Photo by Steve Droter, Chesapeake Bay Program: https://flic.kr/p/2eMDazG

# Updates to Modeled Sewer and Septic for the Phase 7 Watershed Model

Wastewater Treatment Workgroup Meeting

January 22, 2026

Jackie Pickford, Peter Claggett, Michelle Katoski, Labeeb Ahmed, Sarah McDonald, USGS-CBPO
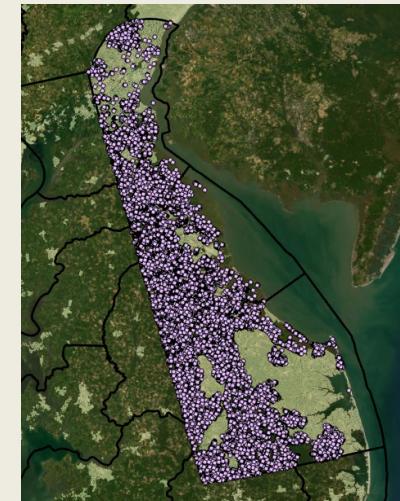
# Background/Context

The USGS models septic system counts and populations served by sewer and septic within the Chesapeake Bay Watershed from 1985 through future years (e.g., 2050) to inform the Chesapeake Bay Watershed Model and CAST.
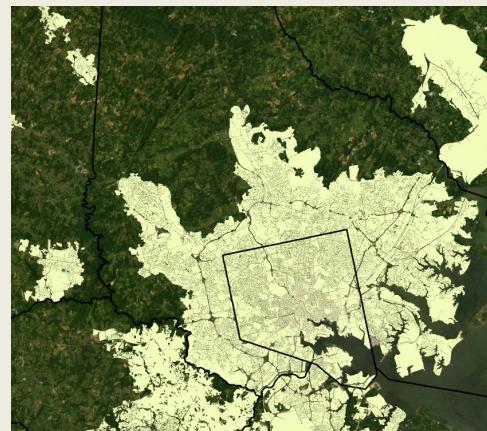


Sanitary Sewer
Service Area
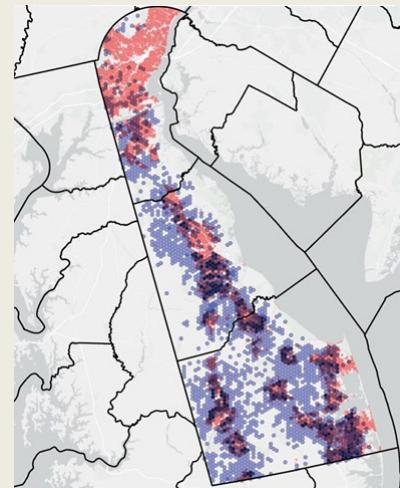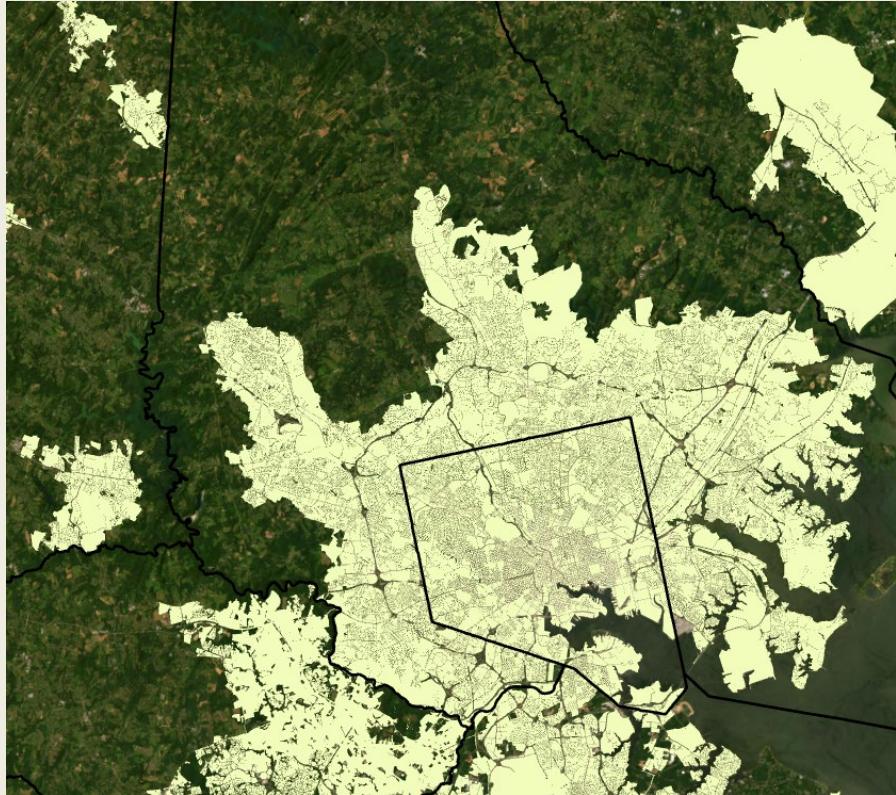
Chesapeake Bay Land
Change Model
(CBLCM)

Sewer/Septic Model

Phase 7 Watershed
Model/CAST

# Approvals from the WWTWG in July 2025



1. Approved Phase 7 sanitary sewer service area.

2. Approved the updated methods for the sewer/septic model.
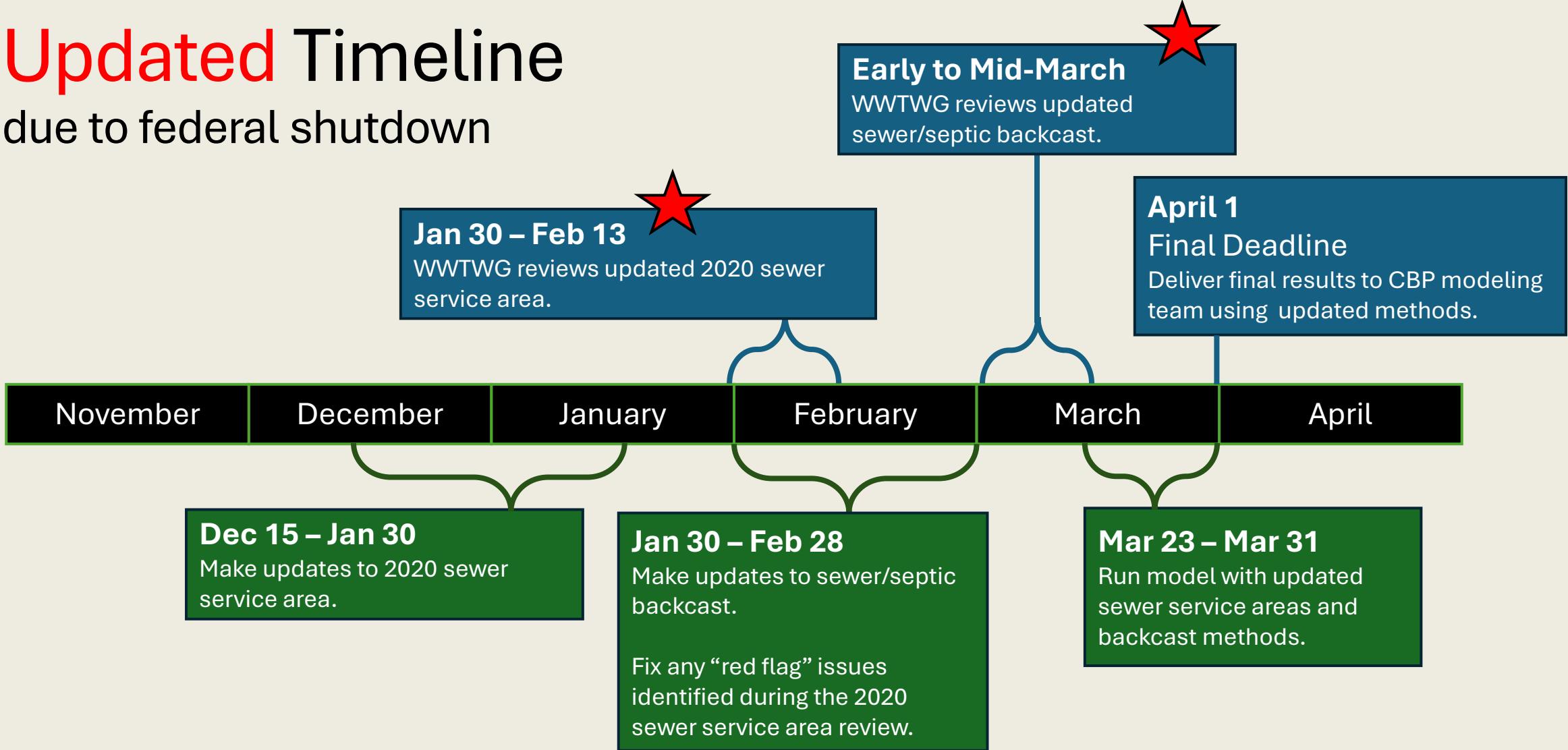
# Updates to Methods since Sept 2025

## I. Slight improvements to the 2020 sewer service area

- ☑ I. Incorporation of sewer data provided by some jurisdictions that missed the original submission deadline
- ☑ II. Adjustments to fix overestimation of septic systems adjacent to the sewer service area
- ☑ III. Adjustments to fix overestimation of septic systems in census places

## II. Updates to sewer/septic backcast

- ⧗ I. Incorporation of a 1990, 2000, & 2010 sewer service area to better account for changes in sewered area over time  (February – March)

# Updated Timeline
## due to federal shutdown

**November** | **December** | **January** | **February** | **March** | **April**

**Early to Mid-March**
WWTWG reviews updated sewer/septic backcast.

**Jan 30 – Feb 13**
WWTWG reviews updated 2020 sewer service area.

**April 1**
Final Deadline
Deliver final results to CBP modeling team using updated methods.

**Dec 15 – Jan 30**
Make updates to 2020 sewer service area.

**Jan 30 – Feb 28**
Make updates to sewer/septic backcast.

Fix any "red flag" issues identified during the 2020 sewer service area review.

**Mar 23 – Mar 31**
Run model with updated sewer service areas and backcast methods.

WWTWG review

# Updates to the 2020 Sewer Service Area

Update I:
Incorporation of new sewer service area data

# Updated sewer data for the following jurisdictions

Hampton Roads, Virginia
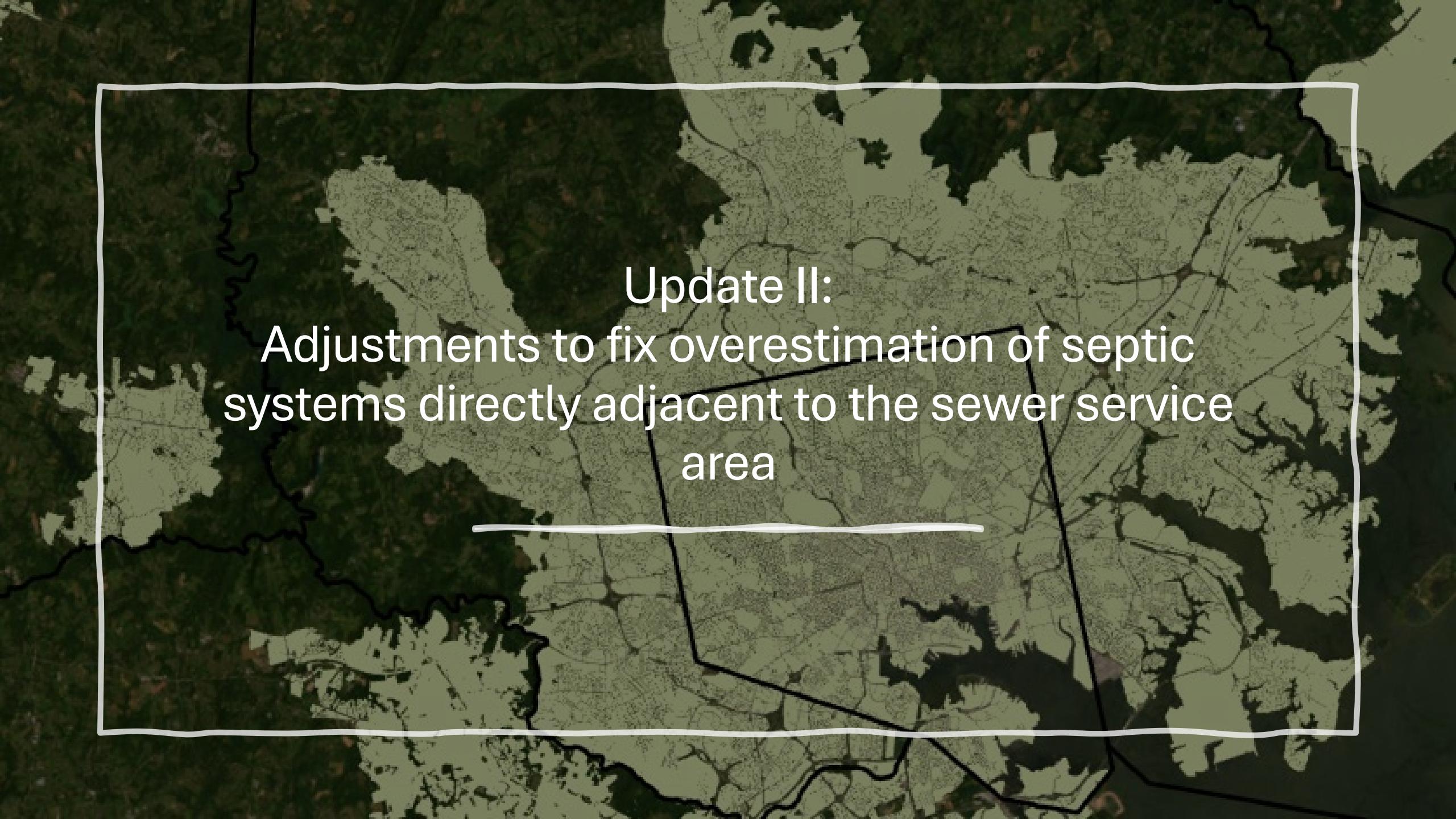
Amelia County, Virginia

Culpeper County, Virginia
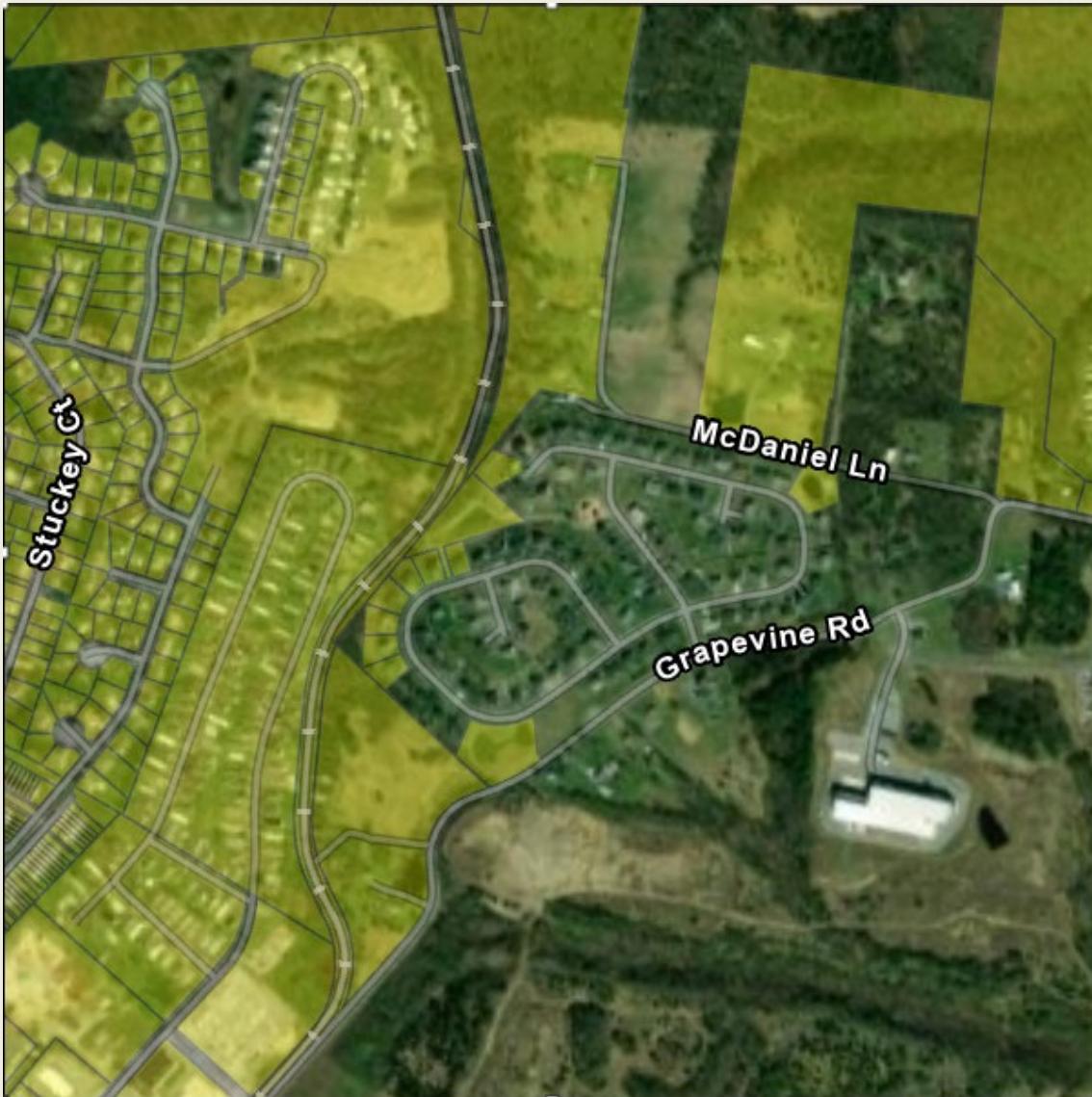
Blair County, Pennsylvania

Perry County, Pennsylvania

Centre County, Pennsylvania

Sussex County, Delaware

Update II:
Adjustments to fix overestimation of septic systems directly adjacent to the sewer service area
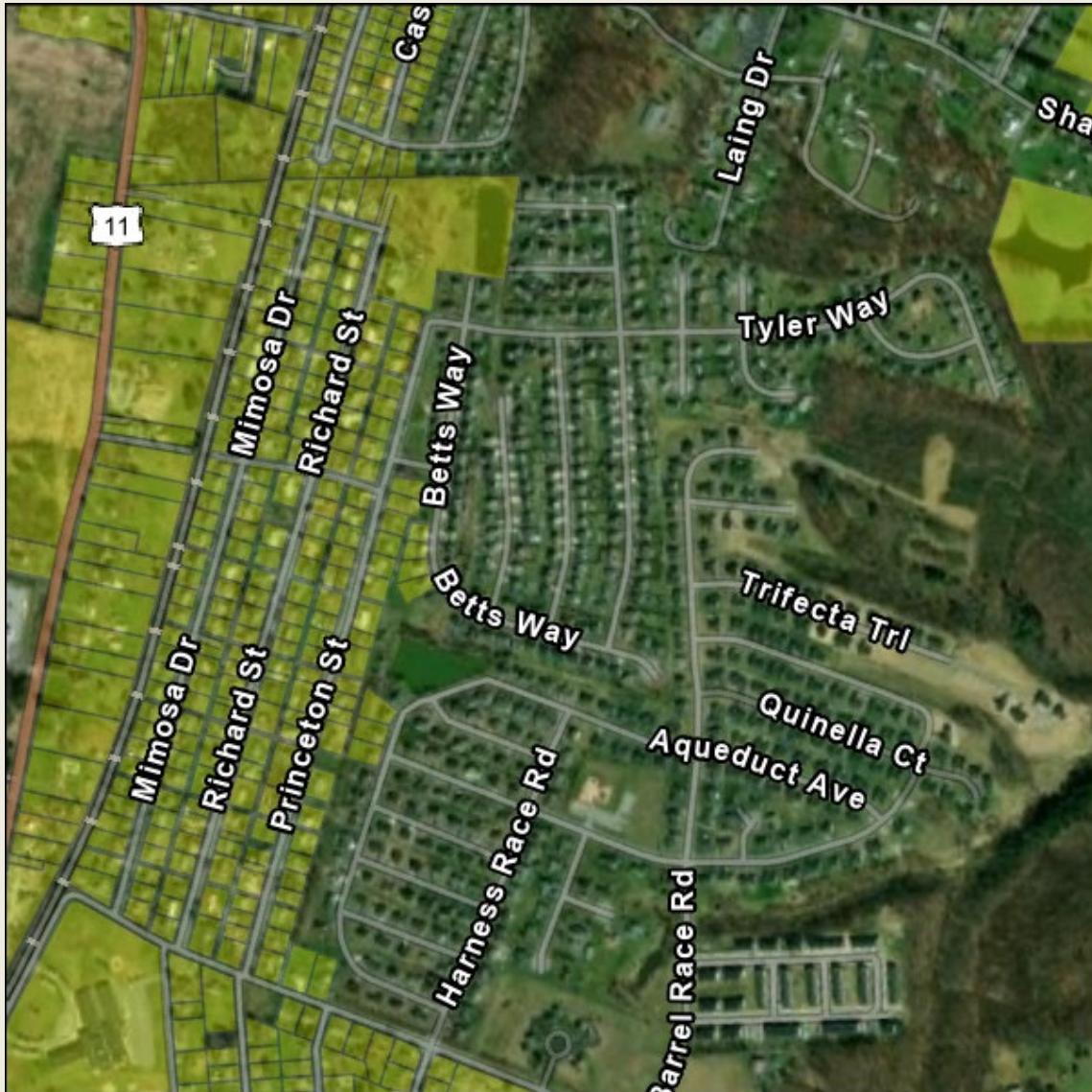
# Berkeley County, West Virginia



= original P7 sewer layer
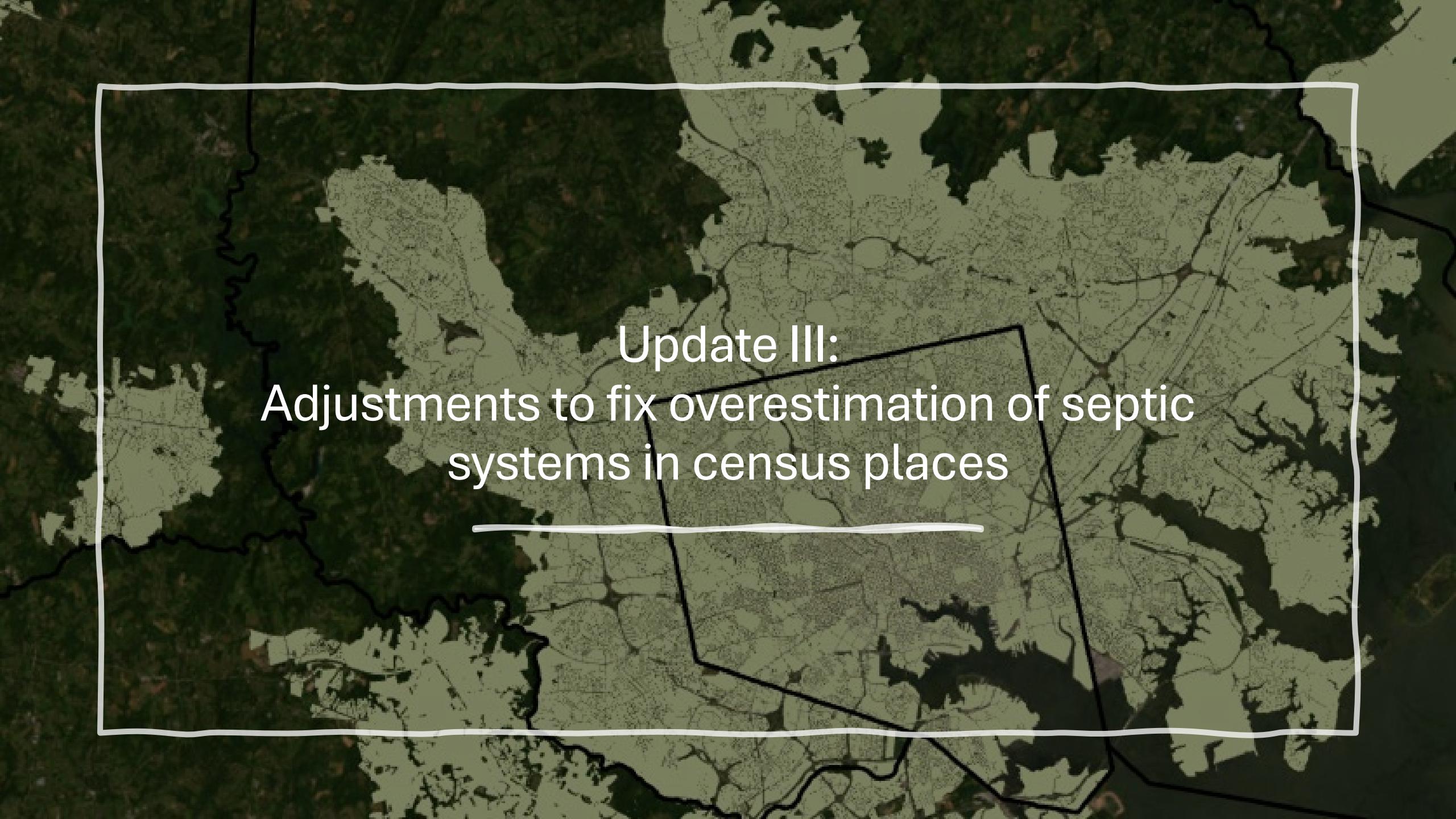
= updates to the P7 sewer layer

# Berkeley County, West Virginia



= original P7 sewer layer

= updates to the P7 sewer layer

Update III:
Adjustments to fix overestimation of septic systems in census places

**Issue**

County data omits some sewered areas within the county (e.g., the town of Culpeper)



Example: Culpeper, Virginia

███ = county sewer data

## Fixes/Updates

Use 2022 Clean Water Needs Survey data to identify wastewater treatment plant locations and tag overlapping 2020 Census Places currently excluded from the 2020 sewer service area

Example: Culpeper, Virginia



= county sewer data

= updates to the P7 sewer layer

Next Steps: Sewer Service Area Review

Phase 7 Sanitary Sewer Service Area
https://gis.chesapeakebay.net/sewer/

Discussion/Questions?

# Acronyms

- CAST: Chesapeake Assessment Scenario Tool
- CBP: Chesapeake Bay Program
- CBLCM: Chesapeake Bay Land Change Model
- CBW: Chesapeake Bay Watershed
- NLCD: National Land Cover Data
- P6: Phase 6 [Watershed Model]
- P7: Phase 7 [Watershed Model]
- SSA: Sewer Service Area
- USGS: United States Geological Survey
- USWG: Urban Stormwater Workgroup
- WWTWG: Wastewater Treatment Workgroup