

**MARYLAND AVENUE BACKUPS
DURING AUGUST 31, 2014 STORM EVENT
COMMUNITY OUTREACH**

MARYLAND AVENUE BACKUPS COMMUNITY OUTREACH

MEETING AGENDA

- Introductions
- History of PWSA Actions
 - August 31 Storm Impacts
 - Short Term Alternatives
 - Long Term Alternatives
 - Next Steps

Presenters:

James Good, Interim Executive Director
Robert Christian, Director Of Engineering
and Construction

2012 Sewer Capacity Improvements Along Holden Street Alleviated Reasons For Past Flooding.

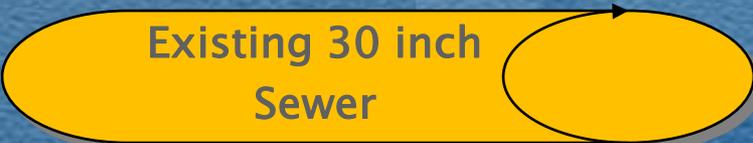


The Holden Street sewer improvement helped address localized problems, but did not address overall system capacity limitations to convey stormwater to river outfalls.

Maryland Street

August 31 Flooding Incident Statistics

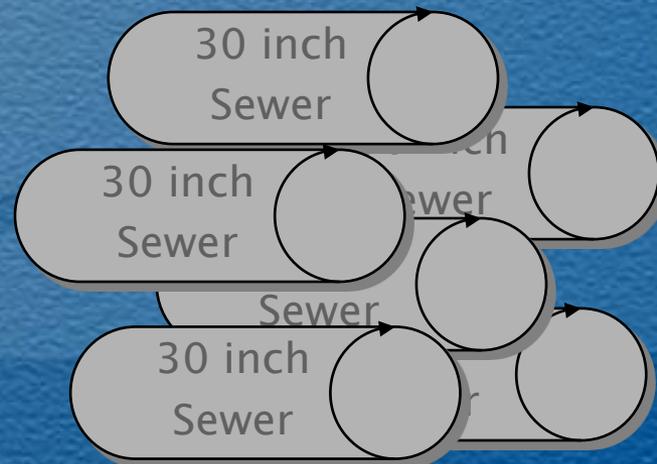
- Once in 17 year event occurred on August 31, 2014
- 1.05 inches of rain—2.7 Million Gallons in 15 minutes
- Surface Runoff overwhelmed sewer system capacity



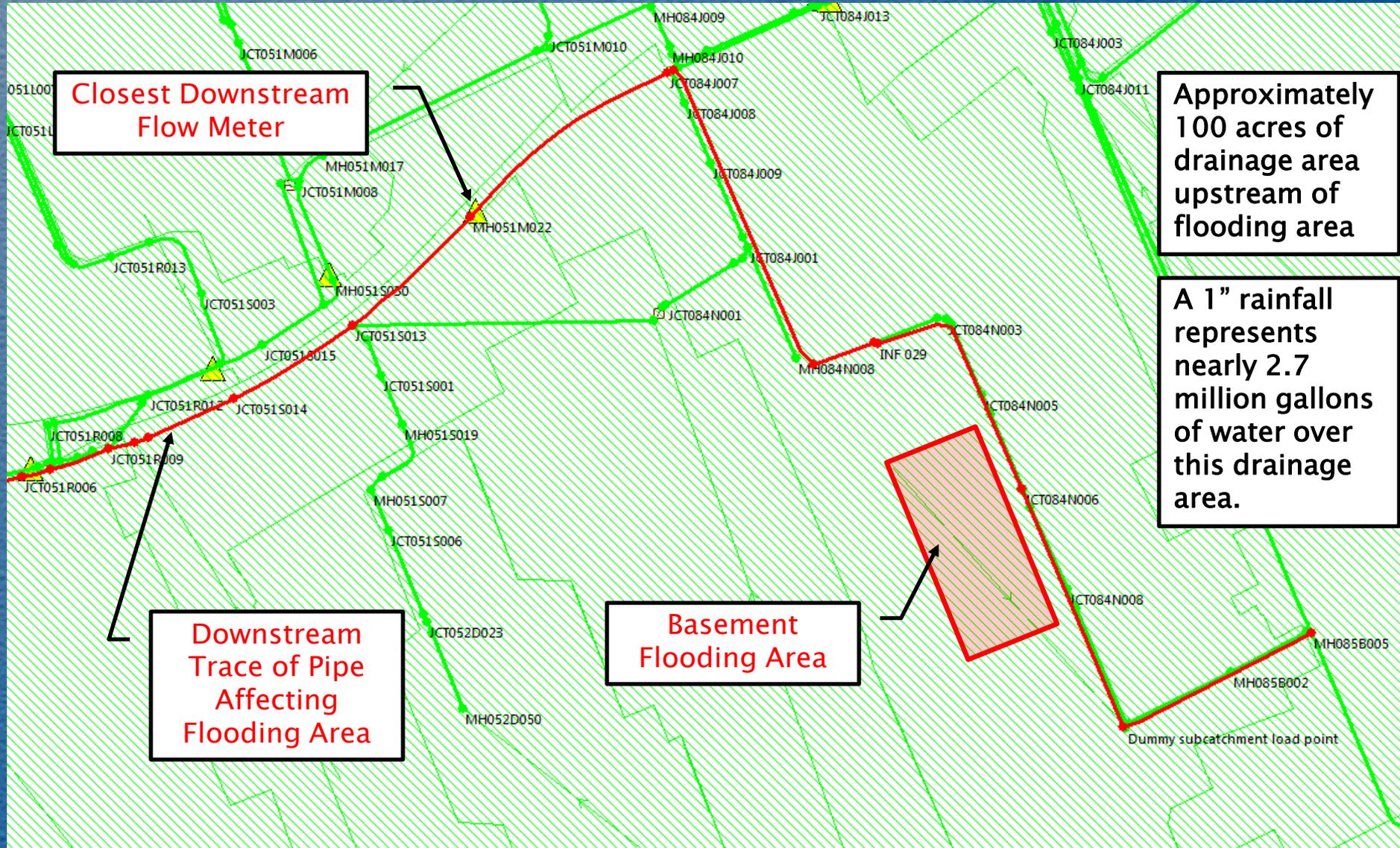
Existing 30 inch
Sewer

The diagram shows a single yellow horizontal oval representing a sewer pipe. An arrow points from the right side of the oval to the right, indicating flow direction.

About 5 more 30 Inch
Sewers Are Needed To
Convey This Rainfall!



The Problem Area Is Part of Major Sewershed



What Factors Cause Basement Flooding?

THE STORM

- Depth and Intensity of Rainfall
- Back to back Storm Events

EXISTING SEWER SYSTEM CAPACITY AND CONDITION

- Sewer Pipe Size and Internal Condition
- Amount of Stormwater Entering Sewers
- Timing of Stormwater Entering Sewers

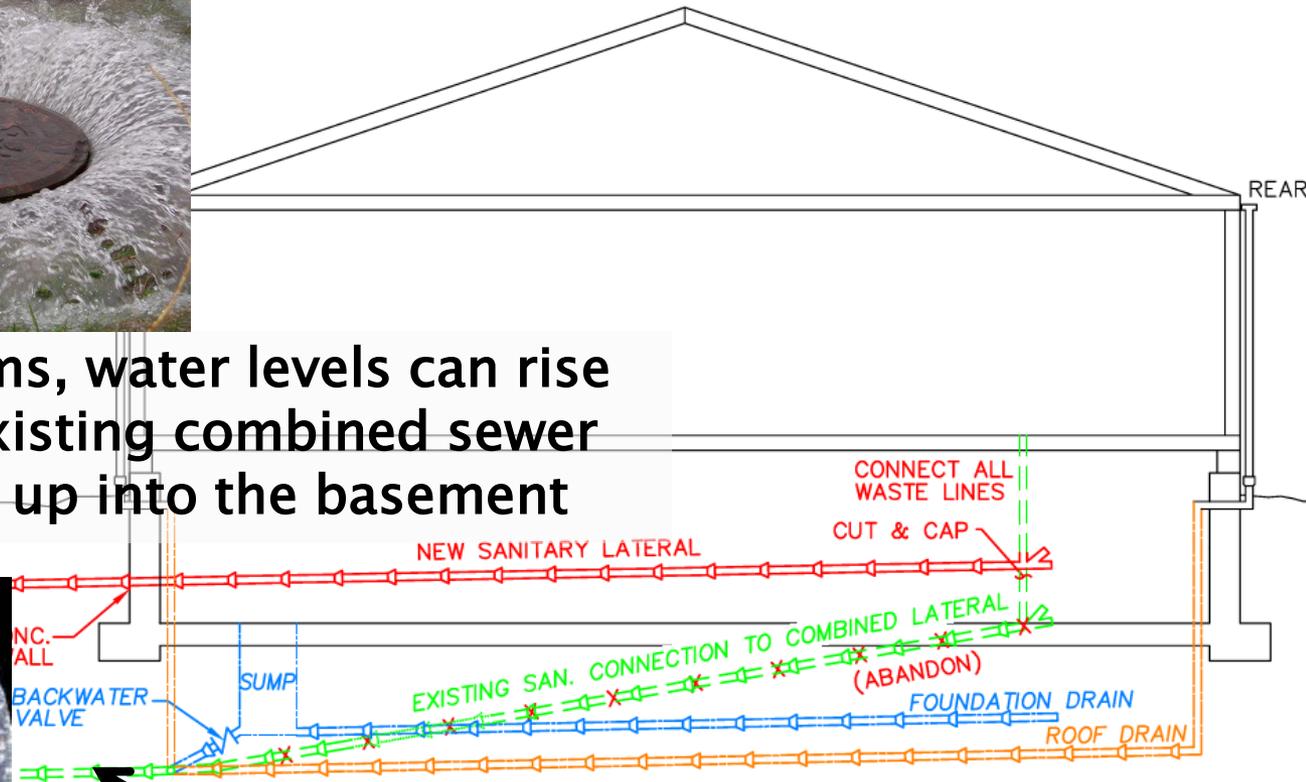
EXISTING HOUSEHOLD CONNECTIONS

- Downspout and Drainage Flow Volume
- Condition of Existing Lateral (capacity)

What Factors Cause Basement Flooding?



During storms, water levels can rise above the existing combined sewer which backs up into the basement



During intense storms, runoff can exceed the house lateral capacity

PWSA is Evaluating Short-Term Options to Prevent Future Backups

- 1. Check Existing House Lateral Condition**
- 2. Backflow Preventer (check valve) on House Lateral (with activation alarm)**
- 3. Grinder Pump to pressurize house lateral flow**
- 4. Grinder Pump pressurizes household flows to new local sanitary sewer**
- 5. New House “sanitary” lateral and sewer to a new end of street pump station.**

Short-Term Improvement Options

Backflow Preventer



Advantages:

- Stops sewage from backing up from mainline
- Gravity flow, no pumping
- Small footprint
- Lower cost - Approx. \$ 6,000 - \$8,000

Disadvantages:

- Dig up basement slab or yard for installation
- Cannot use much water during larger rain events
- Must disconnect roof drains and sump pumps from house lateral
- May cause other houses to backup

Short-Term Improvement Options

Grinder Pump



Advantages:

- Stops sewage from backing up from mainline
- Small footprint
- Can use water during rain event

Disadvantages:

- Dig up basement slab or yard for installation
- Relies on a pump
- Must disconnect roof drains and sump pumps from house
- Higher cost – \$30,000 – \$40,000 with Battery Backup
- May cause other houses to backup

Short-Term Improvement Options

Grinder Pump with New Shallow Sewer



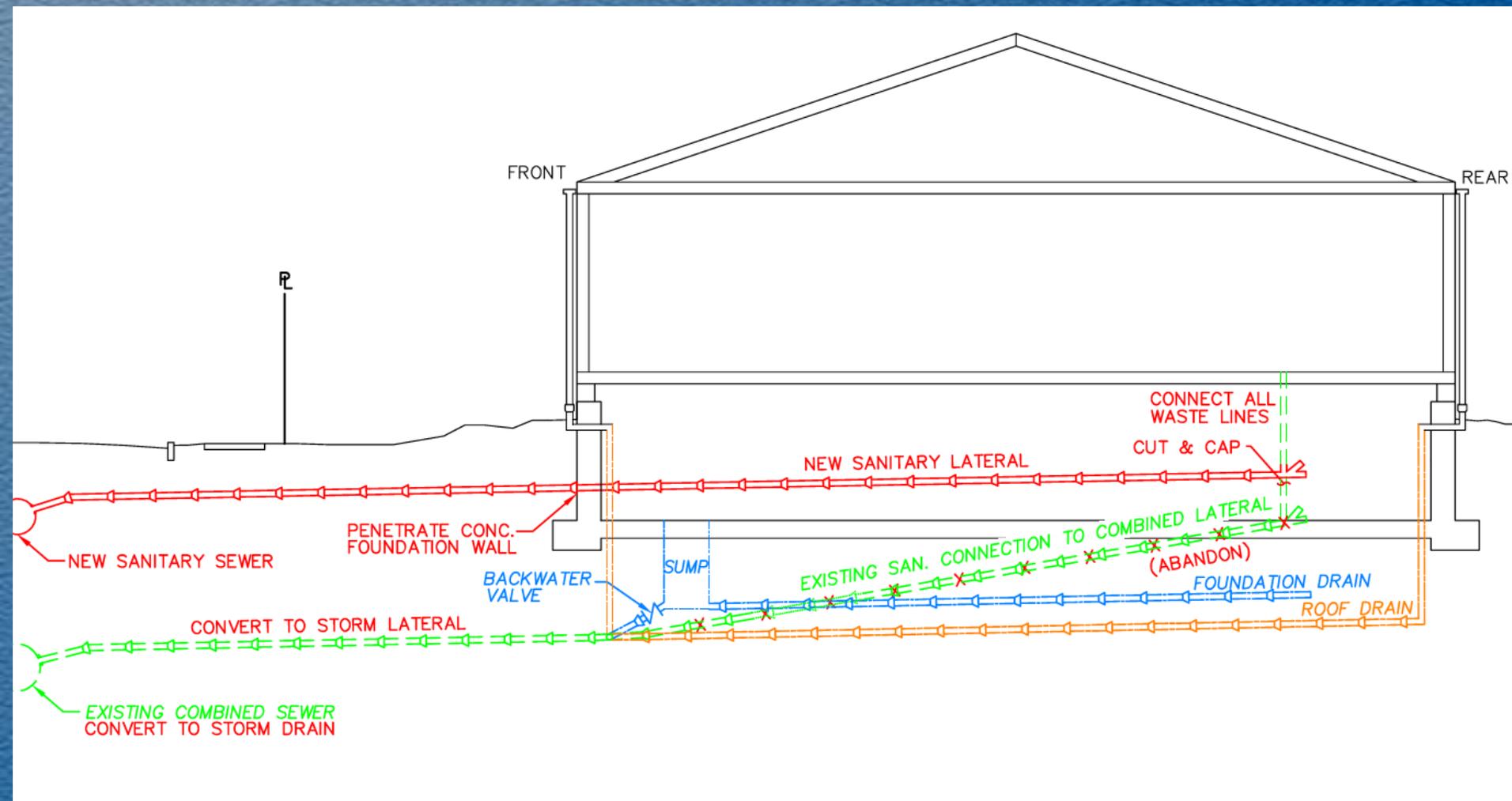
Advantages:

- Stops sewage from backing up from mainline
- Small footprint
- Can use water during rain event

Disadvantages:

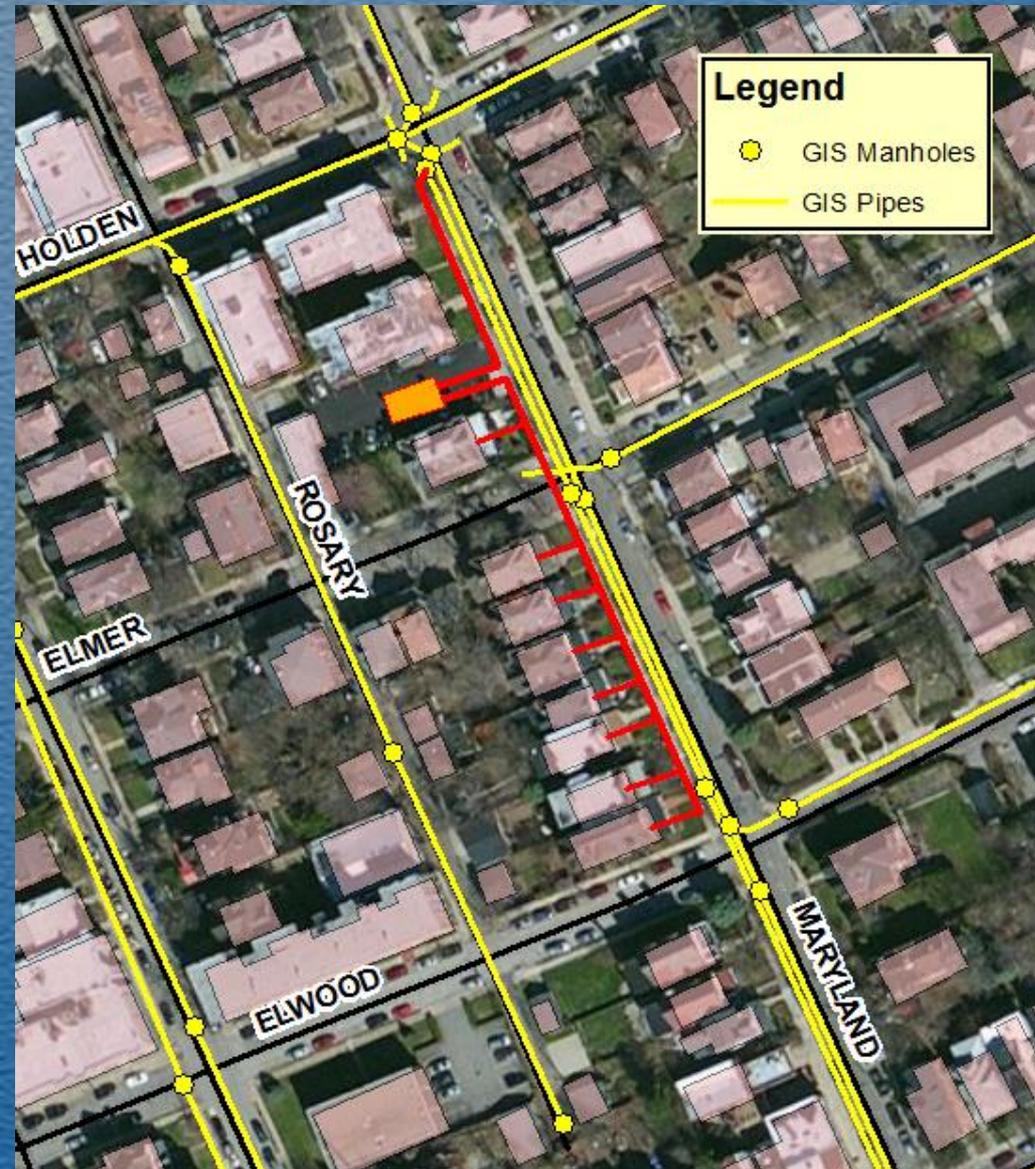
- Installed in basement
- Relies on a pump
- New Sewer in yard
- Must disconnect roof drains and sump pumps from house
- Higher cost - \$TBD
- May cause other houses to backup

New Shallow Sanitary Sewer



Short-Term Improvement Options

New Local Pump Station



Advantages:

- Stops sewage from backing up from mainline
- No valves or pumps at house

Disadvantages:

- New Sewer in yard
- Difficulty to site local Pump Station
- May cause other houses to backup
- Must disconnect roof drains and sump pumps from house
- Higher cost – \$TBD

Short-Term Options To Prevent Future Backups

MARYLAND STREET OPTIONS				
OPTION	COST	RELIABILITY	O&M	PUBLIC VALUE
Backflow Valve (8 Houses)	\$48,000 to \$64,000	Moderate To High, Storm piping change required	Minimal	Individual Homes
Household Grinder Pump (8 Houses)	\$240,000 to \$320,000	High	Minimal	Individual Homes
Grinder Pump With New Shallow Sewer (8 Houses)	\$320,000 to \$380,000	High	Minimal	Individual Homes
New Local Pump Station, and Sewer	\$240,000 to \$320,000	High	Moderate	Future Sewer Separation Benefit

PWSA is Evaluating Longer-Term Options to Prevent Future Backups

- 1. Develop and Implement Combined Sewer Compliance Improvements, Including Green Infrastructure**
- 2. Additional Capacity Improvements on Holden Street and Summerlea Street**
- 3. Ultimate System wide Sewerage Separation, to Create Capacity To Discharge Stormwater To River Separate from Wastewater**

Potential Sewer Improvements – Summerlea St.



The Summerlea Street extension of the Holden Street project improves localized problems. Confirming overall capacity limitation improvements.

Longer-Term Options To Prevent Future Backups

LONG TERM CAPACITY MANAGEMENT OPTIONS

OPTION	COST	RELIABILITY	O&M	PUBLIC VALUE
Upsize Downstream Sewers To Convey Total Flow	\$25-40M	Very High	Low	High
Minimize Flows With Distributed Green Infrastructure (1" Rain)	\$5.0 to \$6.0 M (35% of Runoff)	High (Maintenance Dependent)	Moderate	Very High
Combination of Both	< \$30 M	Very High	Moderate (GI Costs)	Extremely High

Identify Downstream Sewer Improvements & Use of Green Infrastructure



Rain barrels with overflow to yard



Immediate Actions Are Needed To Confirm and Select The Highest Benefit Solution

- Site visits to each property to assess lateral and storm water piping construction
- Confirm construction and operational costs
- Assess comparable benefits of longer-term solutions, including future schedule
- Collect localized sewer flow data to verify analysis
- Determine future sewer and drain pipe sizes
- Assess Value and Cost of Green Infrastructure
- Confirm No Additional Basement Flooding Caused By Recommended Alternative

QUESTIONS?