Technical Memorandum

Banks Groundwater Engineering Limited
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5 November 2021

To: Dustin Lyttle, P.Eng., Triton Engineering Services Limited

Copies: Brandon Figg, C.Tech., CMT Engineering Inc.

From: William Banks, P.Eng., Principal Hydrogeologist

Re: Hydrogeological Assessment, Dickson Drive Extension Municipal Class EA
Fergus, Township of Centre Wellington

The following presents a brief summery of the groundwater monitoring conducted to-date at the above-referenced site. Banks Groundwater Engineering (BGE) staff were onsite during the drilling, sampling, and monitoring well installation on 20 May 2021, completed by CMT Engineering. The following day, data loggers were installed in each of the five monitoring wells. A shallow piezometer was also installed in the wetland on the north boundary of the site and a data logger was installed to begin recording groundwater levels. The locations of the monitoring wells and the piezometer are shown in the attached Figure 1. The installation details are presented in the borehole logs for each monitoring well in the CMT Engineering report, dated 5 October 2021.

With the installation of data loggers in the five monitors and one piezometer, recording of groundwater levels on an hourly basis began 21 May 2021. The occurrence of groundwater in all but one monitor (i.e. BH5-MW-21) was confirmed on this date. Geodetic ground surface elevations at each monitoring well, provided by Triton Engineering Services, were used to establish the elevation of groundwater levels in each monitor. The results of manual measurements and data logger recordings are presented in hydrographs in Figures 2 to 7. It is noted that in some graphs, the data logger recordings are not continuous as we experienced interruptions in data logger operation. All data loggers have since been replaced.

The observed increases in groundwater levels in four of the locations are attributed to precipitation events and resulting recharge to the shallow groundwater system. For reference, the daily total precipitation recorded at the Elora climate station, is presented in Figure 8. Events of more than 15 mm will typically cause a rise in levels in shallow groundwater systems, where the local overburden is granular in nature.

As planned, groundwater levels will continue to be recorded at this site through the coming months, and updated graphs will be provided in the spring of 2022, and as required.



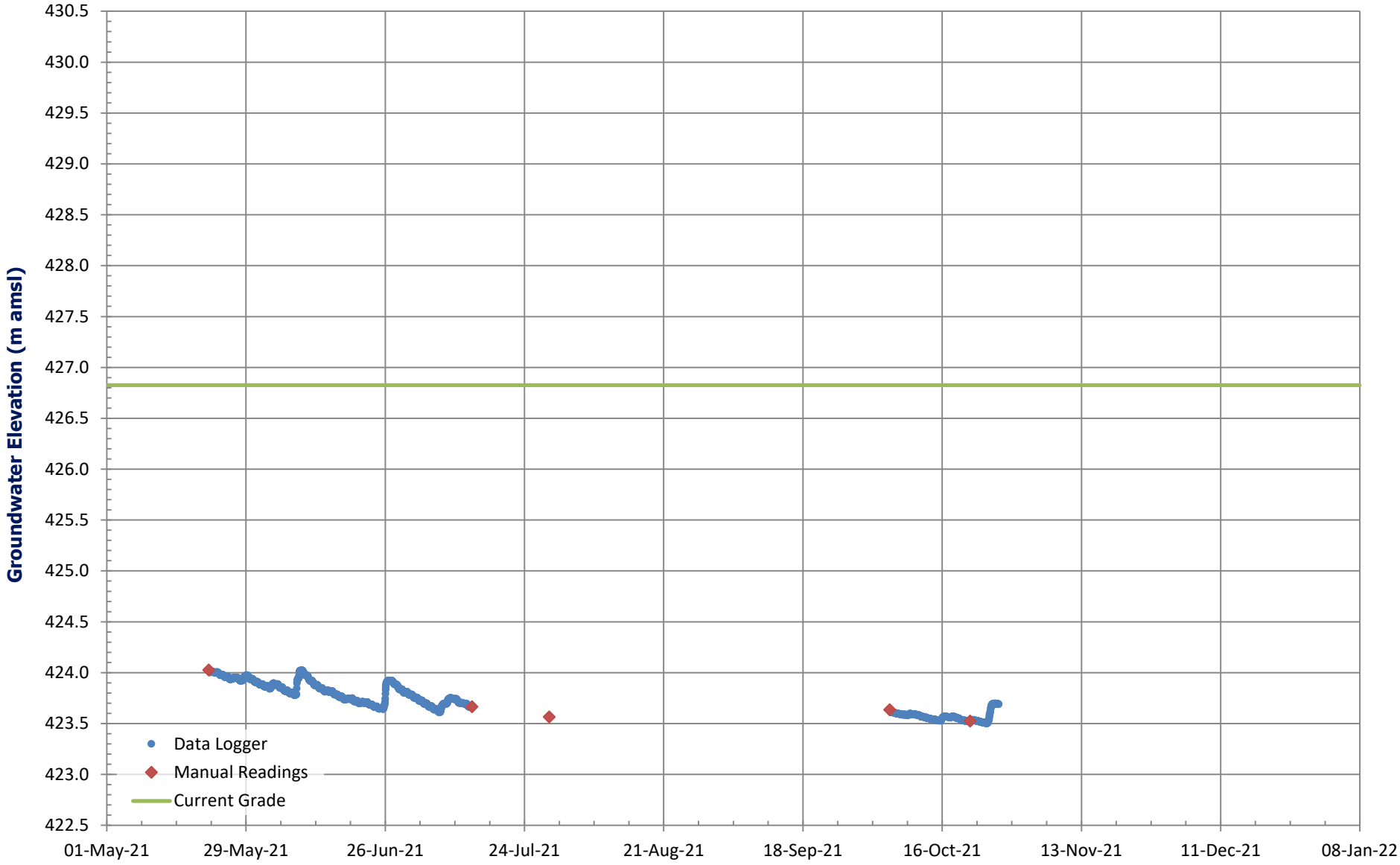
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Hydrogeological Assessment
Dickson Drive Extension Municipal Class EA
Fergus, Township of Centre Wellington

Monitoring Well & Piezometer Locations

Figure 1

Groundwater Elevation - BH1-MW-21

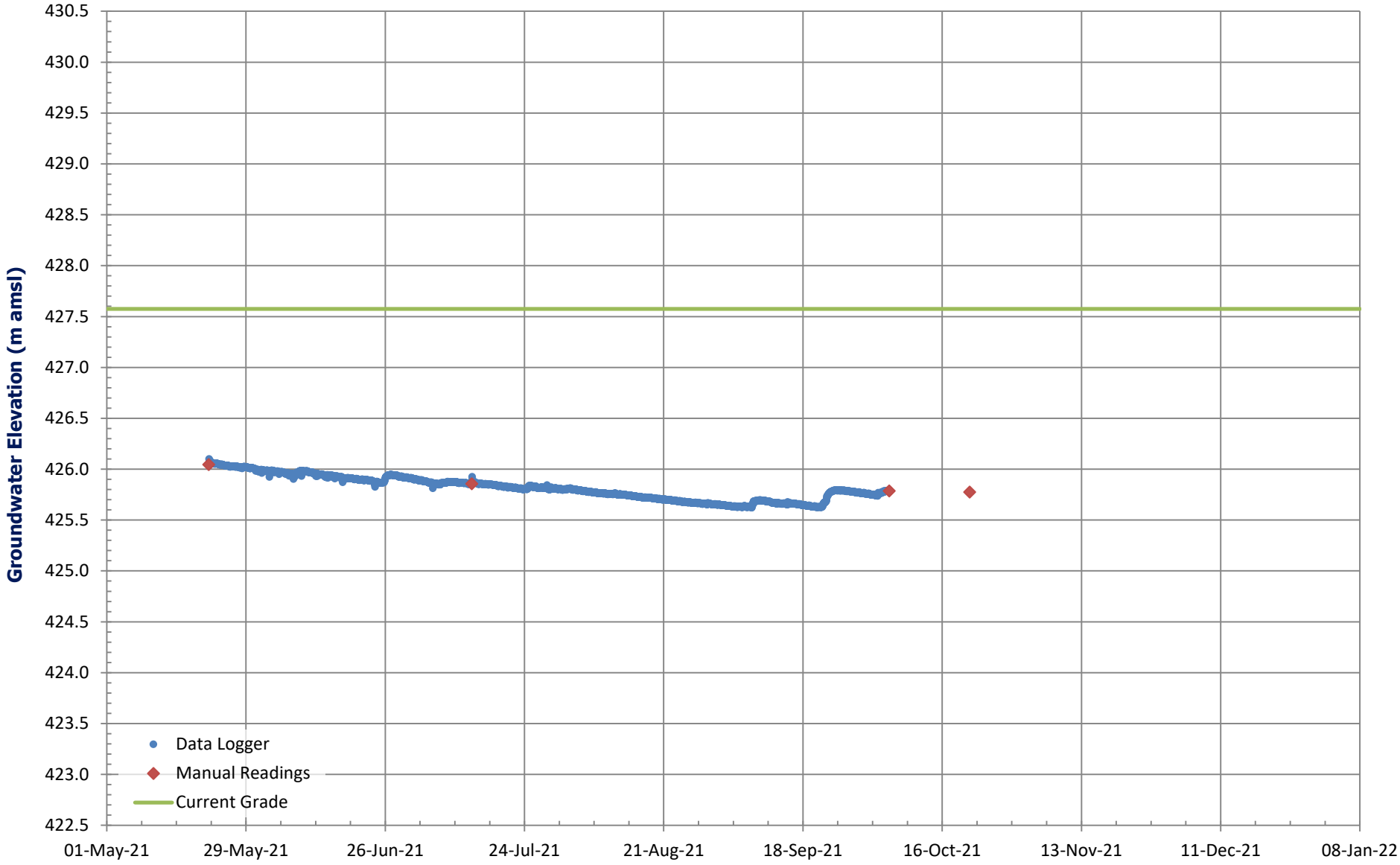


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Dickson Drive Extension EA - Groundwater Monitoring Program

Figure 2

Groundwater Elevation - BH2-MW-21

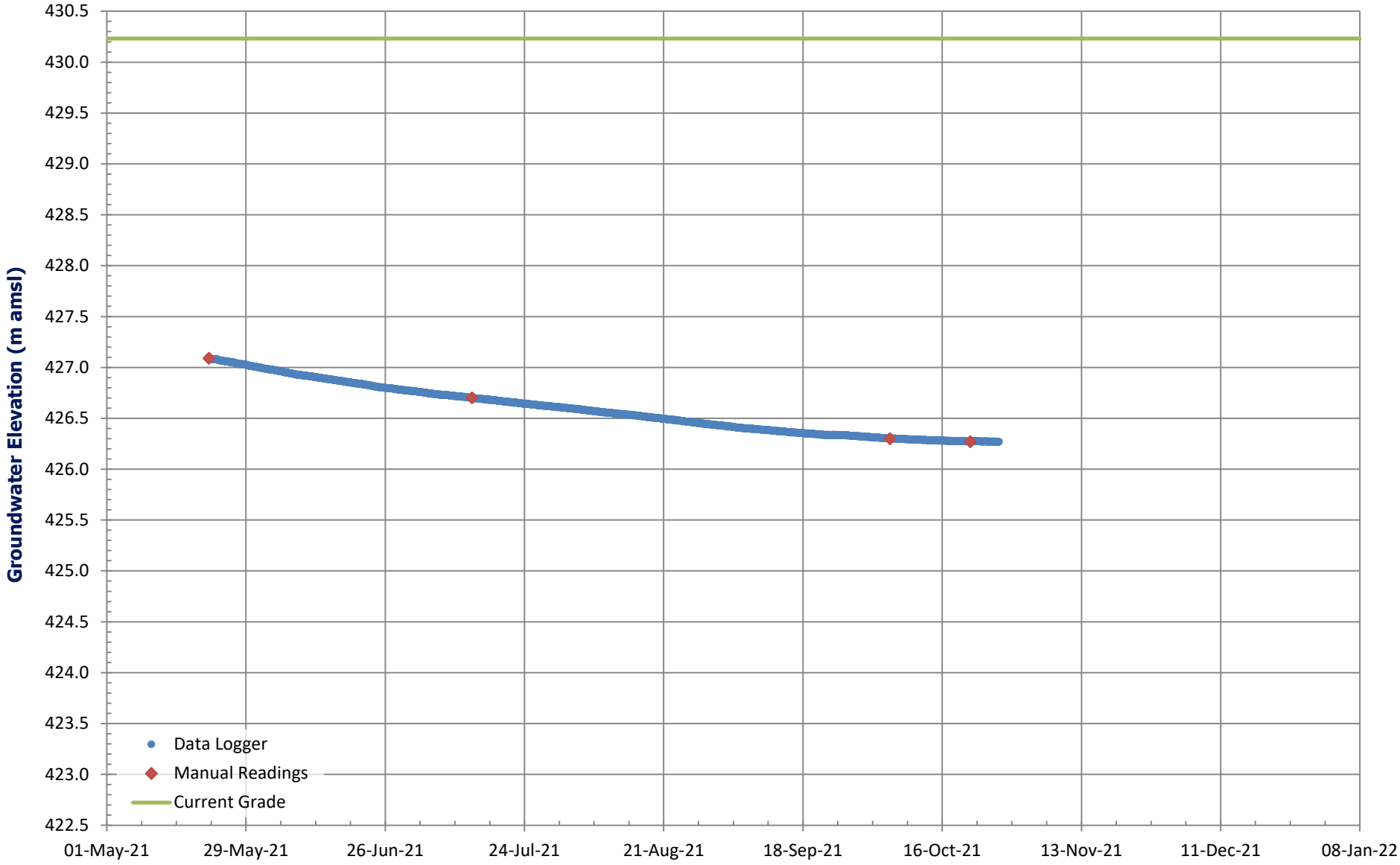


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Figure 3

Groundwater Elevation - BH3-MW-21

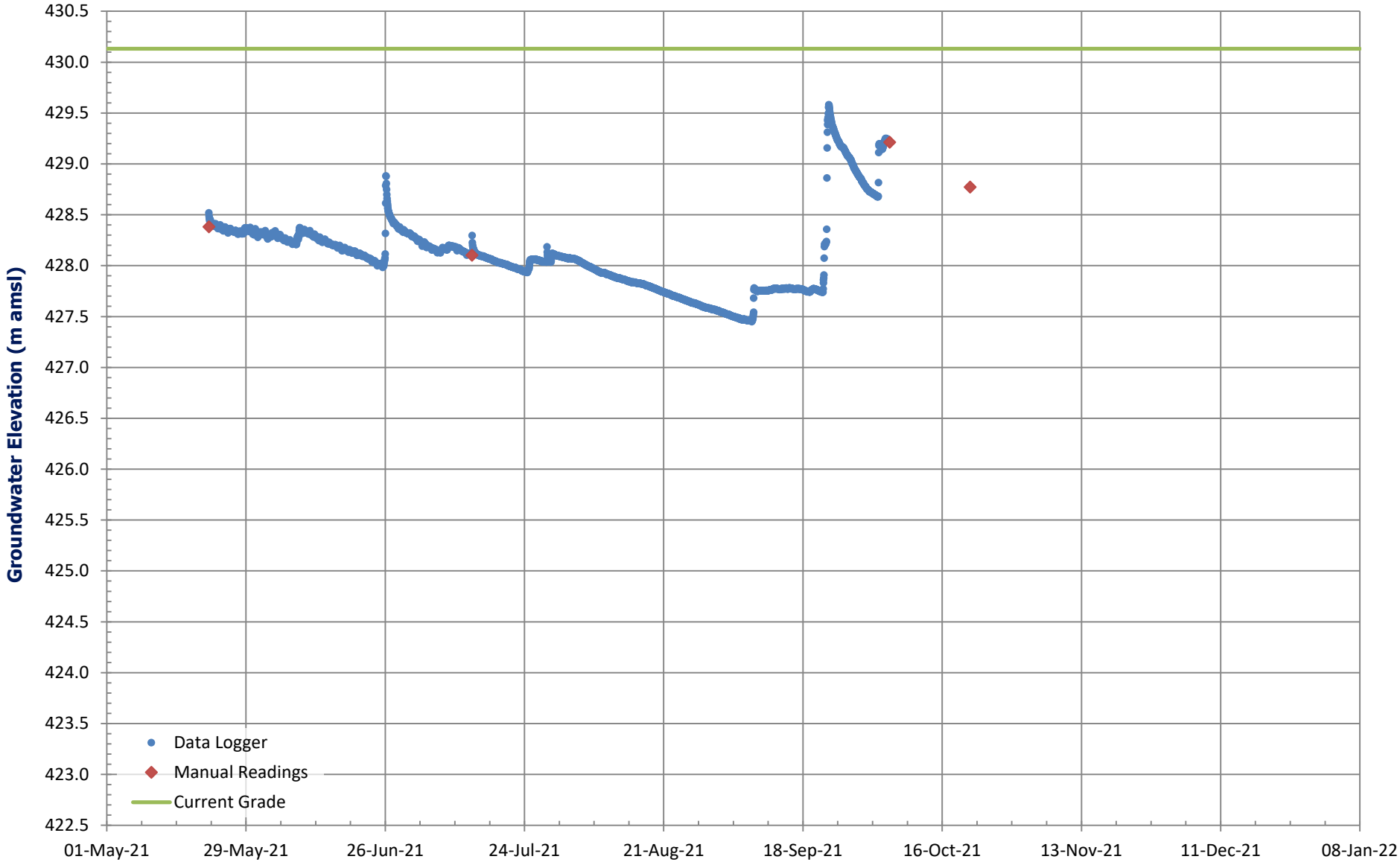


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Figure 4

Groundwater Elevation - BH4-MW-21

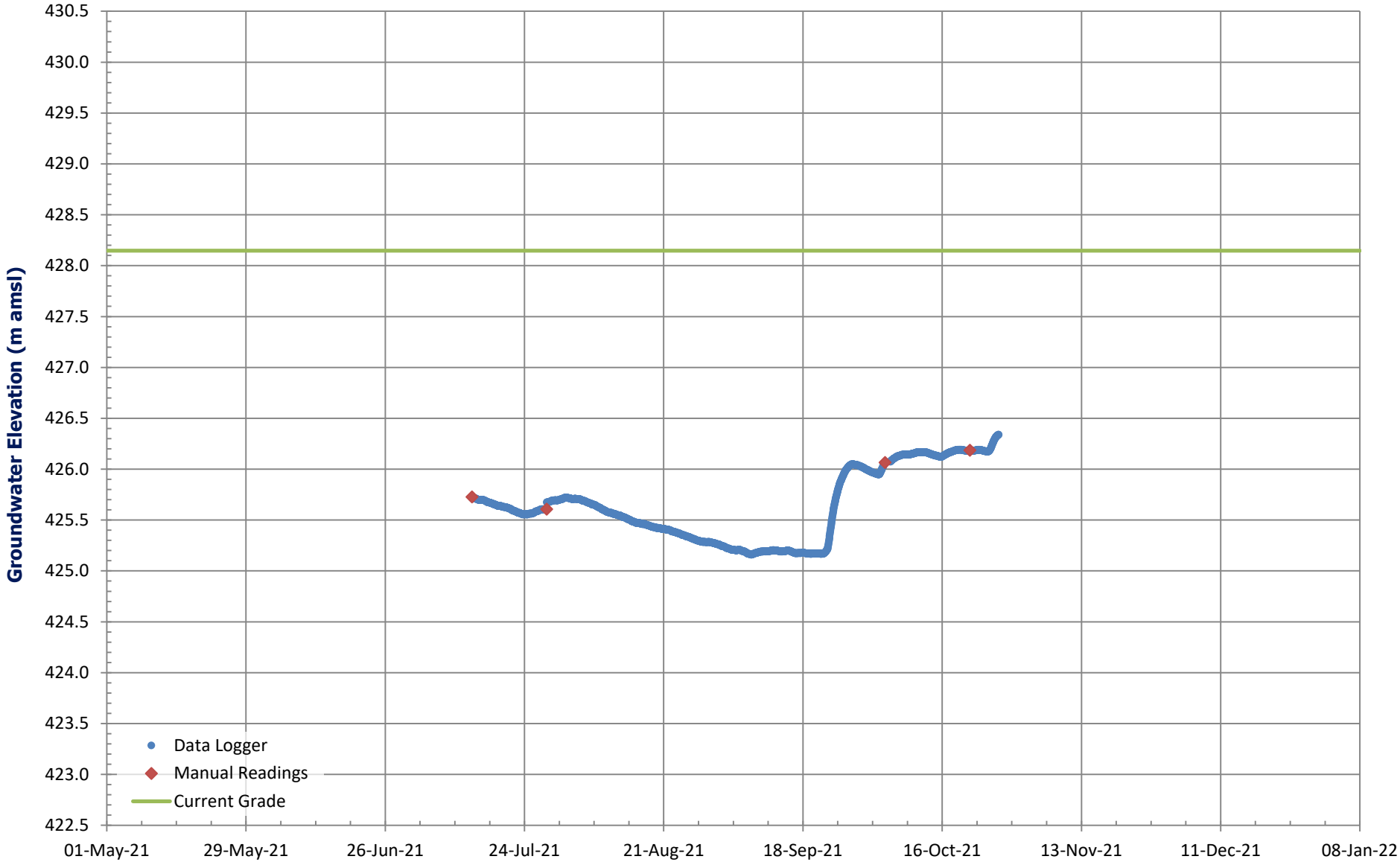


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Figure 5

Groundwater Elevation - BH5-MW-21

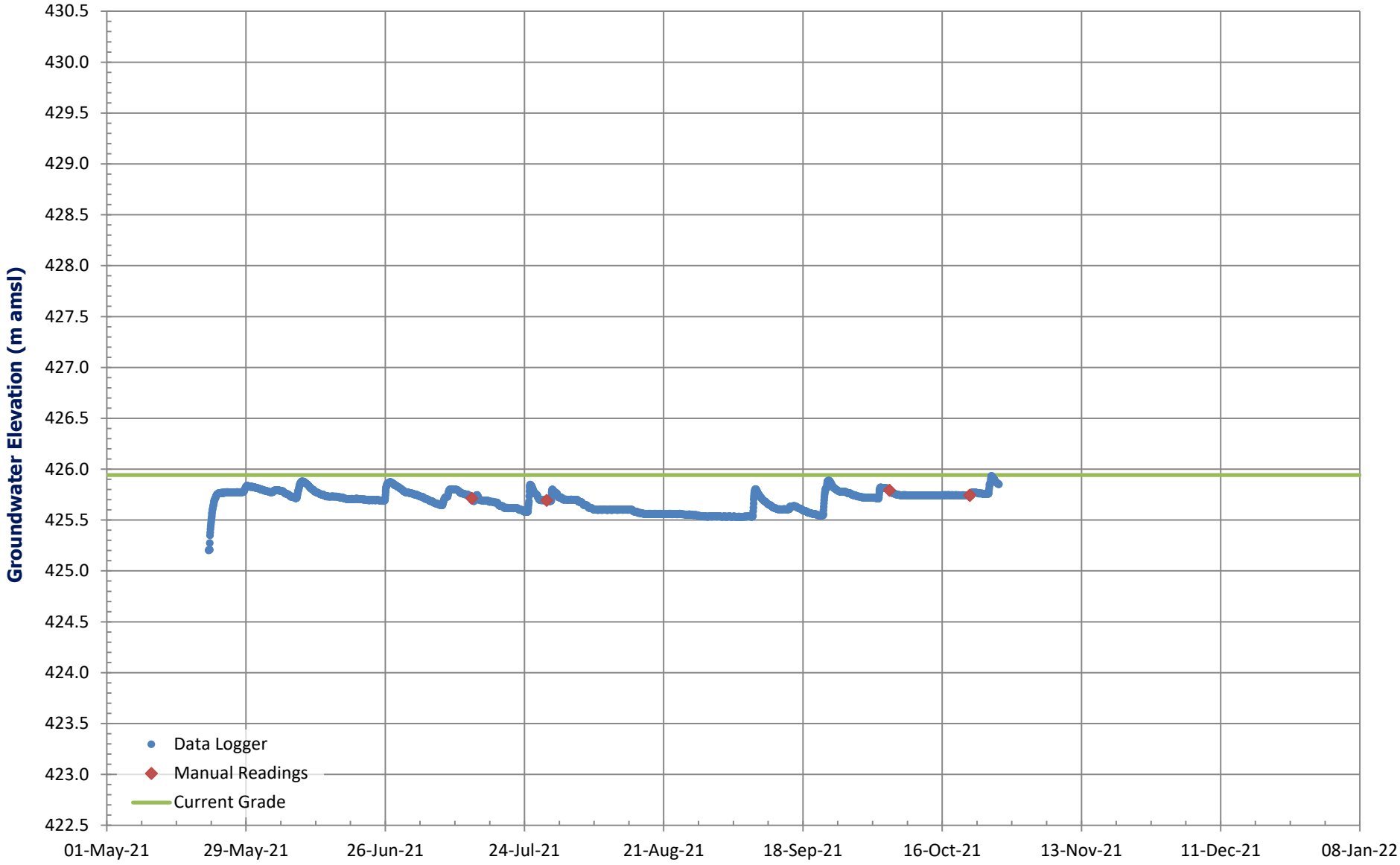


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Figure 6

Groundwater Elevation (Estimated) - PZ1-21

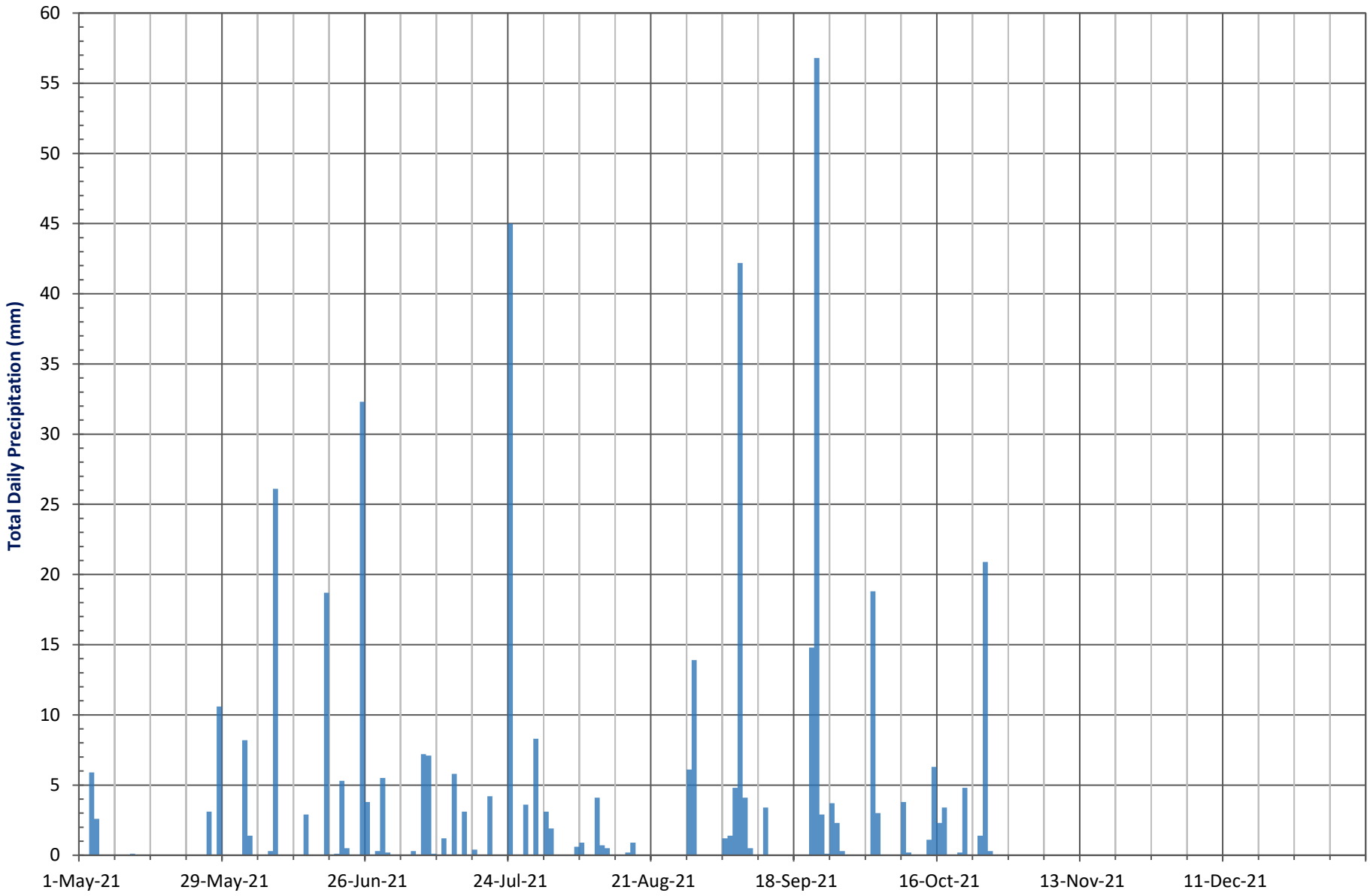


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Figure 7

Total Daily Precipitation (mm) - Elora RCS



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Figure 8