

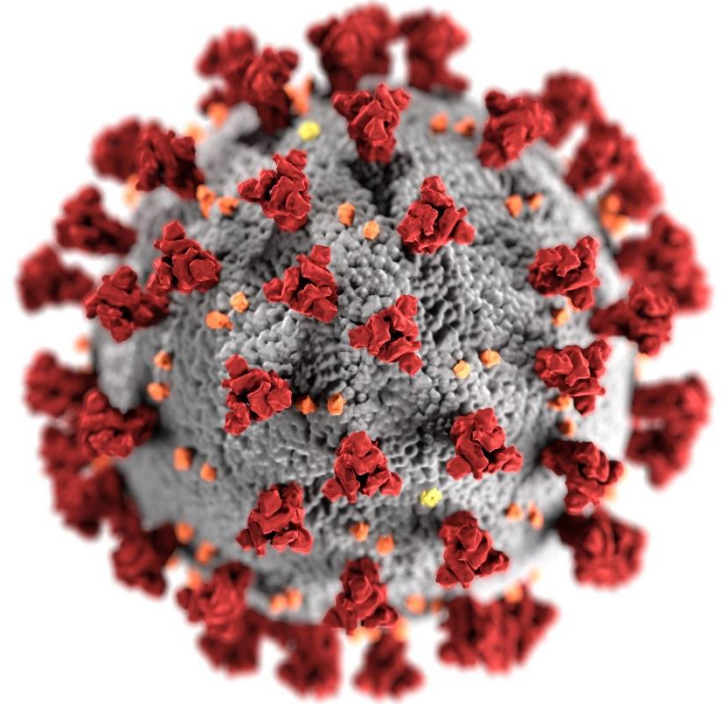
# National Wastewater Surveillance System

Science to Implementation

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Community Interventions and Critical Populations Taskforce  
COVID-19 Response

Waterborne Disease Prevention Branch  
Division of Foodborne, Waterborne, and Environmental Diseases



October 2, 2020  
WEF Government Affairs Committee Meeting

[cdc.gov/coronavirus](https://cdc.gov/coronavirus)

# Wastewater Surveillance | Public Health Toolbox

- Wastewater is an efficient pooled sample of community (or sub-community) infection prevalence
- Captures sub-clinical infections
- Independent of healthcare-seeking behavior and testing access
- Data available within days of shedding onset versus up to 2-week lag for other surveillance data



# Sewage Surveillance Data

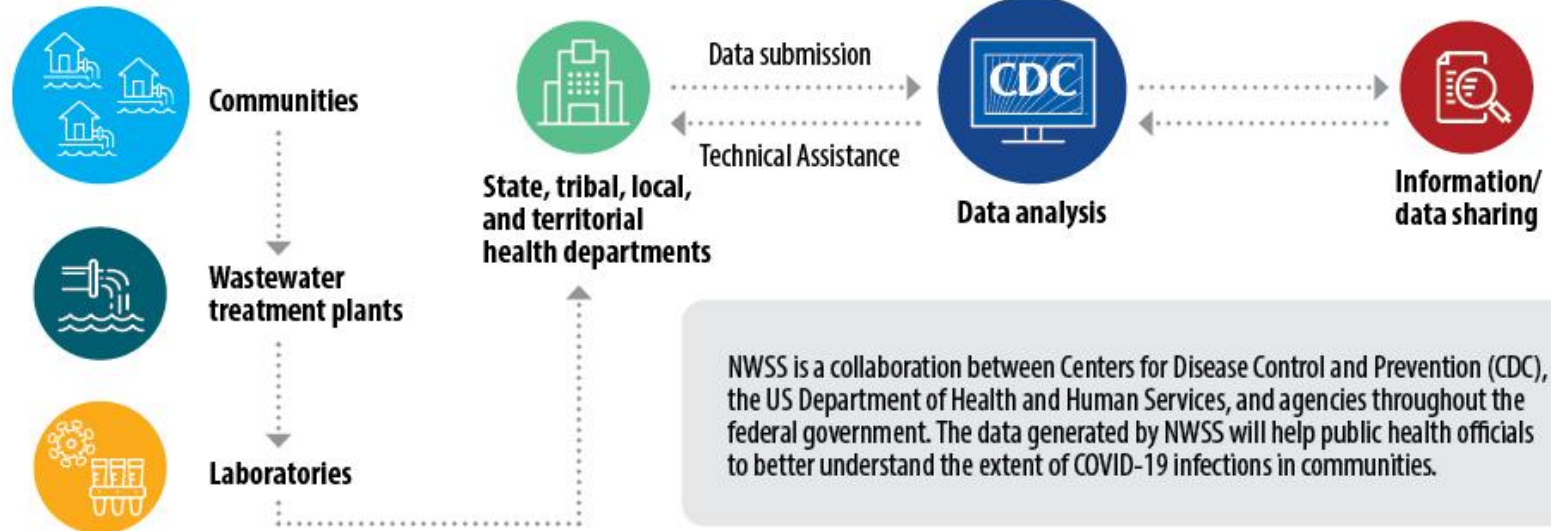


Current potential: *based on state of the science*

- Provide county and sub-county level total infection **trends**
- **Leading indicator** of potential infection increases following reopening of communities
- **Early warning** to inform re-closure decisions – particularly for high-risk facilities like senior living centers, university campuses, prisons, nursing homes
- **Tracking** virus evolution and global origin upon emergence in US

**More data needed: estimating overall daily infection prevalence within a sewershed**

# NATIONAL WASTEWATER SURVEILLANCE SYSTEM (NWSS)



NWSS is a collaboration between Centers for Disease Control and Prevention (CDC), the US Department of Health and Human Services, and agencies throughout the federal government. The data generated by NWSS will help public health officials to better understand the extent of COVID-19 infections in communities.



**U.S. Department of  
Health and Human Services**  
Centers for Disease  
Control and Prevention

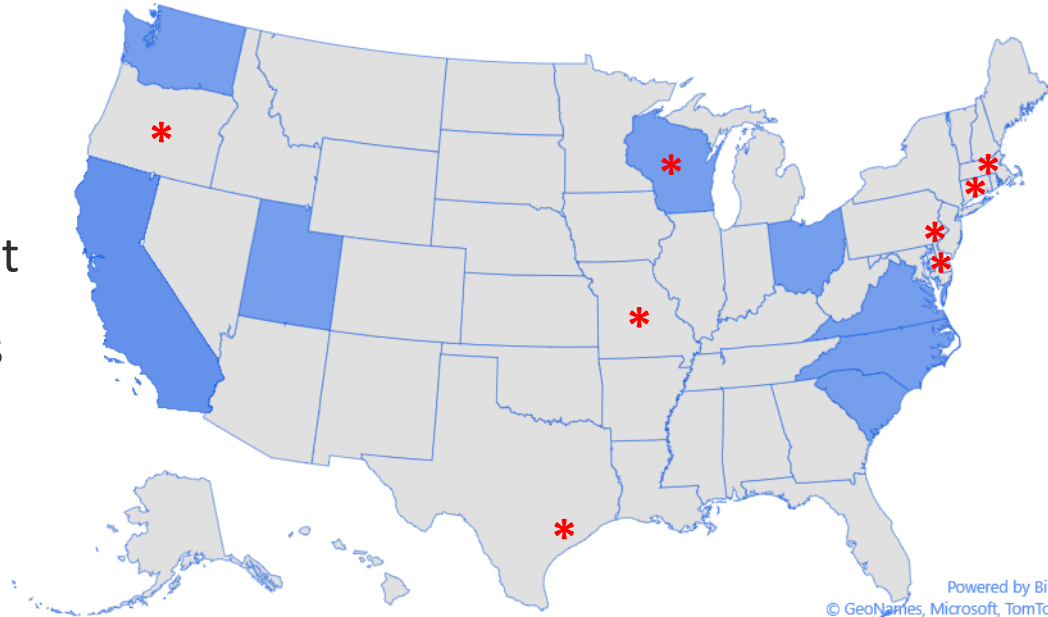
[cdc.gov/coronavirus](https://cdc.gov/coronavirus)

CB319450-A

# NWSS | Early Implementer Jurisdictions

- 15 jurisdictions
- Epidemiology and Laboratory Capacity cooperative agreement
- Wide range of funding amounts
- Includes community and targeted surveillance

NWSS Pilot States




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# NWSS | Data Submission





DCIPHER


DATA COLLATION AND INTEGRATION FOR PUBLIC HEALTH EVENT RESPONSES





### National Wastewater Surveillance System


**HELP & RESOURCES**


-  Palantir Foundry 101
-  User Docs


 **View Samples & Add Quantification Results**  
Search recorded NWSS Samples and enter data for new Quantification Results

 **Add New Sample Metadata**  
Enter metadata for a new NWSS Sample

 **Add a New Wastewater Treatment Plant**  
Enter data for a new NWSS Wastewater Treatment Plant

 **Add a New Collection Method**  
Enter data for a new NWSS Collection Method

 **Add a New Processing Method**  
Enter data for a new NWSS Processing Method

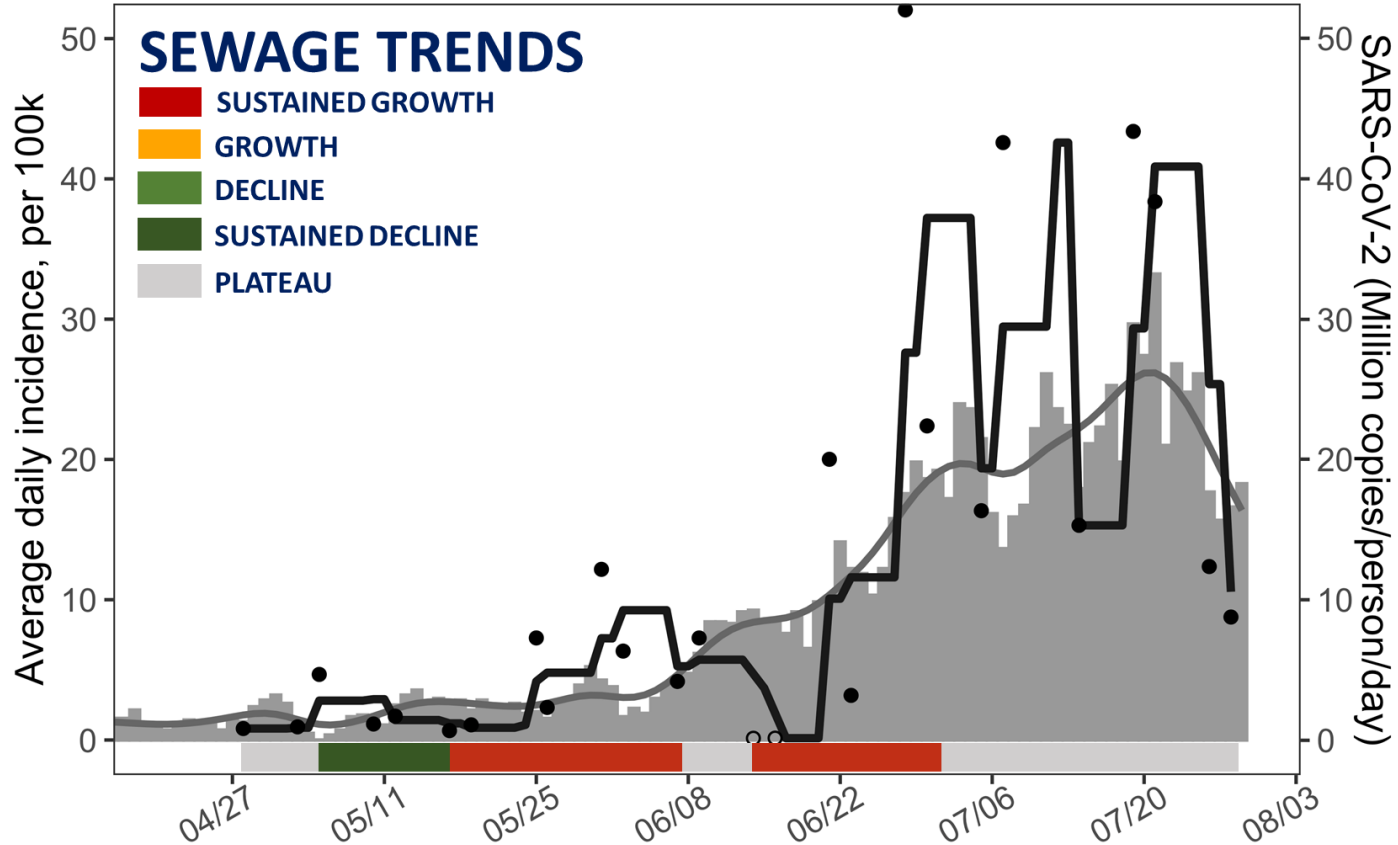
 **Add a New Quantification Method**  
Enter data for a new NWSS Quantification Method

## COVID-19 NWSS Training Document

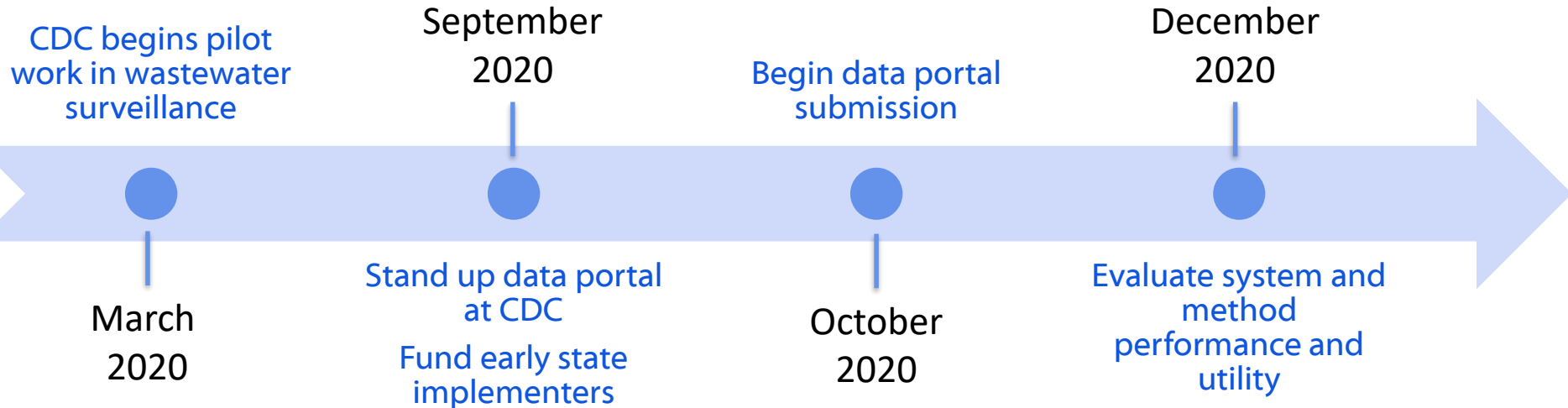
This training guide will take you through the process to enter data into DCIPHER, update data within DCIPHER, download data and view Reports. This guide is intended for users that are completing the National Wastewater Surveillance System (NWSS) Forms.



# SARS-CoV-2 Sewage Assessment | Trend classification



# NWSS | Implementation Timeframe





# Targeted Use Cases | Potential early warning

## Building-level applications:

- Long-term care facilities
- University dormitories
- Correctional facilities

## Potential benefits:

- Early warning for new cases
- More efficient
- Cheaper for routine surveillance

Morning Mix

The University of Arizona says it caught a dorm's covid-19 outbreak before it started. Its secret weapon: Poop.

The Washington Post

## 287 Utah State University students quarantined after Covid-19 found in wastewater from four dorms

By Ralph Ellis, Nakia McNabb, and Eric Levenson, CNN

Updated 8:34 PM ET, Tue September 1, 2020

CNN

## CSU orders mandatory COVID-19 testing after dorm wastewater shows possible spike

Jacy Marmaduke Fort Collins Coloradoan

Published 4:06 p.m. MT Sep. 4, 2020



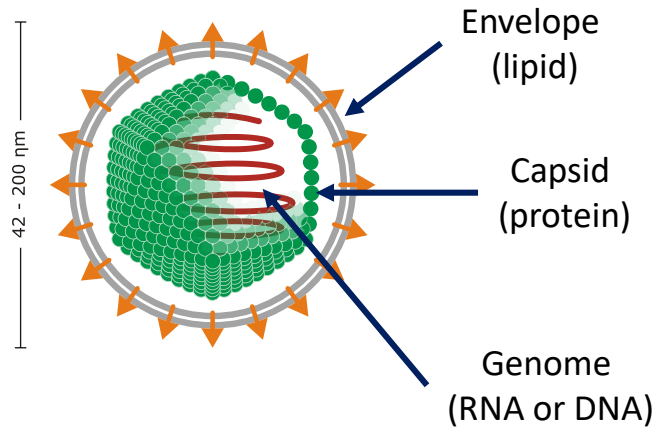
Coloradoan

# COVID-19 Wastewater Surveillance | Limitations

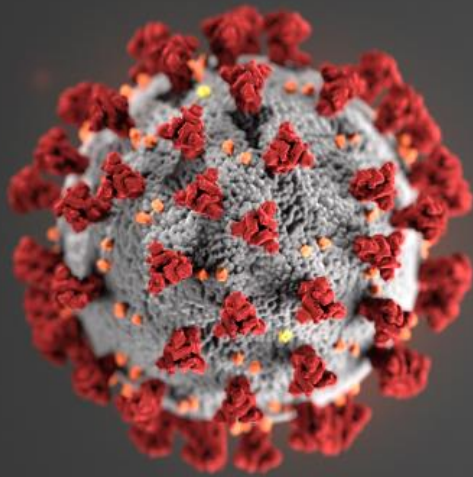
- Surveillance limit of detection is unknown
  - How many people need to be infected in a system to be reliably detected in wastewater?
  - → **Cannot** be used to “clear” a community or facility
- ~25% of US households are not connected to sewer
- In many facilities, wastewater may not be accessible for sampling
- May be impacted by pre-treatment of sewage
- Requires multiple samples per week and fast turnaround to be useful
- Competition for resources (lab capacity, lab supplies, sampling equipment)



# PCR Detection Does Not Mean Virus Is Infectious



- Culture of live virus requires an intact virus particle
- PCR detects specific regions of the viral genome
  - Damage to the envelope, capsid or genome does not necessarily prevent PCR detection



For more information, contact CDC  
1-800-CDC-INFO (232-4636)  
TTY: 1-888-232-6348 [www.cdc.gov](http://www.cdc.gov)

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

