

City of Chicago

Department of Water Management

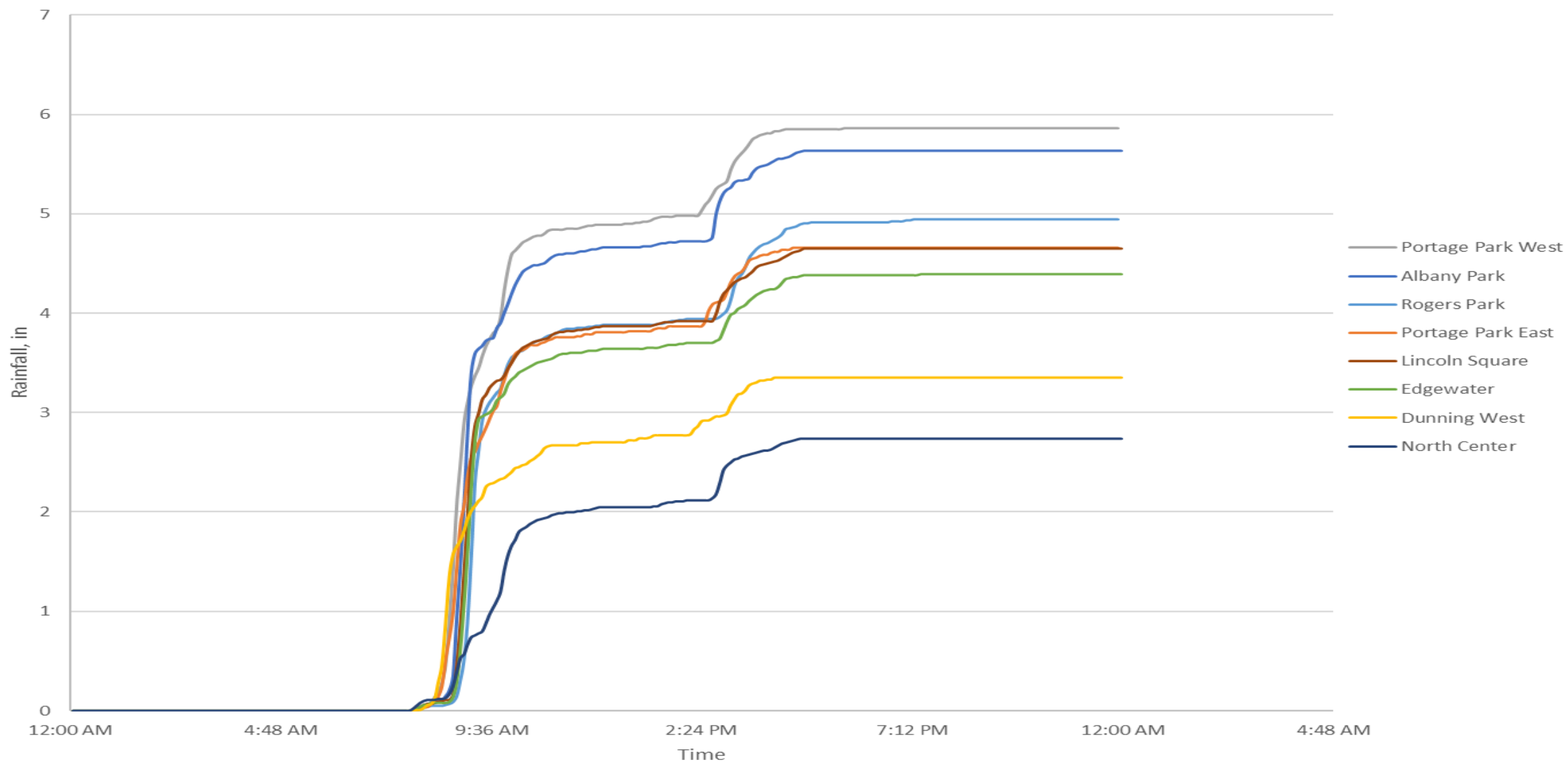


Andrea R.H. Cheng, Ph.D., P.E., Commissioner
Matt Quinn, Deputy Commissioner
Brendan Schreiber, Chief Engineer of Sewers
Anupam Verma, Asst Chief Engineer of Sewers

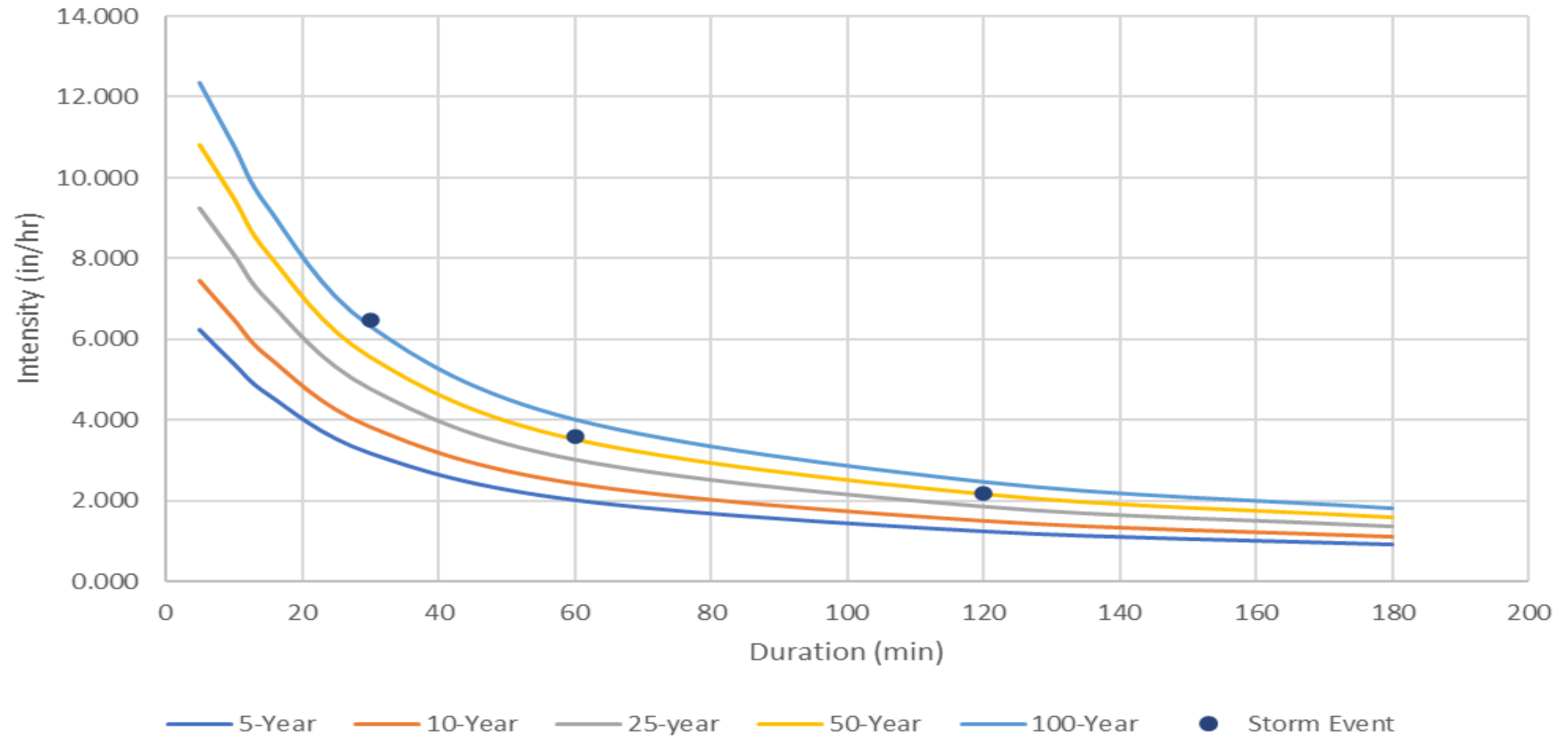
Rainfall Event – September 11, 2022

- Rainfall was entering the sewer system faster than the sewer system could move it through the sewer pipe below the street.
- Total rainfall recorded was almost 6” inches.
- Average September total monthly rainfall for Chicago is 3.3 inches
- Rainfall fell at a rate in excess of 3 inches per hour.

Hourly rainfall on 9/11/2022



Intensity Duration Frequency Curve



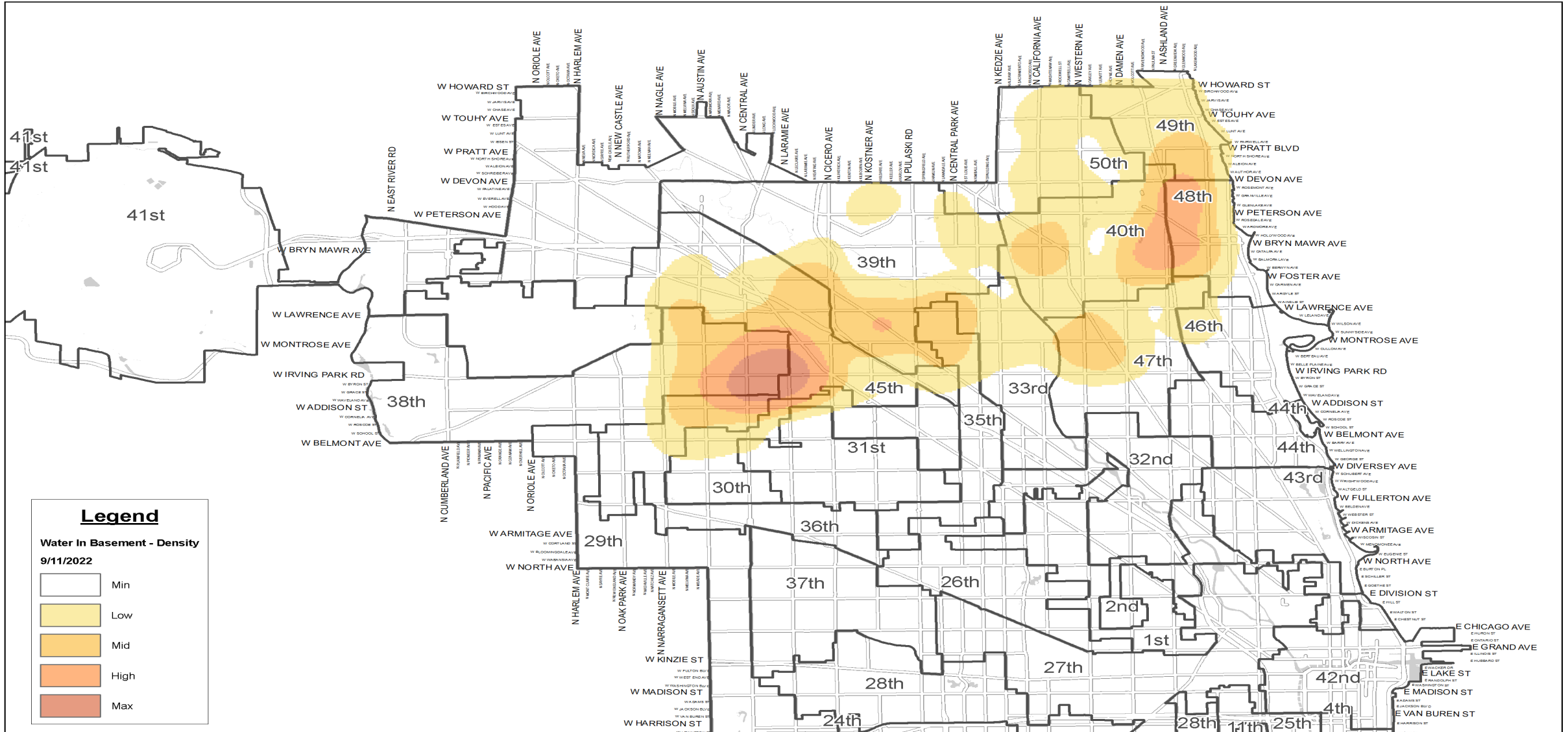


Department of Water Management
Andrea R.H. Cheng, Ph.D., P.E.
Commissioner

Water In Basement 9/11/2022



City of Chicago
Lori E. Lightfoot, Mayor



DWM's Response

COMPLETED SERVICE REQUESTS IN THE 39TH WARD

Service Request	North
Alley Sewer Inspection Request	2
Private Drain Repair (DWM Use Only)	8
Refer to Underground/FESS - Sewer	2
Repair Catch Basin Outlet/Gutter Box Inlet (DWM Use Only)	4
Repair Catch Basin/Gutter Box (DWM Use Only)	5
Repair in Alley (DWM Use Only)	2
Repair Main Sewer (DWM Use Only)	1
Repair Manhole (DWM Use Only)	2
Sewer Cave-In Inspection Request	10
Sewer Cleaning Inspection Request	21
Water in Basement Complaint	302
Water On Street Complaint	23
Grand Total	382

DWM's Response

Restrictors (“Rain Blockers”):

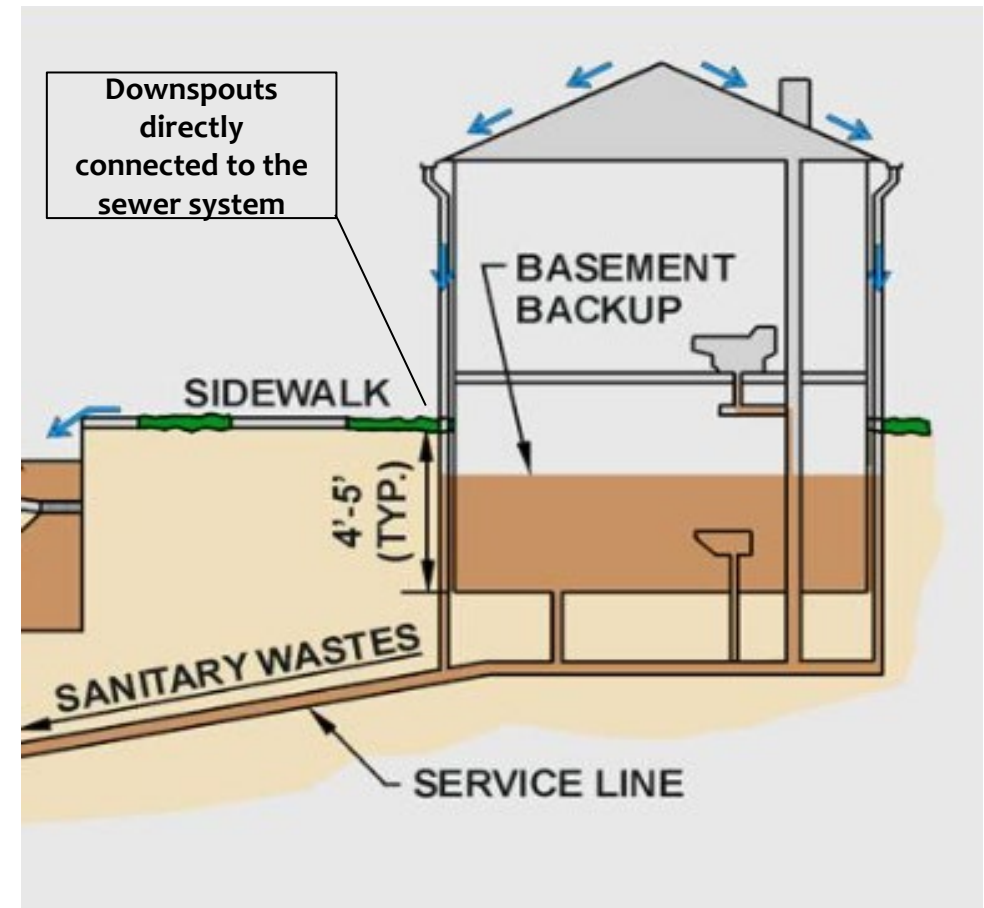
- A vortex design to temporarily hold water on the street and restrict or slow down the amount of storm water that flows into the sewer.
- Restrictors are in catch basins.

Private Sewer Drains (PDs)

- PDs are the sewers that connect homes to the municipal sewer main in the street.
- The DWM's PD repair program repairs damaged PDs within the City Right of Way
 - 8 completed in the flood area

Preventative Measures - Homeowner

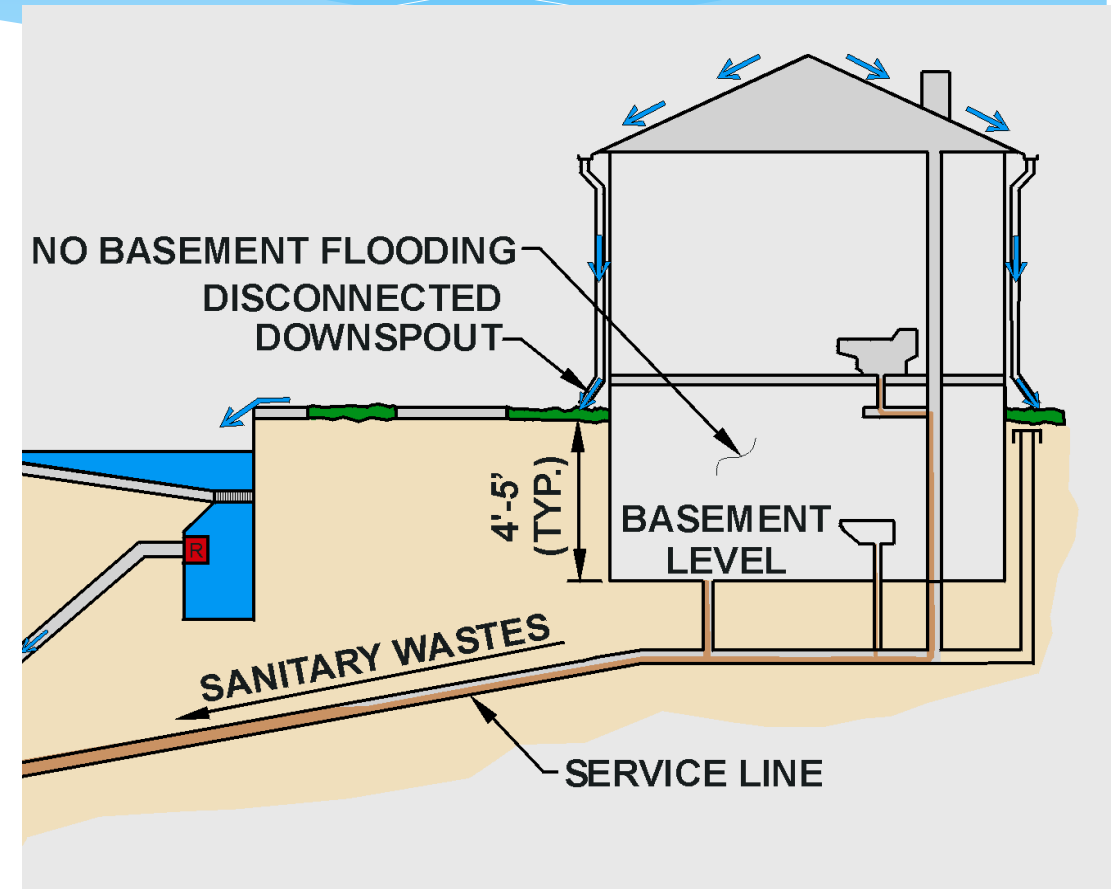
- **Downspout disconnection – Homeowner initiative**
 - Downspouts connected directly to the sewer allow all rainwater hitting roofs to directly enter the sewer system. This rainwater competes for the limited capacity in the sewer and increases the risk of basement backups.
- **Backflow Prevention – Homeowner initiative**
 - Check valve
 - Private flood control system
 - Overhead sewer



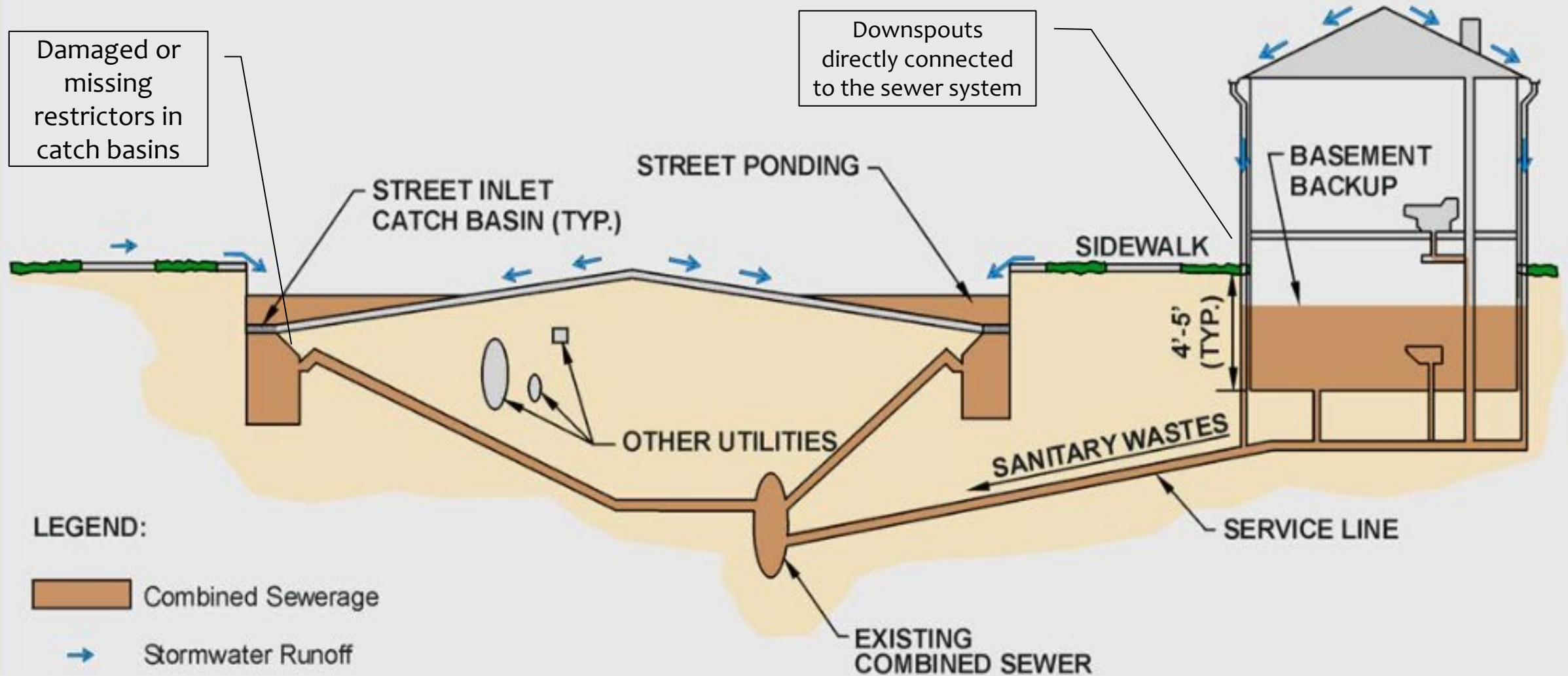
Preventative Measures - DWM

Department of Water Management Initiatives

- **RainBlocker** – Vortex restrictors temporarily hold the water on the street to restrict the flow of stormwater into the sewer. This helps reduce the risk of basement backups by decreasing the rate at which the rainwater enters the sewer.
- **Sewer Capital Improvements**– Sewer main replacement/rehabilitation in Ward 39: 21 miles since 2012
- Every time a sewer structure is lined, they are cleaned and if the restrictor is damaged or missing, it is replaced. 98,000 structures were lined since 2012

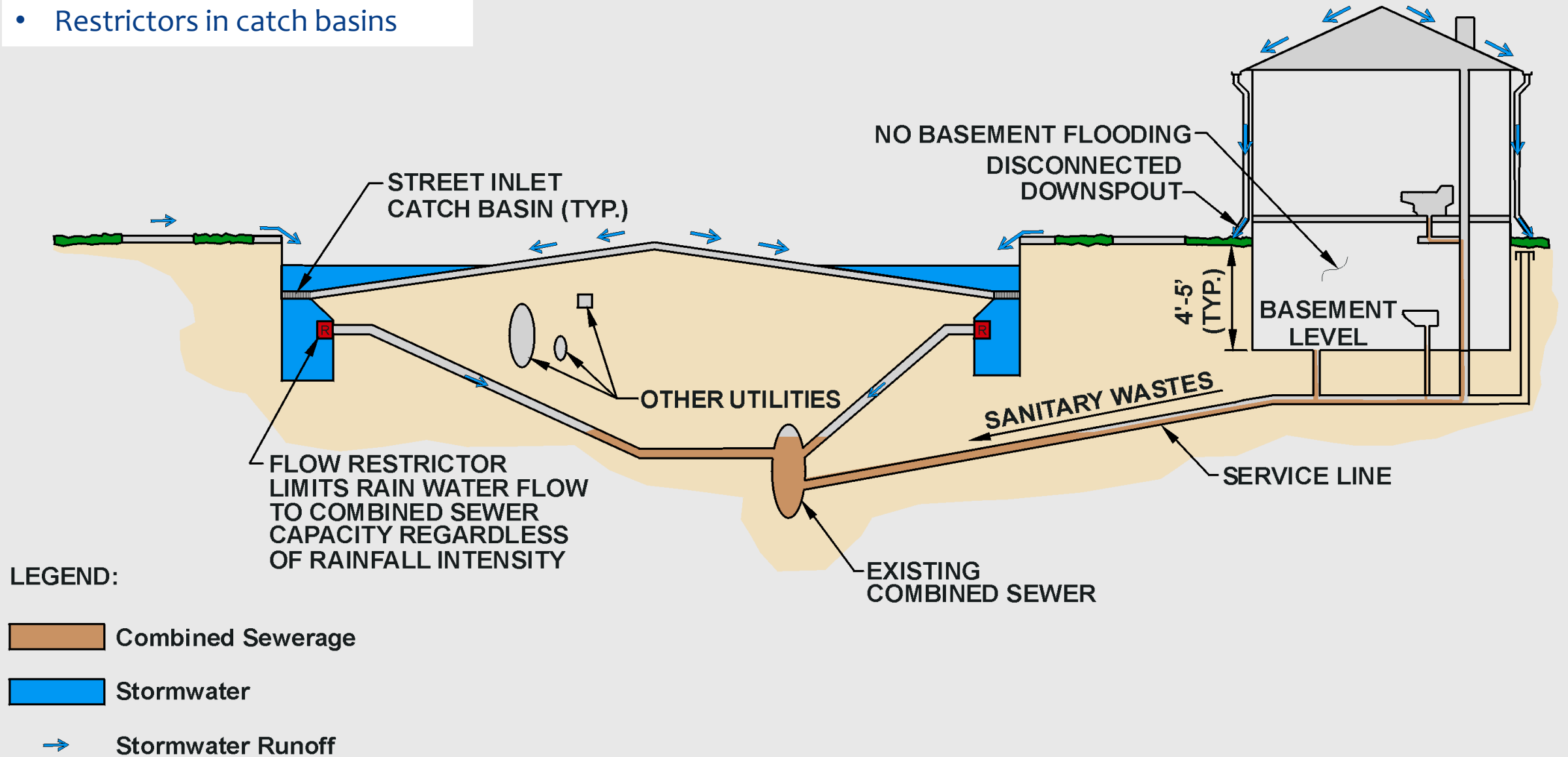


Preventative Measures



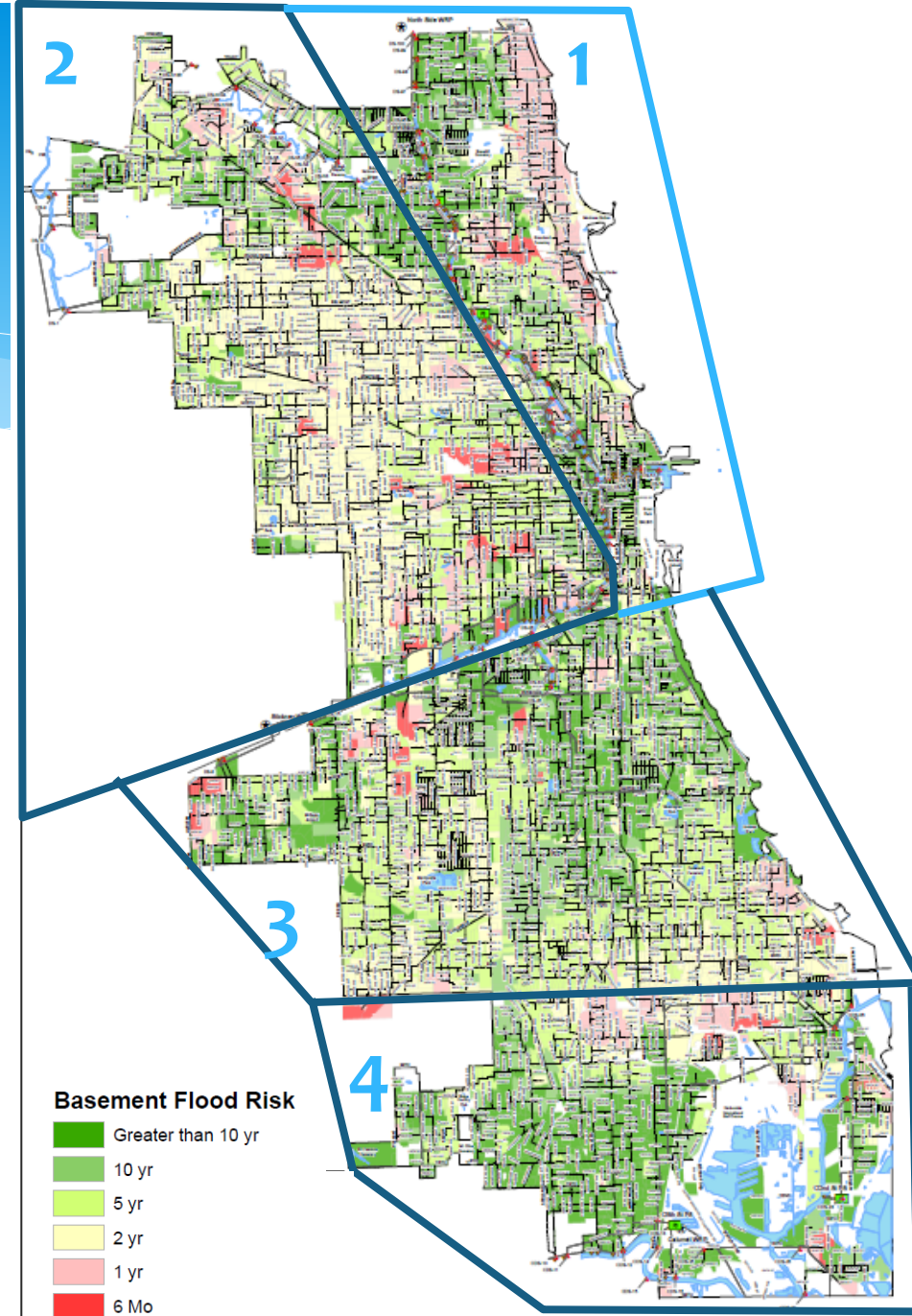
Ideal Condition:

- Downspouts disconnected
- Restrictors in catch basins



Chicago Sewer Modeling

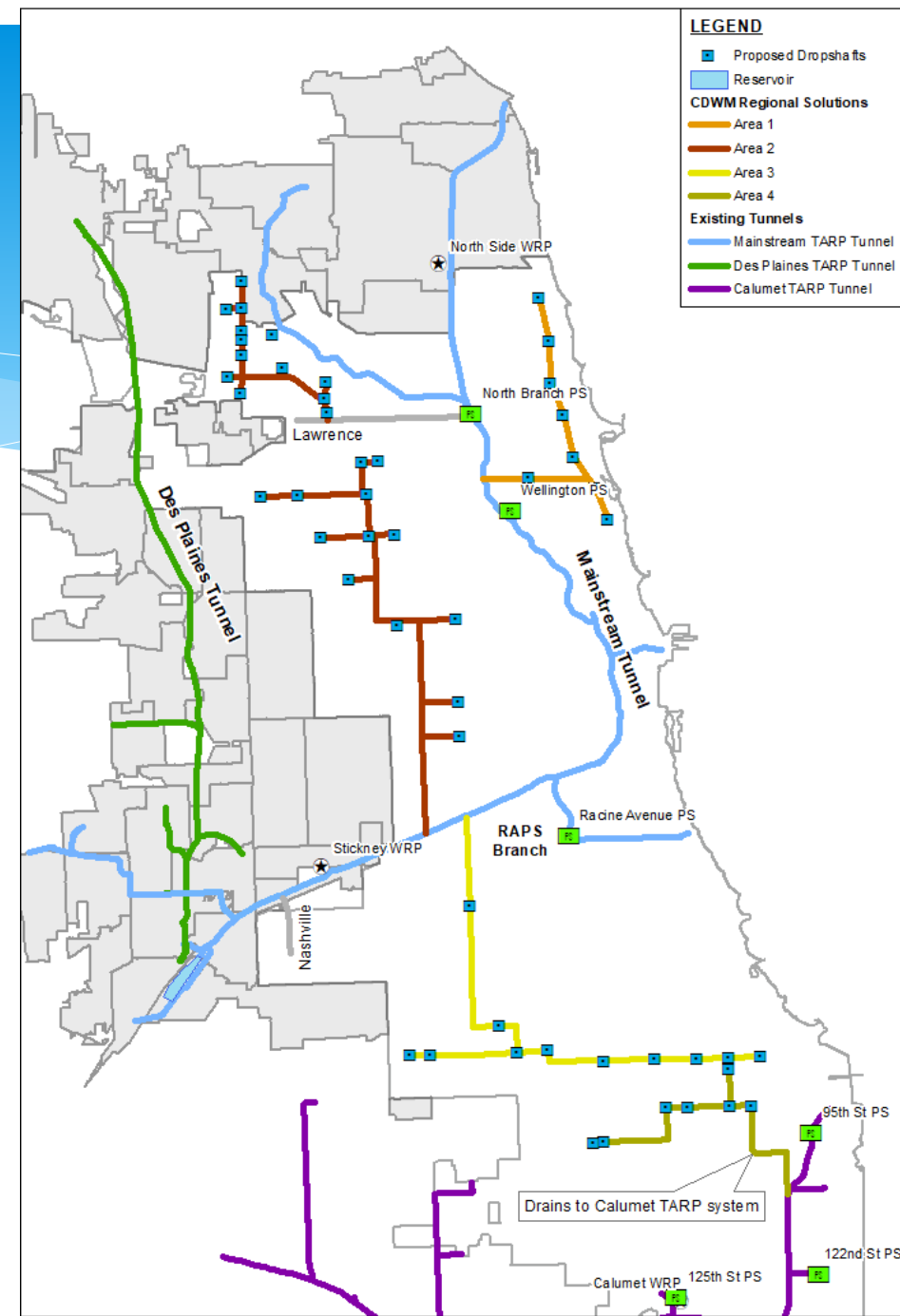
- Chicago maintains a detailed hydraulic model of our sewer system
- Chicago sewer model
 - 4,400 miles of combined sewer
 - Local, Interceptor and tunnel Systems
 - Split into 4 hydraulically distinct areas
- Performance Goal is 5-year Level of Service for Basement Flooding
- Model Results Drive Decision Making
 - Sewer main replacement recommendations
 - Sewer lining recommendations



Model results – New Regional Tunnels

Tunnel	Length	Size Range
Area 1	7.8 mi	14' - 16'
Area 2	27 mi	7' - 26'
Area 3	15 mi	14' - 25'
Area 4	8 mi	10' – 18'

- Area 4 Project is the first to move forward
 - Under design right now
 - Received a starter grant, still sourcing full funding
 - 120,000 will benefit from the tunnel
- Some area projects would require additional evaluations for alignment efficiencies and feasibility



Thank you

