0	16.7	2905.0	87.9	76.8	12.7	5.7	17.6	2905
28-Sep-21	0.00	0.0	0.00	0.0	12.37	676.2	8.8	1523.5	87.9	76.9	4.6	6.0	22.2	2200
29-Sep-21	0.00	0.0	6.10	2479.2	5.73	316.3	3.4	578.3	80.2	70.4	0.5	5.7	15.2	3374
30-Sep-21	0.00	0.0	3.04	1560.7	0.00	0.0	19.1	3297.8	79.9	69.9	0.0	5.3	22.1	4859
Total	0.0	0	21.4	7434	208.3	38913	118.3	20391	------	------	59.0	------	348	66738
Average	0.0	0	0.7	248	6.9	1297	3.9	680	85.7	73.9	2.0	13.3	12	2225
Min	0.0	0	0.0	0	0.0	0	0.0	1	79.9	69.9	0.0	5.3	3	550
Max	0.0	0	8.1	3316	12.6	2525	19.1	3298	89.0	77.5	13.2	20.8	22	4859

Merritt Water System **Month:** Sep-21

Water System Information Sheet #2

Date	Production Well Turbidity					Production Well pH				Production Well Levels				Grimmett Reservoir		
	Voght VFD	Voght GE	Kengard	Fairley Park	Collettville	Voght UV	Kengard	Fairley Park	Collettville	Voght VFD	Voght GE	Fairley Park	Collettville	Chlorine Residual	PH	Water Temp
	ntu	ntu	ntu	ntu	ntu	pH	pH	pH	pH	Feet	Feet	Feet	Feet	Mg/l	------	°C
01-Sep-21	0.21	0.24	0.21	0.12	0.64			7.5	6.7	73.5	67.9	45.2		0.89	7.6	13.8
02-Sep-21	0.21	0.26	0.22	0.13	0.53			7.5	6.8	73.5	67.8	42.1		0.91	7.7	13.8
03-Sep-21	0.19	0.27	0.22	0.12	0.12			7.7	6.8	73.4	67.8	42.7		0.93	7.6	13.8
04-Sep-21	0.19	0.27	0.22	0.13	0.12			7.5	6.8	73.4	67.8	46.2		0.92	7.6	13.8
05-Sep-21	0.20	0.29	0.22	0.13	0.13			7.7	6.8	73.4	67.8	48.1		0.90	7.6	13.8
06-Sep-21	0.18	0.27	0.23	0.12	0.13			7.5	6.8	73.4	67.8	40.8		0.94	7.6	13.8
07-Sep-21	0.19	0.26	0.23	0.12	0.13			7.2	6.8	73.3	67.8	40.8		0.93	7.6	13.8
08-Sep-21	0.21	0.27	0.24	0.13	0.13			7.3	6.8	73.3	67.7	46.1		0.88	7.6	14.0
09-Sep-21	0.18	0.26	0.24	0.13	0.13			7.5	6.8	73.3	67.7	41.0		0.93	7.6	13.8
10-Sep-21	0.18	0.25	0.25	0.13	0.14			7.2	6.8	73.3	67.7	42.2		0.91	7.6	13.9
11-Sep-21	0.18	0.24	0.25	0.12	0.13			7.5	6.8	73.3	67.7	44.7		0.91	7.6	13.9
12-Sep-21	0.17	0.22	0.27	0.13	0.14			7.6	6.8	73.3	67.7	43.6		0.91	7.6	13.9
13-Sep-21	0.19	0.22	0.30	0.13	0.14			7.3	6.8	73.3	67.7	42.5		0.94	7.6	13.8
14-Sep-21	0.21	0.20	0.25	0.12	0.14			7.4	6.8	73.3	67.7	44.6		0.90	7.6	13.7
15-Sep-21	0.24	0.15	0.47	0.13	0.17			7.4	6.5	72.2	55.6	48.6		0.86	7.6	13.6
16-Sep-21	0.14	0.12	0.23	0.13	0.15			7.8	6.8	73.1	67.6	45.9		0.88	7.6	13.5
17-Sep-21	0.18	0.18	0.31	0.13	0.16			7.9	6.8	73.3	67.6	46.7		0.92	7.6	13.4
18-Sep-21	0.21	0.21	0.32	0.13	0.19			7.9	6.7	73.5	67.8	49.8		0.85	7.6	13.5
19-Sep-21	0.21	0.21	0.29	0.13	0.16			7.9	6.7	73.7	68.1	48.9		0.92	7.7	13.4
20-Sep-21	0.20	0.17	0.24	0.13	0.12			7.5	6.6	73.7	67.8	45.9		0.87	7.7	13.4
21-Sep-21	0.21	0.15	0.23	0.13	0.17			7.8	6.6	73.7	68.0	45.2		0.89	7.7	13.3
22-Sep-21	0.21	0.22	0.23	0.13	0.15			7.9	6.6	73.7	68.1	48.1		0.88	7.7	13.4
23-Sep-21	0.20	0.23	0.21	0.12	0.19			7.8	6.5	73.7	68.1	44.6		0.91	7.6	13.5
24-Sep-21	0.20	0.23	0.23	0.13	0.13			7.6	6.7	73.6	68.0	46.1		0.91	7.6	13.4
25-Sep-21	0.19	0.23	0.32	0.14	0.07			7.5	6.7	73.5	67.8	52.6		0.92	7.6	13.4
26-Sep-21	0.18	0.22	0.38	0.14	0.06			7.5	6.7	73.5	67.8	52.6	0.0	0.90	7.6	13.5
27-Sep-21	0.18	0.23	0.33	0.15	0.07			7.5	6.7	73.5	67.8	52.7	0.0	0.92	7.6	13.4
28-Sep-21	0.18	0.24	0.39	0.14	0.12			7.5	6.7	73.5	67.9	41.4	0.0	0.89	7.6	13.3
29-Sep-21	0.18	0.16	0.70	0.12	0.17			7.4	7.0	72.7	58.9	47.2	0.0	0.87	7.6	13.3
30-Sep-21	0.16	0.12	0.51	0.14	0.06			7.5	6.7	72.8	62.1	52.4	0.0	0.73	7.4	13.0
Total	------	------	------	------	------			------	------	------	------	------	------	------	------	------
Average	0.19	0.22	0.29	0.13	0.16			7.6	6.7	73.4	66.9	46.0	0.0	0.90	7.6	13.6
Min	0.14	0.12	0.21	0.12	0.06			7.2	6.5	72.2	55.6	40.8	0.0	0.73	7.4	13.0
Max	0.24	0.29	0.70	0.15	0.64			7.9	7.0	73.7	68.1	52.7	0.0	0.94	7.7	14.0

Merritt Water System **Month:** Sep-21

UV System Information Sheet #3

Date	UV Dosing					UV Intensity					UV System Power				
	Voght VFD	Voght GE	Kengard	Fairley Park	Collettville	Voght VFD	Voght GE	Kengard	Fairley Park	Collettville	Voght VFD	Voght GE	Kengard	Fairley Park	Collettville
	mJ/cm2	mJ/cm2	mJ/cm2	mJ/cm2	mJ/cm2	W/m2	W/m2	W/m2	W/m2	W/m2	%	%	%	%	%
01-Sep-21															
02-Sep-21															
03-Sep-21															
04-Sep-21															
05-Sep-21															
06-Sep-21															
07-Sep-21															
08-Sep-21															
09-Sep-21															
10-Sep-21															
11-Sep-21															
12-Sep-21															
13-Sep-21															
14-Sep-21															
15-Sep-21															
16-Sep-21															
17-Sep-21															
18-Sep-21															
19-Sep-21															
20-Sep-21															
21-Sep-21			40.84					6.89					87.52		
22-Sep-21			37.41					6.31					80.48		
23-Sep-21			37.44					6.31					81.51		
24-Sep-21			29.46					4.97					64.43		
25-Sep-21			21.92					3.32					42.53		
26-Sep-21			17.67					2.62					33.30		
27-Sep-21			20.42					3.07					39.15		
28-Sep-21			13.49					2.16					27.13		
29-Sep-21			0.40					0.05					0.76		
30-Sep-21			2.66					0.44					5.60		
Total	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Average	#DIV/0!	#DIV/0!	22.17	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	3.61	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	46.24	#DIV/0!	#DIV/0!
Min	0.00	0.00	0.40	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.76	0.00	0.00
Max	0.00	0.00	40.84	0.00	0.00	0.00	0.00	6.89	0.00	0.00	0.00	0.00	87.52	0.00	0.00

Merritt Water System **Month:** Oct-21

Well Water Totals Report

	Voght Park				Fairley		Collettville		Res Min Levels		City Totals			
Date	VFD Pump		GE Pump		Well Pump		Well Pump		Grimmett	Nicola	RainFall	Temp	Pmp Total	Flow Total
	Hrs	Cubic Meters	Hrs	Cubic Meters	Hrs	Cubic Meters	Hrs	Cubic Meters	%	%	mm	Mean C	Hours	Cubic Meters
01-Oct-21	0.00	0.0	2.03	950.4	0.01	0.0	20.4	3526.6	79.9	70.2	0.0	10.7	22.4	4477
02-Oct-21	0.00	0.0	2.04	807.6	0.02	0.0	17.0	2922.5	78.0	70.5	0.0	13.3	19.1	3730
03-Oct-21	0.00	0.0	1.02	718.7	0.03	0.0	18.9	3275.3	80.0	69.3	0.0	13.2	19.9	3994
04-Oct-21	0.00	0.0	1.01	778.4	1.88	370.9	21.0	3619.4	79.9	70.7	0.0	13.9	23.9	4769
05-Oct-21	0.00	0.0	1.02	714.3	0.00	0.0	19.9	3446.8	79.9	69.5	0.0	11.3	20.9	4161
06-Oct-21	0.00	0.0	1.02	752.7	0.00	0.0	19.5	3357.6	79.9	68.6	0.0	8.3	20.5	4110
07-Oct-21	0.00	0.0	1.01	753.9	0.00	0.0	21.0	3634.5	79.9	68.6	0.0	7.0	22.0	4388
08-Oct-21	0.00	0.0	1.01	716.2	0.00	0.0	20.3	3511.2	79.9	69.9	0.0	7.7	21.3	4227
09-Oct-21	0.00	0.0	1.02	687.2	0.00	0.0	17.7	3053.7	79.9	69.9	0.0	10.1	18.7	3741
10-Oct-21	0.00	0.0	1.01	704.7	0.00	0.0	15.5	2677.8	79.9	72.6	6.3	5.8	16.5	3383
11-Oct-21	0.00	0.0	1.03	781.7	0.00	0.0	17.0	2912.4	77.4	71.3	1.3	4.2	18.0	3694
12-Oct-21	0.00	0.0	1.02	690.3	0.00	0.0	15.5	2673.4	79.9	71.6	0.5	3.1	16.5	3364
13-Oct-21	0.00	0.0	1.76	688.8	0.00	0.0	16.8	2901.0	79.9	72.5	0.5	5.2	18.6	3590
14-Oct-21	0.00	0.0	1.71	673.1	0.00	0.0	16.6	2863.7	79.9	70.4	0.3	8.5	18.3	3537
15-Oct-21	0.00	0.0	1.02	693.0	0.01	0.0	14.3	2462.1	80.0	71.5	0.0	11.2	15.3	3155
16-Oct-21	0.00	0.0	1.01	669.5	0.01	0.0	15.9	2728.6	80.0	73.2	0.0	11.8	16.9	3398
17-Oct-21	0.00	0.0	1.02	677.2	0.01	0.0	15.8	2726.5	80.0	73.3	0.0	11.9	16.8	3404
18-Oct-21	0.00	0.0	1.01	703.7	0.02	0.0	16.6	2860.4	79.9	72.2	0.0	9.1	17.6	3564
19-Oct-21	0.00	0.0	1.03	689.0	0.02	0.0	15.7	2696.7	79.9	70.9	0.0	4.6	16.7	3386
20-Oct-21	0.00	0.0	1.01	704.9	6.58	1312.0	3.3	558.1	79.8	72.0	0.3	7.7	10.9	2575
21-Oct-21	0.00	0.0	0.00	0.0	10.18	2029.3	0.0	1.4	89.8	78.0	0.3	10.2	10.8	2031
22-Oct-21	0.00	0.0	4.04	1955.2	1.88	363.5	0.0	2.8	74.9	66.7	0.0	11.4	5.9	2322
23-Oct-21	0.00	0.0	1.01	702.0	16.28	3234.3	0.0	8.1	74.9	69.4	0.3	8.8	17.3	3944
24-Oct-21	0.00	0.0	0.00	0.0	19.39	3889.2	0.0	0.0	89.3	79.0	3.0	7.9	19.4	3889
25-Oct-21	0.00	0.0	0.00	0.0	14.72	2950.1	0.0	0.0	86.4	77.0	0.0	10.4	14.7	2950
26-Oct-21	0.00	0.0	0.00	0.0	18.88	3784.4	0.0	0.0	88.8	75.4	2.8	8.7	18.9	3784
27-Oct-21	0.00	0.0	0.00	0.0	21.30	4270.3	0.0	0.7	89.0	78.3	0.3	8.6	21.3	4271
28-Oct-21	0.00	0.0	0.00	0.0	15.33	3071.8	0.0	2.2	86.8	77.2	0.0	6.2	15.3	3074
29-Oct-21	0.00	0.0	0.00	0.0	15.83	3170.5	0.0	2.6	87.6	77.3	0.0	1.4	15.8	3173
30-Oct-21	0.00	0.0	0.00	0.0	17.17	3444.5	0.0	3.0	89.8	79.4	0.0	-2.4	17.2	3448
31-Oct-21	0.00	0.0	0.00	0.0	7.80	1563.7	9.6	1640.4	87.8	78.8	0.0	-3.7	17.4	3204
Total	0.0	0	29.5	17213	167.3	33455	348.3	60070	------	------	15.9	------	545	110737
Average	0.0	0	1.0	555	5.4	1079	11.2	1938	81.9	72.7	0.5	7.9	18	3572
Min	0.0	0	0.0	0	0.0	0	0.0	0	74.9	66.7	0.0	-6.9	6	2031
Max	0.0	0	4.0	1955	21.3	4270	21.0	3635	89.8	79.4	6.3	13.9	24	4769

Merritt Water System **Month:** Oct-21

Water System Information Sheet #2

Date	Production Well Turbidity					Production Well pH				Production Well Levels				Grimmett Reservoir		
	Voght VFD	Voght GE	Kengard	Fairley Park	Collettville	Voght UV	Kengard	Fairley Park	Collettville	Voght VFD	Voght GE	Fairley Park	Collettville	Chlorine Residual	PH	Water Temp
	ntu	ntu	ntu	ntu	ntu	pH	pH	pH	pH	Feet	Feet	Feet	Feet	Mg/l	------	°C
01-Oct-21	0.17	0.12	0.63	0.14	0.05			7.6	6.7	73.1	64.4	52.6	0.0	0.75	7.5	12.8
02-Oct-21	0.17	0.12	0.67	0.14	0.07			7.6	6.7	73.3	65.0	52.7	0.0	0.75	7.5	12.9
03-Oct-21	0.19	0.13	0.69	0.14	0.06			7.6	6.8	73.3	65.3	52.7	0.0	0.83	7.5	13.0
04-Oct-21	0.18	0.13	0.71	0.14	0.05			7.6	6.8	73.3	65.0	51.1	0.0	0.81	7.6	13.0
05-Oct-21	0.20	0.12	0.78	0.15	0.06			7.6	6.8	73.2	65.2	52.8	0.0	0.84	7.5	12.9
06-Oct-21	0.18	0.12	0.80	0.16	0.06			7.6	6.8	73.2	65.1	52.8		0.77	7.5	12.8
07-Oct-21	0.18	0.12	0.80	0.17	0.06			7.6	6.8	73.1	65.1	52.8	63.7	0.77	7.5	12.8
08-Oct-21	0.17	0.12	0.72	0.19	0.06			7.6	6.8	73.1	65.2	52.8	64.5	0.77	7.5	12.7
09-Oct-21	0.17	0.12	0.55	0.16	0.08			7.6	6.8	73.2	65.3	52.8	65.3	0.76	7.4	12.5
10-Oct-21	0.17	0.12	0.52	0.15	0.10			7.6	6.8	73.2	65.3	52.8	66.1	0.71	7.4	12.5
11-Oct-21	0.17	0.12	0.50	0.17	0.11			7.6	6.8	73.2	65.0	52.8	66.9	0.70	7.4	12.4
12-Oct-21	0.16	0.12	0.51	0.19	0.11			7.6	6.8	73.2	65.3	52.9	67.8	0.72	7.4	12.2
13-Oct-21	0.16	0.12	0.54	0.18	0.12			7.6	6.8	73.2	65.3	52.9	29.4	0.75	7.5	12.2
14-Oct-21	0.15	0.12	0.57	0.18	0.12			7.6	6.8	73.2	65.4	52.9	0.0	0.75	7.5	12.2
15-Oct-21	0.16	0.13	0.55	0.19	0.14			7.6	6.9	73.2	65.3	52.9	0.0	0.71	7.4	12.1
16-Oct-21	0.17	0.13	0.54	0.20	0.19			7.6	6.8	73.2	65.3	52.9	0.0	0.70	7.5	12.2
17-Oct-21	0.18	0.14	0.56	0.20	0.15			7.6	6.9	73.2	65.3	52.9	0.0	0.72	7.4	12.1
18-Oct-21	0.17	0.13	0.55	0.21	0.14			7.6	6.9	73.3	65.3	52.9	0.0	0.71	7.4	12.1
19-Oct-21	0.18	0.13	0.53	0.21	0.15			7.6	6.9	73.3	65.4	52.9	0.0	0.70	7.4	12.0
20-Oct-21	0.16	0.13	0.38	0.20	0.38			7.6	6.9	73.4	65.4	47.0	0.0	0.73	7.5	11.9
21-Oct-21	0.16	0.15	0.19	0.13	0.87			7.1	6.5	73.6	68.0	43.5		0.75	7.6	12.0
22-Oct-21	0.19	0.16	0.40	0.14	0.19			7.2	6.4	73.1	60.9	51.1		0.69	7.5	12.0
23-Oct-21	0.15	0.13	0.48	0.14	0.57			7.2	6.8	73.3	65.3	38.0		0.70	7.4	12.0
24-Oct-21	0.18	0.17	0.77	0.24	1.23			7.1	6.5	73.6	67.8	34.8		0.63	7.3	12.0
25-Oct-21	0.19	0.21	0.59	0.33	0.41			7.1	6.6	73.6	67.8	38.9		0.74	7.4	11.9
26-Oct-21	1.23	0.23	0.58	0.52	0.27			7.1	6.6	73.5	67.8	35.0		0.63	7.3	11.9
27-Oct-21	0.22	0.24	0.90	0.78	0.23			7.1	6.6	73.5	67.9	32.7	0.0	0.62	7.3	11.9
28-Oct-21	0.21	0.25	0.93	0.76	0.21			7.1	6.6	73.6	67.9	38.1	0.0	0.72	7.4	11.8
29-Oct-21	0.21	0.24	1.79	0.54	0.17			7.1	6.6	73.7	68.1	37.8	0.0	0.70	7.3	11.6
30-Oct-21	0.20	0.20	1.09	0.20	0.22			7.1	6.6	73.9	68.2	36.6	0.0	0.61	7.3	11.5
31-Oct-21	0.19	0.20	1.12	0.13	0.14			7.5	6.9	73.8	68.1	45.2	0.0	0.69	7.4	11.3
Total	------	------	------	------	------			------	------	------	------	------	------	------	------	------
Average	0.21	0.15	0.68	0.24	0.22			7.4	6.7	73.3	65.9	47.8	17.6	0.72	7.4	12.2
Min	0.15	0.12	0.19	0.13	0.05			7.1	6.4	73.1	60.9	32.7	0.0	0.61	7.3	11.3
Max	1.23	0.25	1.79	0.78	1.23			7.6	6.9	73.9	68.2	52.9	67.8	0.84	7.6	13.0

Merritt Water System **Month:** Oct-21

UV System Information Sheet #3

Date	UV Dosing					UV Intensity					UV System Power				
	Voght VFD	Voght GE	Kengard	Fairley Park	Collettville	Voght VFD	Voght GE	Kengard	Fairley Park	Collettville	Voght VFD	Voght GE	Kengard	Fairley Park	Collettville
	mJ/cm2	mJ/cm2	mJ/cm2	mJ/cm2	mJ/cm2	W/m2	W/m2	W/m2	W/m2	W/m2	%	%	%	%	%
01-Oct-21			2.02					0.32					4.21		
02-Oct-21			1.75					0.29					3.67		
03-Oct-21			3.52					0.23					2.87		
04-Oct-21	0.00	0.00	1.38	0.00	42.00	0.30	0.00	0.23	0.00	7.16	0.00	0.00	2.90	0.00	67.68
05-Oct-21	0.00	4.88	1.34	0.00	34.83	0.30	0.69	0.22	0.00	5.95	0.00	4.24	2.77	0.00	54.89
06-Oct-21	0.00	5.12	3.52	0.00	33.94	0.29	0.71	0.23	0.00	5.77	0.00	4.44	2.93	0.00	54.38
07-Oct-21	0.00	5.06	3.77	0.00	36.73	0.29	0.71	0.24	0.00	6.27	0.00	4.44	3.01	0.00	59.14
08-Oct-21	0.00	4.88	1.38	0.00	35.50	0.29	0.69	0.23	0.00	6.05	0.00	4.24	2.89	0.00	57.51
09-Oct-21	0.00	4.72	1.33	0.00	30.87	0.29	0.65	0.22	0.00	5.25	0.00	4.10	2.79	0.00	50.40
10-Oct-21	0.00	4.91	1.42	0.00	27.08	0.30	0.68	0.24	0.00	4.61	0.00	4.19	2.87	0.00	44.15
11-Oct-21	0.00	5.29	1.83	0.00	29.58	0.30	0.70	0.30	0.00	5.04	0.00	4.61	3.85	0.00	49.53
12-Oct-21	0.00	4.77	4.87	0.00	27.07	0.29	0.66	0.26	0.00	4.60	0.00	4.10	3.19	0.00	44.64
13-Oct-21	0.00	4.73	1.30	0.00	29.46	0.29	0.66	0.22	0.00	5.02	0.00	4.11	2.67	0.00	49.27
14-Oct-21	0.00	4.67	1.27	0.00	29.02	0.29	0.67	0.21	0.00	4.94	0.00	4.02	2.61	0.00	48.67
15-Oct-21	0.00	4.73	1.27	0.00	24.96	0.29	0.66	0.21	0.00	4.24	0.00	4.13	2.69	0.00	42.67
16-Oct-21	0.00	4.65	1.21	0.00	27.79	0.29	0.65	0.20	0.00	4.73	0.00	4.01	2.51	0.00	47.30
17-Oct-21	0.00	4.60	3.56	0.00	27.70	0.30	0.65	0.22	0.00	4.72	0.00	4.04	2.70	0.00	47.30
18-Oct-21	0.00	4.79	1.24	0.00	29.12	0.30	0.66	0.20	0.00	4.95	0.00	4.18	2.63	0.00	49.80
19-Oct-21	0.00	4.69	1.78	0.00	27.31	0.29	0.65	0.30	0.00	4.64	0.00	4.10	3.82	0.00	46.54
20-Oct-21	0.00	4.82	14.92	11.25	5.75	0.29	0.67	2.11	1.94	0.97	0.00	4.18	25.93	19.80	9.65
21-Oct-21	0.00	0.00	17.59	17.46	0.00	0.30	0.00	2.95	3.00	0.00	0.00	0.00	36.48	30.99	0.00
22-Oct-21	0.00	11.81	1.41	3.09	0.00	0.29	1.56	0.23	0.54	0.00	0.00	10.69	2.88	5.63	0.00
23-Oct-21	0.00	4.65	5.03	27.86	0.12	0.30	0.65	0.85	4.78	0.02	0.00	4.18	10.20	48.21	0.19
24-Oct-21	0.00	0.00	0.00	33.06	0.00	0.30	0.00	0.00	5.67	0.00	0.00	0.00	0.00	57.28	0.00
25-Oct-21	0.00	0.00	3.61	25.03	0.00	0.30	0.00	0.61	4.30	0.00	0.00	0.00	7.57	43.96	0.00
26-Oct-21	0.00	0.00	2.88	32.27	0.00	0.30	0.00	0.08	5.53	0.00	0.00	0.00	0.99	56.03	0.00
27-Oct-21	0.00	0.00	0.00	36.25	0.00	0.30	0.00	0.00	6.22	0.00	0.00	0.00	0.00	62.98	0.00
28-Oct-21	0.00	0.00	3.42	26.12	0.00	0.30	0.00	0.58	4.47	0.00	0.00	0.00	7.01	44.93	0.00
29-Oct-21	0.00	0.00	2.75	26.96	0.00	0.30	0.00	0.46	4.62	0.00	0.00	0.00	5.70	46.41	0.00
30-Oct-21	0.00	0.00	0.00	29.19	0.00	0.30	0.00	0.00	5.00	0.00	0.00	0.00	0.00	50.09	0.00
31-Oct-21	0.00	0.00	3.53	13.23	16.80	0.30	0.00	0.59	2.27	2.86	0.00	0.00	7.11	23.00	28.12
Total	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Average	0.00	3.35	3.06	10.06	18.41	0.30	0.46	0.42	1.73	3.14	0.00	2.93	5.21	17.48	30.42
Min	0.00	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max	0.00	11.81	17.59	36.25	42.00	0.30	1.56	2.95	6.22	7.16	0.00	10.69	36.48	62.98	67.68

Merritt Water System **Month:** Nov-21

Well Water Totals Report

	Voght Park				Fairley		Collettville		Res Min Levels		City Totals			
Date	VFD Pump		GE Pump		Well Pump		Well Pump		Grimmett	Nicola	RainFall	Temp	Pmp Total	Flow Total
	Hrs	Cubic Meters	Hrs	Cubic Meters	Hrs	Cubic Meters	Hrs	Cubic Meters	%	%	mm	Mean C	Hours	Cubic Meters
01-Nov-21	0.00	0.0	0.00	0.0	0.00	0.0	17.8	3076.8	88.3	77.9			17.8	3077
02-Nov-21	0.00	0.0	0.00	0.0	0.00	0.0	18.3	3154.9	90.9	80.3			18.3	3155
03-Nov-21	0.00	0.0	0.00	0.0	0.00	0.0	19.9	3438.9	87.7	79.4			19.9	3439
04-Nov-21	0.00	0.0	0.00	0.0	0.00	0.0	18.2	3136.9	86.9	77.2			18.2	3137
05-Nov-21	0.00	0.0	0.00	0.0	0.00	0.0	2.7	168.1	86.1	76.5			2.7	168
06-Nov-21	0.00	0.0	0.00	0.0	0.00	0.0	0.0	0.0	88.9	78.3			0.0	0
07-Nov-21	0.00	0.0	0.00	0.0	0.00	0.0	13.9	2395.7	87.9	78.0			13.9	2396
08-Nov-21	0.00	0.0	0.00	0.0	0.00	0.0	17.8	3059.9	88.7	79.4			17.8	3060
09-Nov-21	0.00	0.0	0.00	0.0	0.00	0.0	18.6	3215.0	90.4	80.2			18.6	3215
10-Nov-21	0.00	0.0	0.00	0.0	0.00	0.0	18.7	3230.2	90.4	80.5			19.0	3230
11-Nov-21	0.00	0.0	0.00	0.0	0.00	0.0	16.8	2883.0	91.8	80.9			17.5	2883
12-Nov-21	0.00	0.0	0.00	0.0	0.00	0.0	18.5	3175.1	88.9	80.1			19.6	3175
13-Nov-21	0.00	0.0	0.00	0.0	0.01	0.1	8.3	1427.3	91.7	80.9			9.7	1427
14-Nov-21	0.00	0.0	0.00	0.0	0.01	0.1	0.9	151.1	90.0	78.8			2.7	151
15-Nov-21	0.00	0.0	1.01	522.8	0.01	0.1	0.0	0.0	68.4	4.3			13.1	523
16-Nov-21	0.00	0.0	0.00	0.0	0.01	0.1	0.0	0.0	68.3	4.3			0.0	0
17-Nov-21	0.00	0.0	0.00	0.0	0.00	0.0	0.0	0.0	67.4	4.3			0.0	0
18-Nov-21	0.00	0.0	0.00	0.0	0.00	0.0	0.0	0.0	26.5	4.4			0.0	0
19-Nov-21	0.00	0.0	0.00	0.0	0.00	0.0	0.0	0.0	19.8	4.4			0.0	0
20-Nov-21	0.00	0.0	0.00	0.0	0.00	0.0	0.0	0.0	20.4	67.9			0.0	0
21-Nov-21	0.00	0.0	0.00	0.0	0.00	0.0	0.0	0.0	20.5	65.6			0.0	0
22-Nov-21	0.00	0.0	0.00	0.0	0.00	0.0	0.0	0.0	25.3	54.3			0.0	0
23-Nov-21	0.00	0.0	0.00	0.0	0.00	0.0	0.9	213.5	39.2	4.5			0.9	213
24-Nov-21	0.00	0.0	0.00	0.0	0.86	0.6	0.0	0.0	36.5	4.5			0.9	1
25-Nov-21	0.00	0.0	0.00	0.0	0.01	0.0	0.2	33.8	83.0	4.6			0.2	34
26-Nov-21	0.00	0.0	0.00	0.0	3.62	799.3	0.0	0.0	90.5	14.2			3.6	800
27-Nov-21	0.00	0.0	0.00	0.0	24.00	4807.6	0.0	0.0	87.9	32.0			24.0	4809
28-Nov-21	0.00	0.0	0.00	0.0	9.14	1811.5	0.0	0.0	85.9	71.1			9.1	1814
29-Nov-21	0.00	0.0	0.00	0.0	11.66	2264.1	8.6	1446.8	85.9	12.4			20.3	3711
30-Nov-21	0.00	0.0	0.00	0.0	16.85	3271.3	0.0	0.0	85.9	84.0			16.9	3274
Total	0.0	0	1.0	523	66.2	12955	200.1	34224	------	------			303	47702
Average	0.0	0	1.0	523	2.2	432	6.7	1141	72.0	51.5			10	1590
Min	0.0	0	0.0	0	0.0	0	0.0	0	19.8	4.3			0	0
Max	0.0	0	1.0	523	24.0	4808	19.9	3439	91.8	84.0			24	4809

Merritt Water System **Month:** Nov-21

Water System Information Sheet #2

Date	Production Well Turbidity					Production Well pH				Production Well Levels				Grimmett Reservoir		
	Voght VFD	Voght GE	Kengard	Fairley Park	Collettville	Voght UV	Kengard	Fairley Park	Collettville	Voght VFD	Voght GE	Fairley Park	Collettville	Chlorine Residual	PH	Water Temp
	ntu	ntu	ntu	ntu	ntu	pH	pH	pH	pH	Feet	Feet	Feet	Feet	Mg/l	------	°C
01-Nov-21	0.19	0.20	0.50	0.13	0.05			7.6	6.9	73.7	68.0	52.6	0.0	0.68	7.4	11.2
02-Nov-21	0.18	0.23	0.56	0.15	0.05			7.6	6.9	73.7	68.0	52.7	0.0	0.64	7.4	11.2
03-Nov-21	0.19	0.29	0.72	0.15	0.05			7.6	6.9	73.6	68.0	52.8		0.61	7.4	11.2
04-Nov-21	0.20	0.28	0.52	0.14	0.06			7.6	6.9	73.7	67.9	52.9	0.0	0.81	7.5	11.2
05-Nov-21	0.22	0.24	0.17	0.15	0.12			8.0	6.9	73.9	68.2	53.0	0.0	0.66	7.5	11.2
06-Nov-21	0.21	0.20	0.10	0.17	0.17			8.0	7.1	74.1	68.4	53.1	0.0	0.76	7.6	11.1
07-Nov-21	0.21	0.26	0.14	0.18	0.08			8.1	7.1	74.1	68.3	53.1	0.0	0.79	7.6	11.1
08-Nov-21	0.23	0.31	0.30	0.20	0.06			7.6	6.9	73.9	68.2	53.2	0.0	0.71	7.5	10.8
09-Nov-21	0.26	0.36	0.35	0.23	0.06			7.6	6.9	73.9	68.2	53.2	0.0	0.71	7.5	10.9
10-Nov-21	0.25	0.40	0.63	0.27	0.06			7.6	6.9	73.8	68.2	53.1	0.0	0.73	7.5	10.8
11-Nov-21	0.24	0.40	1.26	0.20	0.06			7.7	6.9	73.8	68.2	53.2		0.71	7.5	10.6
12-Nov-21	0.23	0.39	0.77	0.19	0.06			7.6	6.9	73.8	68.2	53.2		0.78	7.5	10.7
13-Nov-21	0.22	0.38	0.33	0.21	0.09			8.0	6.9	74.1	68.4	53.2		0.76	7.5	10.6
14-Nov-21	0.22	0.36	0.14	0.21	0.13			8.0	7.0	74.5	68.7	53.3		0.78	7.6	10.6
15-Nov-21	1.73	0.95	0.18	0.87	0.17			8.3	7.0	80.6	72.9	57.7		0.81	7.6	10.8
16-Nov-21	1.68	0.58	0.28	1.51	0.17			8.3	7.0	83.5	77.2	60.4		0.72	7.6	10.7
17-Nov-21	1.09	0.52	0.27	0.67	0.17			8.3	7.0	82.1	75.7	59.7		0.70	7.6	10.4
18-Nov-21	0.68	0.48	1.23	0.00	0.17			0.0	7.0	80.3	73.9	59.0		0.70	7.7	10.0
19-Nov-21	0.69	0.48	1.19	0.00	0.17			0.0	8.4	80.2	73.8	58.6		0.65	7.7	9.7
20-Nov-21	0.69	0.48	0.22	0.00	0.15			0.0	8.3	80.2	73.8	58.2		1.43	7.8	10.1
21-Nov-21	0.69	0.48	0.21	0.00	0.18			0.0	8.3	80.2	73.8	58.0		1.14	7.8	10.6
22-Nov-21	0.69	0.48	0.19	0.00	0.60			8.1	6.9	80.2	73.8	57.8		1.28	7.9	11.0
23-Nov-21	0.69	0.48	0.19	0.13	1.04			8.0	8.2	80.2	73.8	57.5		1.28	7.9	10.9
24-Nov-21	0.69	0.48	0.17	0.44	0.52			8.0	7.0	80.2	73.8	56.1		1.61	7.9	11.3
25-Nov-21			0.18	0.37	0.60			8.1	7.3			57.3		1.56	7.9	11.1
26-Nov-21			0.19	0.29	0.73			8.0	7.0			52.3		1.82	7.9	10.9
27-Nov-21			0.21	0.12	1.50			7.1	7.0			34.0		2.01	7.9	10.8
28-Nov-21			0.23	0.12	1.50			7.3	6.7			48.9		1.97	7.9	10.8
29-Nov-21			0.22	0.17	0.75			7.2	6.8			45.2		1.92	7.9	10.9
30-Nov-21			0.23	0.12	0.21			7.1	6.8			42.3		1.93	7.9	10.9
Total	------	------	------	------	------			------	------	------	------	------	------	------	------	------
Average	0.52	0.40	0.40	0.25	0.33			6.7	7.1	76.8	70.7	53.5	0.0	1.06	7.7	10.8
Min	0.18	0.20	0.10	0.00	0.05			0.0	6.7	73.6	67.9	34.0	0.0	0.61	7.4	9.7
Max	1.73	0.95	1.26	1.51	1.50			8.3	8.4	83.5	77.2	60.4	0.0	2.01	7.9	11.3

Merritt Water System **Month:** Nov-21

UV System Information Sheet #3

Date	UV Dosing					UV Intensity					UV System Power				
	Voght VFD	Voght GE	Kengard	Fairley Park	Collettville	Voght VFD	Voght GE	Kengard	Fairley Park	Collettville	Voght VFD	Voght GE	Kengard	Fairley Park	Collettville
	mJ/cm2	mJ/cm2	mJ/cm2	mJ/cm2	mJ/cm2	W/m2	W/m2	W/m2	W/m2	W/m2	%	%	%	%	%
01-Nov-21	0.00	0.00	3.36	0.00	31.06	0.30	0.00	0.56	0.00	5.29	0.00	0.00	6.87	0.00	52.45
02-Nov-21	0.00	0.00	4.08	0.00	31.92	0.30	0.00	0.28	0.00	5.44	0.00	0.00	3.50	0.00	54.45
03-Nov-21	0.00	0.00	0.00	0.00	34.99	0.30	0.00	0.00	0.00	5.96	0.00	0.00	0.00	0.00	60.69
04-Nov-21	0.00	0.00	3.42	0.00	31.76	0.30	0.00	0.57	0.00	5.42	0.00	0.00	7.32	0.00	55.21
05-Nov-21	0.00	0.00	30.92	0.00	168.10	0.30	0.00	5.21	0.00	0.60	0.00	0.00	64.78	0.00	6.60
06-Nov-21	0.00	0.00	33.72	0.00	0.00	0.30	0.00	5.69	0.00	0.00	0.00	0.00	69.10	0.00	0.00
07-Nov-21	0.00	0.00	10.25	0.00	24.34	0.30	0.00	1.72	0.00	4.14	0.00	0.00	20.80	0.00	41.49
08-Nov-21	0.00	0.00	1.98	0.00	30.14	0.30	0.00	0.33	0.00	5.15	0.00	0.00	4.00	0.00	52.03
09-Nov-21	0.00	0.00	3.94	0.00	32.99	0.30	0.00	0.08	0.00	5.61	0.00	0.00	0.99	0.00	56.67
10-Nov-21	0.00	0.00	0.00	0.00	33.01	0.30	0.00	0.00	0.00	5.63	0.00	0.00	0.00	0.00	57.49
11-Nov-21	0.00	0.00	0.00	0.00	30.89	0.30	0.00	0.00	0.00	5.25	0.00	0.00	0.00	0.00	53.84
12-Nov-21	0.00	0.00	2.75	0.00	30.62	0.30	0.00	0.46	0.00	5.20	0.00	0.00	5.75	0.00	52.55
13-Nov-21	0.00	0.00	16.40	0.00	14.58	0.30	0.00	2.76	0.00	2.48	0.00	0.00	33.72	0.00	25.32
14-Nov-21	0.00	0.00	34.80	0.00	1.58	0.30	0.00	5.85	0.00	0.27	0.00	0.00	71.32	0.00	2.75
15-Nov-21	0.00	0.00	21.07	0.00	0.00	0.29	0.00	3.59	0.00	0.00	0.00	0.00	43.24	0.00	0.00
16-Nov-21	0.00	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17-Nov-21	0.00	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18-Nov-21	0.00	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19-Nov-21	0.00	0.00	21.25	0.00	0.00	0.29	0.00	3.07	0.00	0.00	0.00	0.00	36.30	0.00	0.00
20-Nov-21	0.00	0.00	23.87	0.00	0.00	0.29	0.00	3.33	0.00	0.00	0.00	0.00	40.54	0.00	0.00
21-Nov-21	0.00	0.00	28.27	0.00	0.00	0.29	0.00	4.59	0.00	0.00	0.00	0.00	55.66	0.00	0.00
22-Nov-21	0.00	0.00	59.43	0.00	0.00	0.29	0.00	6.88	0.00	0.00	0.00	0.00	82.72	0.00	0.00
23-Nov-21	0.00	0.00	44.21	0.00	0.00	0.29	0.00	5.22	0.00	0.00	0.00	0.00	62.62	0.00	0.00
24-Nov-21	0.00	0.00	38.56	0.00	0.00	0.29	0.00	6.53	0.00	0.00	0.00	0.00	78.03	0.00	0.00
25-Nov-21	0.00	0.00	25.21	0.00	0.00	0.29	0.00	4.24	0.00	0.00	0.00	0.00	50.81	0.00	0.00
26-Nov-21	0.00	0.00	19.48	0.00	0.00	0.29	0.00	3.24	0.00	0.00	0.00	0.00	39.24	0.00	0.00
27-Nov-21	0.00	0.00	15.65	0.00	0.00	0.29	0.00	2.24	0.00	0.00	0.00	0.00	26.93	0.00	0.00
28-Nov-21	0.00	0.00	13.45	0.00	0.00	0.29	0.00	2.24	0.00	0.00	0.00	0.00	26.87	0.00	0.00
29-Nov-21	0.00	0.00	14.93	0.00	0.00	0.29	0.00	2.51	0.00	0.00	0.00	0.00	30.59	0.00	0.00
30-Nov-21	0.00	0.00	12.68	0.00	0.00	0.29	0.00	2.13	0.00	0.00	0.00	0.00	25.46	0.00	0.00
Total	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Average	0.00	0.00	16.12	0.00	16.53	0.29	0.00	2.44	0.00	1.88	0.00	0.00	29.57	0.00	19.05
Min	0.00	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max	0.00	0.00	59.43	0.00	168.10	0.30	0.00	6.88	0.00	5.96	0.00	0.00	82.72	0.00	60.69

Merritt Water System **Month:** **Dec-21**

Well Water Totals Report

	Voght Park				Fairley		Collettville		Res Min Levels		City Totals			
Date	VFD Pump		GE Pump		Well Pump		Well Pump		Grimmett	Nicola	RainFall	Temp	Pmp Total	Flow Total
	Hrs	Cubic Meters	Hrs	Cubic Meters	Hrs	Cubic Meters	Hrs	Cubic Meters	%	%	mm	Mean C	Hours	Cubic Meters
01-Dec-21	0.00	0.0	0.00	0.0	2.50	465.3	5.5	926.0	85.8	76.8			8.0	1391
02-Dec-21	0.00	0.0	0.00	0.0	7.77	1543.6	5.5	926.0	85.9	75.3			13.3	2470
03-Dec-21	0.00	0.0	0.00	0.0	10.81	2185.0	5.5	926.0	85.9	75.1			16.3	3111
04-Dec-21	0.00	0.0	0.00	0.0	3.48	696.6	14.2	2406.0	85.9	75.3			17.7	3103
05-Dec-21	0.00	0.0	0.00	0.0	5.10	1020.4	7.9	1354.4	72.1	66.7			13.0	2375
06-Dec-21	0.00	0.0	0.00	0.0	7.27	1462.0	7.9	1356.5	63.4	61.3			15.2	2819
07-Dec-21	0.00	0.0	0.00	0.0	11.00	2237.6	5.2	891.8	66.5	63.5			16.2	3129
08-Dec-21	0.00	0.0	0.00	0.0	13.09	2650.1	6.5	1115.2	69.7	67.7			19.6	3765
09-Dec-21	0.00	0.0	0.00	0.0	13.49	2758.9	3.2	558.6	72.5	66.7	0.0	-7.2	16.7	3317
10-Dec-21	0.00	0.0	0.00	0.0	7.21	1446.9	7.5	1286.4	67.4	64.0	0.0	-8.9	14.7	2733
11-Dec-21	0.00	0.0	0.00	0.0	9.32	1885.4	7.5	1274.6	69.8	67.3	0.8	2.0	16.8	3160
12-Dec-21	0.00	0.0	0.00	0.0	0.00	0.0	18.8	3246.6	78.6	70.2	0.3	-0.7	18.8	3247
13-Dec-21	0.00	0.0	0.00	0.0	3.49	695.3	8.2	1410.4	69.8	65.2	0.0	-3.4	11.7	2106
14-Dec-21	0.00	0.0	0.00	0.0	20.67	4222.2	1.5	256.0	70.3	68.8	0.3	-5.2	22.2	4478
15-Dec-21	0.00	0.0	0.00	0.0	10.17	2066.8	8.8	1515.4	66.4	66.1	0.3	-8.1	19.0	3582
16-Dec-21	0.00	0.0	0.00	0.0	4.51	900.6	13.2	2269.8	69.3	64.7	0.0	-8.9	18.0	3170
17-Dec-21	0.00	0.0	0.00	0.0	6.06	1228.7	8.8	1512.9	75.7	70.8	0.0	-13.2	15.2	2742
18-Dec-21	0.00	0.0	0.00	0.0	0.00	0.0	16.5	2856.4	68.7	66.6	0.0	-7.2	16.8	2856
19-Dec-21	0.00	0.0	0.00	0.0	4.05	808.4	16.8	2891.2	71.6	65.8	0.0	-8.8	21.2	3700
20-Dec-21	0.00	0.0	0.00	0.0	6.85	1369.1	6.2	1051.5	71.0	66.1	0.0	-13.6	13.4	2421
21-Dec-21	0.00	0.0	0.00	0.0	11.38	2290.3	12.8	2202.7	69.8	66.7	0.0	-14.7	24.5	4493
22-Dec-21	0.00	0.0	0.00	0.0	2.42	486.4	13.0	2241.8	66.2	63.6	2.5	-1.2	15.7	2728
23-Dec-21	0.00	0.0	0.00	0.0	12.07	2436.3	7.4	1257.1	69.2	63.5	0.0	-6.2	19.8	3693
24-Dec-21	0.00	0.0	0.00	0.0	6.80	1360.1	7.1	1223.0	64.5	62.1	0.0	-9.4	14.2	2583
25-Dec-21	0.00	0.0	0.00	0.0	9.38	1875.5	9.8	1679.5	66.8	65.4	0.0	-16.7	19.5	3555
26-Dec-21	0.00	0.0	0.00	0.0	14.91	3077.1	0.0	0.0	68.7	66.1	0.0	-21.4	15.2	3079
27-Dec-21	0.00	0.0	0.00	0.0	20.40	4168.3	0.1	0.0	76.7	70.8	0.0	-29.1	20.8	4176
28-Dec-21	0.00	0.0	0.00	0.0	15.20	3074.8	4.7	814.1	79.6	71.3			20.2	3889
29-Dec-21	0.00	0.0	0.00	0.0	0.00	0.0	22.0	3787.5	80.7	73.7			22.3	3788
30-Dec-21	0.00	0.0	0.00	0.0	2.56	511.2	18.6	3198.8	81.4	73.8	0.2	-19.0	21.5	3710
31-Dec-21	0.00	0.0	0.00	0.0	8.12	1647.1	13.4	2322.2	83.4	75.1	0.3	-21.5	21.8	3969
Total	0.0	0	0.0	0	250.1	50570	284.1	48768	------	------	4.7	------	539	99338
Average	0.0	0	0.0	0	8.1	1631	9.2	1573	73.3	68.3	0.2	-12.0	17	3204
Min	0.0	0	0.0	0	0.0	0	0.0	2	63.4	61.3	0.0	-29.1	8	1391
Max	0.0	0	0.0	0	20.7	4222	22.0	3788	85.9	76.8	2.5	2.0	24	4493

Merritt Water System **Month:** Dec-21

Water System Information Sheet #2

Date	Production Well Turbidity					Production Well pH				Production Well Levels				Grimmett Reservoir		
	Voght VFD	Voght GE	Kengard	Fairley Park	Collettville	Voght UV	Kengard	Fairley Park	Collettville	Voght VFD	Voght GE	Fairley Park	Collettville	Chlorine Residual	PH	Water Temp
	ntu	ntu	ntu	ntu	ntu	pH	pH	pH	pH	Feet	Feet	Feet	Feet	Mg/l	------	°C
01-Dec-21			0.22	0.12	0.13			7.5	6.8			53.8		1.97	7.9	11.0
02-Dec-21			0.20	0.12	0.13			7.2	6.8			50.7		1.95	7.9	11.1
03-Dec-21			0.22	0.12	0.13			7.2	6.8			46.6		1.97	7.9	10.8
04-Dec-21			0.31	0.11	0.11			7.5	6.8			53.7		1.90	7.9	10.6
05-Dec-21			0.88	0.12	0.14			7.5	6.8			52.1		1.85	7.8	10.2
06-Dec-21			1.20	0.11	0.15			7.4	6.8			49.8		1.72	7.7	9.9
07-Dec-21			1.60	0.11	0.17			7.3	6.8			45.9		1.49	7.6	9.7
08-Dec-21	0.69	0.48	1.28	0.12	0.16			7.3	6.8	80.2	73.8	43.8	0.0	1.18	7.4	9.6
09-Dec-21	0.69	0.48	0.86	0.12	0.22			7.1	6.8	80.2	73.8	43.0	0.0	1.22	7.4	9.4
10-Dec-21	0.69	0.48	0.62	0.11	0.14			7.4	6.8	80.2	73.8	49.2	0.0	1.14	7.3	9.1
11-Dec-21	0.69	0.48	0.55	0.12	0.17			7.4	6.8	80.2	73.8	47.0	0.0	1.02	7.3	9.1
12-Dec-21	0.69	0.48	0.46	0.12	0.09			7.5	6.8	80.2	73.8	56.0	0.0	1.04	7.3	9.0
13-Dec-21	0.69	0.48	0.40	0.12	0.13			7.6	6.8	80.2	73.8	51.8	0.0	1.07	7.3	8.8
14-Dec-21	0.69	0.48	0.36	0.12	0.21			7.2	6.8	80.2	73.8	36.4	0.0	0.86	7.2	8.8
15-Dec-21			0.30	0.12	0.13			7.5	7.3			45.7		0.93	7.3	8.6
16-Dec-21	0.69	0.48	0.27	0.11	0.12			7.5	6.8	80.2	73.8	51.2	0.0	0.96	7.3	8.4
17-Dec-21	0.69	0.48	0.32	0.11	0.14			7.5	6.8	80.2	73.8	49.6	0.0	0.92	7.2	8.2
18-Dec-21	0.69	0.48	0.35	0.12	0.12			7.6	6.8	80.2	73.8	55.5	0.0	0.96	7.3	8.2
19-Dec-21	0.69	0.48	0.32	0.13	0.11			7.6	6.9	80.2	73.8	51.3	0.0	1.03	7.3	8.2
20-Dec-21	0.69	0.48	0.29	0.11	0.15			7.3	6.8	80.2	73.8	49.4	0.0	0.91	7.3	8.0
21-Dec-21	0.69	0.48	0.28	0.11	0.13			7.6	6.8	80.2	73.8	44.6	0.0	0.89	7.2	7.9
22-Dec-21	0.69	0.48	0.29	0.11	0.14			7.5	6.8	80.2	73.8	52.1	0.0	0.92	7.3	7.9
23-Dec-21			0.30	0.11	0.17			7.2	6.9			44.7		0.86	7.2	8.1
24-Dec-21			0.31	0.17	0.16			7.2	6.8			48.8		0.86	7.2	7.9
25-Dec-21			0.29	0.11	0.16			7.4	6.8			46.3		0.84	7.2	7.7
26-Dec-21			0.23	0.11	0.25			7.2	6.8			39.5		0.84	7.2	7.5
27-Dec-21			0.22	0.11	0.52			7.1	6.8			35.0		0.86	7.1	7.5
28-Dec-21			0.23	0.11	0.48			7.1	6.8			41.2		0.85	7.1	7.3
29-Dec-21			0.24	0.12	0.10			7.5	6.9			54.9		0.82	7.2	7.1
30-Dec-21			0.25	0.12	0.10			7.5	6.9			51.7		0.88	7.2	7.1
31-Dec-21			0.23	0.12	0.16			7.6	6.9			48.2		0.82	7.2	7.0
Total	------	------	------	------	------			------	------	------	------	------	------	------	------	------
Average	0.69	0.48	0.45	0.12	0.17			7.4	6.8	80.2	73.8	48.1	0.0	1.15	7.4	8.7
Min	0.69	0.48	0.20	0.11	0.09			7.1	6.8	80.2	73.8	35.0	0.0	0.82	7.1	7.0
Max	0.69	0.48	1.60	0.17	0.52			7.6	7.3	80.2	73.8	56.0	0.0	1.97	7.9	11.1

Merritt Water System **Month:** Dec-21

UV System Information Sheet #3

Date	UV Dosing					UV Intensity					UV System Power				
	Voght VFD	Voght GE	Kengard	Fairley Park	Collettville	Voght VFD	Voght GE	Kengard	Fairley Park	Collettville	Voght VFD	Voght GE	Kengard	Fairley Park	Collettville
	mJ/cm2	mJ/cm2	mJ/cm2	mJ/cm2	mJ/cm2	W/m2	W/m2	W/m2	W/m2	W/m2	%	%	%	%	%
01-Dec-21	0.00	0.00	12.63	0.00	0.00	0.29	0.00	2.12	0.00	0.00	0.00	0.00	25.64	0.00	0.00
02-Dec-21	0.00	0.00	17.34	0.00	0.00	0.29	0.00	2.92	0.00	0.00	0.00	0.00	35.10	0.00	0.00
03-Dec-21	0.00	0.00	9.26	6.94	0.00	0.29	0.00	1.56	1.19	0.00	0.00	0.00	18.53	11.88	0.00
04-Dec-21	0.00	0.00	8.92	5.94	0.00	0.29	0.00	1.51	1.02	0.00	0.00	0.00	18.04	9.97	0.00
05-Dec-21	0.00	0.00	0.00	8.75	0.00	0.29	0.00	0.00	1.50	0.00	0.00	0.00	0.00	14.59	0.00
06-Dec-21	0.00	0.00	0.00	12.40	0.00	0.29	0.00	0.00	2.13	0.00	0.00	0.00	0.00	21.29	0.00
07-Dec-21	0.00	0.00	0.00	18.72	0.00	0.29	0.00	0.00	3.21	0.00	0.00	0.00	0.00	32.47	0.00
08-Dec-21	0.00	0.00	0.00	22.27	0.00	0.29	0.00	0.00	3.82	0.00	0.00	0.00	0.00	38.16	0.00
09-Dec-21	0.00	0.00	0.00	22.96	0.00	0.29	0.00	0.00	3.94	0.00	0.00	0.00	0.00	39.79	0.00
10-Dec-21	0.00	0.00	0.00	12.29	0.00	0.29	0.00	0.00	2.11	0.00	0.00	0.00	0.00	21.20	0.00
11-Dec-21	0.00	0.00	0.00	15.90	0.00	0.29	0.00	0.00	2.73	0.00	0.00	0.00	0.00	27.29	0.00
12-Dec-21	0.00	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13-Dec-21	0.00	0.00	0.00	7.58	0.00	0.29	0.00	0.00	1.30	0.00	0.00	0.00	0.00	13.07	0.00
14-Dec-21	0.00	0.00	0.00	33.49	0.00	0.29	0.00	0.00	5.75	0.00	0.00	0.00	0.00	58.08	0.00
15-Dec-21	0.00	0.00	0.00	17.30	0.00	0.29	0.00	0.00	2.97	0.00	0.00	0.00	0.00	29.55	0.00
16-Dec-21	0.00	0.00	0.00	7.68	0.00	0.29	0.00	0.00	1.31	0.00	0.00	0.00	0.00	12.96	0.00
17-Dec-21	0.00	0.00	0.00	10.31	0.00	0.29	0.00	0.00	1.77	0.00	0.00	0.00	0.00	17.53	0.00
18-Dec-21	0.00	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19-Dec-21	0.00	0.00	0.00	7.78	0.00	0.29	0.00	0.00	1.33	0.00	0.00	0.00	0.00	13.00	0.00
20-Dec-21	0.00	0.00	0.00	10.88	0.00	0.29	0.00	0.00	1.87	0.00	0.00	0.00	0.00	18.60	0.00
21-Dec-21	0.00	0.00	0.00	19.41	0.00	0.29	0.00	0.00	3.33	0.00	0.00	0.00	0.00	33.13	0.00
22-Dec-21	0.00	0.00	0.00	5.89	0.00	0.29	0.00	0.00	1.01	0.00	0.00	0.00	0.00	10.10	0.00
23-Dec-21	0.00	0.00	0.00	18.80	0.00	0.29	0.00	0.00	3.22	0.00	0.00	0.00	0.00	32.48	0.00
24-Dec-21	0.00	0.00	0.00	11.61	0.00	0.29	0.00	0.00	1.99	0.00	0.00	0.00	0.00	20.03	0.00
25-Dec-21	0.00	0.00	0.00	15.98	0.00	0.29	0.00	0.00	2.74	0.00	0.00	0.00	0.00	27.32	0.00
26-Dec-21	0.00	0.00	0.00	27.14	0.00	0.29	0.00	0.00	4.65	0.00	0.00	0.00	0.00	45.98	0.00
27-Dec-21	0.00	0.00	0.00	34.76	0.00	0.29	0.00	0.00	5.97	0.00	0.00	0.00	0.00	59.31	0.00
28-Dec-21	0.00	0.00	0.00	24.18	0.00	0.29	0.00	0.00	4.15	0.00	0.00	0.00	0.00	42.03	0.00
29-Dec-21	0.00	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30-Dec-21	0.00	0.00	0.00	6.15	0.00	0.29	0.00	0.00	1.05	0.00	0.00	0.00	0.00	10.52	0.00
31-Dec-21	0.00	0.00	0.00	12.02	0.00	0.29	0.00	0.00	2.07	0.00	0.00	0.00	0.00	20.75	0.00
Total	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Average	0.00	0.00	1.55	12.81	0.00	0.29	0.00	0.26	2.20	0.00	0.00	0.00	3.14	21.97	0.00
Min	0.00	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max	0.00	0.00	17.34	34.76	0.00	0.29	0.00	2.92	5.97	0.00	0.00	0.00	35.10	59.31	0.00

Merritt Water System **Month:** Jan-21

Kengard Well Report

	Totals		Water Data								Well Levels			
Date	Well Run Time and Flow Total		Chlorine Residual (mg/L)			Turbidity (ntu)			Cond (uS/cm)	Water Temp ©	Production Well (Ft)		Observation Well (Ft)	
	Hrs	Cubic Meters	High	Low	Avg	High	Low	Avg	Avg	Avg	Min	Max	Min	Max
01-Jan-21	1.4	240.0	0.61	0.24	0.48	3.31	0.10	0.45	0.0	10.9	72.0	72.0	56.5	56.7
02-Jan-21	1.1	203.0	0.65	0.27	0.44	1.58	0.12	0.47	0.0	10.9	49.2	72.0	56.2	56.7
03-Jan-21	1.6	282.0	0.54	0.26	0.43	2.02	0.09	0.44	0.0	10.9	47.7	72.0	56.3	57.1
04-Jan-21	2.8	498.0	0.46	0.27	0.40	2.07	0.10	0.39	0.0	10.9	48.3	49.6	56.5	56.7
05-Jan-21	1.7	308.0	0.45	0.26	0.39	4.57	0.10	0.39	0.0	10.9	48.5	69.9	56.5	56.7
06-Jan-21	1.5	259.0	0.45	0.22	0.38	1.34	0.09	0.39	0.0	10.9	66.2	72.0	56.5	56.9
07-Jan-21	0.0	0.0	0.43	0.34	0.36	0.99	0.41	0.50	0.0	10.9	49.7	72.0	56.6	56.9
08-Jan-21	0.0	0.0	0.51	0.42	0.44	5.12	0.54	0.63	0.0	10.9	49.3	72.0	55.6	58.4
09-Jan-21	0.0	0.0	0.47	0.41	0.42	1.35	0.67	0.75	0.0	10.9	49.6	72.0	56.5	56.8
10-Jan-21	0.0	0.0	0.47	0.42	0.43	1.24	0.33	0.47	0.0	10.9	49.7	72.0	56.3	57.7
11-Jan-21	0.0	0.0	0.49	0.41	0.45	1.06	0.34	0.40	0.0	10.9	49.1	71.9	56.4	56.8
12-Jan-21	0.4	74.0	0.48	0.10	0.38	1.32	0.14	0.41	0.0	10.9	47.9	68.1	56.7	56.8
13-Jan-21	1.2	213.0	0.42	0.21	0.36	5.12	0.11	0.36	0.0	10.9	48.8	72.0	55.5	57.9
14-Jan-21	1.2	216.0	0.41	0.20	0.32	0.56	0.07	0.22	0.0	10.9	49.3	72.0	56.0	57.3
15-Jan-21	1.3	237.0	0.53	0.19	0.35	1.05	0.06	0.24	0.0	10.9	48.4	49.5	56.5	56.7
16-Jan-21	1.2	213.0	0.47	0.22	0.38	1.07	0.06	0.26	0.0	10.9	48.6	72.0	56.5	58.4
17-Jan-21	1.2	219.0	0.42	0.21	0.34	0.78	0.08	0.25	0.0	10.9	48.6	49.7	56.6	56.7
18-Jan-21	1.5	272.0	0.47	0.20	0.34	0.80	0.06	0.24	0.0	10.9	48.6	49.7	56.5	56.7
19-Jan-21	1.5	263.0	0.50	0.19	0.34	1.91	0.07	0.23	0.0	10.9	49.6	72.0	56.6	56.8
20-Jan-21	2.2	398.0	0.44	0.23	0.30	1.04	0.05	0.22	0.0	10.9	69.2	72.0	56.5	56.7
21-Jan-21	0.8	147.0	0.37	0.21	0.30	1.07	0.06	0.22	0.0	10.9	49.8	72.0	56.5	56.9
22-Jan-21	0.8	137.0	0.31	0.21	0.26	1.08	0.07	0.23	0.0	10.9	50.1	72.0	56.3	57.0
23-Jan-21	1.1	194.0	0.30	0.21	0.24	1.43	0.08	0.22	0.0	10.9	49.1	72.0	56.3	57.0
24-Jan-21	1.1	193.0	0.45	0.20	0.26	1.06	0.06	0.22	0.0	10.9	48.9	72.0	56.1	57.5
25-Jan-21	1.6	283.0	0.29	0.19	0.24	0.71	0.08	0.21	0.0	10.9	49.1	72.0	56.3	57.5
26-Jan-21	1.3	232.0	0.29	0.18	0.25	0.70	0.08	0.20	0.0	10.9	49.5	72.0	56.4	57.4
27-Jan-21	1.2	204.0	0.36	0.19	0.25	0.77	0.07	0.18	0.0	10.9	49.4	72.0	56.3	58.7
28-Jan-21	0.5	87.0	0.36	0.20	0.28	1.03	0.06	0.22	0.0	10.9	50.2	72.0	55.6	57.1
29-Jan-21	0.6	108.0	0.34	0.18	0.27	1.01	0.09	0.24	0.0	10.9	51.1	72.0	56.2	57.9
30-Jan-21	0.5	80.0	0.37	0.16	0.31	0.99	0.06	0.24	0.0	10.9	71.7	72.0	56.5	56.8
31-Jan-21	0.4	76.0	0.35	0.24	0.30	0.62	0.09	0.23	0.0	10.9	49.9	72.0	56.3	57.6
Total	31.8	5642	------	------	------	------	------	------	------	------	------	------	------	------
Average	1.0	182	0.43	0.24	0.35	1.57	0.14	0.33	0.0	10.9	51.8	68.9	56.3	57.2
Min	0.0	0	0.29	0.10	0.24	0.56	0.05	0.18	0.0	10.9	47.7	49.5	55.5	56.7
Max	2.8	498	0.65	0.42	0.48	5.12	0.67	0.75	0.0	10.9	72.0	72.0	56.7	58.7

Merritt Water System **Month:** **Feb-21**

Kengard Well Report

	Totals		Water Data								Well Levels			
Date	Well Run Time and Flow Total		Chlorine Residual (mg/L)			Turbidity (ntu)			Cond (uS/cm)	Water Temp ©	Production Well (FT)		Observation Well (FT)	
	Hrs	Cubic Meters	High	Low	Avg	High	Low	Avg	Avg	Avg	Min	Max	Min	Max
01-Feb-21	1.7	297.5	0.31	0.24	0.28	1.45	0.07	0.22	0.0	1.9	49.5	72.0	56.1	57.3
02-Feb-21	1.8	316.0	0.44	0.20	0.29	1.41	0.07	0.24	0.0	1.8	48.9	72.0	56.2	57.2
03-Feb-21	1.4	245.0	0.49	0.26	0.37	1.05	0.07	0.29	0.0	1.7	49.5	72.0	56.2	56.6
04-Feb-21	1.4	238.0	0.36	0.25	0.29	0.94	0.08	0.26	0.0	1.6	49.4	72.0	56.3	56.9
05-Feb-21	1.4	243.0	0.36	0.20	0.29	1.20	0.06	0.24	0.0	10.9	49.4	72.0	56.0	57.9
06-Feb-21	2.1	362.0	0.31	0.20	0.27	1.08	0.06	0.23	0.0	10.9	50.8	72.0	56.1	57.6
07-Feb-21	1.9	334.0	0.31	0.24	0.27	1.19	0.07	0.21	0.0	10.9	50.4	72.0	56.3	56.7
08-Feb-21	1.7	292.0	0.29	0.19	0.26	1.44	0.07	0.22	0.0	10.9	49.4	72.0	56.4	56.7
09-Feb-21	3.3	581.0	0.24	0.19	0.24	2.05	0.06	0.21	0.0	10.9	49.5	72.0	56.2	56.9
10-Feb-21	2.5	430.0	0.29	0.19	0.23	1.15	0.06	0.21	0.0	10.9	72.0	72.0	56.4	56.6
11-Feb-21	1.7	303.0	0.25	0.19	0.23	1.25	0.06	0.22	0.0	10.9	49.9	72.0	55.7	56.8
12-Feb-21	1.6	274.0	0.26	0.18	0.22	1.07	0.06	0.22	0.0	10.9	50.6	72.0	56.2	56.7
13-Feb-21	2.0	355.0	0.27	0.16	0.22	1.34	0.06	0.20	0.0	10.9	50.6	72.0	56.3	57.0
14-Feb-21	1.2	209.0	0.27	0.17	0.22	1.35	0.08	0.21	0.0	10.9	49.6	72.0	56.4	56.9
15-Feb-21	2.0	352.0	0.28	0.17	0.22	1.28	0.06	0.21	0.0	10.9	71.5	72.0	56.4	56.7
16-Feb-21	2.1	367.0	0.22	0.17	0.20	3.07	0.09	0.34	0.0	10.9	71.0	71.5	56.5	56.7
17-Feb-21	0.0	0.0	0.24	0.18	0.19	0.43	0.30	0.35	0.0	10.9	71.0	71.0	56.7	56.7
18-Feb-21	0.0	0.0	0.37	0.22	0.30	0.30	0.25	0.29	0.0	0.4	72.0	72.0	56.7	56.7
19-Feb-21	0.0	0.0	0.39	0.31	0.33	5.12	0.22	0.30	0.0	0.3	72.0	72.0	56.7	56.7
20-Feb-21	0.0	0.0	0.39	0.34	0.35	1.63	0.33	0.37	0.0	0.2	72.0	72.0	56.7	56.7
21-Feb-21	0.0	0.0	0.39	0.34	0.35	1.23	0.34	0.40	0.0	0.1	72.0	72.0	56.7	56.8
22-Feb-21	0.0	0.0	0.41	0.32	0.37	1.65	0.30	0.38	0.0	0.0	72.0	72.0	56.8	56.8
23-Feb-21	0.0	0.0	0.41	0.30	0.33	1.46	0.28	0.33	0.0	0.0	72.0	72.0	56.8	56.8
24-Feb-21	0.0	0.0	0.40	0.30	0.33	0.65	0.25	0.28	0.0	0.0	72.0	72.0	56.8	56.8
25-Feb-21	0.0	0.0	0.40	0.29	0.32	0.93	0.24	0.28	0.0	0.0	72.0	72.0	56.8	56.8
26-Feb-21	0.0	0.0	0.39	0.29	0.32	1.19	0.22	0.26	0.0	0.0	72.0	72.0	56.7	56.9
27-Feb-21	0.0	0.0	0.37	0.28	0.32	1.18	0.22	0.29	0.0	0.0	72.0	72.0	56.6	57.0
28-Feb-21	0.0	0.0	0.40	0.29	0.35	1.03	0.22	0.31	0.0	0.0	72.0	72.0	56.6	56.7
Total	29.7	5041	------	------	------	------	------	------	------	------	------	------	------	------
Average	1.1	180	0.34	0.24	0.28	1.40	0.15	0.27	0.0	5.3	61.6	71.9	56.4	56.9
Min	0.0	0	0.22	0.16	0.19	0.30	0.06	0.20	0.0	0.0	48.9	71.0	55.7	56.6
Max	3.3	581	0.49	0.34	0.37	5.12	0.34	0.40	0.0	10.9	72.0	72.0	56.8	57.9

Merritt Water System **Mar** **Month:** **Mar-21**

Kengard Well Report

	Totals		Water Data								Well Levels			
Date	Well Run Time and Flow Total		Chlorine Residual (mg/L)			Turbidity (ntu)			Cond (uS/cm)	Water Temp ©	Production Well (FT)		Observation Well (FT)	
	Hrs	Cubic Meters	High	Low	Avg	High	Low	Avg	Avg	Avg	Min	Max	Min	Max
01-Mar-21	0.0	0.0	0.38	0.29	0.31	1.53	0.26	0.35		0.0	72.0	72.0	56.6	56.7
02-Mar-21	0.0	0.0	0.41	0.36	0.36	1.68	0.31	0.39		0.0	72.0	72.0	56.6	56.7
03-Mar-21	0.0	0.0	0.43	0.32	0.37	1.57	0.30	0.42		0.0	63.9	63.9	56.6	56.7
04-Mar-21	0.0	0.0	0.41	0.30	0.35	1.57	0.28	0.30			63.4	63.9	56.7	56.7
05-Mar-21	0.0	0.0	0.40	0.29	0.33	1.94	0.26	0.30			62.9	63.4	56.7	56.7
06-Mar-21	0.0	0.0	0.37	0.30	0.31	1.13	0.25	0.28			62.5	62.9	56.7	56.8
07-Mar-21	0.0	0.0	0.38	0.29	0.34	1.13	0.24	0.26			62.0	62.5	56.7	56.8
08-Mar-21	0.0	0.0	0.38	0.12	0.26	5.12	0.23	2.13			61.5	62.0	56.7	56.7
09-Mar-21	0.0	0.0	0.41	0.29	0.33	5.12	4.99	5.10			61.0	61.5	56.7	56.8
10-Mar-21	0.0	0.0	0.42	0.31	0.37	5.12	0.49	2.01			60.6	61.0	56.7	56.8
11-Mar-21	0.0	0.0	0.40	0.31	0.34	1.60	0.29	0.38			60.1	60.6	56.7	56.7
12-Mar-21	0.0	0.0	0.39	0.05	0.20	5.12	0.24	0.82			50.1	72.0	56.0	57.8
13-Mar-21	0.0	0.0	0.20	0.08	0.14	1.35	0.79	0.93			50.8	51.3	56.6	56.7
14-Mar-21	0.0	0.0	0.25	0.20	0.20	1.63	0.87	1.05			50.9	72.0	56.1	57.1
15-Mar-21	0.0	0.0	0.27	0.25	0.26	1.26	0.52	0.75			51.0	72.0	56.3	57.0
16-Mar-21	1.0	180.0	0.25	0.10	0.20	5.12	0.17	0.52			50.1	51.7	56.5	56.7
17-Mar-21	0.0	0.0	0.20	0.15	0.15	1.47	0.75	1.05			51.0	72.0	56.2	57.2
18-Mar-21	0.0	0.0	0.20	0.19	0.20	2.17	1.16	1.33			51.5	72.0	56.1	57.2
19-Mar-21	0.0	0.0	0.19	0.18	0.19	5.12	0.37	0.96			51.2	72.0	56.5	57.2
20-Mar-21	0.0	0.0	0.18	0.17	0.18	3.88	0.36	0.40			50.8	51.2	56.7	57.0
21-Mar-21	0.0	0.0	0.17	0.16	0.17	1.21	0.32	0.36			51.0	72.0	56.5	57.0
22-Mar-21	0.0	0.0	0.16	0.15	0.16	0.89	0.27	0.29			50.9	72.0	56.5	57.2
23-Mar-21	0.5	90.0	0.15	0.10	0.13	1.86	0.20	0.37			49.9	72.0	56.4	57.0
24-Mar-21	0.0	0.0	0.16	0.11	0.11	1.52	0.50	0.61			50.9	50.9	56.7	57.0
25-Mar-21	1.8	324.0	0.17	0.07	0.11	2.13	0.17	0.49			18.8	72.0	54.0	58.4
26-Mar-21	1.0	180.0	0.10	0.07	0.07	1.35	0.19	0.53			50.0	72.0	56.0	57.5
27-Mar-21	1.0	180.0	0.12	0.07	0.09	1.73	0.19	0.66			51.0	72.0	56.5	57.4
28-Mar-21	1.2	216.0	0.09	0.07	0.07	1.87	0.22	0.67			50.0	72.0	56.0	56.7
29-Mar-21	1.5	270.0	0.11	0.09	0.09	2.10	0.23	0.61			49.2	50.7	56.4	56.7
30-Mar-21	1.5	270.0	0.12	0.07	0.09	3.40	0.22	0.55			49.6	72.0	56.2	57.0
31-Mar-21	1.5	270.0	0.14	0.07	0.08	2.03	0.21	0.54			49.8	72.0	56.2	58.5
Total	11.0	1980	------	------	------	------	------	------	------	------	------	------	------	------
Average	0.4	64	0.26	0.18	0.21	2.41	0.51	0.82	#DIV/0!	0.0	54.2	65.8	56.4	57.0
Min	0.0	0	0.09	0.05	0.07	0.89	0.17	0.26	0.0	0.0	18.8	50.7	54.0	56.7
Max	1.8	324	0.43	0.36	0.37	5.12	4.99	5.10	0.0	0.0	72.0	72.0	56.7	58.5

Merritt Water System **Month:** **Apr-21**

Kengard Well Report

	Totals		Water Data								Well Levels			
Date	Well Run Time and Flow Total		Chlorine Residual (mg/L)			Turbidity (ntu)			Cond (uS/cm)	Water Temp ©	Production Well (FT)		Observation Well (FT)	
	Hrs	Cubic Meters	High	Low	Avg	High	Low	Avg	Avg	Avg	Min	Max	Min	Max
01-Apr-21	2.3	414.0	0.15	0.10	0.11	1.93	0.21	0.53			49.6	50.9	56.3	56.6
02-Apr-21	1.3	234.0	0.15	0.10	0.11	5.12	0.23	0.52			49.7	50.8	56.4	56.6
03-Apr-21	1.0	180.0	0.15	0.10	0.11	1.69	0.23	0.50			49.8	50.8	56.4	56.7
04-Apr-21	1.0	180.0	0.15	0.10	0.11	1.19	0.22	0.51			49.7	50.8	56.5	56.7
05-Apr-21	1.0	180.0	0.16	0.11	0.12	0.96	0.24	0.53			49.8	50.8	56.4	56.7
06-Apr-21	1.6	288.0	0.17	0.11	0.13	5.12	0.22	0.50			49.7	50.8	56.4	56.6
07-Apr-21	1.3	234.0	0.11	0.09	0.11	1.27	0.21	0.43			49.7	50.8	56.4	56.6
08-Apr-21	1.3	234.0	0.09	0.08	0.09	1.22	0.22	0.37			49.7	50.8	56.4	56.6
09-Apr-21	1.4	252.0	0.09	0.07	0.07	1.18	0.20	0.40			50.0	72.0	56.2	57.2
10-Apr-21	1.7	306.0	0.12	0.07	0.08	1.58	0.20	0.48			49.9	72.0	56.4	57.7
11-Apr-21	1.2	216.0	0.12	0.05	0.08	1.71	0.22	0.51			50.3	72.0	56.2	58.2
12-Apr-21	1.5	270.0	0.05	0.03	0.05	1.85	0.22	0.54			51.0	72.0	56.4	57.2
13-Apr-21	1.5	270.0	0.41	0.01	0.07	5.12	0.25	0.67			50.5	72.0	56.3	57.1
14-Apr-21	1.4	252.0	0.21	0.08	0.17	5.12	0.25	0.75			50.3	72.0	55.9	58.1
15-Apr-21	2.0	360.0	0.98	0.00	0.39	5.12	0.34	2.57			51.9	72.0	56.3	58.2
16-Apr-21	2.7	486.0	0.58	0.35	0.49	5.12	0.10	2.13			56.2	72.0	56.4	56.7
17-Apr-21	2.0	360.0	0.35	0.25	0.31	1.65	0.03	0.50			51.1	72.0	56.1	57.6
18-Apr-21	2.0	360.0	0.25	0.20	0.24	2.11	0.04	0.46			50.8	72.0	55.9	58.5
19-Apr-21	2.3	414.0	0.21	0.18	0.19	1.29	0.05	0.42			50.9	72.0	56.0	57.7
20-Apr-21	2.7	486.0	0.44	0.21	0.30	2.16	0.05	0.39			50.7	72.0	55.9	58.0
21-Apr-21	1.0	180.0	0.50	0.39	0.44	1.91	0.05	0.32			51.1	72.0	56.3	58.2
22-Apr-21	0.6	108.0	0.45	0.40	0.43	5.12	0.06	0.43			50.8	72.0	56.4	57.2
23-Apr-21	0.6	108.0	2.05	0.20	0.34	5.12	0.06	0.51			50.7	72.0	55.9	57.2
24-Apr-21	0.0	0.0	0.33	0.22	0.26	2.34	0.55	0.96			50.8	72.0	56.2	57.6
25-Apr-21	0.6	108.0	0.41	0.13	0.23	2.45	0.08	0.72			72.0	72.0	56.7	56.8
26-Apr-21	1.0	180.0	0.13	0.11	0.13	2.04	0.05	0.55			50.9	72.0	56.5	56.9
27-Apr-21	1.0	180.0	0.11	0.05	0.07	1.66	0.05	0.32	0.0	0.0	49.8	50.9	56.6	57.0
28-Apr-21	0.2	36.0	0.05	0.05	0.05	5.12	0.05	1.34	0.0	0.0	49.9	72.0	56.5	57.2
29-Apr-21	9.8	1764.0	0.05	0.05	0.05	5.12	0.15	1.92	0.0	0.0	49.0	72.0	55.8	58.3
30-Apr-21	22.0	3960.0	0.90	0.05	0.19	1.19	0.09	0.16	0.0	0.0	48.9	72.0	55.4	56.0
Total	70.0	12600	------	------	------	------	------	------	------	------	------	------	------	------
Average	2.3	420	0.33	0.13	0.18	2.82	0.16	0.70	0.0	0.0	51.2	65.6	56.2	57.3
Min	0.0	0	0.05	0.00	0.05	0.96	0.03	0.16	0.0	0.0	48.9	50.8	55.4	56.0
Max	22.0	3960	2.05	0.40	0.49	5.12	0.55	2.57	0.0	0.0	72.0	72.0	56.7	58.5

Merritt Water System **Month:** **May-21**

Kengard Well Report

	Totals		Water Data								Well Levels			
Date	Well Run Time and Flow Total		Chlorine Residual (mg/L)			Turbidity (ntu)			Cond (uS/cm)	Water Temp ©	Production Well (FT)		Observation Well (FT)	
	Hrs	Cubic Meters	High	Low	Avg	High	Low	Avg	Avg	Avg	Min	Max	Min	Max
01-May-21	23.0	4140.0	0.51	0.35	0.44	1.47	0.09	0.14	0.0	0.0	49.1	72.0	55.6	57.1
02-May-21	23.0	4140.0	0.95	0.40	0.47	1.27	0.08	0.14	0.0	0.0	49.2	72.0	55.5	57.9
03-May-21	23.0	4140.0	0.78	0.50	0.65	1.34	0.07	0.12	0.0	0.0	49.5	50.5	56.1	56.3
04-May-21	23.0	4140.0	0.82	0.76	0.79	1.24	0.07	0.12	0.0	0.0	49.4	50.5	56.1	56.4
05-May-21	23.0	4140.0	0.86	0.82	0.84	1.51	0.06	0.11	0.0	0.0	49.4	72.0	55.7	56.6
06-May-21	23.0	4140.0	0.84	0.76	0.81	1.90	0.07	0.12	0.0	0.0	48.8	72.0	55.4	56.3
07-May-21	23.0	4140.0	0.81	0.76	0.77	1.67	0.06	0.10	0.0	0.0	48.9	50.0	55.6	56.0
08-May-21	23.0	4140.0	0.82	0.75	0.76	1.56	0.05	0.08	0.0	0.0	49.1	50.2	56.0	56.3
09-May-21	22.5	4050.0	0.75	0.73	0.75	1.66	0.04	0.07	0.0	0.0	49.3	50.4	56.2	56.5
10-May-21	23.0	4140.0	0.77	0.70	0.73	1.46	0.04	0.07	0.0	0.0	48.9	50.3	55.7	56.3
11-May-21	23.0	4140.0	0.78	0.70	0.72	1.57	0.04	0.07			48.8	72.0	55.6	56.2
12-May-21	23.0	4140.0	0.84	0.37	0.74	2.63	0.04	0.10	0.0	0.0	49.2	72.0	55.7	56.9
13-May-21	23.0	4140.0	0.82	0.74	0.78	1.42	0.08	0.13	0.0	0.0	49.5	72.0	56.0	56.8
14-May-21	23.0	4140.0	0.77	0.71	0.76	1.53	0.07	0.13	0.0	0.0	49.8	72.0	56.0	56.6
15-May-21	23.0	4140.0	0.77	0.64	0.73	1.42	0.08	0.13	0.0	0.0	48.4	72.0	55.9	56.6
16-May-21	23.0	4140.0	0.73	0.65	0.70	1.10	0.08	0.13	0.0	0.0	49.2	72.0	55.9	56.5
17-May-21	24.0	4320.0	0.71	0.62	0.67	1.22	0.08	0.13	0.0	0.0	49.6	72.0	55.7	56.4
18-May-21	23.0	4140.0	0.70	0.58	0.62	1.12	0.07	0.11	0.0	0.0	72.0	72.0	55.8	56.3
19-May-21	23.0	4140.0	0.70	0.55	0.60	1.15	0.06	0.11	0.0	0.0	72.0	72.0	56.1	56.7
20-May-21	23.0	4140.0	0.69	0.55	0.59	1.62	0.07	0.11	0.0	0.0	72.0	72.0	56.1	56.6
21-May-21	23.0	4140.0	0.70	0.53	0.58	1.20	0.07	0.10	0.0	0.0	72.0	72.0	56.1	56.4
22-May-21	23.0	4140.0	0.73	0.51	0.55	1.51	0.07	0.11	0.0	0.0	72.0	72.0	56.0	56.4
23-May-21	23.0	4140.0	0.67	0.51	0.53	1.68	0.08	0.12	0.0	0.0	72.0	72.0	56.0	56.5
24-May-21	23.0	4140.0	0.65	0.50	0.51	1.31	0.08	0.11	0.0	0.0	72.0	72.0	55.9	56.5
25-May-21	23.0	4140.0	0.66	0.47	0.50	1.37	0.08	0.12	0.0	0.0	72.0	72.0	56.0	56.6
26-May-21	6.8	1224.0	0.48	0.09	0.39	5.12	0.08	0.38	0.0	0.0	72.0	72.0	56.0	57.0
27-May-21	0.0	0.0	0.48	0.24	0.37	2.33	0.63	0.99	0.0	0.0	72.0	72.0	56.4	57.3
28-May-21	0.0	0.0	0.55	0.40	0.48	5.12	0.57	1.37	0.0	0.0	72.0	72.0	56.8	57.4
29-May-21	0.0	0.0	0.50	0.41	0.48	2.44	0.54	0.71	0.0	0.0	72.0	72.0	56.4	57.3
30-May-21	0.0	0.0	0.45	0.40	0.44	5.12	0.53	0.65	0.0	0.0	72.0	72.0	56.4	57.2
31-May-21	0.0	0.0	0.59	0.07	0.43	5.12	0.51	2.45	0.0	0.0	72.0	72.0	56.8	59.4
Total	582.3	104814	------	------	------	------	------	------	------	------	------	------	------	------
Average	18.8	3381	0.71	0.54	0.62	2.01	0.15	0.30	0.0	0.0	59.5	67.8	56.0	56.7
Min	0.0	0	0.45	0.07	0.37	1.10	0.04	0.07	0.0	0.0	48.4	50.0	55.4	56.0
Max	24.0	4320	0.95	0.82	0.84	5.12	0.63	2.45	0.0	0.0	72.0	72.0	56.8	59.4

Merritt Water System **Month:** **Jun-21**

Kengard Well Report

	Totals		Water Data								Well Levels			
Date	Well Run Time and Flow Total		Chlorine Residual (mg/L)			Turbidity (ntu)			Cond (uS/cm)	Water Temp ©	Production Well (FT)		Observation Well (FT)	
	Hrs	Cubic Meters	High	Low	Avg	High	Low	Avg	Avg	Avg	Min	Max	Min	Max
01-Jun-21	4.0	720.0	1.14	0.52	0.71	5.12	0.16	1.79	0.0	0.0	72.0	72.0	56.4	57.1
02-Jun-21	0.0	0.0	1.01	0.28	0.62	5.12	0.26	0.94	0.0	0.0	72.0	72.0	56.4	57.8
03-Jun-21	0.0	0.0	0.56	0.43	0.48	5.12	1.53	1.97	0.0	0.0	72.0	72.0	56.9	57.2
04-Jun-21	0.0	0.0	0.61	0.37	0.48	2.43	0.61	1.09	0.0	0.0	72.0	72.0	56.5	57.4
05-Jun-21	0.0	0.0	0.63	0.55	0.57	0.92	0.54	0.61	0.0	0.0	72.0	72.0	56.4	57.4
06-Jun-21	0.0	0.0	0.64	0.53	0.57	1.32	0.45	0.56	0.0	0.0	72.0	72.0	56.7	57.6
07-Jun-21	0.0	0.0	0.62	0.52	0.53	1.19	0.31	0.37	0.0	0.0	72.0	72.0	56.7	56.9
08-Jun-21	0.3	54.0	1.22	0.31	0.71	5.12	0.08	0.56	0.0	0.0	72.0	72.0	56.4	57.3
09-Jun-21	0.0	0.0	1.04	0.39	0.59	2.70	1.07	1.26	0.0	0.0	72.0	72.0	56.4	57.2
10-Jun-21	0.0	0.0	0.65	0.51	0.56	1.88	1.21	1.34	0.0	0.0	72.0	72.0	56.4	57.3
11-Jun-21	0.0	0.0	0.61	0.45	0.51	1.48	0.44	0.85	0.0	0.0	72.0	72.0	56.3	57.0
12-Jun-21	0.0	0.0	0.56	0.45	0.50	1.27	0.43	0.50	0.0	0.0	72.0	72.0	56.6	57.4
13-Jun-21	0.0	0.0	0.59	0.45	0.46	0.96	0.45	0.49	0.0	0.0	72.0	72.0	56.8	57.8
14-Jun-21	0.0	0.0	0.52	0.45	0.46	1.10	0.41	0.47	0.0	0.0	72.0	72.0	56.9	57.8
15-Jun-21	0.2	36.0	1.00	0.28	0.63	4.49	0.11	0.57	0.0	0.0	72.0	72.0	56.9	57.8
16-Jun-21	0.0	0.0	1.06	0.44	0.75	1.87	0.83	1.04	0.0	0.0	72.0	72.0	56.6	58.2
17-Jun-21	0.0	0.0	2.05	0.02	0.72	5.12	1.15	1.24	0.0	0.0	72.0	72.0	56.4	58.8
18-Jun-21	0.0	0.0	0.81	0.60	0.70	1.89	0.50	0.89	0.0	0.0	72.0	72.0	56.4	58.1
19-Jun-21	0.0	0.0	0.65	0.60	0.62	1.91	0.47	0.51	0.0	0.0	72.0	72.0	56.2	58.9
20-Jun-21	0.0	0.0	0.71	0.60	0.63	1.51	0.46	0.50	0.0	0.0	72.0	72.0	56.3	58.3
21-Jun-21	0.0	0.0	0.75	0.60	0.65	1.77	0.44	0.49	0.0	0.0	72.0	72.0	56.3	58.4
22-Jun-21	0.0	0.0	0.81	0.65	0.71	1.24	0.43	0.49	0.0	0.0	72.0	72.0	56.2	57.8
23-Jun-21	0.0	0.0	0.77	0.65	0.69	1.77	0.42	0.47	0.0	0.0	72.0	72.0	56.3	58.6
24-Jun-21	0.0	0.0	0.83	0.66	0.71	2.21	0.26	0.38	0.0	0.0	72.0	72.0	56.2	57.0
25-Jun-21	0.0	0.0	0.82	0.66	0.70	1.78	0.22	0.28	0.0	0.0	72.0	72.0	56.2	57.8
26-Jun-21	0.0	0.0	0.83	0.67	0.70	0.99	0.22	0.27	0.0	0.0	72.0	72.0	56.1	56.9
27-Jun-21	0.0	0.0	0.80	0.66	0.70	1.24	0.22	0.27	0.0	0.0	72.0	72.0	56.1	57.2
28-Jun-21	1.2	216.0	0.76	0.06	0.68	5.12	0.18	0.33	0.0	0.0	72.0	72.0	56.0	57.2
29-Jun-21	8.6	1548.0	0.72	0.10	0.18	1.41	0.10	0.38	0.0	0.0	72.0	72.0	55.6	56.1
30-Jun-21	0.0	0.0	0.27	0.21	0.22	2.28	0.83	1.05	0.0	0.0	72.0	72.0	56.0	56.4
Total	14.3	2574	------	------	------	------	------	------	------	------	------	------	------	------
Average	0.5	86	0.80	0.46	0.59	2.41	0.49	0.73	0.0	0.0	72.0	72.0	56.4	57.6
Min	0.0	0	0.27	0.02	0.18	0.92	0.08	0.27	0.0	0.0	72.0	72.0	55.6	56.1
Max	8.6	1548	2.05	0.67	0.75	5.12	1.53	1.97	0.0	0.0	72.0	72.0	56.9	58.9

Merritt Water System **Month:** **Jul-21**

Kengard Well Report

	Totals		Water Data								Well Levels			
Date	Well Run Time and Flow Total		Chlorine Residual (mg/L)			Turbidity (ntu)			Cond (uS/cm)	Water Temp ©	Production Well (FT)		Observation Well (FT)	
	Hrs	Cubic Meters	High	Low	Avg	High	Low	Avg	Avg	Avg	Min	Max	Min	Max
01-Jul-21	0.0	0.0	0.30	0.25	0.26	5.12	1.17	1.45	0.0	0.0	72.0	72.0	56.3	56.9
02-Jul-21	0.0	0.0	0.34	0.29	0.30	5.12	1.50	1.61	0.0	0.0	51.9	72.0	56.4	56.7
03-Jul-21	0.0	0.0	0.37	0.31	0.35	2.82	1.34	1.49	0.0	0.0	53.2	53.3	56.4	56.6
04-Jul-21	0.0	0.0	0.43	0.32	0.35	5.12	0.55	0.90	0.0	0.0	53.1	53.2	56.4	57.2
05-Jul-21	0.0	0.0	0.48	0.40	0.42	2.01	0.53	0.59	0.0	0.0	52.8	53.2	56.1	56.4
06-Jul-21	0.0	0.0	0.52	0.47	0.47	2.12	0.50	0.58			52.6	52.8	56.1	56.4
07-Jul-21	0.0	0.0	0.55	0.50	0.51	3.45	0.48	0.55	0.0	0.0	52.6	53.2	56.3	56.5
08-Jul-21	0.0	0.0	0.58	0.47	0.51	1.65	0.47	0.53	0.0	0.0	52.4	53.1	56.2	56.6
09-Jul-21	0.0	0.0	0.61	0.51	0.56	1.65	0.45	0.52	0.0	0.0	52.3	52.5	56.1	56.3
10-Jul-21	0.0	0.0	0.63	0.52	0.54	1.30	0.44	0.49	0.0	0.0	51.9	52.4	56.0	56.4
11-Jul-21	0.0	0.0	0.64	0.54	0.56	1.66	0.41	0.47	0.0	0.0	52.0	52.3	56.4	56.5
12-Jul-21	0.0	0.0	0.65	0.55	0.57	1.98	0.38	0.45	0.0	0.0	50.8	52.6	56.0	56.7
13-Jul-21	0.0	0.0	0.67	0.57	0.58	1.73	0.37	0.44	0.0	0.0	50.8	51.1	56.0	56.4
14-Jul-21	0.0	0.0	0.68	0.55	0.58	1.89	0.36	0.43	0.0	0.0	50.8	51.1	56.1	56.6
15-Jul-21	0.0	0.0	0.71	0.57	0.61	2.49	0.34	0.41	0.0	0.0	50.7	51.0	56.0	56.3
16-Jul-21	0.0	0.0	0.71	0.56	0.59	1.81	0.34	0.40	0.0	0.0	51.0	51.1	56.2	56.6
17-Jul-21	0.0	0.0	0.68	0.56	0.60	1.94	0.34	0.38	0.0	0.0	50.9	51.1	56.0	56.5
18-Jul-21	0.0	0.0	0.73	0.58	0.61	1.45	0.32	0.37	0.0	0.0	50.8	51.2	55.9	56.7
19-Jul-21	0.0	0.0	0.73	0.57	0.60	1.62	0.30	0.36	0.0	0.0	51.1	51.3	56.3	56.4
20-Jul-21	0.0	0.0	0.74	0.57	0.61	1.96	0.29	0.36	0.0	0.0	51.1	51.3	56.3	56.5
21-Jul-21	0.0	0.0	0.74	0.58	0.61	3.39	0.29	0.35	0.0	0.0	50.9	51.4	56.1	56.5
22-Jul-21	15.2	2736.0	0.60	0.02	0.35	2.68	0.12	0.22	0.0	0.0	49.2	50.9	55.4	56.7
23-Jul-21	22.5	4050.0	0.97	0.08	0.51	0.86	0.11	0.13	0.0	0.0	49.1	50.2	55.3	55.7
24-Jul-21	24.0	4320.0	0.91	0.43	0.66	1.19	0.10	0.13	0.0	0.0	49.4	49.8	55.5	55.8
25-Jul-21	22.7	4086.0	0.79	0.37	0.56	1.25	0.10	0.13	0.0	0.0	49.6	50.7	55.7	56.1
26-Jul-21	24.0	4320.0	0.71	0.36	0.52	1.08	0.10	0.12	0.0	0.0	49.6	50.0	55.7	56.1
27-Jul-21	24.0	4320.0	0.95	0.40	0.70	1.20	0.10	0.13	0.0	0.0	49.6	50.0	55.7	56.2
28-Jul-21	23.0	4140.0	1.19	0.87	0.97	1.05	0.09	0.13	0.0	0.0	49.7	50.7	55.7	56.0
29-Jul-21	24.0	4320.0	1.25	0.99	1.03	1.08	0.10	0.12	0.0	0.0	49.2	50.0	55.3	55.8
30-Jul-21	24.0	4320.0	1.43	0.79	1.08	1.24	0.10	0.13	0.0	0.0	49.1	49.5	55.2	55.4
31-Jul-21	24.0	4320.0	1.37	1.10	1.16	1.69	0.10	0.13	0.0	0.0	49.0	49.6	55.3	55.7
Total	227.4	40932	------	------	------	------	------	------	------	------	------	------	------	------
Average	7.3	1320	0.73	0.50	0.59	2.12	0.39	0.47	0.0	0.0	51.6	52.7	55.9	56.4
Min	0.0	0	0.30	0.02	0.26	0.86	0.09	0.12	0.0	0.0	49.0	49.5	55.2	55.4
Max	24.0	4320	1.43	1.10	1.16	5.12	1.50	1.61	0.0	0.0	72.0	72.0	56.4	57.2

Merritt Water System **Month:** **Aug-21**

Kengard Well Report

	Totals		Water Data								Well Levels			
Date	Well Run Time and Flow Total		Chlorine Residual (mg/L)			Turbidity (ntu)			Cond (uS/cm)	Water Temp ©	Production Well (FT)		Observation Well (FT)	
	Hrs	Cubic Meters	High	Low	Avg	High	Low	Avg	Avg	Avg	Min	Max	Min	Max
01-Aug-21	17.7	3186.0	1.39	1.07	1.19	1.69	0.09	0.15	0.0	0.0	49.4	50.6	55.5	55.9
02-Aug-21	21.5	3870.0	1.41	1.19	1.23	1.41	0.10	0.15	0.0	0.0	49.2	50.7	55.3	56.0
03-Aug-21	22.9	4122.0	1.50	1.18	1.24	1.78	0.11	0.14	0.0	0.0	49.1	50.2	55.2	55.6
04-Aug-21	13.2	2376.0	1.45	0.06	1.16	1.70	0.12	0.21	0.0	0.0	49.5	50.9	55.5	56.1
05-Aug-21	1.8	324.0	1.29	0.81	1.12	1.49	0.14	0.47	0.0	0.0	49.9	50.9	55.7	56.1
06-Aug-21	13.8	2484.0	1.23	0.76	1.02	1.64	0.14	0.42	0.0	0.0	49.2	50.5	55.2	56.0
07-Aug-21	21.9	3942.0	1.09	0.80	0.90	1.21	0.13	0.16	0.0	0.0	49.0	50.2	55.1	55.7
08-Aug-21	21.9	3942.0	1.42	0.89	0.97	1.31	0.12	0.15	0.0	0.0	49.3	50.5	55.3	55.8
09-Aug-21	22.0	3960.0	1.40	0.94	0.99	1.11	0.13	0.15	0.0	0.0	49.4	50.5	55.4	55.7
10-Aug-21	21.9	3942.0	1.17	0.92	0.99	1.01	0.13	0.16	0.0	0.0	49.1	50.6	55.1	55.8
11-Aug-21	13.0	2340.0	1.36	0.89	1.02	1.29	0.13	0.22	0.0	0.0	49.0	50.4	55.1	56.4
12-Aug-21	11.6	2088.0	2.05	0.47	0.94	1.79	0.16	0.40	0.0	0.0	49.5	50.5	55.6	56.7
13-Aug-21	21.3	3834.0	0.70	0.47	0.50	1.58	0.14	0.18	0.0	0.0	49.5	50.7	55.4	57.0
14-Aug-21	22.0	3960.0	0.71	0.50	0.53	1.03	0.14	0.17	0.0	0.0	49.4	50.4	55.4	57.7
15-Aug-21	21.2	3816.0	0.71	0.51	0.55	1.43	0.15	0.19	0.0	0.0	49.0	50.6	55.4	58.0
16-Aug-21	20.8	3744.0	0.69	0.52	0.53	1.60	0.14	0.18	0.0	0.0	48.9	49.9	55.1	57.6
17-Aug-21	20.9	3762.0	0.71	0.49	0.55	1.58	0.14	0.17	0.0	0.0	49.0	50.1	55.2	58.3
18-Aug-21	24.0	4320.0	0.70	0.60	0.62	1.22	0.14	0.17	0.0	0.0	49.3	49.7	55.4	58.1
19-Aug-21	22.9	4122.0	0.75	0.57	0.64	1.64	0.15	0.18	0.0	0.0	49.4	50.4	55.7	58.3
20-Aug-21	18.9	3402.0	0.79	0.55	0.61	1.10	0.15	0.19	0.0	0.0	49.4	50.7	55.9	58.9
21-Aug-21	24.0	4320.0	0.80	0.06	0.57	1.63	0.15	0.18	0.0	0.0	49.6	49.9	56.3	59.8
22-Aug-21	24.0	4320.0	0.79	0.58	0.61	0.67	0.15	0.17	0.0	0.0	49.6	50.0	56.8	60.1
23-Aug-21	12.7	2286.0	0.80	0.48	0.61	1.50	0.15	0.25	0.0	0.0	49.7	51.1	56.6	60.4
24-Aug-21	9.7	1746.0	1.58	0.57	0.71	0.95	0.18	0.42	0.0	0.0	49.3	51.2	55.7	60.3
25-Aug-21	20.4	3672.0	0.81	0.54	0.60	1.21	0.17	0.20	0.0	0.0	49.2	50.5	56.1	59.6
26-Aug-21	21.9	3942.0	0.81	0.60	0.65	0.91	0.17	0.20	0.0	0.0	49.5	50.7	56.2	59.6
27-Aug-21	21.9	3942.0	0.85	0.60	0.69	0.67	0.16	0.19	0.0	0.0	49.6	50.7	56.2	59.8
28-Aug-21	21.9	3942.0	1.05	0.77	0.81	1.15	0.17	0.20	0.0	0.0	49.1	50.8	56.7	61.5
29-Aug-21	21.9	3942.0	1.05	0.74	0.80	0.60	0.17	0.21	0.0	0.0	48.9	50.1	56.4	60.5
30-Aug-21	21.9	3942.0	1.08	0.75	0.82	0.87	0.17	0.21	0.0	0.0	48.9	50.0	55.3	60.6
31-Aug-21	21.9	3942.0	1.10	0.78	0.84	1.34	0.18	0.21	0.0	0.0	49.4	50.6	55.7	61.9
Total	597.5	107532	------	------	------	------	------	------	------	------	------	------	------	------
Average	19.3	3469	1.07	0.67	0.81	1.29	0.14	0.21	0.0	0.0	49.3	50.5	55.7	58.1
Min	1.8	324	0.69	0.06	0.50	0.60	0.09	0.14	0.0	0.0	48.9	49.7	55.1	55.6
Max	24.0	4320	2.05	1.19	1.24	1.79	0.18	0.47	0.0	0.0	49.9	51.2	56.8	61.9

Merritt Water System **Month:** **Sep-21**

Kengard Well Report

	Totals		Water Data								Well Levels			
Date	Well Run Time and Flow Total		Chlorine Residual (mg/L)			Turbidity (ntu)			Cond (uS/cm)	Water Temp ©	Production Well (FT)		Observation Well (FT)	
	Hrs	Cubic Meters	High	Low	Avg	High	Low	Avg	Avg	Avg	Min	Max	Min	Max
01-Sep-21	21.9	3942.0	1.12	0.79	0.85	0.49	0.18	0.21	0.0	0.0	49.5	50.8	55.9	62.7
02-Sep-21	21.9	3942.0	1.13	0.80	0.85	0.99	0.18	0.22	0.0	0.0	49.4	50.6	56.9	61.1
03-Sep-21	21.9	3942.0	1.14	0.77	0.87	0.74	0.19	0.22	0.0	0.0	47.6	50.8	55.5	62.4
04-Sep-21	21.9	3942.0	1.17	0.78	0.87	2.11	0.19	0.22	0.0	0.0	49.0	50.2	55.1	62.4
05-Sep-21	21.9	3942.0	1.18	0.81	0.88	1.41	0.19	0.22	0.0	0.0	49.1	50.4	57.0	63.1
06-Sep-21	21.9	3942.0	1.17	0.82	0.88	1.48	0.20	0.23	0.0	0.0	49.7	50.8	57.8	63.3
07-Sep-21	21.9	3942.0	1.17	0.81	0.87	0.55	0.20	0.23	0.0	0.0	0.0	50.9	57.5	63.2
08-Sep-21	21.9	3942.0	1.18	0.81	0.87	1.52	0.21	0.24	0.0	0.0	49.8	50.9	56.5	63.0
09-Sep-21	21.9	3942.0	1.21	0.80	0.87	0.43	0.21	0.24	0.0	0.0	49.8	51.0	56.1	64.1
10-Sep-21	21.9	3942.0	1.22	0.80	0.89	1.05	0.21	0.25	0.0	0.0	49.8	51.0	56.5	65.9
11-Sep-21	21.9	3942.0	1.21	0.80	0.87	0.65	0.22	0.25	0.0	0.0	49.7	50.9	57.7	64.1
12-Sep-21	21.9	3942.0	1.22	0.80	0.88	3.29	0.23	0.27	0.0	0.0	49.6	50.8	56.9	65.4
13-Sep-21	21.9	3942.0	1.24	0.79	0.89	5.12	0.09	0.30	0.0	0.0	37.9	50.8	57.4	63.1
14-Sep-21	21.4	3852.0	1.27	0.83	0.90	1.14	0.08	0.25	0.0	0.0	27.4	49.7	56.9	63.1
15-Sep-21	5.9	1062.0	1.32	0.79	0.99	2.22	0.10	0.47	0.0	0.0	21.9	29.9	56.9	63.2
16-Sep-21	21.9	3942.0	1.31	0.83	0.93	0.93	0.09	0.23	0.0	0.0	19.8	26.3	56.7	63.2
17-Sep-21	21.9	3942.0	1.25	0.79	0.89	0.90	0.10	0.31	0.0	0.0	25.8	35.0	58.3	64.8
18-Sep-21	21.9	3942.0	1.29	0.79	0.91	1.20	0.10	0.32	0.0	0.0	27.1	32.0	59.6	65.1
19-Sep-21	21.9	3942.0	1.32	0.83	0.93	1.52	0.08	0.29	0.0	0.0	27.7	34.7	56.9	65.1
20-Sep-21	21.9	3942.0	1.32	0.80	0.94	1.43	0.06	0.24	0.0	0.0	31.2	51.2	59.2	68.8
21-Sep-21	21.9	3942.0	1.36	0.86	0.96	1.69	0.06	0.23	0.0	0.0	50.2	51.3	58.5	66.9
22-Sep-21	21.9	3942.0	1.38	0.84	0.96	1.50	0.06	0.23	0.0	0.0	50.2	51.4	58.5	68.4
23-Sep-21	21.9	3942.0	1.37	0.87	0.94	1.31	0.06	0.22	0.0	0.0	50.4	51.5	59.4	67.7
24-Sep-21	17.2	3096.0												
25-Sep-21	11.5	2070.0												
26-Sep-21	9.1	1638.0												
27-Sep-21	10.6	1908.0												
28-Sep-21	7.5	1350.0												
29-Sep-21	0.2	36.0												
30-Sep-21	1.6	288.0												
Total	544.9	98082	------	------	------	------	------	------	------	------	------	------	------	------
Average	18.2	3269	1.24	0.81	0.90	1.46	0.14	0.26	0.0	0.0	39.7	46.7	57.3	64.4
Min	0.2	36	1.12	0.77	0.85	0.43	0.06	0.21	0.0	0.0	0.0	26.3	55.1	61.1
Max	21.9	3942	1.38	0.87	0.99	5.12	0.23	0.47	0.0	0.0	50.4	51.5	59.6	68.8

Merritt Water System **Month:** **Oct-21**

Kengard Well Report

	Totals		Water Data								Well Levels			
Date	Well Run Time and Flow Total		Chlorine Residual (mg/L)			Turbidity (ntu)			Cond (uS/cm)	Water Temp ©	Production Well (FT)		Observation Well (FT)	
	Hrs	Cubic Meters	High	Low	Avg	High	Low	Avg	Avg	Avg	Min	Max	Min	Max
01-Oct-21	1.2	228.0	0.23	0.13	0.15	1.58	0.07	0.63	0.0	0.0	52.0	54.6	59.7	66.7
02-Oct-21	1.0	190.0	0.21	0.11	0.14	4.39	0.07	0.67	0.0	0.0	52.2	54.1	60.4	65.6
03-Oct-21	0.8	152.0	0.19	0.09	0.13	4.22	0.08	0.69	0.0	0.0	51.7	52.7	57.5	64.4
04-Oct-21	0.8	152.0	0.22	0.09	0.12	5.12	0.08	0.71	0.0	0.0	51.8	52.7	57.6	61.7
05-Oct-21	0.8	152.0	1.39	0.07	0.59	5.12	0.08	0.78	0.0	0.0	51.8	52.9	56.3	69.3
06-Oct-21	0.8	152.0	1.40	0.94	1.13	2.14	0.17	0.80			51.9	52.9	57.8	61.6
07-Oct-21	0.8	152.0	1.53	0.76	1.10	1.97	0.16	0.80	0.0	0.0	51.8	52.9	57.0	60.8
08-Oct-21	0.8	152.0	1.58	0.93	1.20	5.12	0.18	0.72	0.0	0.0	51.8	52.9	56.9	58.2
09-Oct-21	0.8	152.0	1.67	1.10	1.30	1.15	0.08	0.55	0.0	0.0	51.8	52.9	56.5	57.8
10-Oct-21	0.8	152.0	1.67	1.10	1.34	1.87	0.10	0.52	0.0	0.0	51.7	53.0	56.6	61.1
11-Oct-21	1.0	190.0	1.63	1.02	1.35	1.62	0.07	0.50	0.0	0.0	51.8	53.1	57.4	67.4
12-Oct-21	1.2	228.0	1.95	1.06	1.44	1.42	0.09	0.51	0.0	0.0	51.7	65.2	58.6	66.3
13-Oct-21	0.7	133.0	1.80	1.10	1.41	1.09	0.09	0.54	0.0	0.0	51.6	69.8	56.2	70.9
14-Oct-21	0.8	152.0	1.98	1.10	1.51	1.31	0.10	0.57	0.0	0.0	51.9	72.0	59.0	72.0
15-Oct-21	0.9	171.0	1.74	1.08	1.44	1.53	0.08	0.55	0.0	0.0	52.3	72.0	63.4	72.0
16-Oct-21	0.7	133.0	2.01	1.06	1.45	1.24	0.10	0.54	0.0	0.0	72.0	72.0	66.7	72.0
17-Oct-21	0.8	152.0	1.83	1.19	1.54	1.18	0.11	0.56	0.0	0.0	51.8	72.0	61.5	72.0
18-Oct-21	0.7	133.0	2.03	1.04	1.52	1.84	0.10	0.55	0.0	0.0	51.2	68.7	56.6	67.9
19-Oct-21	1.1	209.0	2.00	1.04	1.61	5.12	0.09	0.53	0.0	0.0	51.4	52.6	56.5	59.7
20-Oct-21	7.4	1406.0	1.90	0.99	1.40	1.18	0.08	0.38	0.0	0.0	51.4	72.0	56.5	58.6
21-Oct-21	10.3	1957.0	1.58	0.93	1.08	0.98	0.07	0.19			52.5	72.0	56.2	62.0
22-Oct-21	0.8	152.0	1.85	0.96	1.38	1.21	0.08	0.40			53.0	72.0	57.1	67.1
23-Oct-21	3.0	570.0	2.00	1.27	1.60	1.16	0.11	0.48			59.7	62.0	60.3	66.2
24-Oct-21	0.0	0.0	2.05	1.54	1.86	2.21	0.43	0.77			52.0	72.0	59.3	66.3
25-Oct-21	2.1	399.0	2.02	1.25	1.79	1.60	0.12	0.59			52.2	72.0	59.6	66.0
26-Oct-21	0.3	57.0	2.04	1.46	1.90	5.09	0.14	0.58			51.1	52.3	59.8	66.9
27-Oct-21	0.0	0.0	2.03	1.92	2.01	1.42	0.62	0.90	0.0	0.0	52.0	72.0	58.9	63.4
28-Oct-21	2.0	380.0	2.05	1.56	1.98	5.12	0.11	0.93	0.0	0.0	49.9	72.0	58.1	63.5
29-Oct-21	1.6	304.0	2.05	1.09	1.53	5.12	0.55	1.79	0.0	0.0	50.1	72.0	60.2	72.0
30-Oct-21	0.0	0.0	2.05	1.19	1.51	2.81	0.67	1.09	0.0	0.0	49.1	72.0	61.8	70.5
31-Oct-21	2.0	380.0	2.04	1.00	1.36	3.29	0.19	1.12	0.0	0.0	49.9	72.0	63.8	72.0
Total	46.0	8740.0	------	------	------	------	------	------	------	------	------	------	------	------
Average	1.5	281.9	1.64	0.97	1.29	2.59	0.16	0.68	0.0	0.0	52.5	63.3	58.8	65.9
Min	0.0	0.0	0.19	0.07	0.12	0.98	0.07	0.19	0.0	0.0	49.1	52.3	56.2	57.8
Max	10.3	1957.0	2.05	1.92	2.01	5.12	0.67	1.79	0.0	0.0	72.0	72.0	66.7	72.0

Merritt Water System **Month:** **Nov-21**

Kengard Well Report

	Totals		Water Data								Well Levels			
Date	Well Run Time and Flow Total		Chlorine Residual (mg/L)			Turbidity (ntu)			Cond (uS/cm)	Water Temp ©	Production Well (FT)		Observation Well (FT)	
	Hrs	Cubic Meters	High	Low	Avg	High	Low	Avg	Avg	Avg	Min	Max	Min	Max
01-Nov-21	1.9	342.0	1.69	0.71	1.13	2.06	0.14	0.50	0.0	0.0	54.4	72.0	62.5	72.0
02-Nov-21	1.0	180.0	1.80	0.83	1.22	2.07	0.13	0.56	0.0	0.0	49.0	72.0	61.0	72.0
03-Nov-21	0.0	0.0	2.04	1.06	1.43	2.97	0.35	0.72			72.0	72.0	69.5	72.0
04-Nov-21	2.0	360.0	1.56	0.86	1.24	2.02	0.10	0.52	0.0	0.0	72.0	72.0	72.0	72.0
05-Nov-21	18.1	3258.0	1.29	0.64	0.91	0.85	0.08	0.17	0.0	0.0	64.1	72.0	65.9	72.0
06-Nov-21	19.8	3564.0	1.13	0.55	0.70	1.29	0.07	0.10	0.0	0.0	42.5	72.0	60.7	72.0
07-Nov-21	5.3	954.0	1.11	0.55	0.78	1.67	0.07	0.14	0.0	0.0	41.9	72.0	57.5	72.0
08-Nov-21	1.2	216.0	1.84	0.92	1.13	0.96	0.12	0.30	0.0	0.0	41.8	72.0	57.4	72.0
09-Nov-21	0.2	36.0	2.01	1.09	1.28	2.47	0.09	0.35	0.0	0.0	41.2	72.0	58.9	72.0
10-Nov-21	0.0	0.0	2.05	0.74	1.64	5.12	0.34	0.63	0.0	0.0	42.0	72.0	58.8	72.0
11-Nov-21	0.0	0.0	2.05	0.64	1.14	2.72	0.72	1.26			72.0	72.0	63.3	72.0
12-Nov-21	1.6	288.0	0.80	0.44	0.55	2.74	0.15	0.77			71.5	72.0	72.0	72.0
13-Nov-21	9.5	1710.0	0.86	0.24	0.43	5.12	0.10	0.33			72.0	72.0	72.0	72.0
14-Nov-21	20.3	3654.0	2.05	0.12	0.33	0.94	0.10	0.14			64.9	72.0	62.3	72.0
15-Nov-21	12.3	2214.0	0.20	0.00	0.13	1.23	0.10	0.18			42.3	72.0	65.4	72.0
16-Nov-21	0.0	0.0	0.00	0.00	0.00	0.28	0.28	0.28			72.0	72.0	72.0	72.0
17-Nov-21	0.0	0.0	0.08	0.00	0.00	0.28	0.21	0.27			71.0	72.0	63.5	72.0
18-Nov-21	0.0	0.0	0.35	0.03	0.13	5.12	0.16	1.23			39.1	72.0	61.2	72.0
19-Nov-21	10.8	1944.0	0.99	0.07	0.37	5.12	0.15	1.19			37.3	41.2	56.6	61.7
20-Nov-21	12.4	2232.0	0.20	0.16	0.18	0.94	0.17	0.22			38.2	72.0	56.7	60.7
21-Nov-21	16.3	2934.0	2.05	0.16	1.98	0.90	0.16	0.21			41.7	72.0	56.8	60.2
22-Nov-21	23.5	4230.0	4.77	0.00	2.64	1.04	0.16	0.19			69.9	72.0	56.5	59.4
23-Nov-21	17.9	3222.0	4.44	3.00	3.55	0.92	0.15	0.19			0.0	72.0	55.8	59.5
24-Nov-21	22.6	4068.0	4.45	2.66	3.71	1.05	0.13	0.17			36.8	72.0	56.1	65.0
25-Nov-21	14.6	2628.0	4.61	3.45	3.86	1.25	0.13	0.18			35.2	72.0	56.9	65.2
26-Nov-21	11.1	1998.0	4.12	3.22	3.70	1.42	0.14	0.19			35.7	72.0	56.7	65.6
27-Nov-21	5.7	1026.0	4.84	2.86	3.94	1.00	0.14	0.21			67.0	72.0	56.7	64.7
28-Nov-21	7.7	1386.0	4.12	2.56	3.19	1.55	0.14	0.23			38.2	72.0	56.8	62.6
29-Nov-21	8.8	1584.0	4.46	2.57	3.24	1.22	0.14	0.22			66.6	72.0	57.1	69.7
30-Nov-21	7.4	1332.0	4.24	3.09	3.74	1.38	0.14	0.23			63.9	72.0	60.2	71.6
Total	252.0	45360.0	------	------	------	------	------	------	------	------	------	------	------	------
Average	8.4	1512.0	2.21	1.11	1.61	1.92	0.17	0.40	0.0	0.0	51.9	70.9	61.3	68.7
Min	0.0	0.0	0.00	0.00	0.00	0.28	0.07	0.10	0.0	0.0	0.0	41.2	55.8	59.4
Max	23.5	4230.0	4.84	3.45	3.94	5.12	0.72	1.26	0.0	0.0	72.0	72.0	72.0	72.0

Merritt Water System **Month:** **Dec-21**

Kengard Well Report

	Totals		Water Data								Well Levels			
Date	Well Run Time and Flow Total		Chlorine Residual (mg/L)			Turbidity (ntu)			Cond (uS/cm)	Water Temp ©	Production Well (%)		Observation Well (%)	
	Hrs	Cubic Meters	High	Low	Avg	High	Low	Avg	Avg	Avg	Min	Max	Min	Max
01-Dec-21	7.3	1314.0	4.43	2.92	3.88	1.18	0.14	0.22			66.4	72.0	62.7	72.0
02-Dec-21	7.1	1278.0	4.49	3.26	3.77	1.57	0.14	0.20			66.8	72.0	63.6	72.0
03-Dec-21	5.2	936.0	5.12	3.45	4.00	1.04	0.14	0.22			65.7	72.0	65.1	72.0
04-Dec-21	5.2	936.0	5.12	3.47	4.35	1.29	0.14	0.31			65.2	69.7	64.2	72.0
05-Dec-21	0.1	18.0	5.12	0.05	4.57	1.93	0.56	0.88			68.2	72.0	66.2	72.0
06-Dec-21	0.0	0.0	5.12	0.85	3.58	2.11	0.76	1.20			68.8	71.8	64.1	72.0
07-Dec-21	0.0	0.0	1.25	1.03	1.12	5.12	0.74	1.60			62.0	71.9	66.8	72.0
08-Dec-21	0.0	0.0	1.03	0.67	0.87	1.89	0.70	1.28	0.0	0.0	56.8	67.8	62.8	72.0
09-Dec-21	0.0	0.0	0.71	0.55	0.59	1.52	0.66	0.86	0.0	0.0	36.5	70.0	62.0	72.0
10-Dec-21	0.0	0.0	0.65	0.48	0.57	1.22	0.50	0.62	0.0	0.0	36.1	72.0	60.2	70.4
11-Dec-21	0.0	0.0	0.66	0.50	0.55	0.88	0.41	0.55	0.0	0.0	44.6	72.0	62.2	71.4
12-Dec-21	0.0	0.0	0.61	0.45	0.52	1.00	0.36	0.46	0.0	0.0	37.6	72.0	62.7	71.7
13-Dec-21	0.0	0.0	0.69	0.53	0.54	0.70	0.32	0.40	0.0	0.0	36.8	71.5	61.7	69.8
14-Dec-21	0.0	0.0	0.73	0.57	0.60	0.72	0.27	0.36	0.0	0.0	36.6	72.0	63.1	68.7
15-Dec-21	0.0	0.0	0.84	0.60	0.62	0.63	0.25	0.30			40.4	72.0	61.8	68.2
16-Dec-21	0.0	0.0	0.74	0.62	0.64	0.48	0.21	0.27	0.0	0.0	39.3	72.0	61.7	67.6
17-Dec-21	0.0	0.0	0.76	0.63	0.67	0.55	0.22	0.32	0.0	0.0	42.3	72.0	63.9	72.0
18-Dec-21	0.0	0.0	0.77	0.65	0.67	0.61	0.24	0.35	0.0	0.0	71.9	71.9	66.2	71.9
19-Dec-21	0.0	0.0	0.81	0.65	0.70	0.64	0.22	0.32	0.0	0.0	71.9	71.9	63.0	72.0
20-Dec-21	0.0	0.0	0.81	0.65	0.68	0.54	0.21	0.29	0.0	0.0	27.3	72.0	59.5	68.0
21-Dec-21	0.0	0.0	0.82	0.71	0.72	0.49	0.24	0.28	0.0	0.0	21.6	72.0	57.6	70.6
22-Dec-21	0.0	0.0	0.86	0.68	0.71	0.52	0.21	0.29	0.0	0.0	46.5	56.7	57.6	67.7
23-Dec-21	0.0	0.0	0.86	0.70	0.71	0.58	0.21	0.30			23.7	65.3	62.5	66.9
24-Dec-21	0.0	0.0	0.82	0.71	0.73	0.51	0.22	0.31			52.7	59.8	63.5	71.8
25-Dec-21	0.0	0.0	0.85	0.69	0.74	0.58	0.23	0.29			50.8	57.3	62.6	70.4
26-Dec-21	0.0	0.0	0.86	0.70	0.73	0.58	0.20	0.23			49.9	51.4	61.6	66.2
27-Dec-21	0.0	0.0	0.81	0.70	0.73	0.43	0.20	0.22			48.2	50.7	60.4	63.4
28-Dec-21	0.0	0.0	0.84	0.72	0.73	0.41	0.19	0.23			47.0	49.7	57.1	62.0
29-Dec-21	0.0	0.0	0.84	0.70	0.74	0.42	0.21	0.24			39.7	47.6	56.8	60.1
30-Dec-21	0.0	0.0	0.87	0.67	0.71	0.75	0.22	0.25			39.0	40.5	56.9	60.0
31-Dec-21	0.0	0.0	0.88	0.72	0.76	0.35	0.20	0.23			38.3	39.8	57.1	59.4
Total	24.9	4482.0	------	------	------	------	------	------	------	------	------	------	------	------
Average	0.8	144.6	1.61	0.98	1.34	1.01	0.31	0.45	0.0	0.0	48.3	65.2	61.8	69.0
Min	0.0	0.0	0.61	0.05	0.52	0.35	0.14	0.20	0.0	0.0	21.6	39.8	56.8	59.4
Max	7.3	1314.0	5.12	3.47	4.57	5.12	0.76	1.60	0.0	0.0	71.9	72.0	66.8	72.0

APPENDIX B

Well Data from FLNRORD

Appendix B
Well Data from FLNRORD

Site Name	MW 5 S Collett Hicks	MW 5 D Collett Hicks	MW 3 S	MW 3 D	MW 4 S	MW 4 D	Colletteville 12727	Voght 1 GE 12729	Voght 2 VFD 12728	MW04-1 S Voght Park	MW04-1 D Voght Park	MW04-2 S Claybanks	MW04-2 D Claybanks	MW04-3 S May St	MW04-3 D May St	MW04-4 S Spring Granite	MW04-4 D Spring Granite	Fairly Park 12730	MW07-2 S Fairly Park	MW07-2 M Fairly Park	MW07-2 D Fairly Park	MW04-5 S N'Kwala Park	MW04-5 D N'Kwala Park	MW04-6 S Kengard RR	MW04-6 D Kengard RR	MW07-1 S Kengard RR
Well Tag Number							40069	114668	34180	122251	122252	122255	122254	122257	122258	122262	122261	WTN 38902	122277	122276	122275	122264	122265	122267	122268	122270
well id plate							12727	12729	12728									12730								
Construction date							1978-07-08	1970	1976	2004-12-07	2004-12-07	2004-12-08	2004-12-08	2004-12-08	2004-12-08	2004-12-07	2004-12-07	1966-01-25	2007-06-22	2007-06-22	2007-06-22	2004-12-07	2004-12-07	2004-12-07	2004-12-07	2007-06-23
well depth	5.243	9.85	5.49	10.97	5.24	9.61	49.07	30	34.75	5	9.2	6	9.2	6.5	11.2	5.6	9.3	29.87	30	57.9	132	5.5	9.9	4.8	9.4	57
bottom of screen							45.11		34.14	4.8	8.5	5.8	9.2	6.2	11.2	5.3	9.2	25.3	29.9	56.9	131	5.4	9.9	4.56	9.42	56.4
top of screen							39		24.69	3.3	7	4.2	6.7	4.6	9.7	4	7.7	19.2	25	53.9	128	3.6	8.2	3	7.8	48.7
well record casing stick-up										0.52	0.52	0.56	0.56	0.84	0.84	0.25	0.25		0.3	0.03	0.03	0.67	0.67	0.48	0.62	0.3
casing stick-up at time of wellhead survey	0.63	0.63	1.22	1.22	0.83	0.82				0.355	0.355	0.56	0.56	0.78	0.78	0.65	0.65		0.87	0.87	0.63	0.67	0.67	0.575	0.635	1.155
2020																					well packer					
Lat	50.112001	50.112001	50.114012	50.113969	50.114525	50.114531	50.109926	50.110317	50.110169	50.110221	50.110221	50.104692	50.104692	50.102388	50.102388	50.113226	50.113226	50.111135	50.111188	50.111188	50.111188	50.114785	50.114785	50.114690	50.114677	50.112447
Long	120.807770	120.807770	120.809641	120.809628	120.804506	120.804537	120.802938	120.800532	120.800743	120.801606	120.801606	120.794659	120.794659	120.784409	120.784409	120.796869	120.796869	120.795010	120.795119	120.795119	120.795119	120.785641	120.785641	120.776276	120.776329	120.777555
UTM 10U Easting	656738.17	656738.17	656598.32	656599.43	656961.50	656961.50	657090.570	657261.62	657247.000	657185.13	657185.13	657700.202	657700.202	658440.47	658440.47	657513.583	657513.583	657653.72	657645.78	657645.78	657645.78	658311.51	658311.51	658981.29	658977.57	658897.28
Northing	5553384.84	5553384.84	5553604.50	5553599.83	5553672.98	5553672.98	5553162.224	5553212.93	5553196.000	5553199.97	5553199.97	5552599.868	5552599.868	5552365.48	5552365.48	5553543.668	5553543.668	5553315.46	5553321.11	5553321.11	5553321.11	5553741.13	5553741.13	5553750.45	5553748.93	5553498.31
TOC @ mASL by KABLAL										590.186	590.186	594.617	594.617	599.619	599.619											
ground at mASL by KABLAL																										
Top of Pipe ELEV (GCM) by Underhill Geomatics	588.480	588.480	587.542	587.540	588.110	588.094		590.765	590.822	590.157	590.157	594.654	594.654	598.681	598.681	589.651	589.651		591.945	591.946	591.752	593.180	593.180	594.547	594.379	596.923
Top of Cement ELEV (GCM) by Underhill Geomatics							591.481	590.765	590.822									591.310								
surface casing stick-up.																										
Production casing stick-up from top of cement pad																			0.870	0.870	0.630					
2021																										
Top of Pipe ELEV (GCM) by Underhill Geomatics										590.121	590.121	594.517	594.517	598.541	598.541	588.986	588.986								593.346	
Lat																										
Long																										
Ground ELEV (GCM) by Underhill Geomatics										589.704	589.704	593.973	593.973	597.845	597.845	588.893	588.893								593.779	
Lat										50.110220	50.110220	50.104690	50.104690	50.102400	50.102400	50.113225	50.113225								50.114678	
Long										120.801610	120.801610	120.794650	120.794650	120.784400	120.784400	120.796872	120.796872								120.776300	
UTM 10U Easting										657185.125	657185.125	657700.359	657700.359	658441.129	658441.129	657513.740	657513.740								658979.688	
Northing										5553199.765	5553199.765	5552600.069	5552600.069	5552366.732	5552366.732	5553543.949	5553543.949								5553749.073	
Piezo Top of Pipe ELEV (GCM) by Underhill Geomatics																										
Lat																										
Long																										
UTM 10U Easting																										
Northing																										
STATIC WATER LEVEL (m)																										
from Top of Pipe																										
2021-03-21																										
2021-07-12																										
2021-08-10																										
2021-09-07										3.300	3.410	2.500	2.507													
2021-09-08																2.365	2.460									
2021-09-09	3.270	3.300			3.030	2.895								4.052	4.052							3.170	3.185			
2021-09-13																								2.140	1.980	
2021-09-14			3.027	3.060																						5.064
2021-09-15																			3.762	4.204						
2021-09-17																										
2021-09-22																										
2021-09-28																										
2021-10-04																										
2021-10-05																										
2021-11-09 (TOC survey)										3.175	3.222	2.185	2.542	4.168	4.178	2.395	2.263							2.225	2.050	
2021-11-20										1.800	1.930					1.860	2.050		2.322	3.450						
2021-12-01	2.275	2.285														1.942	2.120					2.830	2.840			
2021-12-02										1.628	1.678			2.820	2.850				2.622	3.400				2.175	2.228	4.222

Appendix B
Well Data from FLNRORD

Site Name	MW07-1 M Kengard RR	MW07-1 D Kengard RR	Kengard Test	Kengard 29680	Nicola River Kengard RR	Nicola River Kengard RR Piezo	Nicola River N'Kwala Bridge	Nicola River N'Kwala Bridge Piezo	Nicola River Spring Granite	Nicola River Spring Granite Piezo	Nicola U/S Coldwater	Nicola U/S Coldwater (Norgaard Piezo)	Coldwater R US Nicola R	Coldwater R US Collett Bridge	Coldwater R Voght Park	Coldwater River U/S Voght Park Piezo	Coldwater R Claybanks Gauge	Coldwater R Claybanks	Coldwater R Claybanks Piezo	Coldwater R May St	Coldwater R May St Piezo	Coldwater R Houston	OW 296	OW 494	
Well Tag Number	122274	122273	WTN 97208	WTN 97218																			WTN 56918	WTN 61559	
well id plate				29680																			21152	18704	
Construction date	2007-06-23	2007-06-23	2007-09-02	2007-12-10																			1987-03-04	1990-12-12	
well depth	86	131.1	172.21	166.12																			17.07	60.35	
bottom of screen	85	123		139.51																			14.22	56.08	
top of screen	72	118.9		89.58																			12.58	51.51	
well record casing stick-up	0.3	0.3																					1.31	0.61	
casing stick-up at time of wellhead survey	1.155	1.155	0.765																				1.31	0.61	
2020																									
Lat	50.112447	50.112447	50.112884	50.113045	50.114753		50.114308		50.113500			657087.00	50.114734	50.110303	50.109800			50.104592		50.102096		50.095782	50.107991	50.125478	
Long	120.777555	120.777555	120.777805	120.778056	120.547500		120.786109		120.796646			5553795.00	120.803901	120.803104	120.800718			120.794465		120.784092		120.777609	120.788610	120.746775	
UTM 10U Easting	658897.28	658897.28	658877.96	658859.47	659038.33		658279.63		657529.00			657087.00	657006.30	657077.83	657250.01			657714.22		658464.09		658948.59	658103.68	661054.89	
Northing	5553498.31	5553498.31	5553546.38	5553563.80	5553759.16		5553687.04		5553575.00			5553795.00	5553696.84	5553205.95	5553155.04			5552589.19		5552333.69		5551645.60	5552978.94	5555013.29	
TOC @ mASL by KABLAL																							596.220		
ground at mASL by KABLAL																							594.910		
Top of Pipe ELEV (GCM) by Underhill Geomatics	596.923	596.923	596.895	596.039																			596.183	630.337	
Top of Cement ELEV (GCM) by Underhill Geomatics																									
surface casing stick-up.																									
Production casing stick-up from top of cement pad																									
2021																									
Top of Pipe ELEV (GCM) by Underhill Geomatics												587.677													
Lat												50.115595													
Long												120.802733													
Ground ELEV (GCM) by Underhill Geomatics					593.779	593.779			588.893	588.893	586.847	586.847			589.704	589.704		593.973	593.973	597.845	597.845				
Lat					50.114678	50.114678			50.113225	50.113225	50.115610	50.115610			50.110220	50.110220		50.104690	50.104690	50.102400	50.102400				
Long					120.776300	120.776300			120.796872	120.796872	120.802730	120.802730			120.801610	120.801610		120.794650	120.794650	120.784400	120.784400				
UTM 10U Easting					658979.688	658979.688			657513.740	657513.740	5553796.301	5553796.301			657185.125	657185.125		657700.359	657700.359	658441.129	658441.129				
Northing					5553749.073	5553749.073			5553543.949	5553543.949	657086.907	657086.907			5553199.765	5553199.765		5552600.069	5552600.069	5552366.732	5552366.732				
Piezo Top of Pipe ELEV (GCM) by Underhill Geomatics					593.823	593.823			588.094	588.094	585.381				590.498	590.498		593.062	593.062	597.431	597.431				
Lat					50.114747	50.114747			50.113518	50.113518	50.115570				50.110030	50.110030		50.104650	50.104650	50.102170	50.102170				
Long					120.775692	120.775692			120.796652	120.796652	120.802800				120.801660	120.801660		120.794710	120.794710	120.784400	120.784400				
UTM 10U Easting					659022.853	659022.853			657528.484	657528.484	5553791.888				657182.088	657182.088		657696.538	657696.538	658441.514	658441.514				
Northing					5553757.976	5553757.976			5553577.016	5553577.016	657082.613				5553178.804	5553178.804		5552595.149	5552595.149	5552341.774	5552341.774				
STATIC WATER LEVEL (m)																									
from Top of Pipe																									
2021-03-21												1.960											5.443	35.005	
2021-07-12												2.068					0.55						5.502	35.127	
2021-08-10																							5.827		
2021-09-07																									
2021-09-08																									
2021-09-09																									
2021-09-13			5.170																						
2021-09-14	5.073	5.225																							
2021-09-15					1.150	1.265												0.922	0.985						
2021-09-17					1.160	1.265	0.973	1.475	0.925	0.905								0.900	0.972						
2021-09-22									0.938	0.905															
2021-09-28							0.985	1.515																	
2021-10-04					1.150	1.285	0.962	1.495	0.935	0.830					1.957	1.995		0.695	0.745	1.210	1.597				
2021-10-05					1.155	1.290	0.962	1.415																	
2021-11-09 (TOC survey)					1.160	1.362			0.950	0.937		2.165			1.875	1.902		0.581	0.665	1.458	1.120				
2021-11-20																									
2021-12-01									0.953	0.923		1.218													
2021-12-02	4.185	4.280			1.160	1.315																	4.825	35.347	

APPENDIX C

Water Quality Data from FLNRORD

Site Name		MW 5 S Collett Hicks	MW 5 D Collett Hicks	MW 3 S	MW 3 D	MW 3 D	MW 4 S	MW 4 D	Colletteville 12727	Voght 1 GE 12729	Voght 2 VPD 12728	MW04-1 S Voght Park	MW04-1 D Voght Park	MW04-2 D Claybanks	MW04-3 S May St
Client REQ ID		50255530	50255531	50255526	50255527	50255527	50255528	50255529	50255553	5025552	Pump out for servic	50255541	50255542	50255540	50255539
Client Sample ID		E321933_REG	E321762_REG	E321932_REG	E322371_REG	E322371_REG	E321931_REG	E206592_REG	E250649_REG	E250652_REG		E321761_REG	E321760_REG	E321763_REG	E321751_REG
Date Sampled		09-Sep-2021	09-Sep-2021	14-Sep-2021	14-Sep-2021	14-Sep-2021	09-Sep-2021	09-Sep-2021	20-Sep-2021	20-Sep-21		07-Sep-21	07-Sep-21	09-Sep-2021	09-Sep-2021
Time Sampled		10:15	10:35	14:50	14:35	14:35	10:15	11:40	13:15	13:40		15:43	15:20	15:10	13:45
ALS Sample ID		VA21B9672-001	VA21B9673-001	VA21C0133-001	VA21C0130-001	VA21C0130-001	VA21B9671-001	VA21B9670-001	VA21C0581-001	VA21C0585-001		VA21B9289-001	VA21B9291-001	VA21B9739-001	VA21B9737-001
Analyte	Units	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water		Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water
Field Tests (Matrix: Water)															
specific conductivity, field	μS/cm	153.8	139.7	773	422.1	422.1	312	475.7	322.9	250.5		176.1	182.8	184.0	172.1
oxygen, dissolved, field	mg/L	3.47	2.93	0.83	2.65	2.65	2.55	2.19	3.05	3.62		7.81	2.48	3.74	4.79
pH, field	pH units	6.63	6.98	6.82	7.44	7.44	6.85	7.69	7.14	6.66		7.14	6.71	7.68	7.14
redox potential, field	mV	154.7	136.1	63.2	36.2	36.2	133.3	112	322.9	59.7		114.4	128.1	147.1	124.1
temperature, field	°C	9.8	6.8	20.7	16.0	16.0	14.7	11.6	9.2	10.4		17.2	12.1	13.4	18.9
Physical Tests (Matrix: Water)															
conductivity	μS/cm	190	174	922	536	549	373	565	412	312		222	227	239	215
alkalinity, bicarbonate (as CaCO3)	mg/L	75.1	69.8	207	13.6	166	136	196	134	101		77.7	84.6	110	86.1
alkalinity, carbonate (as CaCO3)	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	8.2	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0
alkalinity, hydroxide (as CaCO3)	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0
alkalinity, phenolphthalein (as CaCO3)	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	4.1	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0
alkalinity, total (as CaCO3)	mg/L	75.1	69.8	207	13.6	166	136	204	134	101		77.7	84.6	110	86.1
hardness (as CaCO3), dissolved	mg/L	75.4	69.6	279	226	226	147	271	186	141		90.7	93.4	106	91.5
pH	pH units	8.03	8.03	7.77	5.60	7.99	8.16	8.44	8.15	7.81		7.66	7.47	8.14	7.41
solids, total dissolved [TDS]	mg/L	109	100	609	363	363	274	337	264	221		173	166	167	136
turbidity	NTU	6.06	6.16	0.34	<0.10	<0.10	<0.10	0.79	<0.10	0.15		>4000	0.47	0.60	>4000
Anions and Nutrients (Matrix: Water)															
Kjeldahl nitrogen, dissolved [DKN]	mg/L	0.081	<0.050	0.626	0.112	0.112	0.095	0.275	<0.050	<0.050		0.076	0.1	0.063	0.081
ammonia, total dissolved (as N)	mg/L	<0.0050	<0.0050	0.115	<0.0050	<0.0050	<0.0050	0.242	<0.0050	<0.0050		0.0158	<0.0050	<0.0050	0.0338
chloride	mg/L	9.51	7.79	113	37.3	37.3	29.8	39.8	11.9	13.9		12.1	13	3.94	9.48
fluoride	mg/L	0.058	0.048	0.126	0.042	0.042	0.082	0.051	0.074	0.05		0.052	0.046	0.126	0.082
nitrate (as N)	mg/L	0.374	0.203	0.973	1.39	1.39	1.00	0.0537	0.119	0.419		0.108	0.399	0.0426	0.0761
nitrate + nitrite (as N)	mg/L	0.374	0.203	0.976	1.39	1.39	1.00	0.0630	0.119	0.419		0.109	0.399	0.0426	0.0774
nitrite (as N)	mg/L	<0.0010	<0.0010	0.0025	<0.0010	<0.0010	<0.0010	0.0093	<0.0010	<0.0010		0.0014	<0.0010	<0.0010	0.0013
nitrogen, total dissolved	mg/L	0.409	0.222	2.22	1.16	1.16	1.06	0.430	0.156	0.418		0.143	0.423	0.070	0.133
phosphorus, total dissolved	mg/L	0.0104	0.0065	0.298	<0.0020	<0.0020	0.0037	0.0576	0.0064	<0.0020		0.0131	0.0028	0.0586	0.0259
sulfate (as SO4)	mg/L	8.28	7.46	127	37.3	37.3	29.3	47.8	48.1	30.9		9.12	9.73	11.4	6.72
Ion Balance (Matrix: Water)															
anion sum	meq/L	1.97	1.79	10.0	2.20	5.25	4.24	6.20	4.03	3.09		2.09	2.29	2.56	2.14
cation sum	meq/L	1.83	1.68	8.92	5.26	5.26	3.72	6.23	4.28	3.21		2.14	2.18	2.43	2.32
ion balance (cation-anion difference)	%	3.68	3.17	5.71	41.0	0.095	6.53	0.241	3.01	1.9		1.18	2.46	2.60	4.04
Dissolved Metals (Matrix: Water)															
aluminum, dissolved	mg/L	0.0107	0.0014	0.0015	0.0138	0.0138	<0.0010	0.447	0.0011	<0.0010		0.0678	<0.0010	0.0050	1.18
antimony, dissolved	mg/L	<0.00010	<0.00010	0.00021	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010		<0.00010	<0.00010	<0.00010	0.00024
arsenic, dissolved	mg/L	0.00013	<0.00010	0.00107	<0.00010	<0.00010	0.00016	0.00040	0.00041	<0.00010		0.00028	0.0001	0.00316	0.00085
barium, dissolved	mg/L	0.0399	0.0354	0.220	0.122	0.122	0.0913	0.0843	0.0459	0.0565		0.1	0.0582	0.0186	0.0852
beryllium, dissolved	mg/L	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100		<0.000100	<0.000100	<0.000100	0.000150
bismuth, dissolved	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050		<0.000050	<0.000050	<0.000050	<0.000050
boron, dissolved	mg/L	<0.010	<0.010	0.198	0.021	0.021	0.019	0.023	0.015	0.013		<0.010	<0.010	0.011	<0.010
cadmium, dissolved	mg/L	0.0000082	<0.0000050	0.000116	0.0000072	0.0000072	<0.0000050	0.0000222	<0.0000050	<0.0000050		0.0000118	0.0000194	<0.0000050	0.0000304
calcium, dissolved	mg/L	22.7	21.0	74.6	69.9	69.9	40.9	80.1	51.2	41.5		27.6	28.2	20.1	28.0
chromium, dissolved	mg/L	<0.00010	<0.00010	<0.00010	0.00020	0.00020	<0.00010	0.00073	0.00012	0.00011		<0.00010	<0.00010	<0.00010	0.00066
cobalt, dissolved	mg/L	<0.00010	<0.00010	0.00204	<0.00010	<0.00010	<0.00010	0.00052	<0.00010	<0.00010		0.00011	<0.00010	<0.00010	0.00066
copper, dissolved	mg/L	0.00088	0.00064	0.0140	0.00107	0.00107	0.00086	0.00261	0.00193	0.00078		0.00392	0.00081	0.00025	0.00343
iron, dissolved	mg/L	<0.0050	<0.0050	0.0284	<0.0050	<0.0050	<0.0050	0.648	<0.0050	<0.0050		0.0529	<0.0050	0.0495	0.776
lead, dissolved	mg/L	<0.000050	<0.000050	0.000062	<0.000050	<0.000050	<0.000050	0.000489	0.000091	<0.000050		0.000212	<0.000050	<0.000050	0.00513
magnesium, dissolved	mg/L	4.56	4.16	22.5	12.6	12.6	10.8	17.2	14.1	9.01		5.28	5.58	13.5	5.25
manganese, dissolved	mg/L	0.00045	0.00022	0.256	<0.00010	<0.00010	<0.00010	0.336	0.00267	0.00038		0.00582	<0.00010	0.191	0.0710
molybdenum, dissolved	mg/L	0.000514	0.000431	0.00332	0.000435	0.000435	0.000644	0.000549	0.00158	0.000515		0.000701	0.000427	0.00235	0.000522
nickel, dissolved	mg/L	<0.00050	<0.00050	0.00799	<0.00050	<0.00050	<0.00050	0.00123	<0.00050	<0.00050		<0.00050	<0.00050	<0.00050	0.00120
phosphorus, dissolved	mg/L	0.019	<0.010	0.281	<0.010	<0.010	<0.010	0.101	<0.010	<0.010		0.014	<0.010	0.096	0.029
potassium, dissolved	mg/L	1.04	1.06	15.9	2.15	2.15	1.31	2.34	1.91	1.2		1.01	0.721	1.67	1.30
selenium, dissolved	mg/L	0.000117	0.000054	0.000191	0.000202	0.000202	0.000279	0.000129	0.000064	0.000081		<0.000050	0.000076	<0.000050	<0.000050
silicon, dissolved	mg/L	4.43	3.91	7.73	6.35	6.35	6.09	8.64	6.24	6.14		4.32	4.92	7.71	8.60
silver, dissolved	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010		<0.000010	<0.000010	<0.000010	0.000012
sodium, dissolved	mg/L	6.71	6.09	67.1	15.6	15.6	17.3	15.1	12.0	8.41		6.71	6.86	6.03	6.70
strontium, dissolved	mg/L	0.149	0.130	0.491	0.360	0.360	0.296	0.458	0.303	0.253		0.169	0.173	0.132	0.161
sulfur, dissolved	mg/L	2.86	2.56	48.6	12.4	12.4	10.1	21.7	16.4	10.2		3.06	3.19	3.71	2.39
thallium, dissolved	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010		<0.000010	<0.000010	<0.000010	0.000010
tin, dissolved	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010		<0.00010	<0.00010	<0.00010	<0.00010
titanium, dissolved	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	0.0134	<0.00030	<0.00030		0.0015	<0.00030	<0.00030	0.0142
uranium, dissolved	mg/L	0.000090	0.000105	0.000356	0.000651	0.000651	0.000451	0.000957	0.00116	0.000419		0.000244	0.000103	0.00122	0.000462
vanadium, dissolved	mg/L	0.00050	<0.00050	0.00529	<0.00050	<0.00050	0.00070	0.00198	0.00086	<0.00050		0.00079	<0.00050	<0.00050	0.00246
zinc, dissolved	mg/L	0.0011	0.0011	0.0022	0.0011	0.0011	0.0011	0.0032	0.0029	0.0026		0.0032	0.0014	0.0015	0.0070
dissolved metals filtration location		Field	Field	Field	Field	Field	Field	Field	Field	Field		Field	Field	Field	Field

Site Name		MW04-3 D May St	MW04-4 S Spring Granite	MW04-4 D Spring Granite	Fairly Park 12730	MW07-2 S Fairly Park	MW07-2 M Fairly Park	MW07-2 M Fairly Park	MW04-5 S N'Kwala Park	MW04-5 D N'Kwala Park	MW04-6 S Kengard RR	MW04-6 D Kengard RR	MW07-1 S Kengard RR	MW07-1 M Kengard RR	MW07-1 D Kengard RR
Client REQ ID		50255538	50255536	50255537	50255550	50255544	50255543	50255700	50255535	50255534	50255532	50255533	50255547	50255546	50255545
Client Sample ID		E321752_REG	E321756_REG	E321755_REG	E250650_REG	E321732_REG	E321757_REG	E321757_REG	E321754_REG	E321753_REG	E321851_REG	E321766_REG	E321853_REG	E321852_REG	E321758_REG
Date Sampled		09-Sep-21	08-Sep-2021	08-Sep-2021	15-Sep-21	15-Sep-21	15-Sep-21	15-Sep-2021	09-Sep-2021	09-Sep-2021	13-Sep-2021	13-Sep-2021	14-Sep-2021	14-Sep-21	14-Sep-21
Time Sampled		14:25	14:10	14:15	9:50	11:35	14:45	14:50	12:48	13:00	13:40	13:30	13:05	15:32	11:55
ALS Sample ID		VA21B9738-001	VA21B9565-001	VA21B9567-001	VA21C0173-001	VA21C0180-001	VA21C0177-001	VA21C0181-001	VA21B9668-001	VA21B9735-001	VA21B9876-001	VA21B9875-001	VA21C0075-001	VA21C0131-001	VA21C0067-001
Analyte	Units	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water
Field Tests (Matrix: Water)															
specific conductivity, field	μS/cm	169.3	599.4	375	593.9	712	730	720	554.5	394.2	241.7	446.7	513.3	485.6	678
oxygen, dissolved, field	mg/L	3.8	8.86	4.16	4.75	2.21	0.11	0.11	2.34	2.59	0.65	5.97	0.04	0.16	0.05
pH, field	pH units	7.25	6.74	7.69	6.93	7.22	7.97	7.97	6.87	7.14	7.33	7.69	8.27	8.28	8.1
redox potential, field	mV	123.1	90.0	27.3	708.4	12.7	-198.8	-198.8	360.25	122.6	44.1	64.8	-222.5	-205	-236
temperature, field	°C	17.9	14.1	13.4	10.9	10.8	11	11.0	11.9	10.5	16.2	17.1	11.5	11.1	12.3
Physical Tests (Matrix: Water)															
conductivity	μS/cm	219	698	461	629	721	739	736	683	507	303	562	617	483	839
alkalinity, bicarbonate (as CaCO3)	mg/L	81.9	202	155	181	226	203	210	252	185	119	149	196	176	194
alkalinity, carbonate (as CaCO3)	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	12	10.4	6.0	<1.0	<1.0	<1.0	12.6	14.4	<1.0
alkalinity, hydroxide (as CaCO3)	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, phenolphthalein (as CaCO3)	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	6	5.2	3.0	<1.0	<1.0	<1.0	6.3	7.2	<1.0
alkalinity, total (as CaCO3)	mg/L	81.9	202	155	181	226	215	220	258	185	119	149	209	191	194
hardness (as CaCO3), dissolved	mg/L	82.8	291	207	234	285	326	321	298	226	116	170	259	203	405
pH	pH units	7.96	7.91	8.21	7.97	8.06	8.35	8.34	8.36	7.66	7.96	8.23	8.40	8.43	8.17
solids, total dissolved [TDS]	mg/L	131	501	366	425	536	665	644	428	291	202	349	495	345	634
turbidity	NTU	0.29	100	2.32	<0.10	5.82	2.39	2.52	46.1	<0.10	47.1	0.12	15.3	1.19	7.81
Anions and Nutrients (Matrix: Water)															
Kjeldahl nitrogen, dissolved [DKN]	mg/L	<0.050	0.289	0.084	0.264	0.244	0.058	0.059	0.221	0.258	0.253	<0.050	0.065	0.077	0.064
ammonia, total dissolved (as N)	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	0.014	0.0291	0.0326	<0.0050	0.0341	0.0136	<0.0050	0.0381	0.049	0.0355
chloride	mg/L	11.8	45.3	24.5	69.6	82.1	4.5	4.52	24.2	13.9	6.67	2.28	2.69	1.82	5.34
fluoride	mg/L	0.052	<0.100	0.052	<0.100	<0.100	0.138	0.140	0.126	0.123	0.136	0.226	0.158	0.18	0.12
nitrate (as N)	mg/L	0.0652	2.23	0.185	1.73	1.47	<0.0150	<0.0150	0.127	<0.0030	<0.0030	0.134	<0.0150	<0.0030	<0.0150
nitrate + nitrite (as N)	mg/L	0.0652	2.23	0.188	1.73	1.47	<0.0158	<0.0158	0.127	<0.0050	<0.0050	0.134	<0.0158	<0.0050	<0.0158
nitrite (as N)	mg/L	<0.0010	<0.0050	0.0027	<0.0050	<0.0050	<0.0050	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	0.0059	<0.0010	<0.0050
nitrogen, total dissolved	mg/L	0.096	2.30	0.241	1.81	1.51	0.061	0.065	0.333	0.247	0.257	0.182	0.056	0.065	0.064
phosphorus, total dissolved	mg/L	0.0042	0.0079	0.0306	<0.0020	0.0033	0.0183	0.0176	0.0069	0.0054	0.0237	0.0487	0.0260	0.0413	0.0126
sulfate (as SO4)	mg/L	8.55	83.0	47.1	38.1	48.5	202	204	89.8	49.2	24.0	135	132	81.9	258
Ion Balance (Matrix: Water)															
anion sum	meq/L	2.15	7.20	4.78	6.5	7.95	8.64	8.78	7.72	5.12	3.07	5.87	7.01	5.58	9.4
cation sum	meq/L	1.96	7.07	4.68	5.98	7.14	7.94	7.84	7.22	5.45	2.93	5.48	6.71	5.5	9.83
ion balance (cation-anion difference)	%	4.62	0.911	1.06	4.17	5.37	4.22	5.66	3.35	3.12	2.33	3.44	2.19	0.722	2.24
Dissolved Metals (Matrix: Water)															
aluminum, dissolved	mg/L	0.0018	0.0033	0.0186	<0.0010	<0.0010	0.0014	0.0017	0.0036	0.0021	0.0209	0.0240	0.0012	0.0018	0.0029
antimony, dissolved	mg/L	<0.00010	<0.00010	0.00097	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00012	0.00035	<0.00010	<0.00010	<0.00010
arsenic, dissolved	mg/L	0.00021	0.00022	0.00181	<0.00010	0.00037	0.00204	0.00206	0.00025	0.00043	0.00076	0.00164	0.00167	0.00251	0.00313
barium, dissolved	mg/L	0.047	0.157	0.0508	0.14	0.126	0.0499	0.0489	0.117	0.0806	0.0474	0.0264	0.0548	0.051	0.0507
beryllium, dissolved	mg/L	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100
bismuth, dissolved	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, dissolved	mg/L	<0.010	0.028	0.015	0.017	0.017	0.041	0.042	0.027	0.015	<0.010	0.100	0.052	0.053	0.042
cadmium, dissolved	mg/L	<0.0000050	0.0000063	0.0000382	0.0000086	<0.0000050	<0.0000050	<0.0000050	0.0000089	0.0000734	<0.0000150	<0.000200	<0.0000050	<0.0000050	<0.0000050
calcium, dissolved	mg/L	24.9	76.1	61.8	64.9	82.1	71.7	70.0	77.1	57.0	30.0	41.9	47.5	37	78.4
chromium, dissolved	mg/L	<0.00010	0.00018	0.00012	0.00018	0.00011	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00015
cobalt, dissolved	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00028	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
copper, dissolved	mg/L	0.00091	0.00176	0.00101	0.00433	<0.00020	<0.00020	<0.00020	0.00257	0.00340	0.00374	0.00144	<0.00020	0.00027	<0.00020
iron, dissolved	mg/L	<0.0050	<0.0050	0.0348	<0.0050	0.376	0.373	0.360	0.0075	0.0075	0.0199	<0.0050	0.126	0.108	0.362
lead, dissolved	mg/L	<0.000050	<0.000050	0.00113	<0.000050	<0.000050	<0.000050	<0.000050	0.000081	0.000057	0.000123	0.000091	<0.000050	<0.000050	<0.000050
magnesium, dissolved	mg/L	5	24.6	12.8	17.4	19.5	35.8	35.5	25.6	20.2	10.0	16.0	34.0	26.8	50.9
manganese, dissolved	mg/L	<0.00010	<0.00010	0.0840	0.00108	0.118	0.185	0.184	0.00229	0.519	0.0469	0.00083	0.0744	0.0596	0.0504
molybdenum, dissolved	mg/L	0.000645	0.00123	0.00211	0.000385	0.000645	0.00642	0.00647	0.00113	0.00210	0.00635	0.162	0.00759	0.00855	0.00493
nickel, dissolved	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00092	0.00125	0.00095	0.00238	<0.00050	<0.00050	<0.00050
phosphorus, dissolved	mg/L	<0.010	<0.010	0.022	<0.010	<0.010	0.021	0.017	<0.010	<0.010	0.016	0.053	0.019	0.032	0.025
potassium, dissolved	mg/L	1.01	2.50	2.50	2.05	2.31	5.21	5.11	2.87	2.27	4.82	2.54	6.51	5.78	6.37
selenium, dissolved	mg/L	<0.000050	0.000538	0.000292	0.000349	0.000291	<0.000050	<0.000050	0.000174	0.000219	0.000120	0.000077	0.000101	<0.000050	<0.000050
silicon, dissolved	mg/L	5.43	6.60	7.75	6.2	6.62	9.8	9.60	8.39	7.53	5.22	6.26	9.52	11	9.54
silver, dissolved	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000020	<0.000010
sodium, dissolved	mg/L	6.5	27.3	10.9	29	31.2	29.1	29.2	27.4	19.8	11.0	46.1	31.4	29.8	35.6
strontium, dissolved	mg/L	0.159	0.594	0.345	0.531	0.544	0.545	0.542	0.470	0.344	0.199	0.271	0.471	0.309	0.656
sulfur, dissolved	mg/L	2.81	30.6	15.3	12	16.2	67.4	66.6	32.2	18.0	8.51	48.6	43.8	27.1	89.8
thallium, dissolved	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, dissolved	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, dissolved	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
uranium, dissolved	mg/L	0.000204	0.00212	0.00183	0.000962	0.000903	0.00339	0.00337	0.00176	0.000702	0.000359	0.00441	0.00332	0.00368	0.00217
vanadium, dissolved	mg/L	0.00106	0.00097	0.00165	0.00055	0.00054	0.00066	0.00065	0.00090	0.00063	0.00104	0.00400	<0.00050	<0.00050	<0.00050
zinc, dissolved	mg/L	<0.0010	0.0020	0.0020	0.0032	0.0097	0.0017	0.0016	0.0019	0.0043	0.0020	0.0874	<0.0010	<0.0010	0.0012
dissolved metals filtration location		Field	Field	Field	Field	Field	Field	Field	Field	Field	Field	Field	Field	Field	Field

Site Name		MW 5 S Collett Hicks	MW 5 D Collett Hicks	MW 3 S	MW 3 D		MW 4 S	MW 4 D	Colletteville 12727	Voght 1 GE 12729	Voght 2 VPD 12728	MW04-1 S Voght Park	MW04-1 D Voght Park	MW04-2 D Claybanks	MW04-3 S May St
Client REQ ID		50255482	50255481	50255486	50255485		50255483	50255484	50255457	50255458		50255471	50255470	50255472	50255473
Client Sample ID		E321933_REG	E321762_REG	E321932_REG	E322371_REG		E321931_REG	E206592_REG	E250649_REG	E250652_REG		E321761_REG	E321760_REG	E321763_REG	E321751_REG
Date Sampled		09-Sep-2021	09-Sep-2021	14-Sep-2021	14-Sep-2021		09-Sep-2021	09-Sep-2021	20-Sep-2021	20-Sep-2021		07-Sep-2021	05-Sep-2021	09-Sep-2021	09-Sep-2021
Time Sampled		10:15	10:35	14:50	14:35		11:20	11:48	13:15	13:40		15:43	15:20	15:10	13:45
ALS Sample ID		VA21B9543-001	VA21B9552-001	VA21C0077-001	VA21C0137-001		VA21B9667-001	VA21B9557-001	VA21C0587-001	VA21C0589-001		VA21B9297-001	VA21B9295-001	VA21B9743-001	VA21B9741-001
$d^{18}O$	‰ VSMOW	-15.8	-15.9	-15.3	-15.7		-15.4	-15.4	-15.9	-15.9		-15.5	-15.8	-16.1	-15.3
	±1σ	0.02	0.03	0.01	0.03		0.02	0.04	0.01	0.01		0.01	0.03	0.02	0.01
$d^{2}H$	‰ VSMOW	-118	-118	-121	-120		-118	-119	-122	-120		-116	-117	-121	-116
	±1σ	0.25	0.09	0.08	0.06		0.1	0.12	0.08	0.13		0.1	0.08	0.1	0.07
Bacteriological Tests (Matrix: Water)															
coliforms, thermotolerant [fecal]	CFU/100mL								<1	<1					
coliforms, total	MPN/100mL								<1	<1					

Site Name		MW04-3 D May St	MW04-4 S Spring Granite	MW04-4 D Spring Granite	Fairly Park 12730	MW07-2 S Fairly Park	MW07-2 M Fairly Park	MW07-2 M Fairly Park	MW04-5 S N'Kwala Park	MW04-5 D N'Kwala Park	MW04-6 S Kengard RR	MW04-6 D Kengard RR	MW07-1 S Kengard RR	MW07-1 M Kengard RR	MW07-1 D Kengard RR
Client REQ ID		50255474	50255476	50255475	50255461	50255468	50255469	50255696	50255478	50255477	50255480	50255479	50255465	50255466	50255467
Client Sample ID		E321752_REG	E321756_REG	E321755_REG	E250650_REG	E321732_REG	E321757_REG	E321757_REG	E321754_REG	E321753_REG	E321851_REG	E321766_REG	E321853_REG	E321852_REG	E321758_REG
Date Sampled		09-Sep-2021	08-Sep-2021	08-Sep-2021	15-Sep-2021	15-Sep-2021	15-Sep-2021	15-Sep-2021	09-Sep-2021	09-Sep-2021	13-Sep-2021	13-Sep-2021	14-Sep-2021	14-Sep-2021	14-Sep-2021
Time Sampled		14:25	14:10	14:15	09:50	11:35	14:45	14:50	12:06	13:00	13:40	13:30	13:05	15:32	11:55
ALS Sample ID		VA21B9742-001	VA21B9569-001	VA21B9571-001	VA21C0182-001	VA21C0183-001	VA21C0184-001	VA21C0185-001	VA21B9666-001	VA21B9740-001	VA21B9882-001	VA21B9881-001	VA21C0135-001	VA21C0328-001	VA21C0134-001
$d^{18}O$	‰ VSMOW	-15.3	-14.9	-15.1	-15.6	-15.5	-16.7	-16.7	-14.6	-14.3	-13.6	-16.2	-17.4	-17.1	-17.1
	±1σ	0.02	0.04	0.02	0.03	0.02	0.02	0.02	0.02	0.07	0.01	0.01	0.02	0.03	0.03
$d^{2}H$	‰ VSMOW	-116	-120	-119	-120	-121	-133	-133	-119	-119	-114	-130	-137	-136	-136
	±1σ	0.1	0.17	0.06	0.04	0.03	0.17	0.05	0.1	0.55	0.19	0.06	0.08	0.07	0.31
Bacteriological Tests (Matrix: Water)															
coliforms, thermotolerant [fecal]	CFU/100mL				<1										
coliforms, total	MPN/100mL				<1										

Appendix C
Water Quality Data from FLNRORD

Site Name		Kengard Test	Kengard Test	Kengard 29680	Nicola River Kengard RR	Nicola River Kengard RR Piezo	Nicola River N'Kwala Bridge	Nicola River N'Kwala Bridge Piezo	Nicola River Spring Granite	Nicola River Spring Granite Piezo	Nicola U/S Coldwater	Nicola U/S Coldwater	Coldwater R US Nicola R	Coldwater R US Collett Bridge	Coldwater R Voght Park	Coldwater River U/S Voght Park Piezo	Coldwater R Claybanks	Coldwater R Claybanks Piezo	Coldwater R May St	Coldwater R May St Piezo	Coldwater R Houston	OW 296	OW 296	OW 494
Client REQ ID		50255699	50255548	50255549	50255516	50255850	50255517		50255518	50255848	50255837	50255836	50255519	50255521		50255520	50255522	5055843	50255576	50255840	50255524	50255555	50255556	50255561
Client Sample ID		E321765_REG	E321765_REG	E307146_REG	E322351_REG		E322352_REG	not enough water	E322353_REG		0600115_REG	0600115_REG	E322354_REG	E279294_REG		E322355	E206272_REG		E321832_REG		E321831_REG	E206918_REG	E206918_REG	E317012_REG
Date Sampled		13-Sep-2021	13-Sep-2021	13-Sep-2021	23-Sep-2021	23-Sep-2021	04-Oct-2021	greyish clay water	23-Sep-2021	23-Sep-2021	23-Sep-2021	23-Sep-2021	22-Sep-2021	23-Sep-2021		04-Oct-2021	22-Sep-2021	22-Sep-2021	22-Sep-2021		22-Sep-2021	07-Sep-2021	07-Sep-2021	08-Sep-21
Time Sampled		14:50	14:20	12:55	12:20	12:30	14:50		13:35	13:35	15:45	16:00	10:25	15:05		12:55	12:55	12:40	14:50		13:55	13:15	13:45	12:10
ALS Sample ID		VA21B9869-001	VA21B9872-001	VA21B9871-001	VA21C1035-001	VA21C1037-001	VA21C1853-001		VA21C1043-001	VA21C1038-001	VA21C1042-001	VA21C1039-001	VA21C0876-001	VA21C1044-001		VA21C1852-001	VA21C0880-001	VA21C0879-001	VA21C0882-001		VA21C0881-001	VA21B9290-001	VA21B9288-001	VA21B9568-001
Analyte	Units	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water		Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water		Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water		Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water
Field Tests (Matrix: Water)																								
specific conductivity, field	µS/cm	630.5	611.4	755.0	241.9	365.5	242.9		244.0	357.0	249.7	248.7	134.4	130.0		119.2	130.0	120.5	120.4		120.2	202.7	202.7	1314
oxygen, dissolved, field	mg/L	0.02	0.03	0.55	9.25	1.67	10.47		8.72	6.46	5.33	7.85	7.87	7.90		6.99	6.76	7.81	10.0		7.66	3.56	3.54	0.04
pH, field	pH units	8.29	8.33	7.92	8.36	7.46			8.28	7.80	8.09	8.54	7.66	8.05		7.57	8.07	7.99	8.00		7.98	6.81	6.83	7.8
redox potential, field	mV	-2867	-305.70	-98.6	58.6	36.7			61.2	54.9	39.6	49.7	78.5	97.8		-53.6	27.5	123.5	60.1		66.5	36.4	24.9	-152.6
temperature, field	°C	13.0	12.7	12.9	14.4	13.1	12.9		14.8	14.8	13.6	15.4	11.1	15.2		13.9	16.7	12.9	15.0		14.3	11.3	11.3	13.4
Physical Tests (Matrix: Water)																								
conductivity	µS/cm	797	773	940	307	310	315		309	440	326	314	169	162		144	156	150	150		149	250	249	1630
alkalinity, bicarbonate (as CaCO3)	mg/L	188	172.00	207	126	115	126		128	146	133	125	62.3	63.4		63.9	60.7	57.7	57.4		57.8	86.9	86.9	249
alkalinity, carbonate (as CaCO3)	mg/L	8.6	8.6	7.6	<1.0	<1.0	7.7		2.8	<1.0	<1.0	6.4	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0
alkalinity, hydroxide (as CaCO3)	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0
alkalinity, phenolphthalein (as CaCO3)	mg/L	4.3	4.3	3.8	<1.0	<1.0	3.8		1.4	<1.0	<1.0	3.2	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0
alkalinity, total (as CaCO3)	mg/L	197	181.00	214	126	115	134		131	146	133	131	62.3	63.4		63.9	60.7	57.7	57.4		57.8	86.9	86.9	249
hardness (as CaCO3), dissolved	mg/L	352	337	415	130	124	143		127	177	134	128	70.3	62.2		64.7	64.7	61.9	59.9		60.3	103	101	782
pH	pH units	8.32	8.36	8.32	8.24	8.14	8.37		8.30	8.26	8.10	8.34	7.98	7.99		7.93	7.91	8.00	8.03		8.03	7.54	7.50	8.18
solids, total dissolved [TDS]	mg/L	527	503	766	174	195	211		179	246	182	203	115	87		94	101	93	105		93	178	167	1410
turbidity	NTU	62.1	93.20	<0.10	2.76	22.3	10.2		2.26	58.6	142	2.59	0.51	0.42		227	4.08	0.41	0.38		0.35	3.56	14.0	1.74
Anions and Nutrients (Matrix: Water)																								
Kjeldahl nitrogen, dissolved [DKN]	mg/L	<0.050	0.054	0.062	0.438	0.441	0.392		0.427	0.300	0.421	0.426	<0.050	0.101		0.065	0.069	0.057	0.054		0.064	<0.050	<0.050	0.075
ammonia, total dissolved (as N)	mg/L	0.0415	0.04	0.0337	0.0086	0.101	0.0154		0.0110	0.0172	0.0884	0.0114	<0.0050	<0.0050		0.0113	<0.0050	<0.0050	<0.0050		<0.0050	<0.0050	<0.0050	0.027
chloride	mg/L	4.76	5.7	7.77	6.50	6.56	7.25		6.54	19.2	10.8	6.86	9.52	8.35		5.58	7.58	7.77	7.80		7.80	13.2	13.3	11.8
fluoride	mg/L	<0.100	0.10	0.116	0.106	0.101	0.120		0.102	0.100	0.057	0.102	0.049	0.047		0.048	0.047	0.046	0.046		0.047	0.046	0.047	<0.200
nitrate (as N)	mg/L	<0.0150	<0.0150	<0.0150	0.0180	<0.0030	0.0166		0.0131	0.697	0.0380	0.0163	0.0634	<0.0030		0.0043	<0.0030	<0.0030	<0.0030		<0.0030	0.221	0.240	<0.0300
nitrate + nitrite (as N)	mg/L	<0.0158	<0.0158	<0.0158	0.0191	<0.0050	0.0177		0.0131	0.698	0.0426	0.0163	0.0634	<0.0050		<0.0050	<0.0050	<0.0050	<0.0050		<0.0050	0.221	0.240	<0.0316
nitrite (as N)	mg/L	<0.0050	<0.0050	<0.0050	0.0011	<0.0010	0.0011		<0.0010	0.0012	0.0046	<0.0010	<0.0010	<0.0010		<0.0010	<0.0010	<0.0010	<0.0010		<0.0010	<0.0010	<0.0010	<0.0100
nitrogen, total dissolved	mg/L	0.069	0.07	0.087	0.411	0.394	0.449		0.408	1.03	0.400	0.464	0.154	0.062		0.117	0.087	0.093	0.060		0.061	0.233	0.231	0.079
phosphorus, total dissolved	mg/L	0.0080	0.0064	0.0181	0.0091	0.0444	0.0130		0.0104	0.0170	0.0073	0.0104	0.0030	<0.0020		0.0085	0.0055	<0.0020	0.0044		0.0033	<0.0020	<0.0020	0.0172
sulfate (as SO4)	mg/L	234	228.00	292	24.7	25.4	29.8		25.7	42.6	23.6	26.9	7.67	6.24		3.57	6.42	5.86	5.90		5.89	18.6	18.7	692
Ion Balance (Matrix: Water)																								
anion sum	meq/L	8.94	8.53	10.6	3.22	3.02	3.51		3.34	4.40	3.46	3.38	1.68	1.63		1.51	1.56	1.50	1.49		1.50	2.51	2.52	19.7
cation sum	meq/L	8.75	8.52	10.3	3.14	3.07	3.46		3.10	4.25	3.30	3.11	1.68	1.48		1.51	1.53	1.48	1.42		1.44	2.42	2.38	19
ion balance (cation-anion difference)	%	1.07	0.059	1.44	1.26	0.821	0.717		3.73	1.73	2.37	4.16	<0.010	4.82		<0.010	0.971	0.671	2.40		2.04	1.82	2.86	1.81
Dissolved Metals (Matrix: Water)																								
aluminum, dissolved	mg/L	<0.0010	0.0012	<0.0010	0.0028	0.0053	0.0022		0.0027	0.0016	0.0580	0.0028	0.0050	0.0042		0.0086	0.0046	0.0050	0.0052		0.0052	<0.0010	<0.0010	0.181
antimony, dissolved	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010		<0.00010	<0.00010	<0.00010	<0.00010		<0.00010	<0.00010	<0.00010	<0.00010
arsenic, dissolved	mg/L	0.00356	0.00328	0.00310	0.00106	0.00164	0.00117		0.00111	0.00060	0.00083	0.00106	0.00016	0.00015		0.00058	0.00046	0.00016	0.00014		0.00016	<0.00010	<0.00010	0.0012
barium, dissolved	mg/L	0.0518	0.05	0.0694	0.0264	0.0686	0.0296		0.0262	0.0684	0.0352	0.0284	0.0465	0.0430		0.0286	0.0419	0.0421	0.0415		0.0422	0.0564	0.0527	0.0572
beryllium, dissolved	mg/L	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100		<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100		<0.000100	<0.000100	<0.000100	<0.000100		<0.000100	<0.000100	<0.000100	<0.000100
bismuth, dissolved	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050		<0.000050	<0.000050	<0.000050	<0.000050		<0.000050	<0.000050	<0.000050	<0.000050
boron, dissolved	mg/L	0.037	0.038	0.050	<0.010	<0.010	<0.010		<0.010	0.017	<0.010	<0.010	<0.010	<0.010		<0.010	<0.010	<0.010	<0.010		<0.010	<0.010	<0.010	0.091
cadmium, dissolved	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.0000158	0.0000108		0.0000125	0.0000241	0.0000122	<0.0000050	<0.0000050	<0.0000050		<0.0000050	<0.0000050	<0.0000050	<0.0000050		<0.0000050	<0.0000050	<0.0000050	<0.0000100
calcium, dissolved	mg/L	71.9	66	85.8	31.6	30.6	35.3		30.9	45.7	32.6	31.2	21.4	19.3		19.4	19.5	19.3	18.4		18.4	30.8	30.4	149
chromium, dissolved	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010		<0.00010	<0.00010	0.00012	<0.00010	0.00010	<0.00010		<0.00010	<0.00010	<0.00010	<0.00010		<0.00010	0.00014	0.00015	0.00064
cobalt, dissolved	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	0.00031	<0.00010		<0.00010	0.00019	0.00026	<0.00010	<0.00010	<0.00010		0.00025	0.00010	<0.00010	<0.00010		<0.00010	<0.00010	<0.00010	0.00015
copper, dissolved	mg/L	<0.00020	<0.00020	0.00138	0.00166	0.00102	0.00188		0.00168	0.00231	0.00152	0.00167	0.00055	0.00043		0.00082	0.00045	0.00052	0.00048		0.00053	0.00056	0.00051	0.00038
iron, dissolved	mg/L	0.698	0.878	0.0271	0.0163	0.0359	0.0151		0.0154	0.0296	0.211	0.0154	0.0083	0.0080		0.0864	0.102	0.0088	0.0051		0.0060	0.114	0.129	0.169
lead, dissolved	mg/L	<0.000050	<0.000050	0.000054	<0.000050	<0.000050	<0.000050		<0.000050	<0.000050	0.000068	<0.000050	<0.000050	<0.000050		<0.000050	<0.000050	<0.000050	<0.000050		<0.000050	<0.000050	<0.000050	<0.000050
magnesium, dissolved	mg/L	41.9	41.9	48.8	12.3	11.6	13.4		12.2	15.3	12.7	12.2	4.10	3.40		3.94	3.88	3.32	3.39		3.48	6.31	6.21	99.6
manganese, dissolved	mg/L	0.0629	0.08	0.117	0.0262	1.78	0.0300		0.0218	0.110	0.334	0.0274	0.00396	0.00593		0.194	0.138	0.00387	0.00294		0.00296	0.00453	0.00348	0.19
molybdenum, dissolved	mg/L	0.00513	0.00499	0.00556	0.00195	0.00250	0.00209		0.00194	0.00140	0.00174	0.00189	0.000475	0.000524		0.000614	0.000571	0.000480	0.000476		0.000485	0.000392	0.000347	0.00658
nickel, dissolved	mg/L	<0.00050	<0.00050	<0.00050	0.00080	0.00160	0.00087		0.00079	0.00076	0.00109	0.00075	<0.00050	<0.00050		<0.00050	<0.00050	<0.00050	<0.00050		<0.00050	<0.00050	<0.00050	<0.00050
phosphorus, dissolved	mg/L	0.012	0.016	0.024	<0.010	0.034	<0.010		<0.010	0.013	<0.010	0.012	0.018	<0.010		<0.010	<0.010	<0.010	<0.010		<0.010	<0.010	<0.010	0.011
potassium, dissolved	mg/L	6.47	5.92	7.06	3.11	2.94	3.49		3.11	2.46	2.99	3.07	0.729	0.676		0.702	0.621	0.687	0.655		0.664	1.10	1.00	6.71
selenium, dissolved	mg/L	<0.000050	0.000078	<0.000050	0.000147	0.000091	0.000181		0.000162	0.000157	0.000101	0.000177	0.000065	<0.000050		<0.000050	<0.000050	<0.000050	<0.000050		<0.000050	<0.000050	<0.000050	0.000052
silicon, dissolved	mg/L	9.10	8.38	10.4	1.36	4.01	1.38		1.36	4.44	1.81	1.43	3.05	3.24		3.88	3.11	3.00	2.98		2.97	5.01	4.83	10.5
silver, dissolved	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010		<0.000010	<0.000010	<0.000010	<0.000010		<0.000010	<0.000010	<0.000010	<0.000010
sodium, dissolved	mg/L	35.0	36.70	42.6	10.9	10.1	11.6		10.8	14.8	11.8	10.7	5.94	5.15		4.36	4.98	5.18	4.86		5.05	7.68	7.42	72.7
strontium, dissolved	mg/L	0.607	0.583	0.745	0.174	0.175	0.188		0.177	0.303	0.180	0.181	0.133	0.125		0.107	0.118	0.118	0.122		0.116	0.195	0.205	1.33
sulfur, dissolved	mg/L	78.2	79.80	103	8.61	8.42	10.2		8.52	14.0	9.19	9.01	2.84	2.13		1.38	2.38	2.08	2.31		2.35	6.51	6.20	241
thallium, dissolved	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010		<0.000010	<0.000010	<0.000010	<0.000010		<0.000010	<0.000010	<0.000010	<0.000010
tin, dissolved	mg/L	<0.00010	<0.00010	0.00044	<0.00010	<0.00010	<0.00010		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010		<0.00010	<0.00010	<0.00010	<0.00010		<0.00010	<0.00010	<0.00010	<0.00010
titanium, dissolved	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030		<0.00030	<0.00030	0.00182	<0.00030	<0.00030	<0.00030		<0.00030	<0.00030	<0.00030	<0.00030		<0.00030	<0.00030	<0.00030	<0.00030
uranium, dissolved	mg/L	0.00188	0.00	0.00382	0.000720	0.000309	0.000698		0.000744	0.00101	0.000505	0.000735	0.000176	0.000138		0.000053	0.000049	0.000118	0.000119		0.000119	0.000159	0.000145	0.006
vanadium, dissolved	mg/L	<0.00050	<0.00050	<0.00050	0.00111	0.00102	0.00129		0.00122	0.00100	0.00091	0.00117	<0.00050	0.00051		0.00075	0.00066	0.00050	0.00053		0.00051	<0.00050	<0.00050	0.00112
zinc, dissolved	mg/L	<0.0010	<0.0010	0.0027	0.0012	0.0040	0.0074		<0.0010	0.0187	0.117	0.0025	<0.0010	<0.0010		0.0063	0.0116	0.0017	0.0018		0.0021	0.0019	0.0016	0.0018
dissolved metals filtration location		Field	Field	Field	Field	Field	Field		Field	Field	Field	Field	Field	Field		Field	Field	Field	Field		Field	Field	Field	Field

Site Name		Kengard Test	Kengard Test	Kengard 29680	Nicola River Kengard RR	Nicola River Kengard RR Piezo	Nicola River N'Kwala Bridge	Nicola River N'Kwala Bridge Piezo	Nicola River Spring Granite	Nicola River Spring Granite Piezo	Nicola U/S Coldwater	Nicola U/S Coldwater	Coldwater R US Nicola R	Coldwater R US Collett Bridge	Coldwater R Voght Park	Coldwater River U/S Voght Park Piezo	Coldwater R Claybanks	Coldwater R Claybanks Piezo	Coldwater R May St	Coldwater R May St Piezo	Coldwater R Houston	OW 296	OW 296	OW 494
Client REQ ID		50255698	50255464	50255462	50255498	50255849	50255497		50255496	50255847	50255839	50255838	50255494	50255493		50255495	50255492	50255844	50255489	50255841	50255490	50255558	50255557	50255560
Client Sample ID		E321765_REG	E321765_REG	E307146_REG	E206918_REG	REG	04-Oct-2021		E322353_REG	REG	0600115_REG	0600115_REG	E322354_REG	E279294_REG		04-Oct-2021	E206272_REG	REG	E321832_REG		E321831_REG	E206918_REG	E206918_REG	E317012_REG
Date Sampled		13-Sep-2021	13-Sep-2021	13-Sep-2021	07-Sep-2021	23-Sep-2021	14:50		23-Sep-2021	23-Sep-2021	23-Sep-2021	23-Sep-2021	22-Sep-2021	23-Sep-2021		12:55	22-Sep-2021	22-Sep-2021	22-Sep-2021		22-Sep-2021	07-Sep-2021	07-Sep-2021	08-Sep-2021
Time Sampled		14:50	14:20	12:55	13:45	12:30	VA21C1855-001		13:25	13:35	15:45	16:00	10:25	15:05		VA21C1854-001	12:55	12:40	14:50		13:55	13:15	13:45	12:10
ALS Sample ID		VA21B9877-001	VA21B9879-001	VA21B9883-001	VA21B9285-001	VA21C1049-001	Sub-Matrix: Water		VA21C1047-001	VA21C1051-001	VA21C1045-001	VA21C1052-001	VA21C0883-001	VA21C1050-001		Sub-Matrix: Water	VA21C0885-001	VA21C0884-001	VA21C0888-001		VA21C0887-001	VA21B9326-001	VA21B9285-001	VA21B9572-001
$d^{18}O$	**‰ VSMOW**	-16.8	-16.8	-16.9	-13.5	-13.4	-13.5		-13.5	-14.2	-14.2	-13.5	-15.1	-15.1		-14.7	-15.1	-15.2	-15.2		-15.2	-15.9	-15.9	-17
	±1σ	0.02	0.01	0.01	0.02	0.04	0.02		0.00	0.04	0.01	0.02	0.01	0.02		0.02	0.02	0.02	0.01		0.02	0.03	0.05	0.02
$d^{2}H$	**‰ VSMOW**	-134	-134	-133	-113	-113	-113		-113	-117	-117	-113	-113	-113		-108	-112	-113	-113		-113	-119	-118	-135
	±1σ	0.36	0.1	0.16	0.07	0.08	0.15		0.04	0.11	0.07	0.08	0.08	0.05		0.13	0.05	0.03	0.04		0.05	0.06	0.1	0.33
Bacteriological Tests (Matrix: Water)																								
coliforms, thermotolerant [fecal]	CFU/100mL	<1		<1																				
coliforms, total	MPN/100mL	1		<1																				

APPENDIX D

Photos From 2021 Field Program

Photo 1: Coldwater River at Claybanks Mini-Piezometer and MW04-2 (Photo Date: 2021-09-15)

Photo 2: Coldwater River at Claybanks Mini-Piezometer (Photo Date: 2021-09-22)

Photo 3: Coldwater River at May St. Mini-Piezometer (Photo Date: 2021-09-17)

Photo 4: Coldwater River at Voght Park Mini-Piezometer (Photo Date: 2021-09-29)

Photo 5: Coldwater River at Voght Park Viewpoint (Photo Date: 2021-09-23)

Photo 6: Coldwater River Streamflow Station A (Photo Date: 2021-09-23)

Photo 7: Coldwater River Streamflow Station B (Photo Date: 2021-09-23)

Photo 8: Coldwater River Streamflow Station C (Photo Date: 2021-09-16)

Photo 9: Coldwater River Streamflow Station D (Photo Date: 2021-09-23)

Photo 10: Coldwater River Streamflow Station E (Photo Date: 2021-09-16)

Photo 11: Coldwater River Streamflow Station F (Photo Date: 2021-09-23)

Photo 12: Mini-Piezometer Screen Tip (Photo Date: 2021-09-28)

Photo 13: Nicola River at Kengard Mini-Piezometer (Photo Date: 2021-09-22)

Photo 14: Nicola River at N'kwala Park Mini-Piezometer (Photo Date: 2021-09-28)

Photo 15: Nicola River at Spring & Granite Mini-Piezometer (Photo Date: 2021-09-23)

Photo 16: Nicola River U/S of Coldwater (Norgaard) Stilling Well (Photo Date: 2021-08-20)

Photo 17: Nicola River Streamflow Station A (Photo Date: 2021-09-16)

Photo 18: Nicola River Streamflow Station B (Photo Date: 2021-09-16)

Photo 19: Nicola River Streamflow Station C (Photo Date: 2021-09-16)

Photo 20: Nicola River Streamflow Station D (additional) (Photo Date: 2021-09-16)

Photo 21: Nicola River Streamflow Station D (Photo Date: 2021-09-16)

Photo 22: Streamflow Meter (Photo Date: 2021-09-15)

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