

February 28, 2011 Rain/Snow Melt Event and Subsequent Sewers Surcharge

Presented to:

Avon Lake City Council Sewer Committee
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Outline

- Background/How did water get in?
 - The rain event & snow melt
 - The runoff
 - Surcharges/Back-ups
- Path Forward/How do you keep water out?
 - What ALMU is doing
 - What the City is doing
 - What Residents can do
- The Partnership



The rain event & snow melt

- Around midnight, Monday morning 2/28/11, thunderstorms rolled into Avon Lake
- Approximately 2” fell in 5 hours
- Temperatures started around 50° and fell to 35°
- Rain caused melting of several inches of snow

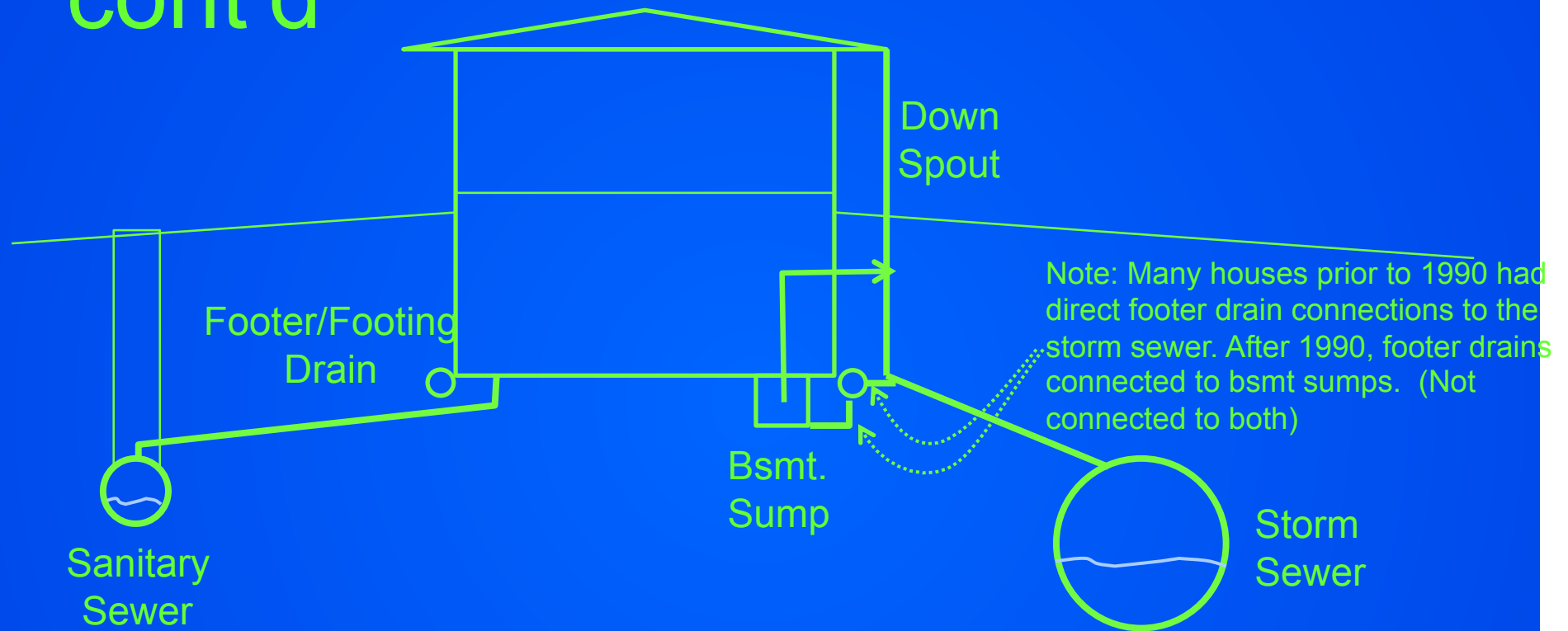


Where does the water go?

- Rain and snow melt goes to 4 places
 1. Streams
 2. Groundwater
 3. Storm Sewer
 4. Sanitary Sewer
- Assume 1 was not problematic
- Focus on 2, 3, & 4



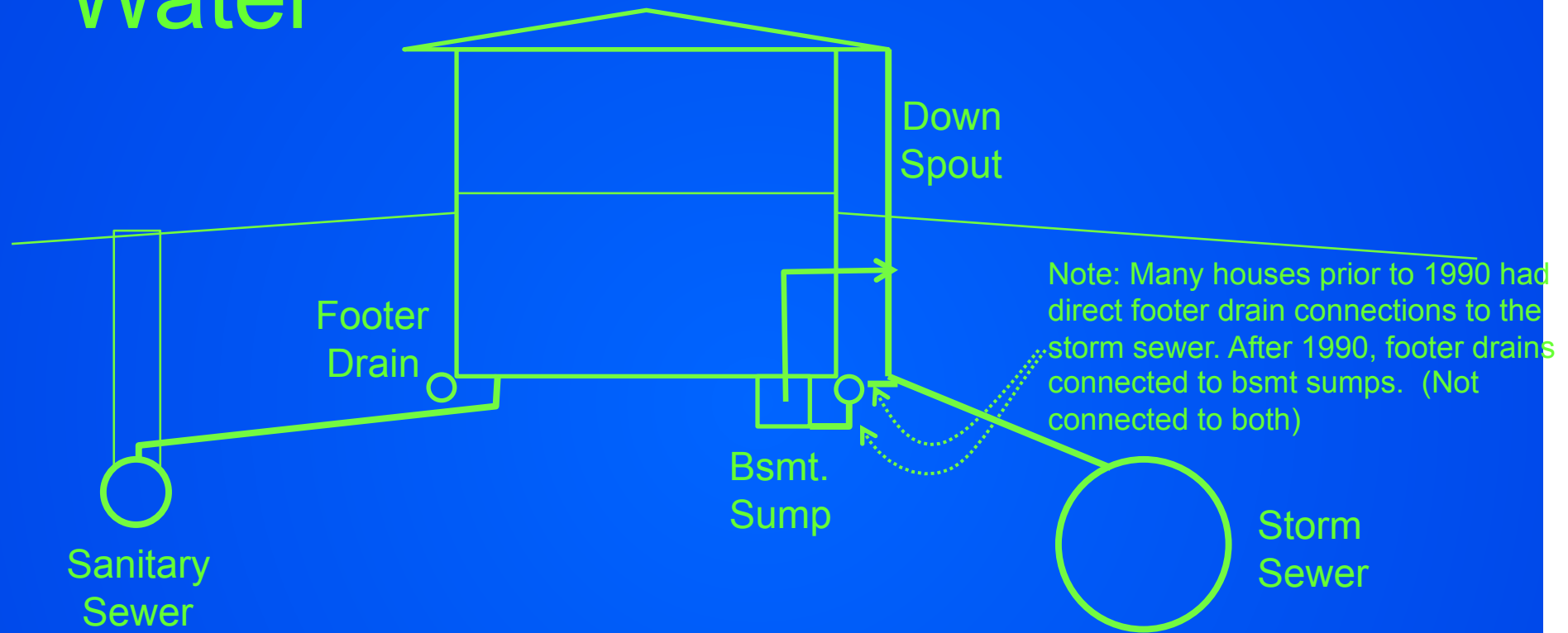
Where does the water go? – cont'd



- Storm water usually goes to the storm sewer and wastewater to the sanitary sewer



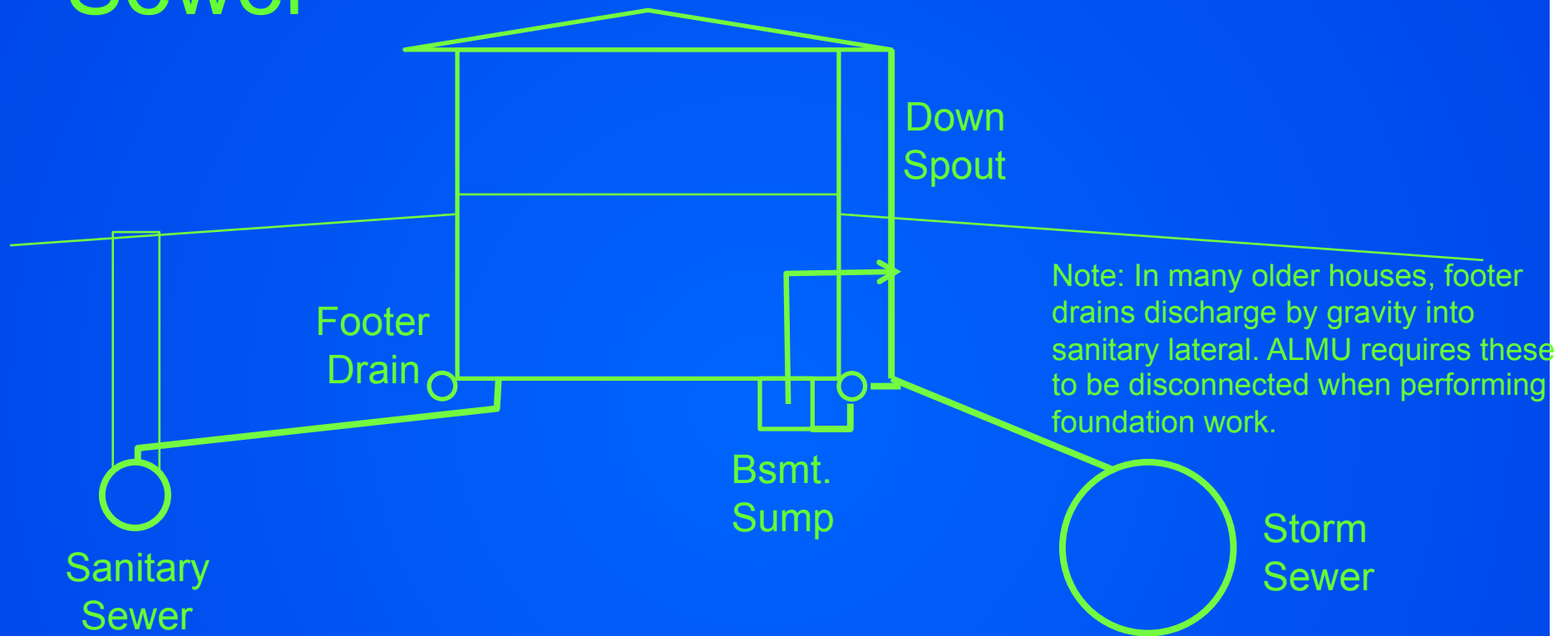
Surcharges/Backups – Storm Water



- Storm water made its way to footer drains and overloaded sumps. Storm water backed up into footer tiles of pre-1990 homes and forced itself into bsmts through joints, etc.



Surcharges/Backups – Sanitary Sewer



- Too much water entered the sanitary sewer, which caused backups in sanitary laterals; and water entered bsmts through floor drains and plumbing fixtures



How did water get into basements?

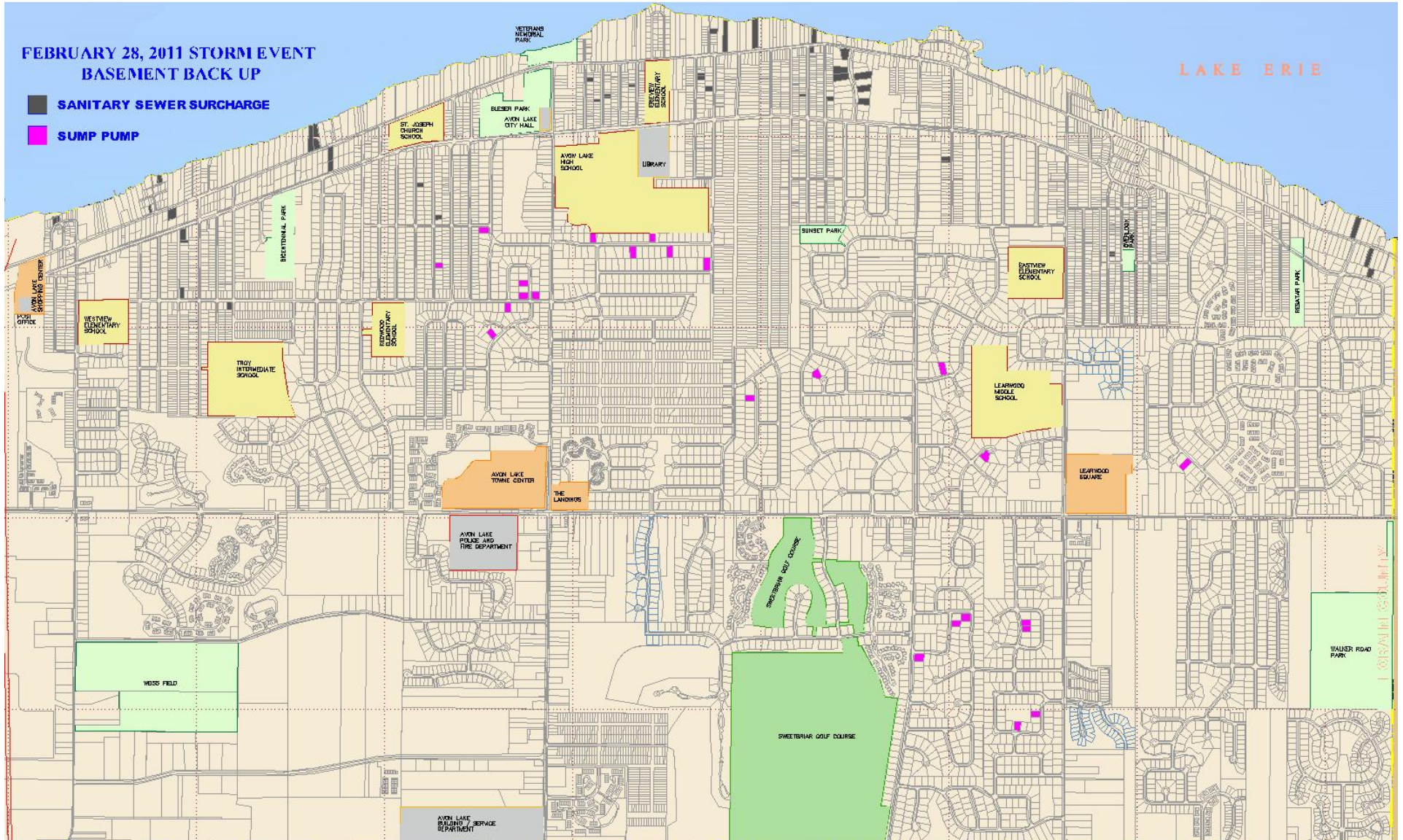
- Overflowing sumps
 - Too much water for pump to keep up
 - Partial clog in discharge
 - Power outage
 - GFCI tripped and pump didn't run
 - Pump failure
 - (Through joints/cracks – w/ or w/o sumps)
- Overloaded sanitary sewer
 - Backed up into floor drains and plumbing fixtures connected directly to sanitary sewer (by gravity)



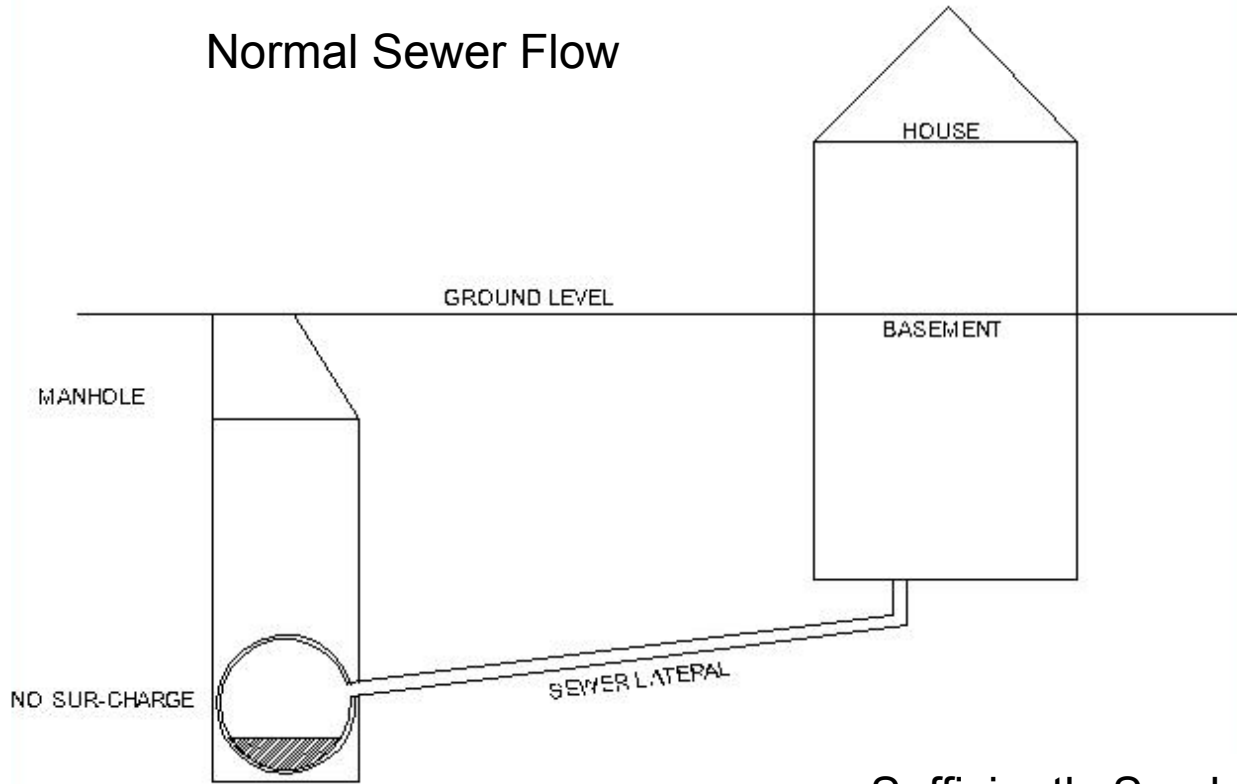
FEBRUARY 28, 2011 STORM EVENT
BASEMENT BACK UP

-  SANITARY SEWER SURCHARGE
-  SUMP PUMP

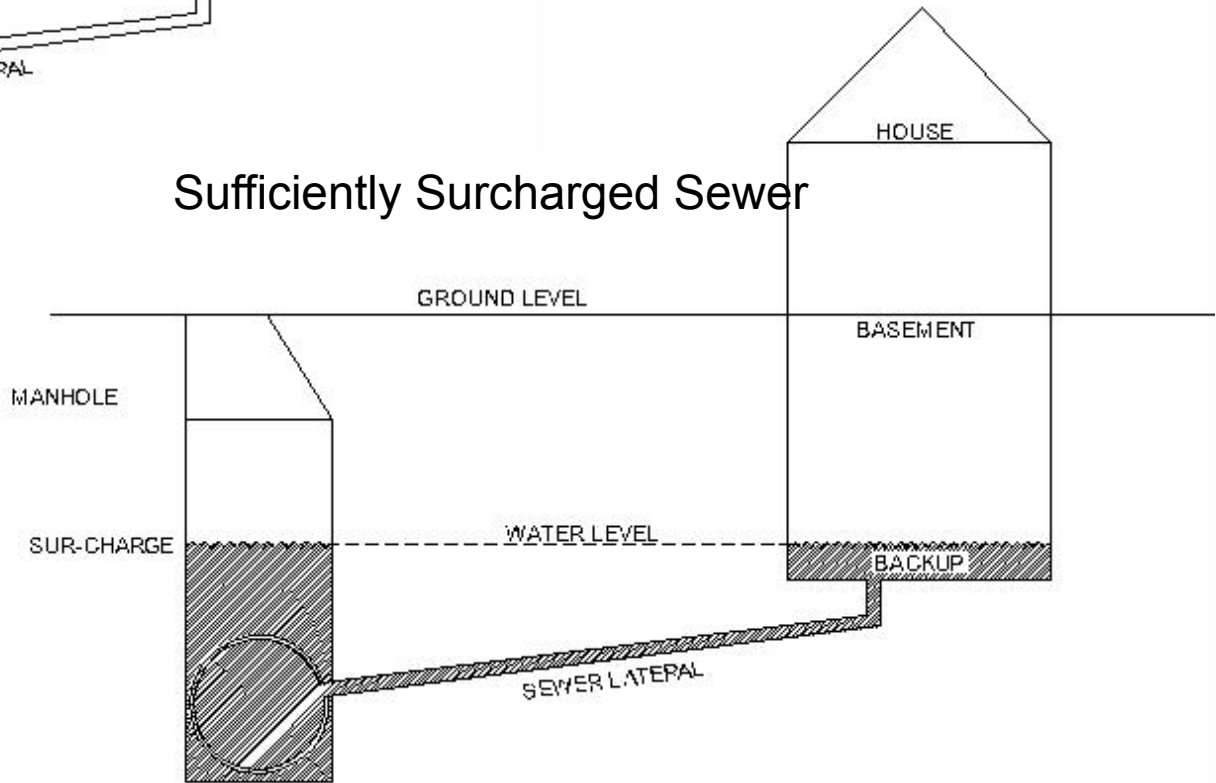
LAKE ERIE



Normal Sewer Flow



Sufficiently Surcharged Sewer



What overloaded the sanitary sewer?

Storm-related water: both directly into the system and through residents' connections

- Directly into the system
 - Some areas allow water to enter and need rehabilitation (e.g., Inwood/Delwood/Bellaire)
 - Submerged manholes allow some entry
 - Combined sewer areas are not the problem - they have regulators that send water to the lake



What overloaded...? – cont'd

- Through residents' connections
 - Sumps/footer drains still tied into sanitary
 - Sumps/bsmt joints (cracks) that overflowed and drained into floor drains
 - Cleanouts (in yard) without caps
 - Cracked or compromised laterals



What ALMU is doing

- Regular inspection/cleaning of sewers
- Rehabilitating system
 - Center Road Lift Station – 2009
 - Inwood/Dellwood/Bellaire – 2011
- Requiring disconnection of footer drains whenever there is foundation work
- Considering inspection program in areas where sewers have been separated



What the City is doing

- Regular revision of standards and ordinances to better manage storm water and reduce peaks
- Retention basin studies (determine if basins are sufficient size for 100 yr storm)
- Regular outfall inspection program



What residents can do

- Storm Water / Sump Pumps
 - Properly maintain sumps and floats/switches
 - Install backup, battery powered sump pumps
 - Assure sump pumps are sufficiently sized for potential flow
 - Disconnect footer tile/sump pumps from sanitary lateral
 - Assure ground slopes away from building



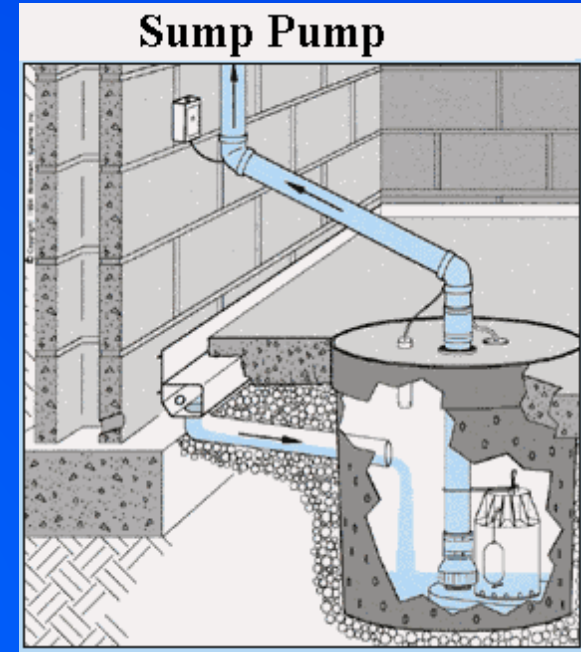
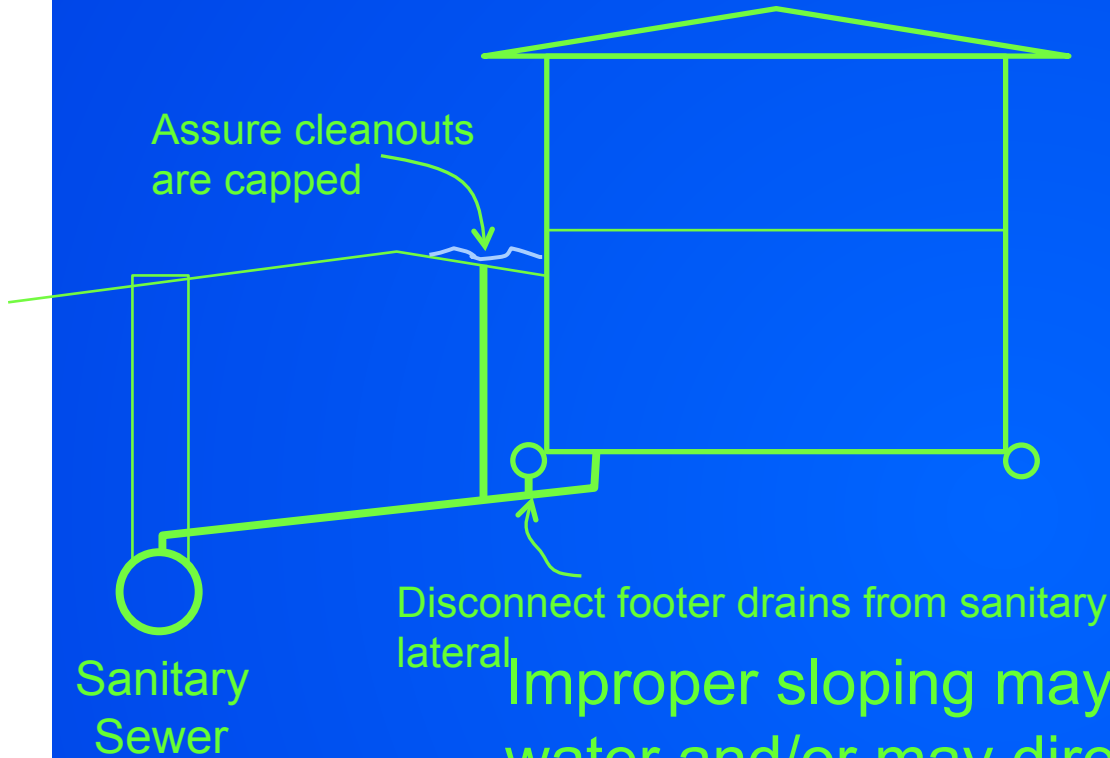
What residents can do – cont'd

- Sewer backups
 - Install stand pipes on floor drains
 - Install check valve(s) on bsmt connections and/or lateral*
 - Assure cleanouts are capped
 - Disconnect gravity drainage from basement

* - Requires on-going cleaning/maintenance, not specifically endorsed by ALMU or City



Illustrations



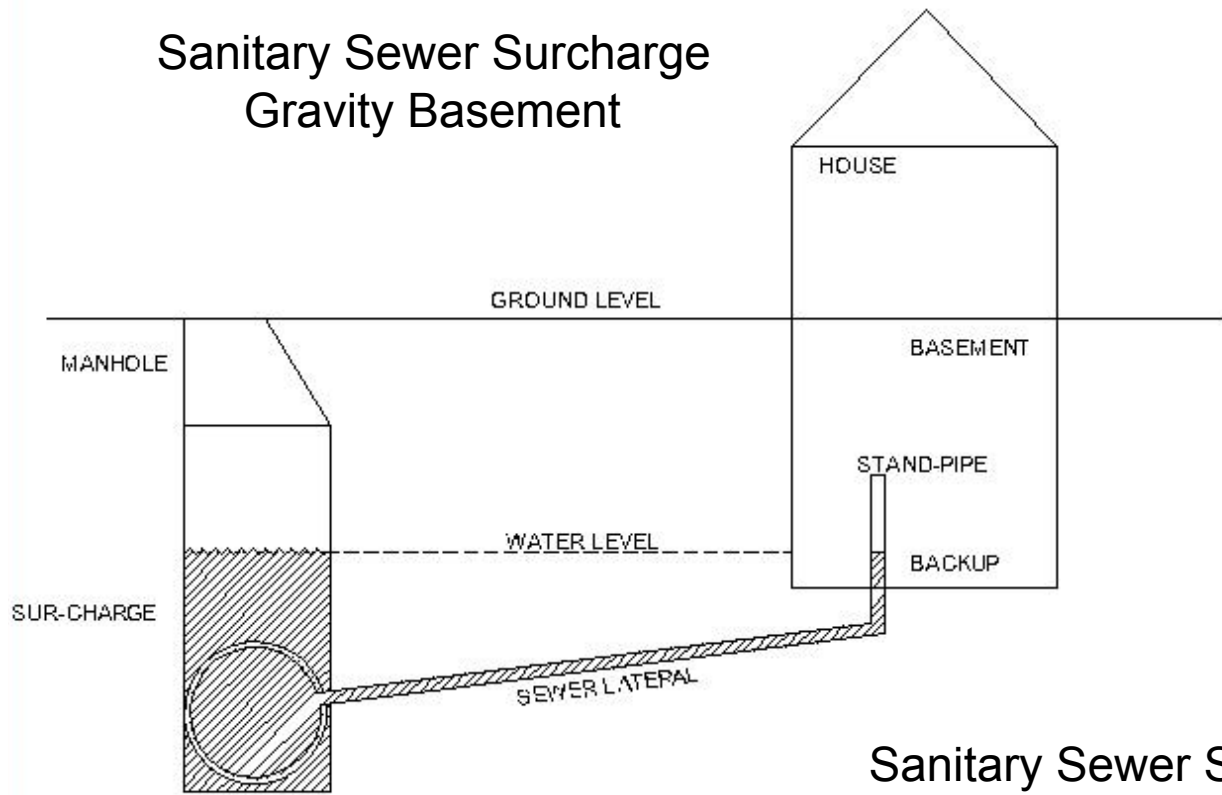
Regularly check for sediment and test pump, float, and alarm operation. (Look, listen, smell) Replace according to manufacturer.

Improper sloping may allow for ponding of water and/or may direct water toward the foundation and down to the footer drain.

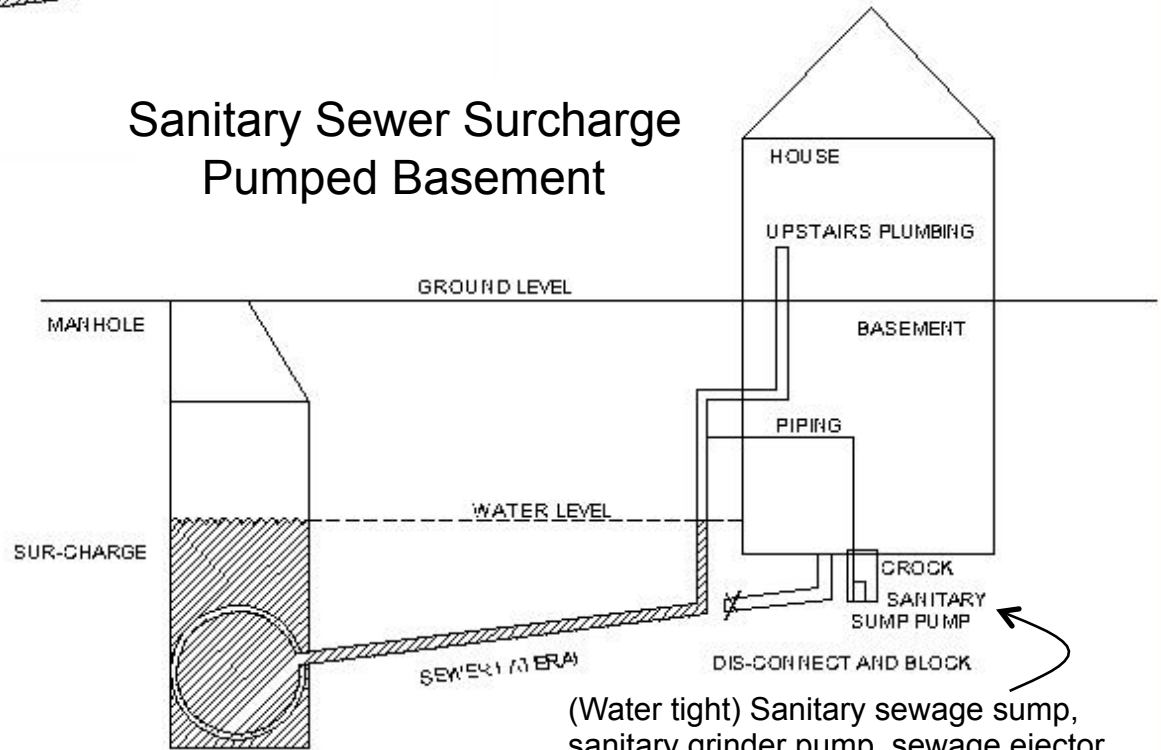
An uncapped cleanout can act as a yard drain but is expressly prohibited from being used in this manner because it is connected to the sanitary sewer system.



Sanitary Sewer Surchage Gravity Basement



Sanitary Sewer Surchage Pumped Basement



(Water tight) Sanitary sewage sump, sanitary grinder pump, sewage ejector pump



The Partnership

- The 2/28/11 rain/melt was an “Act of God”
- Nothing will guarantee dry basements
- As partners, we can each do our part to minimize the chances for reoccurrence
 - ALMU – sewer rehabilitations (paid by rates)
 - City – storm water ordinances/facilities inspections
 - Residents – Route storm water away from sanitary and, possibly, make it harder for backups to enter bsmt.



Whom to call in an emergency

- Basement Flooding – ALMU
 - 440-933-6226 (business hours, 8 AM – 4:30 PM)
 - 440-933-3229 (after hours)
- Street Flooding – Avon Lake Service Dept.
 - 440-930-4126 (business hours)
 - 440-933-4567 (after hours, Police Dept.)
- Clogged sewer lateral/sump pump failure
Call your plumber



Questions?

Avon Lake Municipal Utilities

Staff - Todd Danielson, Rick Eberle, Rick Kasten

Board – John Dzwonczyk

City of Avon Lake

Joe Reitz, Tom Carleton, Tom Lescher

Sewer Committee

Larry Meiners, Marty O'Donnell, Greg Zilka

