

2023 Mississippi River Elevation Monitoring

Along the Mississippi River within the MWMO watershed, six river staff gages are installed seasonally and monitored for water level from April through November since 2005. In 2015, MWMO monitoring staff installed an additional staff gage in the river at the MWMO office. The monitoring sites are labeled according to the approximate river mile, which is identified by the distance upstream from the confluence of the Mississippi and Ohio Rivers in Cairo, Illinois, and from the nearest riverbank to the river staff gage. The “E” refers to the eastern river bank and “W” refers to the western river bank. The site with the highest river mile is the farthest upstream.

Ordinary High Water Level (OHWL) values were calculated for the seven river sites using two elevation data sets. The data provided by the Minnesota Department of Natural Resources use NGVD (National Geodetic Vertical Datum) 1929 and MWMO’s reference elevations for each staff gage use NAVD (North American Vertical Datum) 1988 elevation values, so the NGVD 29 values were converted to NAVD 88 using a conversion map from MN DNR. The MWMO watershed falls between 0.2 and 0.3 conversion so 0.25 was used to adjust values from NGVD 29 to NAVD 88.

The following figures show river elevation values for each of the monitored river sites. River elevation values from 2021, 2022, and 2023 are overlaid in Figures 1–3 and Figures 5–8. Figure 4 shows the minimum, average, and maximum elevation values between years 2018–2023 at the MWMO river gage site just north of the Lowry Bridge in Northeast Minneapolis.

The figures do not represent the full scale and detail of river elevation changes throughout the year. They display the values collected by periodic visits to each site, with the intent to document overall trends and large-scale variations. In 2023, elevation values were collected for each site approximately 2-4 times per month (with the exception of the MWMO site (MR856.4E) which was collected more frequently). Therefore, the high and low points on each graph do not capture the actual minimum and maximum elevation values, as river elevation can change on a daily basis — especially during peak seasonal events. See figure descriptions for details regarding any significant data gaps in the 2023 data set.

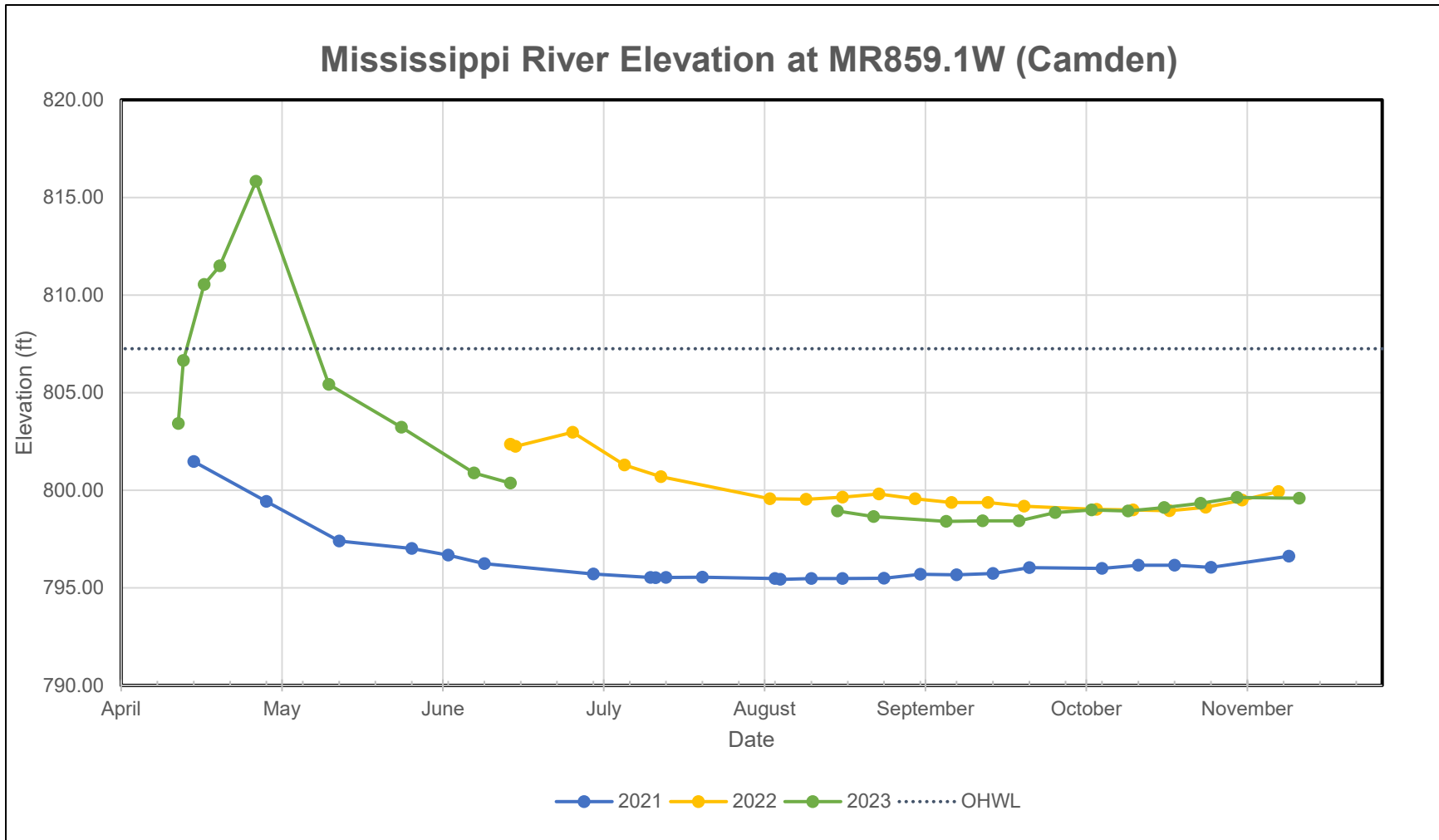


Figure 1. Mississippi River elevation values between April and November in 2021, 2022 and 2023 at river mile 859.1. Staff gage readings were collected approximately every week or when monitoring staff were on site and able to read gage. The gap in 2023 data signifies the period at which the river level dropped below the staff gauge, and resumes when the gauge was moved deeper into the river. Ordinary high water level (OHWL) value included for comparison.

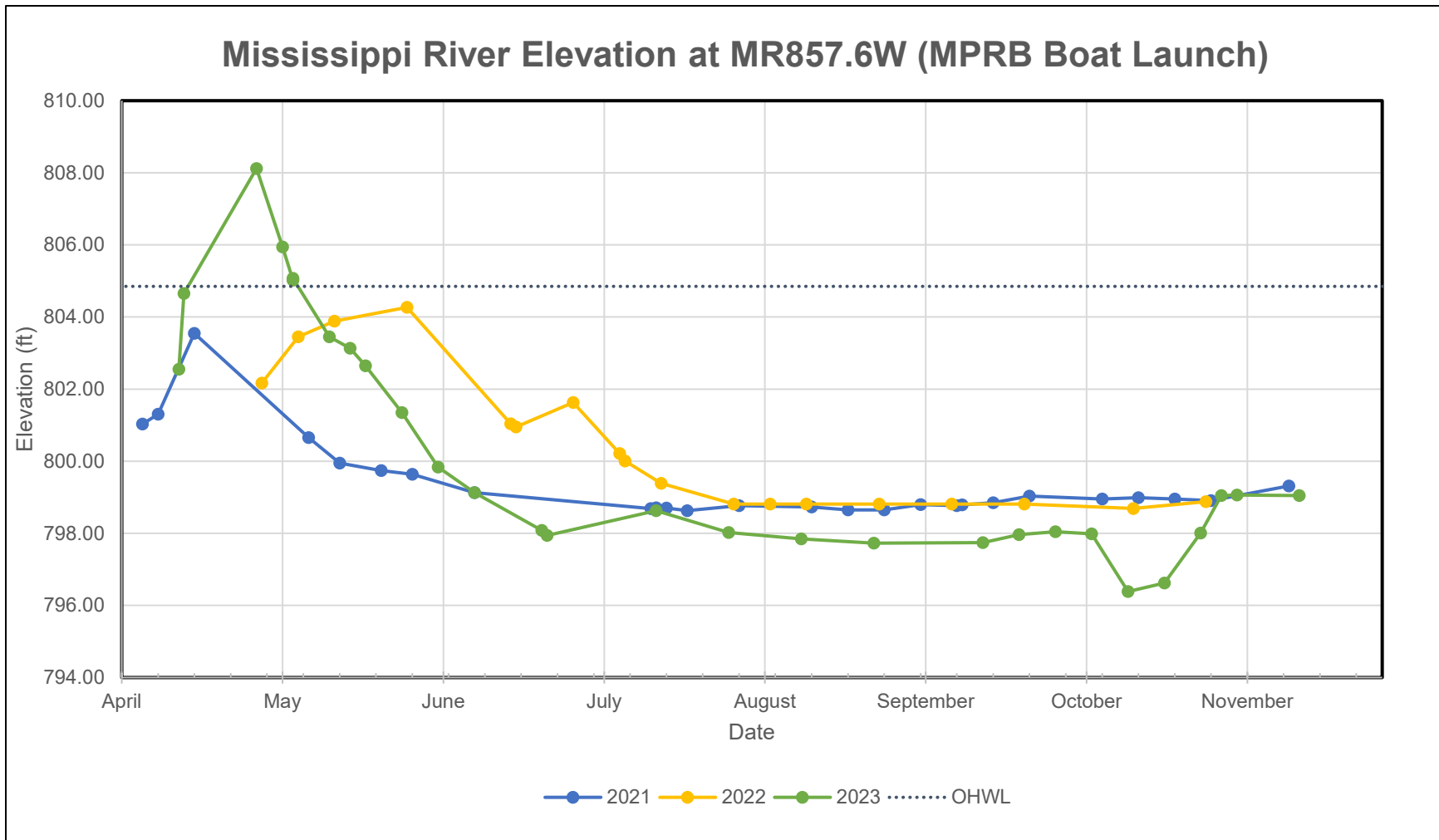


Figure 2. Mississippi River elevation values between April and November in 2021, 2022, and 2023 at river mile 857.6. Staff gage readings were collected approximately every week or when monitoring staff were on site and able to read gage. Ordinary high water level (OHWL) value included for comparison.

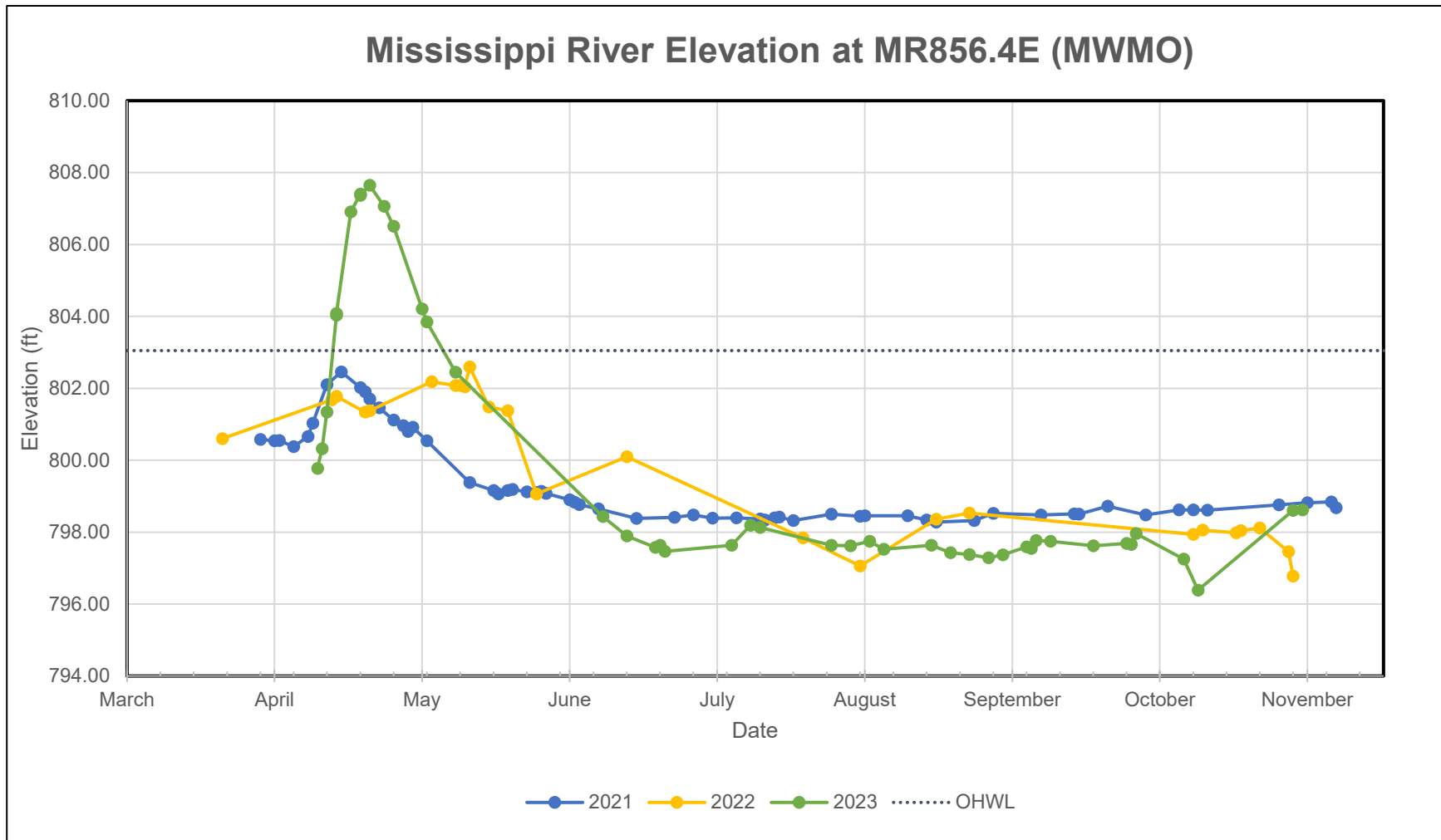


Figure 3. Mississippi River elevation values between April and November in 2021, 2022, and 2023 at river mile 856.4. Staff gage readings were collected on an approximately biweekly basis. Ordinary high water level (OHWL) value included for comparison.

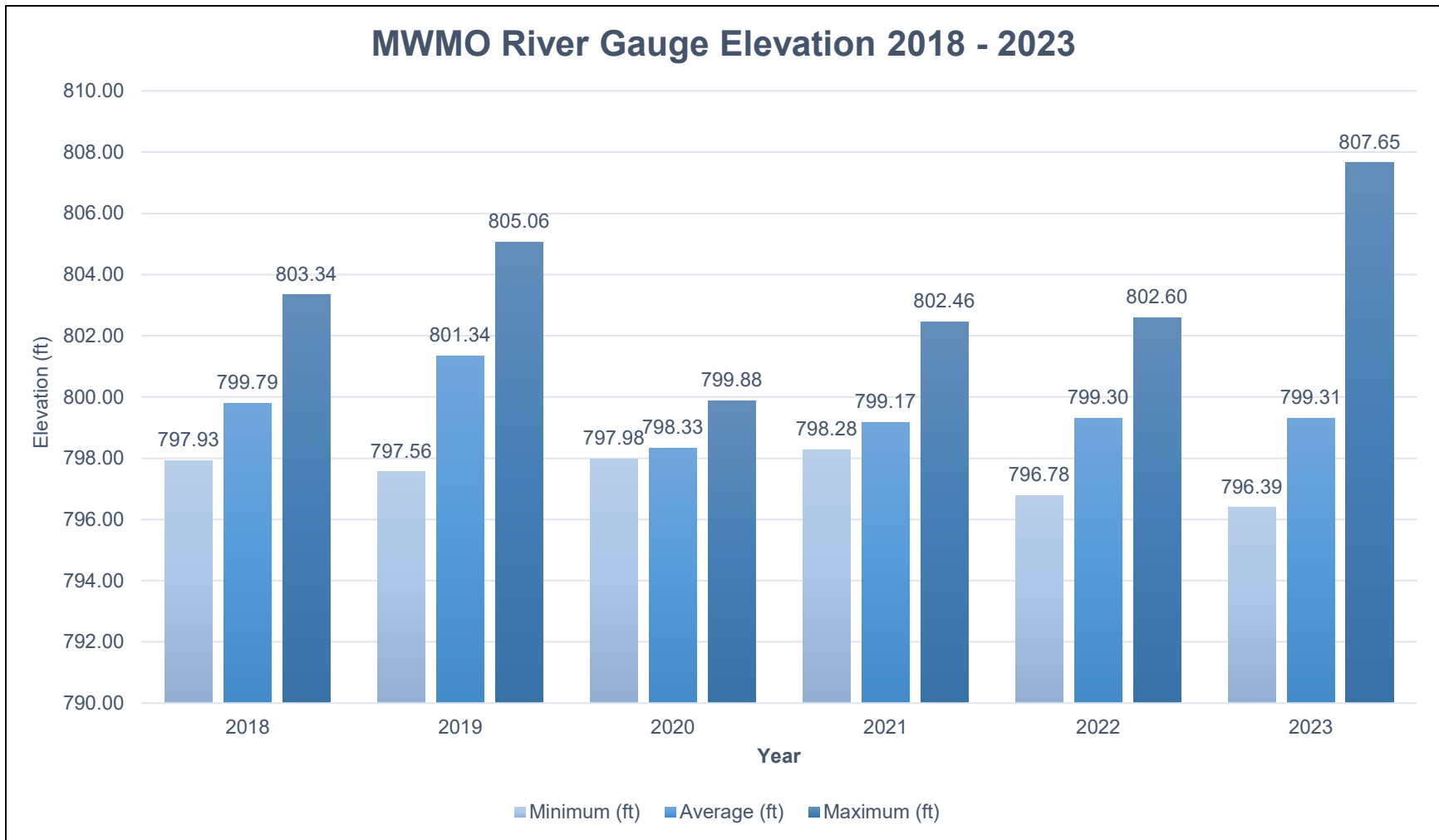


Figure 4. Minimum, average, and maximum collected elevation values at Mississippi River mile 856.4 for years 2018-2023.

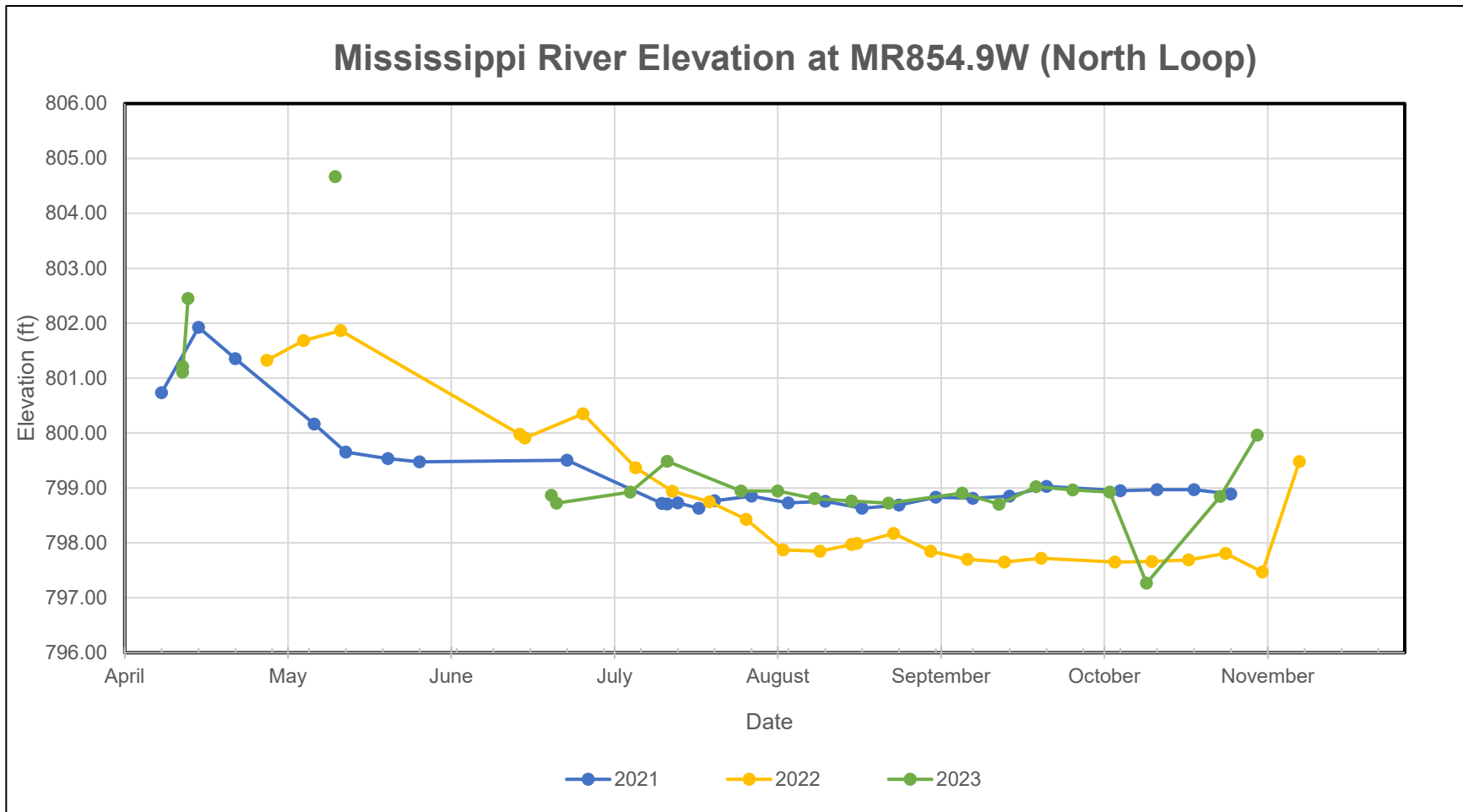


Figure 5. Mississippi River elevation values between April and November in 2021, 2022, and 2023 at river mile 854.9. Staff gage readings were collected approximately every week or when monitoring staff were on site and able to read the gage. Data gaps in 2023 were due to flood levels that surpassed and ultimately dislodged the staff gauge. Data collection resumed when river levels receded and the gauge could be reinstalled. Ordinary high water level (OHWL) values were not calculated for this site.

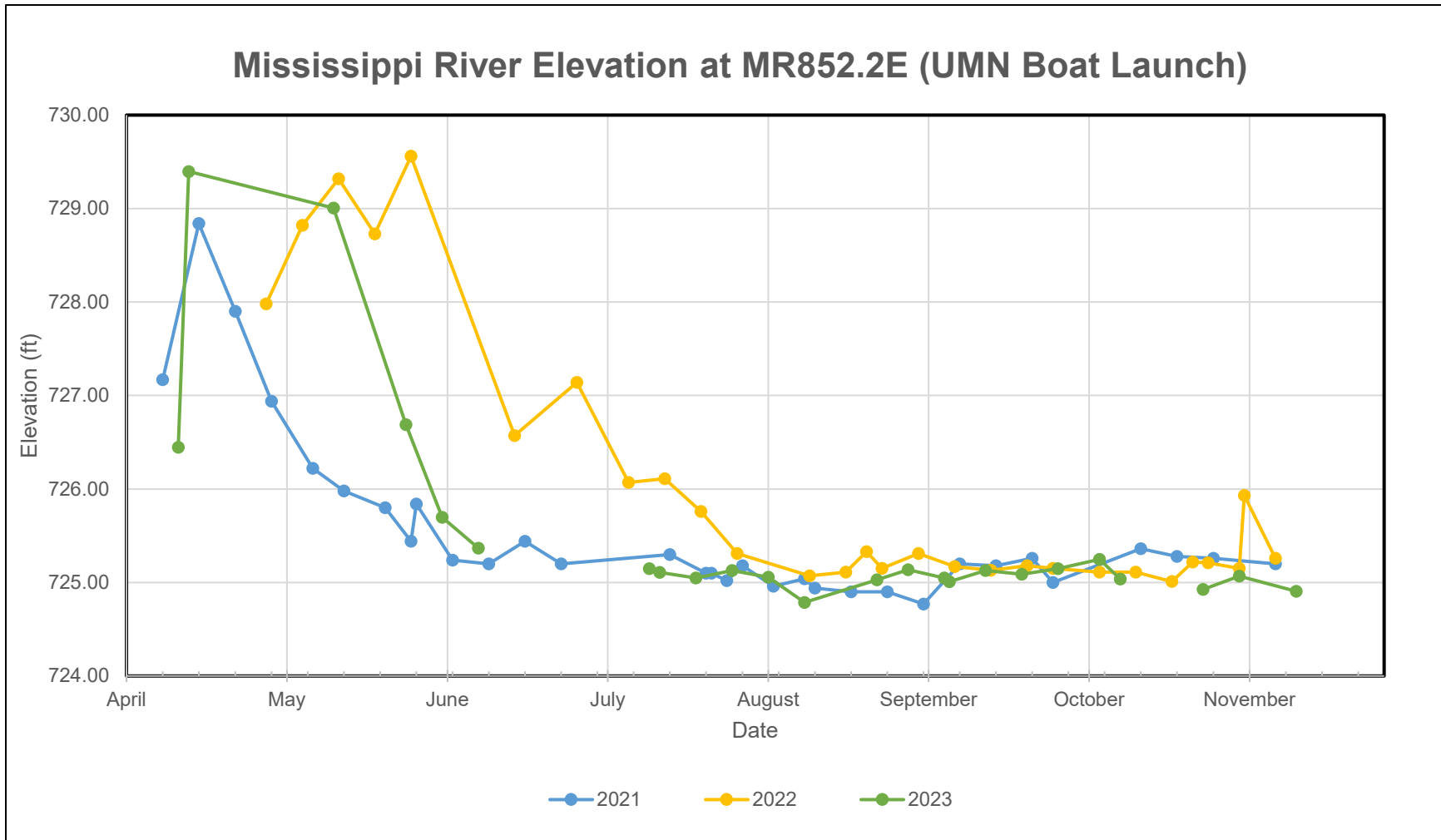


Figure 6. Mississippi River elevation values between April and November in 2021, 2022, and 2023 at river mile 852.2. Staff gage readings were collected approximately every week or when monitoring staff were on site and able to read gage. Data gaps occurred in 2023 when river levels dropped below the measuring capacity of the staff gauge. Ordinary high water level (OHWL) values were not available for this location.

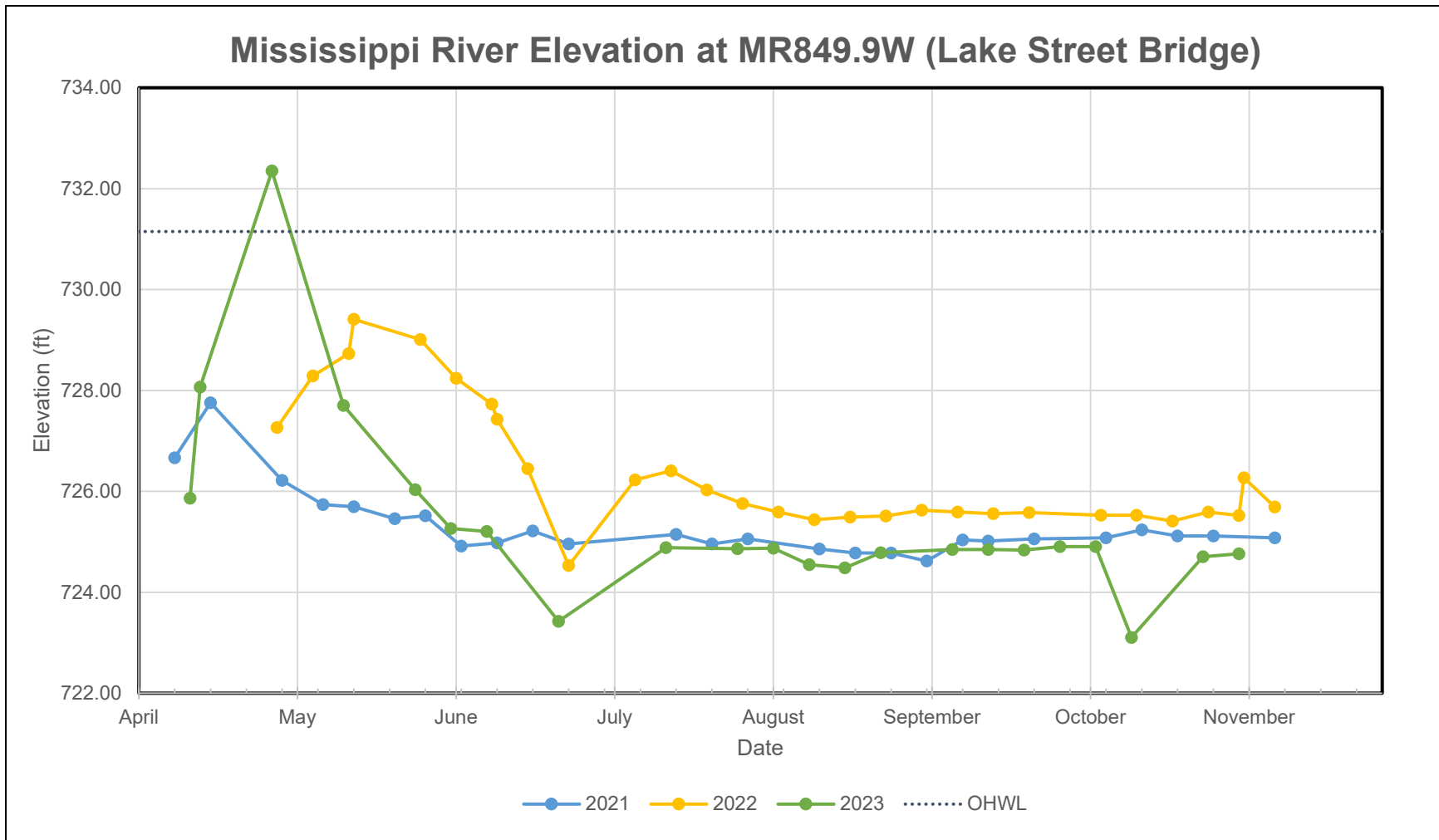


Figure 7. Mississippi River elevation values between April and November in 2021, 2022, and 2023 at river mile 849.9. Staff gage readings were collected approximately every week or when monitoring staff were on site and able to read gage. Ordinary high water level (OHWL) value included for comparison.

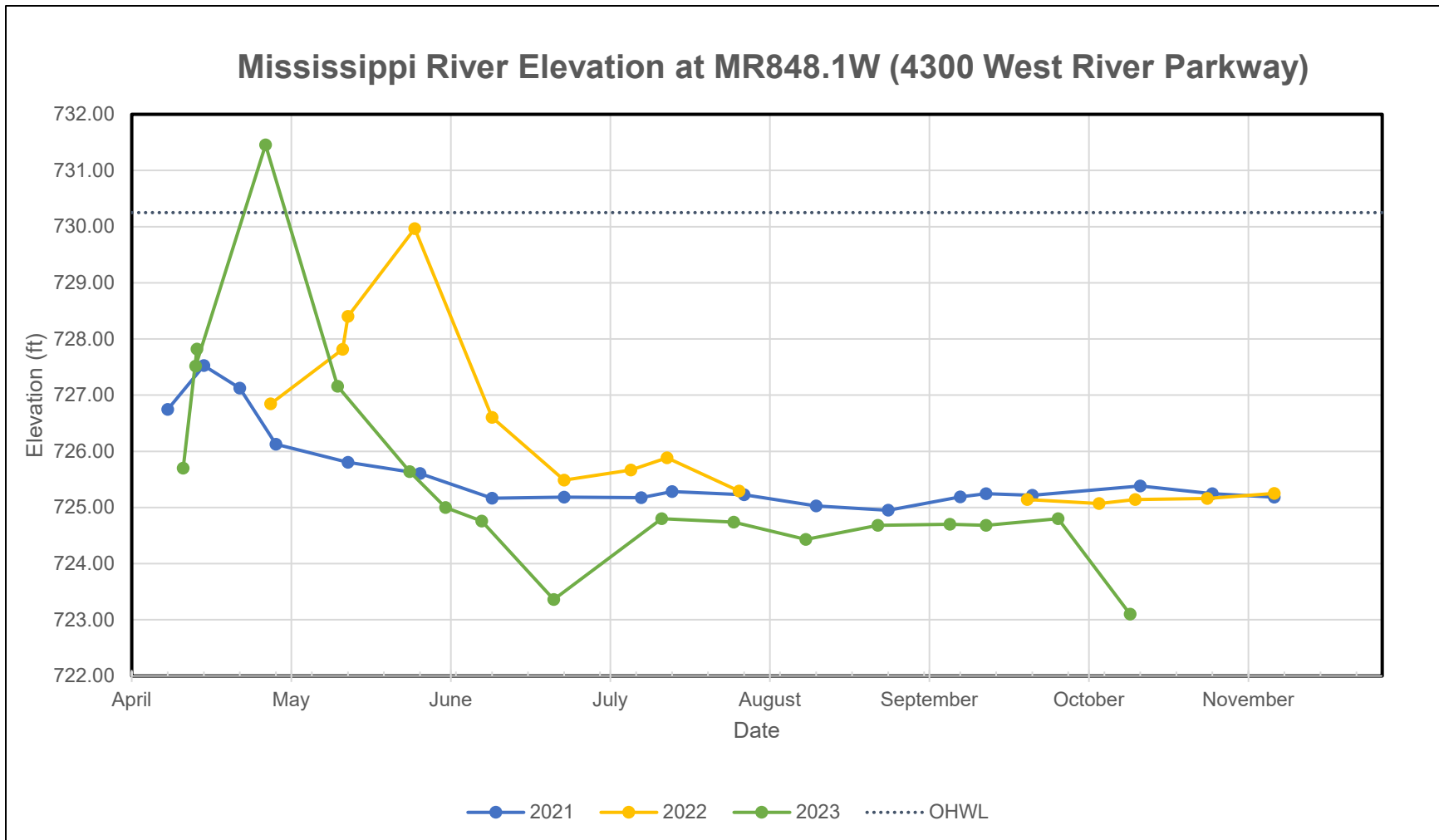


Figure 8. Mississippi River elevation values between April and November in 2021, 2022, and 2023 at river mile 848.1. Staff gage readings were collected approximately every week or when monitoring staff were on site and able to read gage. Ordinary high water level (OHWL) value included for comparison.