



Utopia Parkway

Update to the Fresh Meadows Homeowners Civic Association

June 26, 2013

**James J. Roberts, P.E. Deputy Commissioner,
Bureau of Water and Sewer Operations**

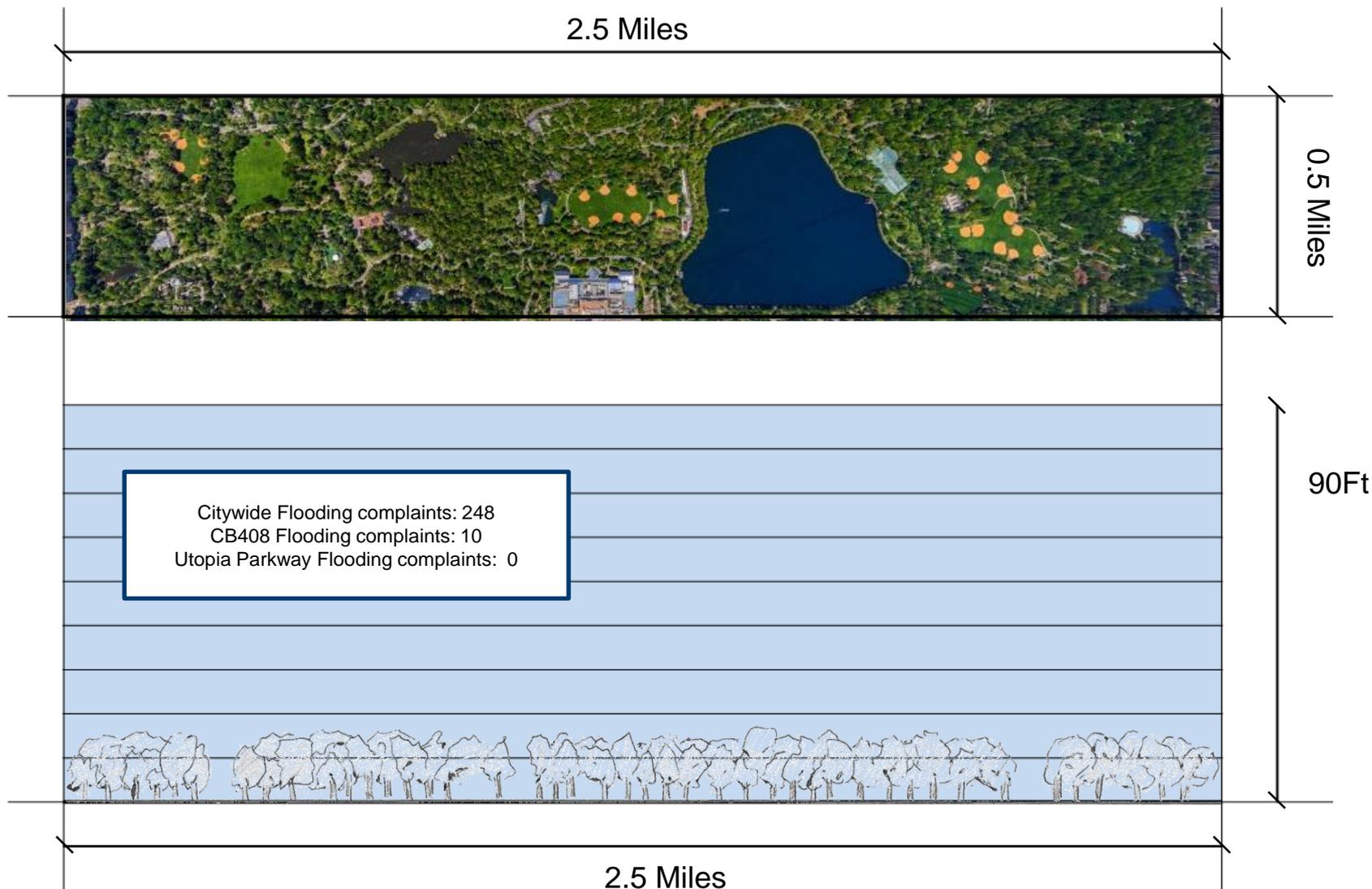
- **Objectives:**

- Discuss opportunities for flood mitigation
- Explain the effort DEP has applied to Utopia Parkway to help mitigation flood concerns
- Discuss the flooding mitigation cost/benefit analysis at Utopia Parkway between 64th Avenues and 67th Avenues

- **Agenda**

- Review of Existing (Baseline) Flooding Condition in the context of sewer design and short duration, high intensity storms
- Provide a Progress Update on
 - Sewer and Catch Basin Maintenance
 - Field Investigations
 - Analysis and Planning
 - Education and Outreach
- Conclude with our next steps

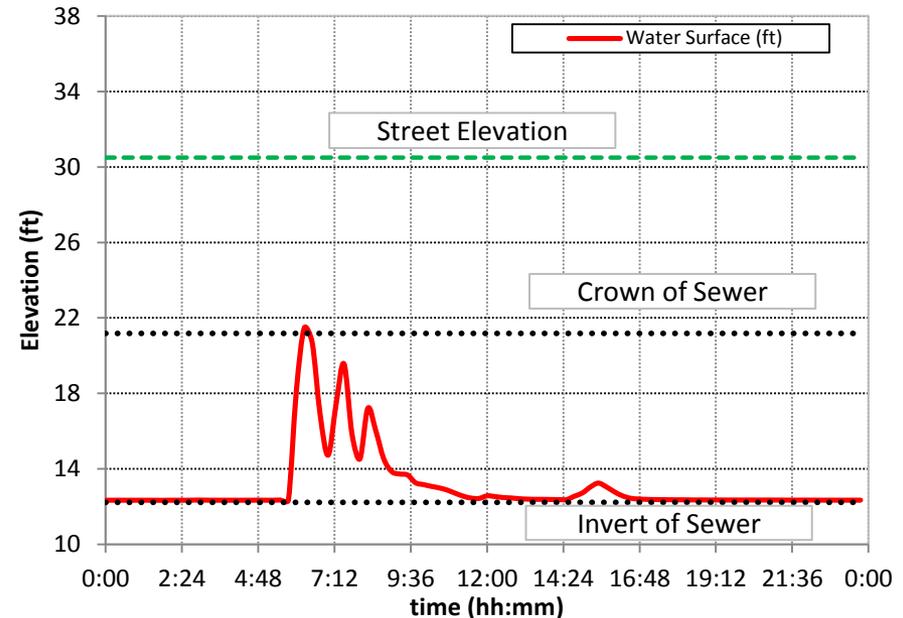
Sewer Capacity and Storm Intensity



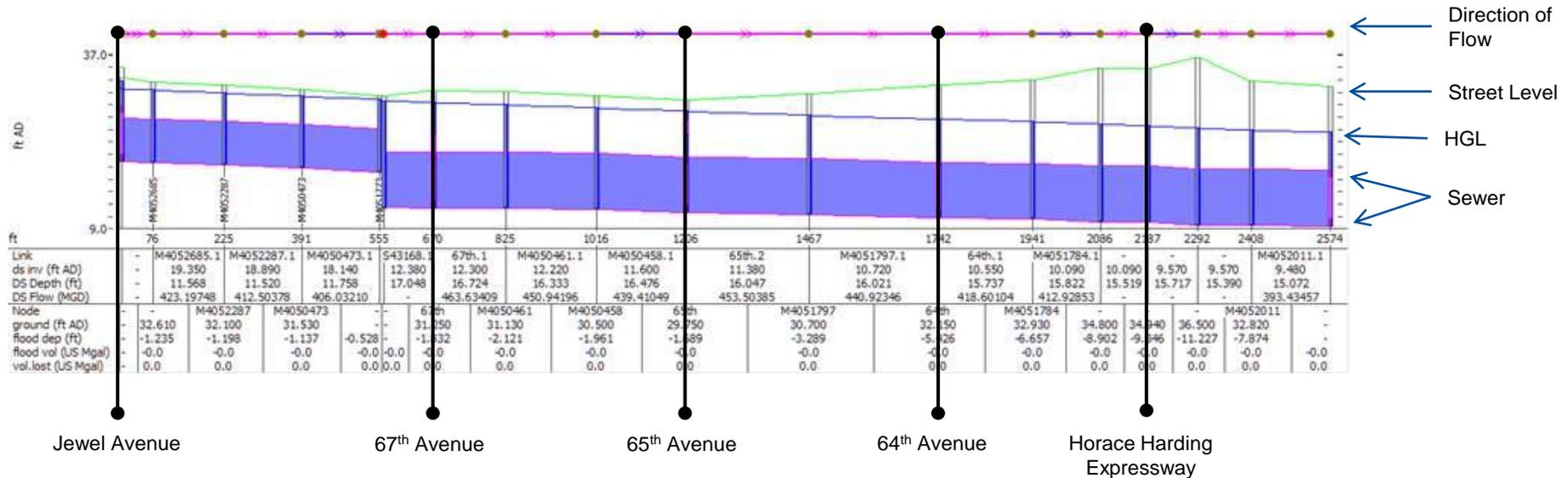
On June 7th, 2012, enough rainfall fell over New York City to fill Central Park 9 stories high (90ft)

- Largest storm during monitoring period was a 3.12 inches on October 1st, 2010
- Though not as 'flashy' in nature as recent events, this large storm is greater than the sewers' designed capacity (return frequency large than our sewer design criteria)
- Provides data that informs the performance of the system versus its design intent

Flow Monitor 09-U7, Utopia Pkwy. and 67th Ave.



Calibrated Model Simulation



Sewers in Utopia Pkwy between 69th Ave and L.I.E. surcharge, but do not flood (nearly reaches ground) Model calibrated using data from the ADS flow monitoring report

- Model results presented at October Meeting were developed using standard drainage design parameters for hydrologic/ hydraulic characteristics
- To create higher confidence in the results, the model was calibrated using the data from the ADS flow monitoring report for the largest storm recorded during the study (October 1, 2010)
- Modeling indicates that the sewers on Utopia Parkway are functioning as designed
 - Observations:
 - Modeling and DEP design criteria do not account for very intense flash floods.
 - Street Grade can play a significant part during intense events

- Catch basin programmatic Cycle completed in February 2012

- Pre-storm inspections and cleaning (as needed) on Utopia during every time the Flash Flood Plan is activated
 - 2012: 11 times
 - 2013: 6 times (to date)
 - Plan was activated today at noon, in anticipation of afternoon rainstorms

- A total of 962 work-orders have been completed in Community Board 8 since last public meeting in October 2012
 - 156 (16%) in zip-code 11365

Date Flash Flood was Issued	Date of Rainstorm	Total Rainfall (in) – Highest Recorded
05/03/2012	05/03 to 05/05	1 (JFK)
06/11/2012	06/12 to 06/13	2.45 (JFK)
07/26/2012	07/26	0.6 (CPK)
08/05/2012	08/05 to 08/06	0.41 (JFK)
09/03/2012	09/03 to 09/05	1.37 (JFK)
09/07/2012	09/08	1.18 (LGA)
09/17/2012	9/18	1.62 (LGA)
10/25/2012	10/29 to 10/30	0.94 (CPK)
11/05/2012	11/7 to 11/8	1.18 (CPK)
12/20/2012	12/21	0.85 (LGA)
01/29/2013	1/30 to 1/31	0.94 (CPK)
05/21/2013	5/23 to 5/25	2.25 (CPK)
06/06/2013	6/6 to 6/8	4.77 (CPK)
06/10/2013	6/10 to 6/11	1.47 (CPK)
06/12/2013	6/13 to 6/14	1.64 (CPK)
06/26/2013	TBD	TBD

Progress Status: Additional Maintenance

- Retrofitted 14 catchbasins with open curb inlets to allow greater flow of stormwater to be collected

LOCATION	Linear Footage Flushed	Catch Basin Conn. Flushed	Manholes Televised
181 St and 67 Ave	641	8	0
175-08 65 Ave	Supervisor spoke to homeowner. Plumber on location making repairs. Inside condition.		
165 St and 72 Ave	CB in front of address inspected and found to be functioning.		
168 St btwn 67 n 68 Ave.	352	0	2
164 St btwn 71 and 72 Ave	0	4	2
71 Ave and 164 St	Crew checked for a leaking hydrant. Found hydrant repaired.		
67 Ave and 181 St.	378	5	2
174 St and 75 Ave	325	4	2
164 St. and 71 Ave.	0	4	2

- Field crews inspected at locations identified at 10/24/2012 meeting

- Capacity Management Operations and Maintenance (CMOM) crews inspected 5,300 feet of sewers in CB 408 since Last October

LOCATION	Inspection Type	Footage	Yardage	Catch Basins
Utopia Pkwy bt 64 Av and 67 Av	Survey	1273		
138 St and Union Tpke	Catch Basin Inspection	0	0	3
181 St btwn 67 Av and 69 Av	Vactoring	526	3	
81 St and 19 Av SE-814	Walk-Through	170		
Gothic Dr (168-32) bt 168 Pl and 169 St	Cleaning & Televising	265	0.25	
87 Rd bt 144 St and 148 St	Survey	786		
164 St Grease Pilot Area	Survey	1163		
166 St from 65 Av to 67 Av	Cleaning & Televising	552	2	
Chevy Chase St bt Aberdeen Rd and Midland Pkwy	Survey	247		
87 Rd bt 144 St and 148 St	Vactoring	265		
164 St (82-20) bt Goethals Av and 82 Rd	Field Inspection	53		

Schematic of Property Protections

Home not protected from flooding

Note: The amount of rainfall collected from your driveway can fill your basement 2 inches. Your roof and patio can add an additional 4 inches.

Water Level At Unprotected Home

Home protected from flooding

Driveway Gate Prevents Street Overflow Into Driveway

Direction of Flooding

Water Level At Protected Home

Backup through Sewer Connection

Backup through Sewer Connection

Check Valve Prevents Sewer Backup Into Basement

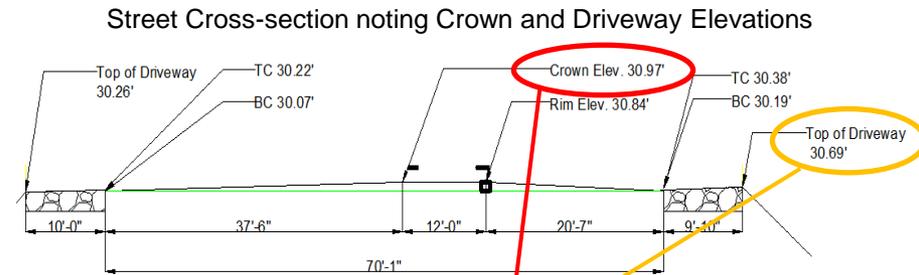
Check valves are advisable anytime a household plumbing fixture is below the elevation that the sewer may rise to.

Progress Status: Field Investigations

Locations	Depressed Driveways	Roof leader drainage / Other drainage	Sidewalk	Street
Utopia Parkway between 64 th and 65 th Avenue (WEST SIDE)	No	<ul style="list-style-type: none"> • 2 connections discharge to driveway • 3 connections discharge to street • Remaining 7 connections are directly in ground 	No observed issues	Crown elevation below top of driveway
Utopia Parkway between 65 th and 67 th Avenue (WEST SIDE)	Yes (all) <ul style="list-style-type: none"> • 16 out of 20 had flood gates 	<ul style="list-style-type: none"> • 5 connections discharge to sidewalk • 3 connections discharge to driveway • 2 connection discharge in front of house (on private property) • Remaining 13 connections are directly to ground Multiple drainage pipes (roof and possible sump pump discharge)	5 homes had recent repaved sidewalks	Crown elevation below top of driveway Large ponding in street (from multiple investigations)
Utopia Parkway between 67 th and 68 th Avenues (WEST SIDE)	Yes (all) <ul style="list-style-type: none"> • 9 out of 12 had flood gates 	<ul style="list-style-type: none"> • 2 homes – connection not visible • 7 connections discharge to ground • 2 connection discharge to driveway • 1 connection discharge to sidewalk • 1 connection discharge in front of home (actual location of discharge not visible) Multiple drainage pipes (roof and possible sump pump discharge)	5 homes had recent repaved sidewalks	None
Utopia Parkway between 68 th and 69 th Avenues (WEST SIDE)	Yes (all) <ul style="list-style-type: none"> • 1 had a flood gate • 9 had driveway humps 	<ul style="list-style-type: none"> • 3 connection discharge to sidewalk • 3 connection discharge to driveway • 3 connections discharge in front of home 	No observed issues	None

- In addition to investigations connected to maintenance activities, numerous field investigations were conducted to understand existing conditions during rainfall and to catalog conditions on the street
 - Street Survey Observations: Manhole crown is below the top elevation of the driveway
 - Driveway and Sidewalk Observations:
 - Majority of homes have some flood mitigation measure
 - Recent sidewalk repairs
 - Observations during a rain event: A large amount of flow was observed in the street; catch basins accept flow
 - Observations after (24-hr) a rain event: mid-block ponding

Existing conditions of Utopia Parkway between 65th and 67th Street



Ponding conditions during dry weather (24-hrs after rain)



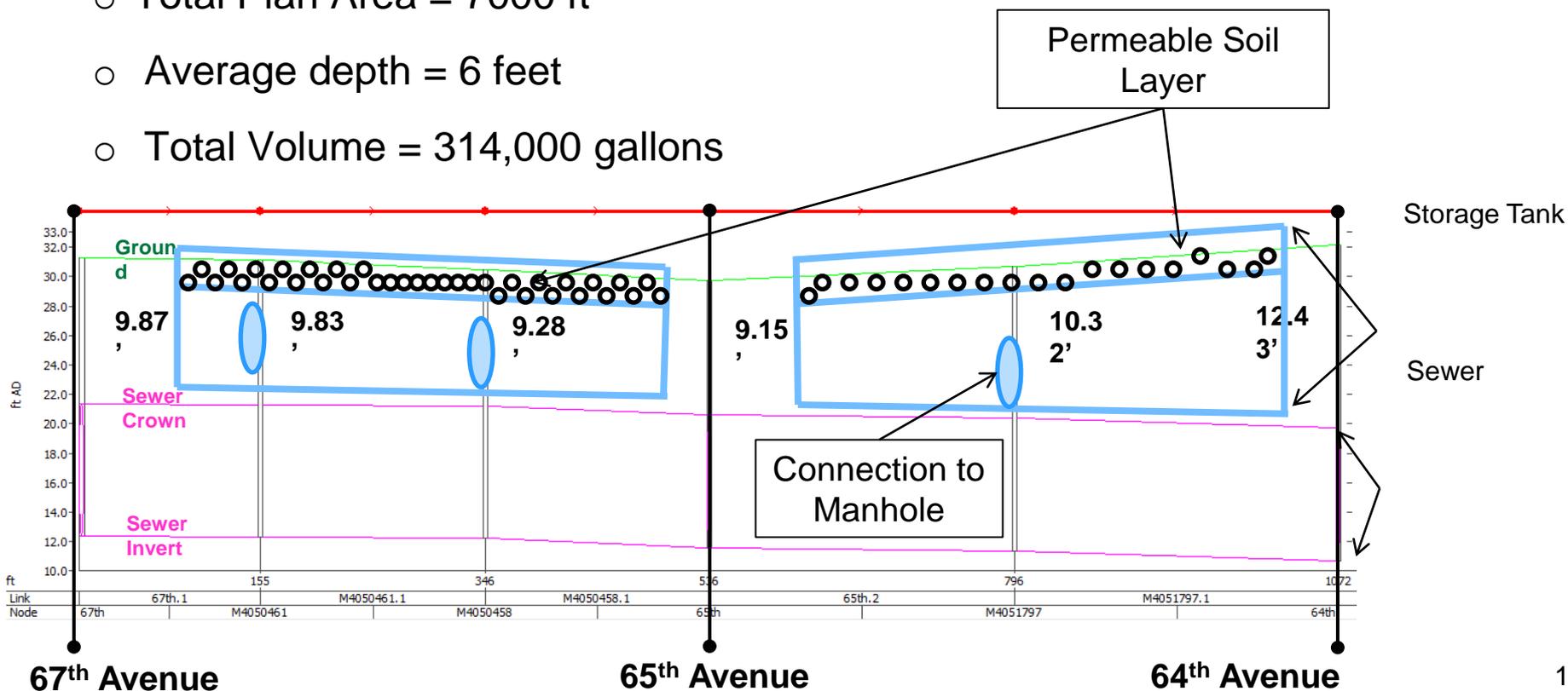
- DEP has a citywide responsibility and, in addition to the Utopia Parkway Analysis, we have completed or in the process of the following:
 - SE Queens (inclusive of CB408, 409, 410, 412, 413)
 - Over 50 streets were surveyed during wet weather (and follow up visits) to identify priority locations
 - Analysis of possible storm connections to identified possible Capital projects other flooding mitigation projects
 - Example: 183rd From 90th Avenue to Jamaica – DDC to design an additional storm sewer (7'6" x 6') Projected construction start date is 7/15/2014
 - Queens Community Board 5
 - Investigated 10 identified locations
 - Extensive investigations and additional maintenance:
 - Example: Cleaned and TV'ed various sewers in the 77th Avenue area of Glendale
 - Alternatives Analysis for two identified locations: 77th Avenue and Cooper Avenue in Glendale

Utopia Parkway Alternatives Analysis

Alternative	Advance	Change in the amount of flooding	Time	Cost
Baseline Conditions & Groundwater Analysis	<ul style="list-style-type: none"> Sewer Design Standard, 3-yr, 1-hr storm, does not cause flooding Storm at which flooding occurs is 10yr, 1-hr storm Modeled Groundwater levels may preclude Green Infrastructure 			
Seepage Basin on side streets	NO – Minimal flood mitigation	Minimal (1%<)	Short	Low < \$1M Million
Relief sewer (2 variations modeled)	NO - High cost and construction impacts for minimal benefit	Small (4%)	Medium	Medium > \$1M
High Level Storm Sewer (2 variations modeled)	NO - Technically Not Feasible; Major Permitting and Review Concerns	Large (95%)	Long	High Rough estimate between \$80-\$100M
Sealing Manholes	NO - Shifts flooding to another locations; Major safety concerns as seen in Nassau County (Bay Park WWTP) after Sandy	Moderate (65%)	Immediate	Minimal
Detention System on Utopia Pkwy	YES - Scoping Design with DDC	Small (17%)	Long	Medium >\$1M
Street Improvements: Green Infrastructure / Permeable Pavement	YES – Requires further discussions with DOT	DEP cannot model since it is improvements to road surface and not to the sewer itself	Short	Low to Medium
Street Improvement: Street Regrading / Reconstruction	YES – Requires further discussions with DOT		Medium	Medium to High

Storage Tank Alternative

- Description: rectangular tank with a permeable soil top; Flap valve would prevent sewer from backing-up into the tank
- Location: installed in the median along the whole length of the Utopia between 67th and 65th avenues and between 65th and 64th Avenues
- Specifications:
 - Total Plan Area = 7000 ft²
 - Average depth = 6 feet
 - Total Volume = 314,000 gallons



- Description: Permeable paving along parking lane to provide additional drainage; Traffic calming measures with bioswales and other retentions features at corners and side streets
- Location: Utopia Parkway and surrounding side streets
- Specifications: TBD



Street Re-Grading & Increased Curb Reveal

- Description: increase the curb height to bring the sidewalk higher then and the crown of the street
- Location: Utopia Parkway between 65th and 67th Avenues where the West side of street has depressed driveways
- Specifications: TBD

Locations along Utopia Parkway	Crown Elev. (in)	Location	Top of Curb (in)	Bottom of Curb (in)	Top of Driveway (in)	Curb Height (in)	Difference between Top of Driveway and Crown Elevation (in)
Utopia Between 64 th Avenue and 65 th Avenue	37.71	West	30.88	30.75	31.09	0.13	-6.62
		East	30.86	30.79	31.23	0.07	-6.48
	30.80	West	29.88	29.71	30.20	0.17	-0.60
		East	30.00	29.84	30.42	0.16	-0.38
	30.23	West	29.38	29.17	29.48	0.21	-0.75
		East	29.48	29.30	29.90	0.18	-0.33
	29.91	West	29.18	28.95	29.03	0.23	-0.88
		East	29.35	29.10	29.58	0.25	-0.33
Utopia Between 65 th Avenue and 67 th Avenue	29.71	West	28.48	28.27	28.44	0.21	-1.27
		East	28.94	28.77	29.29	0.17	-0.42
	30.01	West	28.99	28.78	29.05	0.21	-0.96
		East	29.55	29.28	29.80	0.27	-0.21
	30.97	West	30.22	30.07	30.26	0.15	-0.71
		East	30.38	30.19	30.69	0.19	-0.28
	31.29	West	30.25	30.00	30.70	0.25	-0.59
		East	30.41	30.20	30.77	0.21	-0.52

Highlighted sections have depressed driveways

- Outreach program to include:
 - Brochure with general guidance on how to protect private property from intense storm events
 - Handbook with detailed guidance on how to protect private property from intense storm events
 - Outreach to professional community

General Practices for Flood Preparedness

- **Elevate or Relocate:** Keep all items in basements on high shelves to reduce any damage that may be caused by flooding or sewer back-ups or move high-valued items to higher floors
- **Direct and Collect:** Make sure your roof gutters and landscaping drain away from the walls of your home and, where possible, direct stormwater to rain barrels or landscaped stormwater features. Plug leaks and cracks in walls, foundations, sidewalks, patios, and driveways to prevent stormwater from seeping in from the outside
- **Stop and Block:** Consider installing a check valve to stop sewer backups. Use barriers (such as sand bags) at driveway entrances and around basement entrances and windows built below street level to divert moving water away from your property.

Conclusions

Questions & Answers