



CITY OF RICHMOND  
DEPARTMENT OF PUBLIC UTILITIES



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# Reedy Creek Stream Restoration Project

Ordinance 2016-217

To authorize the CAO to accept DEQ SLAF funds in the sum of  
**\$635,000**

*Presented to: City Council*

*Date: September 26, 2016*

# Why Stream Restoration Projects?

## Compliance/Cost Effective/Aquatic Life

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- Compliance with Clean Water Act and City's 2013-2018 MS4<sup>1</sup> Permit #VAR040005
  - First permit term Chesapeake Bay (TMDL<sup>2</sup>) Action Plan
- Reduction of TMDL specific pollutants
  - Phosphorous (P); Nitrogen (N); Total Suspended Solids (TSS)
- Most Cost Effective method for removing pollutants
  - In 2014, 66% of all Stormwater Local Assistance Funds (SLAF) were awarded to Stream Restoration projects across Virginia.
  - In 2015, 89% of the SLAF projects were Stream Restorations
- A healthy stream infrastructure is the foundation needed to sustain aquatic life; Severely eroded streams do not 'heal themselves'.

<sup>1</sup> Small Municipal Separate Storm Sewer Systems

<sup>2</sup> Total Maximum Daily Load

# Why Stream Restoration Projects?

## Alternative Analysis

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- Several alternative projects proposed in 2013 SLAF Grant application:
  - 1 Dry Swale project: \$/lbs of P removed = \$197,521
  - 5 Bioretention projects: \$/lbs of P removed = \$144,389
  - 2 Pervious Pavement projects: \$/lbs of P removed = \$399,500
  - None of these projects received funding
- Two Stream Restoration projects were proposed
  - \$/lbs of P removed = \$4,667
  - Both Stream projects were approved for funding
- 2013 Alternative Analysis of *TMDL Total Phosphorus Compliance Costs* for 2,550 pounds of P
  - Stream Restoration costs: \$11,900,850 (not including any DEQ matching funds)
  - Bioretention costs: \$139,682,784
  - Difference of \$128 Million would come to Stormwater Ratepayers

# Communications with Stakeholders

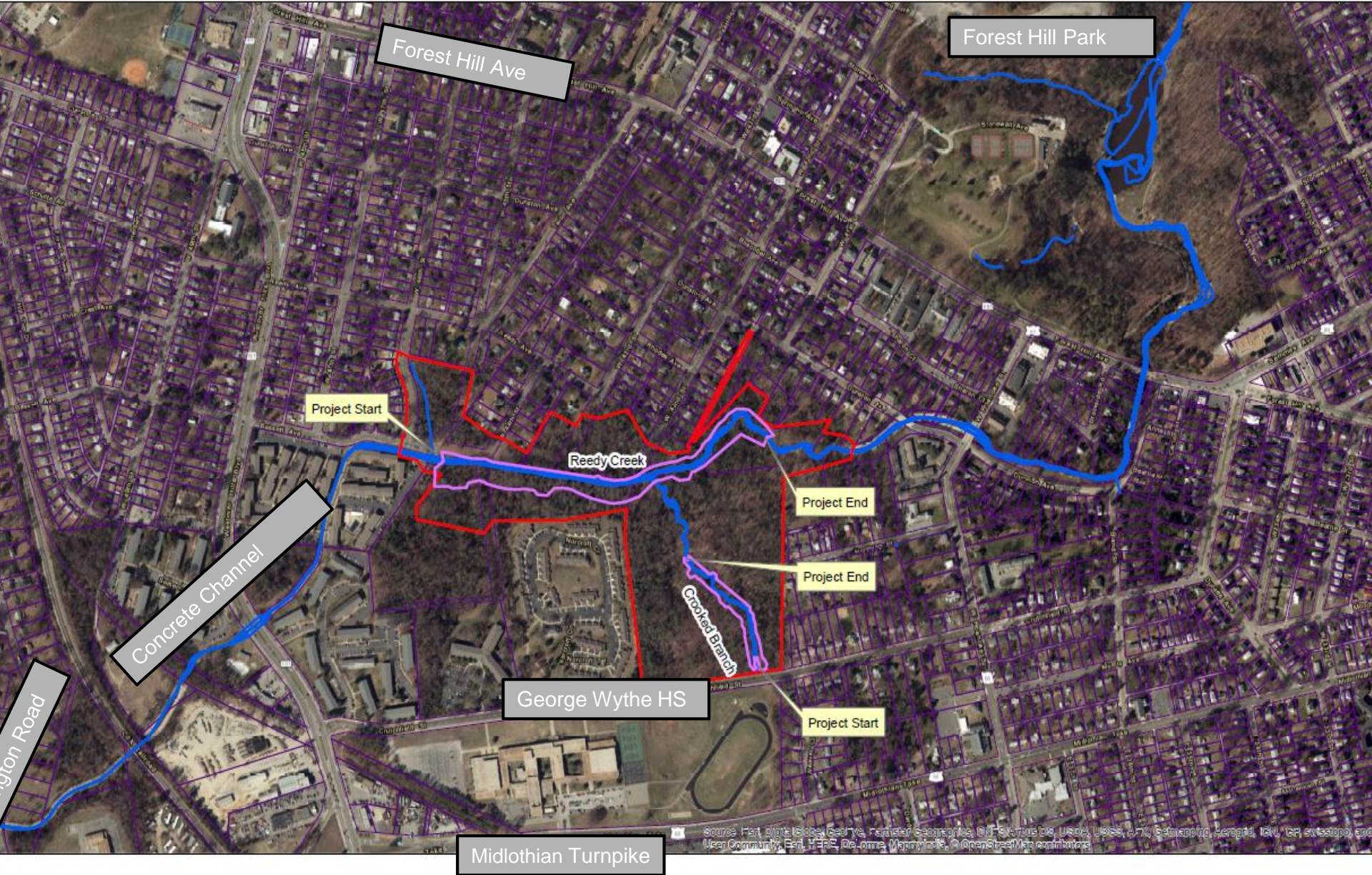
## Public Notice; Social Media; Community Meetings

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- Public Noticed (30 days) *City's Chesapeake Bay TMDL Action Plan, 2013 to 2018*
  - Advertised 07-01-2015
  - Chesapeake Bay Foundation and James River Association both requested and were granted a one week extension of the deadline. Neither organization submitted written comments.
  - Comments received from Reedy Creek Coalition (RCC) 09-21-15
- Written responses to several blog, twitter and other inquiries/ statements by RCC have continued since then
- Public meetings held Oct & Dec 2015 and Feb 2016
  - Changes made to design to avoid the Owl Orchard; a community garden on 44<sup>th</sup> Street and the passive park along Crooked Branch
  - Added formal tree survey to project scope & Phase I Archeology Survey



# Reedy Creek from Covington Road to Forest Hill Park





# Reedy Creek from Covington Road to Forest Hill Park





# Reedy Creek & Crooked Branch Project Area





# Reedy Creek & Crooked Branch Stream Reach targeted for restoration

Crooked Branch at Crutchfield Road





# Reedy Creek & Crooked Branch Stream Reach targeted for restoration

Reedy Creek near W. 44<sup>th</sup> Street





# Reedy Creek & Crooked Branch Stream Reach targeted for restoration

Reedy Creek between W. 43<sup>rd</sup> and W. 44<sup>th</sup> Street

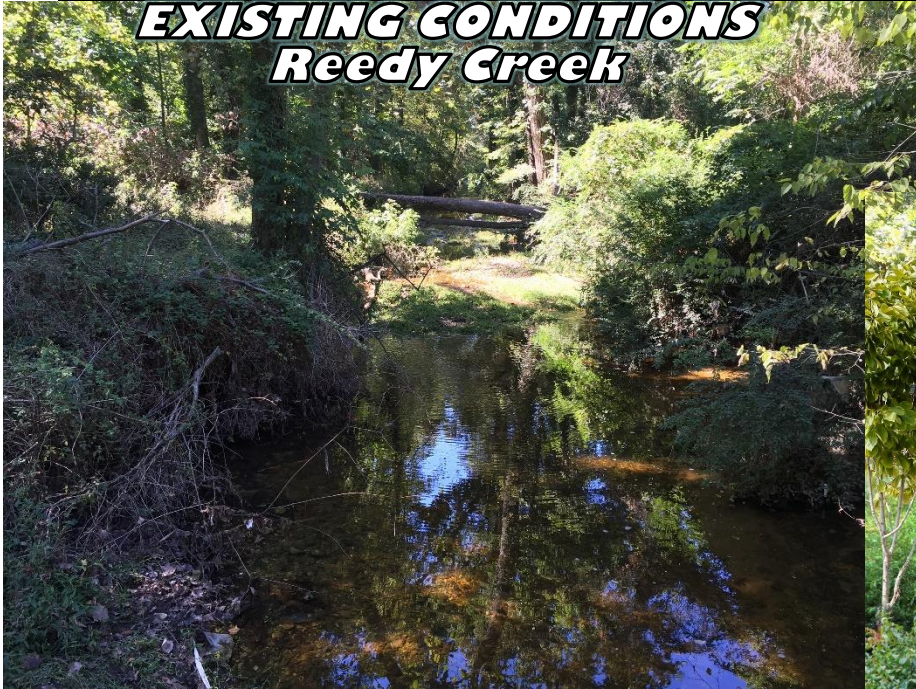




# Reedy Creek & Crooked Branch

## Now and Future

***EXISTING CONDITIONS  
Reedy Creek***



***PROPOSED CONDITIONS  
Reedy Creek***





# Reedy Creek & Crooked Branch

## Now and Future





# Inaccurate Project Assumptions

## Project is High Risk; No similar projects

- Project in Reston, Snakeden Creek, is comparable and very successful.

	<u>Snakeden Creek</u>	<u>Reedy Creek</u>
Impervious Area (%)	45%	38%
Design Discharge (cubic ft/s)	353	297
Low flow (cubic ft/s)	25	10.9
Reach (ft)	2,800	3,050

- Another in Tysons Corner, Scotts Run, has been permitted by ACOE but not yet constructed.

# Snakeden Creek, Fairfax, Virginia

## Before Construction Apr & Sep 2008

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# Snakeden Creek, Fairfax, Virginia

## After Construction 07-2010 & 08-2014

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# Alternatives Suggested

## Covington Road Bioretention/Rain Gardens

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### Covington Road

- Drainage area about 45 acres; 30% impervious
- Bioretention of 1.5 acres to remove 22.5 lb P/year
- Total cost estimated at \$600,000 ( \$26,600/lb P)
- Reedy/Crooked Branch estimated at \$8,489/lb P

3x more expensive per pound of pollutant removed and  
only 15% removal

### Upstream Rain Gardens

- Estimated over 1,800 rain gardens would be needed



# Historic Resources

## Consultant Phase 1 Study Complete

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- Consultant, Dutton & Associates, completed the Phase 1 Sep15, 2016
- Report recommends that no resources qualify for registration
- Department of Historic Resources will make final decision



# Summary

## Impacts of not Approving Funding Paper

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- Potential non-compliance in 2018 (or later) with Chesapeake Bay TMDL Action Plan could lead to DEQ or EPA enforcement action and/or reduction in future State or Federal funding opportunities
- Ratepayers costs **increase** due to loss of grant funds
- Ratepayers costs **increase** if stream restoration projects are removed from tool box to meet compliance



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# Questions?

