

Shasta County Wastewater Surveillance Monthly Report

09/2023



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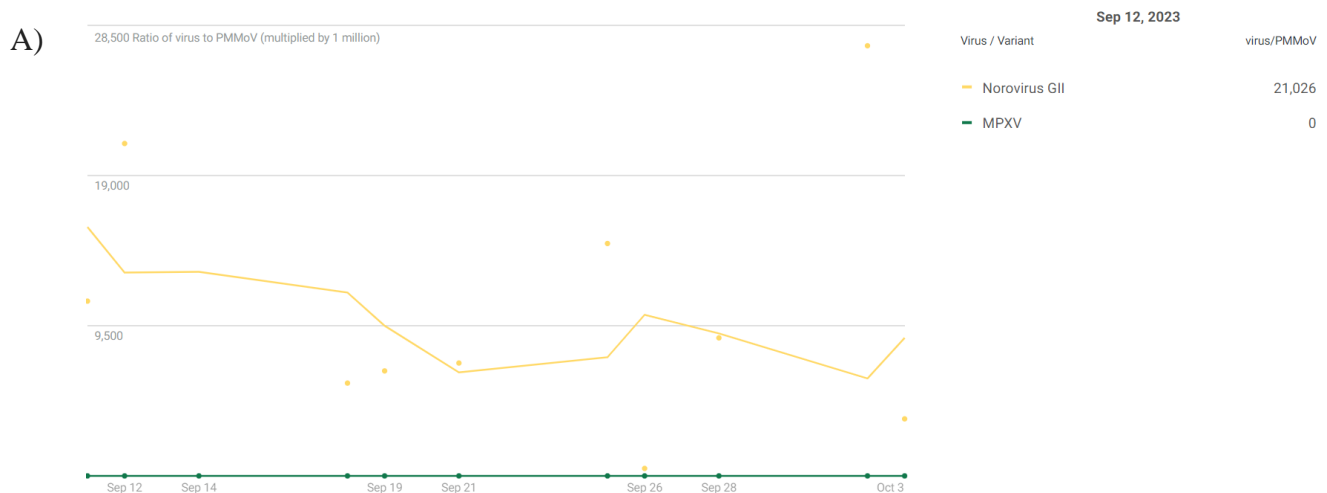


Shasta County
Health & Human
Services Agency

Welcome to the Shasta County Wastewater Surveillance Monthly Report, a pioneering initiative aimed at safeguarding public health through proactive pathogen detection. Commencing on June 15, 2023, our comprehensive surveillance program has been diligently monitoring the Clear Creek utility for the presence of various infectious agents. This crucial endeavor underscores our unwavering commitment to early identification and effective management of potential health risks within our community. We extend our thanks to the city of Redding for partnering with Public Health. We also thank the utilities and laboratory personnel at Clear Creek and Stillwater WWTP, for their contributions to wastewater surveillance in our community. We are working together to protect our community!

Material and Methods: Three composited samples were collected from Stillwater Wastewater Utility and Clear Creek Wastewater Utility per week (Monday, Tuesday, and Thursday schedule) and then shipped to Verily Lab and CDPH Drinking Water and Radiation Laboratory for testing and analysis.

Results: Norovirus is an enteric virus that is currently present in Shasta County. Its presence had a peak on June 15th and since then has been plateauing (Figure 1A). Mpox was not present in any of the samples from Stillwater (Figure 1A). We had 4 detections of Mpox from samples at the Clear Creek Wastewater Utility (08/29, 08/31, 09/05 and 09/25 (Figure 1B)). It is important to note that there were no reported cases nor positive tests for MPOX in the county during this time. We cannot determine at this stage whether the positive result is linked to a resident of the county or someone visiting. This emphasizes the importance of wastewater surveillance in providing early warning and insights that complement traditional testing methods.



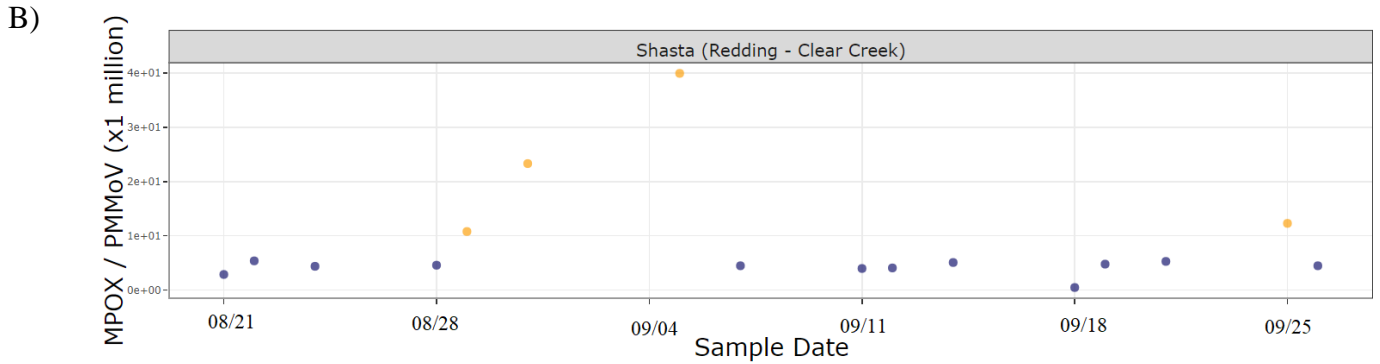


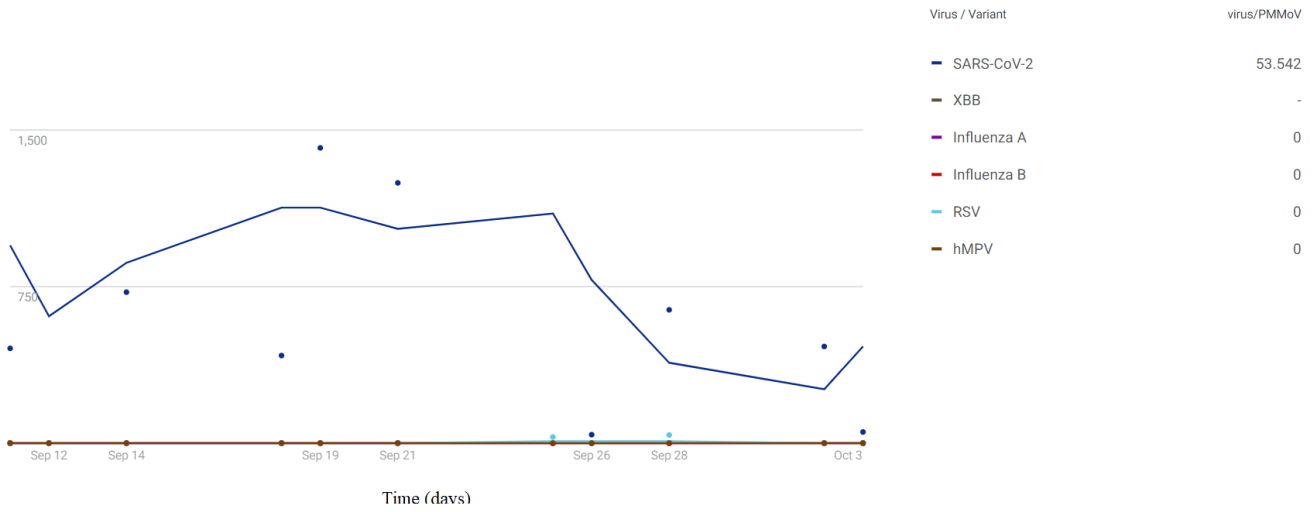
Figure 1. A) The ratio of Norovirus and MpoX viruses to Pepper Mild Mottle Virus (PMMoV) multiplied by one million from September 12th to October 3rd from composite samples collected at the Stillwater wastewater treatment plant. Showing a plateau of Norovirus and no detection of MpoX. B) The ratio of MpoX viruses to Pepper Mild Mottle Virus (PMMoV) multiplied by one million from August 21st to September 26th from composite samples collected at the Clear Creek wastewater treatment plant. Blue dots mean negative detection and yellow dots mean positive detection.

Respiratory viruses affect different groups of individuals in varying ways. SARS-CoV-2 can lead to severe illness and fatalities, with the elderly and those with underlying health conditions being at higher risk. Influenza A and B primarily impact the very young, the elderly, and individuals with weakened immune systems, although severe cases can occur across age groups. Respiratory Syncytial Virus (RSV) disproportionately affects infants and young children, often leading to hospitalizations. Human Metapneumovirus (hMPV) tends to cause respiratory infections in individuals of all ages, particularly the elderly and those with compromised immune systems, although its impact can vary widely. Wastewater surveillance enables early detection of these respiratory viruses, providing essential data for informed public health decisions that can protect vulnerable populations and mitigate the spread of infectious diseases.

Figure 2 shows the ratio of SARS-CoV-2, Influenza A and B, RSV, and hMPV viruses to Pepper Mild Mottle Virus (PMMoV) multiplied by one million from September 12th to October 3rd from composite samples collected at the Stillwater wastewater treatment plant (WWTP) and Clear Creek. SARS-CoV-2 was detected in all the samples submitted and was in a decreasing plateau at Stillwater and at Clear Creek WWTP. No positive samples were detected for Influenza A or B. RSV had positive detections on samples from Stillwater on 09/25 and 09/28 but no detections at Clear Creek.

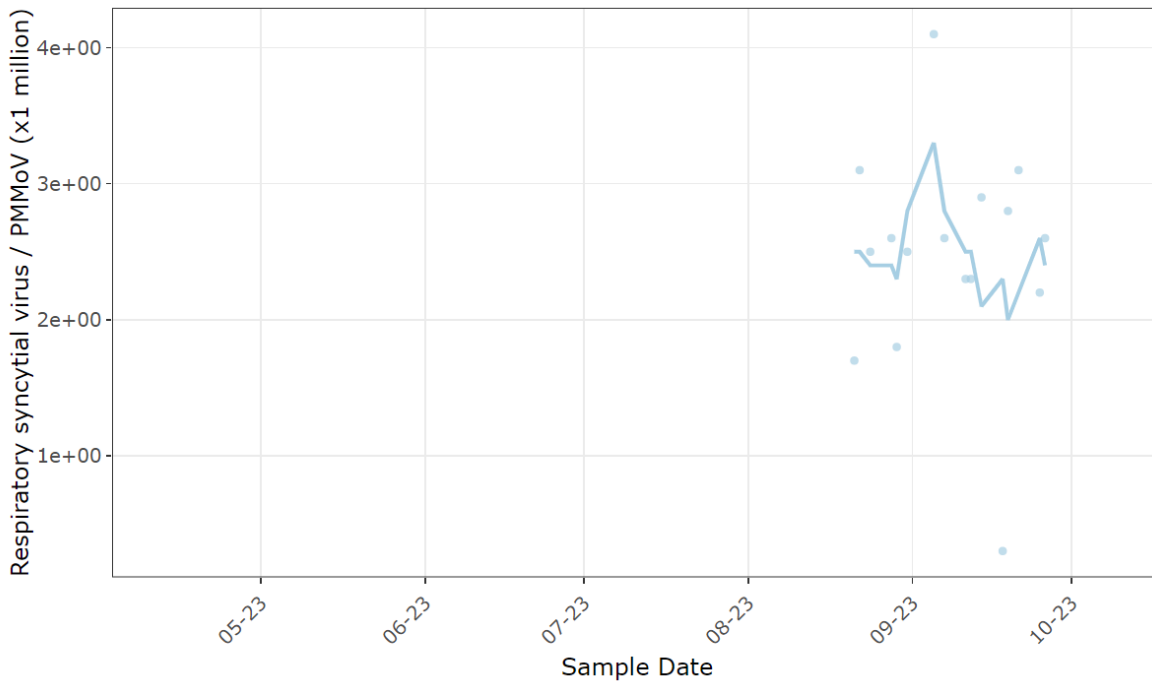
A)

2,250 Ratio of virus to PMMoV (multiplied by 1 million)

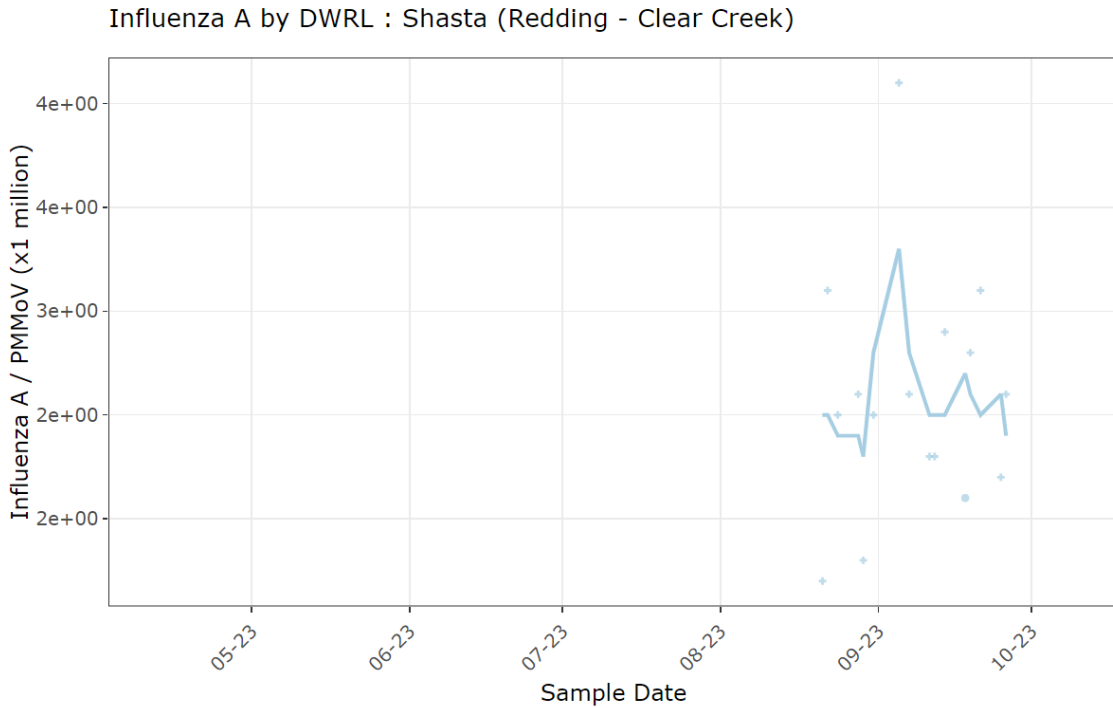


B)

Respiratory syncytial virus by DWRL : Shasta (Redding - Clear Creek)



C)



D)

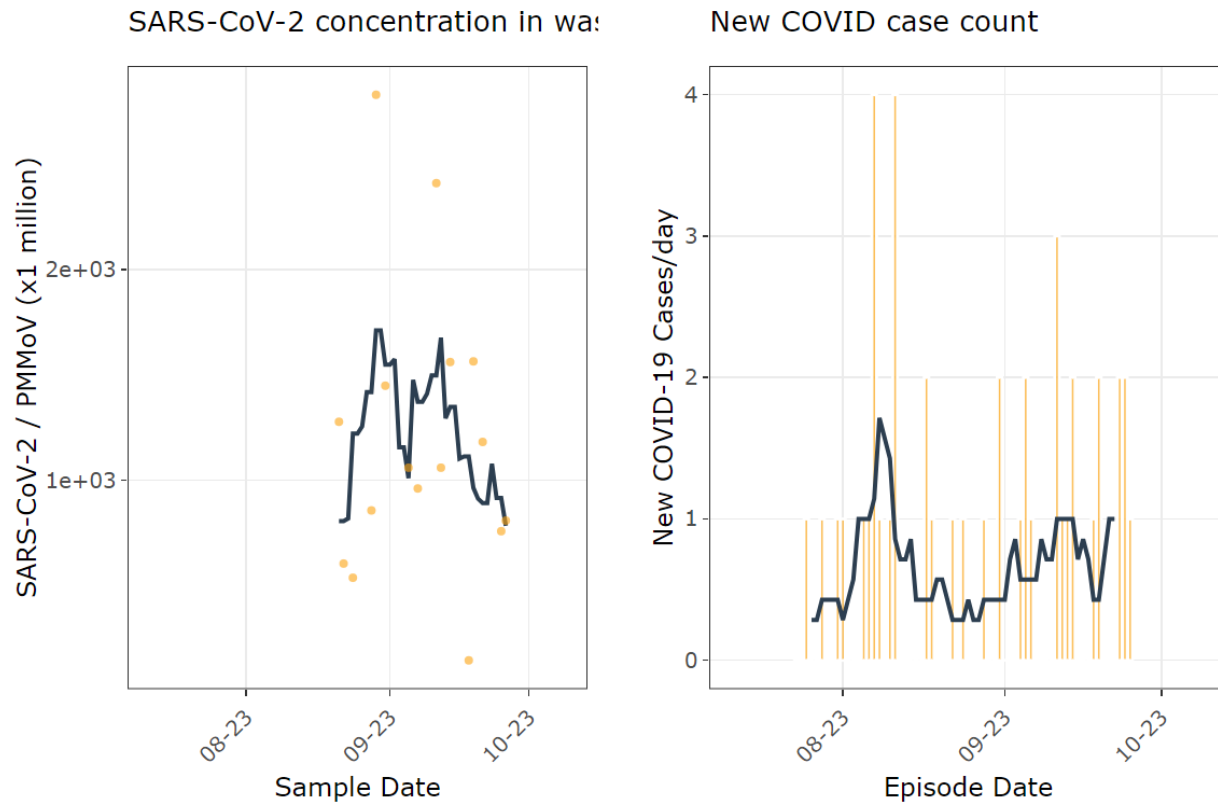


Figure 2. A) The ratio of SARS-CoV-2, Influenza A and B, RSV, and hMPV viruses to Pepper Mild Mottle Virus (PMMoV) multiplied by one million from September 12th to October 3rd from composite

samples collected at the Stillwater wastewater treatment plant. B) C) D) The ratio of RSV, Influenza A and SARS-CoV-2 viruses to Pepper Mild Mottle Virus (PMMoV) multiplied by one million from from August 21st to September 26th. from composite samples collected at the Clear Creek wastewater treatment plant.