DAYLIGHTING TIBBETTS BROOK IN THE BRONX

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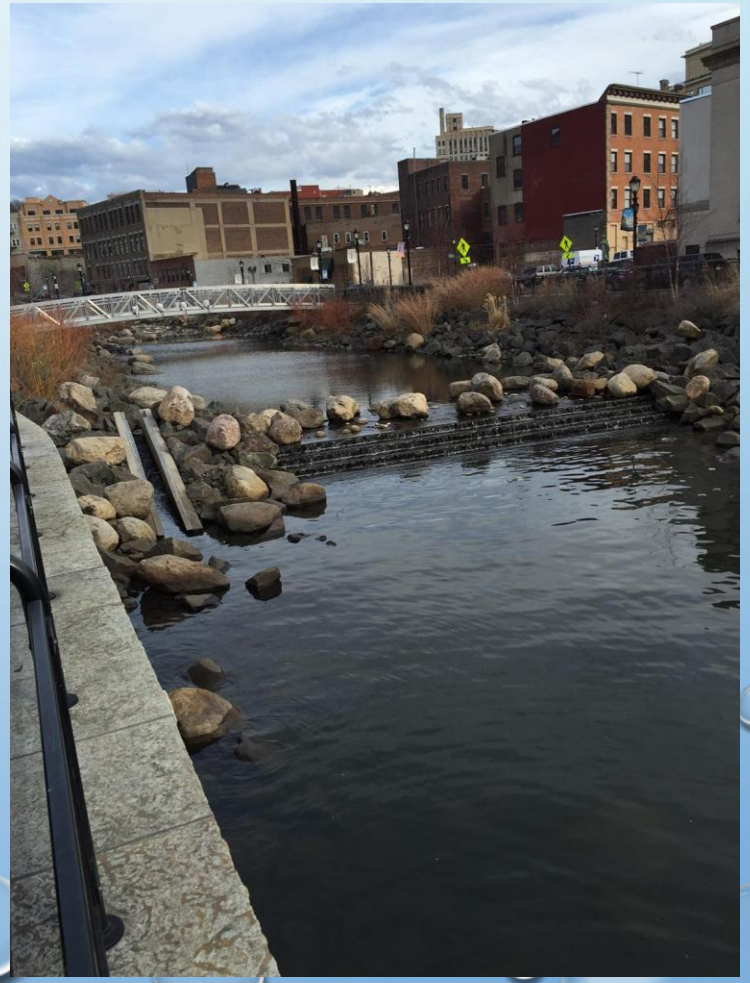
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WHAT IS DAYLIGHTING?

Daylighting is the process of bringing underground pipelines to the surface.

Pictures are from a Daylight section of the Saw Mill River in Yonkers, NY.

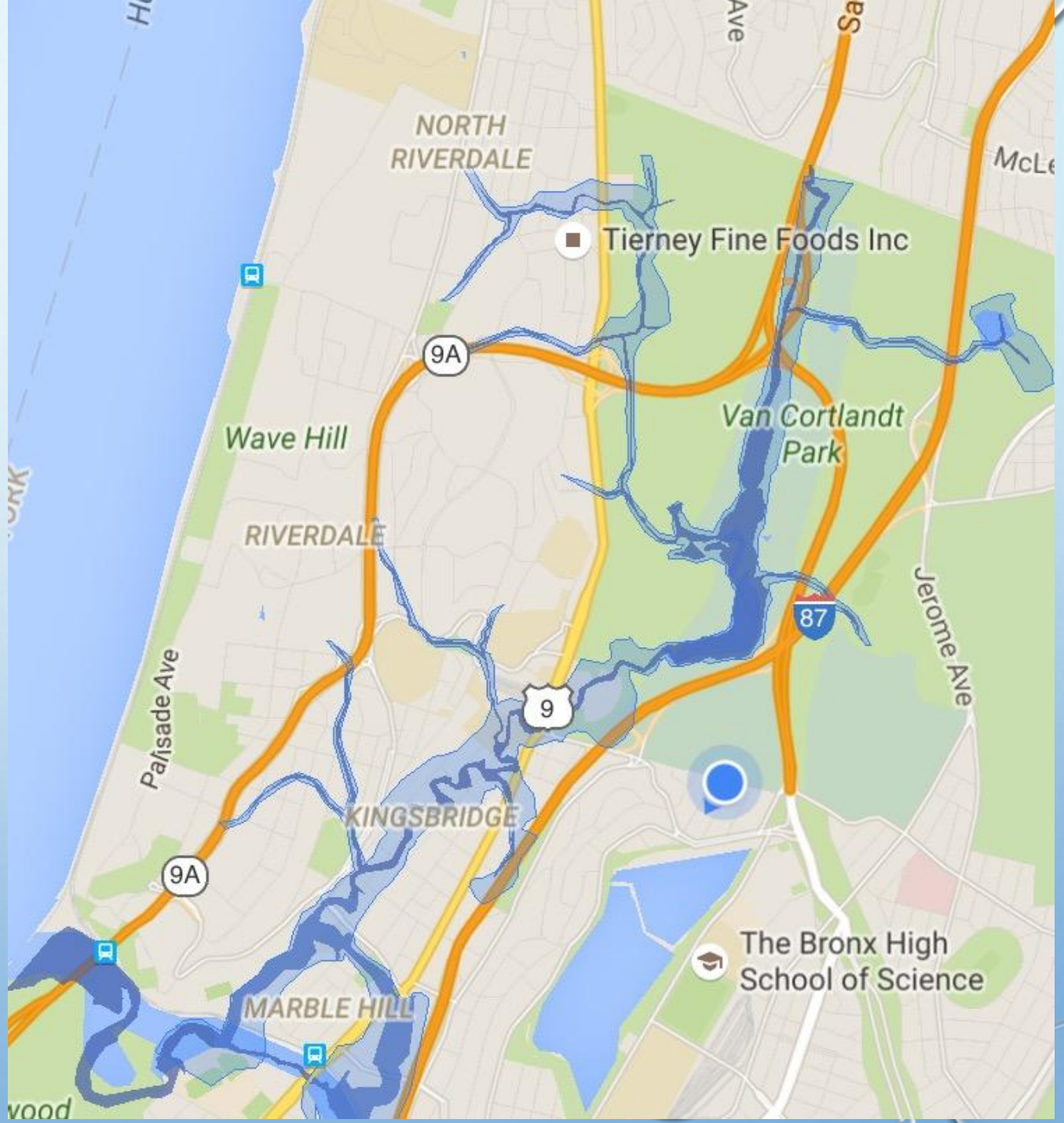




Historic Route of Tibbetts Brook within the Bronx in 1891

Historic waterway in dark blue; associated wetlands and swamps in light blue.

Data primarily from 1891 Bien Atlas of NYC; compiled by Steve Duncan / undercity.org.



CONNECTION TO SEWER

In 1912, Tibbetts Brook was piped into a drain at the south end of VC Lake and directed into the Broadway sewer. This made it possible to construct streets and buildings south of the park. Before 1912, that area was a marsh.*



Photo from Riverdale Press.

** VCP Master Plan from NYC Parks*

TIBBETTS BROOK WATERSHED

Yellow shows current watershed and red shows additional watershed if we daylight. Note that half of yellow portion is in Yonkers.



WHY SHOULD WE CARE?

According to the DEP, on a dry day, **4-5 million gallons of water flow into the Broadway sewer daily** from Tibbetts Brook and the VCP Lake alone**.** The water goes through the Broadway Sewer to the Wards Island Sewage Treatment Plant. When it rains, **the amount of water can be 2-5 times greater and this is when a CSO event will be triggered.**

IMPACT

At least 60 times a year, the treatment plant becomes overwhelmed from rainwater and shuts down. **Untreated sewage and rainwater are discharged directly into the Harlem River** from WI-056. **This is clearly a violation of federal law**, as it contributes to the pollution of the Harlem River and NYC can be fined for it.

CSO DISCHARGES TO THE HARLEM RIVER*

Combined Sewer Overflow (CSO) of 1.35 Billion Gallons is discharged from WI-056 a year. This one outflow contributes 50% of all untreated water into the Harlem River.

*DEP PRESENTATION IN 2007 BCEQ WATER CONFERENCE



WARDS ISLAND OUTFALL PIPE WI-056

WI-056 discharges 1.346 billion gallons per year*

WI-056 is “the largest in terms of annual CSOs” in New York City*

A study by Dr. Gemma (Jingyu) Wang, from CSO discharge points along the Harlem River found **the colonies of fecal coliform were more than 5 million MPN/100ml** during tropical storm Arthur in July 2014 and heavy rainstorm in April 2014**. These bacteria (pathogen) levels were significantly higher than EPA standards of 200 MPN/100ml.**

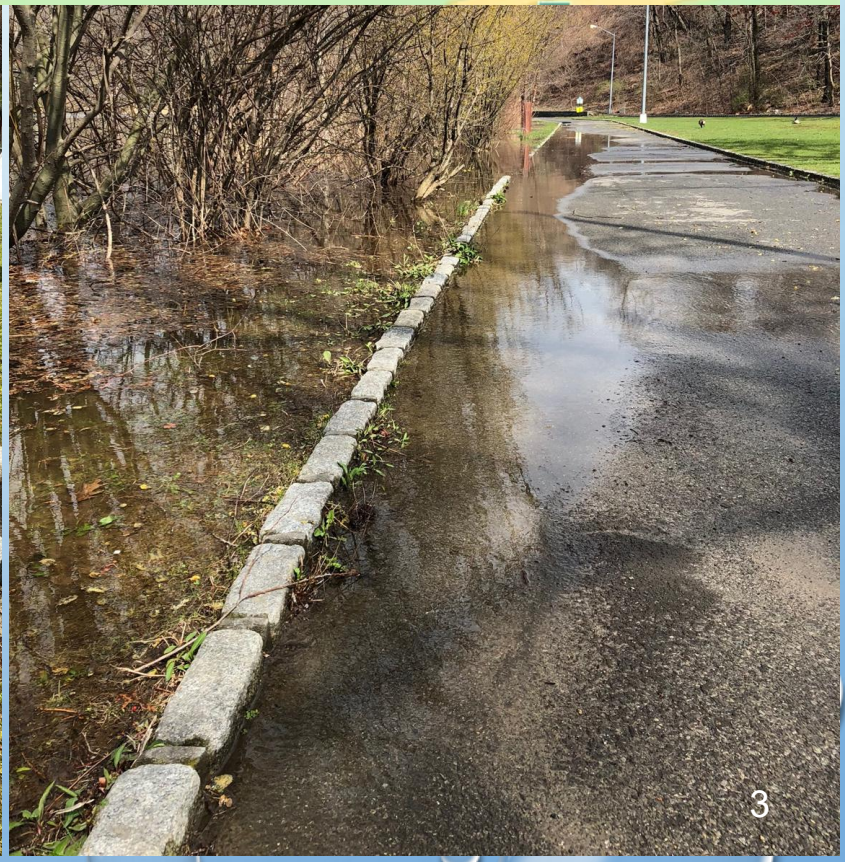
*According to “A Geographic Approach to Modeling the Impact of Green Roofs on Combined Sewer Overflows in the Bronx by Danielle M. Hartman, 2008.

Overflow at VC Lake During Rainstorms





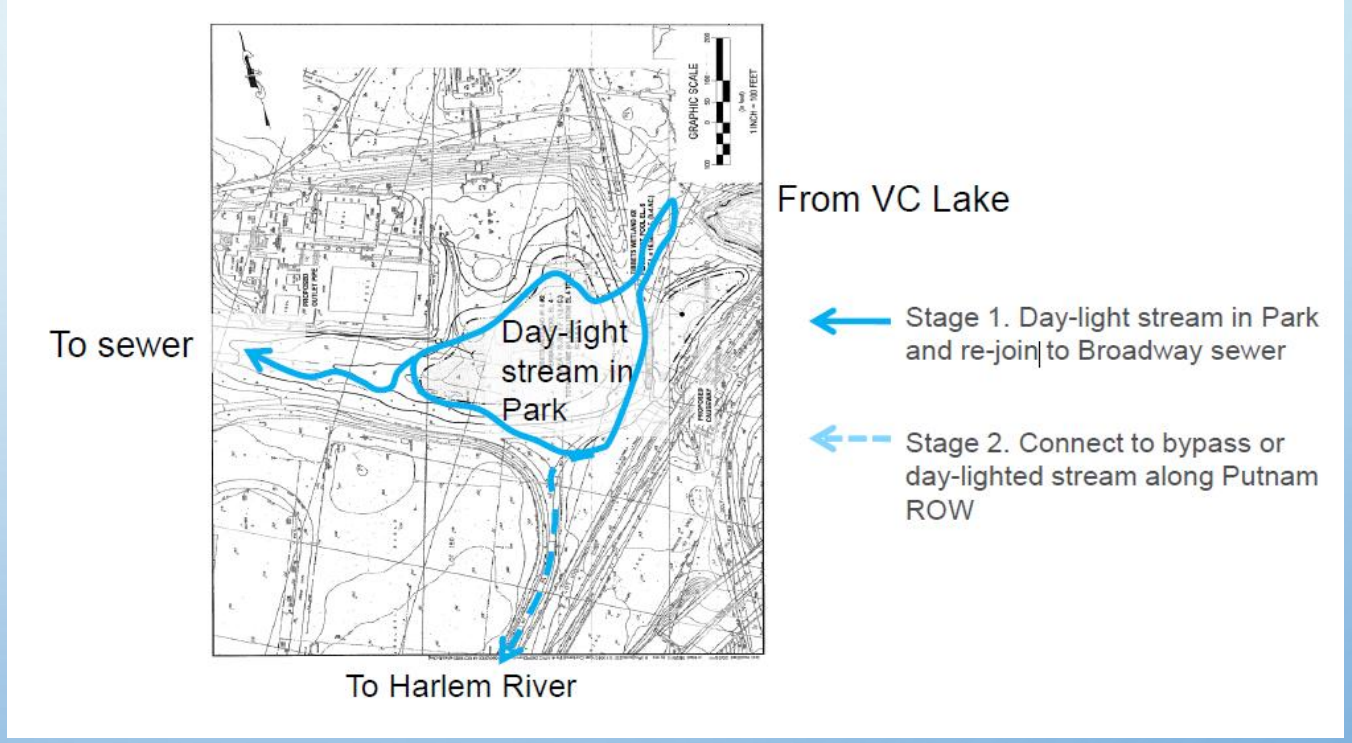




PROPOSED SOLUTION: PART 1: WETLAND RESTORATION WITHIN VAN CORTLANDT PARK

NYC Parks has funding to study potential solutions proposed in the 2034 VCP Master Plan.

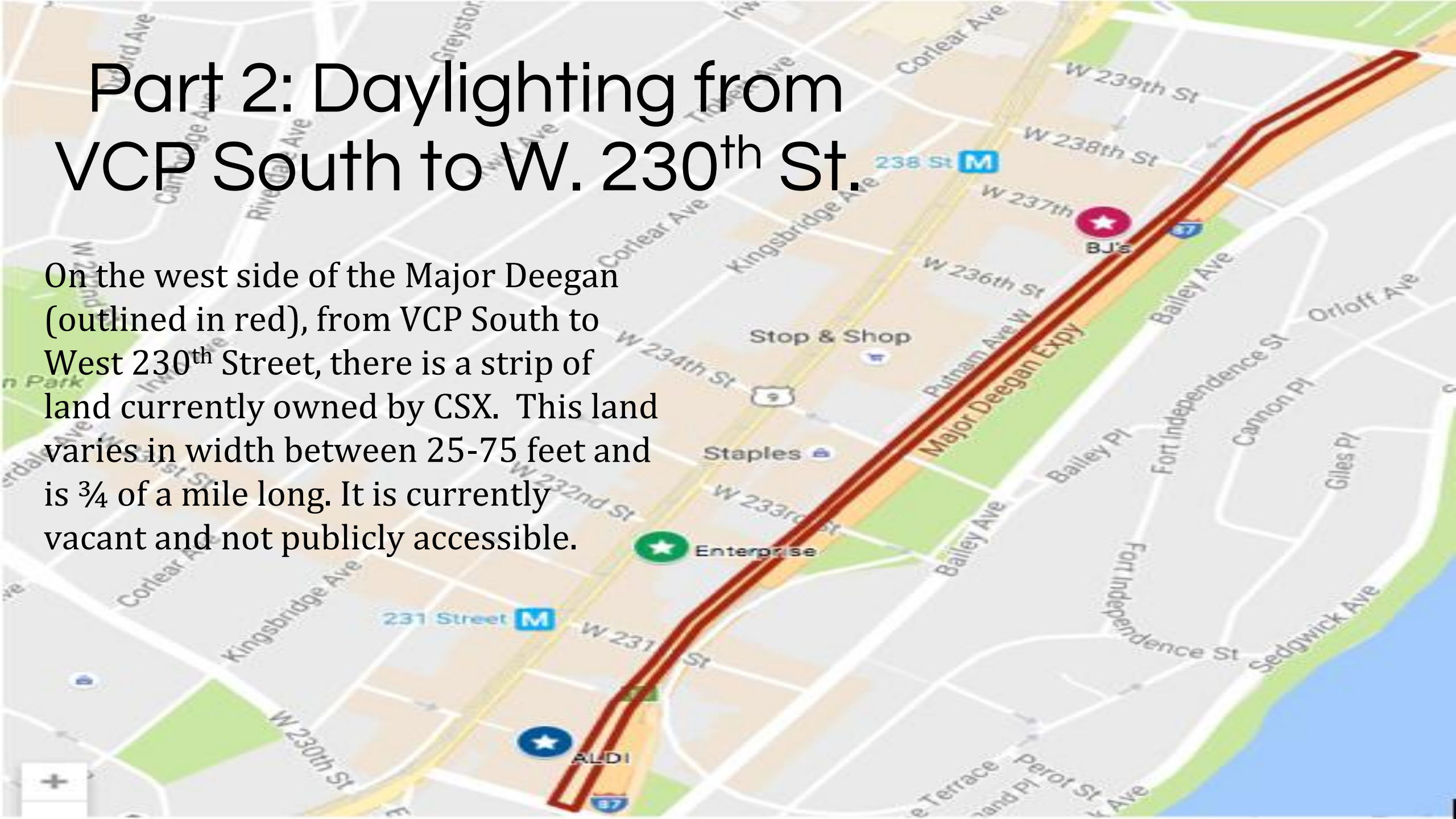
This first step would improve current wetlands in the southwest corner of VCP to allow them to hold more water from Tibbetts Brook. This would slightly reduce the amount of water entering the Broadway sewer.



From NYC Parks Department 's presentation in October 2015.

Part 2: Daylighting from VCP South to W. 230th St.

On the west side of the Major Deegan (outlined in red), from VCP South to West 230th Street, there is a strip of land currently owned by CSX. This land varies in width between 25-75 feet and is ¾ of a mile long. It is currently vacant and not publicly accessible.



CSX PROPERTY

For several years, NYC has been in negotiations with CSX to obtain this land. Originally, NYC Parks had $2 million to purchase the land. CSX has evaluated the land at $13 million. NYC Parks and CSX agreed to hire an independent appraiser (CSX suggested the appraiser that was eventually hired) and to accept the appraisal in that report. The appraisal came back at $4 million, NYC Parks agreed to it but CSX then stated they wanted $9 million.

PS. This was purchased and received approval for an easement in 2024

CSX Property (post clean up for the first time this year)

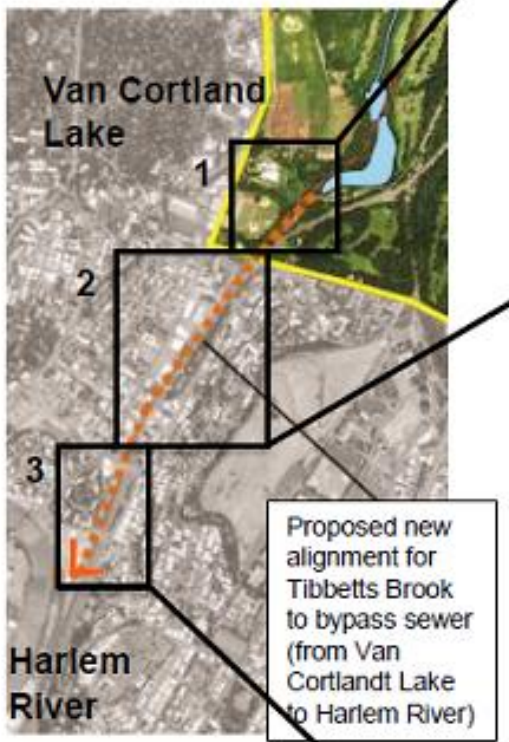




#3 230TH STREET TO HARLEM RIVER

This section is owned by MTA and others. This area will likely have to be piped underground due to active railroads but MTA has expressed willingness to allow this piping. The key is to get the CSX property first and then this should fall into place relatively easily.

Proposed route for Tibbetts Brook to the Harlem River



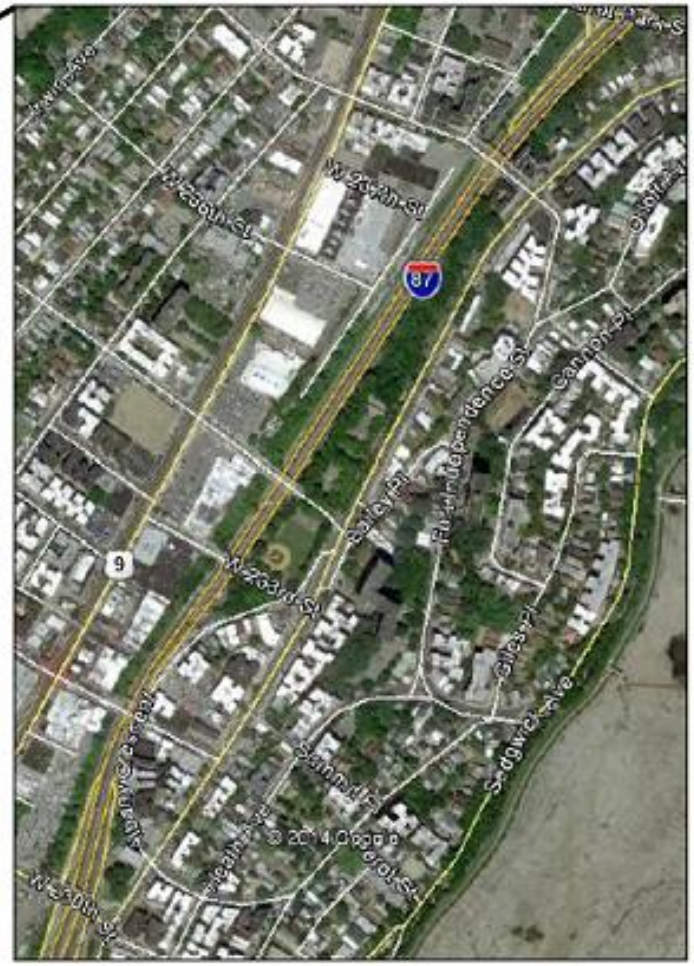
Proposed new alignment for Tibbetts Brook to bypass sewer (from Van Cortlandt Lake to Harlem River)



1. Van Cortland Park (daylighting & piping)



3. MTA and other property (likely piping)

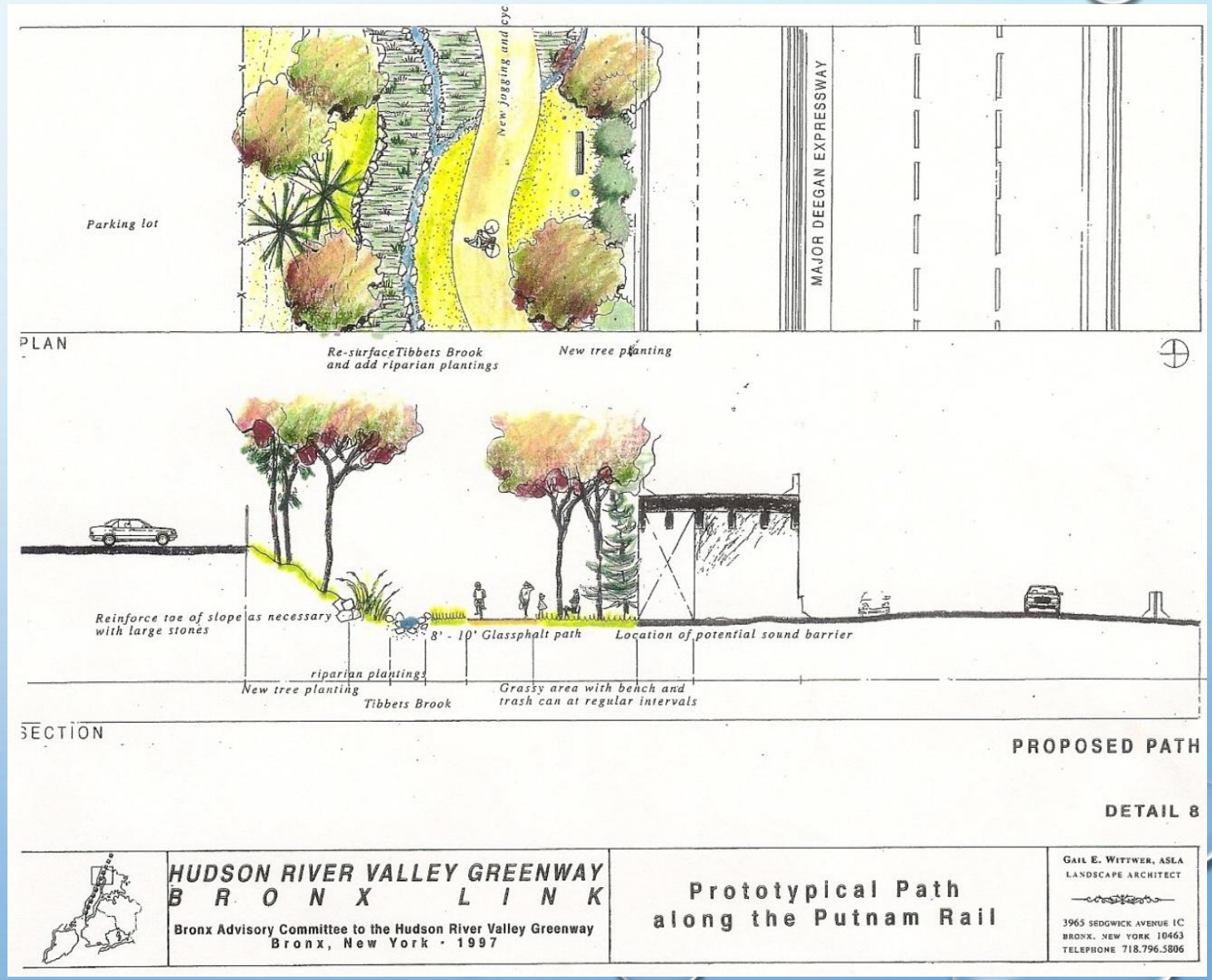


2. CSX property: Parks has partial funding to acquire (piping and day-lighting)

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WHAT IT COULD BE!





NYC Parks Department Harlem River Watershed and Natural Resources Management Plan for the Bronx, funded by NYS DOS, June 2018 Draft out for comments.

Draft General Recommendations

Goal: Manage stormwater through green infrastructure to capture, retain and treat runoff

	Recommendations	Near-term (within 5 years)	Long-term (> 5 years)	Lead & Partners
	Strategy 9: Reduce volume of stream flow entering sewers			
20	Conduct engineering feasibility study for by-pass of base flow from Tibbetts Brook.	✓		NYC DEP
21	Investigate potential funding opportunities for Tibbetts Brook wetland restoration.	✓		NYC Parks NYC DEP
22	Evaluate potential ecological impacts of increasing storage upstream along the Tibbetts Brook corridor.	✓		NYC Parks
23	Acquire CSX property for Tibbetts Brook daylighting and Putnam Greenway south of Van Cortlandt Park.	✓	✓	NYC Parks
24	Investigate opportunities and funding for daylighting as many sections of Tibbetts Brook as possible along new Putnam Greenway downstream of Van Cortlandt Park.	✓	✓	NYC Parks

NO DEP???

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CSO Mitigation Toolbox

INCREASING COMPLEXITY

INCREASING COST

Source Control	Green Infrastructure		Storm Sewers		
System Optimization	Fixed Weir	Parallel Interceptor / Sewer	Bending Weirs Control Gates	Pump Station Optimization	Pump Station Expansion
CSO Relocation	Gravity Flow Tipping to Other Watersheds	Pumping Station Modification	Flow Tipping with Conduit/Tunnel and Pumping		
Water Quality / Ecological Enhancement	Floatables Control	Environmental Dredging	Wetland Restoration	Daylighting	
Treatment *Satellite:*	Outfall Disinfection	Retention Treatment Basin (RTB)		High Rate Clarification (HRC)	
Centralized:	WWTP Expansion				
Storage	In-System	Shaft	Tank	Tunnel	