STORM WATER MANAGEMENT & INFRASTRUCTURE MAINTENANCE

September 10, 2020 Background Information Included

Angela D. Alsobrooks
County Executive

October 13, 2020

Terry L. Bellamy
DPW&T Director

TOWN OF RIVERDALE PARK

Angela D. Alsobrooks
County Executive

Terry L. Bellamy
DPW&T Director

Agenda

- Greetings from the Mayor
- DPWT Presentation
  - Gwendolyn Clerkley
  - Vernon Stinnett
  - Charlie Griffith
- Questions
- Wrap Up and Next Steps

Meeting Reminders

- Keep yourself on mute unless you are speaking
- Raise your virtual hand and be recognized to make comments
- Be respectful, no profanity or yelling
- Be mindful of the time and allow your neighbors the opportunity to ask questions
- DPWT will monitor the CHAT, please place any questions there

- *Introduction*

  On September 10, 2020, our region Washington, Maryland and District of Columbia reported rainfall totals of four (4) to six (6) inches within a two to three hour period. This amount of rainfall equates to a one hundred (100) year storm; the storm caused unprecedented flooding causing creeks, streams, channels, culverts and road to overflow; and home and businesses to flood.

- *Storm Facts*

  The AccuWeather forecast on September 9th for 11:30 AM – 10:30 PM, heavy rain with an accumulation of .75 to 1.5 inches with localized amounts of 2 inches.

  The AccuWeather forecast on September 10th for 12:45 PM – 11 PM; periods of rain through Thursday night expected to be heavy at times, especially late Thursday afternoon. Rainfall totals of 0.25 to 0.75 inches are likely with locally higher amounts of 2.00 inches are possible where heavy downpours persist. Rainfall rates of 0.50 to 1.00 inch per hour are likely, especially in any heavy downpour. Be alert for flash flooding in any flood prone and low lying areas. This forecast was later cancelled with the following message: This warning has been canceled. A couple of spotty showers and perhaps an isolated downpour will remain possible into this evening. However, the threat for widespread heavy rain has ended.

  The National Weather Service issued the flash flood warning shortly after the heavy down pour began.

STORM WATER INFRASTRUCTURE

- Public infrastructure, to include storm drain, is typically designed and constructed as a requirement of permitted projects.
- The current design standard for a storm drain system is ten (10) years; communities designed prior to the change may have a two (2) years system. Communities developed prior to the storm water management standards may have no storm drain system in place.
- This standard means the storm drain system can convey two and eight tenths (2.8) inches of water in the first hour.
- Rain intensity, amount and time are factors in determining how much water a storm drain system may convey.

Rain Intensity Report

Prince George's County and USGS Gauges (view = 5aef955f-1714-4cfe-8538-d79d0a3505bb)
Start time: 2020-09-10 08:00:00
End time: 2020-09-10 20:00:00
All Timestamps are in local time and mark end of interval.
Null interval fill method: fill with zero value

Change This Title - Area

Rainfall Return Periods

Inches of rainfall

Return Period	1-hour	2-hour	3-hour	6-hour	12-hour	1-day	2-day	Color
2-year	1.9	2.1	2.5	2.9	3.4	4.1	4.7	
5-year	2.5	2.7	3.3	4.0	4.8	5.8	6.6	
10-year	2.8	3.2	3.9	4.9	5.9	7.1	8.1	
25-year	3.4	3.8	4.8	6.1	7.4	9.0	10.1	
50-year	3.8	4.2	5.6	7.2	8.7	10.6	11.8	
100-year	4.2	5.1	6.5	8.5	10.2	12.4	13.6	
500-year	5.5	7.2	9.0	12.2	14.7	17.7	18.7	

RAIN TOTALS IN INCHES
SEPTEMBER 10TH EVENT

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Terry L. Bellamy
DPW&T Director

Site	Sensor	1 HR	2 HR	3 HR	6 HR	12 HR	1 Day	2 Day
Edmonston Pump Station	530	4.13	4.57	4.57	4.61	4.61	0.00	0.00
Queens Chapel Rd.	540	3.62	4.76	4.84	4.92	4.92	0.00	0.00
Riverdale Rd.	550	3.86	4.57	4.61	4.61	4.61	0.00	0.00
Wildercroft Park	560	1.81	1.97	1.97	1.97	1.97	0.00	0.00
Adelphi Mill	570	1.34	1.50	1.50	1.50	1.50	0.00	0.00
Berwyn Rd.	590	2.56	3.07	3.11	3.15	3.15	0.00	0.00
Powder Mill	620	0.94	1.10	1.10	1.26	1.26	0.00	0.00
Odell Rd.	630	1.30	1.89	1.89	1.97	1.97	0.00	0.00
Briggs Chaney Rd.	640	0.08	0.12	0.16	0.20	0.24	0.00	0.00
Kenilworth Ave.	650	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PG Sports Center	660	0.59	0.71	0.71	0.79	0.83	0.00	0.00
Montpelier School	670	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MNCPPC Maint. Facility	680	1.73	2.28	2.36	2.56	2.56	0.00	0.00
Sligo Ck.	690	3.27	4.49	4.57	4.65	4.65	0.00	0.00
Laurel Lakes	PC	1.77	2.09	2.09	2.13	2.13	0.00	0.00
Largo Town Center	PC	2.28	3.27	3.43	3.43	3.43	0.00	0.00
Heritage Glen	PC	1.18	1.38	1.46	1.46	1.50	0.00	0.00

NOAA POINT PRECIPITATION FREQUENCY ESTIMATES

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County Executive

Terry L. Bellamy
DPW&T Director

PDS-based precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.358** (0.325-0.394)	**0.430** (0.390-0.473)	**0.511** (0.463-0.563)	**0.570** (0.515-0.628)	**0.646** (0.580-0.712)	**0.702** (0.627-0.775)	**0.758** (0.672-0.838)	**0.812** (0.716-0.902)	**0.882** (0.768-0.985)	**0.937** (0.809-1.05)
10-min	**0.572** (0.519-0.629)	**0.688** (0.624-0.756)	**0.818** (0.741-0.901)	**0.912** (0.824-1.00)	**1.03** (0.924-1.14)	**1.12** (0.998-1.23)	**1.21** (1.07-1.33)	**1.29** (1.13-1.43)	**1.40** (1.22-1.56)	**1.48** (1.27-1.66)
15-min	**0.715** (0.649-0.787)	**0.864** (0.784-0.950)	**1.03** (0.938-1.14)	**1.15** (1.04-1.27)	**1.31** (1.17-1.44)	**1.42** (1.26-1.56)	**1.52** (1.35-1.68)	**1.63** (1.43-1.80)	**1.76** (1.53-1.96)	**1.85** (1.60-2.08)
30-min	**0.981** (0.889-1.08)	**1.19** (1.08-1.31)	**1.47** (1.33-1.62)	**1.67** (1.51-1.84)	**1.93** (1.73-2.13)	**2.13** (1.90-2.35)	**2.33** (2.07-2.58)	**2.53** (2.23-2.81)	**2.79** (2.43-3.12)	**3.00** (2.59-3.37)
60-min	**1.22** (1.11-1.35)	**1.50** (1.36-1.65)	**1.89** (1.71-2.08)	**2.18** (1.97-2.40)	**2.57** (2.31-2.84)	**2.89** (2.58-3.19)	**3.21** (2.85-3.55)	**3.55** (3.13-3.94)	**4.01** (3.49-4.48)	**4.38** (3.78-4.92)
2-hr	**1.42** (1.29-1.57)	**1.73** (1.57-1.91)	**2.19** (1.99-2.42)	**2.55** (2.30-2.81)	**3.06** (2.74-3.37)	**3.47** (3.09-3.83)	**3.91** (3.46-4.31)	**4.36** (3.83-4.83)	**5.01** (4.34-5.58)	**5.53** (4.75-6.21)
3-hr	**1.52** (1.38-1.69)	**1.85** (1.68-2.06)	**2.35** (2.12-2.60)	**2.75** (2.47-3.04)	**3.31** (2.95-3.66)	**3.78** (3.35-4.18)	**4.27** (3.75-4.73)	**4.80** (4.18-5.33)	**5.55** (4.77-6.19)	**6.17** (5.23-6.93)
6-hr	**1.86** (1.69-2.07)	**2.26** (2.05-2.51)	**2.85** (2.58-3.17)	**3.34** (3.00-3.70)	**4.06** (3.62-4.50)	**4.68** (4.13-5.19)	**5.34** (4.67-5.83)	**6.06** (5.24-6.76)	**7.12** (6.06-8.00)	**8.01** (6.71-9.05)
12-hr	**2.25** (2.02-2.52)	**2.71** (2.44-3.05)	**3.45** (3.09-3.87)	**4.08** (3.64-4.57)	**5.04** (4.44-5.63)	**5.87** (5.13-6.57)	**6.80** (5.87-7.63)	**7.84** (6.67-8.82)	**9.42** (7.84-10.7)	**10.8** (8.82-12.3)
24-hr	**2.60** (2.37-2.90)	**3.15** (2.87-3.52)	**4.07** (3.69-4.53)	**4.87** (4.40-5.41)	**6.09** (5.47-6.73)	**7.17** (6.39-7.89)	**8.40** (7.41-9.20)	**9.78** (8.54-10.7)	**11.9** (10.2-13.0)	**13.8** (11.7-15.0)

September 10, 2020: 100-1000-year event

[1]Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

WHAT IS A STORM DRAIN SYSTEM

It's a network of structures, channels and underground pipes that carry stormwater (rain water) to ponds, lakes, streams and rivers. The network consists of both public and private systems. It's an integral part of the system in the county that is designed to control the quantity, quality, timing and distribution of storm runoff.

Components

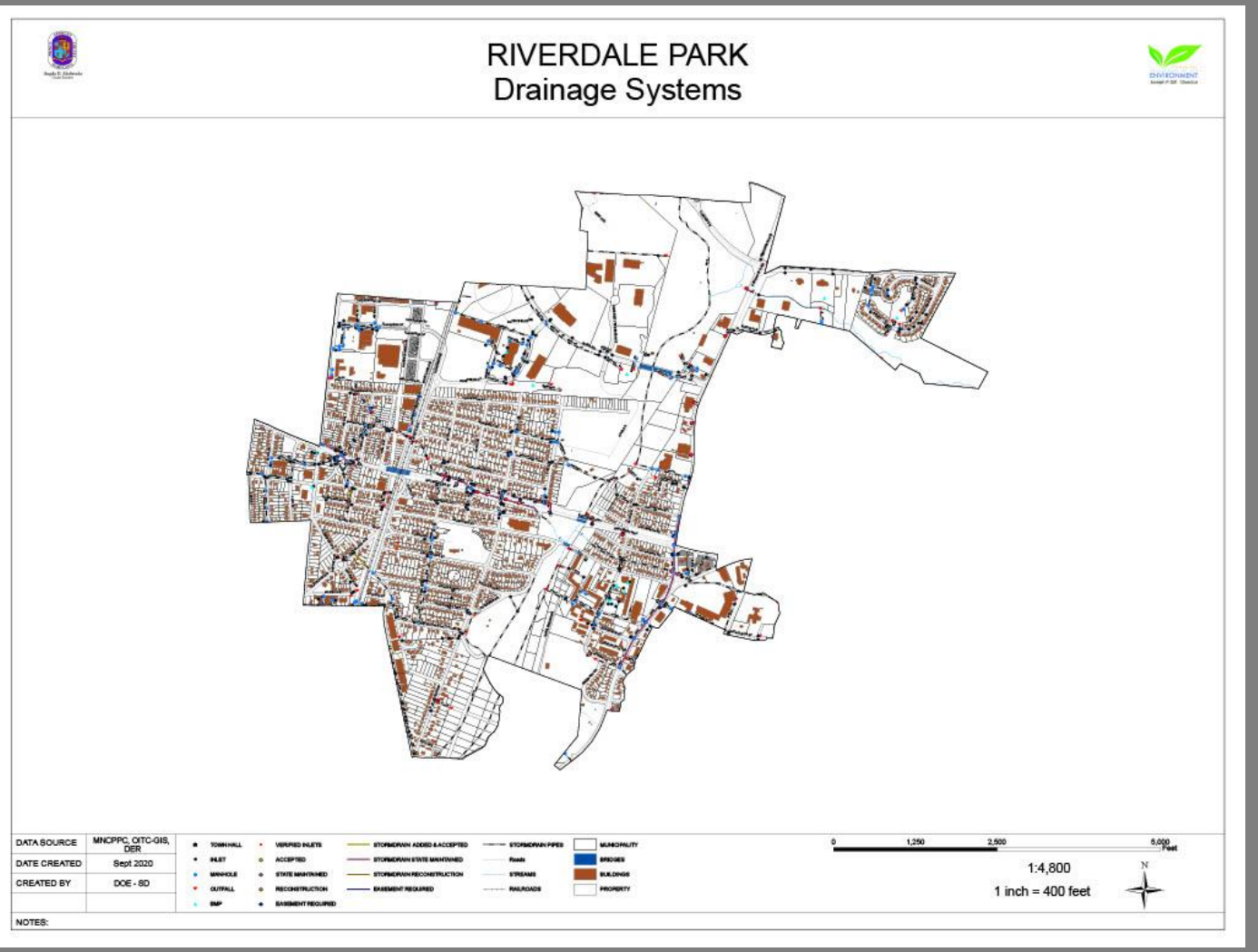
- Roadside ditches
- Roadside curb inlets
- Yard inlets
- Channels: grass, concrete, stone or asphalt
- Pipes or varying sizes
- Outfalls

Maintenance of the System

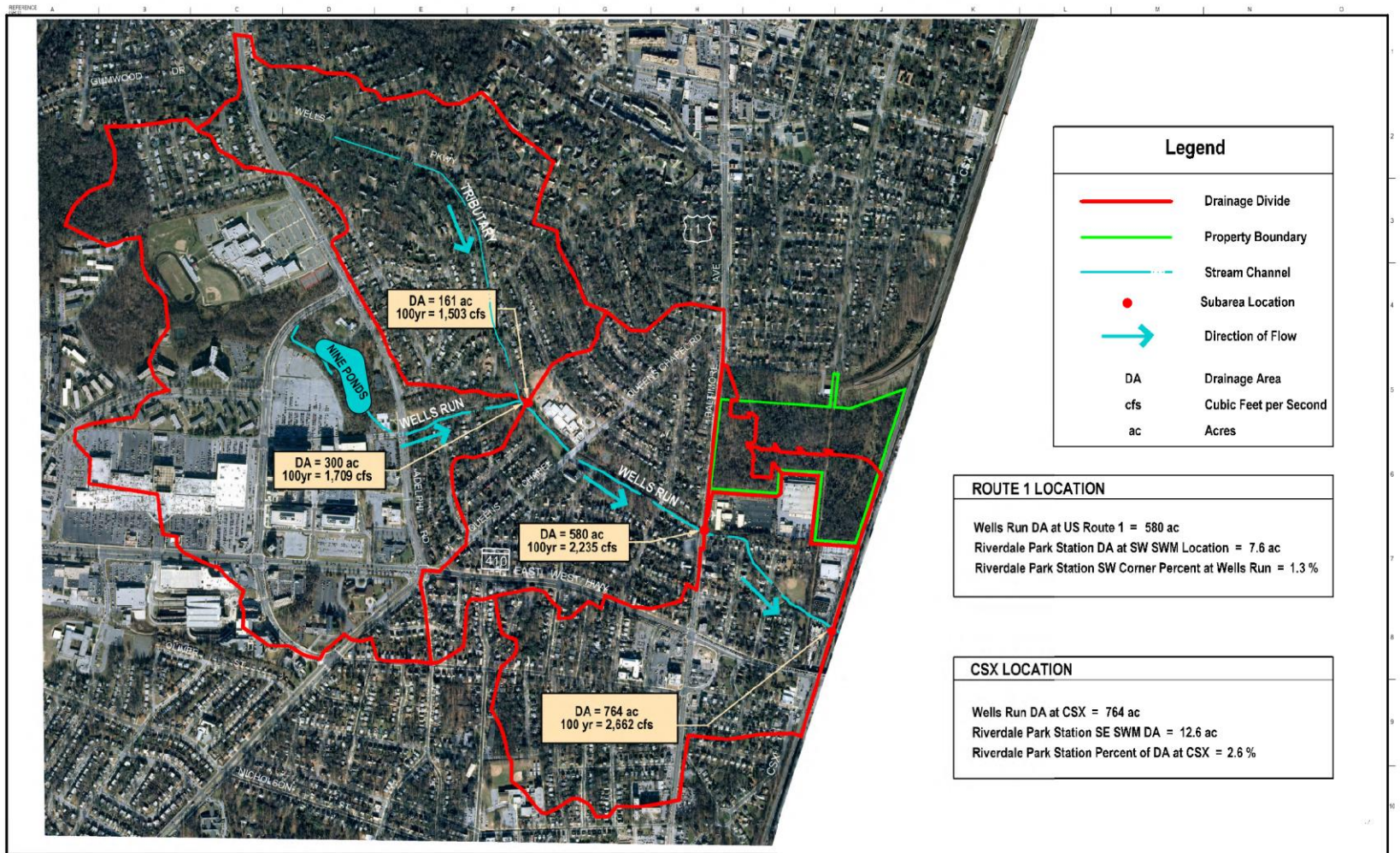
- County maintains the public storm drain system in the public rights of way and those with storm drain easements
- Systems on land owned by others are maintained by the land owner
- Private systems are maintained by the private property owner, including driveway culverts or pipes installed by the property owner outside of the public rights of way

EXAMPLE OF MUNICIPALITY STORM DRAIN INFRASTRUCTURE MAP

- Maps are available for all Municipalities
- Federal Emergency Management Administration (FEMA) updated the National Flood Insurance Program Map effective January 17, 2020.
- The Department of the Environment manages the municipal storm drain program
- The Department of Public Works and Transportation maintains storm drain systems that have been accepted into the County's inventory.
  - Maintenance includes checking and cleaning the system every 3 – 5 years
  - Responding to service requests if challenges are reported outside of the cleaning cycle



WELLS RUN DRAINAGE AREA



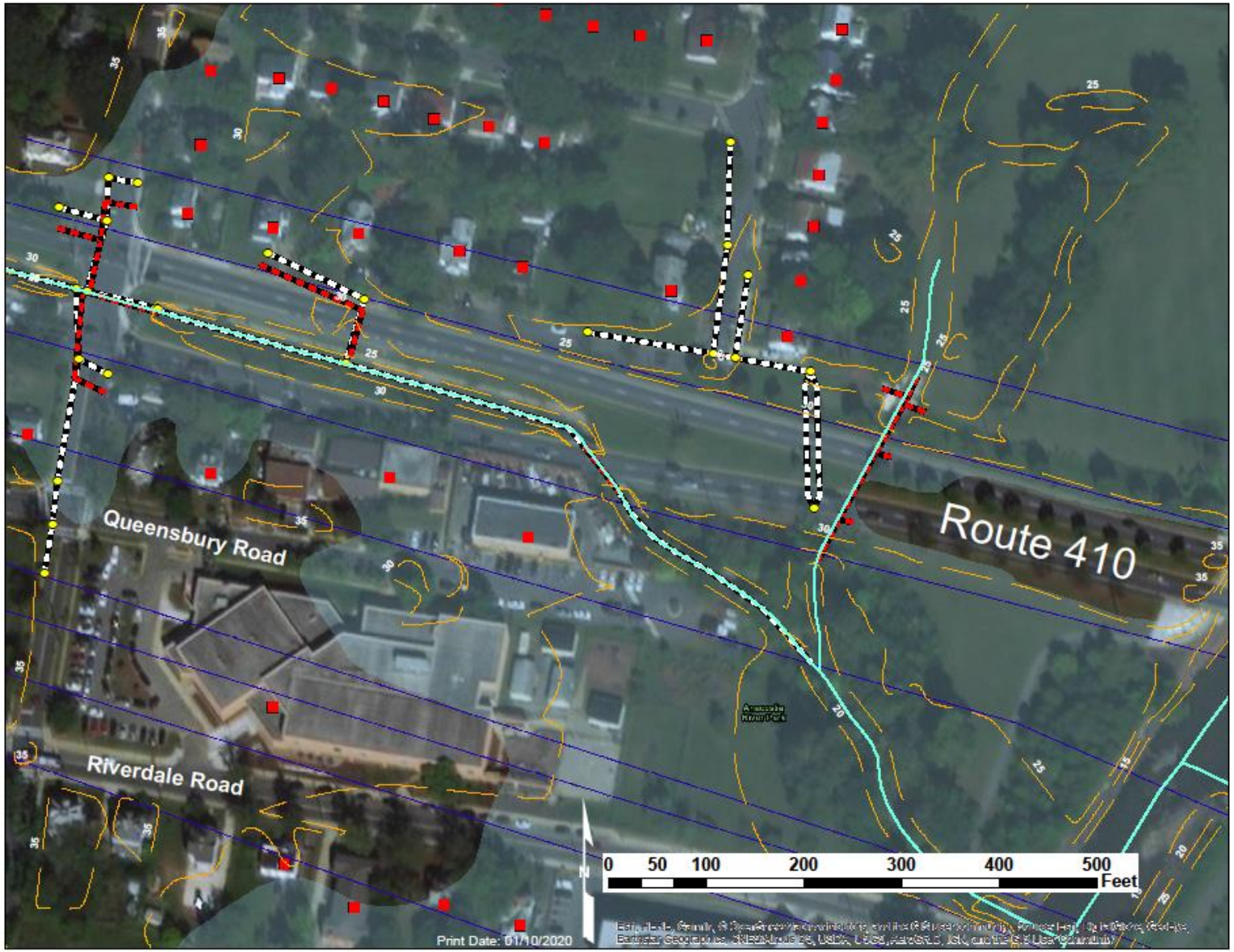
Wells Run Drainage Area

FEMA FLOOD PRONE STRUCTURE MAP

Rushern L. Baker, III
County Executive

Darrell B. Mobley
Director

FLOOD PRONE STRUCTURE MAP



Legend

- GISDEV.STREAMS
- GISDEV.SDI_OUTFALLS
- GISDEV.DRAINAGE
- GISDEV.SD_INLETS
- GISDEV.CONTOURS5FT
- GISDEV.SHA_CONVEYANCE
- GISDEV.SDI_PIPES
- GISDEV.Floodprone_structures
- Outfalls
- GISDEV.SWMTG_FLOODPLAIN
- GISDEV.County_Roads_DPWT

Segments

Segment Type

- Bridge
- Channel
- Culvert
- Hydraulic Connector
- Channels
- GISDEV.FLOOD_SFHA_SWMG_2017

Riverdale Park Channel

Flood Prone Structures

Map 1

FLOOD PRONE STRUCTURE MAP

Rushern L. Baker, III
County Executive

Darrell B. Mobley
Director

Legend

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Segments

Segment Type

- Bridge
- Channel
- Culvert
- Hydraulic Connector
- Channels
- GISDEV.FLOOD_SFHA_SWMG_2017

Riverdale Park Channel

Flood Prone Structures

Map 2

FLOOD PRONE STRUCTURE MAP

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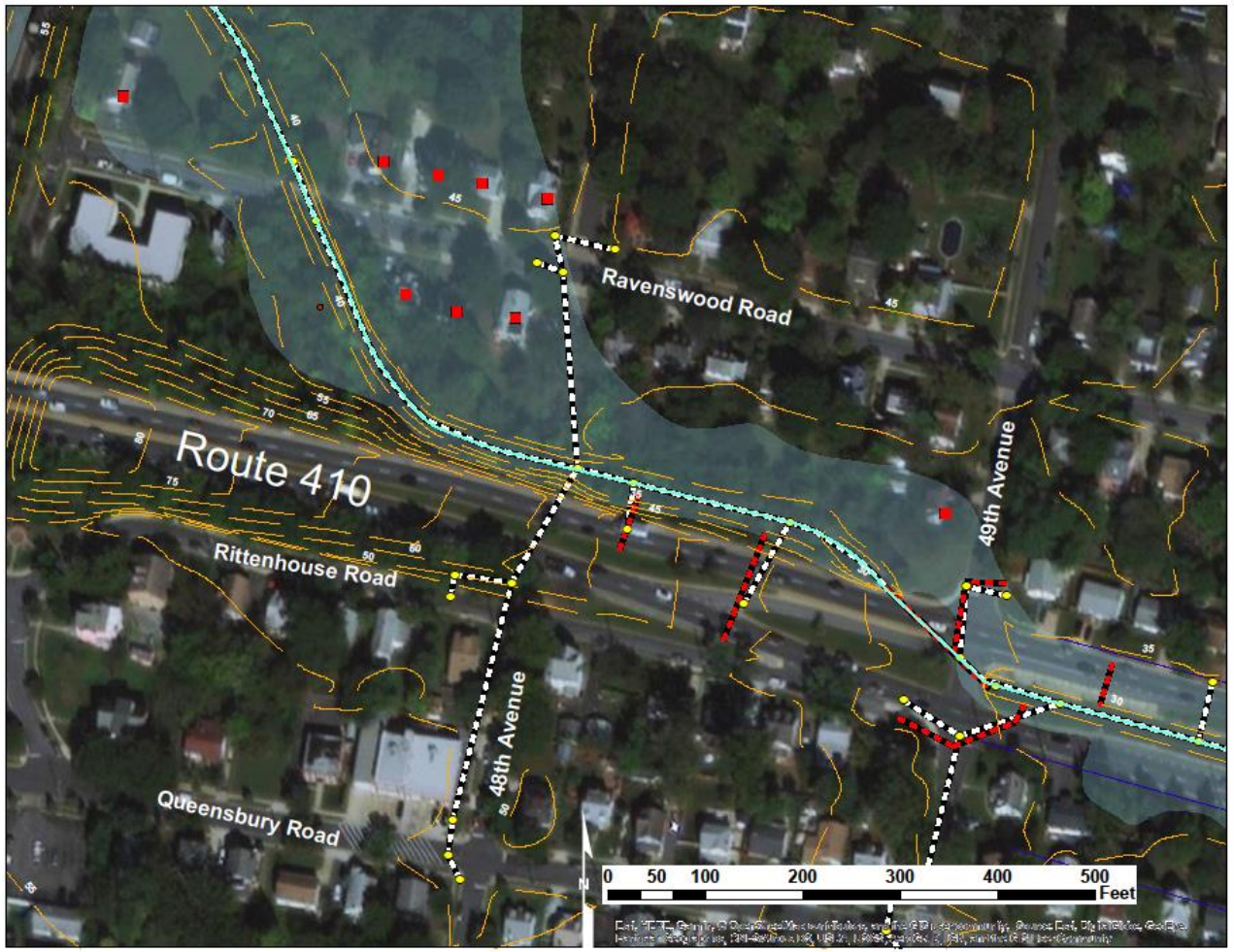

Legend

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- Outfalls
- GISDEV.SWMTG_FLOODPLAIN
- GISDEV.County_Roads_DPWT

Segments

Segment Type

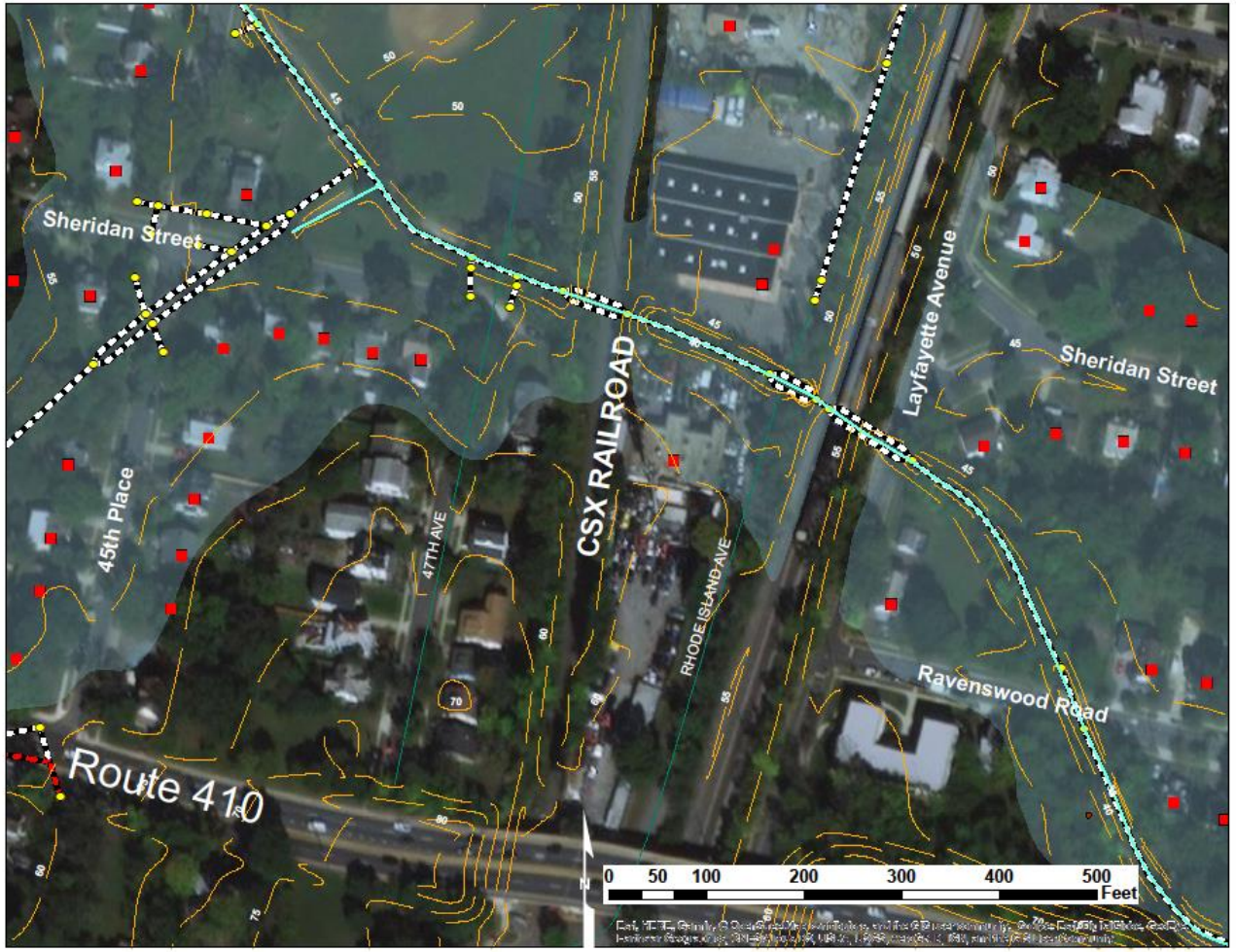
- Bridge
- Channel
- Culvert
- Hydraulic Connector
- Channels
- GISDEV.FLOOD_SFHA_SWMG_2017

Riverdale Park Channel

Flood Prone Structures

Map 3

FLOOD PRONE STRUCTURE MAP



Legend

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- GISDEV.County_Roads_DPWT

Segments

Segment Type

- Bridge
- Channel
- Culvert
- Hydraulic Connector
- Channels
- GISDEV.FLOOD_SFHA_SWMG_2017

Riverdale Park Channel

Flood Prone Structures

Map 4

FLOOD PRONE STRUCTURE MAP

Legend

- GISDEV.STREAMS
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Segments

Segment Type

- Bridge
- Channel
- Culvert
- Hydraulic Connector
- Channels
- GISDEV.FLOOD_SFHA_SWMG_2017

Riverdale Park Channel
Flood Prone Structures

Map 5

FLOOD PRONE STRUCTURE MAP

Rushern L. Baker, III
County Executive

Darrell B. Mobley
Director

Legend

- GISDEV.STREAMS
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Segments

Segment Type

- Bridge
- Channel
- Culvert
- Hydraulic Connector
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Riverdale Park Channel
Flood Prone Structures

Map 6

PUMPING STATIONS

- Stormwater pump stations help protect areas by pumping away large volumes of water, thereby preventing the occurrence of flooding from nearby large bodies of water.
- Pumping stations were constructed in the 1950s by the Washington Suburban Sanitary Commission (WSSC)
- The stations were turned over to Prince George's County in the 1980s
- The stations are maintained by the Department of Public Works and Transportation under the authority of the Army Corp of Engineers.
- Maintenance is daily, monthly and quarterly; annual inspections are conducted by the Corp

PUMPING STATIONS

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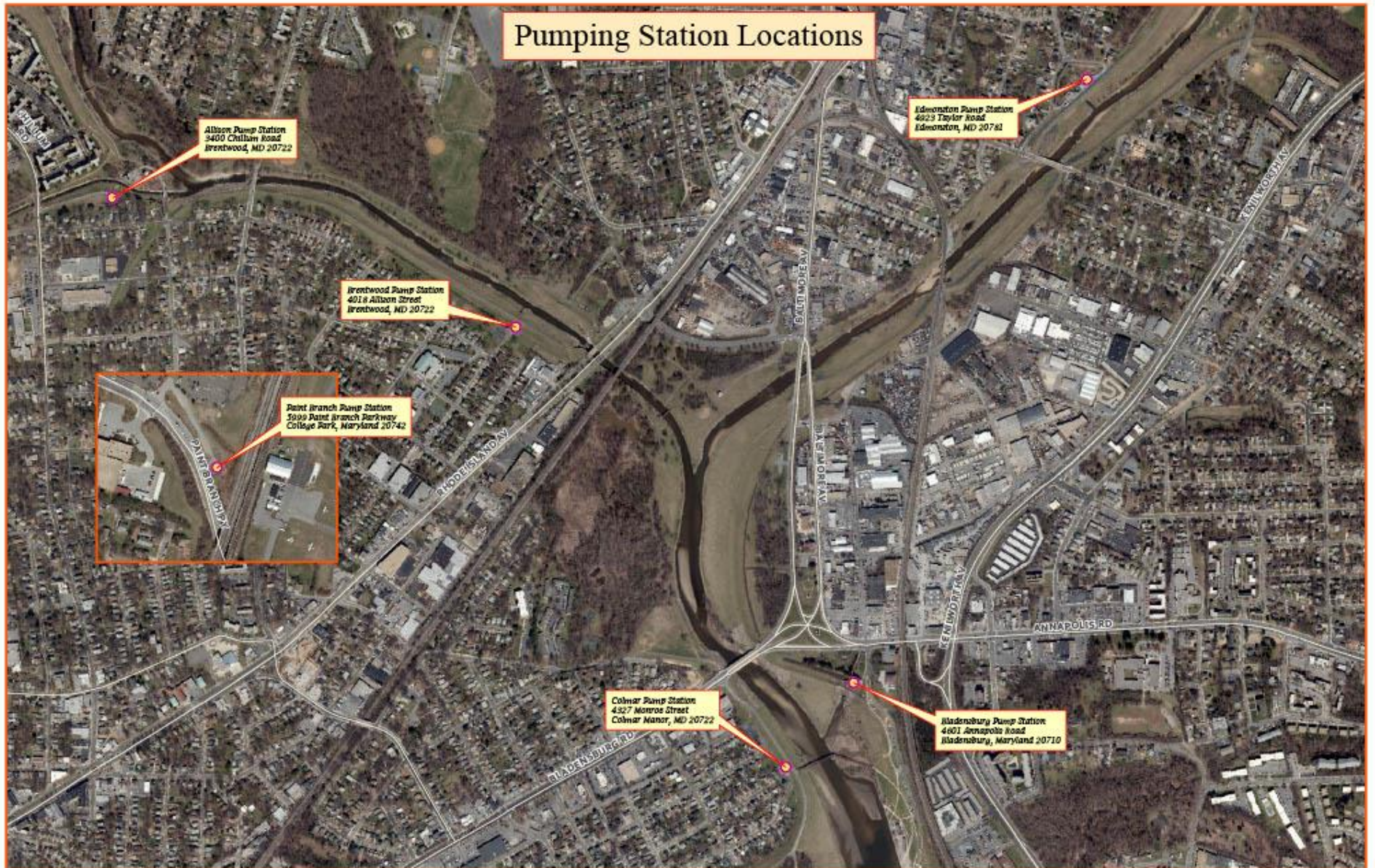

PUMPING STATION OPERATION

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County Executive

Terry L. Bellamy
DPW&T Director

Mayor & Town Contact Info.	Type of Generator	Second Generator	Type of Pumps	# of Pumps	Start & Stop Elevations	Flow Rate Per Pump	Type of Trash Rack	Dumpster on site
Mayor	Cummins	n/a	Submerisble	**1**	Start 6.5-Stop 4.75	50 GPM	Manual	No
Rocio Treminio-Lopez	150 KW		Flyght (sump)	Sump	Start 1 - @ 15.8	at 30 ft TDH		
					Start 2 - @ 16.8			
Brentwood	2000 Gallon		Vertical	**3**	Start 3 - @ 17.3	8000 GPM		
Town Office			Turbine		Stop 1 - @ 15.0	at 18 ft TDH		
301-927-3344			Byron-Jackson		Stop 2 - @ 15.5			
					Stop 3 - @ 16.0			
Mayor	Katolight	n/a	Vertical	**2**	Start 1 - @ 10.0	20,000 GPM each	Bar Screen	Yes
Petrella Robinson	250 KW		Mixed Flow		Start 2 - @ 10.5	at 12 ft TDH	Cleaner	
					Stop 1 - @ 8.5			
North Brentwood	505 Gallon		Mfgr:		Stop 2 - @ 9.0			
Town Office			Peerless					
301-699-9699			Pump Co.					
Mayor	Katolight	n/a	Vertical	**3**	Start 1 - @ 6.5	45,000 GPM each	Bar Screen	Yes
Tkisha D. James	750 KW		Mixed Flow		Start 2 - @ 7.0	at 12 ft TDH	Cleaner	
					Start 3 - @ 7.5			
Bladensburg	1625 Gallon		Mfgr:		Stop 1 - @ 3.5			
Town Office			Peerless		Stop 2 - @ 4.0			
301-927-7048			Pump Co.		Stop 3 - @ 4.5			
Mayor	Katolight	n/a	Vertical	**2**	Start 1 - @ 5.5	20,000 GPM each	Bar Screen	Yes
Sadara Barrow	250 KW		Mixed Flow		Start 2 - @ 7.5	at 12 ft TDH	Cleaner	
					Stop 1 - @ 3.5			
Colmar Manor	505 Gallon		Mfgr:		Stop 2 - @ 4.0			
Town Office			Peerless					
301-277-4920			Pump Co.					
Mayor	Katolight	Cummins	2 - Vertical	**2**	Start 1 - @ 10.75	Vertical Pumps	Bar Screen	Yes
Tracy Gant	250 KW	1750 KW	Mixed Flow		Start 2 - @ 11.00	22,500 GPM each	Cleaner	
					Stop 1 - @ 10.25	at 12 ft TDH		
Edmonston	505 Gallon	6,000 Gallon	3 - Screw Pumps	**3**	Stop 2 - @ 10.50			
Town Office						Screw Pumps		
301-699-8806			Mfgr. Peerless			53,000 GPM each		
			Pump Co.					

Elevation in Feets
GPM: Gallons Per Minute

LEVEE SYSTEM

Angela D. Alsobrooks
County Executive

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DPW&T Director

- Levees are man-made barriers along a water course constructed for the primary purpose of providing flood, storm and hurricane protection. Levees were originally constructed to protect property and reduce damages from flooding, they have often inadvertently increased flood risks by attracting greater development to the floodplain.
- The system was designed and constructed by the Army Corp of Engineers in the 1950s
- There is one levee system and two other levees within Prince George's County; the Anacostia Watershed, the Upper Marlboro levee and the Forest Heights levee
- The levee system is composed of levees known as *Allison Street, Bladensburg, Brentwood, Colmar Manor, Hyattsville - Riverdale

*Is not certified by the Corp

LEVEES IN PRINCE GEORGE'S COUNTY

Angela D. Alsobrooks
County Executive

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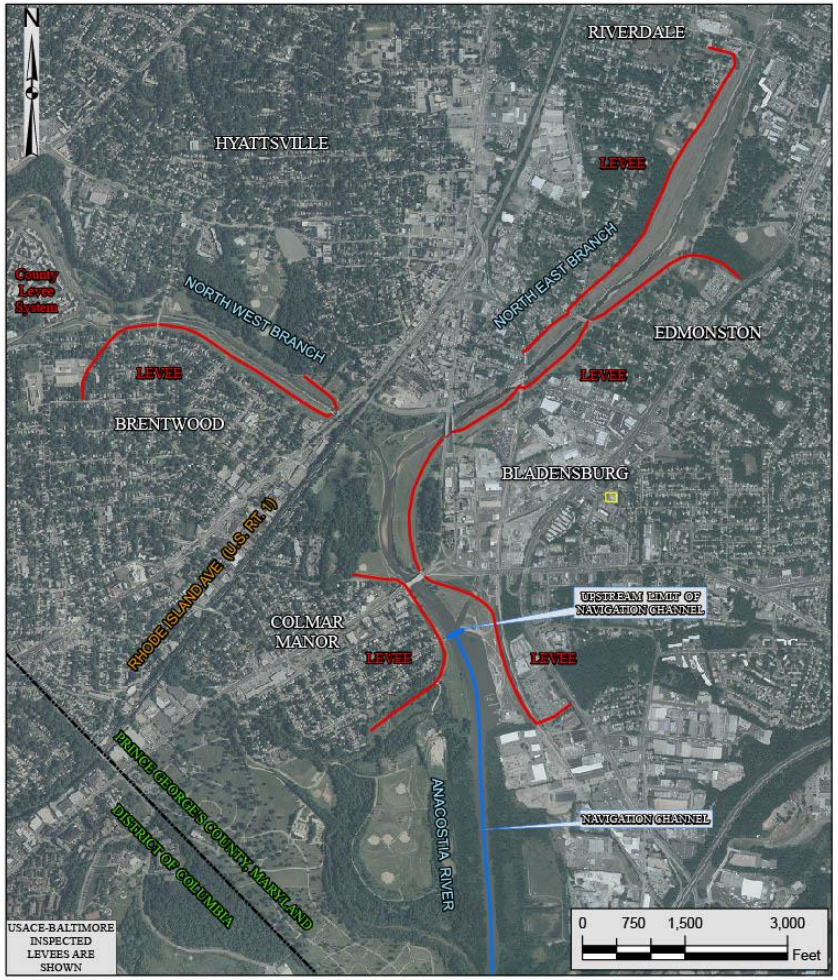
DPW&T Director



ANACOSTIA RIVER
PRINCE GEORGE'S COUNTY, MARYLAND
LOCAL FLOOD PROTECTION AND NAVIGATION

QUESTIONS

Angela D. Alsobrooks
County Executive

Terry L. Bellamy
DPW&T Director