



Visualizing Medical Threat Surveillance: A Framework for Maximizing Wastewater Pathogen Detection and Decision Support

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Introduction

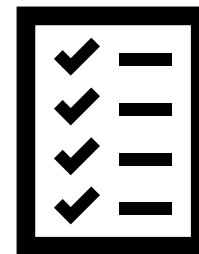
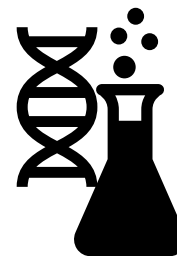
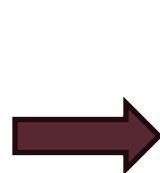
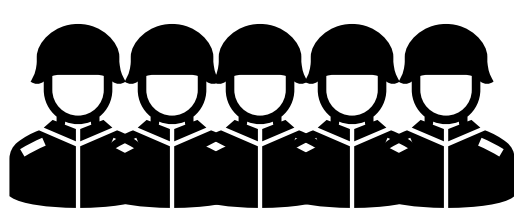
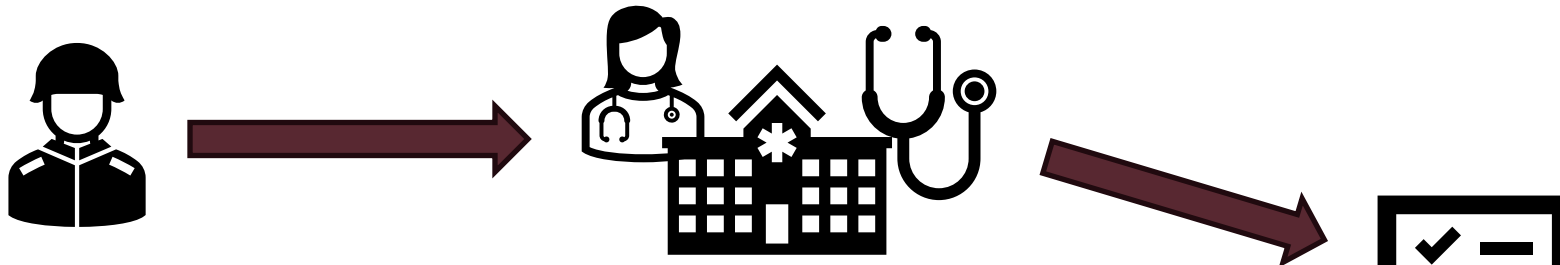


Source: Adobe Stock image



Why Wastewater?

Clinical Surveillance



Population Surveillance



Enterprise-Level Population Monitoring: Essential Lines of Effort



Reachback Support

Method Development
SOPs
Training
Reach-Back
❖ DCPH-A
❖ USAFSAM
❖ BDRD



GEIS Program Office & Lab Network

Global lab
capability and
Partner Network



USPACOM WWS Pilot

Establishing WWS
in 5-7 locations in
USINDOPACOM
AOR.
FY25-26:
❖ Leverage DoW
+ performers
to standardize
methods
❖ Operational
data collection
& reporting



DoW/CDC WWS & NGS Collaboration

Monthly
DoW/CDC syncs
❖ NWSS
❖ TGS
❖ OAMD
❖ TASS



Defense Threat Reduction Agency

Automated
platform for WWS
sampling &
analysis

DCPH-A ☆ JHU-
APL ☆ MIT-LL ☆
LANL ☆ LBNL



WWS at the Service Academies

USNA & USAFA:
WWS study
comparing
clinical data
❖ Collab with
LLNL &
academia



Other Key WWS and Genomic Surveillance within DoW

❖ U.S. Southern
Border
❖ WRNMMC: with
Ginkgo
Bioworks
❖ DoDGRPSP
❖ Small platform,
air, dust, plane,
& ship
monitoring



Data Platforms & System Integration

Existing
platforms and
pipelines
❖ Digital
Biobank
❖ Digital
Backbone
❖ DoW MOVEit
❖ BIP



Sites of USPACOM Surveillance and Pathogen Targets

RNA

SARS-CoV-2	Respiratory Syncytial Virus
Influenza A	Respiratory Syncytial Virus A
Influenza A (H1)	Respiratory Syncytial Virus B
Influenza A (H3)	Norovirus GI
Influenza A (H5)	Norovirus GII
Influenza B	

DNA

Adenovirus
Adenovirus 4
Adenovirus 7
Adenovirus 40/41
Non-Variola Orthopox
MPX Clade Ia
MPX Clade II-pan

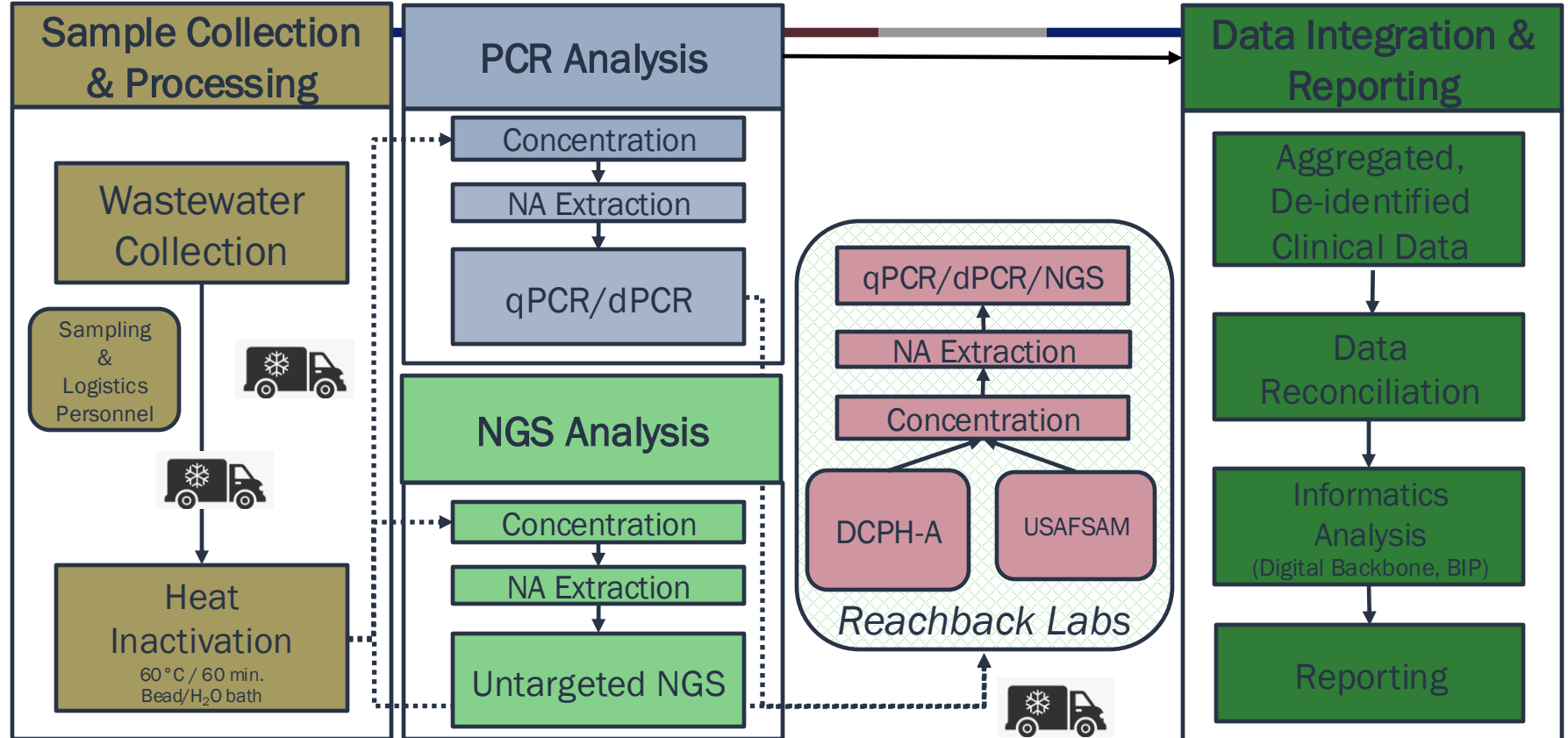
Controls

Pepper Mild Mottle Virus
MS2





WWS in DoD: Overview of Workflow





Data Reporting



■ Sample Information

Sample Name on Plate	Sample Date	Location	Sublocation	Grab or Comp
04JUN26-1	6/4/2026	USNA	N. Severn	Comp

■ Laboratory Processing

Precon	Extraction	Assay type	Target
Amicon	MagNA Pure 96	qPCR	Noro GI

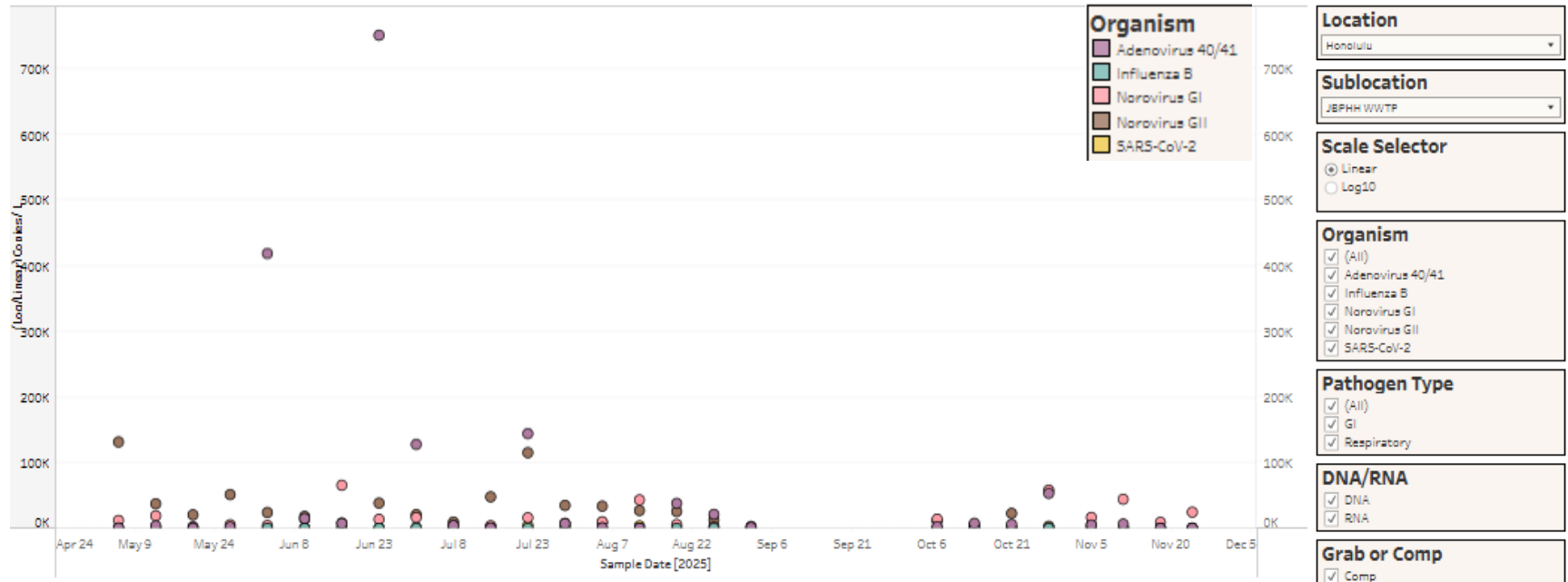
■ PCR Test Results

Ct Result	Raw Copies/L	LOD (Ct)	LOD (Copies/L)	LOQ (Copies/L)
35.27	14,828	36.73	10714	28571

raw or norm	Norm Target	Final Copies/L	Final Result Classification
Raw	PMMoV	-----	Present but not Quantifiable



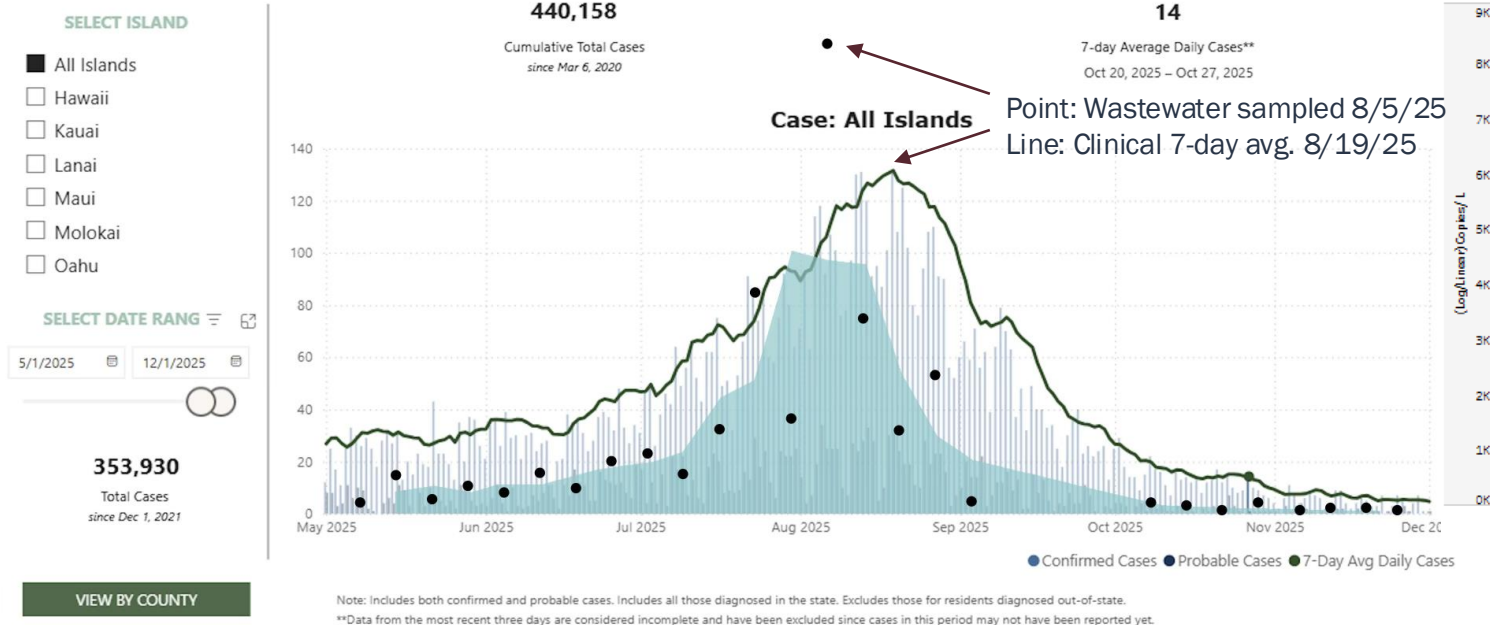
Data Visualization



https://bitab.health.mil/#/views/Wastewater_Dashboard_Carepoint/PCRResultsbyLoc?:iid=1



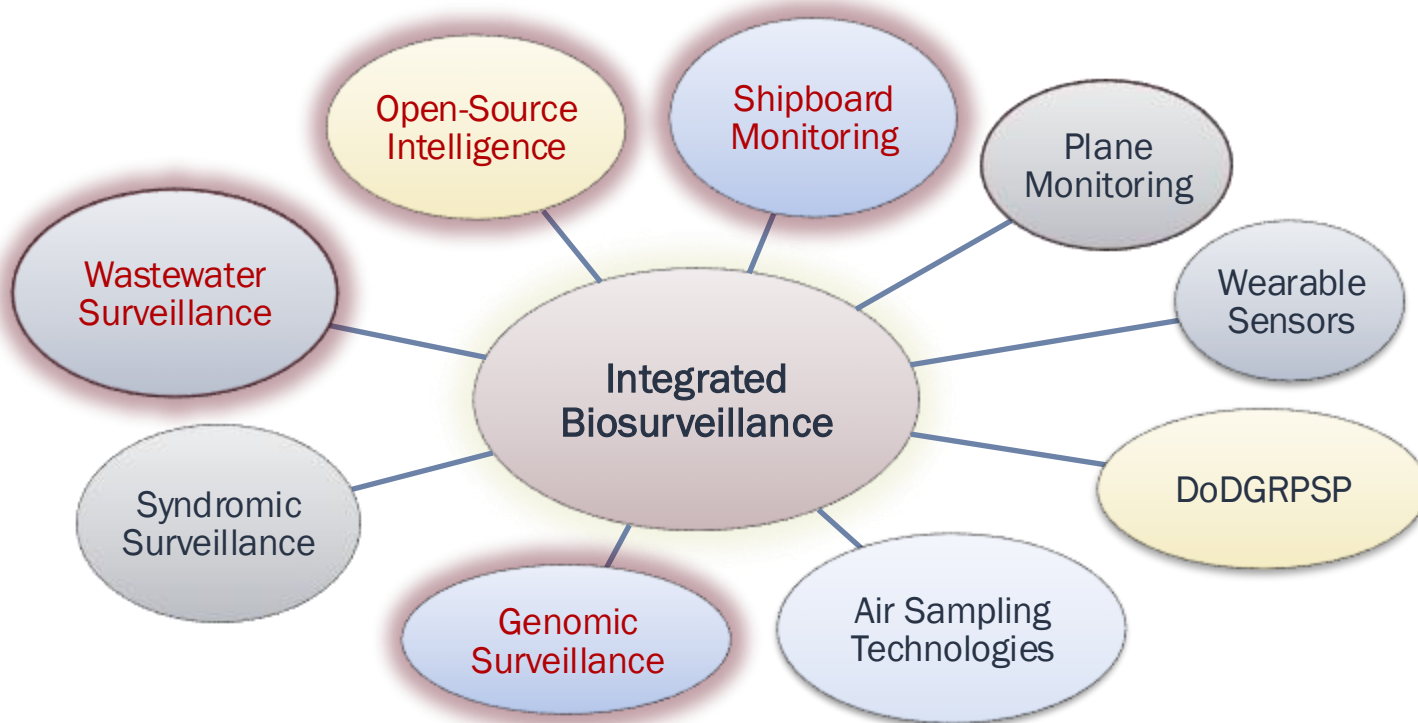
SARS-CoV-2 Data Integration



<https://health.hawaii.gov/coronavirusdisease2019/>



Dashboard Data Integration





Conclusion



- Accessible by CAC
- Includes PCR, methods and submission areas
- Next Steps: Sequencing Data, Clinical Data, Additional Locations
- Central repository for DoW Wastewater surveillance sites
- Makes results actionable for Force Health Protection decision makers
- <https://carepoint.health.mil/sites/APH/ww/Pages/default.aspx>



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