Wissahickon Creek
Collaboration for Stream Restoration

Brett Long, Biohabitats

The Restoration Coalition

- Wissahickon Trails
- Upper Gwynedd Township
- PECO
- Merck
- Biohabitats
- National Fish & Wildlife Foundation
- Temple University
- PA Growing Greener

TEMPLE UNIVERSITY®

PECO®

MERCK

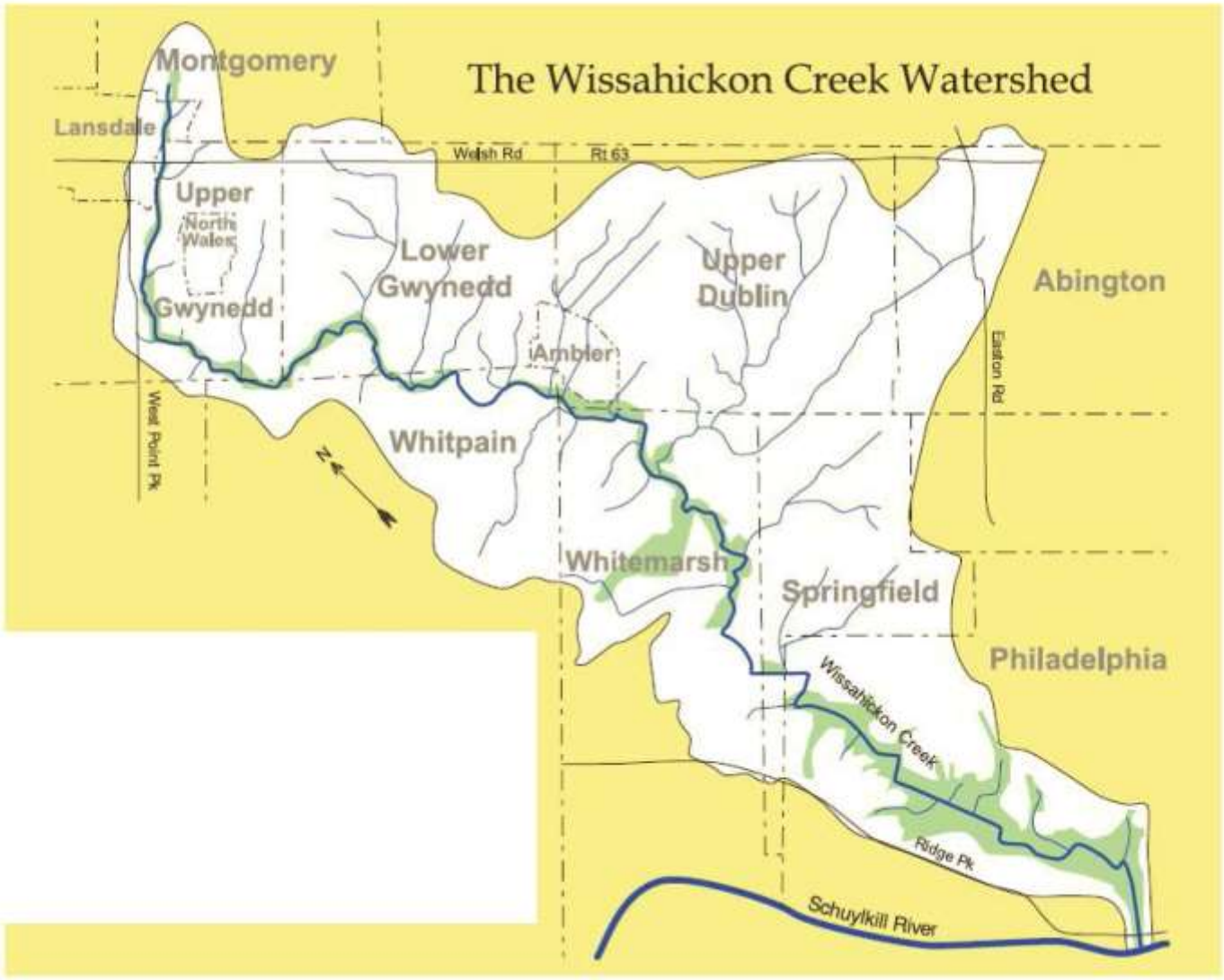
Biohabitats
The Stables Building
2081 Clipper Park Road
Baltimore, MD 21211

WISSAHICKON TRAILS CONNECTING LAND, WATER & PEOPLE

NATIONAL FISH AND WILDLIFE FOUNDATION
NFWF

Growing our Economy
Growing our Communities
Growing Greener

THE WISSAHICKON WATERSHED



WISSAHICKON WATERSHED valley ASSOCIATION

DELAWARE RIVER WATERSHED INITIATIVE

- William Penn Foundation goal: "Move the needle on water quality" in the Delaware River Basin
- Spans 4 states: NY, NJ, PA, DE
- 8 cluster groups around the watershed tackling different issues: source water protection, restoration

$35M initiative aims to improve water quality in the Delaware River basin

APRIL 1, 2014 | 7:00 PM

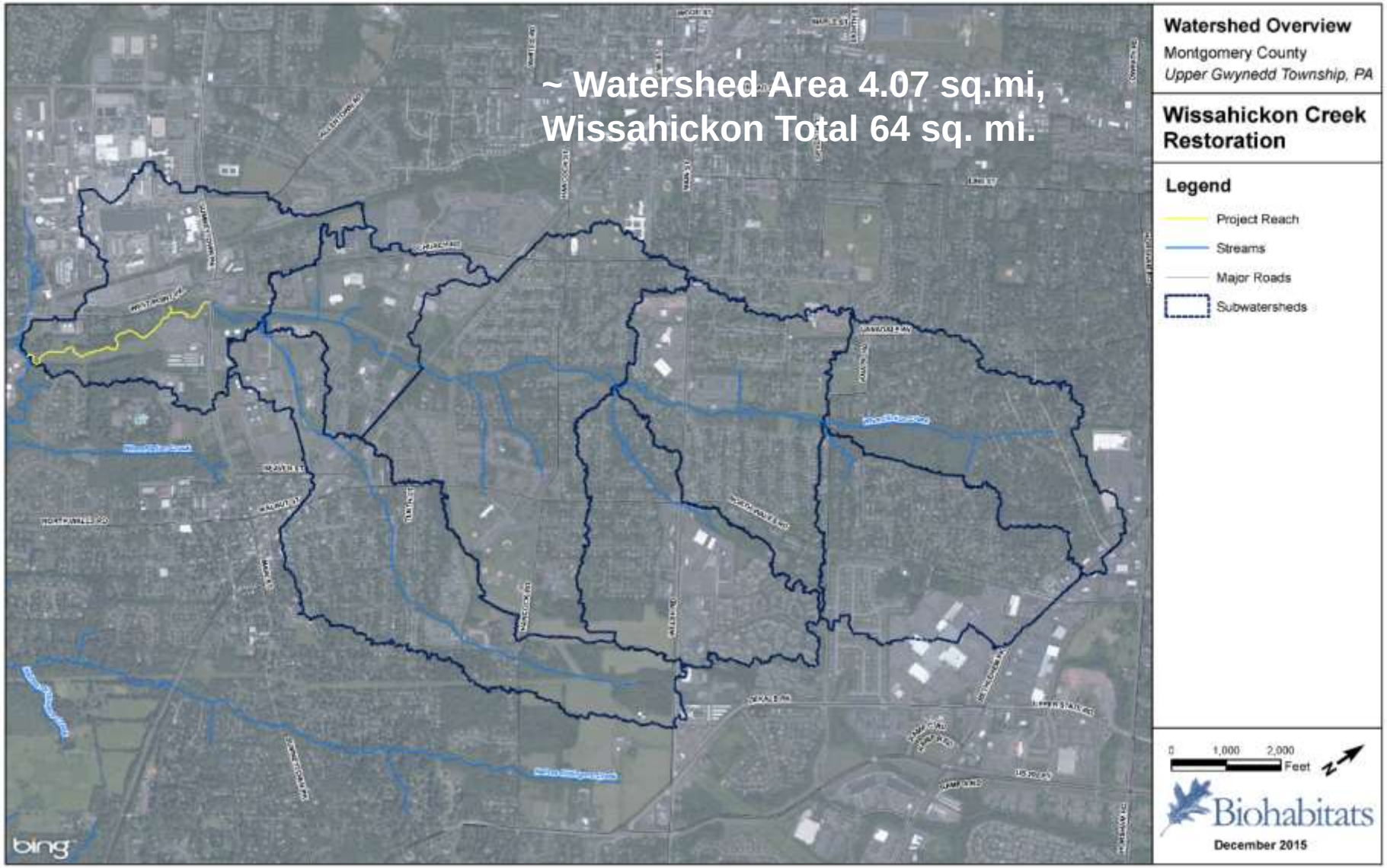
BY KATIE COLANERI

3 Comments

Email

Tweet 13

Recommend 33


~ Watershed Area 4.07 sq.mi,
Wissahickon Total 64 sq. mi.
Watershed Overview
Montgomery County
Upper Gwynedd Township, PA
Wissahickon Creek Restoration
Legend
Project Reach
Streams
Major Roads
Subwatersheds
0
1,000
2,000
Feet
N
Biohabitats
December 2015
bing

Project Site Background

- PECO electric transmission corridor
- Merck facility
- Wissahickon Green Ribbon Trail
- Historically agricultural area
- Major landuse in watershed is now single family, detached homes

Project Goals

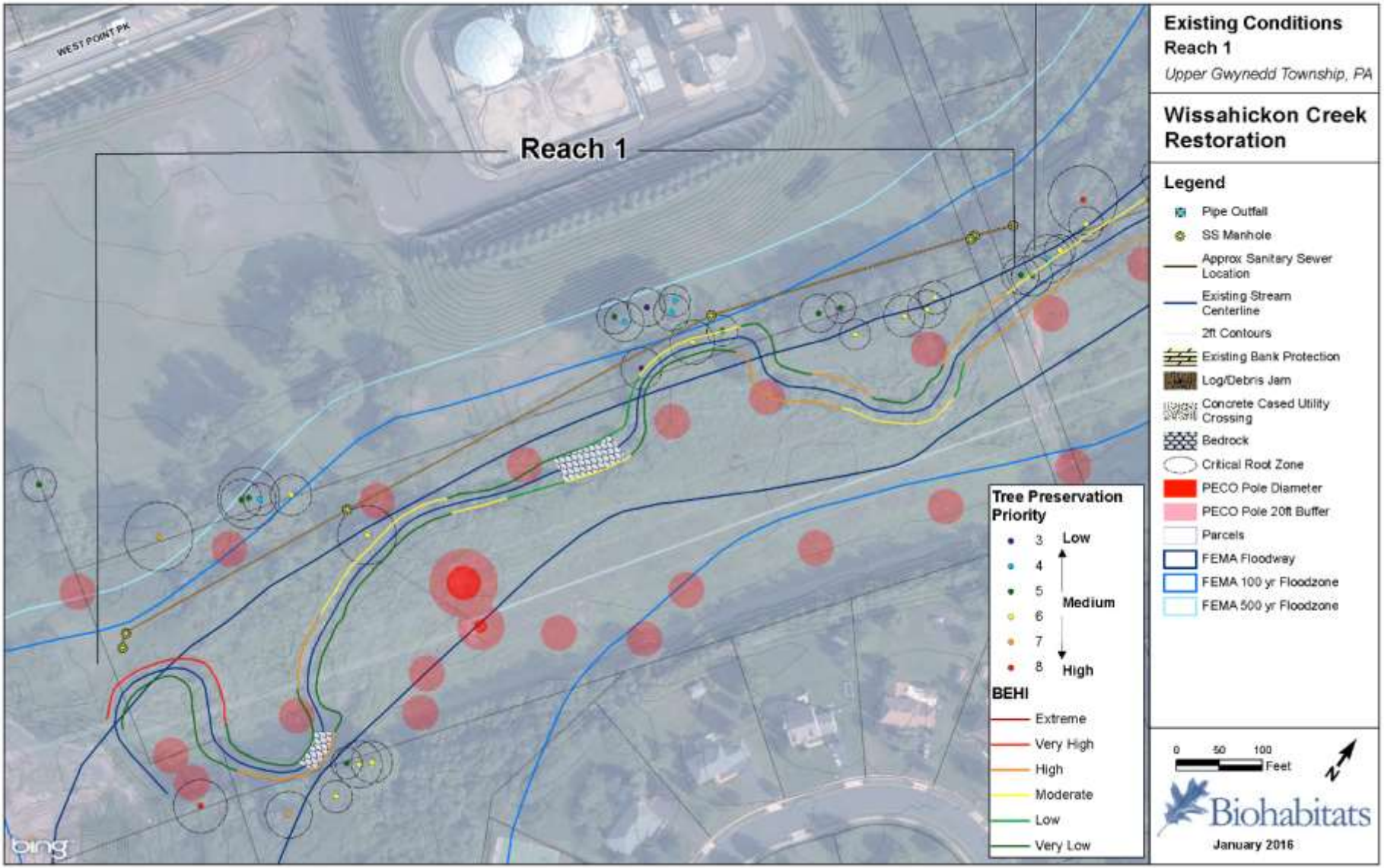
- Restore the connection with the stream and the floodplain
- Provide a stable stream dimension, pattern, and profile
- Reduce erosion and sedimentation
- Improve the hydraulic capacity of the floodplain

Pre-Project Stream Condition

Incision and Channel Widening due to Storm Flows=Floodplain disconnection, loss of floodplain functions (nutrient processing, energy dissipation, etc.)

~ Existing Infrastructure

~ Intermittent Flow



Existing Conditions
Reach 1
Upper Gwynedd Township, PA

Wissahickon Creek Restoration

Legend

- Pipe Outfall
- SS Manhole
- Approx Sanitary Sewer Location
- Existing Stream Centerline
- 2ft Contours
- Existing Bank Protection
- Log/Debris Jam
- Concrete Cased Utility Crossing
- Bedrock
- Critical Root Zone
- PECO Pole Diameter
- PECO Pole 20ft Buffer
- Parcels
- FEMA Floodway
- FEMA 100 yr Floodzone
- FEMA 500 yr Floodzone

0 50 100 Feet

N

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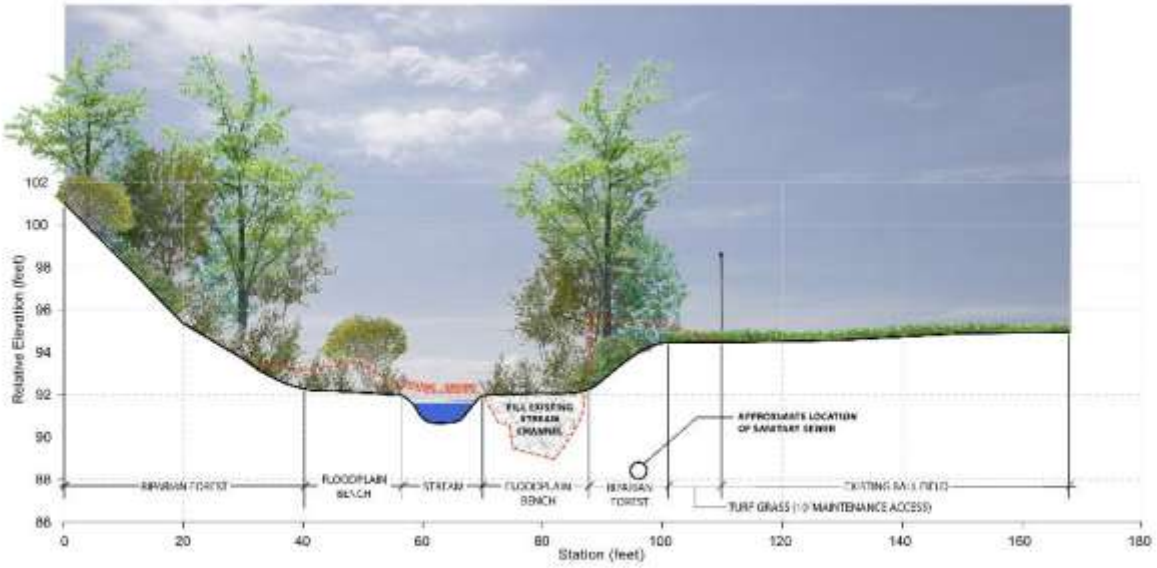
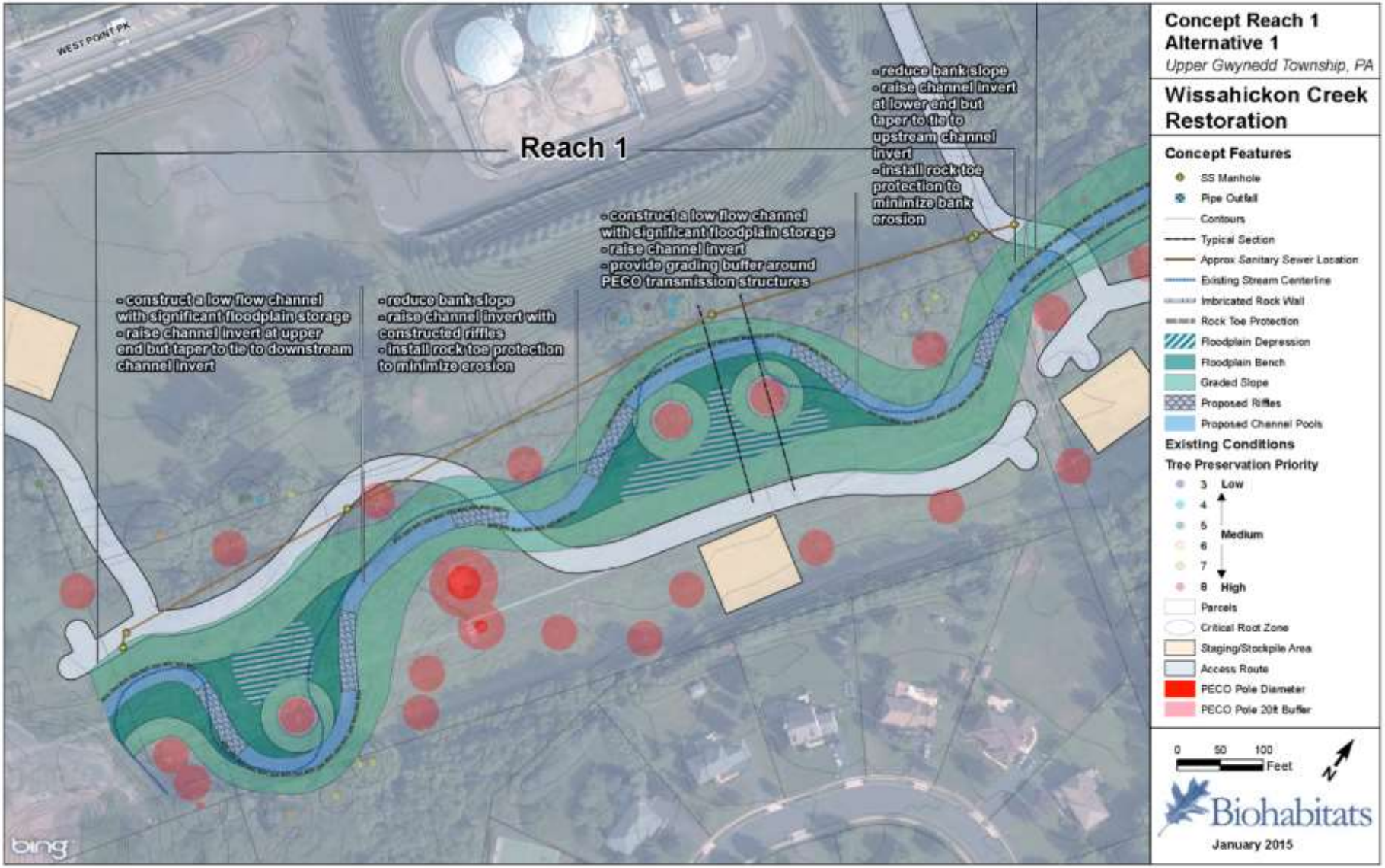
January 2016

Wissahickon Restoration Approach

- Floodplain benching and depression storage
- Moderate raises in channel invert
- Riffle grade control structures
- Improved channel alignment
- Reduction in bank slope
- Native riparian & wetland plantings




WEST POINT PK
Reach 1
- reduce bank slope
- raise channel invert at lower end but taper to tie to upstream channel invert
- install rock toe protection to minimize bank erosion
- construct a low flow channel with significant floodplain storage
- raise channel invert
- provide grading buffer around PECO transmission structures
- construct a low flow channel with significant floodplain storage
- raise channel invert at upper end but taper to tie to downstream channel invert
- reduce bank slope
- raise channel invert with constructed riffles
- install rock toe protection to minimize erosion
bing
Concept Reach 1
Alternative 1
Upper Gwynedd Township, PA
Wissahickon Creek Restoration
Concept Features
SS Manhole
Pipe Outfall
Contours
Typical Section
Approx Sanitary Sewer Location
Existing Stream Centerline
Imbricated Rock Wall
Rock Toe Protection
Floodplain Depression
Floodplain Bench
Graded Slope
Proposed Riffles
Proposed Channel Pools
Existing Conditions
Tree Preservation Priority
3 Low
4
5
Medium
6
7
8 High
Parcels
Critical Root Zone
Staging/Stockpile Area
Access Route
PECO Pole Diameter
PECO Pole 20ft Buffer
0 50 100
Feet
N
Biohabitats
January 2015

Project Specific Considerations

- Power Transmission Infrastructure & Utility ROW Requirement
- Water & Sewer Utilities
- Floodplains/Floodway!
- Construction Access
- Tree Preservation, Habitat Boxes, Fisheries Impacts

PECO

- Protect Infrastructure
- Infrastructure Access
- Plantings
- Clean Fill Requirements

2500-FM-BWM0008 Rev. 8/2010

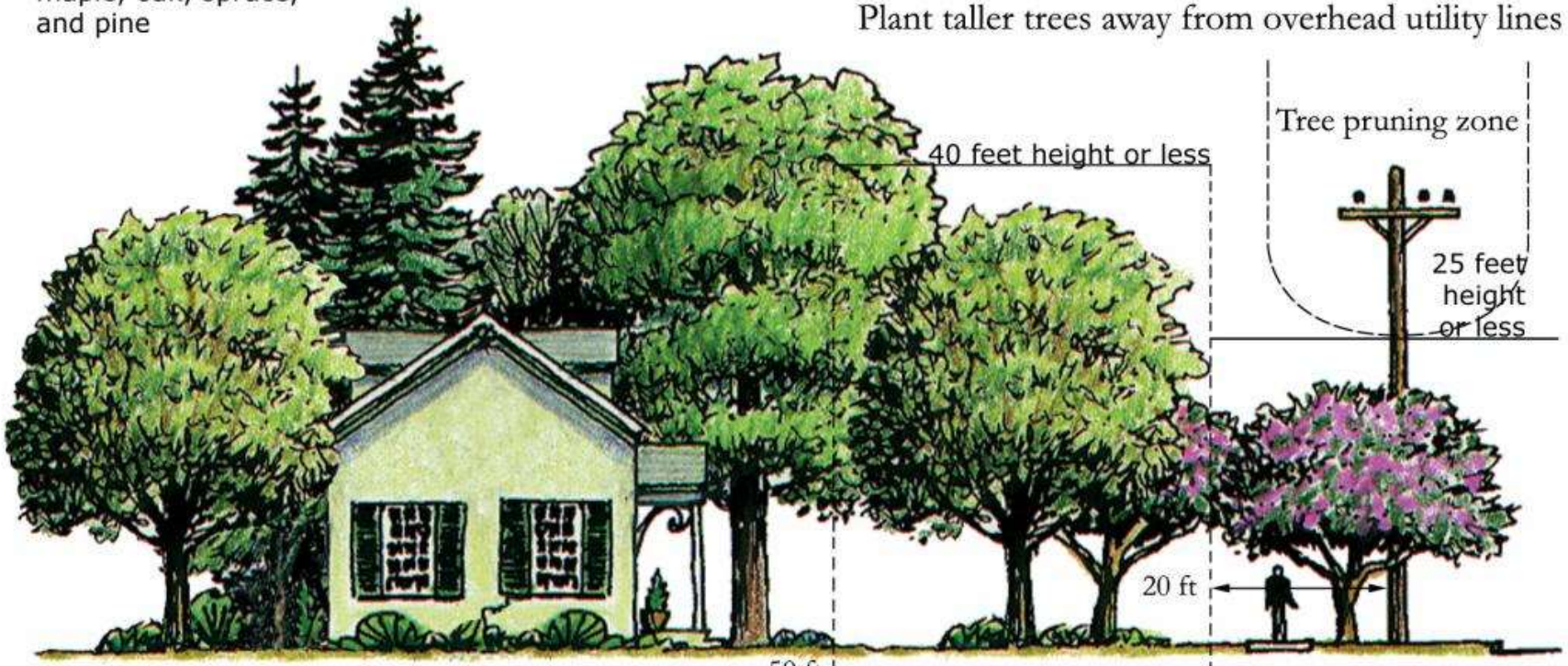
pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

FORM FP-001 - CERTIFICATION OF CLEAN FILL

Plant the right tree in the right place

Plant taller trees away from overhead utility lines

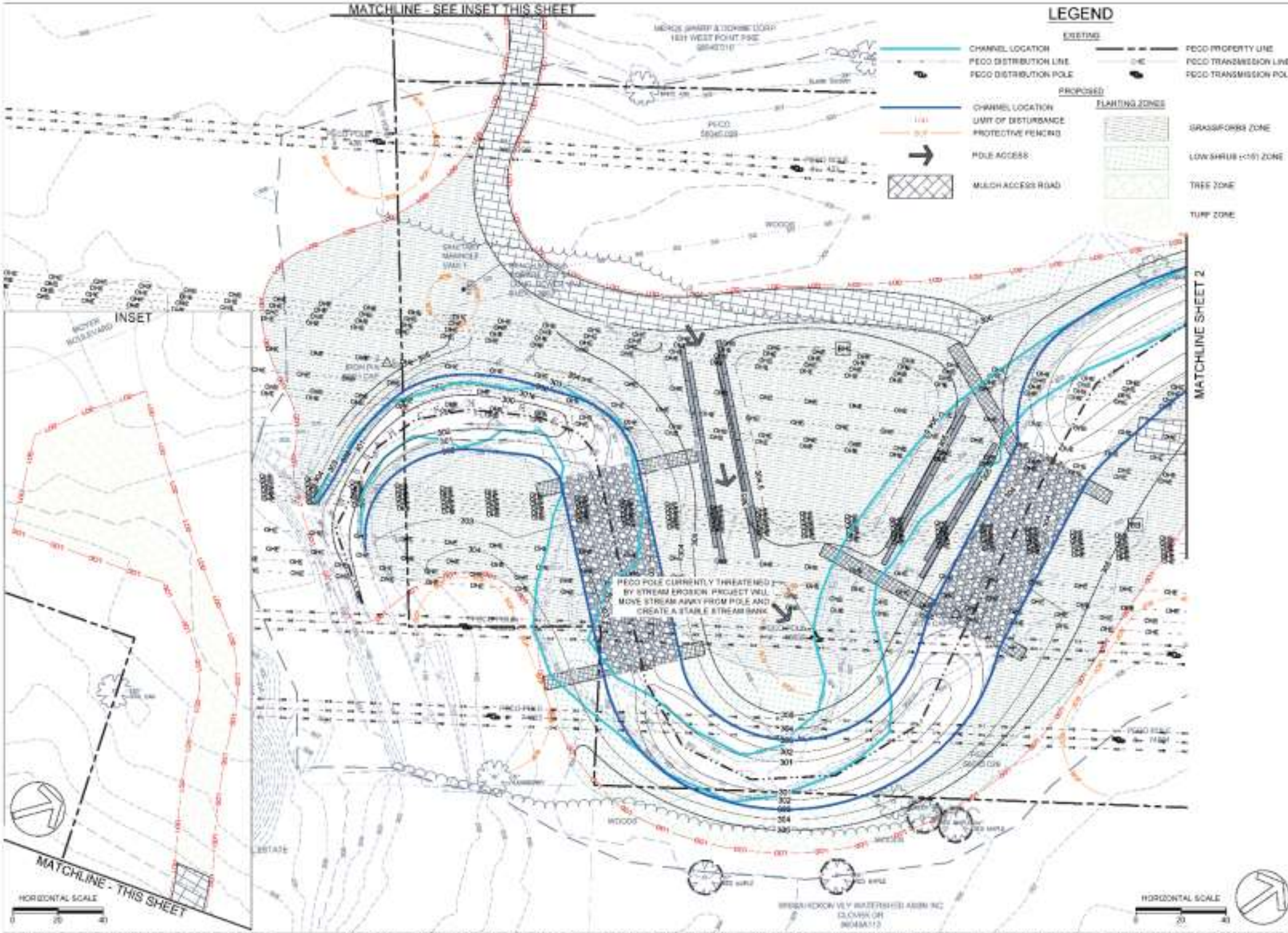


Tall trees, such as:
maple, oak, spruce, and pine

Medium trees, such as:
washington hawthorn and goldenraintree

Small trees, such as:
redbud, dogwood, and crabapple

Arbor Day Foundation™
arborday.org



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CLIENT

WISSAHICKON VALLEY
WATERSHED ASSOCIATION
12 MORRIS RD
AMBLER, PA 19002-5496
215-646-8866

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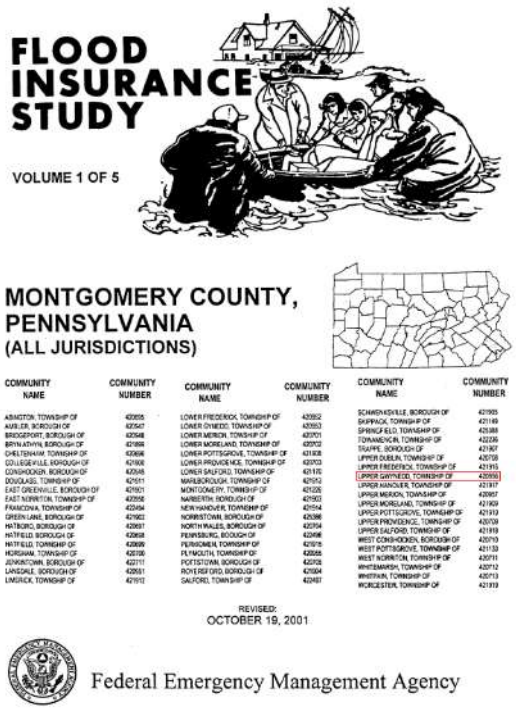
PECO INFRASTRUCTURE & PROTECTIVE MEASURES

PROPOSED CONDITIONS

Floodplain/Floodway!

- FEMA detailed study area with regulatory floodplains and floodways established
- No increase in flood elevations without revisions of flood maps
- Driver of restoration approach and especially floodplain excavation for this project
- Increase in channel invert paired with excavation in floodplain eliminates increases



FLOOD INSURANCE STUDY

VOLUME 1 OF 5

MONTGOMERY COUNTY, PENNSYLVANIA
(ALL JURISDICTIONS)

COMMUNITY NAME	COMMUNITY NUMBER	COMMUNITY NAME	COMMUNITY NUMBER	COMMUNITY NAME	COMMUNITY NUMBER
ABINGTON, TOWNSHIP OF	420355	LOWER FREDERICK, TOWNSHIP OF	420352	SCHWENKSVILLE, BOROUGH OF	421995
AMBLER, BOROUGH OF	420547	LOWER GWYNEDD, TOWNSHIP OF	420353	SKIPPACK, TOWNSHIP OF	421149
BRIDGEPORT, BOROUGH OF	420548	LOWER MERION, TOWNSHIP OF	420701	SPRINGFIELD, TOWNSHIP OF	420388
BRYN ATHYN, BOROUGH OF	421899	LOWER MORELAND, TOWNSHIP OF	420702	TOWAMENCIN, TOWNSHIP OF	422206
CHELTENHAM, TOWNSHIP OF	420696	LOWER POTTSGROVE, TOWNSHIP OF	421828	TRAPPE, BOROUGH OF	421907
COLLEGEVILLE, BOROUGH OF	421908	LOWER PROVIDENCE, TOWNSHIP OF	420703	UPPER DUBLIN, TOWNSHIP OF	420708
CONSHOHOCKEN, BOROUGH OF	420545	LOWER SALFORD, TOWNSHIP OF	421170	UPPER FREDERICK, TOWNSHIP OF	421910
DOUGLASS, TOWNSHIP OF	421911	MARLBOROUGH, TOWNSHIP OF	421953	UPPER GWYNEDD, TOWNSHIP OF	420956
EAST GREENVILLE, BOROUGH OF	421921	MONTGOMERY, TOWNSHIP OF	421226	UPPER HANOVER, TOWNSHIP OF	421917
EAST NORRITON, TOWNSHIP OF	420556	NARBERTH, BOROUGH OF	421562	UPPER MERION, TOWNSHIP OF	420957
FRANCONIA, TOWNSHIP OF	422454	NEW HANOVER, TOWNSHIP OF	421914	UPPER MORELAND, TOWNSHIP OF	421909
GREEN LANE, BOROUGH OF	421902	NORRISTOWN, BOROUGH OF	420386	UPPER POTTSGROVE, TOWNSHIP OF	421913
HATBORO, BOROUGH OF	420601	NORTH WALES, BOROUGH OF	420704	UPPER PROVIDENCE, TOWNSHIP OF	420709
HATFIELD, BOROUGH OF	420658	PENNSBURG, BOOUGH OF	420496	UPPER SALFORD, TOWNSHIP OF	421919
HATFIELD, TOWNSHIP OF	420659	PERKIOMEN, TOWNSHIP OF	421975	WEST CONSHOHOKEN, BOROUGH OF	420710
HORSHAM, TOWNSHIP OF	420106	PLYMOUTH, TOWNSHIP OF	420555	WEST POTTSGROVE, TOWNSHIP OF	421133
JENKINTOWN, BOROUGH OF	422711	POTTSTOWN, BOROUGH OF	420705	WEST NORRITON, TOWNSHIP OF	420711
LANSDALE, BOROUGH OF	420551	ROYERSFORD, BOROUGH OF	421004	WHITEMARSH, TOWNSHIP OF	420712
LIMERICK, TOWNSHIP OF	421912	SALFORD, TOWNSHIP OF	420497	WHITPAIN, TOWNSHIP OF	420713
				WORCESTER, TOWNSHIP OF	421919

REVISED:
OCTOBER 19, 2001

Federal Emergency Management Agency

Existing Conditions

Montgomery County
Upper Gwynedd Township, PA

Wissahickon Creek Restoration

Legend

- Streams
- Contours
- NWI Wetlands
- Floodway
- 100 yr Floodzone
- 500 yr Floodzone

0 300 Feet

N

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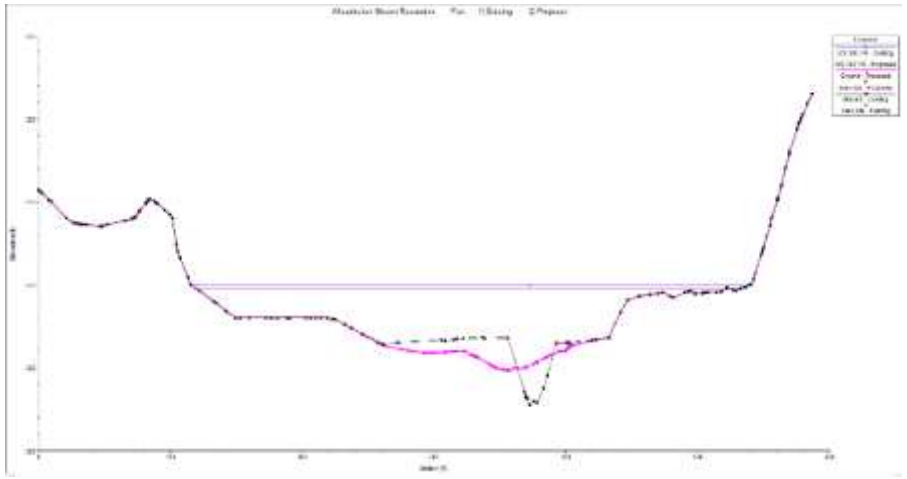
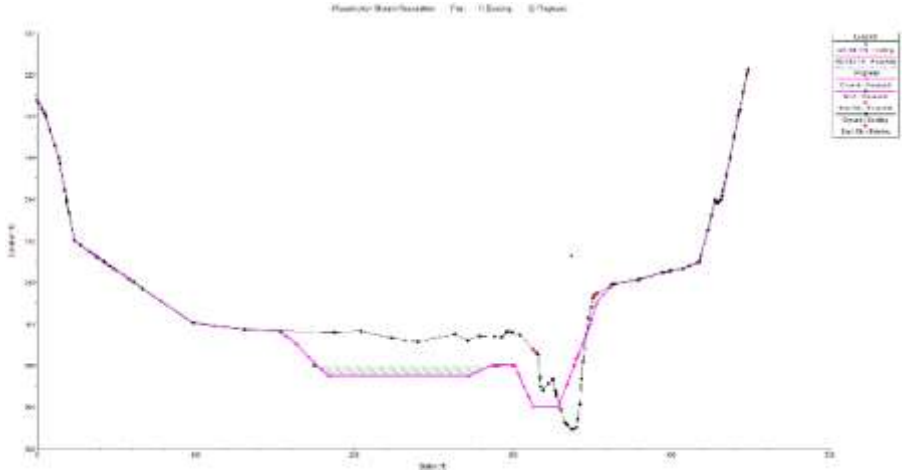
October 2015

Floodplain Modeling





Construction Completed Summer/Fall 2020

- Design/Build Approach
- E&S Approach – worked in dry channel or with pump around
- Major flood event during construction (Tropical Storm Isaias)
- Another major flood event less than 1-yr post construction

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DEERE

Restoration After Construction

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Restoration After Construction

Restoration After Construction

Award Winning Project

Questions?