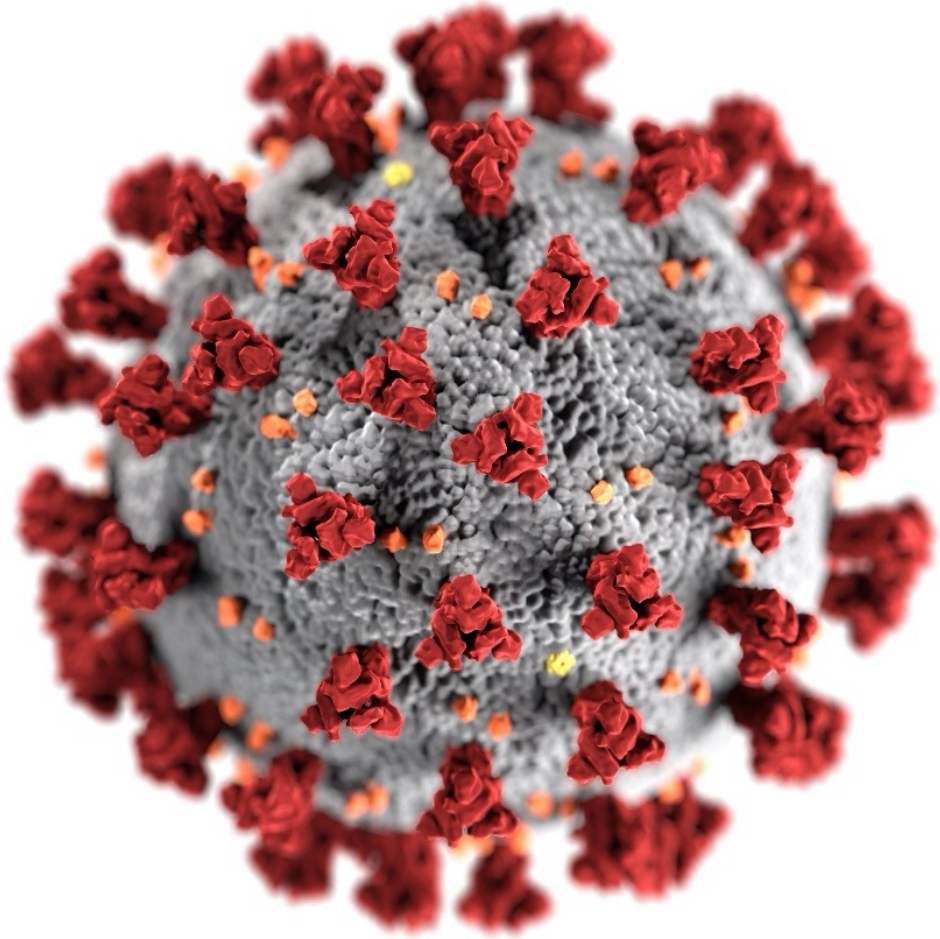
NATIONAL ™ WASTEWATER SURVEILLANCE SYSTEM



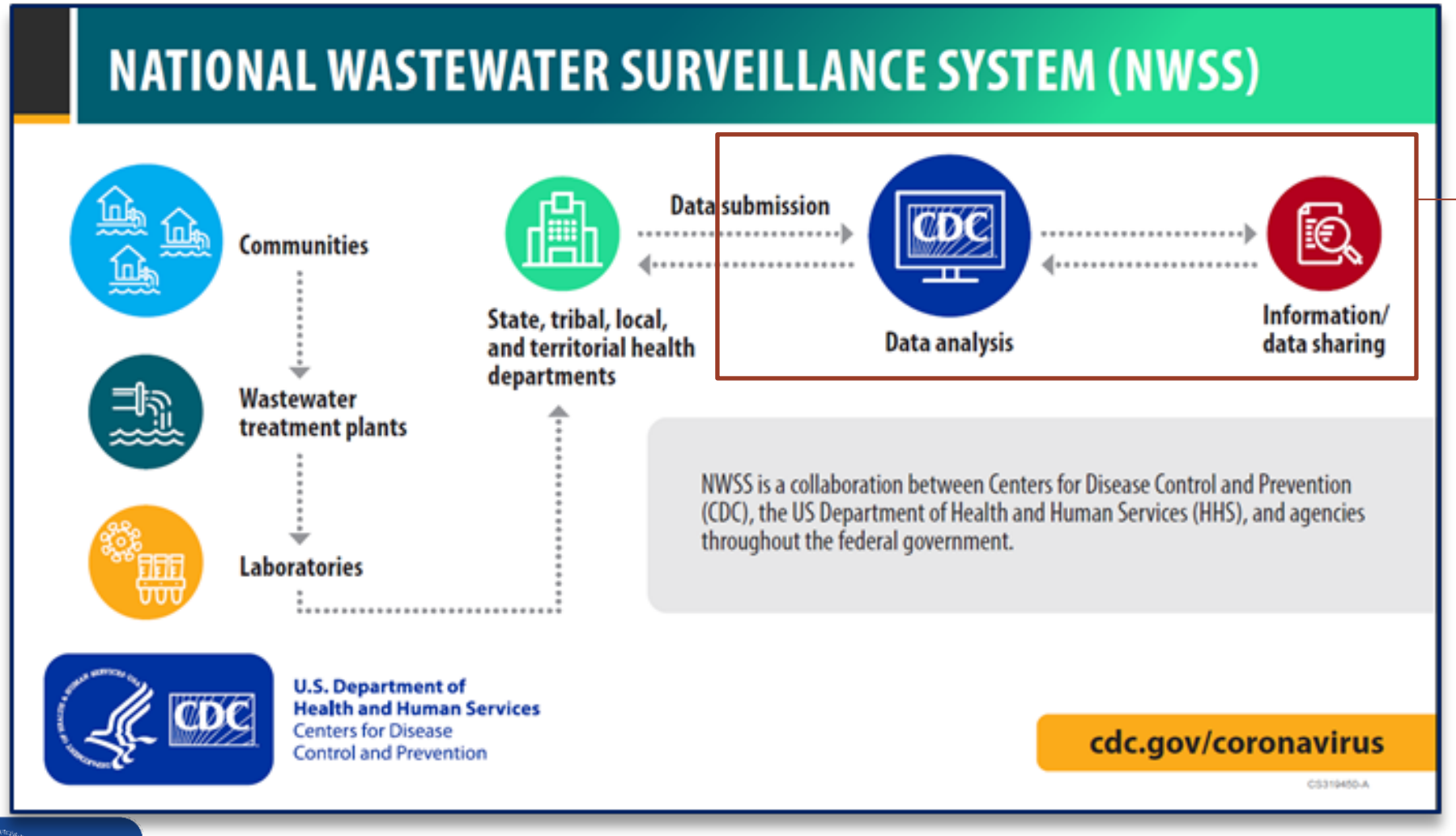
Available Data Tools: National Wastewater Surveillance System

15 June 2021

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

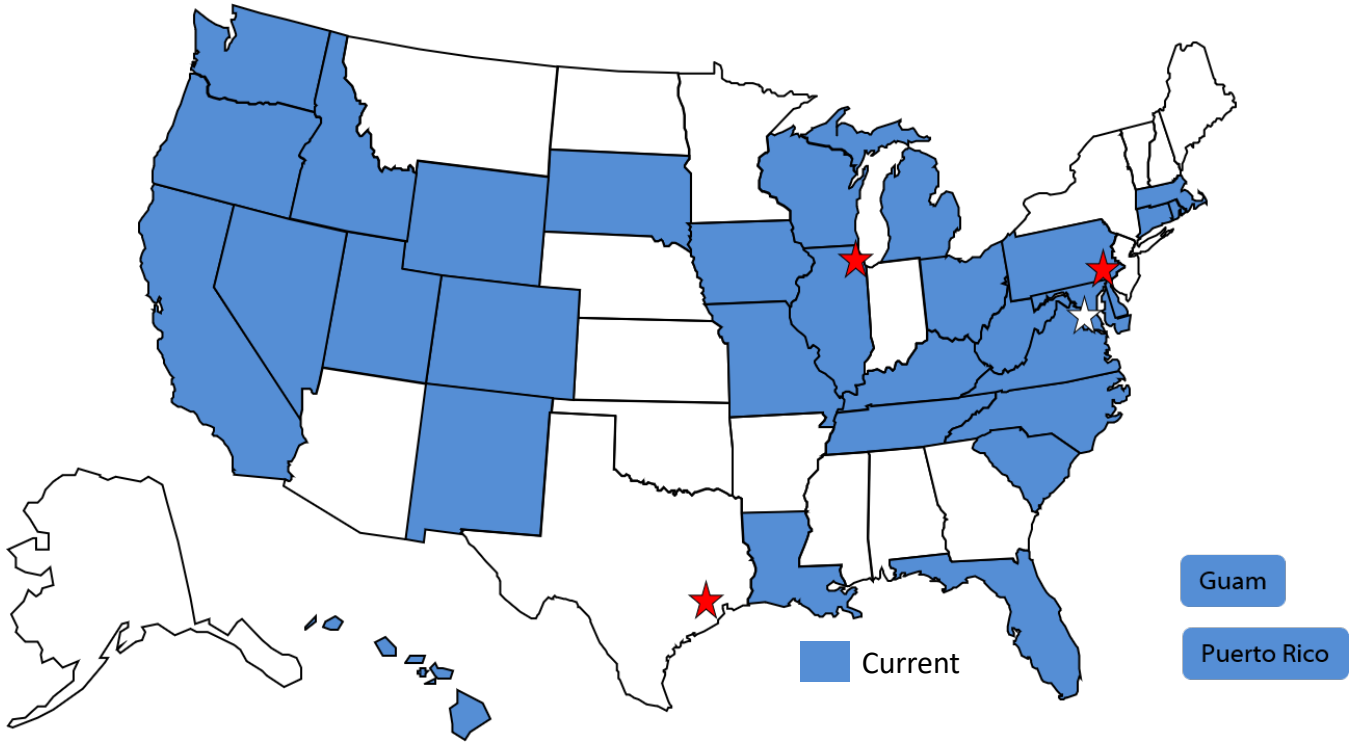
cdc.gov/coronavirus

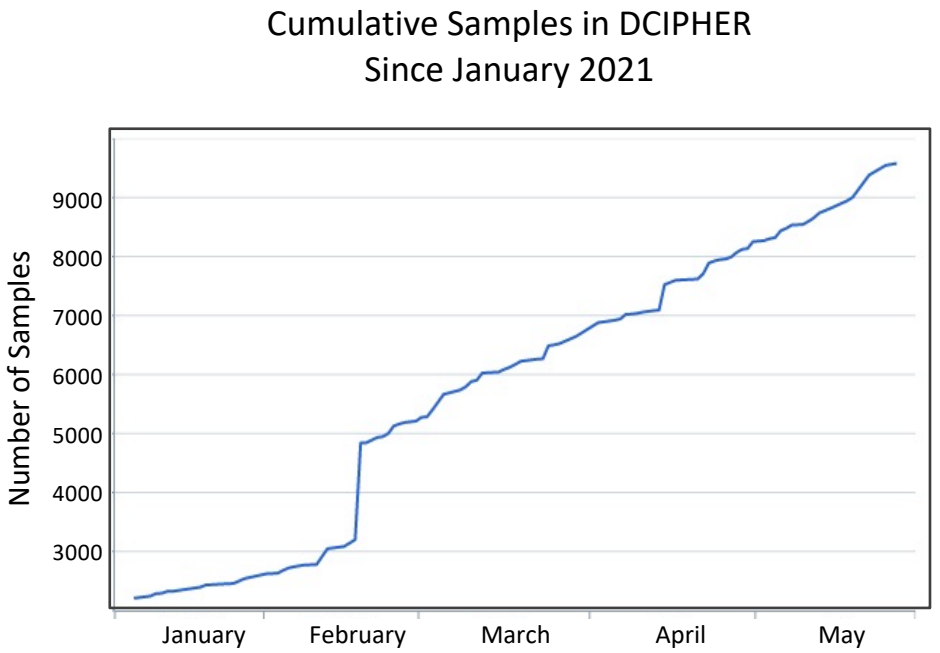
NWSS System overview



→ DCIPHER

Participation in NWSS is growing quickly





- Currently, 36 ELC-funded jurisdictions totaling $223M for wastewater surveillance activities
- Additional $34M pending award will increase number of jurisdictions

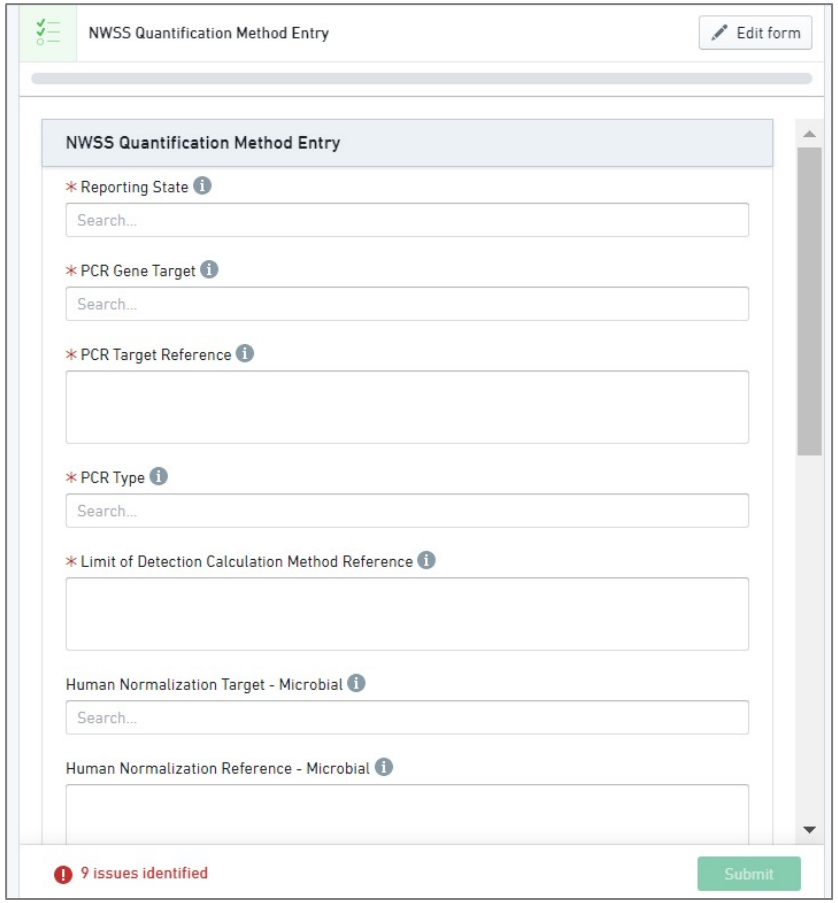
Data elements

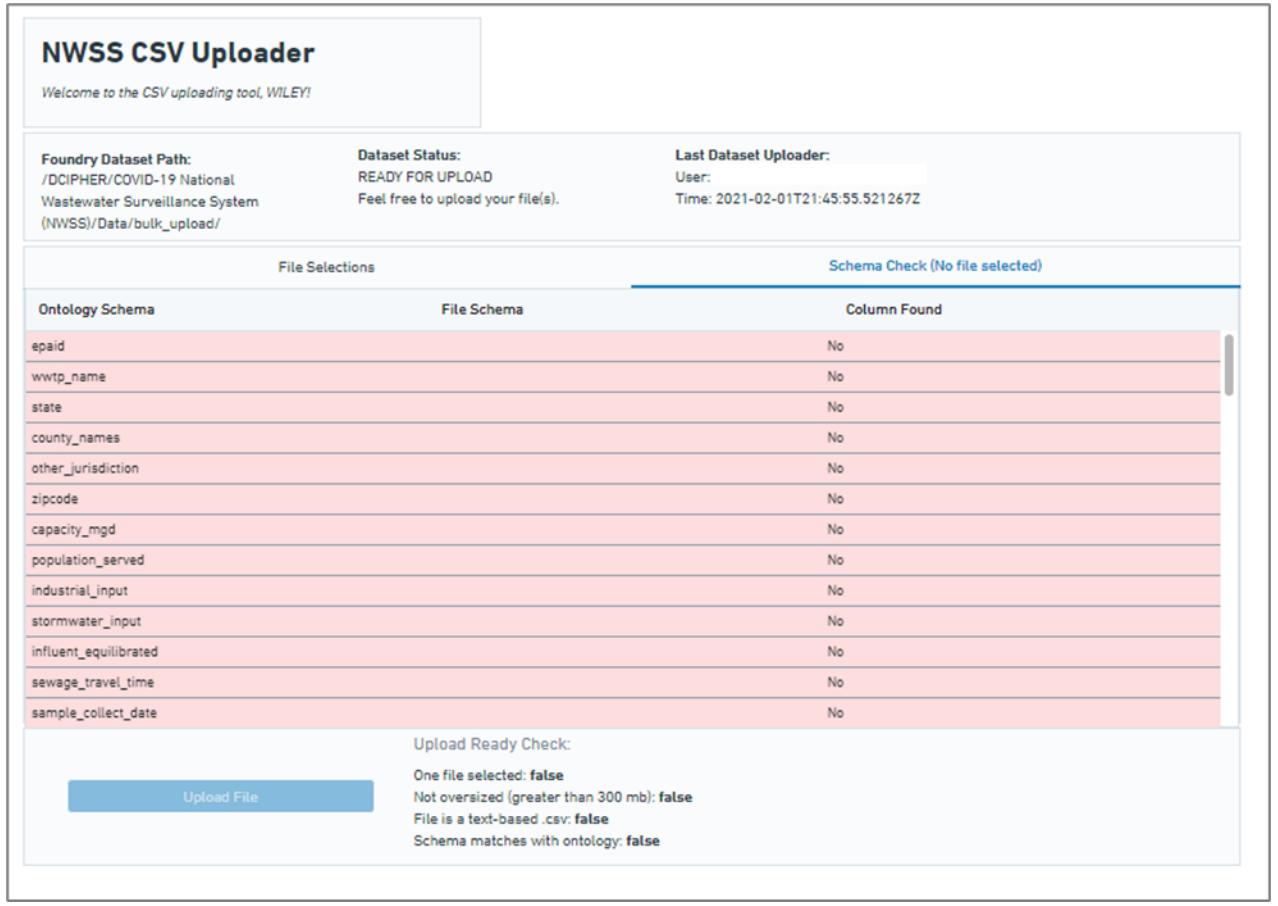
1. Wastewater data – minimum requirement
   - CSV upload
2. Sewershed spatial boundaries
3. Sewershed COVID-19 case data
4. Laboratory protocols

DCIPHER features

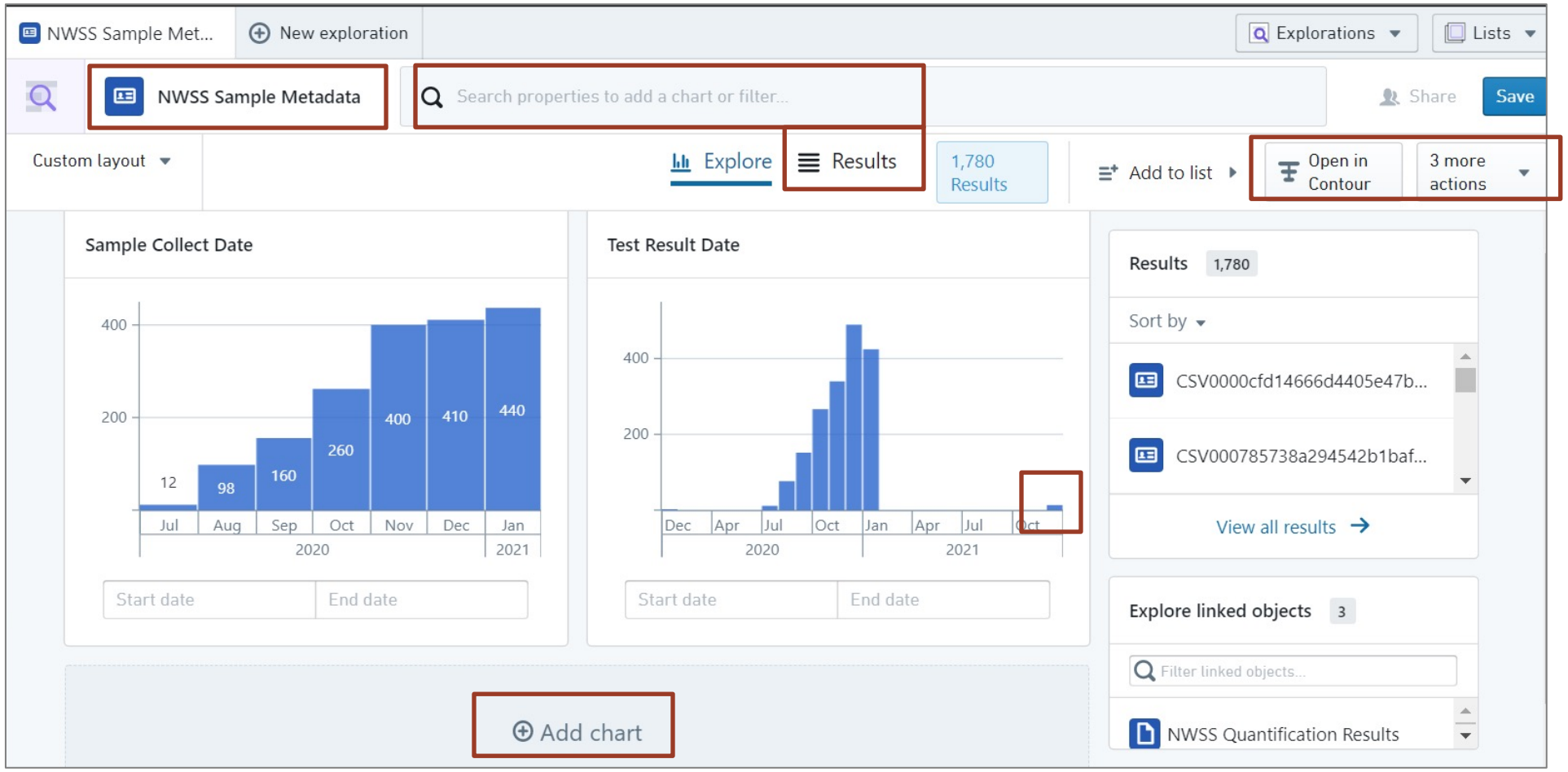
- Data Collation and Integration for Public Health Event Response platform
- Unified system for data submission, management, and analysis
  - Merging of multiple data submission flows
  - Integration of disparate data sources: HHS Protect, other DCIPHER surveillance systems
  - Version control
  - Build scheduling
  - Analysis code
  - Dashboards
  - Document repository
  - User access permissions
  - Built-in tools for quality control
  - Collaboration and communication

DCIPHER features: receive and merge multiple data streams

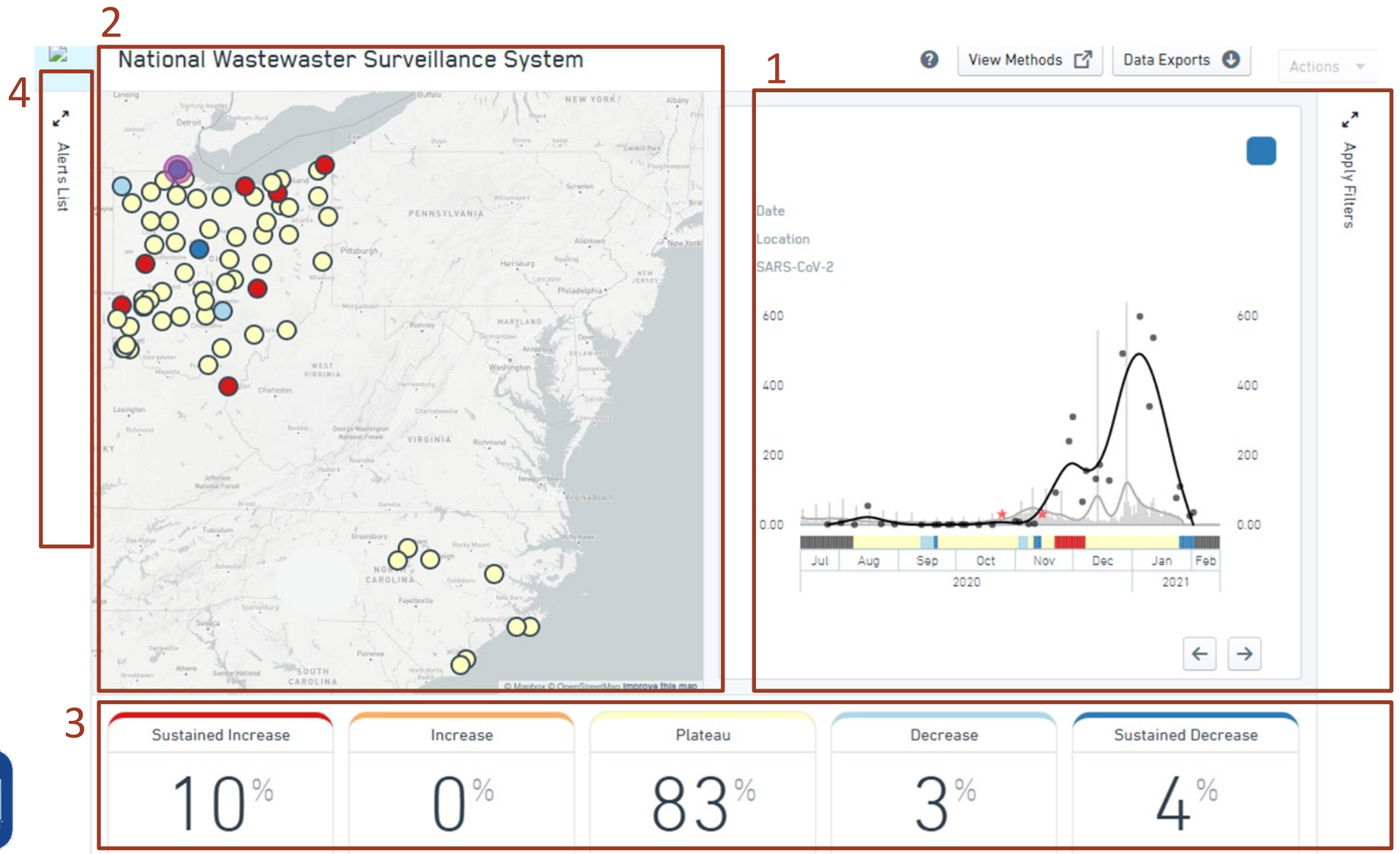




DCIPHER features: exploration and quality control



DCIPHER features: internal dashboard

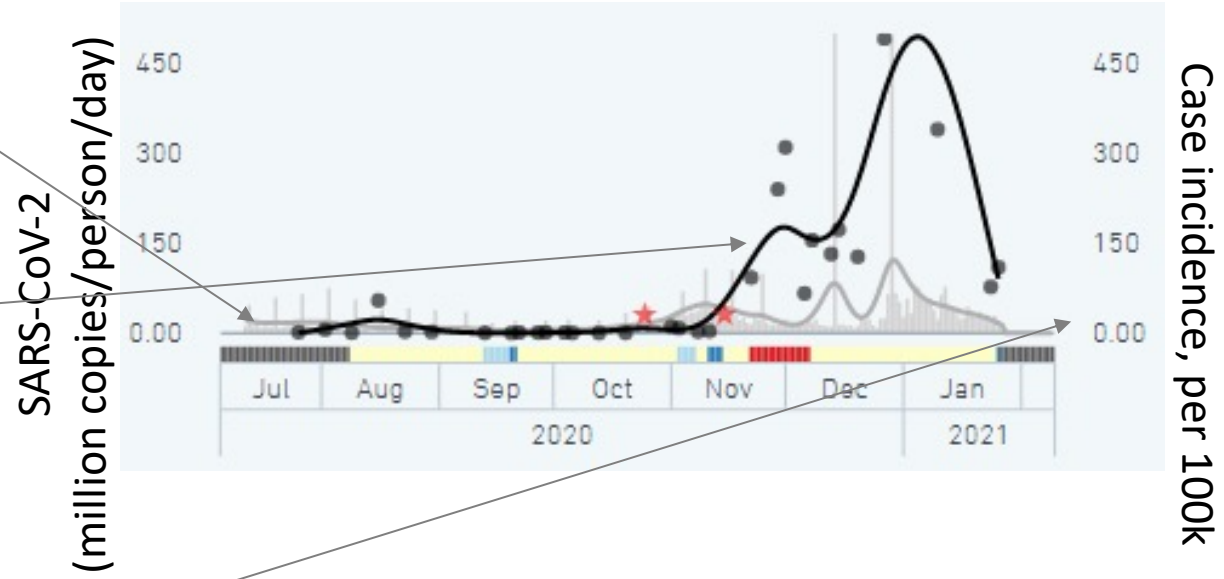


Analytics: wastewater normalization

- Current approach
  - Flow and population normalization of SARS-CoV-2 RNA concentrations
  - Adjusted by site-specific median RNA recovery
- Standardization (and inter-laboratory comparison) need:
  - Endogenous control
  - Matrix spike recovery control
  - PCR type (RT-qPCR vs RT-dPCR) with common standards

Analytics: overlaying wastewater & cases

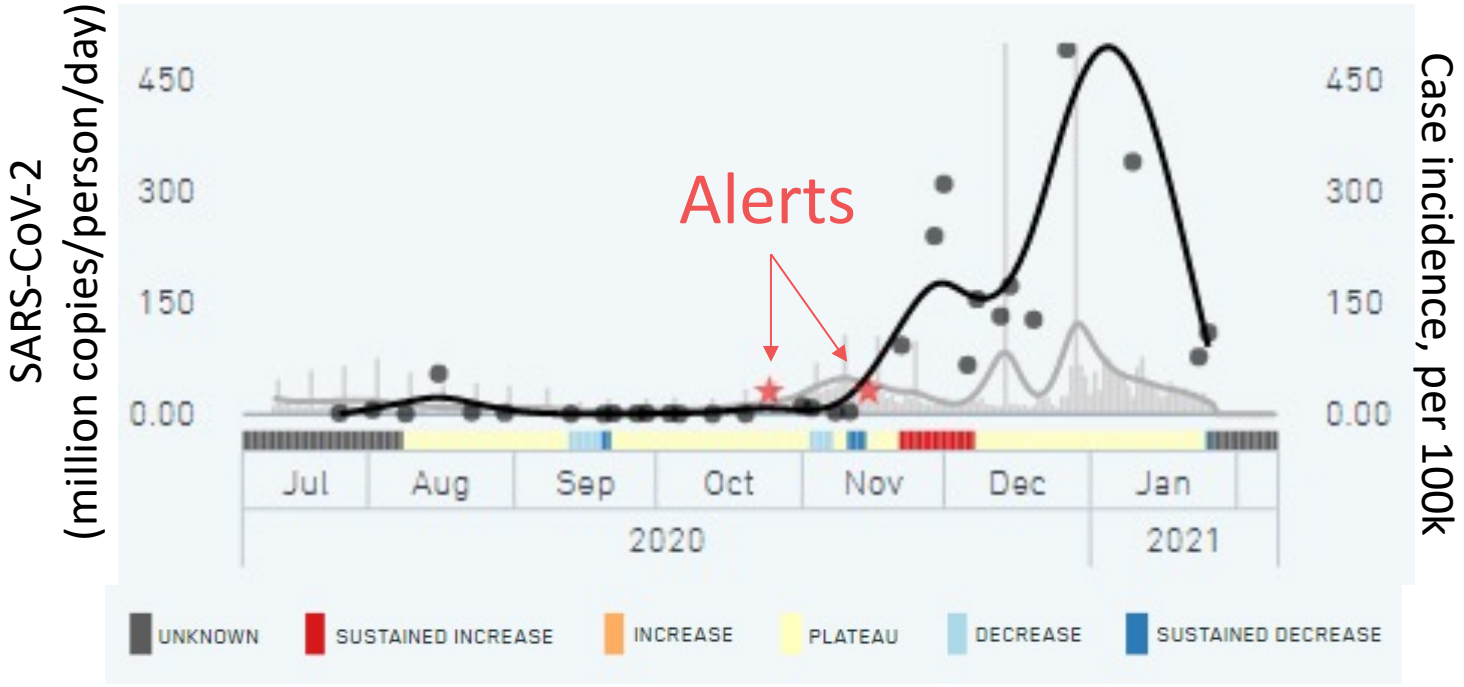
- Contextualizes wastewater data
- Date considerations
- Smoothing – data frequency impacts smoothing approach
- Scaling
  - Currently believe shape of curve, not absolute values, is what's reliable
  - Additive (not just multiplicative) changes matter



Analytics: wastewater trends & alerts

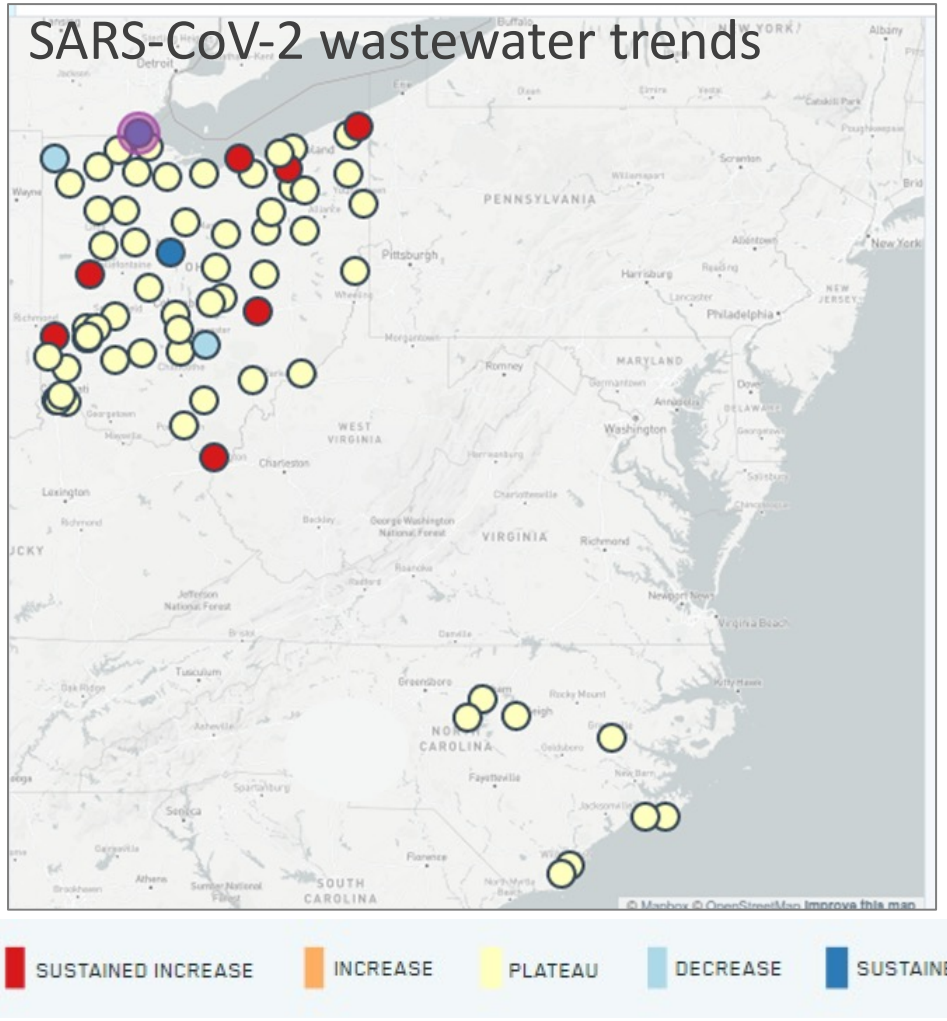
- Trend analysis
  - Sustained trend: 5 measurements
  - Trend: 3 measurements
  - Linear regression
  - Log transform
  - Inverse variance weighting
  - Significance level: 0.05

- Alerts analysis
  - Value higher than expected given 5 previous measurements
  - 1-sided prediction interval



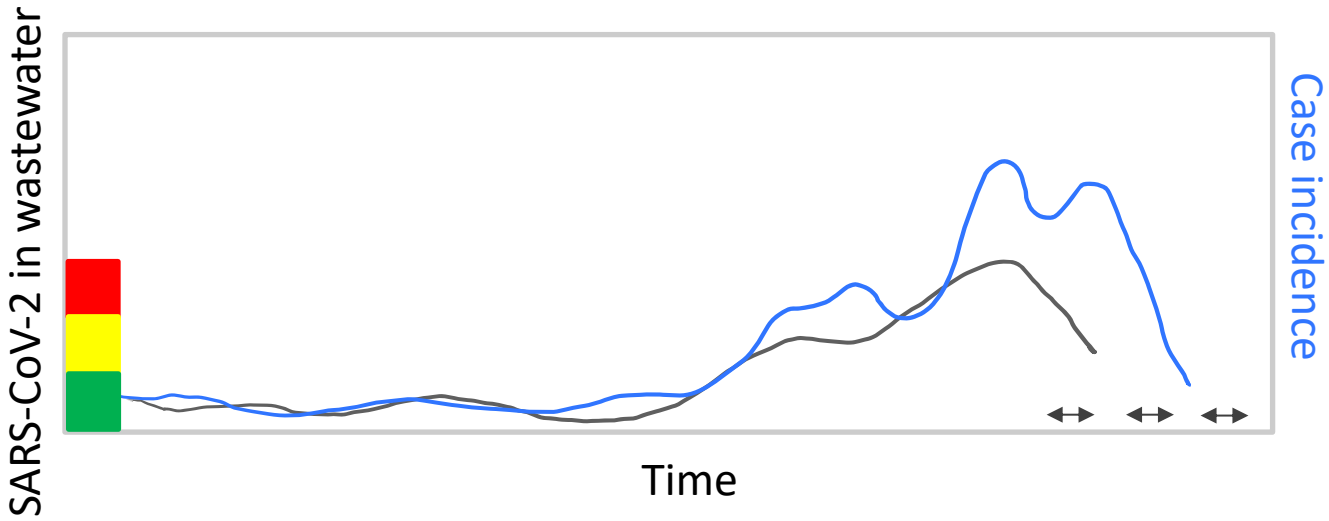
Analytics: wastewater spatial representation

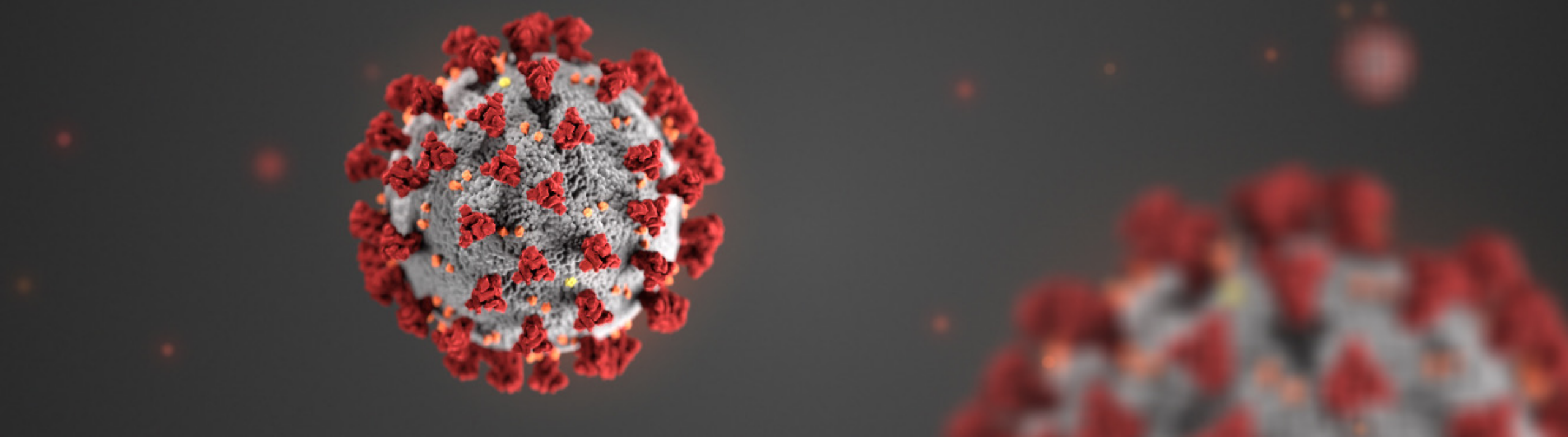
- Metric must be comparable across sites: trends
- Sewershed boundaries used if available
- Sampling location zip code used if not



Analytics: under consideration

- Measure of similarity between SARS-CoV-2 wastewater levels and case rates
- Site-specific measure of relative SARS-CoV-2 level





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

NWSS@cdc.gov