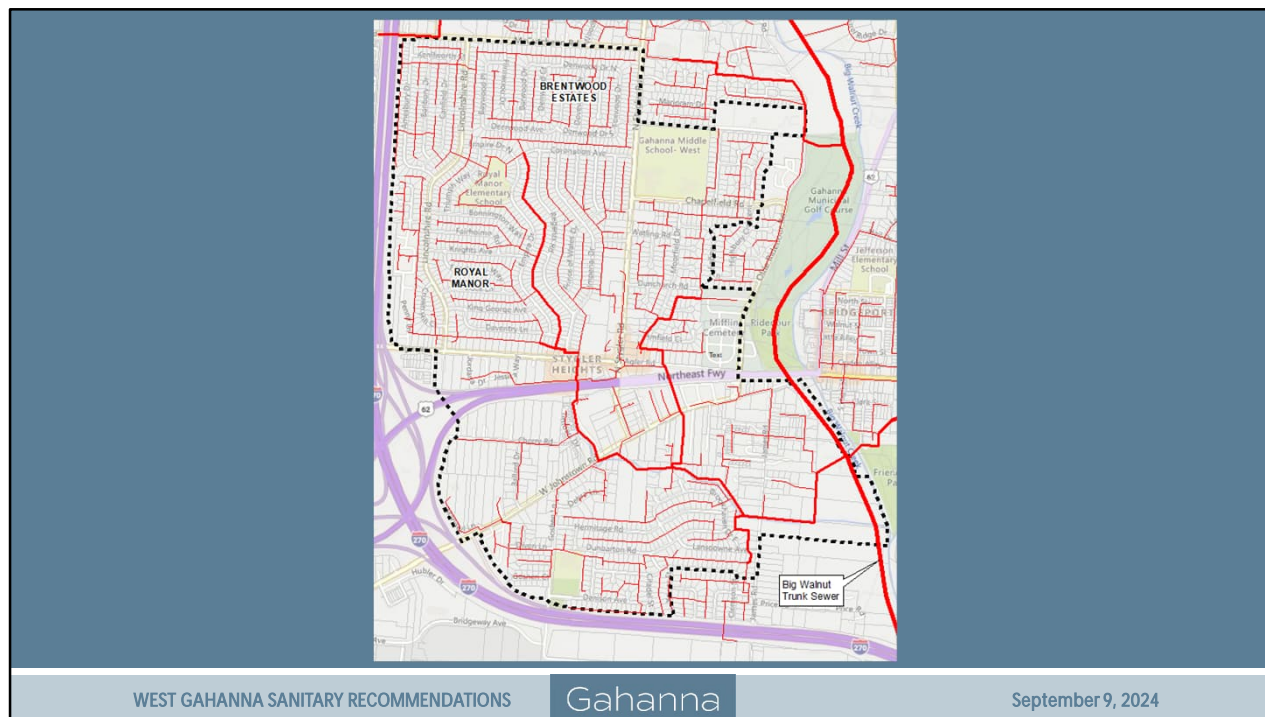




# Gahanna

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WEST GAHANNA SANITARY SEWER EVALUATION  
RECOMMENDATIONS - SANITARY RELIEF SEWER  
SEPTEMBER 9, 2024



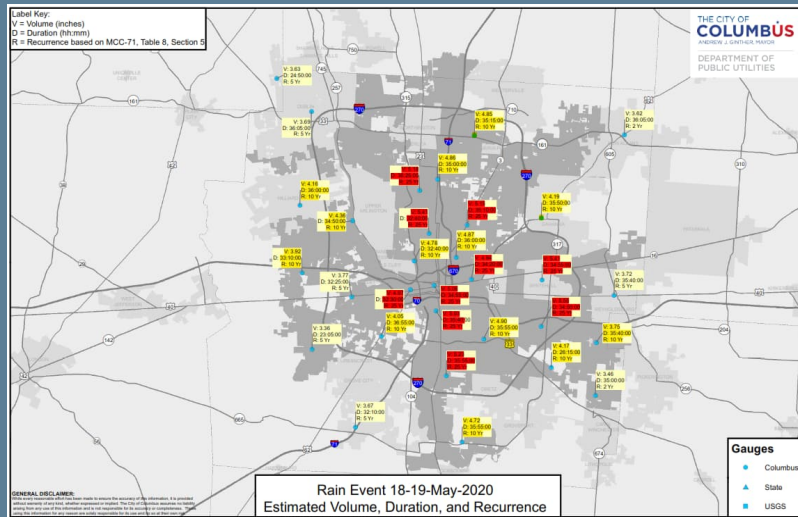
Aprox 1200 Acres and just under 3000 parcels; Subdivisions – Brentwood, Royal Manor, Orchard Hill, College Park, Heritage; Subdivisions Roads & Utilities early 1960's with homes constructed in 60's and early 70's; The RED lines on the map indicate the sanitary sewer collection system; In early 1990's sewer backups and water in basement issues were reported and 8 depressed driveways, and about 200 homes had foundation drain remediations occurred; Fast forward to March & May of 2022 during heavy rainfall events additional backups occurred. City Staff began the evaluation and assessment process leading up to today's reporting of the findings an recommendations

March 18-20, 2020

- Received ~4.2" of rainfall in 2 days
- 10-Year rainfall event
- 71 Reported basement backups

May 18-19, 2020

- Received ~4.5" of rainfall in 2 days
- 10-Year rainfall event
- 53 Reported basement backups
- No reported sanitary sewer overflows



WEST GAHANNA SANITARY RECOMMENDATIONS

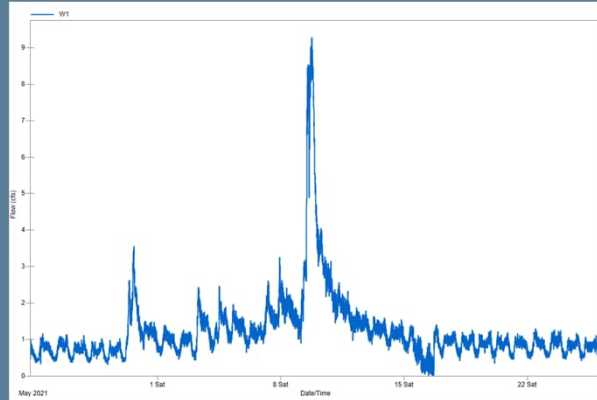
Gahanna

September 9, 2024

Phase I evaluation (2020-2021) Resident Survey, flow monitoring and sanitary sewer hydraulic modeling;  
 Phase II (2021-2022) Sewer Televising, Smoke and Dye testing;  
 [No major sources of I/I found, Wet Weather Capacity issues identified in trunk sewer]  
 Phase III (2023-2024) Alternative Analysis and Columbus Coordination

## Flow Monitoring

- Quantify Inflow and Infiltration (I/I)
  - Inflow – Stormwater Entering from Direct Connections (i.e. catch basins, downspouts, driveway drains, etc.)
  - Infiltration – Groundwater entering through Indirect connections (i.e. joints, private lateral connections, etc.)
- I/I Capture at W1 was 8.6% Capture
- Surcharging

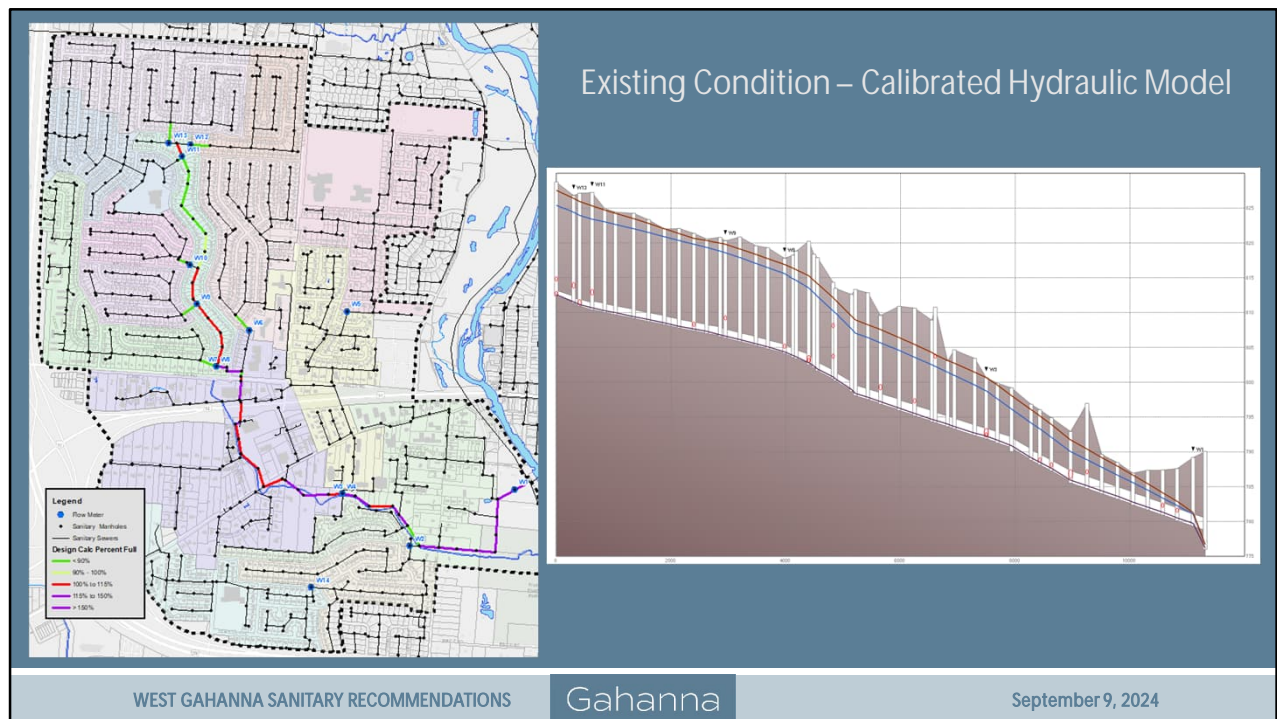


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### Sanitary Sewer Design Calculations:

Trunk sewer is sized per 10 state standards and is adequate for dry weather flows for a tributary area of this size, land use and densities,

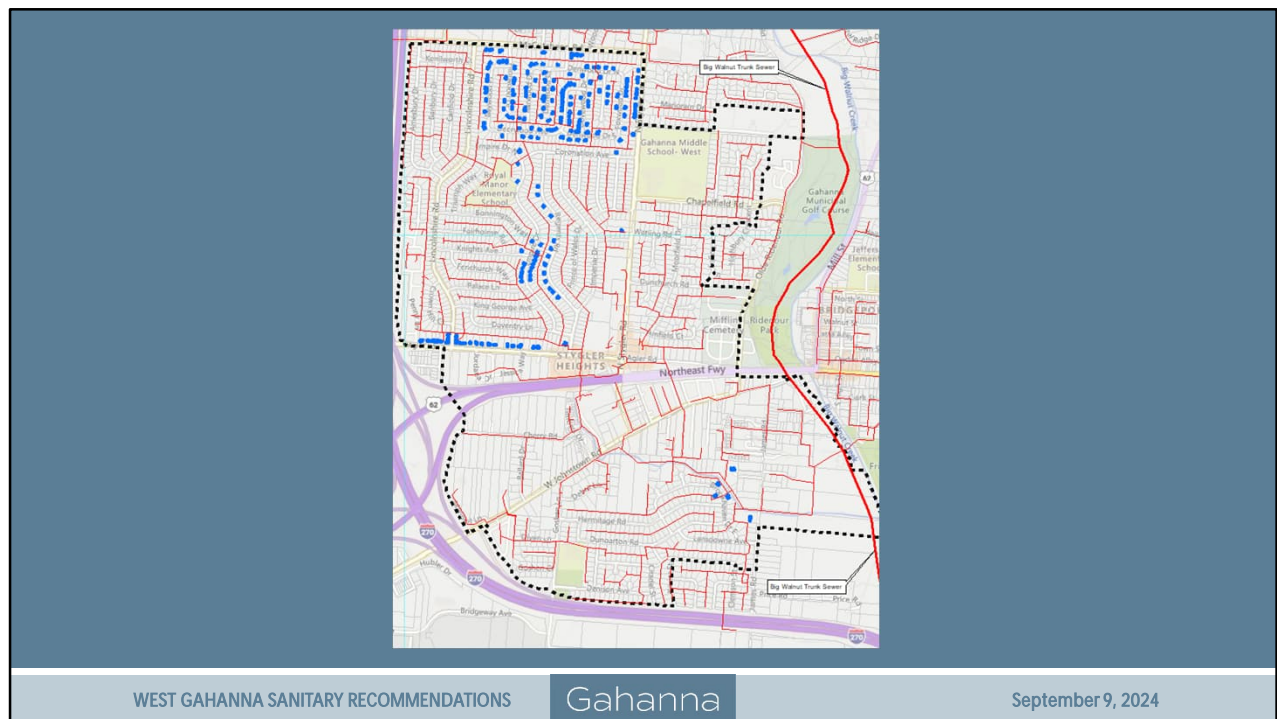
With rainfall and ground water finding its way into the system, the system surcharges with larger storm events resulting in sewer backups

### Computer Modeling

Showed significant surcharging in trunk sewer from 10-year rainfall

Surcharging could result in basement backups

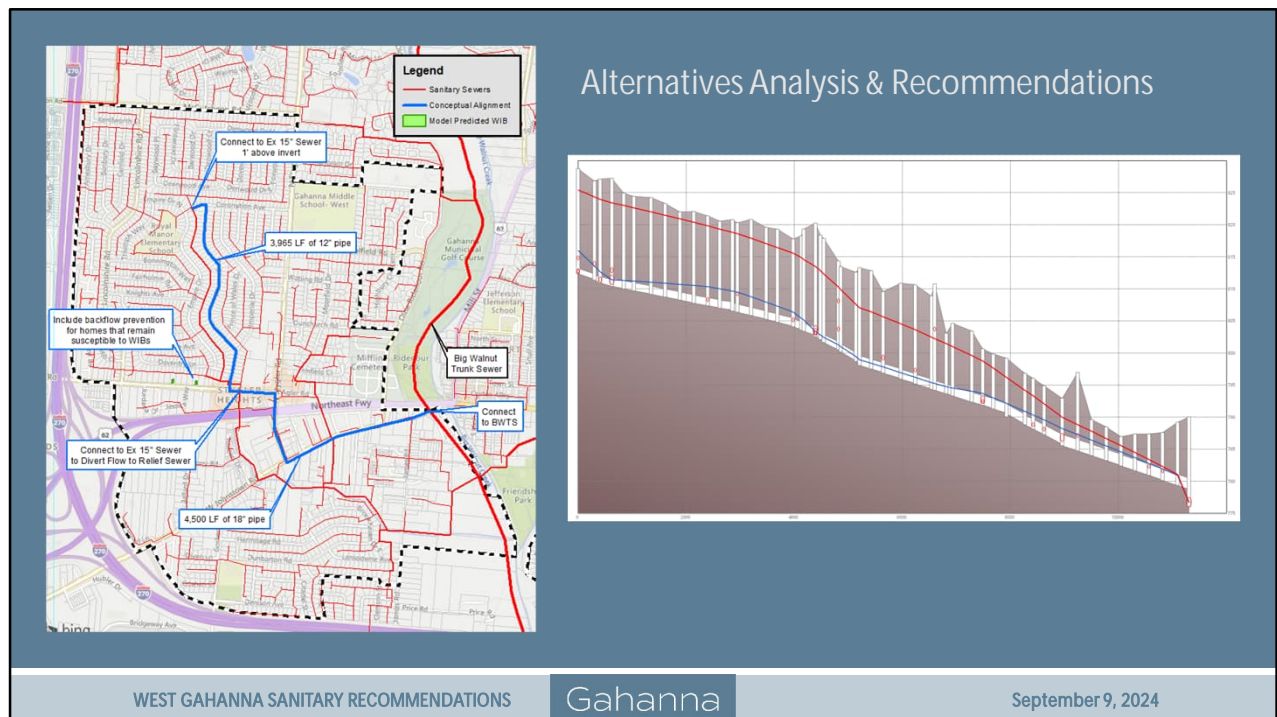
Showed possible sanitary sewer overflows for 25-year



Impacts of Surcharging during rainfall events:

Predicted existing condition during 10-year design storm

Estimated 293 basement backups (53 Reported)



Over 20 alternatives were evaluated including public & private I/I reductions, Capacity Improvements, Water Reuse, and Containment.

Reiterate, not a dry weather flow issue with the system, wet weather and with limitations on flows into the City of Columbus' system, Recommending Private-side sanitary back check valves in addition to a relief sewer.

Key Considerations - Project Expectations/Limitations:

- Sanitary Systems were not designed to handle stormwater

- Project reduces the risk of basement back up but does not totally eliminate

- Evaluation for basement backup is for 10-year rainfall occurrence

- Larger events may still trigger surcharging and basement backup

- Gahanna does not have an unlimited discharge to the Columbus System

- City of Columbus System

- 10-year level of service for basement backup

- 25-year level of service for sanitary sewer overflows

- Gahanna's system cannot exceed level of service of the outfall



# Questions

WEST GAHANNA SANITARY RECOMMENDATIONS

Gahanna

September 9, 2024

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