

Investigation of SARS-CoV-2 Presence in Wastewater and Monitoring of Community Prevalence

City of Sparks Council Meeting

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Presentation Outline

1. Acknowledgements
2. Wastewater Based Epidemiology
3. Infrastructure/Capacity Building for Wastewater
Monitoring at UNR – COVID-19 Monitoring Lab
4. Project Scope and Status
5. Some Findings to Date
6. Future Activities



Acknowledgements

- City Council Members, Mayor Lawson, and Late Mayor Ron Smith
- Neil Krutz, John Martini, Kevin Porter, Ron Korman, Michael Drinkwater
- My Research Team at UNR including Drs. Laura Haak and Lin Li

UNR microbiological researchers (Dr. Lin Li, Lauren, Tatiana, Yingshi)



Laura Haak Lin Li



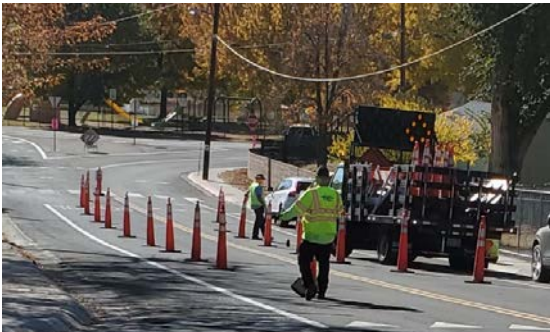
UNR researchers (Niloufar and Blaga) run field analysis on sewage samples (top) and are assisted by Sparks Staff (Chuck and Mike)



City of Sparks Staff (Paqui and Ricky) assist and ensure safety while UNR researcher (Kenny) collects a sample



Silver State Barricade staff prepare traffic control





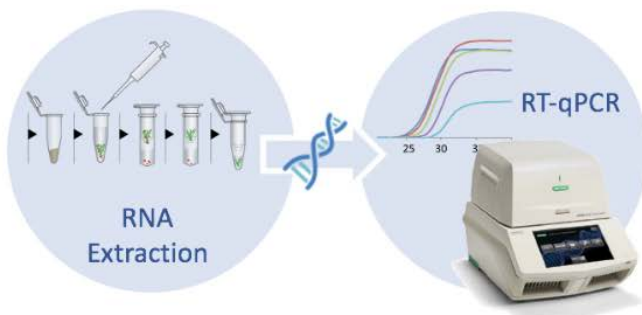
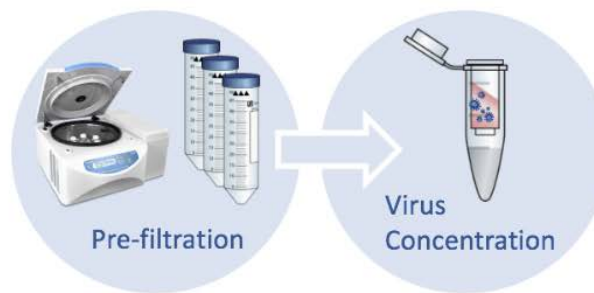
Wastewater Based Epidemiology



Sewage sampling plan:

- Three WRRFs influent sampling;
- Spatial sampling across sewershed sub-areas.

SARS-CoV-2 Concentration:
Enrich virus to \sim X100, from
30 mL to 200 μ L



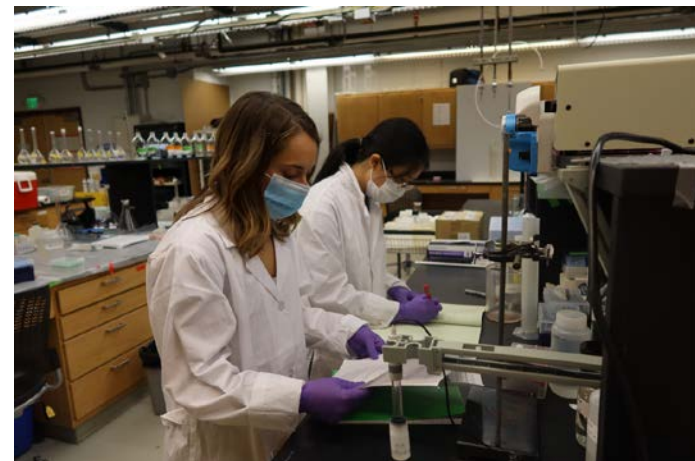
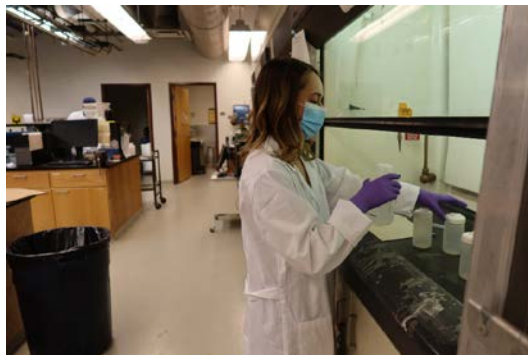
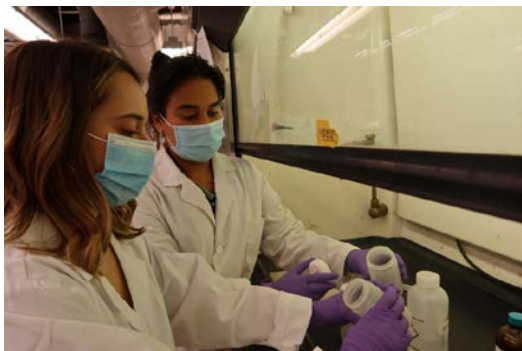
Molecular biology analysis:

- RNA extraction
- RT-qPCR quantification



Lab, Equipment, and Students

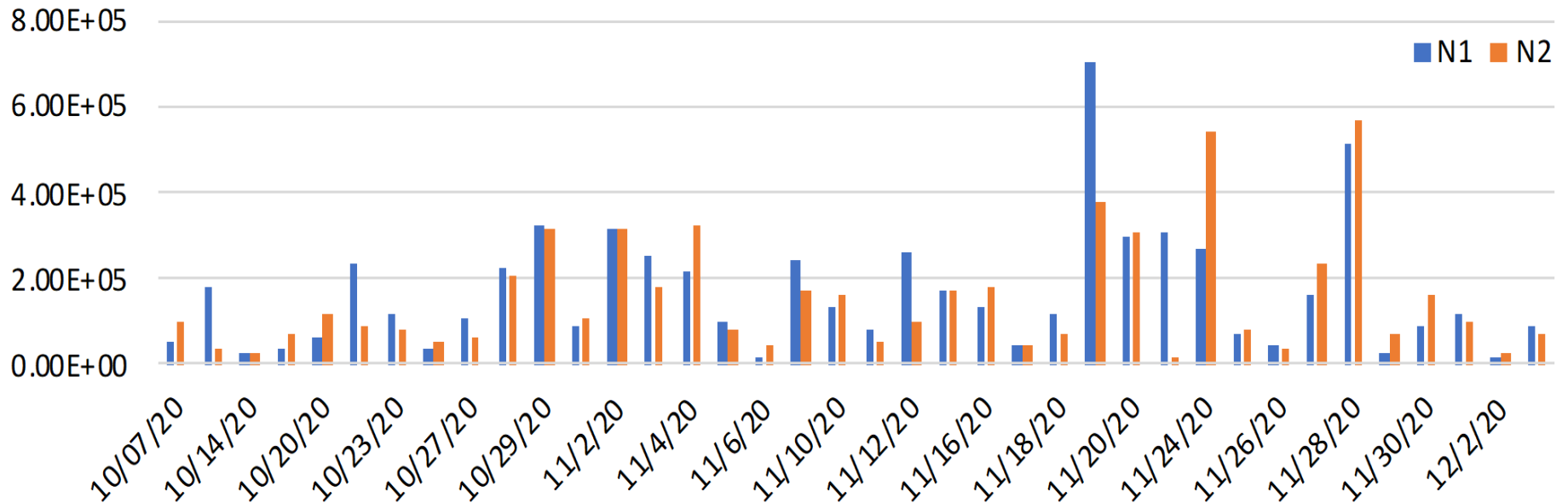
- Lab Capacity and Equipment





Monitoring of TMWRF Influent

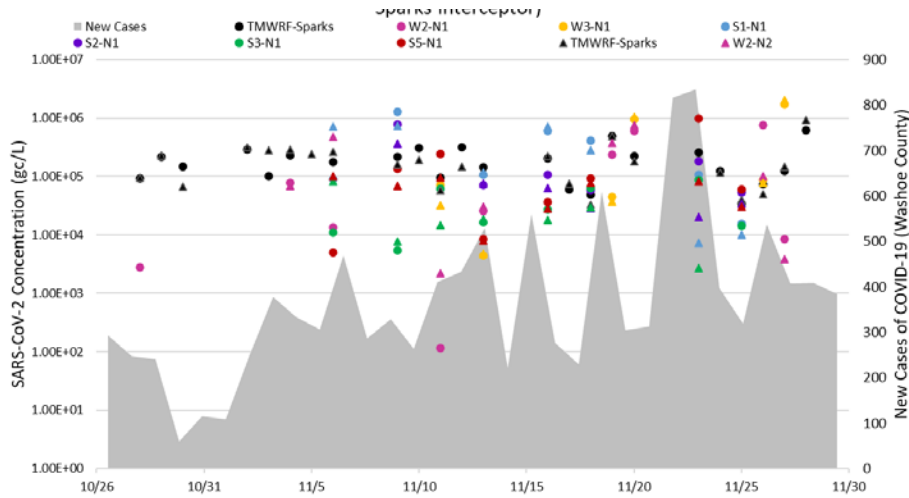
TMWRF-Mixed



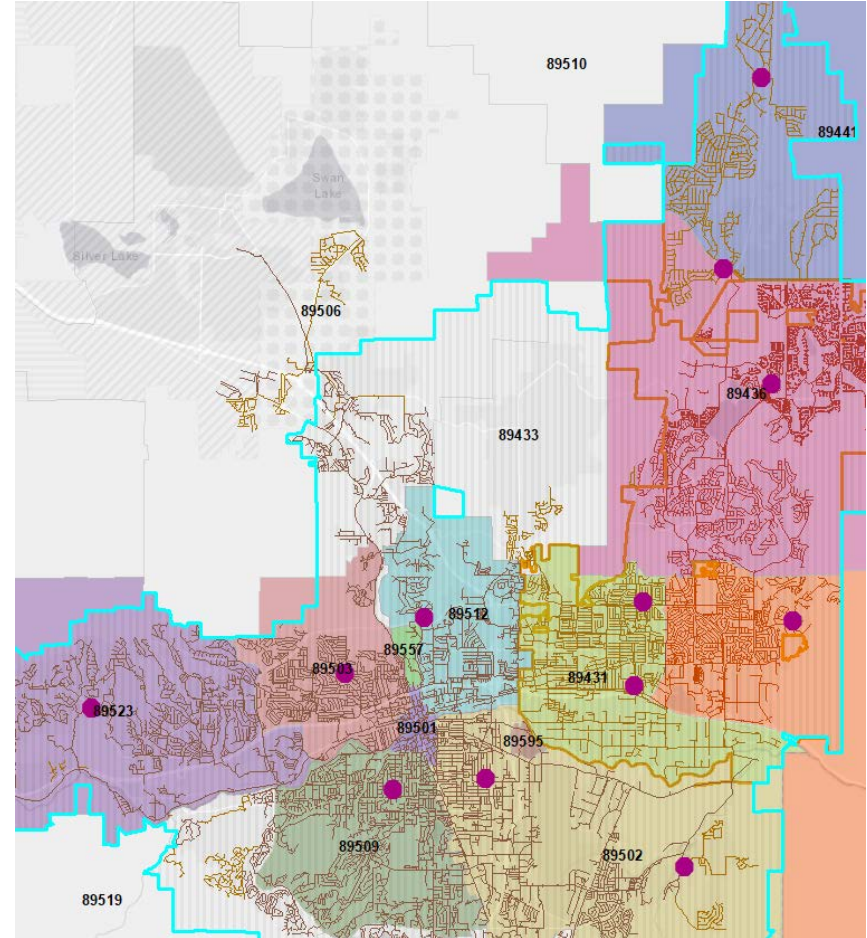
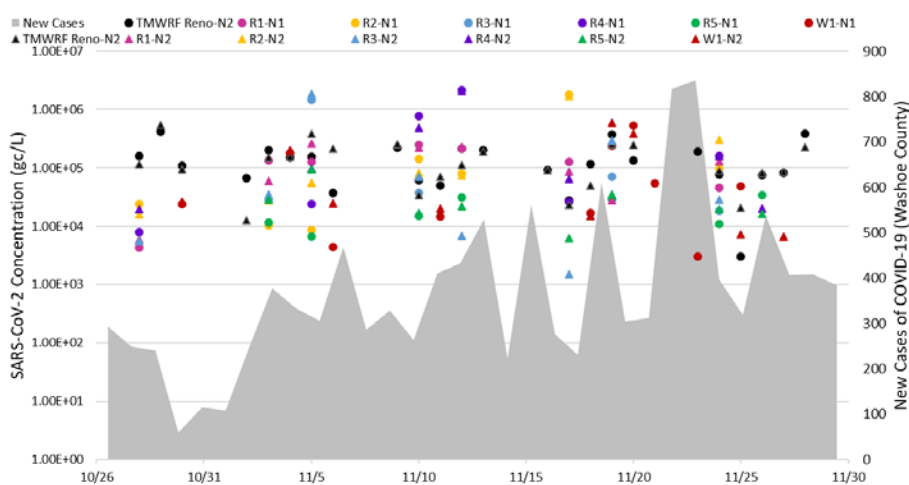


Monitoring of the Sewer Network - TMWRF Interceptors

Sewershed Monitoring - Sparks



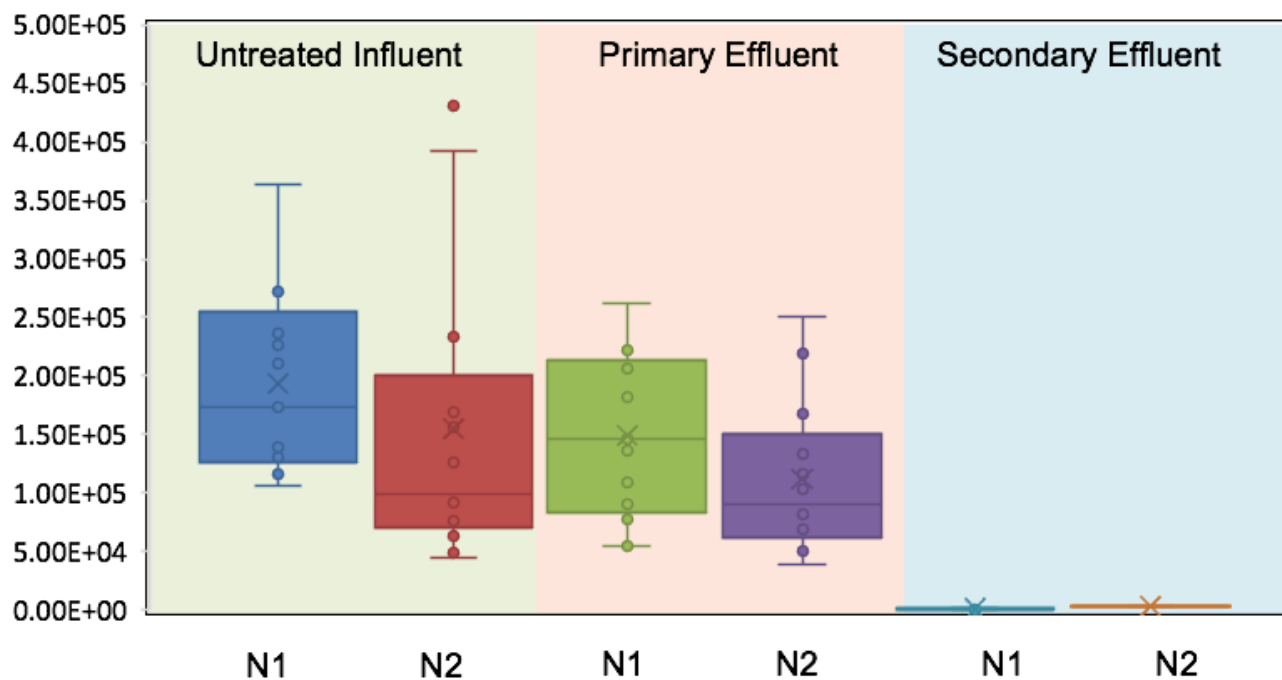
Sewershed Monitoring - Reno





Monitoring of the Viral Marker through TMWRF Treatment Train

Viral Marker through TMWRF Treatment Train





Future Activities

- Continued Monitoring of TMWRF and Selected Sites on Sparks and Reno Interceptors
- Predictive Model to Determine Community Prevalence
- Project Report
- Future Efforts to Seek Additional Funding from National Science Foundation, National Institutes of Health

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