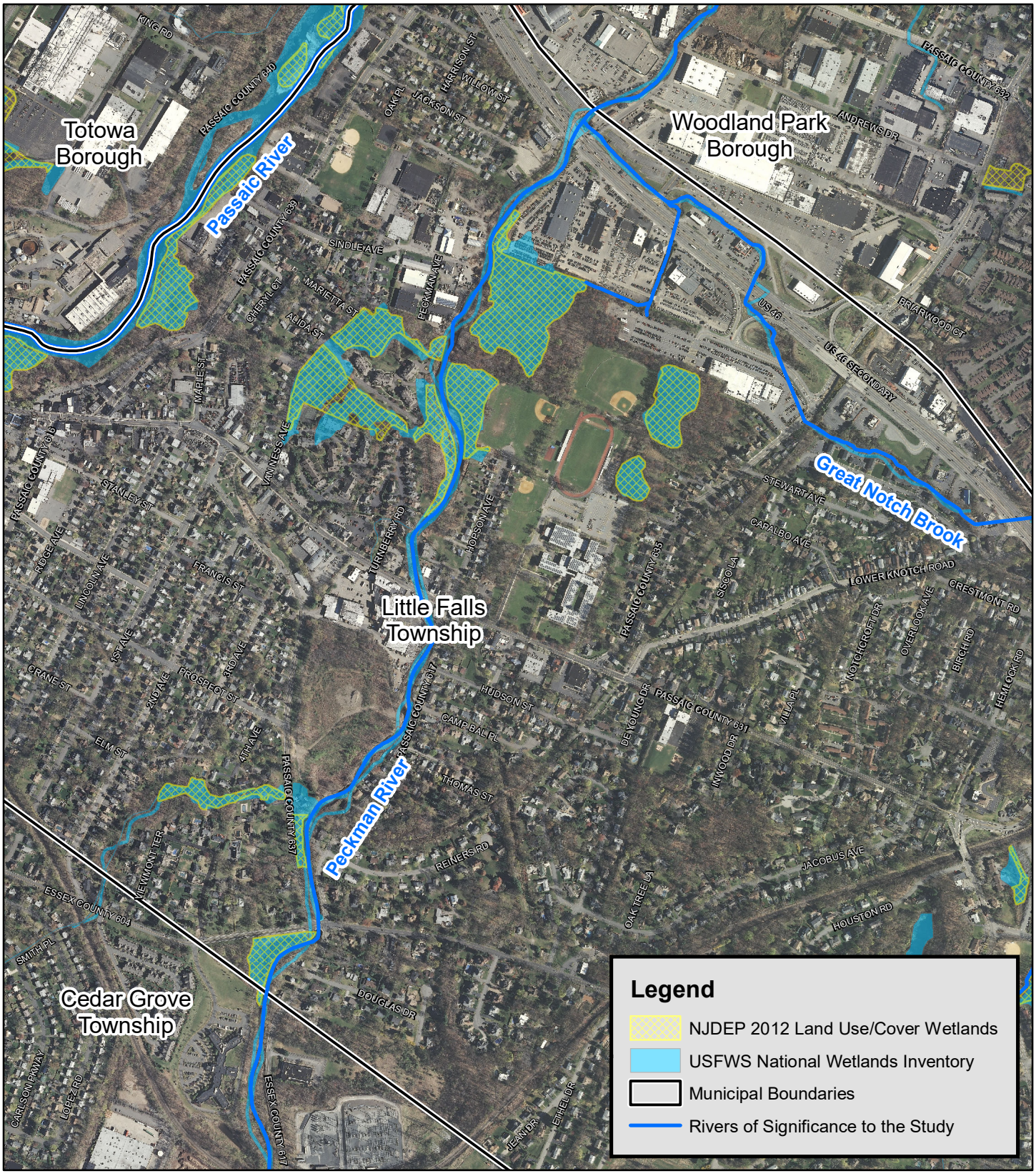
Peckman River Basin, New Jersey
Flood Risk Management Feasibility Study

Appendix A.1
Environmental Resources

Peckman River Basin, New Jersey
Flood Risk Management Feasibility Study

Figure 1
Water Resources Within Project Area



Peckman River Basin Flood Risk Management Feasibility Study
Water Resources within Project Area

US Army Corps of Engineers
New York District

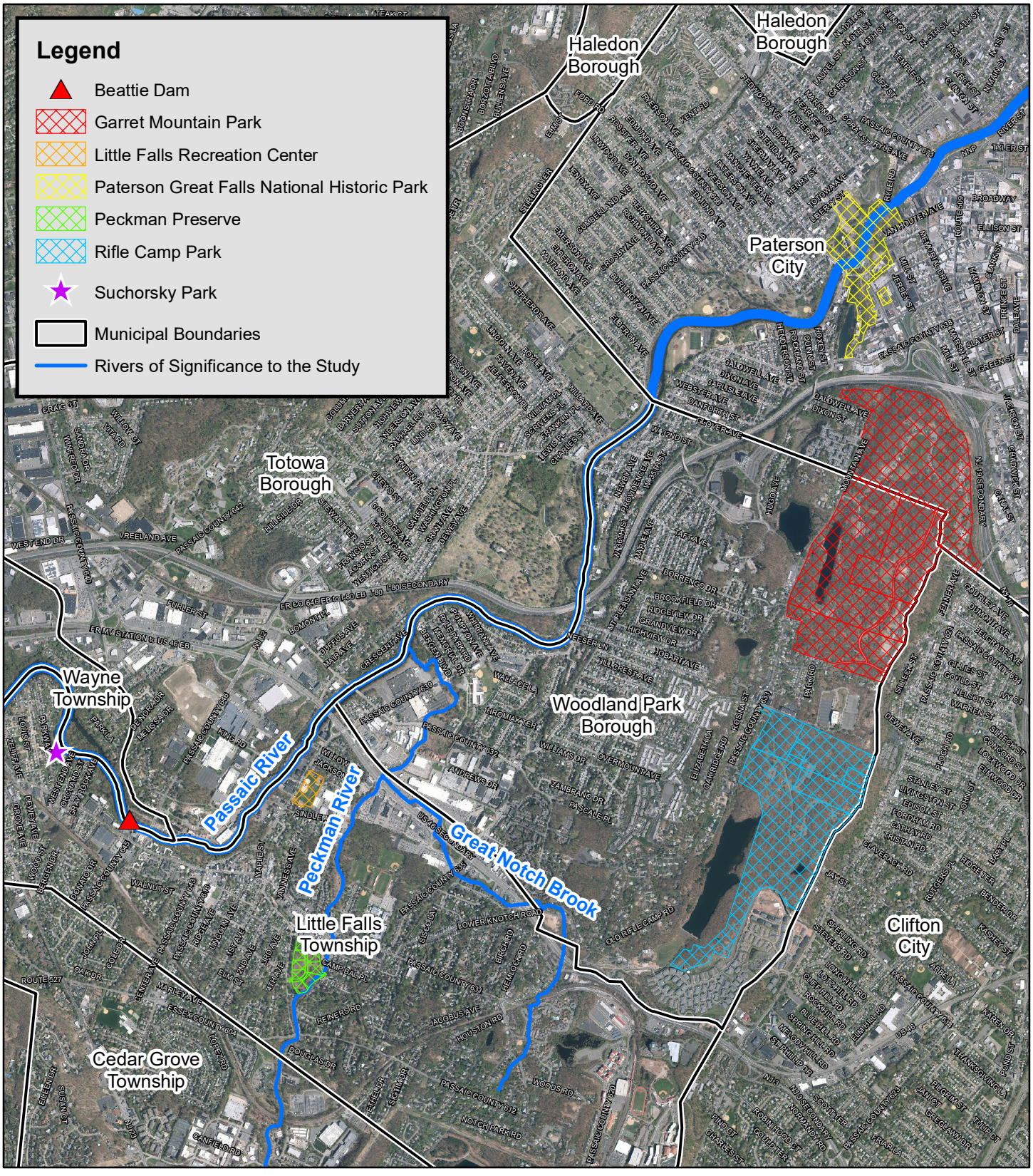
0 1,000 2,000 3,000 Feet

N W E S

New Jersey
Area of Detail

Peckman River Basin, New Jersey
Flood Risk Management Feasibility Study

Figure 2
Pertinent Environmental Resources



Peckman River Basin Flood Risk Management Feasibility Study
Pertinent Environmental Resources

US Army Corps of Engineers
New York District

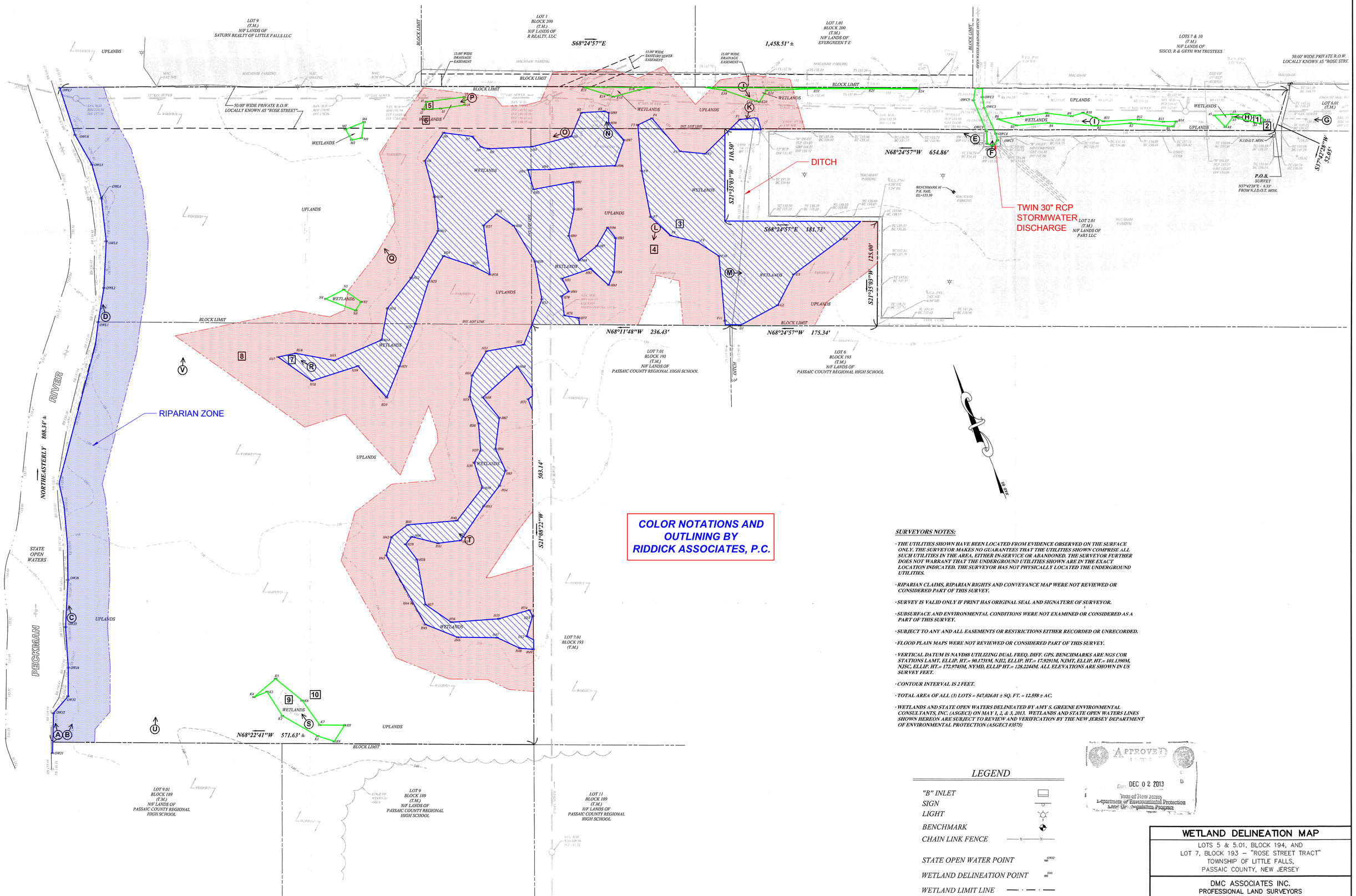
0 1 2 Miles

N W E S

New Jersey
Area of Detail

Peckman River Basin, New Jersey
Flood Risk Management Feasibility Study

Figure 3
Wetland Delineation Conducted by Town of Little Falls



COLOR NOTATIONS AND OUTLINING BY RIDDICK ASSOCIATES, P.C.

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)

1 inch = 40 ft.

SURVEYORS NOTES:

- *THE UTILITIES SHOWN HAVE BEEN LOCATED FROM EVIDENCE OBSERVED ON THE SURFACE ONLY. THE SURVEYOR MAKES NO GUARANTEES THAT THE UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN-SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.*
- *RIPARIAN CLAIMS, RIPARIAN RIGHTS AND CONVEYANCE MAP WERE NOT REVIEWED OR CONSIDERED PART OF THIS SURVEY.*
- *SURVEY IS VALID ONLY IF PRINT HAS ORIGINAL SEAL AND SIGNATURE OF SURVEYOR.*
- *SUBSURFACE AND ENVIRONMENTAL CONDITIONS WERE NOT EXAMINED OR CONSIDERED AS A PART OF THIS SURVEY.*
- *SUBJECT TO ANY AND ALL EASEMENTS OR RESTRICTIONS EITHER RECORDED OR UNRECORDED.*
- *FLOOD PLAIN MAPS WERE NOT REVIEWED OR CONSIDERED PART OF THIS SURVEY.*
- *VERTICAL DATUM IS NAVD88 UTILIZING DUAL FREQ. DIFF. GPS. BENCHMARKS ARE NGS COR STATIONS LAMT, ELLIP. HT.= 90.1731M, NJI2, ELLIP. HT.= 17.9291M, NIMT, ELLIP. HT.= 101.1390M, NJSC, ELLIP. HT.= 172.9745M, NYMD, ELLIP HT.= 128.2244M. ALL ELEVATIONS ARE SHOWN IN US SURVEY FEET.*
- *CONTOUR INTERVAL IS 2 FEET.*
- *TOTAL AREA OF ALL (3) LOTS = 547,026.01 ± SQ. FT. = 12.558 ± AC.*
- *WETLANDS AND STATE OPEN WATERS DELINEATED BY AMY S. GREENE ENVIRONMENTAL CONSULTANTS, INC. (ASGECI) ON MAY 1, 2, & 3, 2013. WETLANDS AND STATE OPEN WATERS LINES SHOWN HEREON ARE SUBJECT TO REVIEW AND VERIFICATION BY THE NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION (ASGECI #3575)*

LEGEND

- "B" INLET
- SIGN
- LIGHT
- BENCHMARK
- CHAIN LINK FENCE
- STATE OPEN WATER POINT (OW22)
- WETLAND DELINEATION POINT (H6)
- WETLAND LIMIT LINE
- SAMPLING STATION LOCATION (1)
- PHOTO LOCATION & DIRECTION (U)

APPROVED
Date: DEC 02 2013
State of New Jersey
Department of Environmental Protection
Land Use Regulation Program

WETLAND DELINEATION MAP

LOTS 5 & 5.01, BLOCK 194, AND
LOT 7, BLOCK 193 – "ROSE STREET TRACT"
TOWNSHIP OF LITTLE FALLS,
PASSAIC COUNTY, NEW JERSEY

DMC ASSOCIATES INC.
PROFESSIONAL LAND SURVEYORS
211 MAIN STREET, BUTLER N.J. 07405
973-838-9787 FAX 973-838-4389 INFO@DMCSURVEYING.COM

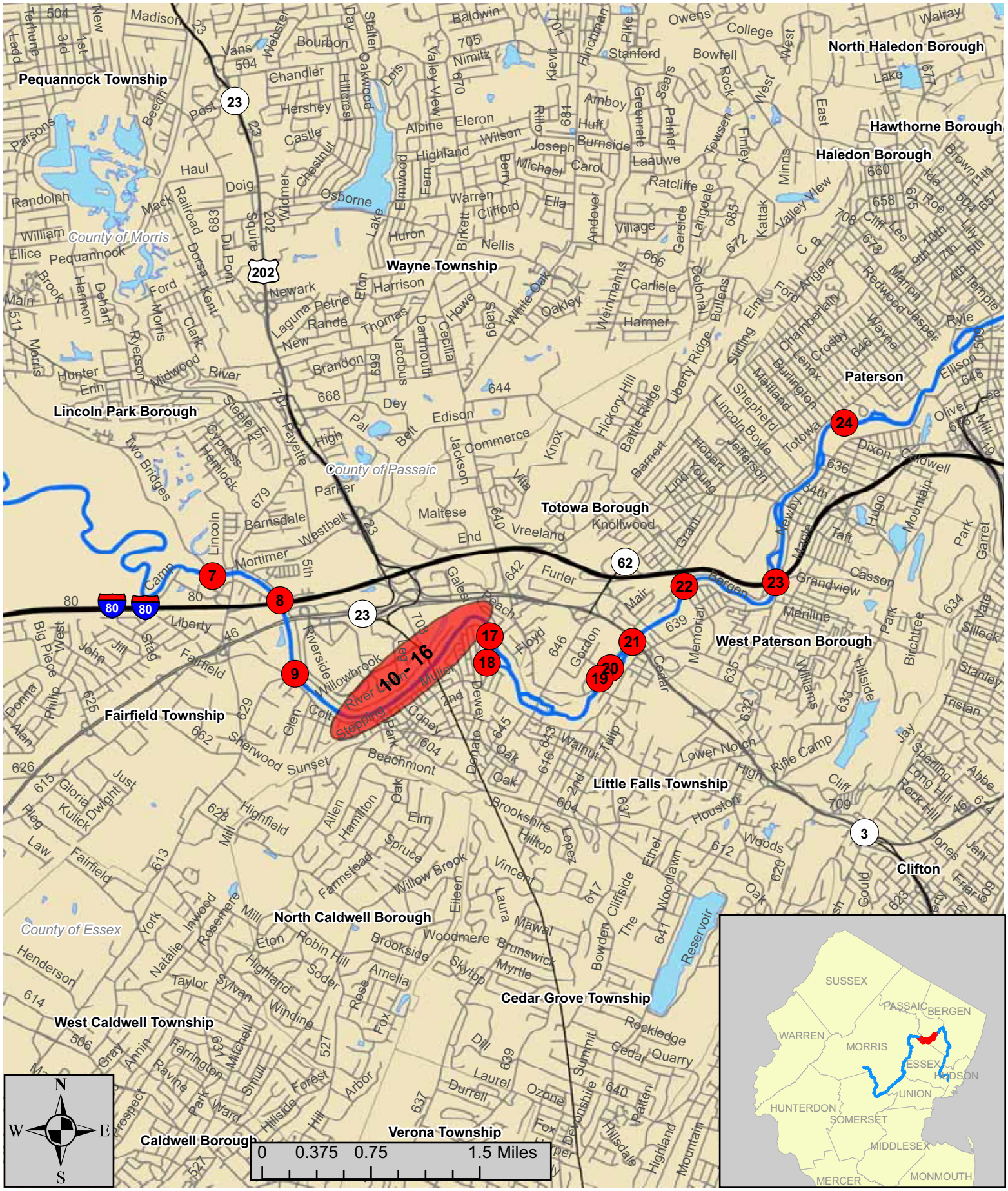
09 2573
ROBERT L. CICOL, N.J.P.L.S. NO. 24GS04026100
CERTIFICATE OF AUTHORIZATION NO. 24GA27919000

DRAWN	CHECKED	SCALE	DATE	SHEET No.	PROJECT No.
JSL/MW	R.L.C./D.R.A.	1"=40'	06-05-2013	1 OF 1	1304038

Peckman River Basin, New Jersey
Flood Risk Management Feasibility Study

Figure 4
New Jersey Department of Fish & Wildlife
Northern Pike Stocking Locations

Passaic River
Northern Pike Stocking Locations



Peckman River Basin, New Jersey
Flood Risk Management Feasibility Study

Figure 5
Recreational Areas within the Project Area

Peckman River Basin Flood Risk Management Feasibility Study
Recreational Areas

US Army Corps of Engineers
New York District

0 1,000 2,000 3,000 Feet

N W E S

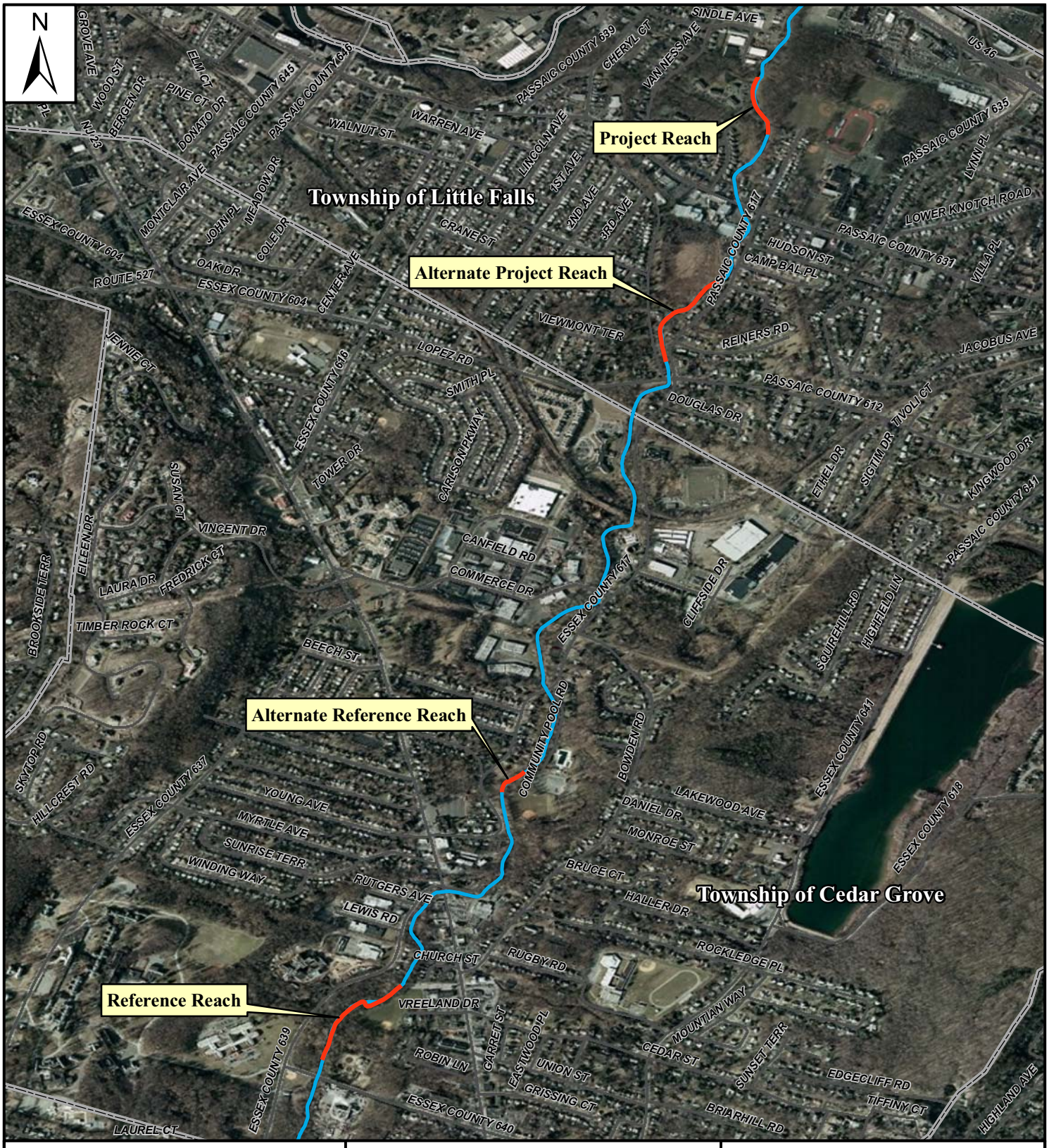
New Jersey
Area of Detail

Peckman River Basin, New Jersey
Flood Risk Management Feasibility Study

A.2 Locations of 2010 Surveys Conducted by the District

Peckman River Basin, New Jersey
Flood Risk Management Feasibility Study

Figure 1
2010 Stream Assessment Locations



Project Location

Source: ESRI ArcGIS Online and data partners, including imagery from agencies supplied via the Content Sharing Program; accessed August 2010 at http://www.arcgis.com. Assement Locations, Tetra Tech August 2010.

0 850 1,700 3,400 Feet

Legend

- Assessment Locations
- Peckman River
- County Roads
- Municipal Boundary

Figure 2. Assessment Locations and County Roadways for Peckman River Flood Risk Management Project, Little Falls, New Jersey.

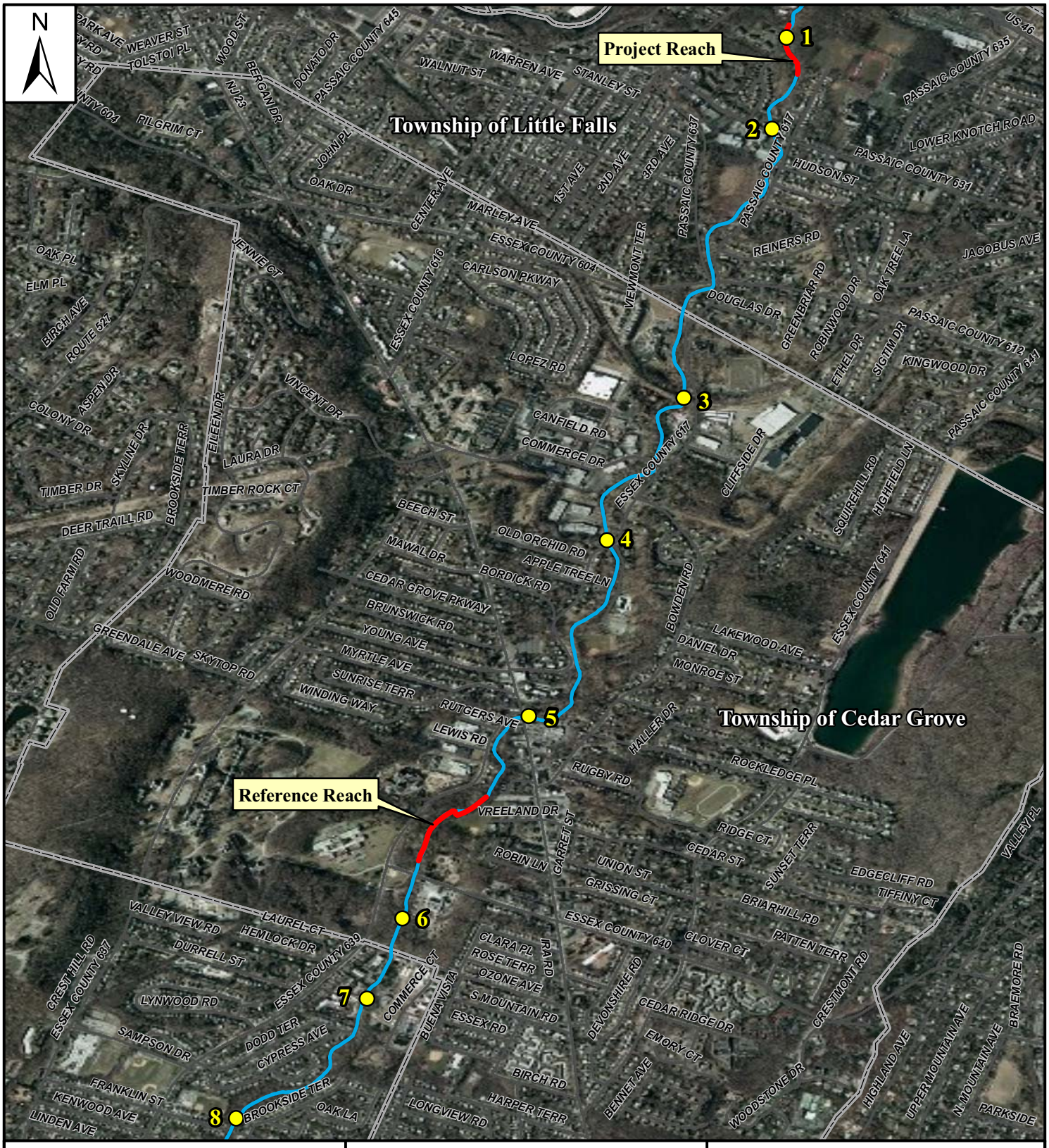
Prepared By: US Army Corps of Engineers® NY District

Date: 09/10

P:GIS/Projects/CNY100/mxd/Report/Figure2.mxd

Peckman River Basin, New Jersey
Flood Risk Management Feasibility Study

Figure 2
2010 Fish Survey Locations



Project Location

Source: ESRI ArcGIS Online and data partners, including imagery from agencies supplied via the Content Sharing Program; accessed August 2010 at http://www.arcgis.com. Assement Locations, Tetra Tech August 2010.

0 1,000 2,000 4,000 Feet

Legend

- 1999 NJDEP Survey Sites
- Assessment Locations
- Peckman River
- County Roads
- Municipal Boundary

Figure 2. Survey Locations for the Peckman River Flood Risk Management Project, Little Falls, New Jersey and the 1999 NJDEP Survey Sites.

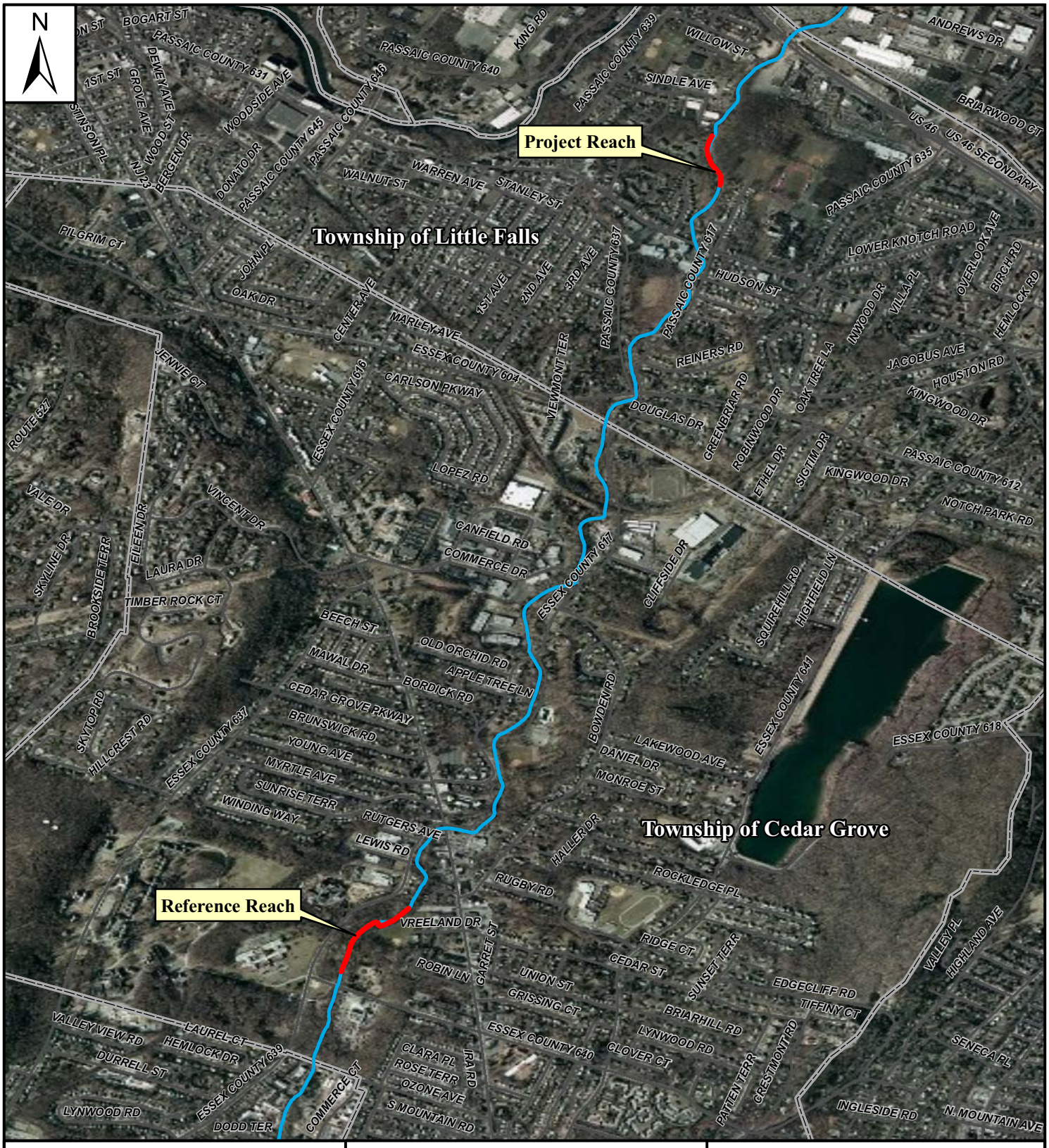
Prepared By: US Army Corps of Engineers® NY District

Date: 09/10

P:GIS/Projects/CNY100/mxd/Report/Figure2.mxd

Peckman River Basin, New Jersey
Flood Risk Management Feasibility Study

Figures 3-5
2010 Aquatic Macroinvertebrate Survey Locations



Project Location

Source: ESRI ArcGIS Online and data partners, including imagery from agencies supplied via the Content Sharing Program; accessed August 2010 at http://www.arcgis.com. Assement Locations, Tetra Tech August 2010.

0 1,000 2,000 4,000 Feet

Legend

- Assessment Locations
- Peckman River
- County Roads
- Municipal Boundary

Figure 2. Survey Locations for the Peckman River Flood Risk Management Project, Little Falls, New Jersey.

Prepared By: US Army Corps of Engineers® NY District

Date: 09/10

P:GIS/Projects/CNY100/mxd/Report/Figure2.mxd

Project Location

Source: ESRI ArcGIS Online and data partners, including imagery from agencies supplied via the Content Sharing Program; accessed August 2010 at http://www.arcgis.com. Assement Locations, Tetra Tech August 2010.

0 100 200

Feet

Legend

- Assessment Location
- Municipal Boundary

Figure 3a. Project Reach for Peckman River Flood Risk Management Project, Little Falls, New Jersey.

Prepared By: US Army Corps of Engineers® NY District

Date: 09/10

P:GIS/Projects/CNY100/mxd/Report/Figure3a.mxd

Project Location

Source: ESRI ArcGIS Online and data partners, including imagery from agencies supplied via the Content Sharing Program; accessed August 2010 at http://www.arcgis.com. Assement Locations, Tetra Tech August 2010.

0 100 200 Feet

Legend

- Assessment Location
- Municipal Boundary

Figure 3b. Reference Reach for Peckman River Flood Risk Management Project, Little Falls, New Jersey.

Prepared By: US Army Corps of Engineers® NY District

Date: 09/10

P:GIS/Projects/CNY100/mxd/Report/Figure4d.mxd

Peckman River Basin, New Jersey
Flood Risk Management Feasibility Study

APPENDIX A.3
Section 404 (b)(1) Evaluation

Peckman River Basin Flood Risk Management Feasibility Study,

Passaic County, New Jersey

Section 404 (b)(1) Evaluation

I. Introduction

This 404(b)(1) summarizes the evaluation of effects the proposed action will have on water resources pursuant to the Clean Water Act Section 404(b)(1) guidelines. The proposed action involves the implementation of flood risk management measures in the Town of Little Falls and the Borough of Woodland Park, Passaic County. Specific project elements include: a) treatment of approximately 118 structures located within the 10-yr floodplain with nonstructural measures, to include the installation of ringwalls; b) installation of a diversion culvert from the Peckman River to the Passaic River, to include the installation of a weir within the Peckman River to divert flow into the diversion culvert; c) construction of floodwalls and a levee along the Peckman River; d) construction of floodwalls and a levee along Great Notch Brook. This work also includes the installation of a precast concrete culvert in the portion of the Great Notch Brook that flows under Browertown Road.

Effects of nonstructural measures are not included within this 404(b)(1) Evaluation as none will be situated within wetlands or open water. For a full description of the project, existing conditions and environmental impacts, refer to the draft Feasibility Report/Environmental Assessment (draft Feasibility Report/EA).

PROJECT DESCRIPTION

a. Location: Town of Little Falls and Borough of Woodland Park Passaic County, New Jersey.

b. General Description: Elements of the project include: a) construction of floodwalls along approximately 800 linear ft of both banks of the Peckman River, and a levee along the right bank of the Peckman River; b) installation of a weir in the Peckman River that will divert flood water into a diversion culvert that will discharge into the Passaic River. The diversion culvert will discharge into the Passaic River approximately 0.60 miles upstream of the natural confluence of the Peckman and Passaic Rivers; c) approximately 800 ft of channel modification within the Peckman River in the form of scour protection. The scour protection will consist of articulated concrete block immediately upstream of the weir and rip rap downstream of the weir; d) armoring the right bank and a portion of the riverbed of the Passaic River at the discharge location of the diversion culvert; e) approximately 3,000 ft of floodwalls and a 350 ft levee along the Great Notch Brook; and d) installation of an additional concrete culvert under Browertown Rd within the Great Notch Brook near the ShopRite to increase the flow capacity of the stream channel during flood events.

   The project may also potentially include compensatory wetland, riparian and open water mitigation as a result of the implementation of the Peckman River channel improvements and the construction of the levee along the Peckman River and the riprap stilling basin along the Passaic River. Compensatory wetland mitigation may involve the creation, restoration and/or enhancement of wetlands within the Peckman River Watershed. Open water mitigation may involve the restoration of streambanks with native vegetation for stabilization purposes and to provide aquatic and riparian habitat.

c. Authority and Purpose: The study was authorized by the U.S. House of Representatives Resolution Docket 2644, dated June 21, 2000. The purpose of the study is to provide flood risk management to communities within the Peckman River watershed.

d. General Description of Fill Material:

1) Characteristics of Material: Material to be used to construct the project includes the following: a) Clay fill to create an impervious inner core and embankment fill to construct the levees along the Peckman River and Great Notch Brook; b) Concrete to construct the weir and the culvert under Browertown Road, and the floodwalls along Great Notch Brook; and c). Rip rap and articulated concrete block to armor approximately 800 linear feet of the Peckman River in the location of the weir. Riprap will also be used to armor the bank of the Passaic River where the diversion culvert will discharge.

2) Quantity of Material: Approximately 944 cubic yards of a combination of embankment and fill material will be deposited in the forested wetlands to construct the levee along the Peckman River. 7,287 cy of rip rap; 28 cy of 6" bedding material, Approximately 200 linear feet comprising of floodwall that may encroach into Great Notch Brook, 35x15 precast concrete located in the Great Notch Brook, and a 100 ft x 11 ft concrete culvert in the Peckman River.

3) Source of Material: Fill that meets the construction specifications for the Peckman River and Great Notch Brook levees and rip rap to be used within the Peckman River and Passaic River will be obtained from a state approved and permitted commercial source. The concrete weir to be placed in the Peckman River and the precast concrete culvert proposed for the Great Notch Brook will be obtained from a reputable and licensed manufacturer.

e. Description of the Proposed Discharge Sites

1) Location: The discharge site is located within the following areas: a) Approximately 800 linear feet totaling 0.64 acres of the Peckman River a freshwater river and tributary to the Passaic River; b) 200 linear feet totaling 0.02 acres of the Great Notch Brook, a freshwater stream, c) 100 linear feet of the Passaic River, a large freshwater river; and d) a 12 acre tract of land consisting of a combination of upland and wetland forest.

2) Size: The floodwalls along the Peckman River will extend along approximately 800 linear ft of both banks and will range from 5-10 ft in height. The levee along the Peckman River is approximately 800 feet long, with an average height of 6 ft, a top width of 10ft, and a base width of 110 ft. The riprap apron proposed in the Passaic River the discharge location of the diversion culvert is approximately 100 ft long by 50 ft wide. The concrete weir proposed in the Peckman River to divert flood flows into the diversion culvert is 100 ft long and 11 ft high. The floodwalls along the Great Notch Brook will extend along 1,000 ft of both banks and will range from 5-10 ft in height. The levee along the Great Notch Brook is approximately 300 ft long with an average height of 5 ft, a top width of 10 ft and a base width of 100 ft. The additional culvert to be placed in the Great Notch Brook under Browertown Road is 35 ft long by 15 ft wide.

3) Type of Site: The proposed action is located within freshwater rivernine systems in an urbanized setting comprised of residential, business and industrial land uses.

4) Types of Habitat: The floodwalls along the Peckman are located in disturbed riparian habitat. The proposed levee along the Peckman River is located in a relatively undisturbed forested upland and wetland area comprised of multiple tracts that are both municipally and privately owned. The concrete weir associated with the diversion culvert is located in the Peckman River, a second order freshwater stream. The Passaic River is a third order freshwater river. The Great Notch Brook is a small first order freshwater stream. The Peckman and Passaic Rivers and the Great Notch Brook are designated as FW2-NT(non-trout) by the New Jersey Department of Environmental Protection.

5) Time and Duration of Disposal: Construction is scheduled to start The total construction duration is estimated at approximately 2.5 years. The following are timeframes for specific project features: a) 1.8 years for the levee along the Peckman River; b) 7 months to construct the channel modifications within the Peckman River; c) 1.8 yrs for the Great Notch floodwalls and levee; and d) 4 months to install the wingwall within the Great Notch Brook.

   All in-water activities will be restricted between 1 May and 31 July to comply with the NJDEP fish spawning window.

f. Description of Disposal Method: Land based construction equipment will be used to construct the project. The project will also be sequenced to minimize in water work to the extent possible.

II. FACTUAL DETERMINATION

a. Physical Substrate Determinations

1) Substrate Evaluation, Sediment Type and Slope: The substrate of the Peckman River within the area of the proposed action is predominantly comprised of cobble and gravel interspersed with riprap/boulder placed for bank and toe of slope stabilization purposes. The slope of the river is moderately steep. Streambanks in this location range from approximately 1.5V:1H to 2.5:1H. The substrate of the Great Notch Brook is predominantly comprised of silt interspersed with gravel and cobble. Slope of the Great Notch Brook is moderately steep. Streambank slopes in the project area range from approximately 1.5V:1H. The substrate of the Passaic River consists predominantly of cobble/gravel. Streambanks slope are moderately steep at an approximately angle of 1.5V:1H.

   The substrate of the Passaic River consists of cobble and gravel. Streambanks in the location of the proposed diversion culvert discharge location are steep.

2) Dredged/Fill Material Movement: The excavation and placement of fill in the form of soil, riprap and articulated concrete block will result in the impact of approximately 800 linear feet of the Peckman River. The levee along the Peckman River will result in the excavation and placement of fill in approximately 0.50 to 4 acres of wetlands. Due to space constraints, approximately 200 linear ft of the Great Notch Brook may experience fill in the form of concrete as result of construction of the proposed levees. A 35ft x 15 ft culvert will also be placed in the Great Notch Brook under Browertown Rd. The installation of the stilling basin will involve the placement of riprap to 100 linear ft of the Passaic River.

3) Physical Effects on Stream Bottom: A total of approximately 800 ft of the Peckman River will be modified through channel improvements related to the installation of the diversion culvert weir. Approximately 100 ft of the Peckman River will be converted to concrete as a result of the installation of the concrete weir itself. Another approximate 300 ft will be modified through the installation of the articulated concrete block matting. The remaining Approximately 400 ft of the Peckman River will be modified through the installation of riprap. In total, up to approximately 0.64 acres of open water within the Peckman River will be impacted. Approximately 100 ft for a total of 0.16 acres, of substrate of the Passaic River will be modified as a result of the installation of rip rap at the discharge location of the diversion culvert. Due to space constraints, 200 linear ft, for a total of 0.02 acres, of stream bottom of the Great Notch Brook may be filled in as a result of constructing the proposed floodwalls. In addition, 35 ft, for a total of 0.01 acres of the

Great Notch Brook may be converted to concrete resulting from the installation of an additional concrete culvert under Browertown Road.

4) Other Effects: N/A

5) Actions Taken to Minimize Impacts: Measures to be implemented to minimize adverse impacts to substrate include: a) implementation of erosion and sediment control best management practices; b) on-site restoration of temporary work spaces; c) installation of two ft high by six ft wide orifice within the weir to maintain base flows within the Peckman River; d) Compensatory mitigation through either the purchase of mitigation credits from a New Jersey State approved mitigation bank and/or stream restoration actions such as streambank stabilization with native vegetation.

b. Water Circulation, Fluctuation and Salinity Determinations

1) Water, Consider Effects on:

(a) Salinity: No effect

(b) Water Chemistry: There may be minor changes to water chemistry as a result of suspended sediment during construction. Long term changes to water chemistry is not expected.

(c) Clarity: Water clarity within the Peckman River may be slightly to moderately impacted during construction of the diversion culvert weir and channel modifications. Water clarity within Great Notch Brook may also be slightly to moderately impacted during construction of the floodwalls. However, no long-term effect is anticipated. Due to the size of the Passaic River when compared to the area of disturbance, no impacts to water clarity are anticipated.

(d) Color: Minor impacts associated with turbidity may affect water color during construction. Erosion and sediment control best management practices including the installation of turbidity barriers implemented during construction to minimize suspension of sediment that could cause discoloration.

(e) Odor: Excavation and dewatering of excavated sediment from the stream and wetland areas to construct the levee may emit a foul odor as it dries out. This is expected to be temporary. No long term effects are anticipated.

(f) Taste: The Passaic River is used as water supply for the region. However, the water is withdrawn approximately 0.60 miles upstream from the discharge point of the proposed diversion culvert. Therefore, the proposed action will not an adverse impact on taste. Neither the Peckman River nor the Great Notch Brook are used as water supply so this policy does not apply.

(g) Dissolved Gas Levels: Dissolved oxygen levels may be reduced to some degree during construction, but this will be a temporary effect. The installation of erosion and sediment controls will reduce sedimentation and pollutant runoff which can have detrimental impacts to dissolved oxygen levels.

(h) Nutrients: Nutrient load to the Peckman River may increase during construction as a result of resuspension of sediments during construction of the weir and channel modifications. Erosion and sediment control best management practices will be implemented during construction to minimize the suspension of nutrient laden sediment during construction. Due to the size of the Passaic River in comparison to the size of the area of the disturbance of the proposed action, a significant increase in nutrient loading is not expected. This is also the case during storm events as the volume of water being discharged into the Passaic River is the same as existing conditions.

(i) Eutrophication: Eutrophication is not expected to occur during construction due the implementation of erosion and sediment control best management practices.

(j) Others as Appropriate: No other adverse impacts are anticipated from the project.

2) Current Patterns and Circulation:

(a) Current Patterns and Flow: The proposed diversion culvert will redirect flow from the Peckman River to the Passaic River during flood events. An orifice in the weir will allow normal river current patterns or flow during typical flow conditions. There will be no significant changes to the current patters and flow to the Passaic River as a result of the implementation the diversion culvert. The floodwalls along the Great Notch Brook will prevent flooding to the surrounding area during storm events, but will not impact normal flow conditions.

(b) Velocity: Normal velocities are not expected to appreciably increase or decrease as a result of the proposed action. During flood events, velocities within the Peckman will increase due to the constraint posed by the floodwalls. The installation of articulate concrete block and riprap will prevent scouring and erosion of the Peckman riverbanks during these flood events. Estimated discharge velocities of the diversion culvert is 15 feet per second. The proposed stilling basin will be lined with riprap to prevent scouring of the Passaic River bank and riverbed. Flood velocities within the Great Notch Brook may also increase due to the floodwalls and levees as well.

(c) Stratification: The project will not impact stratification.

(d) Hydrologic Regime: The proposed action will not change normal daily or seasonal water level fluctuations.

3) Normal Water Level Fluctuations: The proposed action will not have any permanent adverse impacts on normal baseflows within the Peckman River. During flood events, the proposed action will divert flows from the Peckman River and discharge the flows approximately 0.6 miles upstream from its natural confluence with the Passaic River. The project will not have any permanent adverse impacts on normal water level fluctuations within the Great Notch Brook and the Passaic River. Any proposed mitigation measures involving stream restoration to compensate for open water impacts to the Peckman River are not expected to significantly affect normal water fluctuations.

4) Salinity Gradients: Not applicable.

5) Actions Taken to Minimize Impacts: Measures to be implemented to minimize adverse impacts include: a) implementation of erosion and sediment control best management practices; b) installation of two ft high by six ft wide orifice within the weir to maintain base flows within the Peckman River to maintain fish passage and baseflows.; c) adhering to an in-water work restriction from 1 May – 31 July to protect spawning fish species; e) compensatory mitigation through either the purchase of wetland and riparian mitigation credits from a New Jersey State approved mitigation bank or through off-site wetland and riparian mitigation within the Peckman River watershed.

6) Suspended Particulate/Turbidity Determinations.

1) Expected Changes in Suspended Particulates and Turbidity Levels in Vicinity of Disposal Sites: Minor increases in particle suspension and turbidity during construction of the weir and channel modifications within the Peckman River, within the Great Notch Brook during installation of the floodwalls and during installation of the rip rap apron at the discharge point of the diversion culvert in the Passaic River.

2) Effects on Chemical/Physical Properties of the Water Column:

(a) Light Penetration: Minor adverse impacts may occur within the project area during construction of the channel modifications within the Peckman River due to turbid conditions. There are no expected impacts to the Passaic

(b) Dissolved Oxygen: Dissolved oxygen levels may be reduced during construction,

(c) Toxic Metals and Organics: There is a slight potential that construction activities may disturb sediments contaminated with organics. Erosion and sediment controls such as silt fence, turbidity curtains, will be employed during construction to minimize the risk.

(d) Pathogens: Given the urban nature of the Peckman and Passaic Rivers and the Great Notch Brook, there is a potential that the sediments within these waterbodies could contain pathogens such as e. coli that could be transported downstream during construction. This potential will be minimized through the implementation of erosion and sediment control practices.

Aesthetics: Resuspension of sediment during construction activities may have a temporary negative impact to aquatic aesthetics. However, the implementation of erosion and sediment control best management practices will limit this impact to the immediate project area, which is located in areas where the land use consists of business/industrial development. No adverse impacts to aesthetics will occur once construction is completed.

(e) Others as Appropriate: Not applicable

3) Effects on Biota:

(a) Primary Production, Photosynthesis: Removal of vegetation along river banks can reduce the amount of organic material within the river that aquatic species use for food/cover/spawning. This could likely occur within Peckman River, given that there is a modest riparian zone. However, the overall impact on the river system will be minor. Loss of primary production will be negligible along Great Notch Brook given that the portion of the brook within the project area consists of only maintained lawn. Impacts on primary production within the Passaic River are also expected to be negligible due to the size of the river in relation to the area of impact resulting from the stilling basin.

(b) Suspension/ Filter Feeders: Construction activities could create turbid conditions that would temporarily impact suspension/filter feeders. Erosion and sediment control best management practices will be implemented during construction to reduce sedimentation to the portion Peckman River downstream of the project area. No permanent adverse impact is expected.

(c) Sight Feeders: There may be temporary adverse impacts to sight feeders during the construction of the levee and wetland/open water mitigation. These impacts will be minimized through implementation of erosion and sediment control practices during construction.

4) Actions Taken to Minimize Impacts: Measures to be implemented to minimize adverse impacts include: a) implementation of erosion and sediment control best management practices; b) installation of two ft high by six ft wide orifice within the weir to maintain base flows within the Peckman River to maintain fish passage and baseflows; c) adhering to an in-water work restriction from 1 May – 31 July to protect spawning fish species; e) compensatory mitigation through either the purchase of open water, wetland and riparian mitigation credits from a New Jersey State approved mitigation bank or through off-site open water, wetland and riparian mitigation within the Peckman River watershed.

c. Contaminant Determinations: There are no issues with contaminant issues within the study area. All fill material will be clean and will not pose a risk.

d. Aquatic Ecosystem and Organism Determinations.

1) Effects on Plankton: An increase in sedimentation/nutrients during construction may increase some plankton species such as algae. Erosion and sediment control best management practices will be implemented to reduce this potential.

2) Effects on Benthos: Mortality of benthic species within the immediate footprints of the weir and armoring of the Peckman River, installation of the stilling basin within the Passaic River and installation of the precast concrete culvert in the Great Notch Brook is expected during construction activities. In addition, due to the space constraints in some portions of the project area along Great Notch Brook, mortality of some benthic species may occur during construction of the floodwalls. However, this impact is expected to be temporary as recruitment of benthic species from undisturbed areas of the Peckman River is expected to occur subsequent of construction. Any offsite open water and riparian mitigation will be designed in a manner to provide similar or better habitat than existing conditions in order to provide long term benefits to benthic species.

3) Effects on Nekton: Mobile aquatic life will move from area during construction.

4) Effects on Aquatic Food Web: The project will have temporary adverse impacts on the food web as a result of turbidity, and the modification of 800 linear feet of the Peckman River totaling 0.64 acres and from construction of the floodwalls along the Great Notch Brook. Permanent significant adverse impacts are not expected from implementation of the project. Due to the size of the Passaic River in relation to the proposed stilling basin, no adverse temporary or permanent impacts are expected.

5) Effects on Special Aquatic Sites:

(a) Sanctuaries and Refuges: Not applicable

(b) Wetlands - Approximately 0.5 acres to 4 acres of forested wetlands will be permanently impacted by construction of the levee. Approximately one acre of forested wetlands will be temporarily impacted as a result of levee construction.

(c) Mudflats: Not applicable

(d) Vegetated Shallows: Not applicable

(e) Coral Reefs: Not applicable

(f) Riffle and Pool Complexes: The portion of the Peckman River in the vicinity of where the weir is proposed is relatively uniform with no distinct riffle and pool complexes. The armoring of the approximately 800 ft will initially create a uniform flow. However, it is expected that the river may form natural pools as it recovers from the disturbance. Although no defined pool and riffle complexes have been observed in the Great Notch Brook within the project area during site investigations, the proposed floodwalls and levee will be situated along the banks and will not impact any potential in water habitat. The stilling basin proposed along the Passaic River will not have any adverse impacts to any pool and riffle complexes.

6) Threatened and Endangered Species: The proposed action may remove potential summer roosting habitat for the federally and state endangered Indiana bat and federally threatened northern long-eared bat. A tree clearing restriction from 15 April through 30 September will be implemented during construction to protect these species.

7) Other Wildlife: The project will mainly have temporary adverse impacts to wildlife. Minor adverse temporal impacts to wildlife will occur as a result of the removal of mature vegetation that is used for nesting, shelter and foraging. These impacts will be minimized through replanting of vegetation and the use of tree stock ranging from 8-14 ft in height as opposed to saplings in the replanting efforts. A shrub and tree clearing restriction from 1 April through 31 August will be implemented to comply with the Migratory Bird Treaty Act will protect these species.

8) Actions to Minimize Impacts: Measures to be implemented to minimize adverse impacts include: a) implementation of erosion and sediment control best management practices; b) installation of two ft high by six ft wide orifice within the weir to maintain base flows within the Peckman River to maintain fish passage and baseflows.; c) adhering to shrub and tree clearing restrictions from 1 April through 30 September to protect federal endangered and threatened bat species as well as migratory bird species; d) adhering to an in-water work restriction from 1 May – 31 July to protect spawning fish species; e) compensatory mitigation through either the purchase of open water, wetland and riparian mitigation credits from a New Jersey State approved mitigation bank or through off-site open water, wetland and riparian mitigation within the Peckman River watershed.

e. Proposed Disposal Site Determinations

1) Mixing Zone: Not applicable

2) Determination of Compliance with Applicable Water Quality Standards: All fill used to construct the project will be comprised of clean material that meets water quality standards and comes from a state approved and permitted source.

3) Potential Effects on Human Use Characteristic:

(a) Municipal and Private Water Supply: Neither the Peckman River nor the Great Notch Brook are used as a water supply for the region. The Passaic River is used for water supply. There is an intake system in Totowa and treats the water at the Alan C. Levine Little Falls Water Treatment Plant The intake is approximately 0.50 miles upstream of the diversion culvert discharge location. Therefore, there will be no significant adverse impacts to the water supply.

(b) Recreational and Commercial Fisheries: The Peckman River does not support any recreational or commercial fisheries. In addition, there are no access points for recreational fishing with the proposed footprint of the diversion culvert weir and channel modifications. Similar to the Peckman River, the Great Notch Brook does not support any recreational or commercial fisheries. The Passaic River is stocked with northern pike, a recreational fish species, within the vicinity of the discharge location of the diversion culvert. However, there are no access points for recreational fishing within the proposed discharge location.

Therefore, significant adverse impacts to recreational and/or commercial fisheries is not expected.

(c) Water Related Recreation: The Peckman River and Great Notch Brook do not support any water based recreation within the project area. The Passaic River is supportive of water based recreation such as canoeing or kayaking. A boat launch is located along the Passaic River approximately 1.5 miles upstream of the discharge location of the proposed diversion culvert. However, the Beattie Dam serves as a barrier preventing boaters from traversing downstream towards the project area. Therefore, the proposed action will not significant adverse impacts on water related recreation.

(d) Aesthetics: The aesthetics of the project area will be adversely impacted during construction activities due to the presence of construction equipment and clearing and excavation activities. However, the majority of the proposed action is located in areas comprised of business and industrial land use.

The levee along the Peckman River will be inset off the river and should be mostly obscured by mature vegetation. The levee and floodwalls along Great Notch Brook are located in a parking lot and along Rte 46, thus the visual appeal is already limited. Aesthetic enhancements such as stamped concrete and paint can be applied to the floodwalls to reduce visual impacts.

The diversion culvert will be underground. Therefore, once construction is completed, the area will be restored to previous conditions. The proposed weir within the Peckman River is located in an area where the land use consists of a car dealer parking lot and the Little Falls municipal department of public works yard.

The portion of the Passaic riverbank where the rip rap stilling basin is proposed is located near a parking lot. The viewshed of the stilling basin from the opposite bank is obscured by mature vegetation along the opposite bank as well as a vegetated a gravel bar that has formed in the river. In addition, there are no structures located on the opposite bank that could potentially see the stilling basin. Therefore, no impacts to aesthetics are expected. Any wetland, open water and/or riparian mitigation will enhance the aesthetics of the project area by replacing invasive vegetative species with native species.

(e) Park, National and Historical Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves:

The alignment of proposed diversion culvert is located within existing tennis courts and a baseball field that are part of the Town of Little Falls Recreation Center. These recreational amenities will be unavailable for use during construction. A cut and cover method will be employed, therefore the baseball field and tennis courts will be restored once construction is completed. The Great Falls National Park is located approximately 1.5 miles downstream of the discharge location of the diversion culvert. However, due to the size of the Passaic River in comparison to the amount of volume of water being discharged from the Peckman River, no impacts to the National Park will occur. There are no National and Historical monuments, seashores, wilderness areas are research sites within the immediate project area.

f. Determination of Cumulative Effects on the Aquatic Ecosystem: The proposed action will have negligible cumulative impacts on the aquatic ecosystem. Mitigation measures proposed in the above sections will minimize cumulative impacts.

g. Determination of Secondary Effects on the Aquatic Ecosystem: No secondary effects on the aquatic ecosystem are expected from this project.

III. FINDINGS OF COMPLIANCE OR NON-COMPLIANCE WITH THE RESTRICTIONS ON DISCHARGE.

a. No significant adaptation of the Section 404(b)(1) guidelines was made relative to this evaluation.

b. The objective of flood risk management necessitates the construction of a diversion culvert and levees and floodwalls along the Peckman River and floodwalls along the Great Notch Brook.

c. The proposed activity will not violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.

d. The proposed disposal operations will not harm any endangered species or their critical habitats under the Endangered Species Act of 1973.

e. The proposed discharge of fill material will not result in significant adverse effects on human health and welfare, including municipal and private waters supplies, recreational and commercial fishing, plankton, fish, shellfish, wildlife, and special aquatic sites. The life stages of aquatic life and other wildlife will not be significantly affected.

f. Appropriate steps to minimize potential adverse impacts of the discharge of fill material include the implementation of an erosion and sediment control plan and judicious engineering practices.

Peckman River Basin, New Jersey
Flood Risk Management Feasibility Study

A.4 USFWS Coordination

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New Jersey Ecological Services Field Office
4 E. Jimmie Leeds Road, Suite 4
Galloway, NJ 08205
Phone: (609) 646-9310 Fax: (609) 646-0352
http://www.fws.gov/northeast/njfieldoffice/Endangered/consultation.html

In Reply Refer To: April 16, 2018
Consultation Code: 05E2NJ00-2018-SLI-0245
Event Code: 05E2NJ00-2018-E-01893
Project Name: Peckman River Basin Flood Risk Managment Feasibility Study

Subject: Updated list of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed, and candidate species that may occur in your proposed action area and/or may be affected by your proposed project. This species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under Section 7(c) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*)

If the enclosed list indicates that any listed species may be present in your action area, please visit the New Jersey Field Office consultation web page as the next step in evaluating potential project impacts: http://www.fws.gov/northeast/njfieldoffice/Endangered/consultation.html

On the New Jersey Field Office consultation web page you will find:

- habitat descriptions, survey protocols, and recommended best management practices for listed species;
- recommended procedures for submitting information to this office; and
- links to other Federal and State agencies, the Section 7 Consultation Handbook, the Service's wind energy guidelines, communication tower recommendations, the National Bald Eagle Management Guidelines, and other resources and recommendations for protecting wildlife resources.

The enclosed list may change as new information about listed species becomes available. As per Federal regulations at 50 CFR 402.12(e), the enclosed list is only valid for 90 days. Please return to the ECOS-IPaC website at regular intervals during project planning and implementation to obtain an updated species list. When using ECOS-IPaC, be careful about drawing the boundary of your Project Location. Remember that your action area under the ESA is not limited to just the footprint of the project. The action area also includes all areas that may be indirectly affected

through impacts such as noise, visual disturbance, erosion, sedimentation, hydrologic change, chemical exposure, reduced availability or access to food resources, barriers to movement, increased human intrusions or access, and all areas affected by reasonably forseeable future that would not occur without ("but for") the project that is currently being proposed.

We appreciate your concern for threatened and endangered species. The Service encourages Federal and non-Federal project proponents to consider listed, proposed, and candidate species early in the planning process. Feel free to contact this office if you would like more information or assistance evaluating potential project impacts to federally listed species or other wildlife resources. Please include the Consultation Tracking Number in the header of this letter with any correspondence about your project.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Migratory Birds
- Wetlands

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New Jersey Ecological Services Field Office
4 E. Jimmie Leeds Road, Suite 4
Galloway, NJ 08205
(609) 646-9310

Project Summary

Consultation Code: 05E2NJ00-2018-SLI-0245

Event Code: 05E2NJ00-2018-E-01893

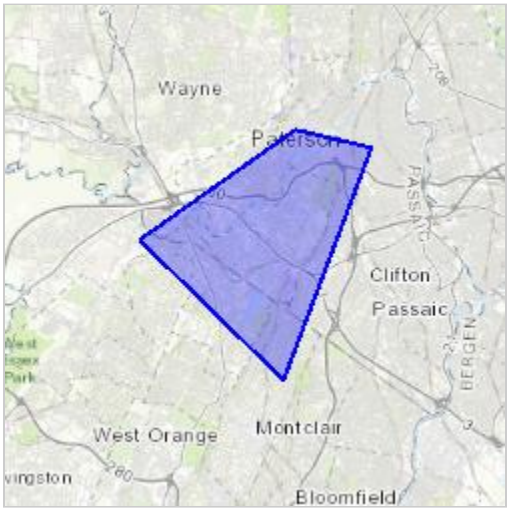
Project Name: Peckman River Basin Flood Risk Managment Feasibility Study

Project Type: LAND - FLOODING

Project Description: Study evaluating the feasibility of implementing nonstructural and structural flood risk management measures. Structural flood risk management measures include channel modification, a diversion culvert and levees and floodwalls.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/40.87658182287704N74.21834668065875W



Counties: Essex, NJ | Passaic, NJ

Endangered Species Act Species

There is a total of 2 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Indiana Bat *Myotis sodalis* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

REFUGE INFORMATION WAS NOT AVAILABLE WHEN THIS SPECIES LIST WAS GENERATED. PLEASE CONTACT THE FIELD OFFICE FOR FURTHER INFORMATION.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

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1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see maps of where birders and the general public have sighted birds in and around your project area, visit E-bird tools such as the E-bird data mapping tool (search for the name of a bird on your list to see specific locations where that bird has been reported to occur within your project area over a certain timeframe) and the E-bird Explore Data Tool (perform a query to see a list of all birds sighted in your county or region and within a certain timeframe). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Sep 1 to Jul 31
Blue-winged Warbler *Vermivora pinus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds May 1 to Jun 30

NAME	BREEDING SEASON
Cerulean Warbler *Dendroica cerulea* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/2974	Breeds Apr 28 to Jul 20
Eastern Whip-poor-will *Antrostomus vociferus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Aug 20
Golden Eagle *Aquila chrysaetos* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds elsewhere
Kentucky Warbler *Oporornis formosus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 20
King Rail *Rallus elegans* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8936	Breeds May 1 to Sep 5
Long-eared Owl *asio otus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3631	Breeds elsewhere
Prairie Warbler *Dendroica discolor* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
Prothonotary Warbler *Protonotaria citrea* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 1 to Jul 31
Red-headed Woodpecker *Melanerpes erythrocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Rusty Blackbird *Euphagus carolinus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere

NAME	BREEDING SEASON
Wood Thrush *Hylocichla mustelina* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

Probability Of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in your project's counties during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season (■)

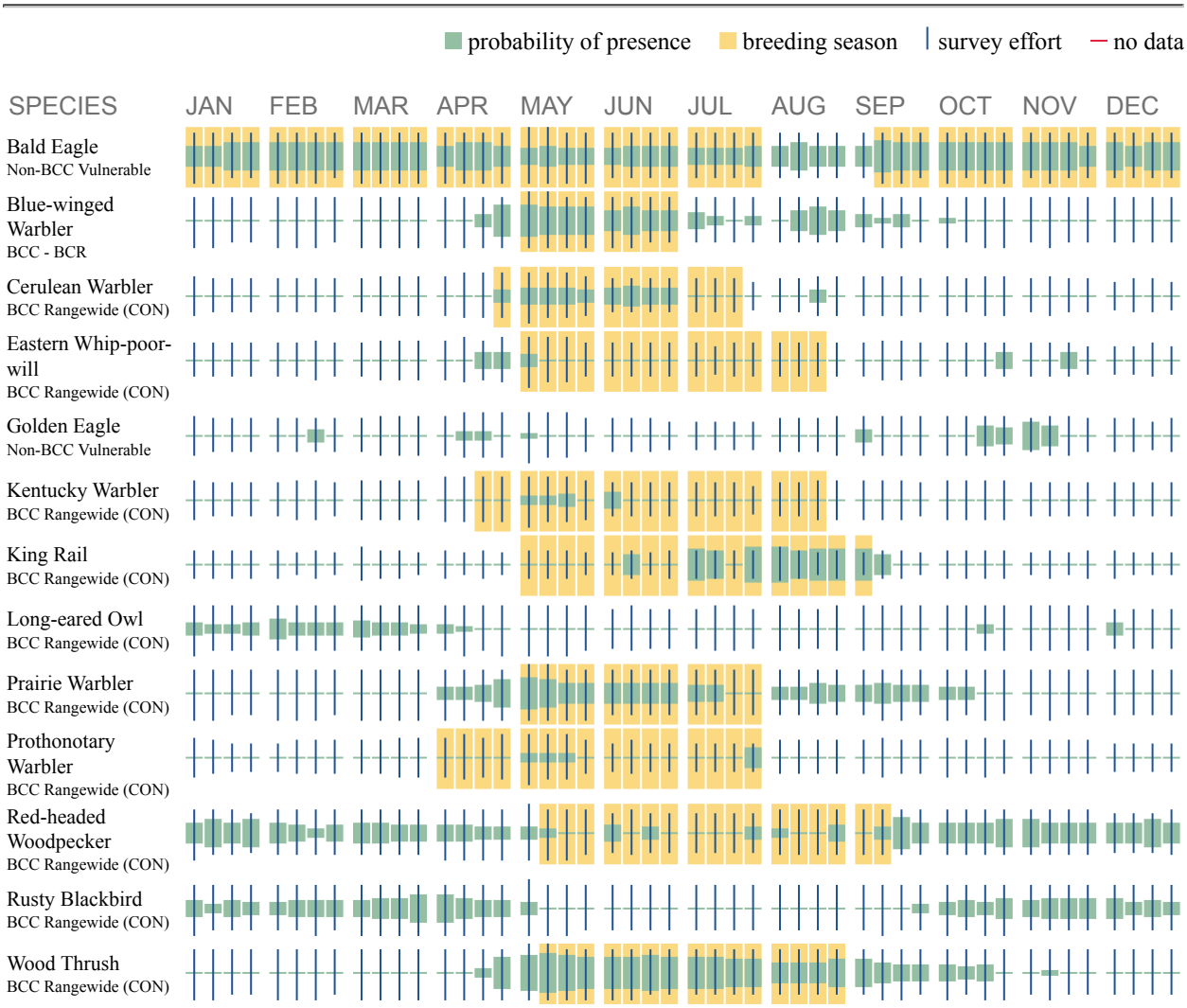
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the counties of your project area. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information.



Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php

- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

Migratory Birds FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.
Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?
The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the counties which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the E-bird Explore Data Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?
The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and

how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?
To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird entry on your migratory bird species list indicates a breeding season, it is probable that the bird breeds in your project's counties at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?
Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects
For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the BGEPA should such impacts occur.

Wetlands

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

FRESHWATER EMERGENT WETLAND

- PEM1C
- PEM1B
- PEM1Ex

FRESHWATER FORESTED/SHRUB WETLAND

- PFO1E
- PFO1Ed
- PFO1A
- PFO1C
- PFO1B
- PSS1Ax
- PFO1Ex
- PFO1Ax
- PSS1E
- PSS1C
- PFO1Ad
- PSS1/EM1A

FRESHWATER POND

- PUBHh
- PUBHx
- PUBH
- PUBFx

LAKE

- L1UBHh

RIVERINE

- R2UBHx

- R4USCx
- R3UBH
- R2UBH
- R4USC
- R3UBHx

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO
ATTENTION OF
Environmental Analysis Branch

8 February 2018

Mr. Eric Schrading
Field Supervisor
U.S. Fish and Wildlife Service
New Jersey Field Office
4 East Jimmie Leeds Road, Unit 4
Galloway, New Jersey 08205-4465

Dear Mr. Schrading:

This letter serves as follow up to 5 October 2017 letter (Encl. 1) sent to your office by the Army Corps of Engineers (Corps), New York District (District) regarding the Peckman River Flood Risk Management Study in the Township of Little Falls and the Borough of Woodland Park, Passaic County, New Jersey.

The District received the Scope of Work (SOW) dated 29 November 2017 between the U.S. fish and Wildlife Service (Service) and the District to prepare Supplemental and final Fish and Wildlife Coordination Act (FWCA) reports for the NED Plan and a Locally Preferred Plan (LPP) study (Encl. 2).

The District was recently informed by the non-federal sponsor that they no longer support the LPP and have requested the District to move forward with the NED Plan. Enclosed (Encl. 3) is a revised SOW to reflect the removal of the LPP and to prepare a Supplemental and final FWCA reports for the NED Plan.

In addition, the alignment and some of the features of the NED Plan are currently undergoing minor modifications. The 29 November 2017 SOW submitted by your agency to the District honored an agreement to utilize two days charged under the previous Government Order for finalizing the FWCA for the NED Plan. However, due to the minor modifications, the Service may want to evaluate if additional funds may be needed to prepare the Supplemental and final FWCA reports for the NED Plan.

The District will be preparing a Draft Feasibility Report and Environmental Assessment focusing on the NED Plan and is anticipating releasing it for public and agency review in April 2018. The Draft FR/EA will be used as the primary coordination vehicle for the preparation for

Supplemental FWCA 2(b) Report. In the meantime, the District response to the July 2014 Draft FWCA 2(b) report is included with this letter (Encls. 4 and 5).

The District will continue to coordinate with your agency closely to assist in your preparation of the Supplement 2(b) Final FWCA reports. Should any questions arise, or additional information is needed, please contact Ms. Kimberly Rightler at (917) 790-8722.

Sincerely,

Peter Weppler
Chief, Environmental Analysis Branch

Enclosures

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New Jersey Ecological Services Field Office
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Phone: (609) 646-9310 Fax: (609) 646-0352
http://www.fws.gov/northeast/njfieldoffice/Endangered/consultation.html

In Reply Refer To: November 16, 2017
Consultation Code: 05E2NJ00-2018-SLI-0245
Event Code: 05E2NJ00-2018-E-00507
Project Name: Peckman River Basin Flood Risk Managment Feasibility Study

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed, and candidate species that may occur in your proposed action area and/or may be affected by your proposed project. This species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under Section 7(c) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.)

If the enclosed list indicates that any listed species may be present in your action area, please visit the New Jersey Field Office consultation web page as the next step in evaluating potential project impacts: http://www.fws.gov/northeast/njfieldoffice/Endangered/consultation.html

On the New Jersey Field Office consultation web page you will find:

- habitat descriptions, survey protocols, and recommended best management practices for listed species;
- recommended procedures for submitting information to this office; and
- links to other Federal and State agencies, the Section 7 Consultation Handbook, the Service's wind energy guidelines, communication tower recommendations, the National Bald Eagle Management Guidelines, and other resources and recommendations for protecting wildlife resources.

The enclosed list may change as new information about listed species becomes available. As per Federal regulations at 50 CFR 402.12(e), the enclosed list is only valid for 90 days. Please return to the ECOS-IPaC website at regular intervals during project planning and implementation to obtain an updated species list. When using ECOS-IPaC, be careful about drawing the boundary of your Project Location. Remember that your action area under the ESA is not limited to just the footprint of the project. The action area also includes all areas that may be indirectly affected through impacts such as noise, visual disturbance, erosion, sedimentation, hydrologic change,

chemical exposure, reduced availability or access to food resources, barriers to movement, increased human intrusions or access, and all areas affected by reasonably forseeable future that would not occur without ("but for") the project that is currently being proposed.

We appreciate your concern for threatened and endangered species. The Service encourages Federal and non-Federal project proponents to consider listed, proposed, and candidate species early in the planning process. Feel free to contact this office if you would like more information or assistance evaluating potential project impacts to federally listed species or other wildlife resources. Please include the Consultation Tracking Number in the header of this letter with any correspondence about your project.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Migratory Birds
- Wetlands

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New Jersey Ecological Services Field Office
4 E. Jimmie Leeds Road, Suite 4
Galloway, NJ 08205
(609) 646-9310

Project Summary

Consultation Code: 05E2NJ00-2018-SLI-0245

Event Code: 05E2NJ00-2018-E-00507

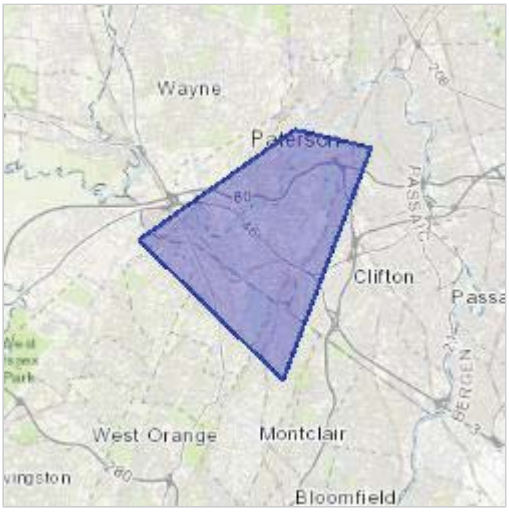
Project Name: Peckman River Basin Flood Risk Managment Feasibility Study

Project Type: LAND - FLOODING

Project Description: Study evaluating the feasibility of implementing nonstructural and structural flood risk management measures. Structural flood risk management measures include channel modification, a diversion culvert and levees and floodwalls.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/40.87658182287704N74.21834668065875W



Counties: Essex, NJ | Passaic, NJ

Endangered Species Act Species

There is a total of 2 threatened, endangered, or candidate species on this species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

Mammals

NAME	STATUS
Indiana Bat *Myotis sodalis* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any activity that results in the take of migratory birds or eagles is prohibited unless authorized by the U.S. Fish and Wildlife Service[3]. There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured. Any person or organization who plans or conducts activities that may result in the take of migratory birds is responsible for complying with the appropriate regulations and implementing appropriate conservation measures, as described below.

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1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are USFWS Birds of Conservation Concern that might be affected by activities in this location. The list does not contain every bird you may find in this location, nor is it guaranteed that all of the birds on the list will be found on or near this location. To get a better idea of the specific locations where certain species have been reported and their level of occurrence, please refer to resources such as the E-bird data mapping tool (year-round bird sightings by birders and the general public) and Breeding Bird Survey (relative abundance maps for breeding birds). Although it is important to try to avoid and minimize impacts to all birds, special attention should be given to the birds on the list below. To get a list of all birds potentially present in your project area, visit the E-bird Explore Data Tool.

NAME	BREEDING SEASON
Blue-winged Warbler *Vermivora pinus* **Bird of Conservation Concern (BCC)**	Breeds May 1 to Jun 30
Cerulean Warbler *Dendroica cerulea* **Bird of Conservation Concern (BCC)** https://ecos.fws.gov/ecp/species/2974	Breeds Aug 20 to Jul 20
Eastern Whip-poor-will *Antrostomus vociferus* **Bird of Conservation Concern (BCC)**	Breeds May 1 to Aug 20
Kentucky Warbler *Oporornis formosus* **Bird of Conservation Concern (BCC)**	Breeds Apr 20 to Aug 20
Long-eared Owl *asio otus* **Bird of Conservation Concern (BCC)** https://ecos.fws.gov/ecp/species/3631	Breeds elsewhere

Prairie Warbler *Dendroica discolor* **Bird of Conservation Concern (BCC)**	Breeds May 1 to Jul 31
Prothonotary Warbler *Protonotaria citrea* **Bird of Conservation Concern (BCC)**	Breeds Apr 1 to Jul 31
Red-headed Woodpecker *Melanerpes erythrocephalus* **Bird of Conservation Concern (BCC)**	Breeds May 10 to Sep 10
Rusty Blackbird *Euphagus carolinus* **Bird of Conservation Concern (BCC)**	Breeds elsewhere
Wood Thrush *Hylocichla mustelina* **Bird of Conservation Concern (BCC)**	Breeds May 10 to Aug 31

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeas

Wetlands

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

FRESHWATER EMERGENT WETLAND

- PEM1C
- PEM1B
- PEM1Ex

FRESHWATER FORESTED/SHRUB WETLAND

- PFO1E
- PFO1Ed
- PFO1A
- PFO1C
- PFO1B
- PSS1Ax
- PFO1Ex
- PFO1Ax
- PSS1E
- PSS1C
- PFO1Ad
- PSS1/EM1A

FRESHWATER POND

- PUBHh
- PUBHx
- PUBH
- PUBFx

LAKE

- L1UBHh

RIVERINE

- R2UBHx
- R4USCx
- R3UBH
- R2UBH
- R4USC
- R3UBHx

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO
ATTENTION OF
Environmental Analysis Branch

5 October 2017

Mr. Eric Schrading
Field Supervisor
U.S. Fish and Wildlife Service
New Jersey Field Office
4 East Jimmie Leeds Road, Unit 4
Galloway, New Jersey 08205-4465

Dear Mr. Schrading:

The Army Corps of Engineers (Corps), New York District (District) has been conducting a Feasibility Study to implement flood risk management measures within the Peckman River in the Township of Little Falls and the Borough of Woodland Park, Passaic County, New Jersey.

The National Economic Plan consisting of non-structural measures within the 10-yr floodplain in the Township of Little Falls, and a diversion culvert and floodwalls along Great Notch Brook in the Borough of Woodland Park was identified in 2014. A draft Fish and Wildlife Coordination Act Report (FWCAR) focusing on the NED Plan was submitted to the District on 25 July 2014 (Enclosure 1). A Final FWCAR for the NED Plan was never finalized due to the non-Federal sponsor requesting a Locally Preferred Plan and then the subsequent suspension of the study by Corps Headquarters.

The study has been reinitiated and the District will be evaluating both the NED Plan and the LPP. There have been no changes to the NED Plan. The LPP consists of channel modifications and levees and floodwalls along the Peckman River in the Township of Little Falls, the diversion culvert, and floodwalls along the Great Notch Brook (Enclosure 2). As a result, the District is requesting an updated FWCAR that finalizes recommendations on the NED Plan and provides recommendations on the LPP be prepared.

Please note that Government Order to develop the FWCAR for the NED Plan was fully charged. Based on a conversation between Ms. Kimberly Rightler from the District and Mr. Ron Popowski from your agency on 28 September 2016, it was agreed that that the two days allotted for drafting the Final FWCAR for the NED Plan would go towards (Enclosure 3).

Due to the budget constraints for this study, the District is requesting that your agency maintain this agreement towards the effort related to updating the FWCAR.

Please review the SOW (Enclosure 4) and provide a time and cost estimate for your services. The District will coordinate with your agency closely, to assist in your preparation of the report. Should any questions arise, or additional information is needed, please contact Ms. Kimberly Rightler at (917) 790-8722.

Sincerely,

Peter Weppler
Chief, Environmental Analysis Branch

Enclosures

United States Department of the Interior

FISH AND WILDLIFE SERVICE

New Jersey Field Office
Ecological Services
4. E. Jimmie Leeds Road, Suite 4
Galloway New Jersey 08205
Tel: 609/646 9310
http://www.fws.gov/northeast/njfieldoffice/

In Reply Refer To:
2018-CPA-0021

NOV 29 2017

Peter Weppler, Chief
Environmental Analysis Branch,
U.S. Army Corps of Engineers, New York District
Jacob K. Javits Federal Building
26 Federal Plaza
New York, New York 10278-0090

Dear Mr. Weppler:

Enclosed is a Fiscal Year 2018 (FY-2018) scope of work (SOW) between the U.S. Fish and Wildlife Service (Service) and the New York District, U.S. Army Corps of Engineers (Corps) for the Peckman River Flood Risk Management Feasibility Study, Township of Little Falls and Borough of Woodland Park, Passaic County, New Jersey.

SOW TASKS

The Service and Corps have a long history of interagency cooperation to protect listed species and Federal trust resources within the Corps New York District areas. A draft report pursuant to the Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401; 16 U.S.C. 661 *et seq.*) was submitted to you on July 25, 2014. Key Service roles in this SOW for FY-2018 are to prepare FWCA Supplement 2(b) to include evaluation of Locally Preferred Plan, and final 2(b) reports.

ADDITIONAL COORDINATION

In the development of the Supplement 2(b), and final FWCA 2(b) reports, the Service will coordinate with the New Jersey's Department of Environmental Protection, including Division of Fish and Wildlife to ensure that the plans address all federally and State-listed species (both plant and animal) and Federal trust resources occurring project area.

SUMMARY

This SOW, along with an estimate of cost for services, is being forwarded for your approval. The total cost for the Service to perform the above work in FY-2018 is $6,444.00 If you are in agreement with the SOW and the estimated cost for services, please prepare the appropriate transfer funding agreement and send via e-mail in pdf format to Laura_Perlick@fws.gov. Please

note the procedural change to forward the transfer funding agreement directly to the Field Office, rather than to our Regional Office for final processing.

The Service commends the Corps' past and ongoing efforts and looks forward to continued multi-agency cooperation and partnership to protect federally and State-listed species, and Federal trust resources. If you have any questions regarding the above cost estimate or any other aspect of this SOW, please contact Ron Popowski at Ron_Popowski@fws.gov.

Sincerely,

Eric Schrading
Field Supervisor

Enclosure

cc: NJFO (2): Perlick
USACE, New York District: Rightler

DRAFT SCOPE OF WORK

FISCAL YEAR 2018
U.S. FISH AND WILDLIFE SERVICE/U.S. ARMY CORPS OF ENGINEERS
PECKMAN RIVER FLOOD RISK MANAGEMENT STUDY
TOWNSHIP OF LITTLE FALLS AND BOROUGH OF WOODLAND PARK
PASSAIC COUNTY, NEW JERSEY

A. SUBJECT:

The scope of work (SOW) between the U.S. Fish and Wildlife Service (Service)'s New Jersey Field Office (Service) and the U.S. Army Corps of Engineers, New York District (Corps) to prepare a Supplement 2(b) and final 2(b) reports pursuant to Section 2(b) of the Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401; 16 U.S.C. *et seq.*) for the Corps' Peckman River Flood Risk Management Feasibility Study, Township of Little Falls and Borough of Woodland Park, Passaic County, New Jersey. Transfer funding from the Corps to the Service is authorized pursuant to the Economy Act (96 Stat. 933; 31 U.S.C. 1535).

Agency Financial Information

Service:
DUNS: 151157950
Tax ID: 53-0201504
Agency Locator Code: 14160006

Corps:
DUNS: 068112791
Tax ID: 62-1642142
Agency Locator Code: 00008736
Business Event Type Code: DISB
Treasury Account Symbol: To be determined

If the Corps cancels the agreement, the Service may collect costs incurred prior to the cancellation of the agreement plus any termination costs.

B. PROJECT NAME:

Peckman River Flood Risk Management Feasibility Study

C. CORPS DISTRICT AND CONTACTS:

U.S. Army Corps of Engineers New York District,
26 Federal Plaza
New York, New York, 10278-0090

Chief, Watershed Section:	Nancy Brighton	Nancy.Brighton@usace.army.mil
Project Biologist:	Kimberly Rightler	Kimberly.A.Rightler@usace.army.mil
Financial Point of Contact:	Robert Greco	Robert.Greco@usace.army.mil

D. SERVICE OFFICE AND CONTACTS:

U.S. Fish and Wildlife Service
New Jersey Field Office
Ecological Services
4 E. Jimmie Leeds Road, Suite 4
Galloway, New Jersey 08205

Field Supervisor	Eric Schrading	Eric_Schrading@fws.gov
Project Biologist	Carlo Popolizio	Carlo_Popolizio@fws.gov
Financial Point of Contact	Laura Perlick	Laura_Perlick@fws.gov

E. DESCRIPTION OF PROJECT:

The proposed study involves formulating and evaluating the feasibility of implementing flood risk management measures within the Peckman River Basin in the Township of Little Falls and Borough of Woodland Park.

Alternatives to be evaluated include the following:
1) No Action
2) Alternative #9 Levees/Floodwalls above Rt 46 and Diversion Culvert
3) Alternative #10b Diversion Culvert and 10-yr nonstructural above Rt. 46

F. STATUS OF STUDY:

The Corps is conducting a feasibility study to evaluate Federal participation in flood risk management in the Peckman River Basin, New Jersey as authorized under U.S. House of Representatives Resolution Docket 2644, dated June 21, 2000. The alternative analysis was completed in 2014, and non-structural improvements located within the 10 year floodplain within the Township of Little Falls with a bypass culvert designed to mitigate the flood risk from the Peckman River and floodwalls along the Great Notch Brook in Woodland Park was identified as the NED Plan. The NJDEP as the non-Federal sponsor requested a Locally Preferred Plan (LPP) that consists of a levee/floodwall system in the Little Falls along with the bypass culvert for the Peckman River and floodwalls along Great Notch brook. The LPP will be designed to protect Little Falls and Woodland Park from the 1% annual chance exceedance (100-yr) event from the Peckman River.

G. COORDINATING AND SCOPING:

The Corps and the Service will coordinate routinely as necessary.

H. DATA AND INFORMATION NEEDED FROM THE CORPS:

1. Signed SOW

2. Completed and signed transfer funding agreement via Military interdepartmental Purchase Request (MIPR).

I. SPECIFIC WORK TO BE ACCOMPLISHED BY THE SERVICE:

1. Review District responses to the 25 July 2014 Draft FWCA 2(b) report on the NED Plan.

2. Review the conceptual plan of the LPP and any other supplemental information provided by the Corps.

3. Provide Corps with information on fish and wildlife resources (including endangered and threatened species) in the Project Area.

4. Coordinate with the Corps and the New Jersey Department of Environmental Protection (NJDEP), including New Jersey Division of Fish and Wildlife (NJDFW), and other agencies/organizations regarding project area resources, project related impacts, and means and measures that should be adopted to prevent the loss of or damage to fish and wildlife resources, as well as to provide for the development and improvement of such resources.

5. Conduct a technical review of the preliminary alternatives that have been developed to date to evaluate impacts of the alternatives on fish and wildlife resources.

6. For any alternatives proposed by the Service that deviate significantly from the proposed plan or include experimental techniques, the Service shall provide a discussion of benefits gained by the proposed alternative, along with case studies, photographs and/or typical details in order to assist the Corps in considering incorporation of the alternative into the overall alternative evaluation process.

7. Provide a supplement 2(b) report addressing the overall potential impacts to fish and wildlife resources from the LPP, including recommended measures that should be adopted to prevent the loss or damage to those resources.

8. Provide a final FWCA 2(b) reports addressing and incorporating comments received from the Corps, NJDEP, and NJDFW on the draft FWCA 2(b) report.

J. CORPS INPUT TO SERVICE:

The Corps will provide project documents and technical information developed during the course of study, secure and provide other existing Corps documents that the Service may request, and coordinate routinely as project plans are refined.

The Corps will provide comments or concurrence with the Service's written products within 30 days of submission. Once any comments are addressed and the Corps provides concurrence, Service products will become public documents available to outside parties upon request.

K. SERVICE INPUT TO CORPS:

Service submits Supplement 2(b) report — January 2018

Service submits Final FWCA 2(b) report — April 2018

L. CORPS AND SERVICE SUBMISSION SCHEDULE:

	Target Date
Corps provides current plans, documents and information; and transmits funding.	Within 7 days after receipt of MIPR.
Service submits supplement 2(b) report to the Corps, NJDEP and NJDFW.	Within 60 days after receipt of project plans.
Corps, NJDEP and NJDFW provide comments on supplement 2(b) report.	Within 30 days after receipt of draft Supplement 2(b) report
Service addresses Corps, NJDEP, and NJDFW comments and submits final FWCA 2(b) report.	Within 20 days after receipt of Corps, NJDEP, and NJDFW comments.

M. SERVICE EFFORTS AND COSTS

Service Effort	Task Days
Investigate fish and wildlife resources within the vicinity of the project area, including review of available literature and coordination with the NJDEP and NJDFW	1
Provide Section 7 consultation pursuant to the Endangered Species Act (87 Stat.884; 15 U.S.C. 1551 et seq.) (not charged to project transfer funds	—
Conduct technical review of the LPP (Alternative #9)	2
Prepare Supplement 2(b) report	4
Prepare final FWCA 2(b) report	2
Total Service Task Days	**9***

***Biologist Day Rate ($519) x Overhead Rate (38%) = $716.00**

9 Service Task Days x $716 **$6,444.00**

Total:

Fiscal Year 2018 Draft Scope of Work
US Fish and Wildlife Service / U.S. Army Corps of Engineers
Peckman River Flood Risk Management Study
Township of Little Falls and Borough of Woodland Park, Passaic County, New Jersey

I. SUBJECT:

The scope of work (SOW) between the U.S. Fish and Wildlife Service (Service)'s New Jersey Field Office (Service) and the U.S. Army Corps of Engineers, New York District (Corps) to prepare a draft and final 2(b) reports pursuant to Section 2(b) of the Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401; 16 U.S.C. *et seq*.) for the Corps' Peckman River Flood Risk Management Feasibility Study (FRM), Township of Little Falls and Borough of Woodland Park Passaic County; (Study Area). Transfer funding from the Corps to the Service is authorized pursuant to the Economy Act (96 Stat. 933; 31 U.S.C. 1535).

Agency Financial Information

Service:
DUNS: 151157950
Tax ID: 53-0201504
Agency Locator Code: 14160006

Corps:
DUNS: 068112791
Tax ID: 62-1642142
Agency Locator Code: 00008736
Business Event Type Code: DISB
Treasury Account Symbol: To be determined

If the Corps cancels the agreement, the Service may collect costs incurred prior to the cancellation of the agreement plus any termination costs.

II. PROJECT NAME:

Peckman River Flood Risk Management Feasibility Study (FRM)

III. CORPS DISTRICT AND CONTACTS:

U.S. Army Corps of Engineers New York District,
26 Federal Plaza
New York, New York, 10278-0090

Chief, Watershed Section:	Nancy Brighton	Nancy.Brighton@usace.army.mil
Project Biologist:	Kimberly Rightler	Kimberly.A.Rightler@usace.army.mil
Financial Point of Contact:	Robert Greco	Robert.Greco@usace.army.mil

IV. SERVICE OFFICE AND CONTACTS:

U.S. Fish and Wildlife Service
New Jersey Field Office
Ecological Services
4 E. Jimmie Leeds Road, Suite 4
Galloway, New Jersey 08205

Field Supervisor	Eric Schrading	Eric_Schrading@fws.gov
Project Biologist	To Be Determined	
Financial Point of Contact	Laura Perlick	Laura_Perlick@fws.gov

V. DESCRIPTION OF PROJECT:

The proposed study involves formulating and evaluating the feasibility of implementing flood risk management measures within the Peckman River Basin in the Township of Little Falls and Borough of Woodland Park, Passaic County, NJ.

Alternatives to be evaluated include the following:
1) No Action
2) Alternative #10b Diversion Culvert and 10-yr nonstructural above Rt. 46

VI. STATUS OF STUDY:

The Corps is conducting a feasibility study to evaluate Federal participation in flood risk management in the Peckman River Basin, New Jersey as authorized under U.S. House of Representatives Resolution Docket 2644, dated June 21, 2000. The alternative analysis was completed in 2014, and non-structural improvements located within the 10 year floodplain within the Township of Little Falls, N.J with a bypass culvert designed to mitigate the flood risk from the Peckman River and floodwalls along the Great Notch Brook in Woodland Park was identified as the NED Plan.

VII. COORDINATING AND SCOPING:

The Corps and the Service will coordinate routinely as necessary.

VIII. DATA AND INFORMATION NEEDED FROM THE CORPS:

1. Signed SOW

2. Completed and signed transfer funding agreement via Military interdepartmental Purchase Request (MIPR).

IX. SPECIFIC WORK TO BE ACCOMPLISHED BY THE SERVICE:

1. Review District responses to the 25 July 2014 Draft FWCAR on the NED Plan.

2. Provide Corps with information on fish and wildlife resources (including endangered and threatened species) in the Project Area.

3. Coordinate with the Corps and the New Jersey Department of Environmental Protection (NJDEP), including New Jersey Division of Fish and Wildlife (NJDFW), and other agencies/organizations regarding project area resources, project related impacts, and means and measures that should be adopted to prevent the loss of or damage to fish and wildlife resources, as well as to provide for the development and improvement of such resources.

4. Provide a Supplemental FWCA 2(b) report addressing the overall potential impacts to fish and wildlife resources from the NED Plan, including recommended measures that should be adopted to prevent the loss or damage to those resources.

5. Provide a final FWCA 2(b) reports addressing and incorporating comments received from Corps, NJDEP, and NJDFW on the draft FWCA 2(b) report.

X. CORPS INPUT TO SERVICE:

The Corps will provide project documents and technical information developed during the course of study, secure and provide other existing Corps documents that the Service may request, and coordinate routinely as project plans are refined.

The Corps will provide comments or concurrence with the Service's written products within 30 days of submission. Once any comments are addressed and the Corps provides concurrence, Service products will become public documents available to outside parties upon request.

XI. SERVICE INPUT TO CORPS:

Service submits Draft Supplemental FWCA 2(b) report June 2018

Service submits Final Supplemental FWCA 2(b) report August 2018

XII. CORPS AND SERVICE SUBMISSION SCHEDULE:

	Target Date
Corps provides current plans, documents and information; and transmits funding.	Within 7 days after receipt of MIPR.
Service submits draft FWCA 2(b) report to the Corps, NJDEP and NJDFW.	Within 60 days after receipt of project plans.
Corps, NJDEP and NJDFW provide comments on draft FWCA 2(b) report.	Within 15 days after receipt of draft FWCA 2(b) report
Service addresses Corps, NJDEP, and NJDFW	Within 20 days after receipt of

comments and submits final FWCA 2(b) report.	Corps, NJDEP, and NJDFW comments.

XIII. SERVICE EFFORTS AND COSTS

Service Effort	**Task Days**
Investigate fish and wildlife resources within the vicinity of the project area, including review of available literature and coordination with the NJDEP and NJDFW	
Provide section 7 consultation pursuant to the Endangered Species Act (87 Stat.884; 15 U.S.C. 1551 et seq.) (not charged to project transfer funds	__
Prepare draft FWCA 2(b) report	
Prepare final FWCA 2(b) report	

Total Service Task Days

***Biologist Day Rate ($629) x Overhead Rate (38% or $239)**
21 Service Task Days x $868

Total:

Enclosure 4: District Response to 25 July 2014 Draft Fish and Wildlife Coordination Act Report for the Diversion culvert

1) Diversion Tunnel and Levees and Floodwalls Recommendation #1 "*Evaluate downstream effects to the Passaic River. Include consideration of climate change projections."*

   Analysis of downstream impacts is included in the Hydrologic and Hydraulic (H&H) modeling. The analysis will also take into account climate change projections for the region.

   Discussion of the H&H modeling will be included in the Draft Integrated Feasibility Report/National Environmental Policy Act (NEPA) Document.

2) Diversion Tunnel and Levees and Floodwalls Recommendation #2: "*Use best management practices and timing restrictions during construction to avoid adverse impacts to fish and wildlife species"*:

   The District will implement the following restrictions during construction: a) a tree clearing restriction from 1 April through 30 September to protect Indiana bat and northern long eared bat; b) a tree clearing restriction from 1 April through 30 August to protect species protected under the Migratory Bird Treaty Act; and c) an in-water work restriction from May 1 through July 31 as required by the New Jersey Flood Hazard Area Control Act to protect fish species.

   These restrictions will be included in the Draft Feasibility Report/NEPA Document and in the construction specifications when they are developed in the Preconstruction Engineering and Design (PED) Phase.

   Any other restrictions identified by the Service and other environmental resource agencies during the public/agency comment period of the Draft Integrated Feasibility Report/NEPA document will be considered for inclusion in the construction specifications.

3) Diversion Tunnel and Levees and Floodwalls Recommendation #3: "*If adverse impacts to freshwater wetlands are unavoidable, develop a compensatory mitigation plan*."

   It is currently estimated that approximately 1-3 acres of freshwater forested wetlands may be permanently impacted by the construction of the floodwall/levee associated located along the forested tract in Little Falls along the Peckman River. No wetland impacts are expected from the construction of the floodwalls along Great Notch Brook. The District will include a conceptual plan for compensatory wetland mitigation within the Draft Integrated Feasibility Report/NEPA document.

4) Diversion Tunnel and Associated Levees and Floodwalls Recommendation #4 "*Maintain mature trees to maximum extent possible. Any trees designated for removal should be surveyed in the appropriate season prior to the start of work for evidence of nesting by bird species of management concern.*"

Existing vegetation will be maintained to extent practicable. It is expected that vegetation removal will primarily be limited to the footprint the diversion culvert, the floodwall and levee and a 15 ft vegetation free zone (maintained lawn only) on either side of the floodwall and levee as required by Corps policy. The District will implement a shrub and tree clearing restriction period of 1 April – 30 August to minimize impacts to species protected under the Migratory Bird Treaty Act.

5) Diversion Tunnel and Associated Levees and Floodwall Recommendation #5 "*Delineate the 50-yr floodplain. Future reports should state the rationale for using a flood control plan designed for a 50-yr event."*

The 50-yr level of protection was used for comparing the costs and benefits of preliminary alternatives in order to identify the NED Plan, which is the alternative that has the highest net benefits. The NED Plan will be further optimized to determine which level of protection maximizes net benefits. Therefore, the ultimate level of protection provided by the NED Plan may be higher or lower than the 50-yr event.

Figures showing the Existing Without Project Conditions vs Future With Project Conditions during flood events will be included in the Draft and Final Feasibility Report/NEPA Document.

6) Diversion Tunnel and Levees and Floodwalls Recommendation #6 "*Construct the inlet to retain bank full flows and divert only higher out of bank flows"*

The District concurs. A weir will be installed near the outlet to only direct flows into the diversion culvert during high flow events. The weir will be notched to maintain fish passage.

7) Diversion Tunnel and Levees and Floodwalls Recommendation #7 "*Design the tunnel to allow passage of normal groundwater flow to and from any nearby wetlands. Minimize creation of additional impervious surface.*"

The location of the proposed diversion culvert has been previously disturbed by development activities and is predominantly characterized as maintained lawn, a dirt parking lot/storage area for the Little Falls DPW, asphalt and tennis courts that are part of the Little Falls Recreation Center. National Inventory Mapping and New Jersey wetland mapping resources do not identify any wetlands within or near the footprint of the diversion culvert.

A cut and cover method will be employed in installing the diversion culvert, with surrounding area to be restored to existing conditions (e.g. maintained lawn, restoration

of the tennis court) once the diversion culvert is installed. The creation of additional impervious surface will be minimized to the extent possible while maintaining the objective of flood risk management.

8) Diversion Tunnel and Levees and Floodwalls Recommendation #8 "*Design the tunnel to avoid adverse impacts to the trees, including the supporting root systems."*

   The location of the diversion culvert was selected to optimize flood risk management while avoiding the need to remove existing structures and infrastructure. As stated in response #7, the area has been disturbed previously. There is a small pocket of mature vegetation that will be removed, but the removal is necessary to construct the culvert. Efforts will be made during the PED Phase to create construction access routes that avoid mature vegetation to the extent possible.

9) Diversion Tunnel and Levees and Floodwalls Recommendation #9: "*Coat the interior of the diversion tunnel to obtain a smooth surface and to reduce abrasion to aquatic biota being diverted. Incorporate a low-flow design to allow any diverted aquatic biota to escape downstream when the amount of diverted water is slight or receding*."

   The District concurs and will evaluate the feasibility of implementing the recommended measures during optimization of the NED Plan.

10) Diversion Tunnel and Levees and Floodwalls Recommendation #10: "*Locate the tunnel outlet to minimize removal of vegetation and adverse impacts on wetlands.*

    The District has minimized impacts to vegetation to the extent practicable. There will be a loss of some mature trees along the outlet, but given that the vegetation is located within the riparian zone as regulated by the New Jersey Flood Hazard Area Control Act Rules, the loss will be compensated through mitigation.

11) Diversion Tunnel and Levees and Floodwalls Recommendation #11: "*Survey for the presence or absence of summering Indiana or northern long-eared bats if Project plans entail the clearing of any tracts of forest or removal of mature trees in riparian habitat*."

    As has been standard protocol, a tree clearing restriction from 1 April through 30 September will be implemented during construction. If the tree clearing restriction cannot be maintained, the District will coordinate with the Service to determine the need for presence or absence surveys.

12) Diversion Tunnel and Levees and Floodwalls Recommendation #12: "*Provide the Service with an updated review of HTRW contamination sites within one quarter mile of the Project area using the most recent government records available*."

    The District is currently updating its review of identifying any potential contaminated sites within the project area. The Draft Integrated Feasibility Report/NEPA document

will include the results of the review and will be provided to the Service when it releases the report for public and agency review.

13) Diversion Tunnel and Levees and Floodwalls Recommendation #13: "*Conduct further soil testing at the Little Falls DPW yard to determine the extent of Lead contamination at the site. Provide the Service with the results*."

The District anticipates conducting sediment testing during the PED Phase. Results of any testing performed will be forwarded to the Service for review. It should be noted that any excavated material not used on-site will be disposed of at a facility that has been approved and permitted by the state to accept that specific type of material. The removal of HTRW impacted soils would be performed by the non-federal sponsor to the depth and grade required for construction of the alternative. This is based on the Corps ER 1165-2-132 guidance, specifically: (1) For cost-shared projects, the local sponsor shall be responsible for ensuring that the development and execution of Federal, state, and/or locally required HTRW response actions are accomplished at 100 percent non-project cost. No cost sharing credit will be given for the cost of response actions.

14) Stormwater Control and Protection of Fish &Wildlife (F&W) Resources: "*Utilize creation of open space, property buyouts, and non-structural alternatives to reduce flash flooding and adverse impacts to fish and wildlife species*".

The NED Plan was updated since the preparation of the DFWCAR to include nonstructural measures within the 10-yr floodplain in the Town of Little Falls. The District may evaluate the use of open space and any lots that were subject for buyouts from others for any wetland and/or riparian compensatory mitigation needs.

15) Stormwater Control and Protection of F&W Resources "*Design in-stream and stream bank restoration plans based upon natural channel morphology and behavior*".

The District concurs. Conceptual plans for any in-stream and streambank compensatory mitigation will be discussed in the Draft and Final Feasibility Report/NEPA document. Full design and any supplemental field investigations associated in –stream and stream bank compensatory mitigation will be conducted during the PED Phase.

16) Stormwater Control and Protection of F&W Resources: "*Include Great Notch Brook in future hydrological studies if it has not been evaluated*."

The Hydrologic and Hydraulic (H&H) modeling includes an analysis of Great Notch Brook.

Discussion of the H&H modeling will be included in the Draft Integrated Feasibility Report/National Environmental Policy Act (NEPA) Document.

17) Stormwater Control and Protection of F&W Resources: "*Forward sediment contaminant test results to the Service when available. Include information on sediment sources and disposal sites.*"

The District anticipates conducting sediment testing during the PED Phase. Results of any testing performed will be forwarded to the Service for review. It should be noted that any excavated material not used on-site will be disposed of at a facility that has been approved and permitted by the state to accept that specific type of material. The removal of HTRW impacted soils would be performed by the non-federal sponsor to the depth and grade required for construction of the alternative. This is based on the Corps ER 1165-2-132 guidance, specifically: (1) For cost-shared projects, the local sponsor shall be responsible for ensuring that the development and execution of Federal, state, and/or locally required HTRW response actions are accomplished at 100 percent non-project cost. No cost sharing credit will be given for the cost of response actions.

18) Stormwater Control and Protection of F&W Resources: "*Develop and implement a long-term management and monitoring plan that provides for adequate evaluation of success at each ecosystem restoration site.*"

At the request of the non-federal sponsor, ecosystem restoration is not included within the scope of the study. However, for any site where habitat enhancement, creation or restoration occurs as part of compensatory mitigation related to wetland, riparian and/or open water impacts from the flood risk management project, a Monitoring and Adaptive Management Plan will be prepared and executed. A draft Monitoring and Adaptive Management Plan will be included within the Draft Integrated Feasibility Report/NEPA document and will be provided to the Service for review when available for public and agency review.

19) Stormwater Control and Protection of F&W Resources: "*Minimize the amount of time that construction equipment will be in the river channel. Also limit the amount of equipment that must be put into the water course. Consult the scientific literature and use the best available information when designing ecosystem restoration Projects*."

The District concurs. The District will evaluate the use of cofferdams to minimize during the PED Phase.

The District will utilize best available scientific information when designing any compensatory mitigation related to wetland, riparian and/or open water impacts associated with the implementation of the NED Plan.

20) Stormwater Control and Protection of F&W Resources: "*Consult with the Service's Partners for Fish and Wildlife program to facilitate cooperation and partnerships with private and municipal landowners when conducting habitat restoration.*"

The District concurs. The District will maintain coordination with the Service in all phases of the project.

21) Stormwater Control and Protection of F&W Resources: "*Coordinate any clearing and snagging activities with the local municipalities. Coordinate with local governments to assess the condition of storm-water outfalls.*"

In general, storm water management is a local issue and not part of the Corps mission. However, the District will coordinate any other in-channel activities as part of overall operations and maintenance of the flood risk management project.

22) Stormwater Control and Protection of F&W Resources: "*Use bioengineering techniques to stabilize stream banks in the Project area. Where hard structures are the only feasible alternative, use natural material.*"

The District will evaluate the use of bioengineering techniques natural hard material to stabilize stream banks during optimization of the NED Plan. However, the ability to utilize bioengineering techniques will be dictated by stream velocities during storm events and level of risk associated with how failure of this technique could adversely affect the function of the flood risk management project.

In addition, bioengineering techniques as part of streambank stabilization/habitat restoration may be considered as part of any open water compensatory mitigation that may be required as a result of any adverse impacts related to implementing the NED Plan.

23) Stormwater Control and Protection of F&W Resources: "*Include in the long term management plans for the Peckman River measures to reduce illegal dumping on the stream banks.*"

Although illegal dumping is a local land owner/manager issue, the District can coordinate with local stakeholders on methods they can employ to deter illegal dumping as part of overall Operations and Maintenance of the flood risk management project since trash and debris could adversely impact the function of the diversion culvert.

24) Stormwater Control and Protection of F&W Resources: "*Salvage large shade-producing trees with exposed roots along the river. Anchor them in place and install boulders near the exposed roots.*"

The District will include this recommendation as part of formulating and evaluating mitigation alternatives should compensatory mitigation be required as a result of implementing the NED Plan. However, the ability to utilize this technique will be dictated by stream velocities during storm events and level of risk associated with how failure of this technique could adversely affect the function of the flood risk management project.

25) Stormwater Control and Protection of F&W Resources: "*Plant native trees and shrubs throughout degraded forest floors to improve understory cover. Eradicate or control exotic, invasive species, particularly Japanese knotweed, along the Peckman River and Great Notch Creek. Include measures to control invasive plants in all phases of construction.*"

The District concurs. Any planting as part of mitigating temporary or permanent impacts will include native tree and shrub species. As part of the construction specifications, the District includes language requiring the contractor to obtain planting material from nurseries within a 50-mile radius from the project area to ensure regionally native planting stock.

Regarding invasive species, the District will be preparing a mitigation plan that will include measures to minimize the dispersal and propagation of invasive species during and post construction. The mitigation plan will be included in the Draft and Final Integrated Feasibility Report/NEPA document and will be updated during the PED Phase.

United States Department of the Interior

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IN REPLY REFER TO:
2014-CPA-0183

Nancy Brighton, Acting Chief
Environmental Analysis Branch
U.S. Army Corps of Engineers
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New York, New York 10278-0090
Attn: Kimberly Rightler

JUL 25 2014

Dear Ms. Brighton:

This letter submits the U.S. Fish and Wildlife Service's (Service) draft report on the potential environmental impacts to fish and wildlife resources of the U.S. Army Corps of Engineers, New York District (Corps) Peckman River Basin, New Jersey Feasibility Study for Flood Control and Ecosystem Restoration. The draft report was prepared pursuant to Section 2(b) of the Fish and Wildlife Coordination Act (48 Stat. 401; 16 U.S.C. 661 *et seq.*) (FWCA). The information presented in this draft report is also provided pursuant to the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) (ESA) to ensure protection of federally listed (threatened and endangered) species. These comments do not preclude separate review and comments by the Service on any forthcoming environmental documents pursuant to the National Environmental Policy Act of 1969 (83 Stat. 852 as amended; 42 U.S.C. 4321 *et seq.*). This draft report is provided pursuant to a Fiscal-Year 2011 interagency agreement.

The Service will prepare a final FWCA report in coordination with the New Jersey Department of Environmental Protection's Division of Fish and Wildlife, incorporating Corps comments to the draft FWCA.

If you have any additional questions or concerns regarding this consultation, please contact Dennis Hamlin at (609) 383-3938 x14 or dennis_hamlin@fws.gov.

Sincerely,

Eric Schrading
Field Supervisor

Enclosure

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Service, ARD ES

DRAFT FISH AND WILDLIFE COORDINATION ACT SECTION 2(b) REPORT

PECKMAN RIVER FLOOD DAMAGE REDUCTION AND ECOSYSTEM RESTORATION FEASIBILITY STUDY

ESSEX AND PASSAIC COUNTIES, NEW JERSEY

Prepared by:

U.S. Fish and Wildlife Service
Ecological Services, Region 5
New Jersey Field Office
Pleasantville, New Jersey 08232

July 2014

INTRODUCTION

This constitutes the U.S. Fish and Wildlife Service's (Service) draft Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401, as amended; 16 U.S.C. 661 *et seq.*), Section 2(b) report describing the fish and wildlife resources and supporting ecosystems in the area of the U.S. Army Corps of Engineers New York District's (Corps) proposed Peckman River Basin Flood Risk Management Feasibility Study. The information presented in this report documents the fish and wildlife resources in the area, identifies potential beneficial and adverse impacts to those resources, provides recommendations to minimize adverse impacts, and identifies additional opportunities for habitat enhancement. This report is provided in accordance with a Fiscal Year-2011 scope-of-work agreement between the Service and the Corps, amended by a January 13, 2014 email from the Corps (Rightler, pers. comm. 2014). The Service will prepare a final FWCA report in coordination with the New Jersey Department of Environmental Protection's (NJDEP) Division of Fish and Wildlife (NJDFW), incorporating Corps comments to the draft FWCA.

AUTHORITY

The following comments are provided pursuant to Section 2(b) of the FWCA. Comments are also provided under the authority of the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 *et seq.*) and the Migratory Bird Treaty Act of 1918 (MBTA) (40 Stat. 775, as amended; 16 U.S.C. 703-712), and are consistent with the intent of the Service's Mitigation Policy (Federal Resister, Vol. 46, No. 15, Jan. 23, 1981).

PROJECT DESCRIPTION

The Corps is engaged in a flood control project (Project) for the Peckman River Basin, located in the northeastern New Jersey counties of Essex and Passaic. Reaches of the Peckman River, especially within the Township of Little Falls and the Borough of Woodland Park (formerly the Borough of West Paterson), are subject to frequent flash flooding from rapid runoff from heavy rainfall events in the Peckman River watershed.

In response to flooding events, degraded ecosystem integrity, and environmental concerns, the Corps, in partnership with the NJDEP, is conducting a feasibility study for flood protection and ecosystem restoration within the Peckman River Basin. As presented in the Corp's Section 905(b) Water Resources Development Act (WRDA) Preliminary Analysis (Corps 2002), the objectives of flood control and ecosystem restoration measures are:

- To reduce the flood hazard and associated urban flood damages in the Basin;
- To preserve, maintain and, to the extent possible, enhance the resources of the existing natural environment in the Project area;
- To preserve to the extent possible, existing open space areas and associated recreational opportunities in the Project area;
- To provide protection to hospitals, municipal buildings, emergency response facilities and transportation corridors and thus improve public health and safety during any future flood disasters; and

- To provide a plan that is compatible with future flood control and economic development opportunities.

The Corps evaluated several proposed flood protection measures throughout the length of the Peckman River, but has focused on the most flood prone areas of Little Falls and Woodland Park. Due to the significant commercial nature of these areas, the Corps considers only structural plans as feasible solutions (Rightler, pers. comm. 2014). However the Corps provided no evidence that non-structural solutions are not feasible. The structural alternatives originally considered to increase drainage capacity included the diversion of flood water from the Peckman River to the Passaic River; the construction of 12,800 feet of levees and floodwalls; and/or extensive channel modification of 1.5 miles of the Peckman River.

The plan being currently being analyzed by the Corps combines the diversion option with elements of the levee/floodwall plan (Figure 1). Above channel flood water would be diverted from the Peckman River to the Passaic River through a 1450-foot-long, 30-foot-wide by 10-foot-high closed culvert located approximately 550 feet upstream of the Route 46 bridge. The culvert would be constructed using a "cut and cover" method to a maximum above grade depth of 20 feet. The diversion culvert would be located on the western bank of the Peckman River and incorporate a side-channel inlet structure constructed at the level of full channel flow. A retaining wall will extend short distances both upstream and downstream from the inlet structure along the west bank of the river and a corresponding flood wall approximately 650 feet in length will be constructed along the east bank. Both the retaining wall and the floodwall will terminate at the site of a weir approximately 100 feet downstream of the culvert inlet structure. This weir, of yet undetermined configuration, will direct flood water into the culvert and be designed to allow both upstream and downstream passage of fish (Rightler, pers. comm. 2014).

A combination levee/floodwall system approximately 1800 feet in length would be constructed extending east from the Peckman River, adjacent to parking lots along the border of an approximately 20 acre forested area located behind Passaic Area High School. To decrease this system's footprint and reduce encroachment on a wetland located within the forested area, approximately 550 feet in the center section of this system will be constructed as a floodwall instead of a wider based levee. The west end of this levee would tie into the flood wall on the east bank of the Peckman River opposite the culvert inlet structure. The current and historic drainage pattern of the forested area (including the entire wetland) is to the north into an unnamed tributary of Great Notch Creek, with a much smaller area along the Peckman River draining into the river. Drainage structures will be included in the levee/floodwall system to maintain the wetland's hydrologic connections.

Retaining walls would be constructed along the channel of Great Notch Brook, extending approximately 1650 feet upstream from its confluence with the Peckman River just north of Route 46. A levee approximately 475 feet long will extend further upstream, south the Route 46 crossing. This entire section of Great Notch Brook runs through a commercial area and has long been channelized and diverted from its original course.

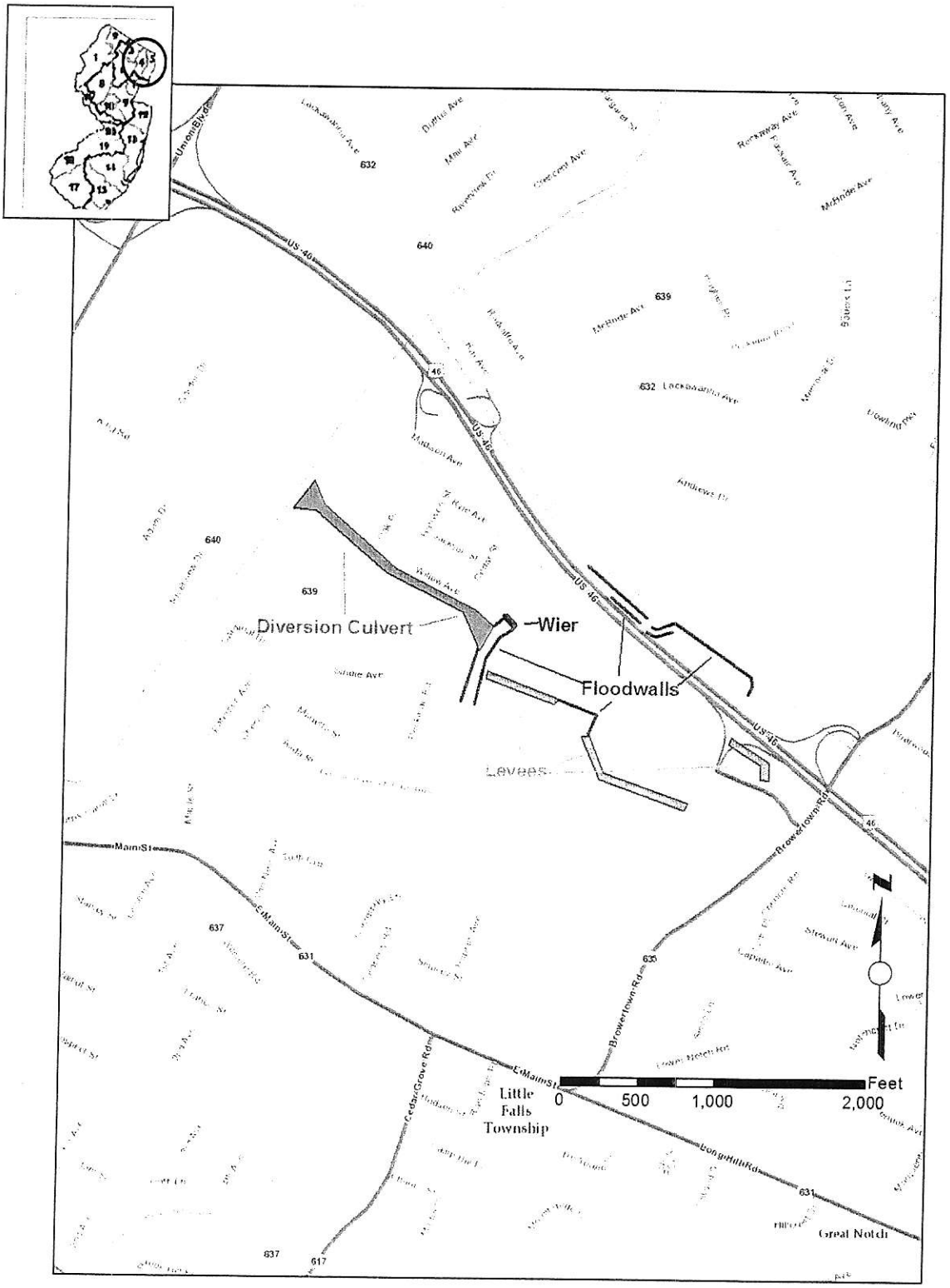

Figure 1. Proposed structural flood protection measures for the Peckman River and Great Notch Creek in Little Falls Township and the Borough of Woodland Park, Passaic County, NJ.

METHODS

Service and Corps representatives conducted a site visit on November 2, 2004, and noted dominant vegetation and general conditions of the Peckman River and its riparian area at various locations accessible by vehicle and foot. The Service also coordinated this review with the NJDFW, including the Bureau of Freshwater Fisheries (BFF). The Service has reviewed the following Project materials provided by the Corps:

- Section 905(b) WRDA 86 Preliminary Analysis, January 2002 (Corps 2002)
- Scoping Document, January 2004 (Corps 2004a)
- Data Gap Report, January 2004 (Corps 2004b)
- Environmental Resource Inventory (Corps 2004c)
- Wetland delineation, riparian corridor characterization, and restoration opportunity identification: Peckman River Basin, New Jersey (Corps 2009)
- Stream Assessment Report, September 2010 (Corps 2010a)
- Invertebrate Survey Report, October 2010 (Corps 2010b)
- Final Fish Survey Report, November 2010 (Corps 2010c)

The Corps has also provided the Service with amended aerial depictions of proposed diversion culvert, levee, and floodwall locations, as of December 2013.

Further, we have searched our Geographic Information System (GIS) database for known locations of federally listed species, wetlands, and other important habitat types within or near the study area. We also searched for State-listed species in the area using available GIS database information.

NATURAL RESOURCES

The Peckman River Basin

The Peckman River Basin is within New Jersey Watershed Management Area 4: Lower Passaic and Saddle, Northeast Water Region (NJDEP 2007). It is one of the major sub-watersheds of the Passaic River, encompassing a drainage area of approximately 9.8 square miles in Passaic and Essex Counties. The Peckman River's headwaters are located in the Town of West Orange and it flows northeasterly through the Borough of Verona, the Township of Cedar Grove, the Township of Little Falls, and the Borough of Woodland Park to its confluence with the Passaic River. Great Notch Brook is a major tributary to the Peckman River, draining lands on the eastern side of the watershed, joining the Peckman in Woodland Park. Great Notch Brook is subject to extremely rapid runoff from higher elevations. Frequent flooding events cause significant physical damages to properties within the Peckman River floodplain and loss of economic activity in the area.

Development activities throughout the Peckman River Basin are likely related to the loss and degradation of fish and wildlife resources and their supporting ecosystems. An estimated 71% of the land in the Peckman River watershed is urbanized (Corps 2002) and flooding is likely related to urban impacts to the watershed.

An evaluation of biological integrity assessed water and habitat quality within four reaches of the Peckman River (Corps 2010a). The reaches included an approximately 750-foot-long reach immediately upstream from the diversion inlet (Project Reach) and three other reaches ranging to 2.5 miles upstream of the Project Reach.

The Project Reach is described as representative of typical stream habitat within the Peckman River Basin. This portion of the river is composed of a series of riffles and glides, and a deep lateral scour pool segment. The substrate consists largely of gravel and cobble, with lesser amounts of sand. Approximately 75% of the substrate is covered by filamentous algae. Human bank alterations, in the form of stone and concrete walls, were noted. The surrounding land-use throughout the Peckman River Basin is predominately residential and commercial; however the Project Reach each has a relatively wide riparian corridor on the east bank. The dominant vegetation within the Project Reach's riparian corridor consists of large deciduous trees with an understory dominated by invasive Japanese knotweed (*Polygonum cuspidatum*) adjacent to the bank.

Physicochemical assessment of instream and riparian water/habitat quality determined that all surveyed reaches of the Peckman River were representative of "suboptimal" conditions (Corps 2010a). Two biological assessment methods were utilized to measure habitat and water quality. Using benthic macroinvertebrate taxonomic richness as an indicator of water quality, the New Jersey Impairment Score determined water quality at the Project site to be "moderately impaired" (Corps 2010b). Using organic pollution tolerances of benthic macroinvertebrates, the Hilsenhoff Biotic Index determined water quality as "fair" and indicative of "fairly significant organic pollution" (Corps 2010b, Mandaville 2002).

Due to the highly developed nature of the Peckman River Basin, wildlife resources are limited to a narrow strip of vegetation along the river corridor, supplemented by remnant palustrine forested/scrub-shrub wetland within the floodplain. Human alterations, such as areas of channelization or stream banks modified by hard structures, are evident at several locations along the river. Channelization is most evident on several small unnamed feeder streams, where runoff from rain events is carried quickly to the Peckman, contributing greatly to the flash flood flow problems. Stream bank erosion is a problem at several locations, leading to losses of riparian vegetation as well as increased streambed sedimentation that negatively impacts aquatic habitat.

Wetlands and Vernal Pools

A NJDEP-mapped 8.54-acre palustrine forested deciduous wetland lies within an approximately 20 acre wooded area on the east side of the Peckman River immediately upstream and opposite of the proposed diversion inlet. The wooded area is bordered by auto dealership parking lots on the north, a shopping center parking lot to the east, Passaic Area High School athletic fields to the south, and the Peckman River to the west. The Corps' assessment of the hydrology, vegetation, and soil within approximately three acres of the mapped wetland delineated approximately 0.7 acres as regulated wetlands. The assessment was confined to an area within 100 feet of the east and north borders of the wooded area. Regulated wetlands and vernal pools were noted to extend south of the assessment area, but were deemed outside the Project's direct impact area and not surveyed (Corps 2009).

Three vernal pools were identified within the assessment area and all were located in the delineated wetland (Corps 2009). Vernal pools are unique ecological systems supporting distinctive plant and animal species. Typically inundated in the spring and dry during the summer, vernal pools provide safe habitat for amphibian and insect species unable to tolerate competition or predation by fish.

The canopy of the surveyed wetland is dominated by red maple (*Acer rubrum*) and green ash (*Fraxinus pennsylvanica*), but also includes black gum (*Nyssa silvatica*), American elm (*Ulmus americana*), bitternut hickory (*Carya cordiformis*), black walnut (*Juglans nigra*), sugar maple (*Acer saccharum*), silver maple (*Acer saccharinum*), and sycamore (*Platanus occidentalis*). The shrub layer consists of Japanese knotweed, spice bush (*Lindera benzoin*), and black haw (*Viburnum prunifolium*). The herbaceous plants observed include royal fern (*Osmunda regalis*), skunk cabbage (*Symplocarpus foetidus*), dotted smartweed (*Polygonum punctatum*), clearweed (*Pilea pumila*), jack-in-the-pulpit (*Arisaema triphyllum*), sensitive fern (*Onoclea sensibilis*), Oriental bittersweet (*Celastrus orbiculatus*), and poison ivy (*Toxicodendron radicans*) (Corps 2009). Japanese knotweed and Oriental bittersweet are considered noxious invasive species.

Fish

The Peckman River supports several freshwater fish species, such as American eel (*Anguilla rostrata*), banded killifish (*Fundulus* diaphanous), blacknose dace (*Rhinichthys atratulus*), bluegill (*Lepomis macrochirus*), common carp (*Cyprinus carpio*), creek chub (*Semotilus atromaculatus*), green sunfish (*Lepomis cyanellus*), largemouth bass (*Micropterus* salmoides), longnose dace (*Rhinichthys cataractae*), smallmouth bass (*Micropterus dolomieu*), tessellated darter (*Etheostoma olmstedi*), and white sucker (*Catostomus commersoni*).

Electrofishing surveys of the Peckman River were conducted by NJDFW in 1999 and by Corps' contracted Tetra Tech, Inc. biologists in 2010. Species composition in the Project Reach was found to be comparable in those surveys (Corps 2010c), with white sucker, blacknose dace, and creek chub dominating the catch in both sampling events. Species present in the 1999 NJDEP survey, but absent from the 2010 survey included brown trout (*Salmo trutta*), pumpkinseed sunfish (*Lepomis gibbosus*), and brown bullhead (*Ameiurus nebulosus*). In contrast, species present in the 2010 survey and absent in the 1999 NJDFW survey included American eel, longnose dace, tessellated darter, and smallmouth bass.

The Fish Index of Biological Integrity (FIBI) is an ecologically based method for identifying and classifying water pollution levels through assessment of fish assemblages. The FIBI assessment focuses on the dynamics and composition of fish population, evaluating metrics that include species richness, trophic level, and tolerance to changing environmental conditions (Barbour *et al.* 1999). The calculated FIBI score from 2010 data determined the Project Reach to be impaired (*i.e.* "poor") (Corps 2010c). Population data were estimated for some species during the 1999 NJDFW survey, precluding any comparative FIBI assessment between the 2010 and 1999 surveys.

The Peckman River is classified by NJDFW as FW2 Non Trout Waters (NJDFW 2005). Approximately 2000 trout per year are stocked in Verona Pond, an impoundment on the Peckman River approximately four miles upstream from the Project area and probably account for any trout collected in surveys.

Environmental Contaminants

A preliminary Hazardous, Toxic, and Radioactive Waste (HTRW) Assessment identified several sites adjacent to the Project that should be considered as low concern for HTRW (Corps 2002). HTRW sites near the Project area include:

- A vacant industrial building at 24 Ryle Avenue is listed on the Emergency Response Notification System database list;
- The Little Falls Recreation Center at 160 Patterson Avenue is listed in the Leaking Underground Storage Tank database with a No Further Action status. Also, several spills have occurred within this area of Patterson Avenue;
- The Little Falls Township New Jersey State Police laboratory is listed in the State Hazardous Waste Site database with an open status;
- An industrial Park is located between Peckman River and the Recreation Center along Patterson Avenue. Several spills are listed within this industrial park especially between 5 and 8 Peckman Road. Fred Heyrion at 3 Peckman Road is listed with an Underground Storage Tank and several spills have been reported.

A review of the NJDEP Site Remediation Program contaminated site lists revealed six properties in the Project Area with confirmed contamination (NJDEP 2012). Pending sites with confirmed contamination include:

- Passaic County Regional High School at 100 E Main Street (property at proposed Peckman River levee/floodwall)
- Little Falls Laboratory, at 1103 RT 46 (property adjacent to, and upgrade of, the proposed Great Notch Creek retaining wall)

Active sites with confirmed contamination include:

- Fred Heyrich Industrial Services at 3 Peckman Rd (property adjacent to proposed diversion inlet)
- Bob Ciasulli Toyota - Toyota Universe at 1485 RT 46 (property at proposed Peckman River levee/floodwall)
- Conoco Phillips Mobil #2635060 at 1455 RT 46 (property at proposed Peckman River levee/floodwall)
- Lukoil #573001500 at RT 46 W (property at proposed Great Notch Creek floodwall)

Given that several of these confirmed contamination sites were not identified in the Corp's 2002 HTRW Assessment, an updated review with the most recent government records search available is advised.

Sub-surface soil samples were obtained from borings to depths of 25 feet (or bedrock) at 23 various locations along the Peckman River and Great Notch Creek stream banks and analyzed for volatile organic compounds (VOC)+15, semi-volatile organic compounds (SVOC)+25, pesticides, polychlorinated biphenyls (PCBs), and Resource Conservation and Recovery Act (RCRA)-8 metals. A summary of the analysis report provided to the Service by the Corps (Dabal, pers. comm. 2012) indicated that detectable levels were found at six locations. The summary indicated that Isophorone (VO+15) was found at levels exceeding NJDEP guidelines in

a sample collected at the Little Falls Township Department of Public Works (DPW) yard (adjacent to, and part of, the diversion culvert inlet site), but its presence was "not an issue" and only standard accepted protocols for excavations were applicable. The SVO compounds Benzo(a)anthracene, Benzo(b)flouranthene, and Indeno(1,2,3-cd)pyrene were detected at five locations, with Benzo(a)pyrene levels exceeding NJDEP guidelines at each site, but deemed as "not excessive". No pesticides or PCBs were detected in any sample. The analysis detected the RCRA-8 metals Arsenic at one location and Lead at two locations. The Arsenic level (22 ppm) was just above NJDEP guideline (20 ppm), but considered "not an issue" due to its depth and location. The Service concurs that the detected contaminant levels of VOCs, SVOCs, and Arsenic, especially given their depth of occurrence, do not pose a significant risk to fish and wildlife resources. The summary indicated that Lead was detected at 681 ppm (above the NJDEP guideline of 400 ppm) in the sample collected at the DPW yard. The diversion culvert inlet structure is planned to be located on the DPW yard and extensive excavation is planned at this site. Environmental exposure to lead contaminated soil at this location could pose a threat to fish and wildlife resources and to human health. The Service agrees with the summary's recommendation that additional drilling and sub-surface sampling will have to be conducted to determine the extent of the lead contamination and that any work conducted in that area will require additional planning beyond general excavation protocols.

Federally Listed Species

Indiana Bat

The Project site is located within the summer breeding range of the federally listed (endangered) Indiana bat (*Myotis sodalis*) and is approximately 16 miles from a known hibernaculum. Indiana bats hibernate in caves and abandoned mine shafts from October through April. Between April and August, Indiana bats inhabit floodplain, riparian, and upland forests, roosting under loose tree bark during the day, and foraging for flying insects in and around the tree canopy at night. During these summer months, numerous females roost together in maternity colonies. Maternity colonies use multiple roosts in both living and dead trees. From late August to mid-November, Indiana bats congregate in the vicinity of their hibernacula, building up fat reserves for hibernation. Protection of Indiana bats during all phases of their annual life cycle is essential to the long term conservation of this species. Threats to the Indiana bat include disturbance or killing of hibernating and maternity colonies; vandalism and improper gating of hibernacula; fragmentation, degradation, and destruction of forested summer habitats; and use of pesticides and other environmental contaminants.

Section 9 of the ESA prohibits unauthorized "take" of federally listed wildlife by killing, wounding, harming, or harassing a species. Harm includes significant habitat modification or degradation; harass includes an intentional or negligent act or omission that significantly disrupts normal behavioral patterns such as breeding, feeding, or sheltering.

Species Proposed for Federal Listing

Northern Long-eared Bat

The Project site is located within the summer breeding range of the federally proposed (endangered) northern long-eared bat (*Myotis septentrionalis*) and is approximately four miles

from a known maternity colony. On October 2, 2013, a proposed rule to list the northern long-eared bat as an endangered species was published in the Federal Register. A final determination to list the long-eared bat will be made by September 2014. Northern long-eared bats are known to utilize trees as roosts, but information regarding the biological needs of the species is not sufficiently well known to permit identification of areas as critical habitat at this time. The Service is seeking more information regarding its specific winter and summer habitat features and requirements, and will make a determination on critical habitat no later than 1 year following any final listing.

Species under Review for Federal Listing

The Service is evaluating the little brown bat (*Myotis lucifugus*), tri-colored bat (*Perimyotis subflavus*), and American eel to determine if listing under the ESA is warranted. The bat species may be present, and the American eel is known to be present, in the Project area. These species do not currently receive any substantive or procedural protection under the ESA, and the Service has not yet determined if listing of any of these species is warranted. However, the Corps and other Federal action agencies should be aware that these species are being evaluated for possible listing and may wish to include them in field surveys and/or impact assessments, particularly for projects with long planning horizons and/or long operational lives.

Except for the above mentioned species, no other federally listed or proposed threatened or endangered flora or fauna under Service jurisdiction are known to occur in the vicinity of the property. If additional information on federally listed species becomes available, or if Project plans change, this determination may be reconsidered.

Migratory Birds

Common bird species in the Project area include American robin *(Turdus migratorius),* northern cardinal *(Cardinalis cardinalis),* tufted titmouse *(Baeolophus bicolor),* gray catbird *(Dumetella carolinensis),* and American crow *(Corvus brachyrhynchos).*

Migratory birds are a Federal trust resource responsibility of the Service pursuant to the MBTA. Many species of migratory birds have experienced population declines in recent decades, largely due to direct and indirect destruction and fragmentation of their habitats (Dunne 1989).

The MBTA prohibits taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Department of the Interior. Unlike the ESA, neither the MBTA nor its implementing regulations at 50 CFR Part 21 provide for permitting of "incidental take" of migratory birds. In New Jersey, the appropriate timing restriction to protect nesting migratory birds from tree and shrub-scrub removal is March 15 to July 31 (NJDFW 2006).

SERVICE RECOMMENDATIONS

The first objective of Corp's Section 905(b) Water Resources Development Act (WRDA) Preliminary Analysis (Corps 2002) is "To reduce the flood hazard and associated urban flood damages in the [Peckman River] Basin". Management of stormwater in urban watersheds requires plans that are designed as a system, integrating structural and nonstructural measures, and incorporating watershed goals (National Research Council 2008). Improving on-site

stormwater retention, creating open space, and replacing hard surfaces with permeable ones are activities that enhance storage capacity and infiltration into the soil, promoting a stronger subsurface hydrologic connection to waterways that decreases the peak flows and resultant flooding (National Research Council 2008).

The Service strongly believes that nonstructural components are integral in the development and implementation of any long-term flood control plan for the Peckman River Basin. We recommend that the Corps reexamine their decision to remove non-structural elements from their analysis. The creation of open space through property buyouts, utilizing permeable pavements where practical, and increasing on-site stormwater storage capacity of residential and commercial properties with the installation of cisterns, rain gardens and/or dry swales, are all feasible measures that can be employed to reduce the flood hazard currently experienced in the Basin.

In an effort to reduce flash flooding in the Basin, some communities in the Basin are partnering with non-government and conservation organizations to promote and implement non-structural stormwater management measures (Kadosh 2014). The Service recommends that the Corp's encourage, support, and assist concerned communities, organizations and residents to expand on such activities, many of which require little capital investment and provide long-term benefits.

The Service recommends that the Corps assess the effects of the Project on area hydrology. Such an assessment should include anticipated changes in sheet flows, stream flows, and groundwater flows into any floodplain wetlands, and any effects from flood waters that would rise in wetlands located behind proposed flood control structures during storm events. Possible effects downstream of the confluence with the Passaic River should also be evaluated.

In addition, the Corp's assessment analysis should be completed with consideration of future effects of climate change. The Sustainable Jersey Climate Change Adaptation Task Force (CATF) identifies that average annual precipitation is expected to increase in the region by up to 5% by the 2020's and up to 10% by the 2050's (CATF 2011).

In general, the Service recommends timing restrictions on construction activities and use of best management practices (*e.g.,* hay bales, silt curtains, coffer dams) during construction to avoid adverse impacts to terrestrial and aquatic species at any proposed restoration sites and flood control locations.

Project plans should be designed to avoid any adverse impacts to freshwater wetlands. If adverse impacts to freshwater wetlands are unavoidable, we recommend that the Corps develop a compensatory mitigation plan.

Mature trees are important components to riparian ecosystem and should be maintained to the maximum extent possible. Shade produced by mature trees along the stream is critical to maintaining water temperature and dissolved oxygen favorable to aquatic organisms. In addition, the vertical structure and canopy provided by mature trees are a critical component of habitat for migratory birds and bats. If any trees must be removed, preferential protection should be afforded to large, native, mast or fruit producing species. The Service also advocates salvaging native extant shrubs and small trees during any flood control construction phase.

Salvaged trees and shrubs should then be replanted at appropriate sites along the river or within the watershed.

Preferred Indiana bat foraging areas and roost locations are strongly associated with riparian and wetland habitats (Kitchell 2008; Watrous *et al.* 2006). Several species of preferred roost trees, including American elm, green ash, sugar maple, silver maple, bitternut hickory, and red maple were identified along the Peckman River corridor and in the wetland adjacent to the Project site (Corps 2009). Based on a site visit, Service personnel identified potential roosting trees for the Indiana bat and foraging habitat within the Project area and determined that tree clearing could adversely affect this species. The Service, therefore, recommends a seasonal restriction on the clearing of trees 5 inches or greater in diameter at breast height during the summer foraging period of April 1 through September 30. Trees may be felled from October 1 to March 31. If Project plans entail the clearing of trees during the foraging season, the Service recommends a survey be conducted for the presence or absence of summering Indiana bats. All survey plans should be submitted to the Service's New Jersey Field Office for review prior to implementation.

DIVERSION

The proposed location for the diversion tunnel would impact a heavily eroded and degraded bank which contains a patch of Japanese knotweed, ailanthus (*Ailanthus altissima*), Tartarian honeysuckle (*Lonicera tatarica*), and a few shrubs and tree saplings. Japanese knotweed, ailanthus, and Tartarian honeysuckle are exotic, invasive species; thus, the Service would anticipate few adverse impacts to the use of this site.

The design plans incorporate a levee/floodwall/retaining wall system extending east of the Peckman River, opposite the diversion culvert. These levees and floodwalls have the potential to alter drainage patterns to the area, which includes approximately 20 forested acres (containing wetlands and vernal pools) and adjacent athletic fields behind Passaic County Regional High School. The majority of this area appears to drain northward into a channelized tributary of Great Notch Creek. The levee/floodwall may restrict or block drainage into the tributary and cause ponding within the forested area.

1. Inlet

- Construct the inlet to retain bank full flows and divert only higher out-of-bank flows. Bank flows are necessary to maintain channel formation (*e.g.*, removal of sediment buildup, channel clearing of debris).

- Forward a copy of the design plans for the levee system and channel constriction to the Service for review to ensure that such designs do not adversely impact palustrine forested wetlands along the eastern bank across from the inlet structure or aquatic resources downstream of the channel constriction. Generally, the Service and NJDFW (Didun, pers. comm. 2004) do not advocate the use of in-stream blockages to divert flows. However, if a diversion is constructed, the Service recommends using natural, soft material, such as clean soil, rock, and stone for levee construction. The levee could then be vegetated. Additionally, the levee would need to be constructed to ensure that fish are unimpeded traveling upstream and downstream of the Peckman River.

2. Tunnel

- Design the tunnel to allow passage of normal groundwater flow to and from any nearby wetlands and avoid impeding the Peckman River's full range of modal flows through all seasons. Minimize the creation of additional impervious surface.

- Retain large trees to protect habitats for migratory birds. A line of large mature trees closely borders the proposed corridor between Harrison Street and McBride Avenue. Given the size of the trees and the scarcity of such trees within the watershed, the Service advises moving the path of the diversion tunnel between Harrison Street and McBride Avenue slightly south to avoid adverse impacts to these trees, including the supporting root systems.

- Coat the interior of the diversion tunnel to obtain a smooth surface and reduce abrasion to aquatic biota being diverted (*e.g.*, reduce de-scaling fish). Incorporate a low flow design to concentrate flows in a narrower section of the culvert bottom (*e.g.*, concave-shaped bottom) to allow any diverted aquatic biota to escape downstream when the amount of diverted water is slight or receding.

3. Outlet

- Locate the outlet for the diversion tunnel to minimize removal of trees and shrubs. Palustrine forested wetlands exist as an island within the Passaic River and as a finger of low floodplains immediately opposite and immediately upstream, respectively, of the proposed outlet location. The Service recommends placing the outlet to minimize adverse impacts on these wetlands.

- Investigate potential hydrologic alterations created by floodwaters exiting the outlet to determine if these forested wetlands would be adversely impacted.

4. Levee/Floodwall

- Design the levee/floodwall extending east from the Peckman River opposite the diversion culvert inlet along the northern border of the forested area on the east side of the river so that it maintains current drainage patterns.

- Include at least two stormwater features: one at near the midpoint of the floodwall allowing drainage into the Great Notch Creek tributary; and one near the bank of the Peckman River allowing drainage into the Peckman River.

- Conduct regular inspections of levee/floodwall stormwater features to clear any blockages that could alter hydrologic conditions by ponding water within the forested area and associated wetlands and vernal pools.

ECOSYSTEM RESTORATION

The Service and NJDFW support Corps efforts to restore fish and wildlife habitats along the Peckman River. We concur with the Corps (2002) statement that habitat availability is very limited in this highly developed area. Although ecosystem restoration is no longer a primary component to the Peckman River Basin Flood Risk Management Feasibility Study (Rightler, pers. comm. 2014), we recommend that the Corps to continue to coordinate with the Service, local municipalities, and interested conservation organizations at all stages of planning and construction to incorporate measures that reduce inputs of stormwater and sedimentation into the River. The Service also recommends that the Corps explore opportunities for creating open space and removing impermeable surfaces to the extent possible. Such actions will promote ecosystem integrity and provide substantial benefits to fish and wildlife resources.

GENERAL RECOMMENDATIONS

1. Project Planning

- Base designs for all in-stream and stream bank restoration plans upon natural channel morphology and behavior to the extent feasible. Data needed include topography, cross sections, and hydrodynamics of the proposed aquatic restoration sites. Planning must ensure that any recommended structures would not cause adverse impacts to the river system downstream. Such planning should include projections associated with climate change.

- Utilize a comprehensive model for flood hazard reduction that maximizes to the extent possible stormwater control methods that reduce direct flow into Basin waterways, including elements such as buyouts of property, creation of open space, decreasing the amount of impermeable surfaces, and the promotion of systems that increase infiltration to groundwater.

- Forward results of sediment testing to the Service for review. The Service understands that contaminants testing will be conducted on Project site sediments once plans have been finalized. According to current plans, it appears that at least 12 properties in the Project area where soils are to be disturbed have been identified as contaminated sites. The Service recommends that future design phases include information on sediment sources and disposal sites where fill or excavation may be required.

- Develop and implement a long-term management and monitoring plan for the Project. The plan should provide adequate evaluation of habitat restoration success. Information obtained will contribute to the science of in-stream and riparian habitat restoration, particularly in urban settings. The plan should include contingencies that would provide for further Corps action during post-construction monitoring, if necessary, as part of an adaptive management strategy to be implemented in coordination with affected municipalities and private landowners. Corps interventions may include regrading, re-planting, or other actions to correct for unexpected conditions, including deposition, erosion, failure of vegetation establishment, and/or re-invasion of undesirable species such as Japanese knotweed.

- Minimize the amount of time that construction equipment will be in the river channel. Also limit the amount of equipment that must be put into the water course. Where possible, conduct work from the top of the bank rather than from the river. Limiting disturbances will minimize any adverse effects on aquatic species and wetlands within the river.

- Consult the scientific literature and use the best available information regarding planting elevation, depth, soil type, and seasonal timing to ensure best results when revegetating sites. Include subsurface conditions such as soil and sediment geochemistry and physics, groundwater quantity and quality, and infauna when designing riparian, wetland, and instream restoration.

2. Coordination with local municipalities and land owners

- Coordinate with landowners on sites proposed for restoration. Consult with the Service's *Partners for Fish and Wildlife* program biologists to facilitate cooperation and partnerships with those private landowners when conducting habitat restoration. For additional information about the *Partners* program, contact the Service's New Jersey Field Office at (609) 646-9310 ext. 22, Attn: Brian Marsh.

- Coordinate with the local municipalities to assess the condition of stormwater outfalls. Opportunities may exist to reconfigure storm-water discharges during Project construction to limit erosion, slow storm-water flows, and improve water quality.

- Coordinate with the local municipalities, non-government organizations, and land owners to promote incorporation of "green infrastructure" stormwater management systems such as residential rain gardens and other stormwater retention measures that increase infiltration and recharge to groundwater, and reduce peak flows of stormwater runoff.

- Coordinate any clearing and snagging activities with the local municipalities. If the river has not been cleared, the Corps will need to coordinate with the local municipalities to ensure that such activities do not adversely affect the proposed ecosystem restoration or further degrade the riverine system.

3. Stream Banks

- Employ bioengineering techniques and soft structures, as described in the Corps' (2002) report to stabilize stream banks. Such techniques include regrading banks, using erosion control fabrics and biologs, and planting native trees and shrubs along the banks. Many feasible sites were identified in the Corps' (2002) report. The Service recommends bioengineering techniques to stabilize stream banks, as opposed to constructing hard structures, along as many eroded sites of the Peckman River as feasible. Where hard structures offer the only feasible alternative, the use of natural material (*e.g.*, stones, boulders) is recommended.

- Salvage as many large shade-producing trees as possible along the river. Large shade-producing trees moderate water temperature in the stream during the summer months that benefits fish and aquatic invertebrates.

4. Riparian Buffers

- Plant native young trees and shrubs throughout degraded forest floors to improve understory cover. A healthy forest requires an understory to provide multiple canopy layers (thus increasing wildlife diversity), to provide replacement trees and shrubs as the forest matures and older trees die, and to reduce sunlight on the forest floor (which decreases chances for certain invasive species to become established). Recommended plantings should be largely comprised of species not palatable to deer.

- Eradicate or control exotic, invasive species, particularly Japanese knotweed, to enhance fish and wildlife habitat and improve stream bank stability and water storage capacity along the Peckman River. Control measures need to be included in all phases of restoration and flood control plans and should be implemented by all contractors to minimize reburial of Japanese knotweed and transportation of its rhizomes off-site from construction activities.

CONCLUSIONS AND SUMMARY OF RECOMMENDATIONS

The Service appreciates the Corps' consulting with us early in the planning stages. We request that the Corps continue to consult with this office to avoid adverse impacts to fish and wildlife resources and species of management concern within the study area. Specifically, please keep this office informed of Project meetings and schedules, environmental and wildlife investigations or studies, and formulation of Project alternatives. Additionally, please forward to this office for review the draft Project Management Plan (PMP) when it becomes available. The Service will review the PMP and comment with respect to fish and wildlife considerations and Service participation.

The Service also recommends that the Corps coordinate closely with the NJDFW/BFF during the formulation of early designs for the flood control measures and ecosystem restoration. Such coordination would require meetings on site with State biologists. Mr. Mark Boriek (Fisheries Biologist, NJDFW /BFF) is available to arrange coordination with the State. He may be contacted at (908) 236-2118.

The flowing summarizes the Service's general conclusions and recommendations for continued Project planning. As Project plans are refined, the Service will be making more specific recommendations.

Diversion Tunnel and Associated Levees and Floodwalls

1. Conduct a thorough and detailed assessment of the effects of each flood control measure on area hydrology. Evaluate downstream effects to the Passaic River. Include consideration of climate change projections.

2. Use best management practices and timing restrictions during construction to avoid adverse impacts to fish and wildlife species.

3. Avoid any adverse impacts to freshwater wetlands. If adverse impacts to freshwater wetlands are unavoidable, develop a compensatory mitigation plan.

4. Maintain mature trees to the maximum extent possible. Any trees designated for removal should be surveyed in the appropriate season prior to the start of work for evidence of nesting by bird species of management concern.

5. Delineate the anticipated 50-year floodplain. Future reports should state the rationale for using a flood control plan designed for a 50-year event.

6. Construct the diversion inlet to retain bank full flows and divert only higher out-of-bank flows. Forward a copy of the design plans for the levee system and channel constriction to the Service for review.

7. Design the tunnel to allow passage of normal groundwater flow to and from any nearby wetlands and avoid impeding the Peckman River's full range of modal flows through all seasons. Minimize the creation of additional impervious surface.

8. Design the tunnel to avoid adverse impacts to the trees, including the supporting root systems.

9. Coat the interior of the diversion tunnel to obtain a smooth surface and to reduce abrasion to aquatic biota being diverted. Incorporate a low-flow design to allow any diverted aquatic biota to escape downstream when the amount of diverted water is slight or receding.

10. Locate the tunnel outlet to minimize removal of vegetation and adverse impacts on wetlands.

11. Survey for the presence or absence of summering Indiana or northern long-eared bats if Project plans entail the clearing of any tracts of forest or removal of mature trees in riparian habitat.

12. Provide the Service with an updated review of HTRW contamination sites within one quarter mile of the Project area using the most recent government records available.

13. Conduct further soil testing at the Little Falls DPW yard to determine the extent of Lead contamination at the site. Provide the Service with the results.

Stormwater Control Measures and Protection of Fish and Wildlife Resources

1. Utilize creation of open space, property buyouts, and non-structural alternatives to reduce flash flooding and adverse impacts to fish and wildlife species.

2. Design in-stream and stream bank restoration plans based upon natural channel morphology and behavior.

3. Include Great Notch Brook in future hydrological studies if it has not been evaluated.

4. Forward sediment contaminant test results to the Service when available. Include information on sediment sources and disposal sites.

5. Develop and implement a long-term management and monitoring plan that provides for adequate evaluation of success at each ecosystem restoration site.

6. Minimize the amount of time that construction equipment will be in the river channel. Also limit the amount of equipment that must be put into the water course. Consult the scientific literature and use the best available information when designing ecosystem restoration Projects.

7. Consult with the Service's Partners for Fish and Wildlife program to facilitate cooperation and partnerships with private and municipal landowners when conducting habitat restoration.

8. Coordinate any clearing and snagging activities with the local municipalities. Coordinate with local governments to assess the condition of storm-water outfalls.

9. Use bioengineering techniques to stabilize stream banks in the Project area. Where hard structures are the only feasible alternative, use natural material.

10. Include in the long term management plans for the Peckman River measures to reduce illegal dumping on the stream banks.

11. Salvage large shade-producing trees with exposed roots along the river. Anchor them in place and install boulders near the exposed roots.

12. Plant native trees and shrubs throughout degraded forest floors to improve understory cover. Eradicate or control exotic, invasive species, particularly Japanese knotweed, along the Peckman River and Great Notch Creek. Include measures to control invasive plants in all phases of construction.

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PECKMAN RIVER BASIN FLOOD CONTROL AND AQUATIC ECOSYSTEM RESTORATION PROJECT, PASSAIC AND ESSEX COUNTIES, NEW JERSEY

PLANNING AID REPORT

Prepared by:

U.S. Fish and Wildlife Service
Ecological Services, Region 5
New Jersey Field Office
Pleasantville, New Jersey 08232

January 2005

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New York, New York
10278-0090

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January 2005

EXECUTIVE SUMMARY

The Peckman River Basin, New Jersey, Flood Control and Ecosystem Study area (study area) is located in Passaic and Essex Counties, New Jersey, in the Lower Passaic River Basin. The Peckman River's headwaters are located in the Town of West Orange, and its waters flow northeasterly through the Borough of Verona, the Township of Cedar Grove, the Township of Little Falls, and the Borough of West Paterson to its confluence with the Passaic River. As a result of residential, commercial, and industrial development within the floodplain, certain areas in the watershed have experienced significant flooding events and property damage. Development within the watershed has also resulted in the loss and degradation of fish and wildlife habitats.

In response to these flooding events and environmental concerns, the U.S. Army Corps of Engineers, New York District (Corps), in partnership with the New Jersey Department of Environmental Protection (NJDEP), is conducting a feasibility study for flood protection and ecosystem restoration. Three preliminary flood control alternatives and a number of potential restoration sites and restoration methods have been identified by the Corps.

Proposed flood control within the study area includes structural and, potentially, nonstructural alternatives. The structural measures identified by the Corps to date include a diversion tunnel and associated structures and levee system, a floodwall, and stream channelization. Nonstructural measures may be considered on a site-by-site basis, but have not been analyzed in detail by the Corps.

In this Planning Aid Report, the U.S. Fish and Wildlife Service (Service) identifies federally listed species and State-listed species of management concern within the study area and addresses potential adverse impacts or benefits from the proposed restorations and flood control alternatives. Preliminary recommendations are made for the sites identified by the Corps for restoration, additional sites are identified, and recommendations are discussed for future planning efforts.

At this stage of planning, the Service recommends greater overall consideration of nonstructural alternatives to reduce flood damage. In this regard, investigating the removal of impervious surfaces from the watershed and improving the amount and quality of vegetative cover upstream of flood-prone areas are also recommended. Of the structural alternatives considered, the Service would recommend developing the diversion alternative, with recommended modifications to reduce adverse impacts to fish and wildlife, over the floodwall and channelization alternatives. The Service also recommends minimizing loss of mature trees for any alternative selected. Additionally, a plan will need to be developed to compensate for unavoidable adverse impacts to wetlands and associated wildlife.

Recommendations for environmental restoration include: further consideration for work on Great Notch Brook; preference of bioengineering to hard structural techniques to stabilize stream banks; protection of large shade trees along the river; coordination of clearing and snagging activities with local municipalities; and development of a long-term monitoring plan for restored sites. As the conceptual designs for the priority restoration sites are developed, the Service will

provide more specific recommendations to help minimize and avoid adverse impacts to species of management concern; recommendations will be presented in future Planning Aid Letters and / or the forthcoming FWCA Section 2(b) report.

I. INTRODUCTION

The Peckman River Basin, New Jersey, Flood Control and Ecosystem Study area (study area) is located in Passaic and Essex Counties, New Jersey, in the Lower Passaic River Basin. The Peckman River's headwaters are located in the Town of West Orange and its waters flow northeasterly through the Borough of Verona, the Township of Cedar Grove, the Township of Little Falls, and the Borough of West Paterson to its confluence with the Passaic River (appendix A). As a result of residential, commercial, and industrial development within the floodplain, certain areas within the watershed have experienced significant flooding events, which have led to physical damages to properties and loss of economic activity. These development activities have also resulted in the loss and degradation of fish and wildlife resources and their supporting ecosystems within the watershed.

In response to these flooding events and environmental concerns, the U.S. Army Corps of Engineers, New York District (Corps), in partnership with the New Jersey Department of Environmental Protection (NJDEP), is conducting a feasibility study for flood protection and ecosystem restoration measures. Three main preliminary flood control alternatives and a number of potential restoration sites and restoration methods were identified in the Corps' (2002) Section 905(b) Water Resources Development Act 1986 Preliminary Analysis report for the *Peckman River Basin, New Jersey, Feasibility Studies for Flood Control and Ecosystem Restoration.*

The proposed measures for flood control within the study area include structural and, potentially, nonstructural alternatives. The structural measures identified in the report include a diversion tunnel and associated structures and levee system, a floodwall, and stream channelization. Nonstructural measures may be considered on a site-by-site basis but were not analyzed in detail by the Corps (2002).

This U.S. Fish and Wildlife Service (Service) Planning Aid Report identifies federally listed species and State-listed species of management concern within the study area and addresses potential adverse impacts or benefits from the proposed restorations and flood control alternatives. Preliminary recommendations are made for the sites identified by the Corps (2002) for restoration, additional sites are identified, and recommendations are discussed for future planning efforts. As the conceptual designs for the priority restoration sites are developed, the Service will provide more specific recommendations to avoid adverse impacts to species of management concern; recommendations will be presented in future Planning Aid Letters and / or the forthcoming FWCA Section 2(b) report.

II. METHODS

Service and Corps representatives conducted a site visit on November 2, 2004 and noted dominant vegetation and general conditions of the Peckman River and its riparian area at various locations accessible by vehicle and foot. The Service also coordinated this preliminary review with the NJDEP's Division of Fish and Wildlife (NJDFW), including the Bureau of Freshwater Fisheries (BFF). The Service has reviewed the following project materials provided by the Corps:

- Section 905(b) WRDA 86 Preliminary Analysis, January 2002 (U.S. Army Corps of Engineers, 2002);
- Scoping Document, January 2004 (U.S. Army Corps of Engineers, 2004a);
- Data Gap Report, January 2004 (U.S. Army Corps of Engineers, 2004b); and the
- Environmental Resource Inventory (U.S. Army Corps of Engineers, 2004c).

Further, we have searched our Geographic Information System (GIS) database for known locations of federally listed species, wetlands, and other important habitat types within or near the study area. We also searched for State-listed species in the area using available GIS database information.

III. FISH AND WILDLIFE RESOURCES

A. COMMON SPECIES

A Service biologist visited the Peckman River with Corps staff on November 2, 2004 (as noted above) and identified common vegetative components of the riparian buffer: red maple (*Acer rubrum*), red oak (*Quercus rubra*), American sycamore (*Platanus occidentalis*), box elder (*Acer negundo*), black cherry (*Prunus serotina*), black gum (*Nyssa sylvatica*), raspberry (*Rubus idaeus*), wild grape (*Vitis* spp.), greenbriar (*Smilax* spp.), and Japanese knotweed (*Polygonum cuspidatum*). This list of vegetation was obtained from a cursory survey of select locations along the river. A more thorough vegetative survey would be warranted as construction and restoration sites become finalized.

According to the NJDFW/BFF (Papson, pers. comm., 2004), the Peckman River was sampled at 8 locations during 1998 and 1999. Fish species collected included: brook trout (*Salvelinus fontinalis*) (stocked), brown trout (*Salmo trutta*) (stocked), rainbow trout (*Oncorhynchus mykiss*) (stocked), creek chub (*Semotilus atromaculatus*), blacknose dace (*Rhinichthys atratulus*), white sucker (*Catostomus commersoni*), carp (*Cyprinus carpio*), bluegill (*Lepomis macrochirus*), green sunfish (*L. cyanellus*), pumpkinseed (*L. gibbosus*), brown bullhead (*Ameiurus nebulosus*), American eel (*Anguilla rostrata*), and satinfin shiner (*Cyprinella analostana*). Trout were not collected downstream of the Main Street Bridge. Based on these sampling surveys, the NJDFW proposed that Peckman River be upgraded to a "Trout Maintenance" classification from a point 1,300 feet upstream of the Ozone Avenue Bridge in Verona Township to the Main Street Bridge in Little Falls Township. The Corps (2002) states that "the presence of trout has been established upstream of Route 46 (p.11)." We recommend that future reports more accurately state that trout are established from 1,300 feet upstream of Ozone Avenue Bridge to the Main Street Bridge. The reclassification of the Peckman River is still under consideration by NJDEP.

B. FEDERALLY LISTED SPECIES

The federally listed (endangered) American burying beetle (*Nicrophorus americanus*) historically occurred within 1.5 miles of the project area. The American burying beetle is no longer found in New Jersey; therefore, the Service does not recommend any surveys or conservation measures for this species.

The federally listed (endangered) Indiana bat (*Myotis sodalis*) is known to hibernate in Morris County within 15 miles of the study area. Indiana bats from these hibernacula may summer or forage within the project area. Based on a site visit, Service personnel identified potential roosting trees for the Indiana bat, as well as foraging habitat (*i.e.*, large forest tracts) within the project area. The Service, therefore, recommends that trees 6 inches or greater in diameter at breast height (dbh) not be cleared between April 1 and September 30. If project plans entail the clearing of any tracts of forest, the Service recommends a survey be conducted for the presence or absence of summering Indiana bats.

Except for the above-mentioned species and an occasional transient bald eagle (*Haliaeetus leucocephalus*), no other federally listed or proposed endangered or threatened flora or fauna under Service jurisdiction are known to occur within the vicinity of the study area. If federally listed species or their habitats are documented in the study area during project planning, the Service will make recommendations to avoid adverse effects through the informal Section 7 consultation process. Current information regarding federally listed species occurring in New Jersey is enclosed (appendix B).

C. STATE-LISTED SPECIES

There is a known nest site of the peregrine falcon *(Falco peregrinus)* located within 4.2 miles of the project site. The peregrine falcon is listed as endangered by the State of New Jersey (N.J.S.A. 23:2A *et seq.*), and is found along the rivers and seacoasts of New Jersey. Peregrines using the nearby nest site may occasionally forage for prey on the project site.

In August 1999, the Service removed the peregrine falcon from the List of Endangered and Threatened Wildlife and Plants, removing all protections provided to the species under the ESA. Section 4(g)(1) of the ESA requires monitoring of de-listed species for a minimum of 5 years. The Service has decided to monitor the peregrine falcon for 13 years to provide data that will reflect the status of at least two generations of birds. If it becomes evident during this period that the peregrine falcon is not maintaining its recovered status, the species could be re-listed under the ESA. The peregrine falcon continues to be protected by the MBTA, which prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests except when specifically authorized by the Department of the Interior.

The State-listed (endangered) invertebrate Appalachian grizzled skipper (*Pyrgus Wyandot*) historically occurred within 1.5 miles of the project site. During project planning, the Service will coordinate with the NJDFW's Endangered and Nongame Species Program (ENSP) to determine if these or other State-listed species or species of concern may be present at potential flood control or ecosystem restoration sites. Surveys may be recommended. If any State-listed species are present, the Service will work with the ENSP to provide the Corps with conservation recommendations.

↓ species considered "probably extirpated" (natureserve websit
- great decline due to gypsy moth spraying. May want to find out gypsy moth spra history in area

IV. FLOOD CONTROL ALTERNATIVES

A. GENERAL RECOMMENDATIONS

The Service recommends that the Corps conduct a thorough and detailed assessment of the effects of each flood control alternative on area hydrology as project plans progress. Such an assessment should include anticipated changes in sheet flows, stream flows, and groundwater flows into any floodplain wetlands, and any effects from flood waters that would rise in wetlands located behind proposed flood control structures during storm events. Possible effects downstream of the confluence with the Passaic River should also be evaluated.

As project plans progress and as the results of the hydrological study are interpreted, the Corps should provide the acreage of freshwater wetlands and transition areas, if any, expected to be impacted by the flood control alternatives. Specifically, the Corps should distinguish wetlands maintained as lawn from other wetlands, differentiate any permanent freshwater wetland fill from other wetland impacts, such as vegetation clearing, and describe the extent of tree clearing for each flood control alternative.

In general, the Service recommends timing restrictions on construction activities and use of best management practices (*e.g.*, hay bales, silt curtains) during construction to avoid adverse impacts to terrestrial and aquatic species at any proposed restoration sites and flood control locations. As Corps project plans are refined, the Service will provide more specific recommendations for the protection of fish and wildlife resources. Recommendations will be presented in future Planning Aid Letters and / or the forthcoming draft FWCA Section 2(b) report.

Future plans should be designed to avoid any adverse impacts to freshwater wetlands. If adverse impacts to freshwater wetlands are unavoidable, we recommend that the Corps develop a compensatory mitigation plan in future reports.

Mature trees should be maintained to the maximum extent possible. Shade produced by mature trees along the stream is critical to maintaining water temperature and dissolved oxygen favorable to fishery resources. In addition, the vertical structure and canopy provided by mature trees is a critical component of habitat for migratory birds. If any trees must be removed, preferential protection should be afforded to large, native, mast or fruit producing species. The Service also advocates salvaging native extant shrubs and small trees during any construction phase of habitat restoration or flood control. Salvaged trees and shrubs should then be replanted at appropriate sites along the river or within the watershed.

Given the value of mature trees, final engineering plans should make detailed references to which trees will be preserved and which, if any, must be removed. These trees should be clearly marked in the field, and instructions regarding tree removal must be discussed with the contractor, prior to construction. In addition, any trees designated for removal should be surveyed in the appropriate season prior to the start of work for evidence of nesting by bird species of management concern (appendix C). If any such species are known to nest in an area targeted for clearing or selective tree removal, this office should be contacted to afford the Service, the Corps, and the contractor an opportunity to determine cooperatively if any

conservation measures are possible (*e.g.*, re-routing equipment access, re-planting, construction scheduling).

The Corps' (2002) report includes a delineation of the 100-year floodplain in Figure 2 although plans for flood control on the Peckman River will be designed for a 50-year storm event. Future reports should delineate the anticipated 50-year floodplain if control measures are designed for a 50-year storm event. Future reports should also state the rational for using a 50-year flood control plan as opposed to greater or lesser levels of protection.

B. NONSTRUCTURAL ALTERNATIVES

The Service understands that the Corps will consider the use of nonstructural measures on a building-by-building basis, during the feasibility study, in conjunction with structural flood control measures. The Service and NJDFW (Didun, pers. comm., 2004) support non-structural flood control alternatives such as floodplain acquisition and restoration, zoning restrictions, early flood warning systems, and flood-proofing buildings in preference to structural solutions to flood control. A buy-out of the properties located within the flood-prone areas of concern and the restoration of the floodplain to its pre-disturbance condition would undoubtedly improve habitat for fish and wildlife and flood storage capacity while offering recreational opportunities (*e.g.*, fishing and bird watching) for local residents.

Should the Corps select structural over nonstructural alternatives to control flood waters, such actions should be supported with a summary of economic findings. A compromise between structural and nonstructural alternatives may render nonstructural methods more economically feasible. The Corps should determine the stream corridor width that can function naturally if re-established or reclaimed (*i.e.*, natural stream channel and vegetated riparian corridor) in order to calculate the feasibility, for example, of buying out the 5-yr or 10-yr floodplain to serve as a functional stream conservation area while protecting the remainder of the floodplain with fewer infrastructures.

The Corps' (2002) report considered flood control measures within the flood-prone areas only. However, flooding can be significantly reduced by increasing the watershed's capacity to store flood waters. The Corps should investigate the extent to which removing impervious surfaces (*i.e.*, asphalt, buildings, and compacted soils) from the watershed and improving the amount and quality of vegetation upstream of the flood-prone areas would reduce the volume and velocity of surface storm waters. Taking such nonstructural measures outside the areas of concern (commercial areas) may reduce the extent to which measures within the flood-prone areas are needed. Further, nonstructural remedies above the immediate floodplain may reduce the cost of using nonstructural means if property upstream of the flood-prone areas is less costly to acquire.

C. FLOODWALL / STREAM CHANNELIZATION

The Service and NJDFW (Didun, pers. comm., 2004) do not recommend implementing the floodwall or stream channelization alternatives as currently proposed. Constructing a floodwall may be considered in the future if the length of the floodwall were minimized and located to significantly reduce or avoid impacts to the existing riparian buffer and wetlands. This may be

accomplished by constructing a floodwall only in flood-prone areas with existing impervious surface (*e.g.*, parking lots, sidewalks) and above the stream banks, away from existing riparian vegetation.

D. DIVERSION

The proposed location for the diversion tunnel would impact a heavily eroded and degraded bank which contains a patch of Japanese knotweed, ailanthus (*Ailanthus altissima*), Tartarian honeysuckle (*Lonicera tatarica*), and a few shrubs and tree saplings. Japanese knotweed, ailanthus, and Tartarian honeysuckle are exotic, invasive species; thus, the Service would anticipate few adverse impacts to the use of this site.

For the above reasons, the Service and the NJDFW recommend this alternative over the floodwall and the river channelization alternatives, provided nonstructural methods are proven infeasible and provided the following measures can be incorporated.

1. Inlet

- Construct the inlet to retain bank full flows and divert only higher out-of-bank flows. Bank flows are necessary to maintain channel formation (*e.g.*, removal of sediment build-up, channel clearing of debris).

- Forward a copy of the design plans for the levee system and channel constriction to the Service for review to ensure that such designs do not adversely impact palustrine forested wetlands along the eastern bank across from the inlet structure or aquatic resources downstream of the channel constriction. Generally, the Service and NJDFW (Didun, personal comm., 2004) do not advocate the use of in-stream blockages to divert flows. However, if a diversion is constructed, the Service recommends using natural, soft material, such as clean soil, rock, and stone for levee construction. The levee could then be vegetated. Additionally, the levee would need to be constructed to ensure that fish are unimpeded traveling upstream and downstream of the Peckman River.

2. Tunnel

- Design the tunnel to allow passage of normal groundwater flow to and from any nearby wetlands and avoid impeding the Peckman River's full range of modal flows through all seasons. Minimize the creation of additional impervious surface.

- Retain large trees to protect habitats for migratory birds. A line of large mature trees closely borders the proposed corridor between Harrison Street and McBride Avenue. Given the size of the trees and the scarcity of such trees within the watershed, the Service advises moving the path of the diversion tunnel between Harrison Street and McBride Avenue slightly south to avoid adverse impacts to these trees, including the supporting root systems.

- Coat the interior of the diversion tunnel to obtain a smooth surface and reduce abrasion to aquatic biota being diverted (*e.g.*, reduce de-scaling fish). Incorporate a low flow design which concentrates flows in a narrower section of the culvert bottom (*e.g.*, concave-shaped bottom) and allows any diverted aquatic biota to escape downstream when the amount of diverted water is slight or receding.

3. Outlet

- Locate the outlet for the diversion tunnel to minimize removal of trees and shrubs. Palustrine forested wetlands exist as an island within the Passaic River and as a finger of low floodplains immediately opposite and immediately upstream, respectively, of the proposed outlet location. The Service recommends placing the outlet to minimize adverse impacts on these wetlands.

- Investigate potential hydrologic alterations created by floodwaters exiting the outlet to determine if these forested wetlands would be adversely impacted.

V. ECOSYSTEM RESTORATION

The Service and NJDFW support Corps efforts to restore fish and wildlife habitats along the Peckman River. We concur with the Corps (2002) statement that habitat availability is very limited in this highly developed area. Therefore, restoration would provide substantial benefits to fish and wildlife.

A. GENERAL RECOMMENDATIONS

1. Project Planning

- Base designs for all in-stream and stream bank restoration plans upon natural channel morphology and behavior to the extent feasible. Data needed include topography, cross sections, and hydrodynamics of the proposed aquatic restoration sites. Planning must ensure that any recommended structures would not cause adverse impacts to the river system downstream. EN

- Consider Great Notch Brook for restoration planning. The Corps (2002) identified Great Notch Brook as a major tributary of the Peckman River that empties into the river within the flood-prone area. The Corps (2002) did not state if hydrological studies to date investigated the magnitude of the tributary's contribution to flooding along the Peckman River. If Great Notch Brook has not been evaluated, the Service recommends the Corps include it in future hydrological studies and survey this tributary for potential ecosystem restoration. EN

- Forward results of sediment testing to the Service for review. The Service understands that contaminants testing will be conducted on project site sediments once plans have been finalized. Service comments regarding those results will be included in a future Planning Aid Letter and / or the Service's draft FWCA report. The Service also

recommends that future design phases include information on sediment sources and disposal sites where fill or excavation may be required to achieve target grades for restoration sites.

- Develop and implement a long-term management and monitoring plan for the project. The plan should provide adequate evaluation of success at each ecosystem restoration site. Information obtained will contribute to the science of in-stream and riparian habitat restoration, particularly in urban settings. The plan should include contingencies that would provide for further Corps action during post-construction monitoring, if necessary, as part of an adaptive management strategy to be implemented in coordination with affected municipalities and private landowners. Corps interventions may include re-grading, re-planting, or other actions to correct for unexpected conditions, including deposition, erosion, failure of vegetation establishment, and / or re-invasion of undesirable species such as Japanese knotweed.

- Minimize the amount of time that construction equipment will be in the river channel. Also limit the amount of equipment that must be put into the water course. Where possible, conduct work from the top of the bank rather than from the river. Limiting disturbances will minimize any adverse effects on aquatic species and wetlands within the river.

- Consult the scientific literature and use the best available information regarding planting elevation, depth, soil type, and seasonal timing to ensure best results when revegetating sites. Include subsurface conditions such as soil and sediment geochemistry and physics, groundwater quantity and quality, and infauna when designing riparian, wetland, and in-stream restoration.

2. Coordination

- Coordinate with landowners on sites proposed for restoration. Consult with the Service's *Partners for Fish and Wildlife* program biologists to facilitate cooperation and partnerships with those private landowners when conducting habitat restoration. Information about the *Partners* program is enclosed (appendix D). For additional information, contact the Service's New Jersey Field Office at (609) 646-9310 ext. 46, Attn: Eric Schrading.

- Coordinate with the local municipalities to assess the condition of storm-water outfalls. Within the project area limits the Service observed ditches and outlet structures that discharge storm water into the Peckman River which have degraded (*e.g.*, Township of Verona's Recycling Center, ball fields at the end of Hopson Avenue in Little Falls Township). Opportunities may exist to reconfigure storm-water discharges during project construction to limit erosion, slow storm-water flows, and improve water quality.

- Coordinate any clearing and snagging activities with the local municipalities. It is not known to the Service or the NJDFW/BFF (Papson, pers. comm., 2004) if the Peckman River has been cleared of large debris and trees by the local municipalities (U.S. Army

Corps of Engineers, 2002, pg. 8). If the river has not been cleared, the Corps will need to coordinate with the local municipalities to ensure that such activities do not adversely affect the proposed ecosystem restoration or further degrade the riverine system.

3. **Stream Banks**

- Employ bioengineering techniques and soft structures, as described in the Corps' (2002) report to stabilize stream banks. Such techniques include regrading banks, using erosion control fabrics and biologs, and planting native trees and shrubs along the banks. Many feasible sites were identified in the Corps' (2002) report. The Service recommends bioengineering techniques to stabilize stream banks, as opposed to constructing hard structures, along as many eroded sites of the Peckman River as feasible. Areas not expressly identified in the Corps' (2002) report include but are not limited to the banks immediately upstream of the dam (Charles Street dam) at the intersection of Charles Street and Cedar Grove Road in Little Falls Township and the forested island (freshwater wetlands) at the confluence of the Peckman and Passaic Rivers. Where hard structures offer the only feasible alternative, the use of natural material (*e.g.*, stones, boulders) is recommended.

- Include measures in the long-term management plans for the Peckman River to reduce illegal dumping. The Service noted along several public access points to the river that lawn clippings and woody debris are being dumped into the river and along its banks. Such actions exacerbate soil erosion by retarding vegetation growth on the banks. Measures that might be implemented with the local sponsor include creating an educational program (*e.g.*, pamphlets, signs) to deter disposal of lawn debris into the river, restricting public access to problem points, and improving law enforcement efforts.

- Salvage as many large shade-producing trees as possible along the river. At many sites along the stream banks, soil erosion has exposed the roots of large, mature trees. It may be possible to prevent these trees from toppling by anchoring the trees with cable above the stream banks and by placing boulders near the exposed roots to deflect water velocities. Exposed root wads provide excellent refugia for fish and other aquatic species. In addition, large shade-producing trees moderate water temperature in the stream during the summer months, which benefits fish and aquatic invertebrates.

4. **Riparian Buffers**

- Plant native young trees and shrubs throughout degraded forest floors to improve understory cover. The Service noted that some forest tracts along the river (*e.g.*, immediately downstream of the Ozone Avenue bridge) had very little understory, a problem occurring in many forests throughout New Jersey. Most likely the local deer (*Odocoileus virginianus*) population has exceeded the forest's carrying capacity, causing over-browsing of the understory vegetation. A healthy forest requires an understory to provide multiple canopy layers (thus increasing wildlife diversity), to provide replacement trees and shrubs as the forest matures and older trees die, and to reduce sunlight on the forest floor (which decreases chances for certain invasive species to

become established). Recommended plantings should be largely comprised of species not palatable to deer. Fencing is another method the Service advocates for controlling deer browse on certain tracts.

- Eradicate or control exotic, invasive species, particularly Japanese knotweed (*Polygonum cuspidatum*), to enhance fish and wildlife habitat and improve stream bank stability and water storage capacity along the Peckman River and its tributaries. A site visit revealed that Japanese knotweed occurs in dense patches throughout the entire length of the Peckman River and its riparian buffer. Though not surveyed, tributaries to the Peckman River undoubtedly also are infested with this species. Control measures need to be included in all phases of restoration and flood control plans and should be implemented by all contractors to minimize reburial of Japanese knotweed and transportation of its rhizomes off-site from construction activities.

B. SITE-SPECIFIC RECOMMENDATIONS

1. Verona Lake

- Partner with the Township of Verona to develop a wildlife enhancement / management plan for Verona Lake Park. The Service recommends that the Corps work with the township to: (a) add nesting and perching structures in areas with limited nesting habitat for birds; (b) plant native grasses, shrubs, and trees in appropriate areas of the park, with special emphasis on landscape features that may benefit migratory birds; (c) establish a riparian buffer around the lake, river, and smaller tributaries in the park; and (d) expand the stream bank restoration sites recently created by the township around the entire margin of the lake, river, and feeder streams in the park. Impervious surfaces (*i.e.*, asphalt, rock gabions, and stone walls) should be removed from the banks and riparian buffers of the lake, river, and feeder streams of the park. The Service's *Partners for Fish and Wildlife* program can help facilitate cooperation with the park.

- Coordinate habitat restoration with the Township of Verona and the NJDEP to ensure that any restoration or dam repair undertaken do not adversely impact stocking efforts by the State. According to the NJDFW/BFF (Papson, pers. comm., 2004), trout and channel catfish (*Ictalurus punctatus*) are stocked seasonally in Verona Lake. Apparently, the Township of Verona plans to perform work on the Verona Lake dam in the near future, which may require lowering water levels in the lake.

- Re-evaluate the proposal to install a flexible weir structure on Verona Lake Dam to attenuate peak flows and augment low flow conditions in the river (U.S. Army Corps of Engineers, 2002). Further study is needed to determine if any beneficial effects would accrue from modifying flow rates.

2. Route 23

- Avoid creating straight channels. In the Corps' (2002) report section entitled "Francisco Street to Rt. 23," the Corps recommends reducing stream sinuosity. Straightening or

channelizing a river reduces in-stream habitat and accelerates bank erosion downstream by increasing water velocity. However, creating meanders or bends within the stream channel will improve habitat for aquatic species and reduce water velocity, which in turn will decrease soil erosion downstream. The Service generally does not support straightening river channels; in fact, it encourages increasing or restoring the sinuosity of rivers as much as feasible, based on a natural channel design. Retain natural stream meanders.

- Re-evaluate plans to remove boulders or other natural features and focus on the removal of man-made obstructions. The Corps (2002) suggests installing vegetated gabions and removing boulders and other large obstructions in the river to reduce bank erosion downstream of the Route 23 Bridge. The Service noted several sections of sidewalk material and a structure that appears to be a footing for an old bridge or retaining wall lying within the river immediately downstream of the Route 23 Bridge. Removing these concrete and brick obstructions would improve water quality (by reducing concrete leachates) and restore normal flow. The Service recommends removing such man-made obstructions wherever feasible; we also recommend that the Corps investigate using bioengineering techniques or other natural means to stabilize the sites. Natural boulders on site should not be removed, but rather may be repositioned along the river to reduce stream velocity and to provide natural in-stream structure for aquatic species.

3. Peckman Falls

- Use bioengineering techniques wherever possible for stabilizing stream banks. The Corps (2002) recommends stabilizing the heavily eroded banks near Peckman Falls with hard structures, such as rock gabions. Future plans should clarify the extent to which hard structures would be used near Peckman Falls. When hard structures are the only feasible alternative, the Service recommends engineering those hard structures to mitigate the increased stream velocity downstream that would inevitably be caused by such structures. The Corps should investigate if structures could be installed along rock gabions to slow water velocity and create pools or areas with decreased stream flows to enhance fish habitat. As suggested by the Corps (2002), vegetation such as willow (*Salix* spp.) could be inserted into rock gabions as live whips or posts to improve habitat cover and to reduce water temperature at the site.

- Investigate the need for fish passage. Step pools have been installed in the stream and the toes of both banks have been armored with boulders at Peckman Falls. If the current step pool design does not allow for upstream fish passage during low flows, these step pools should be redesigned.

4. Charles Street Dam

- Modify the Charles Street Dam to allow fish passage upstream. The dam appears to have no current function. The Service recommends lowering the height of the dam to convert the impounded portion behind the dam from deep water to shallow water habitat (approximately 1-2 feet deep) for migratory birds. In general, a greater diversity of

wildlife species use shallow water than deep water. Additionally, a lower spillway would simplify incorporation of fish passage at the dam, in which case a notch or stepping stone design may provide sufficient fish passage.

- Revegetate the open field adjacent to the Charles Street dam to reduce habitat fragmentation along the river. The Service recommends planting a variety of native tree and shrub species to restore forest habitat to the site. If site conditions suggest that deer may over-browse the plants (*i.e.*, if little understory exists in surrounding forest), then plant species less palatable to deer and / or provide protection from deer using fencing or tree tubes. A typical planting density is about 300 trees and shrubs per acre if small containerized plants are used.

VI. CONCLUSIONS AND SUMMARY OF RECOMMENDATIONS

The Service appreciates the Corps' consulting with us early in the planning stages. We request that the Corps continue to consult with this office to avoid adverse impacts to fish and wildlife resources and species of management concern within the study area. Specifically, please keep this office informed of project meetings and schedules, environmental and wildlife investigations or studies, and formulation of project alternatives. Additionally, please forward to this office for review the draft Project Management Plan (PMP) when it becomes available. The Service will review the PMP and comment with respect to fish and wildlife considerations and Service participation.

The Service also recommends that the Corps coordinate closely with the NJDFW/BFF during the formulation of early designs for the flood control measures and ecosystem restoration. Such coordination would require meetings on site with State biologists. Mr. Robert Papson (Principal Fisheries Biologist, NJDFW/BFF) is available to arrange coordination with the State. He may be contacted at (908) 236-2118.

The following summarizes the Service's general conclusions and recommendations for the next phase of project planning. As project plans are refined, the Service will be making more specific recommendations for inclusion in the forthcoming FWCA Section 2(b) report.

A. FLOOD CONTROL ALTERNATIVES

1. Conduct a thorough and detailed assessment of the effects of each flood control alternative on area hydrology as project plans progress. Evaluate downstream effects to the Passaic River.

2. Use best management practices and timing restrictions during construction to avoid adverse impacts to fish and wildlife species.

3. Avoid any adverse impacts to freshwater wetlands. If adverse impacts to freshwater wetlands are unavoidable, develop a compensatory mitigation plan.

4. Maintain mature trees to the maximum extent possible. Any trees designated for removal should be surveyed in the appropriate season prior to the start of work for evidence of nesting by bird species of management concern.

5. Delineate the anticipated 50-year floodplain. Future reports should state the rationale for using a flood control plan designed for a 50-year event.

6. Use nonstructural flood control alternatives to the extent feasible. Support the selection of structural over nonstructural alternatives with a summary of economic findings. A compromise with structural alternatives may make nonstructural methods more feasible.

7. Investigate the extent to which removing impervious surfaces from the watershed and improving the amount and quality of vegetation upstream of the flood-prone areas would reduce the volume and velocity of surface storm waters.

8. Select the diversion alternative only if nonstructural methods are proven to be infeasible. The Service would prefer the diversion alternative over the floodwall or channelization alternatives if structural measures must be used.

9. Construct the diversion inlet to retain bank full flows and divert only higher out-of-bank flows. Forward a copy of the design plans for the levee system and channel constriction to the Service for review.

10. Design the tunnel to allow passage of normal groundwater flow to and from any nearby wetlands and avoid impeding the Peckman River's full range of modal flows through all seasons. Minimize the creation of additional impervious surface.

11. Move the path of the diversion tunnel between Harrison Street and McBride Avenue slightly south to avoid adverse impacts to the trees, including the supporting root systems.

12. Coat the interior of the diversion tunnel to obtain a smooth surface and to reduce abrasion to aquatic biota being diverted. Incorporate a low-flow design to allow any diverted aquatic biota to escape downstream when the amount of diverted water is slight or receding.

13. Locate the tunnel outlet to minimize removal of vegetation and adverse impacts on wetlands.

14. Survey for the presence or absence of summering Indiana bats if project plans entail the clearing of any tracts of forest.

B. ECOSYSTEM RESTORATION

1. Design in-stream and stream bank restoration plans based upon natural channel morphology and behavior. Retain natural meanders.

2. Include Great Notch Brook in future hydrological studies if it has not been evaluated, and survey this tributary for potential ecosystem restoration.

3. Forward sediment contaminant tests to the Service when available. Include information on sediment sources and disposal sites.

4. Develop and implement a long-term management and monitoring plan that provides for adequate evaluation of success at each ecosystem restoration site.

5. Minimize the amount of time that construction equipment will be in the river channel. Also limit the amount of equipment that must be put into the water course. Consult the scientific literature and use the best available information when designing ecosystem restoration projects.

6. Consult with the Service's *Partners for Fish and Wildlife* program to facilitate cooperation and partnerships with private and municipal landowners when conducting habitat restoration.

7. Coordinate any clearing and snagging activities with the local municipalities. Coordinate with local governments to assess the condition of storm-water outfalls.

8. Use bioengineering techniques to stabilize stream banks along as many eroded sites of the Peckman River as possible. Where hard structures are the only feasible alternative, use natural material.

9. Include in the long term management plans for the Peckman River measures to reduce illegal dumping on the stream banks.

10. Salvage large shade-producing trees with exposed roots along the river. Anchor them in place and install boulders near the exposed roots.

11. Plant native trees and shrubs throughout degraded forest floors to improve understory cover. Eradicate or control exotic, invasive species, particularly Japanese knotweed, along the Peckman River and its tributaries. Include measures to control invasive plants in all phases of construction and restoration.

12. Partner with the Township of Verona to develop a wildlife enhancement / management plan for Verona Lake Park. Ensure that repairs or restoration at the Verona Lake Dam do not adversely impact stocking fish by the NJDFW.

13. Avoid channelizing the river at the Route 23 restoration site. Re-evaluate plans to remove boulders or other natural features and focus on removal of manmade obstructions at the site.

14. Clarify the extent to which hard structures would be used near Peckman Falls. Redesign the step pools near Peckman Falls to pass fish upstream during low flows if needed.

15. Lower the height of the Charles Street dam to convert the impounded portion to shallow water habitat. Revegetate the open field adjacent to the dam with a variety of native trees and shrubs.

VII. REFERENCES

A. LITERATURE CITED

U.S. Army Corps of Engineers. 2002. Section 905(b) WRDA 86 Preliminary Analysis. Peckman River Basin, New Jersey, Feasibility Studies for Flood Control and Ecosystem Restoration. U.S. Department of the Army, Corps of Engineers, New York District, New York, New York. 52 pp.

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_____. 2004b. Data Gap Report. Peckman River Basin, New Jersey, Flood Control and Ecosystem Restoration Project. U.S. Department of the Army, Corps of Engineers, New York District, New York, New York. 3 pp.

_____. 2004c. Environmental Resource Inventory. Peckman River Basin, New Jersey, Flood Control and Ecosystem Restoration Feasibility Study. U.S. Department of the Army, Corps of Engineers, New York District, New York, New York. 8 pp.

B. PERSONAL COMMUNICATIONS

Didun, A. 2004. Biologist. New Jersey Department of Environmental Protection, Division of Fish and Wildlife, Office of Environmental Review, Trenton, New Jersey.

Papson, R. 2004. Principal Fisheries Biologist. New Jersey Department of Environmental Protection, Division of Fish and Wildlife, Bureau of Freshwater Fisheries, Lebanon, New Jersey.

PRELIMINARY DRAFT
PROGRAMMATIC AGREEMENT
AMONG
THE U.S. ARMY CORPS OF ENGINEERS, NEW YORK DISTRICT
AND
THE NEW JERSEY HISTORIC PRESERVATION OFFICE
REGARDING
THE PECKMAN RIVER BASIN FLOOD RISK MANAGEMENT PROJECT,
TOWNSHIP OF CEDAR GROVE, ESSEX COUNTY,
AND
TOWNSHIP OF LITTLE FALLS AND
BOROUGH OF WOODLAND PARK, PASSAIC COUNTY, NEW JERSEY

WHEREAS, the U.S. Army Corps of Engineers, New York District (District) is proposing to undertake a flood risk management project in the Township of Little Falls, Essex County, New Jersey, and has, in coordination with the New Jersey Department of Environmental Protection (NJDEP), a plan consisting of floodwalls, levees, channel modification, a diversion culvert, ringwalls and non-structural measures, consisting of wet- and dry-floodproofing and elevations (Undertaking; Figure 1 in Appendix A); and

WHEREAS, the Peckman River Basin, New Jersey, Flood Risk Management Feasibility Study was authorized by a resolution of the US House of Representatives, Committee on Transportation and Infrastructure Resolution Docket 2644 adopted on June 21, 2000; and

WHEREAS, the Area of Potential Effect (APE) includes: the alignment of the diversion culvert between the Peckman River and the Passaic River; the alignment of the floodwalls and levees and culvert on the Great Notch Brook; the alignment of the levees and floodwall along the Peckman River; the channel modification along the Peckman River; the locations of non-structural measures and the placement of ringwalls that will likely extend from the Route 46 Bridge upstream to the Conrail Rail Bridge and Cedar Grove Avenue (Figure 2 in Appendix A); and

WHEREAS, there are four known historic properties listed on or determined eligible for the New Jersey State and National Registers of Historic Places: the Morris Canal, the Little Falls Laundry, the Route 46 over the Passaic River and Riverside Drive, and the Jersey City Waterworks Valve Pipeline and Valve House; and

WHEREAS, an archaeological and architectural survey completed in 2013 has determined that the remains of the Marley Mill Dam, the Morris Canal Aqueduct, the Jersey City Waterworks Valve House, the Little Falls Laundry Weir and Headrace, and the Cedar Grove Railroad Overpass are also eligible for the New Jersey State and National Registers of Historic Places; and
WHEREAS, the 2013 survey also determined that of the 81 structures surveyed in the Township of Little Falls in the vicinity of the Peckman River, only the Little Falls Laundry met the criteria for the National Register of Historic Places; and

WHEREAS the District has determined, pursuant to 36 CFR Part 800, the regulations implementing Section 106 of the National Historic Preservation Act (NHPA) (54 U.S.C. § 306108), that the Undertaking will not have an effect on the remains of the Marley Mill Dam, the

Cedar Grove Railroad Overpass, and the Jersey City Waterworks Valve House in the Township of Cedar Grove, or the Morris Canal Aqueduct in the Township of Little Falls; and

WHEREAS, the District has determined, pursuant to 36 CFR Part 800, the regulations implementing Section 106 of the National Historic Preservation Act (NHPA) (54 U.S.C. § 306108), that the Undertaking has the potential to have an adverse effect on the Little Falls Laundry, Weir and Headrace with the proposed non-structural measures that may include flood-proofing that would affect the building or other elements that may affect the weir, headrace or archaeological remains that may be associated with the previous use of the building and property; and

WHEREAS, the District has determined, pursuant to 36 CFR Part 800, the regulations implementing Section 106 of the National Historic Preservation Act (NHPA) (54 U.S.C. § 306108), that the Undertaking has the potential to have an adverse effect on intact archaeological sites and deposits located along the levee alignment and the alignment of the diversion culvert at the Passaic River in the Township of Little Falls, Essex County (see Figure 2 in Appendix A); and

WHEREAS, the District is notifying the Advisory Council on Historic Preservation (Council) the potential for the Undertaking to affect historic properties and that a programmatic agreement is being prepared; and

WHEREAS, the District is consulting with the New Jersey Historic Preservation Office (NJHPO), pursuant to 36 CFR Part 800, regulations implementing Section 106 of the National Historic Preservation Act (16 U.S.C. 470f); and

WHEREAS, the District is consulting with the Delaware Tribe of Indians, the Delaware Nation of Oklahoma, and municipal and county historic societies, and other appropriate consulting parties and to define processes for taking into consideration the effects of the Undertaking upon historic properties; and

WHEREAS, the District will involve the general public through the National Environmental Policy Act (NEPA) process, which affords all persons, organizations, and government agencies the right to review and comment on proposed major federal actions that are evaluated by a NEPA document; and

NOW, THEREFORE, the District and the NJHPO agree that the Undertaking shall be implemented in accordance with the following stipulations in order to take into account the Undertaking's effects on historic properties.

STIPULATIONS

The District shall ensure that the following measures are carried out:

I. IDENTIFICATION AND EVALUATION

A. During the Pre-Construction Engineering and Design (PED) phase, the District, in consultation with the NJHPO and consulting parties, will ensure the following actions area undertaken:

1. Non-Structural Measures:
    a. Review the plans for non-structural measures, including, but not limited to floodproofing and ringwalls, to determine if the Little Falls Laundry will be affected by the construction of these measures. If effects are identified and determined to be adverse, the District, in coordination with the NJHPO and consulting parties, will develop measures to avoid, minimize or mitigate them in accordance with Stipulation II below.
    b. Determine, in coordination and consultation with the NJHPO and other relevant signatories and interested parties, if the other buildings and structures slated for non-structural measures are eligible for the National Register. As part of these investigations the District will carry out an intensive-level architectural survey in accordance with the New Jersey Guidelines for Architectural Survey (1999) and ensure the NJHPO structure survey form(s) is completed. As part of these investigations the District will determine if archaeological survey(s) area required. The District will document the results of each property's determination of eligibility.
    c. Complete the NJHPO structure survey forms for the buildings included in the Phase I archaeological and architectural survey (2013).
    d. If a property is determined to be eligible for the National Register, the District will consult with the NJHPO, relevant signatories and interested parties to resolve the adverse effects in accordance with Stipulation V below.
    e. The District will ensure all survey reports are completed in accordance with *Guidelines for Architectural Survey: Guidelines for Historic and Architectural Surveys in New Jersey*.

2. Levee Alignment:
    a. The District will carry out a Phase I archaeological survey, in accordance with the *NJHPO Guidelines for Phase I Archaeological Investigations: Identification of Archaeological Resources*, of the area proposed levee alignment currently planned for the wooded area between the Peckman River and the ShopRite Shopping mall and baseball fields.
    b. If sites are identified, the District, in coordination and consultation with the NJHPO, will complete a Phase II survey to evaluate the sites identified to determine if they meet the criteria for the National Register.
    c. If any identified sites are determined to be eligible for the National Register, the District will determine if the sites will be affected by the construction of the levee and, if the effect is determined to be adverse, will follow Stipulation II below.
    d. The District will ensure all survey reports will be completed in accordance with the *Guidelines for Preparing Cultural Resources Management Archaeological Reports* (NJHPO July 2000).

B. During the Construction phase, the District will monitor the construction of the diversion culvert and will ensure the following actions area undertaken:
    1. The District will monitor the construction of the culvert to determine if archaeological site(s) are buried beneath a portion of the alignment in the parking area in between 219 and 245 Paterson Avenue, Township of Little Falls. This work

will be conducted in accordance with the *NJHPO Guidelines for Phase I Archaeological Investigations: Identification of Archaeological Resources.*

2. If sites are identified, the District, in coordination and consultation with the NJHPO, will complete a Phase II survey to evaluate the sites identified to determine if they meet the criteria for the National Register.
3. If any identified sites are determined to be eligible for the National Register, the District will determine if the sites will be affected by the construction of the levee and, if the effect is determined to be adverse, will follow Stipulation II below.
4. The District will ensure all survey reports will be completed in accordance with the *Guidelines for Preparing Cultural Resources Management Archaeological Reports* (NJHPO July 2000).

II. RESOLUTION OF ADVERSE EFFECTS

A. The District shall continue consultation with the NJHPO and other signatories and consulting parties, as appropriate, pursuant to 36 CFR Part 800.6 to avoid, minimize or mitigate adverse effects to historic properties.

B. The District shall notify the NJHPO and other relevant signatories, property owners and consulting parties and provide documentation regarding the identification and evaluation of the historic properties. The District will work with the NJHPO, other relevant signatories, property owners, etc. to determine how best to resolve any adverse effects and document the proposed resolution.

C. Once there is agreement on how the adverse effects will be resolved, the District shall prepare treatment plan that will identify the activities to be implemented that will resolve the adverse effects. The treatment plan will be provided for review and comment prior to implementation.

D. Should the District, NJHPO, and the relevant signatories disagree on how the adverse effects will be resolved, the District shall seek to resolve such objection through consultation in accordance with procedures outlined in Stipulation VIII.C.

III. PUBLIC INVOLVEMENT AND OUTREACH

A. The District shall inform the public of the existence of this PA and the District's plan for meeting the stipulations of the PA through the public review of the project's Environmental Assessment and continued coordination and consultation with the NJHPO and other interested parties as they are identified. Copies of this agreement and relevant documentation prepared pursuant to the terms of this PA shall be made available for public inspection as part of the project's Environmental Assessment and posting to the District's project website. Information regarding the specific locations of archaeological sites will be withheld in accordance with the Freedom of Information Act and National Register Bulletin No. 29, if it appears that this information could jeopardize archaeological sites. Any comments received from the public related to the activities identified by this PA shall be taken into account by the District.

B. The District shall develop, in coordination with the NJHPO and other interested parties, publically accessible information about the cultural resources and historic properties investigations for the Undertaking in the form of brief publication(s), exhibit(s), or website.

IV. CURATION

A. The District shall ensure that all collections resulting from the identification and evaluation of surveys, data recovery operations, or other investigations pursuant to this PA are maintained in accordance with 36 CFR Part 79 until the collection is turned over to the landowner or other entity. Minimally, the District will ensure that analysis is complete and the final report(s) are produced and accepted by the NJHPO.

B. The District shall be responsible for consulting with landowners regarding the curation of collections resulting from archaeological surveys, data recovery operations, or other studies and activities pursuant to this agreement. The District shall coordinate the return of collections to non-federal landowners. If landowners wish to donate the collection, the District, in coordination with the NJHPO and others to determine an appropriate entity to take control of the collection.

C. The District shall be responsible for the preparation of federally-owned collections and the associated records and non-federal collections donated for curation in accordance with the standards of the curation facility.

V. UNANTICIPATED DISCOVERY

A. The following language shall be included in construction plans and specifications:

"When a previously identified cultural resource, including but not limited to archaeological sites and properties of traditional religious and cultural significance are discovered during the execution of the Project, the individual(s) who made the discovery shall immediately secure the vicinity and make a reasonable effort to avoid or minimize harm to the resource, and notify the Project's Contracting Officer's Representative (COR) and the District. All activities shall cease within a minimum of 50 feet from the inadvertent discovery (50-foot radius 'no work' buffer) until authorized by the District and the Project COR.

B. If previously unidentified and unanticipated properties are discovered during Project activities, the District shall cease all work in the vicinity of the discovery until it can be evaluated in accordance with 36 CFR Part 800.13 "Post Review Discoveries". Upon notification of an unanticipated discovery, the District shall implement any additional reasonable measures to avoid or minimize effects to the resource. Any previously unidentified cultural resource will be treated as though it is eligible for the NRHP until such other determination may be made.

C. The District shall immediately notify the NJHP, the signatories, and additional interested or consulting parties as appropriate, within 48 hours of the finding and request consultation to resolve potential adverse effects.

1. If the District, NJHPO, and the signatories agree that the cultural resource is not eligible for the NRHP, then the suspension of work in the area of the discovery will end.

2. If the District, NJHPO, and the signatories agree that the cultural resource is eligible for the NRHP, then the suspension of work will continue, and the District, in consultation with the NJHPO and the signatories, will determine the actions to

avoid, minimize, or mitigate adverse effects to the historic property and will ensure that the appropriate actions are carried out.

3. If the District, the NJHPO and the signatories cannot agree on the appropriate course of action to address an unanticipated discovery or effects situation, then the District shall initiate the dispute resolution process set forth in Stipulation VIII.C below.

VI. DISCOVERY OF HUMAN REMAINS

1. If any human remains and/or grave-associated artifacts are encountered during any of the investigations, including data recovery, the District will develop a treatment plan for human remains that is responsive to the Council's Policy Statement on Human Remains" (September 27, 1988), the Native American Graves Protection and Repatriation Act (PL 101-601) and , US Army Corps of Engineers, Policy Guidance Letter No. 57 (1998) Indian Sovereignty and Government-to-Government Relations with Indian Tribes.

2. The following language shall be included in the construction plans and specifications:

"When human remains, suspected human remains, or indications of a burial are discovered during the execution of a Project, the individual(s) who made the discovery shall immediately notify the local law enforcement, coroner/medical examiner, and the Project COR and the District, and make a reasonable effort to protect the remains from any harm. The human remains shall not be touched, moved or further disturbed. All activities shall cease within a minimum of 50 feet from the area of the find (50-foot radius 'no work' buffer) until authorized by the District.

VII. PROFESSIONAL QUALIFICATIONS AND STANDARDS

A. The District shall ensure that qualified professionals meeting the National Park Service professional qualifications for the appropriate discipline [National Park Service Professional Qualification Standards, Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (48 FR 44738-39) and NJHPO *Guidelines for Phase I Archaeological Investigations: Identification of Archaeological Resources*] are used to complete all identification and evaluation plans related to this undertaking, to include remote sensing surveys, underwater investigations, historic structure inventory and documentation.

B. All historic structures surveys carried out pursuant to this PA will be undertaken in accordance with the standards and guidelines of the NJHPO (*Guidelines for Architectural Survey: Guidelines for Historic and Architectural Surveys in New Jersey)* and the Secretary of the Interior's *Standards for the Treatment of Historic Properties*.

C. All archaeological investigations carried out pursuant to this PA will be undertaken in accordance with the NJHPO *Guidelines for Phase I Archaeological Investigations: Identification of Archaeological Resources* and the *Guidelines for Preparing the Cultural Resources Management of Archaeological Reports* and the Council's *Section 106 Archaeology Guidance*.

VIII. ADMINISTRATIVE TERMS

A. REPORTING

1. Each year following the execution of this PA until it expires or is terminated, the District shall provide the NJHPO, all signatories, and interested parties a summary report detailing work undertaken pursuant to this PA. This report will include any scheduling changes, problems encountered, project work completed, PA activities completed, and any objections and/or disputes received by the District in its efforts to carry out the terms of this PA.

2. Following authorization and appropriation, the District shall coordinate a meeting or equivalent with the signatories to be held annually on a mutually agreed upon date to evaluate the effectiveness of this PA and discuss activities carried out pursuant to this PA during the preceding year and activities scheduled for the upcoming year.

B. REVIEW PERIODS

1. The District shall ensure that all draft and final reports resulting from action pursuant to this PA will be provided to the NJHPO and, upon request, to other interested parties.

2. The NJHPO and any other interested party shall have 30 calendar days to review and/or object to determinations, evaluations, plans, reports and other documents submitted to them by the District.

3. Any comments and/or objections resulting from a review of any District determination, evaluations, plans, reports and other documents must be provided in writing to the District.

4. If comments, objections, etc., are not received within 30 calendar days, the District will assume concurrence with the subject determination, evaluation, plan, report or other document submitted.

C. DISPUTE RESOLUTION

1. Should any signatory object in writing to the District object in writing to the District at any time to any actions proposed or the manner in which the terms of this PA are implemented, the District and the signatories shall attempt to resolve any disagreement arising from implementation of this PA.

2. If there is a determination that the disagreement cannot be resolved, the District shall forward all documentation relevant to the dispute to the Council and request the Council's recommendations or request the comments of the Council in accordance with 36 CFR Part 800.7(c).

3. The Council shall provide the District with its advice on the resolution of the objection within thirty (30) days of receiving adequate documentation. Any Council recommendations or comments provided in response will be considered in accordance with 36 CFR Part 800.7(c), with reference only to the subject of the dispute. The District shall respond to Council recommendations or comments indicating how the District has taken the Council's recommendations or comments into account and complied with the

Council's recommendations or comments prior to proceeding with the Undertaking activities that are the subject to dispute. Responsibility to carry out all other actions under this PA that are not the subject of the dispute will remain unchanged.

4. If the Council does not provide its advice regarding the dispute within the thirty (30) calendar day time period, the District may make a final decision on the dispute and proceed accordingly. Prior to reaching such a final decision, the District shall prepare a written response that takes into account any timely comments regarding the dispute from the signatories to the PA, and provide them and the Council with a copy of such written response.

D. WITHDRAWAL AND TERMINATION

1. Any signatory may withdraw its participation in this PA by providing thirty (30) days advance written notification to all other signatories. In the event of withdrawal, any signatory to this PA may terminate it by providing 30 calendar days, written notice to the signatories. In the event of withdrawal, this PA will remain in effect for the remaining signatories.

2. This agreement may be terminated in accordance with 36 CFR Part 800, provided that the signatories consult during the period prior to termination to seek agreement on amendments or other actions that would avoid termination. Any signatory requesting termination of this PA will provide thirty (30) days advance written notification to all other signatories.

3. In the event of termination, the District will comply with 36 CFR 800.4 through 800.6 with regard to individual undertakings covered by this Agreement.

E. DURATION AND SUNSET CLAUSE

1. This PA shall take effect upon execution by the District, the NJHPO, and the signatories with the date of the final signature.

2. This PA will continue in full force and effect until the construction of the Undertaking is complete and all terms of this PA are met, unless the Undertaking is terminated or authorization is rescinded or a period of five years from execution of the PA has passed, at which time the agreement may be extended as written provided all signatories concur.

F. AMENDMENT

1. This PA may be amended upon agreement in writing by all signatories. Within thirty (30) days of a written request to the District, the District will facilitate consultation between the signatories regarding the proposed amendment.

2. Any amendments will be in writing and will be in effect on the date the amended PA is filed with the Council.

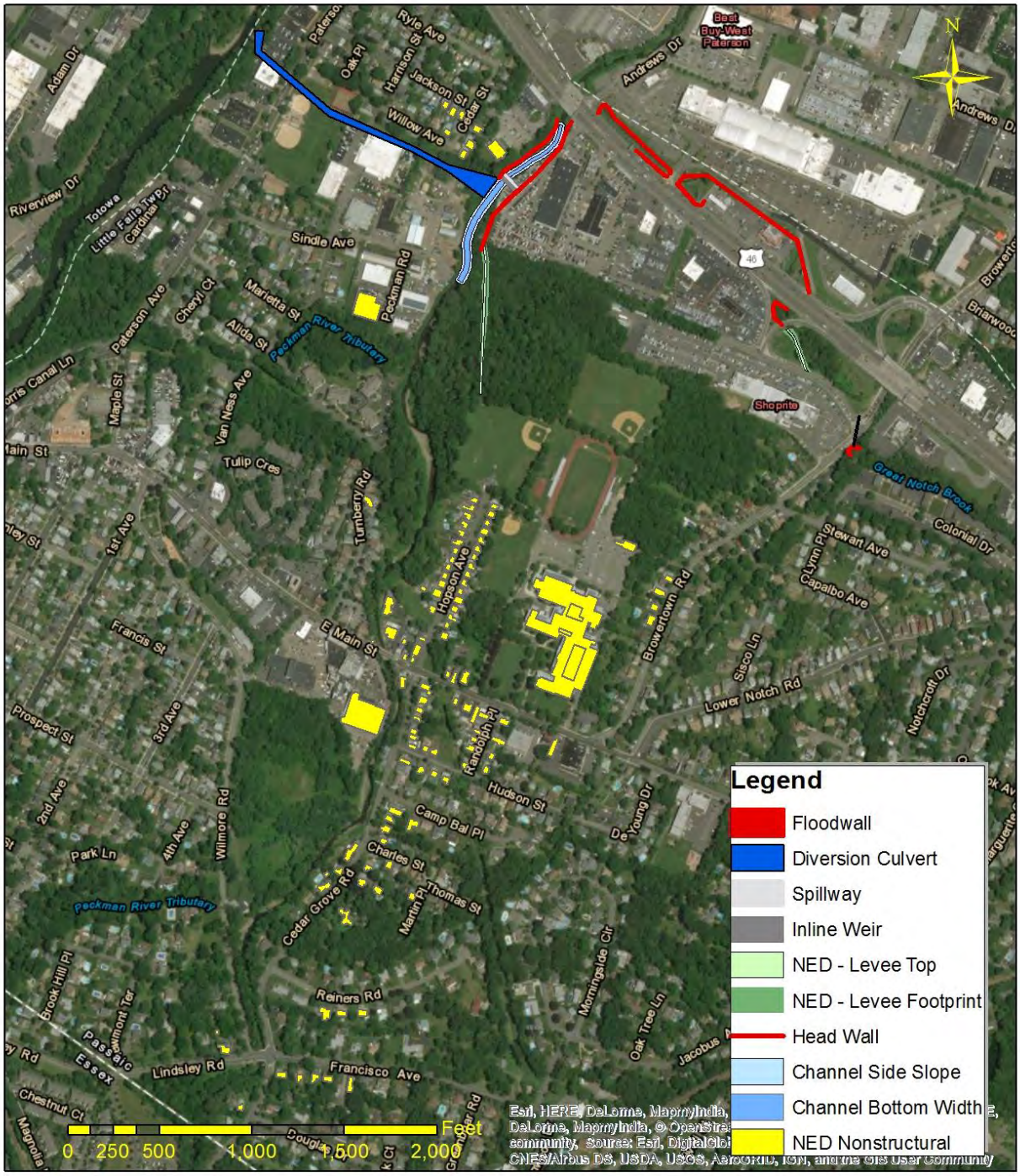
G. ANTI-DEFICIENCY ACT

All requirements set forth in this PA requiring expenditure of funds by the District are expressly subject to the availability of appropriations and the requirements of the Anti-Deficiency Act (31 U.S.C. 1341). No obligation undertaken by the District under the terms of this PA shall require or be interpreted to require a commitment to extend funds not appropriated for a particular purpose. If the District cannot perform any obligation set forth in this PA because of unavailability of funds that obligation must be renegotiated among the District and the signatories as necessary.

Execution and implementation of this PA evidences that the District has satisfied its Section 106 responsibilities for all individual undertakings of the Project, and has afforded the NJHPO and the Council an opportunity to comment on the undertaking and its effects on historic properties.

APPENDIX A

FIGURES
AND
HISTORIC PROPERTIES SUMMARY



US Army
Corps of Engineers

*Channel modification requires erosion protection.

PECKMAN RIVER

FLOOD RISK MANAGEMENT STUDY
ALTERNATIVE #10b (NED)

DRAFT


Best Buy
46
Union Blvd
Kohl's Woodland Park
Fairway Market
Woodland Park
Riverview Dr
Paterson Ave
Passaic River
ShopRite of Little Falls
Paterson Ave
Main St
Browertown Rd
Stevens Ave
E Main St
Passaic Valley
High School
Peckman
Preserve
Long Hill Rd
631
Cedar Grove Rd
Lindsley Rd
E Lindsley Rd
Lindsley Rd
612
612
612
Little Falls Rd
Google
Area of Potential Effect
Peckman River
Flood Risk Management Project
Scale 1"=1000 feet

Affected Historic Properties

Peckman River Basin
Flood Risk Management Feasibility Study
Essex and Passaic Counties, New Jersey

Affected Historic Properties
Peckman River Basin Flood Risk Management Feasibility Study
Essex and Passaic Counties, New Jersey

Introduction

The US Army Corps of Engineers, New York District (Corps) is currently proceeding with the Peckman River Basin Flood Risk Management Feasibility Study (Peckman River), which was authorized by a resolution of the US House of Representatives, Committee on Transportation and Infrastructure Resolution Docket 2644 adopted on June 21, 2000. A Feasibility Cost Sharing Agreement was executed on October 2002 with the New Jersey Department of Environmental Protection (NJDEP) as the non-Federal sponsor.

The purpose of the study is to determine if there is a technically feasible, economically justified and environmentally acceptable recommendation for Federal participation in flood risk management for the Peckman River Basin. Following the authorization in 2000, a reconnaissance study was initiated to examine flooding in Peckman River Basin was completed in 2002. This report recommended the comprehensive basin-wide study to further examine the feasibility of Federal participation in a project that could provide flood risk management.

There are five municipalities within the Basin: West Orange, Verona, Cedar Grove in Essex County and Little Falls and Woodland Park in Passaic County (Figure 1). The narrow floodplain within West Orange, Verona and Cedar Grove has limited the number of structures affected by damages from flooding by the Peckman River. The communities of Little Falls and Woodland Park have a greater risk of flooding and have approximately 630 structures that are impacted by Peckman River flooding. Tropical Storm Floyd (1999) caused a fatality as well as an estimated $12.1 million in damages with the Basin.

Project Description

An alternatives analysis completed for the project included various channel modification lengths and locations, varying lengths and locations for levees and floodwalls, the construction of a diversion culvert, and a variety of non-structural measures (Appendix A). The proposed project measures selected include 1,500 foot long, 35-foot diameter diversion culvert constructed between the Peckman and Passaic Rivers (Figure 2). At the inlet end on the Peckman River, a weir to limit flow and create a pool near the inlet will be installed. The channel of the Peckman River will be modified near the inlet. Up- and downstream of the weir, approximately 2,500 linear feet of levees and/or floodwalls of an average of three to six feet above ground elevation would be constructed. Along the Great Notch Brook, approximately 3,000 linear feet of levees and/or floodwalls would be constructed at an average height of five to 10 feet above ground. Seven permanent ringwalls are planned around 47 structures and 64 structures would be elevated. Four additional structures would be wet floodproofed and three structures would be dry floodproofed.

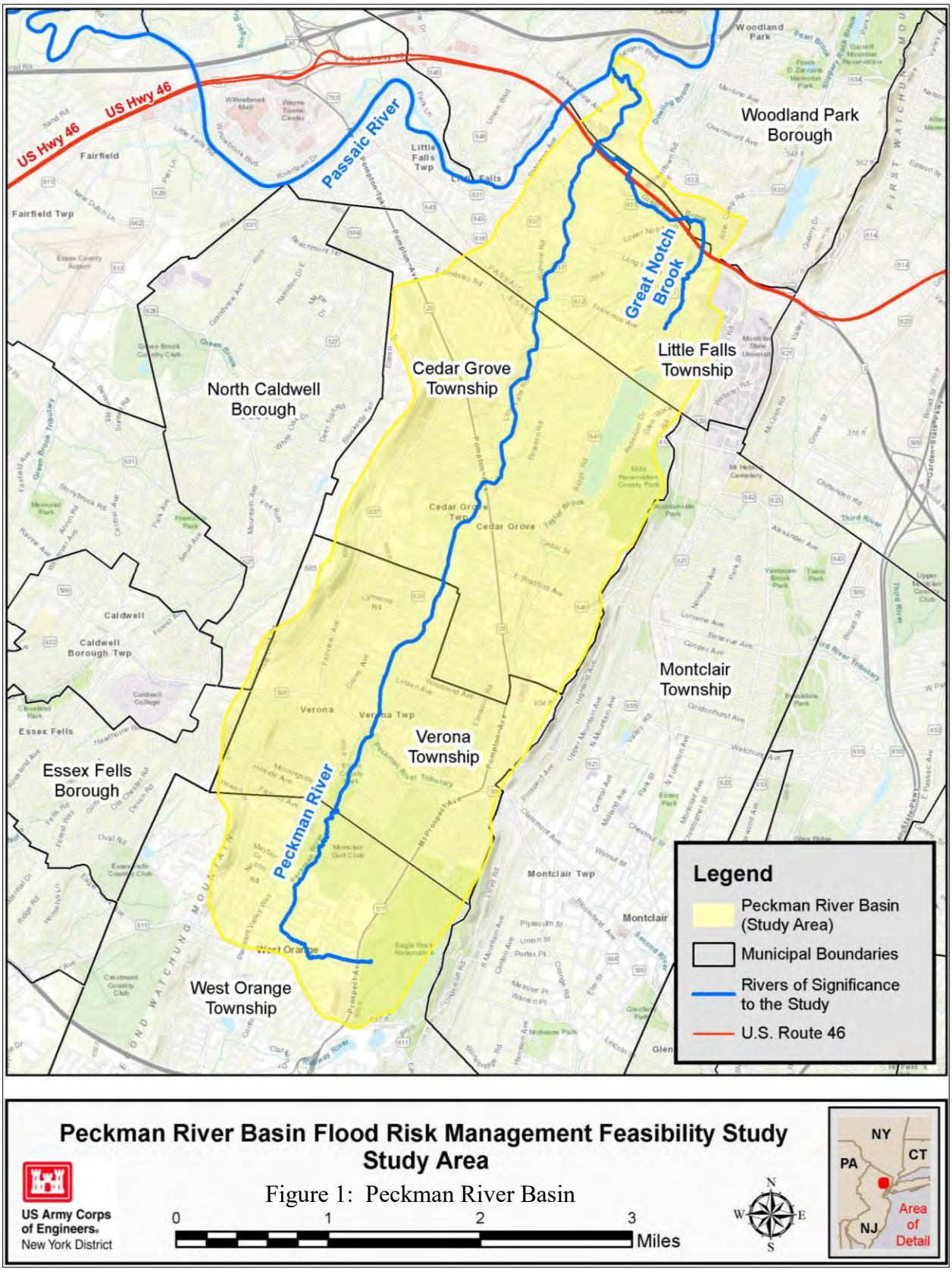


Figure 1: Peckman River Basin

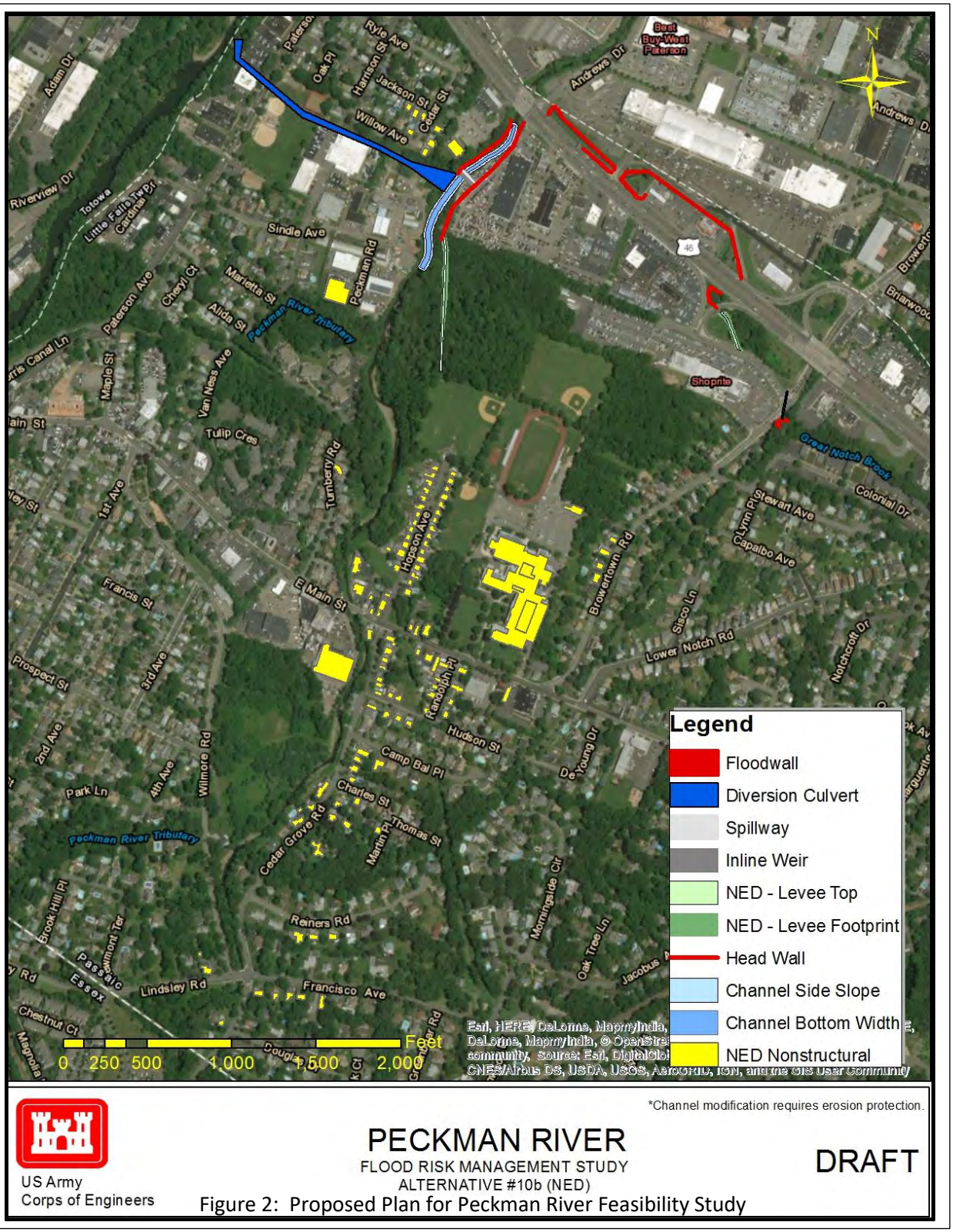


Figure 2: Proposed Plan for Peckman River Feasibility Study

Area of Potential Effect

As a federal agency, the Corps has certain responsibilities for the identification, protection and preservation of cultural resources that may be located within the Area of Potential Effect (APE) associated with the proposed project (also known as the undertaking). Present statutes and regulations governing the identification, protection and preservation of these resources include the National Historic Preservation Act of 1966 (NHPA), as amended; the National Environmental Policy Act of 1969; Executive Order 11593; and the regulations implementing Section 106 of the NHPA (36 CFR Part 800, *Protection of Historic Properties*, August 2004). Significant cultural resources include any material remains of human activity eligible for inclusion on the National Register of Historic Places (NRHP). This work is done in coordination with the New Jersey Historic Preservation Office (NJHPO), federally-recognized Tribes and interested parties.

The APE represents the physical extent of the undertaking to in which direct and/or indirect effects of the construction, operation and maintenance of the project, to character or use of the historic property. For this project, the APE consists of the locations of the levees, floodwalls, diversion culvert, weir, structures for floodproofing, and ringwalls (Figure 3). Currently no staging areas have been identified and it is anticipated that existing parking lots and other used and/or disturbed areas. In addition, if wetland or other required mitigation cannot be accomplished within the bounds of the current proposed project, the mitigation locations outside the project area will form an additional or expand the current APE.

Existing Surveys

In 1982 a cultural resources investigation, including a documentary research and field investigations, was conducted along an 8,400 long section of the Peckman River between Lackwanna Avenue and the Passaic/Essex County line. This survey identified 42 archaeological sites based on map-documented structures. Some of the sites, including the Little Falls Laundry, were located within the current study area; most were located beyond the current study area (Hartgen Archeological Associates 2013).

A Phase I archaeological investigation was conducted prior to the improvements to the sewage treatment plant and a 1,500 alignment under Sindle Avenue to the Passaic River. A total of 18 one-meter test units were excavated but no sites were identified (Hartgen Archeological Associates 2013).

A survey was conducted in 1979 for the Peckman River Wastewater Management Site in Cedar Grove. The survey consisted of background research, interviews and surface reconnaissance. The survey identified the Peckman River channel has been modified and rechanneled as a result of a flood and subsequent rebuilding in 1945 (Hartgen Archeological Associates 2013).

For the current study, a Phase I investigation was completed that included a review of review of previous surveys, documentary research, an architectural survey of 81 structures and 80 shovel tests (Hartgen Archeological Associates 2013). The survey identified three archaeological sites including the Marley Mill Dam site, the Morris Canal Aqueduct site and the Little Falls Laundry Weir and Headrace site and four architectural sites, including the Morris Canal, the Little Falls Laundry, the Jersey City Waterworks Valve House and the Cedar Grove Railroad Overpass.

Figure 3: Area of Potential Effect, Peckman River Flood Risk Management Project

The Morris Canal is listed on the National Register. The Little Falls Laundry and Jersey City Waterworks Valve House were determined to be eligible for the National Register and the Cedar Grove Railroad Overpass was determined to be potentially eligible for the National Register (Hartgen Archeological Associates 2013).

Affected Historic Properties

Little Falls Laundry, Weir, Headrace (Figures 4 –7 and Appendix B)

Proposed measures that may include flood-proofing and the construction of ringwalls may affect the main building, the weir, headrace or archaeological remains that may be associated with the previous use of the building.

Figure 4: The Little Falls Laundry, 101 East Main Street (Hartgen Archeological Associates 2013)

Figure 5: The concrete weir that helped channel water into the Little Falls Laundry. The central part of the weir was washed out during Hurricane Irene, after this picture was taken (Hartgen Archeological Associated 2013).

Figure 6: The Little Falls Laundry headrace's sluice gate and steel culvert (Hartgen Archeological Associates 2013).


Figure 7: The downstream side of the Little Falls Laundry headrace sluice gate and steel culvert (Hartgen Archeological Associates 2013).

Potential Intact Archaeological Sites and Deposits

The proposed diversion culvert alignment and the levees and floodwall alignment within the Township of Little Falls has the potential to disturb archaeological sites and deposits located in these areas.

A preliminary draft Programmatic Agreement (PA) was developed which stipulates the need for and direction of further historic activities to be conducted as the Peckman River Flood Risk Management Project proceeds. As part of the National Environmental Policy Act review of the environmental assessment, the public will have an opportunity to comment on the proposed action, its affects to historic properties and the stipulations included in the draft PA. In addition, coordination with the New Jersey Historic Preservation Office and the Advisory Council on Historic Preservation and in consultation with the Delaware Nation and Delaware Tribe of Indians. Additional coordination will include the Little Falls Historical Society. The draft PA will be revised based on the results of these reviews.

References

2013 Hartgen Archeological Associates
Phase I Archeological Investigation and Structure Inventory, Peckman River Flood Damage Reduction Project, Borough of Woodland Park (formerly West Paterson) and Townships of Little Falls and Cedar Grove, Passaic and Essex Counties, New Jersey.

APPENDIX A

Alternatives Analysis
Peckman River Basin
Essex and Passaic Counties, New Jersey

A.1 Flood Risk Management Measures for the Peckman River Basin

Measures are features or actions that contribute to the planning objectives. Project-specific measures were developed to address problems and to capitalize on opportunities. They were derived from a variety of sources, including prior studies, the public scoping process, and coordination with the non-Federal sponsor.

A.1.1 Non-Structural Measures

Nonstructural features and actions reduce flood risk by removing structures and residents from flood hazards, either temporarily or permanently. They reduce flood damages without significantly altering the nature or extent of flooding. Nonstructural measures considered in the formulation of alternative plans include structure elevation wet floodproofing, dry floodproofing, acquisition, evacuation plans, flood warning systems, and floodplain development zoning changes/enforcement were considered. Various nonstructural techniques were considered as elements of a comprehensive solution.

- Elevating (Raising) Structures. Elevation is the process of raising a structure, typically so that the main living area (main floor) will be above the base flood elevation (Figure A-1:1A-1). In most cases, the process involves separating a structure from its foundation, raising it on hydraulic jacks, and holding it in place with temporary supports while a new or extended foundation is constructed below. The result is the living area is raised and only the foundation remains exposed to flooding. The new or extended foundation may consist of continuous walls or separate piers, piles, and columns, or some combination thereof.

Figure A-1:1 Example of an elevated home in Keansburg, NJ.

- Floodproofing. Floodproofing is the process of making adjustments in the design or construction of buildings to reduce potential flood damages. There are two categories of floodproofing: wet floodproofing and dry floodproofing. Buildings may be dry or wet floodproofed. Dry floodproofing would provide flood risk management to a building by sealing its exterior walls and providing removable shields at structure openings to prevent the influx of floodwaters. Dry floodproofing is practical only for buildings with structurally-sound walls, and only where flood depths are relatively low. Wet floodproofing refers to the protection of a building in a manner that allows floodwaters to enter and exit freely, in such a way that internal and external hydrostatic pressures are equalized. This equalization of pressures reduces the loads imposed on a structure and reduces the probability of structural damage or failure. Basement utilities subjected to flooding may be relocated to an above-grade utility room, where space permits, otherwise, the basement utilities may be surrounded by a watertight barrier.

- Acquisition (Buy-Outs). Acquisition involves the purchase of property and its structures and/or the purchase of development rights. A buy-out plan would result in the permanent evacuation of the floodplain in areas of frequent and severe inundation. Buy-outs involve the acquisition of a property and its structures, either by purchase or by exercising the powers of eminent domain. Following acquisition, the structure and associated property development is either demolished or relocated. Acquired lands are typically restored to a natural condition and used for recreation or other purposes that would not be jeopardized by a flood hazard.

- Flood Warning System. A flood warning system can afford residents advance warning of flooding and allow them time to make appropriate preparations. While a flood warning system does not prevent flooding and does not reduce damage to property that is left in the path of floodwaters, it can provide an aid in reducing property loss and increasing the safety of individuals. With the use of a flood warning system, property, such as motor vehicles, can be relocated to higher ground in time to prevent damage from rising waters. In addition, moveable items can be taken to higher floors within structures, where they will not be impacted. Finally, residents will have time to leave the area, if necessary, for their own safety.

- Floodplain Development Zoning Changes/Enforcement. Through proper land use regulation, floodplains can be managed to ensure that their use is compatible with the severity of the flood hazard. Several means of regulation are available, including zoning ordinances, subdivision regulations, and building and housing codes. Their purpose is to reduce losses by controlling the future use of floodplain lands and would not be effective in mitigating the existing hazard. It should be noted that zoning is a local issue and is not within the jurisdiction of the Federal government. However, any Federal project will have a floodplain management plan component that includes requirements on the use of flood prone lands.

A.1.2 Structural Measures

Structural measures reduce flood risk by modifying the characteristics of the flood. They are physical modifications designed to reduce the frequency of damaging levels of flood inundation. Structural measures are often employed to reduce peak flows (flood storage); direct floodwaters away from flood prone property (flood barriers); or facilitate the flow of water through or around an area (channel modifications or diversions). Structural measures considered in the formulation of alternative plans include diversion culverts, levees/floodwalls, channel modification, detention basins, road elevation, ringwalls, and clearing and snagging. Any barriers must not increase flooding from interior runoff that becomes trapped behind it. To address these requirements, any structural plan that includes a barrier may also require interior drainage facilities that may include pumps and ponding areas.

- Diversion Culverts: A diversion culvert is a structure that allows water to flow under a road, railroad, or similar obstruction from one side to the other (FigureA-2). Culverts come in many sizes and shapes, including round, elliptical, flat-bottomed, pear-shaped, and box-like. A diversion culvert can provide a detour for an existing waterbody.

Figure A-2. Example of a culvert similar in size to the proposed Peckman River diversion culvert.

- Levees: Levees are typically low, wide earthen embankments built to retain floodwater inside a channel (Figure A-3A-3). They generally consist of a trapezoidal shaped mound of earth with 1 vertical:3 height vegetated side slopes. Interior drainage facilities, located on the landward side of the levees, would be needed to collect, control, and disperse water trapped behind the barriers. Otherwise, floodwaters would pond behind the barrier and potentially breach the levee.

Figure A-3. Example of a levee holding back flood waters.

- Floodwalls: Floodwalls are structures composed of steel, concrete, rock, or aluminum. Interior drainage facilities, located on the landward side of the floodwall, would be needed to collect, control, and disperse water trapped behind the barriers. Otherwise, floodwaters would pond behind the barrier (FigureA-4).

Figure A-4. An example of a permanent floodwall in Middlesex, New Jersey.

- Channel Modification**:** Modification of the cross-section of a channel of water along a length or lengths of that channel can sometimes improve flow and reduce or prevent fluvial flooding (Figure A-5A-5). Channel modifications can include dredging, deepening and widening, rechannelization, dam modifications, and elevating or widening bridges.

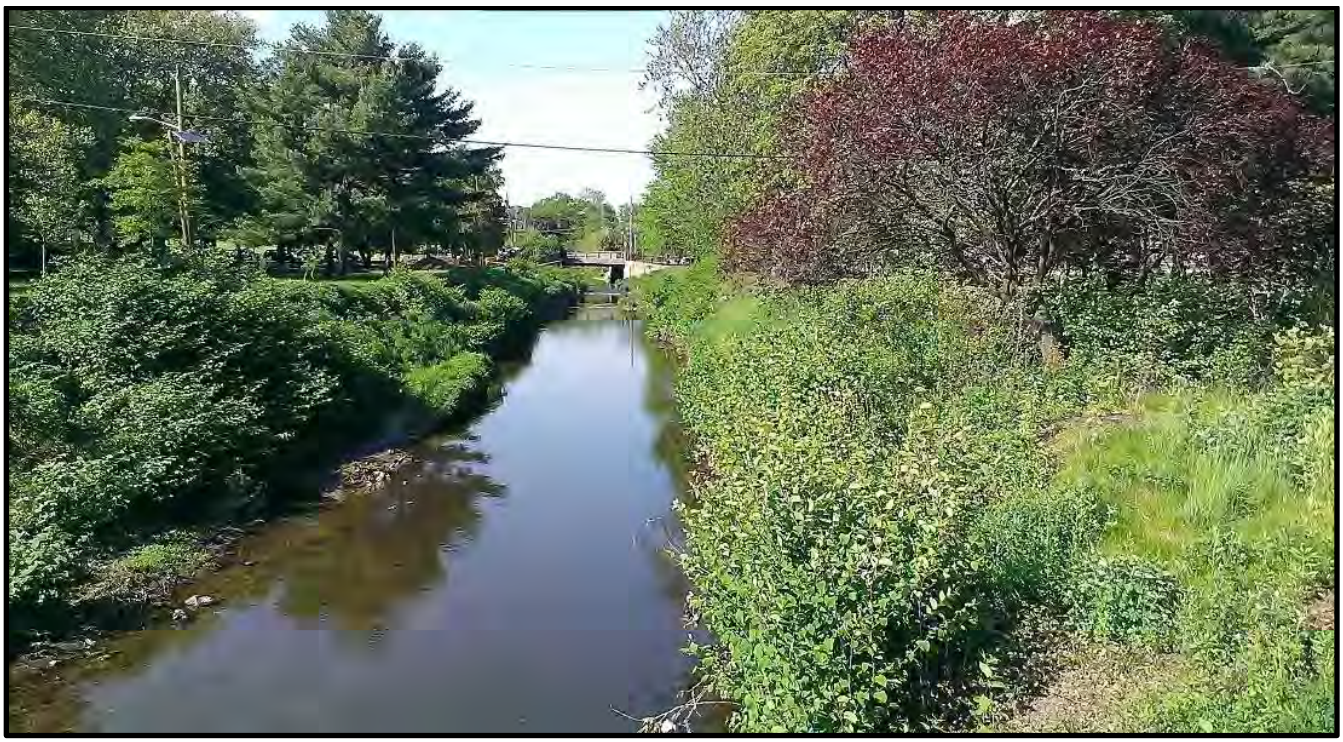


Figure A-5. An example of a sloped grassed bank or trapezoidal channel.

- Detention Basins**:** Detention basins may be used to reduce the peak flood flows by temporarily storing (detaining) floodwater, then releasing it at a substantially reduced flow to reduce peak flood flows. This reduces peak water surface elevations and helps to minimize flood damages downstream.

- Road Elevation: Roads could be elevated to heights that would minimize or eliminate the impacts of flooding. Road raisings are often combined with other structural flood risk management measures.

- Ringwalls**:** Ringwalls are intended to reduce the frequency of flooding to one or a group of structures on a small-scale basis. They can be temporary (deployable) or permanent.

- Clearing & Snagging: Clearing and snagging includes the removal of vegetation along the bank (clearing) and/or selective removal of snags, drifts, or other obstructions (snagging) from natural or improved channels and streams.

- Pumps: Pumps would remove water from the project area. Water would likely be pumped into the Peckman or Passaic Rivers. They would be complementary to other project features.

- Ponding Areas: Ponding areas may be used to control water levels in a water body or diversion culvert. They are typically built by deepening an existing area of a waterbody.

A.2 Screening And Combination of Measures

A.2.1 Screening of Measures

Management measures were retained for further consideration based on their ability to meet the following measures screening criteria:

- Does the measure meet objectives?
- Does the measure avoid constraints?

Measures eliminated from further consideration are shaded in Table 1.

Table 1. Screening of Management Measures.

Measure	Does the measure…				
	Objective 1: Manage the risk of flood damages	**Objective 2: Manage the risk to life safety**	**Objective 3: Support community resilience and cohesion**	**Constraint 1: Avoid impacts to critical infrastructure**	**Constraint 2: Avoid physical constraints**
Elevating Structures	Yes	Yes	Yes	Yes	Yes
Floodproofing	Yes	No	Yes	Yes	Yes
Acquisition	Yes	Yes	No	Yes	Yes
Floodplain Management	Yes	Yes	Yes	Yes	Yes
Diversion Culverts	Yes	Yes	Yes	Likely	Likely
Floodwalls	Yes	Yes	Yes	Likely	Likely
Levees	Yes	Yes	Yes	Likely	Likely
Channel Modification	Yes	Yes	Yes	No	Yes
Detention Basins	Yes	Yes	Yes	Likely	No
Road Elevation	Yes	Yes	Yes	No	Yes
Ringwalls	Yes	Yes	Yes	Likely	Yes
Clearing & Snagging	No	No	No	Yes	Yes
Pumps*	Yes	Yes	Yes	Yes	Yes
Ponding Areas*	Yes	Yes	Yes	Likely	Likely
Natural and Nature-Based Features*	No	No	No	Likely	Likely

* May meet planning objectives and/or avoid planning constraints in combination with other measures.

- Elevating (Raising) Structures: Elevating structures would permanently remove them from flood hazards. It is assumed that homeowners and business owners would support the elevation of their structures. It is acknowledged that elevating structures would not reduce

the problems of street flooding, automobile damage, lost income, and adverse effects on homes and businesses that are not elevated. The measure was included for further consideration.

- Floodproofing: Floodproofing structures would permanently alter the design of structures. Dry floodproofing involves the sealing of building walls with waterproof compounds, so that the structure is watertight. Shields may be installed to seal off doors, windows, and other openings. Wet floodproofing includes techniquest that can reduce flood damage to a building and its contents, while allowing it to flood. This includes actions such as installing flood vents, relocationg contents to higher parts of the building, using flood-damage resistant building materials, and installing automatic shut-off valves on sewer and fuel lines. It is assumed that business owners would support this type of action, which would be limited to non-residential structures. It is acknowledged that floodproofing structures would not reduce the problems of street flooding, automobile damage, lost income, and adverse effects on homes and businesses that are not floodproofed. The measure was included for further consideration.
- Acquisition (Buy-Outs): Acquisition of flood-prone properties may reduce flood risk throughout by permanently removing structures and residents' from the basin. This would possibly create additional open space that may be used for recreation. However, communities would be dispersed to other areas. It is assumed that acquisition and relocation of a significant portion of floodplain properties would be prohibitively expensive, and that public acceptability of a mandatory plan is unlikely. The measure was dropped from further consideration. The measure was included for further consideration.
- Flood Warning System: A flood warning system could allow residents to evacuate low-lying areas in advance of flood. This measure is not investigated further as part of this study because the USGS is currently installing water level gauges within the Peckman River, as part of a flood warning system. Two gauges were installed in Little Falls in May 2017, with a third planned for installation. The flood warning system will provide information about water levels that can inform local leaders and residents about potential flooding in the project area. Because of this, the measure was dropped from further consideration.
- Floodplain Development Zoning Changes/Enforcement: Floodplain management could help promote smart development of the floodplain. Zoning is a local issue and is not within the jurisdiction of the Federal government. However, any Federal project will have a floodplain management plan component that includes requirements on the use of flood prone lands. The measure was included for further consideration.
- Diversion Culverts**:** Culverts could increase the conveyance capacity of the Peckman River and/or its tributaries. It can reduce flood risk by reduce water surface elevations and flood damages throughout the section of basin downstream of Route 46. It was acknowledged that costs for construction, road work, transportation disruption, utility relocation, and acquisition of real estate interests would be significant. There is a potential for impacts to cultural and historic resources needs to be completed. The measure was included for further consideration.
- Levees: Like floodwalls and ringwalls, levees may reduce flood risk throughout the basin by provide flood risk management to areas traditionally sustaining flood damages from overbank flooding. However, their construction may include for the destruction of wetlands

and impacts to jurisdictional waters; this may result in high environmental mitigation costs. In addition, costs for acquisition of real estate interests may be relatively high. The measure was included for further consideration.

- Floodwalls: Like levees and ringwalls, floodwalls may reduce flood risk throughout the basin by providing flood risk management to areas traditionally sustaining flood damages from overbank flooding. Because of their typically smaller footprint, they may result in less impacts to environmental resources and real estate costs relative to levees. The measure was included for further consideration.
- Channel Modification**:** Channel modification may increase the conveyance capacity of the Peckman River and/or its tributaries. It could reduce channel blockages resulting from high sediment loads and bank material transported during flood events. This in turn would reduce the risk of flood damages by reducing water surface elevations and flood damages throughout the basin. Channel modification may result in destruction of wetlands and impacts to jurisdictional waters. This could result in high environmental mitigation costs. In addition, the costs for acquisition of real estate interests may be relatively high. Because of this, the measure was dropped from further consideration.
- Detention Basins: Basin may reduce flood risk by reduce water surface elevations and flood damages by temporarily detaining waters upstream of areas traditionally sustaining flood damages. Areas must have the potential to store enough water temporarily to sufficiently reduce water surface elevations and flood damages downstream. Because the basin is highly developed, no such sufficiently large area could be identified. The measure was dropped from further consideration.
- Road Elevation: Elevating roads would significantly impact existing infrastructure and thus was dropped for consideration as a stand-alone feature. However, this measure could provide an efficient tie-in location for a structural alignment and to allow unimpeded traffic flow. It has been considered for further alternative development as part of a plan with levees and floodwalls. The measure was included for further consideration.
- Ringwalls: Like levees and floodwalls, ringwalls may reduce flood risk throughout the basin by providing flood risk management to areas traditionally sustaining flood damages from overbank flooding. Because of their typically smaller footprint, they may result in less impacts to environmental resources and real estate costs less than levees. The measure was included for further consideration.
- Clearing & Snagging**:** Clearing and snagging of the Peckman River and its tributaries could reduce flood risks throughout the basin by increasing the waterbodies' carrying capacity. Minor snagging and clearing would not have a measurable flood management benefits, and thus would not meet Planning Objective #1. The measure was dropped from further consideration. The measure was included for further consideration.
- Pumps: Pumps alone were dropped for consideration as a stand-alone feature because they would not greatly effectively manage flood risk on their own. However, pumps could allow for the efficient drainage of areas behind levees, floodwalls, and other structural measures and were thus considered for further consideration as part of a plan with levees and floodwalls.
- Ponding Areas: Ponding areas would function generally in the same way as detention basin as a stand-alone feature, thus was dropped for consideration on their own. However, they could improve the function and efficiency of a diversion culvert, and were thus considered for further consideration as part of a plan with culverts.

- Natural and Nature-Based Features: Natural and nature-based features (NNBFs) are habitats or features such as marsh, oyster reefs, and submerged aquatic vegetation that may reduce flood risk while providing ecosystem benefits. Due to the relatively limited flood risk management benefits they would provide and the limited space to construct them, NNBFs were dropped for consideration on their own. However, they could improve the function and efficiency of other measures, and were thus considered for further alternative development as part of the alternatives as practacable.

A.2.2 Combination of Measures: Plan Formulation

Measures that warranted continued consideration were assembled into alternative plans. An alternative plan (also known as, "plan" or "alternative") is a set of one or more management measures functioning together to address one or more planning objectives. The remaining management measures were used individually or combined with others to form alternative plans. The following important points informed the scope and location of the alternatives:

- As described in Section 1.4, the scope of the study and thus the alternatives is limited to addressing flooding caused by the Peckman River and its tributaries. They do not include features that reduce backwater flooding from the Passaic River. As discussed in Section 1.4, USACE and NJDEP are currently investigating ways to manage flood risk in the Passaic River Basin as part of the Passaic River Basin flood risk management feasibility study.
- As described in Section 1.6, flood damages in the basin are concentrated in the communities of Little Falls and Woodland Park. It was determined during initial plan formulation, as documented in the January 2002 Reconnaissance Report, that Federal investment in a flood risk management project would not be economically justified in the upstream municipalities of West Orange, Verona and Cedar Grove.

Route 46 was identified as a logical dividing point in the formulation of structural alternatives. Differences in flooding mechanisms north and south of this point allowed for the development of separate scales of "upstream" and "downstream" (from Route 46) alternatives for comparison. Woodland Park, which is downstream/north of Route 46, experiences backwater flooding from the Passaic River; Little Falls, which is upstream/south, does not experience backwater flooding. In addition, the Peckman River's relatively close proximity (approximately 1,500 feet) to the Passaic River at Route 46 make it a logical geographic location for a diversion culvert.

A.3 Alternative Plans

The following eleven alternatives were developed from the remaining management measures identified above to meet planning objectives and avoid planning constraints. With the exception of the No Action alternative, they are made up of combinations of measures described above.

- Alternative 1: No Action
- Alternative 2: Nonstructural Plan
- Alternative 3: Peckman River Diversion Culvert
- Alternative 4: Channel Modifications Upstream and Downstream of Route 46
- Alternative 5: Levee/Floodwall System Upstream and Downstream of Route 46
- Alternative 6: Levee/Floodwall System Downstream of Route 46
- Alternative 7: Channel Modifications Downstream of Route 46

- Alternative 8: Channel Modifications Upstream of Route 46 with Peckman River Diversion Culvert
- Alternative 9: Levee/Floodwall System Upstream of Route 46 with Peckman River Diversion Culvert
- Alternative 10a: Nonstructural Measures (2 percent floodplain) Upstream of Route 46 with Peckman River Diversion Culvert
- Alternative 10b: Nonstructural Measures (10 percent floodplain) Upstream of Route 46 with Peckman River Diversion Culvert

Varying levels of performance (design levels) of each alternative were considered. For example, different dimensions of the proposed Peckman River Diversion Culvert that would provide capacity for the 10 percent, 2 percent, and 1 percent floods were considered during plan formulation and comparison. For brevity, the descriptions presented in this section do not fully describe the different scales of each alternative. A final level of performance and the final locations of features will be selected after public review of the draft Peckman River Basin Flood Risk Management Integrated Feasibility Report and Environmental Assessment as part of plan optimization.

For the purpose of comparing the performance of alternatives, the structural components of alternatives were evaluated at 2 percent storm event.

- Alternative 1: No Action**.** This alternative assumes no Federal action, and is the basis for comparison of the alternative plans. It serves to establish the likely existing and future without-project conditions, and reflects the continuation of existing economic, social, and environmental conditions and trends within the project area. Additionally, the No Action alternative acts as a baseline to which all other alternatives are compared, and is a requirement of the NEPA process. The No Action alternative reflects an absence of Federal action to manage flood risk in the Peckman River Basin due to flash flooding of the river and its tributaries.

- Alternative 2: Nonstructural Plan**.** A combination of the nonstructural measures described above could be implemented. These measures include elevating structures, floodproofing, and property buy-outs. Three incremental nonstructural plans were developed for comparison, using structures with a main floor elevation at the elevation of the 0.1, 0.02, and 0.01 percent floodplains. All three plans included nonstructural measures designed to withstand inundation up to and including the 0.1 percent flood event. The target elevation for structure elevations is assumed to be one foot above the base flood elevation (BFE). The BFE varies in the project area from +130 feet to +190 feet NAVD88, with the lowest BFEs at the confluence of the Peckman and Passaic Rivers.

  The target elevation for the first floor of all structures to be elevated will be at a height of one foot above the USACE-modeled one percent flood water surface elevation. USACE determined that the “plus one foot” height accurately reflects uncertainly of wave effects on water surface elevations. Floodproofing techniques described above would be implemented.

- Alternative 3: Peckman River Diversion Culvert. A 1,500-foot long, 35-foot wide diversion culvert would be constructed between the Peckman and Passaic Rivers (Figure A-6A-6). Its length would run from 550 feet upstream of the Route 46 bridge, northwest to the Passaic River. It would divert floodwaters from the Peckman River to the Passaic River during and after storms. The diversion culvert inlet at the Peckman River would consist of an in-line weir approximately 10 feet high and 130 feet long that would help divert the flow from the Peckman River into the culvert discharging it into the Passaic River. The diversion culvert would significantly reduce downstream peak discharges (i.e., flash flooding), and subsequently, downstream flood elevations and flood damages. The diversion would not reduce flood damages due to Passaic River backwater flooding the lower reaches of the Peckman River basin in Woodland Park.

  Due to the high velocities along the river and unstable banks, streambank erosion measures are necessary. Streambank erosion measures include riprap and articulated concrete blocks. Approximately 1,000 feet of channel modifications in the Peckman River near the diversion culvert opening would be made.

  Approximately 2,500 linear feet of levees and/or floodwalls downstream of the ponding weir to the Route 46 bridge would be built. The levees and/or floodwalls would range in height from 3 to 6 feet above ground elevation. The top elevation of these features would be +139 feet NAVD88 near Route 46, and +150 feet NAVD88 near Browertown Road. Additionally, approximately 3,000 linear feet of levees and/or floodwalls would be built in the lower reach of Great Notch Brook to its confluence with the Peckman River.

- Alternative 4: Channel Modifications Upstream and Downstream of Route 46. The Peckman River would be widened and dredged along its entire length in the project area (Figure A-7). The sidewalls of the channel would be reinforced with concrete retaining walls and/or riprap. A 60-foot (base) concrete channel with concrete sidewalls would effectively convey flood discharge downstream to the confluence of the Passaic River. The channel modification would require approximately 15,000 feet of retaining walls along the lower reach of the Peckman River. This work may necessitate reconstruction of the Route 46, Lakawanna Avenue, and McBride Avenue bridges.

  Additionally, approximately 3,000 feet of levees and/or floodwalls would be built in the lower reach of Great Notch Brook to its confluence with the Peckman River. The levees and/or floodwalls would range in height between 5 and 10 feet above ground elevation. The top elevation of these features would be +139 feet NAVD88 near Route 46, and +150 feet NAVD88 near Browertown Road. Pump stations would be needed to ensure sufficient interior drainage of areas behind levees and/or floodwalls.

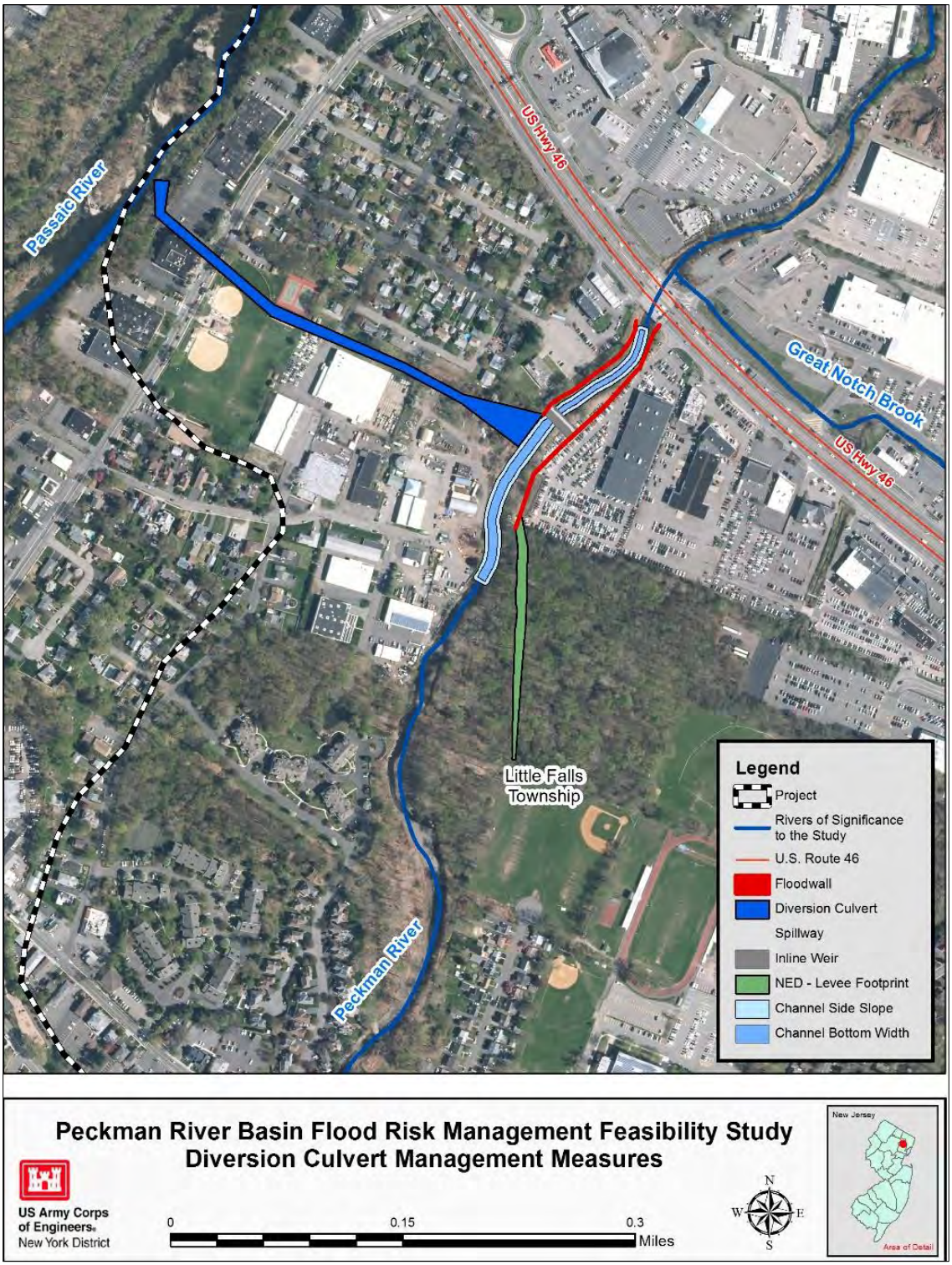


Figure A-6. Features associated with the proposed diversion culvert.

Figure A-7. Upstream and downstream reaches of the Peckman River from the Route 46 bridge.

- Alternative 5: Levee/Floodwall System Upstream and Downstream of Route 46. Approximately 12,000 feet of levees and/or floodwalls would be built on the Peckman River from the confluence of the Passaic River extending upstream for its entire length in the project area. It is assumed that adequate space is not available on most of the length of the river to construct levees without changing current land uses; floodwalls may be more appropriate for areas with limited space. The average height of the levees and/or floodwalls would be eight feet above ground elevation. Four automobile bridges along the Peckman River would need to be replaced during to this work. This work may also necessitate road closure gates and/or raisings at the Lakawanna Avenue and McBride Avenue bridges.

  Additionally, approximately 3,000 feet of levees and/or floodwalls would be built in the lower reach of Great Notch Brook to its confluence with the Peckman River. The levees and/or floodwalls would range in height between five and 10 feet above ground elevation. The top elevation of these features would be +139 feet NAVD88 near Route 46, and +150 feet NAVD88 near Browertown Road. Pump stations would be needed to ensure sufficient interior drainage of areas behind levees and/or floodwalls.

- Alternative 6: Levee/Floodwall System Downstream of Route 46. Approximately 12,000 feet of levees and/or floodwalls would be built on the Peckman River from the confluence of the Passaic River extending upstream to the Route 46 bridge. The average height of the levees and/or floodwalls would be eight feet above ground elevation. This work may necessitate reconstruction of the Lakawanna Avenue and McBride Avenue bridges.

  Additionally, approximately 3,000 feet of levees and/or floodwalls would be built in the lower reach of Great Notch Brook to its confluence with the Peckman River. The levees and/or floodwalls would range in height between five and 10 feet above ground elevation. The top elevation of these features would be +139 feet NAVD88 near Route 46, and +150 feet NAVD88 near Browertown Road. Pump stations would be needed to ensure sufficient interior drainage of areas behind levees and/or floodwalls.

- Alternative 7: Channel Modifications Downstream of Route 46. The Peckman River would be widened and dredged from the confluence of the Passaic River extending upstream to the Route 46 bridge. The amount of channel excavation is approximately 80 percent less than that for Alternative 4.

  The channel modification would require approximately 12,000 feet of retaining walls along the upper reach of the Peckman River. This work may necessitate reconstruction of the Lakawanna Avenue and McBride Avenue bridges.

- Alternative 8: Channel Modifications Upstream of Route 46 with Peckman River Diversion Culvert. The features described in Alternatives 3 and 7 would be combined into this plan, excuding the channel improvement features along the Peckman River.

- Alternative 9: Levee/Floodwall System Upstream of Route 46 with Peckman River Diversion Culvert. The features described in Alternative 3 would be built, in addition to

approximately 9,000 feet of levees and/or floodwalls on the Peckman River from the Route 46 bridge extending upstream for the extent of the project area. The average height of the levees and/or floodwalls would be 8 feet above ground elevation. Due to the high velocities along the river and unstable banks, streambank erosion measures are necessary. Streambank erosion measures include riprap and articulated concrete blocks.

Additionally, approximately 3,000 feet of levees and/or floodwalls would be built in the lower reach of Great Notch Brook to its confluence with the Peckman River. The levees and/or floodwalls would range in height between five and 10 feet above ground elevation. The top elevation of these features would be +139 feet NAVD88 near Route 46, and +150 feet NAVD88 near Browertown Road. Pump stations would be needed to ensure sufficient interior drainage of areas behind levees and/or floodwalls.

Approximately six structures near the bank of the Peckman River would require buyouts to accommodate the levees and/or floodwalls. Due to the high velocities along the Peckman River and unstable banks, streambank erosion mitigation measures would be necessary along the sections of the river. Channel modification is expected in some areas to accommodate riprap and articulated concrete blocks. Large diameter riprap and articulate concrete block are required to eliminate the erosion and possible undermining of the proposed levee and/or floodwall.

Lastly, the alternative includes two bridge replacements, Main Avenue East and Lindsley Road, and an automatic hydraulic gate structure at E. Main Street. The gate would close to traffic during extraordinary storm events.

- Alternative 10a: Nonstructural Measures (2 percent floodplain) Upstream of Route 46 with Peckman River Diversion Culvert. The features described in Alternative 3 would be built, in addition to the construction of ringwalls that would encircle 51 structures (three residential, 48 non-residential), and implementation of nonstructural measures to structures within the 2 percent floodplain. A description of the formulation and selection of these techniques is summarized in Alternative 3. Table 22 summarizes the nonstructural components of the alternative.

Table 2. Nonstructural components of Alternative 10a.

Treatment	Residential	Non-residential	Subtotal
Elevation	71	0	71
Wet Floodproofing	27	2	29
Dry Floodproofing	17	12	29
Total	**115**	**14**	**129**

Ringwalls were individually considered in a last-added analysis. Considering current land uses and the nature of flooding, permanent barriers (vs. temporary barriers) are the most appropriate for the project area. Fifty one ringwalls are included in the plan. Design details will be developed during optimization.

- Alternative 10b: Nonstructural Measures (10 percent floodplain) Upstream of Route 46 with Peckman River Diversion Culvert. The features described in Alternative 3 would be built, in addition to the construction of ringwalls that would encircle 47 structures (0 residential, 47 non-residential), and implementation of nonstructural measures to structures within the 10 percent floodplain. Table 3 summarizes the nonstructural components of the alternative.

Table 3. Nonstructural components of Alternative 10b.

Treatment	Residential	Non-residential	Subtotal
Elevation	64	0	64
Wet Floodproofing	3	1	4
Dry Floodproofing	1	2	3
Total	**68**	**3**	**71**

A.4 Plan Evaluation & Comparison

A. 4.1 Economic Performance

An estimate of Average Annual Costs (AAC) were considered against the Average Annual Benefits (AAB) for the alternatives (Table 4). This allowed for an initial screening of alternatives. The annual costs include interest during construction. Interest accumulated during construction period is the cost of the funds used to finance the construction.

Table 4. Economic performance of the initial array of alternatives (FY18 Price Levels).

	First Cost	Average Annual Cost	Average Annual Benefit	Net Benefits	BCR
Alternative 1	N/A	N/A	N/A	N/A	N/A
Alternative 2	$200,928,000	$8,100,000	$17,403,000	$9,303,000	2.1
Alternative 3	$97,609,000	$4,100,000	$16,029,000	$11,929,000	3.9
Alternative 4	$274,231,000	$12,000,000	$16,776,000	$4,776,000	1.4
Alternative 5	$214,372,000	$9,300,000	$17,836,000	$8,536,000	1.9
Alternative 6	$145,499,000	$7,300,000	$6,789,000	($511,000)	0.93
Alternative 7	$106,540,000	$4,500,000	$14,477,000	$9,977,000	3.2
Alternative 8	$213,231,000	$9,400,000	$20,330,000	$10,930,000	2.2
Alternative 9	$267,448,000	$11,148,000	$19,324,000	$8,176,000	1.7
Alternative 10a	$206,812,000	$8,400,000	$20,148,000	$11,748,000	2.4
Alternative 10b	$154,394,000	$6,507,000	$19,363,000	$12,856,000	3.0

BCR: benefit-to-cost ratio / Average annual costs include interest during construction / Interest rate of 2.75 percent from 2027 through 2076 / Discount rate of 2.75 percent from 2027 through 2076.

All plans but Alternative 6 provide positive net economic benefits – that is, the economic benefits outweigh the project costs. Of the remaining nine alternatives, some provide two to three

times more net economic benefits than others. A relatively ranking of the alternatives by net benefits provided by each plan is shown in Table 5.

Table 5. Relative ranking of net benefits provided by the alternatives.

	Net Benefits	BCR
Alternative 1	N/A	N/A
Alternative 6	($511,000)	0.9
Alternative 4	$4,776,000	1.4
Alternative 9	$8,176,000	1.7
Alternative 5	$8,536,000	1.9
Alternative 7	$9,303,000	2.7
Alternative 2	$9,977,000	2.2
Alternative 8	$10,930,000	2.3
Alternative 10a	$11,748,000	3.7
Alternative 3	$11,929,000	2.5
Alternative 10b	$12,856,000	3.1

Alternative 10b, the plan that provides the greatest amount of net benefits, delivers almost three times the amount of net benefits ($13,088,000) as Alternative 4 ($4,576,000). Differentiation of benefits provided by the alternatives was considered during plan selection.

A.4.2 Consideration of Planning Objectives & Constraints

Alternatives were judged upon whether or not they make significant contributions to the planning objectives and sufficiently avoid planning constraints; some do so more efficiently than others. Table 6 shows a summary of to what degree each alternative meets the planning objectives and avoids planning constraints on a subjective scale of Low-Medium-High. Those alternatives that met objectives and avoided constraints very well were rated “high.” Because of this, the coloring scheme for objectives and constraints is “opposite” to best reflect these ratings.

Note that transportation infrastructure is grouped with critical infrastructure (constraint #1) for the purpose of this evaluation.

Table 6. Consideration of planning objectives and constraints.

	Does the plan…				
	Objective 1: Manage the risk of flood damages	**Objective 2: Manage the risk to life safety**	**Objective 3: Support community resilience and cohesion**	**Constraint 1: Avoid impacts to critical infrastructure**	**Constraint 2: Avoid physical constraints**
Alternative 1	Low	Low	Low	High	High
Alternative 2	Medium	Low	Medium	High	High
Alternative 3	High	Medium	Medium	Medium	Medium
Alternative 4	Low	Medium	Medium	High	High
Alternative 5	Medium	High	Medium	Low	Low
Alternative 6	Low	Low	Low	Low	Low
Alternative 7	Medium	Low	Low	High	High
Alternative 8	High	High	High	Medium	Medium
Alternative 9	Low	High	High	Low	Low
Alternative 10a	High	High	High	Medium	Medium
Alternative 10b	High	High	High	Medium	Medium

The plans that include the Peckman River Diversion Culvert - Alternative 3, Alternative 10a, Alternative 8, and Alternative 10b - generally provide more contributions to the planning objectives than other alternatives. Alternative 2, Alternative 4, and Alternative 7 avoid constraints better than other alternatives.

A.4.3 Consideration of P&G Criteria

The 1983 P&G requires that alternative plans are formulated and compared in consideration of four criteria: completeness, effectiveness, efficiency, and acceptability.

Completeness is the extent to which the alternative plans provide and account for all necessary investments or other actions to ensure the realization of the planned efforts, including actions by other Federal and non-Federal entities. The proposed Peckman River Diversion Culvert would provide a significance reduction in the alleviation of flash flooding in Woodland Park, which is located downstream of the proposed culvert. Most flooding damages in the study area occur in Woodland Park. Those alternatives that include the culvert – Alternative 3, Alternative 8, Alternative 9, Alternative 10a, and Alternative 10b – would thus be more complete than other alternatives.

It was acknowledged that nonstructural measures on their own may provide only a small "piece of the puzzle" for risk management in the Peckman River Basin. Because of this, consideration and communication of residual risk is a key component of Alternative 2, Alternatives 10a, and 10b, the plans with nonstructural components.

Effectiveness is the extent to which the alternative plans alleviates the specified problems and achieves the opportunities. The alternatives all achieve the study opportunities to:

- Manage flood risks from associated fluvial flood events that impact communities, infrastructure, and the economy
- Support the resiliency of the Peckman River Basin's communities, infrastructure, and the economic consequences to the region and to the nation economy
- Communicate existing and potential future flood risks to local planners and public officials

Alternatives were judged upon whether or not they make significant contributions to these opportunities; some do so more efficiently than others. In general, Alternative 1 and Alternative 2 would provide risk reduction to a much smaller geographic area than other alternatives. Alternatives that include limited spans of structural measures are less effective at providing risk management as compared to alternatives that include larger spans of structural measures, or combinations of measures.

It is assumed that alternatives that would require little or no change in community services, pathways, and land use would have minimal negative impacts on community cohesion and resilience. It is assumed that alternatives that include levees and/or floodwalls along the Peckman River would have greater impact on the landscape, environment, and land use than other alternatives.

All alternatives are equally efficient at providing information for local planners; this study and report meet this opportunity.

Efficiency is the extent to which an alternative plan is the most cost effective means of achieving the objectives. Efficiency was measured through a comparison of benefit-to-cost ratios, reduced damages, and benefits from the project. This comparison showed that of the alternatives, all plans but Alternative 6 provide positive net benefits and thus were deemed economically efficient. The relative ranking of the alternatives by net benefits provided by each plan (see Table 5) was used to determine which plans were more efficient than others in providing economic benefits to the study area's communities.

Acceptability is the extent to which the alternative plans are acceptable in terms of applicable laws, regulations, and public policies. The alternatives were formulated in accordance with applicable laws and regulations. One important facet of acceptability is implementability, which is the feasibility of a plan in the technical, environmental, economic, social, and similar senses. Large-scale and complex structural measures are generally less implementable because they are more challenging to construct and generally have greater impacts to the human environment. Plans that include levees and floodwalls along the Peckman River (Alternative 5, Alternative 6, and Alternative 9) are assumed to be less implementable than other plans, since they would require the acquisition of many thousands linear feet of land along highly-developed areas. Alternatives that include the proposed Peckman River Diversion Culvert (Alternative 3, Alternative 10a, and Alternative 10b) are also similarly complex. Due to their limited impact to the human environment and relative simple scope, nonstructural measures are thought to be

generally more implementable. It is assumed that the acceptability of the No Action plan (Alternative 1) is not acceptable because it provides no risk management benefits (Table 7).

Table 7. Summary of contribution of alternatives to the P&G criteria.

	Completeness	Effectiveness	Efficiency	Acceptability
Alternative 1	Low	Low	Low	Low
Alternative 2	Low	Low	Medium	High
Alternative 3	High	Medium	High	Medium
Alternative 4	Medium	High	Low	High
Alternative 5	Medium	High	Medium	Low
Alternative 6	Medium	Medium	Low	Low
Alternative 7	Medium	Medium	Medium	High
Alternative 8	High	Medium	High	High
Alternative 9	High	High	Low	Low
Alternative 10a	High	High	High	Medium
Alternative 10b	High	High	High	Medium

Alternative 8, Alternative 10a and Alternative 10b contribute highly to three of the four P&G criteria. Alternative 1, Alternative 2, Alternative 5, Alternative 6, and Alternative 7, do a poor job of contributing highly to at least two of the four P&G criteria.

A.4.3 Summary of Environmental & Socioeconomic Benefits and Impacts

This section builds upon the EQ "non-monetary effects on significant natural and cultural resources" P&G account by further classifying the magnitude of impacts the preliminary alternatives are likely to have on the environmental and socioeconomic resources. Table 98 and 9 summarize the impacts of each alternative formulated.

For the purposes of the preliminary screening of the alternatives, the magnitude of impacts are categorized as:

- No Effect (No Effect): no noticeable adverse effect on the environment would occur.

- Less Than Significant (LTS): The impacts of the project do reach or exceed the defined threshold/criteria of significance or the effects are not adverse. No mitigation measures are required for a LS impact.

  An example of this type of impact is air quality, where construction emissions from flood risk management projects such as have historically been below the de minimis values established for criteria pollutants. For other environmental resources such as water, vegetation and fish and wildlife, this impact type is assumed when the area being affected by the action has undergone such significant anthropological modifications that the effect of the proposed action would not further decrease the function of the resource to a level where mitigation is necessary.

- Less Than Significant with Mitigation (LTSM): Mitigation measures in the form of avoidance, minimization, reducing the impact over time and/or compensation are identified to reduce the potentially significant impact to less than significant level.

  An example of a LTSM impact is moving a floodwall/levee further out of wetlands to avoid or minimize impacts, or compensating for the impacts through the purchase of wetland mitigation credits or creating, restoring or enhancing wetlands.

- Significant and Unavoidable (SU): SU is applied to actions that cause substantial permanent adverse changes to any of the physical conditions within the area affected by the proposed action. Although implementation of mitigation measures may reduce the significance of the effects, they will not reduce the impact to a less than significant level. Unavoidable is defined as the impact is necessary in order for the proposed action to achieve its stated goal, in this case flood risk management.

  The Water Resource column for Alternative 7, Alternative 8, and Alternative 9 in Table 8 is an example of this type of impact. The channel modifications and levees/floodwalls will significantly permanently change the character and function of the Peckman River, but is necessary to provide flood risk management.

Table 8: Summary of Alternative Impacts to Environmental Resource Impacts.

	Water Resources	Vegetation	Fish and Wildlife	Cultural Resources	Air Quality
Alternative 1	No Effect	No Effect	No Effect	No Effect	No Effect
Alternative 2	No Effect	LTSM	No Effect	LTS	LTS
Alternative 3	LTS	LTSM	LTSM	LTS	LTS
Alternative 4	SU	SU	SU	SU	LTS
Alternative 5	SU	SU	SU	SU	LTS
Alternative 6	LTSM	LTSM	LTSM	LTS	LTS
Alternative 7	SU	SU	SU	LTS	LTS
Alternative 8	SU	SU	SU	SU	LTS
Alternative 9	SU	SU	SU	SU	LTS
Alternative 10a	LTSM	LTSM	LTSM	LTSM	LTS
Alternative 10b	LTSM	LTSM	LTSM	LTSM	LTS

Table 9: Summary of Alternative Impacts to Socioeconomic Resource Impacts.

	Recreation	Aesthetics	Env. Justice	Transportation	Noise
Alternative 1	No Effect	No Effect	No Effect	No Effect	No Effect
Alternative 2	No Effect	LTS	No Effect	LTS	LTSM
Alternative 3	LTS	LTS	No Effect	LTS	LTSM
Alternative 4	LTSM	SU	No Effect	LTS	LTSM
Alternative 5	LTSM	SU	No Effect	LTS	LTSM
Alternative 6	No Effect	LTSM	No Effect	LTS	LTSM
Alternative 7	No Effect	LTS	No Effect	LTS	LTSM
Alternative 8	LTSM	LTSM	No Effect	LTS	LTSM
Alternative 9	LTSM	SU	No Effect	LTS	LTSM
Alternative 10a	LTS	LTS	No Effect	LTS	LTSM
Alternative 10b	LTS	LTS	No Effect	LTS	LTSM

A.4.4 Selection of the Tentatively Selected Plan

The study team considered how well each alternative performed relative to others as related to economic performance, planning objectives, planning constraints, the P&G criteria, and the P&G accounts. Table 10 summarizes the relative performance relative to these selection criteria on a subjective scale of Low-Medium-High. Note that those alternatives that avoided constraints very well were rated "high." Because of this, the coloring scheme for constraints is "opposite" other selection criteria to best reflect these ratings.

Table 10: Summary of performance of the alternative plans.

	Economic Performance	Meets Planning Objectives	Avoids Planning Constraints	Contributes to P&G Criteria	Contributes to P&G Accounts
Alternative 1	Low	Low	High	Low	Low
Alternative 2	Medium	Low	High	Low	Low
Alternative 3	High	High	Medium	Medium	Medium
Alternative 4	Low	Medium	High	Medium	Medium
Alternative 5	Medium	Medium	Low	Low	Medium
Alternative 6	Low	Low	Low	Low	Low
Alternative 7	Medium	Medium	High	Low	Medium
Alternative 8	High	High	Medium	High	High
Alternative 9	Low	Medium	Low	Medium	Medium
Alternative 10a	High	High	Medium	High	High
Alternative 10b	High	High	Medium	High	High

The alternatives were grouped by flood management strategy for the purposes of plan comparison and selection.

- Strategy 1: Plans Focusing on Diverting Floodwaters to the Passaic River

Alternative 3, Alternative 9, Alternative 8, Alternative 10a, and Alternative 10b include the Peckman River Diversion Culvert. These plans generally do a better job of meeting planning

objectives and contributing to the P&G criteria than other alternatives. Alternative 3, Alternative 8, Alternative 10a, and Alternative 10b provide greater net economic benefits than all other plans. Because of the Peckman River floodwalls included in Alternative 9, the plan provides relatively little economic net benefits.

- Strategy 2: Plans Focusing on Channel Modifications in the Peckman River

Alternative 4, Alternative 7, and Alternative 8 include modification of the Peckman River channel. Alternative 8 also includes the Peckman River Diversion Culvert. Alternative 8 provides the most economic net benefits of this group. Alternative 7 provide relatively moderate net economic benefits, while Alternative 4 does a relatively poor job of providing net economic benefits. They generally avoid constraints better than other alternatives, because channel modifications would be limited to within the Peckman River.

- Strategy 3: Plans Focusing on Levees and Floodwalls along the Peckman River

Alternative 5, Alternative 6, and Alternative 9 include the construction of levees and floodwalls along the Peckman River. The alternatives provide relatively low net economic benefits. In addition, they are relatively poor at avoiding physical constraints. Construction of levees and floodwalls would require land use changes that may not be acceptable to the community. The study team determined that this would be a major obstacle during plan implementation.

- Strategy 4: Plans Focusing on Nonstructural Strategies

Alternative 2, Alternative 10a, and Alternative 10b are largely or totally composed of nonstructural measures. Alternative 2 provides moderate net economic benefits and avoids constraints very well. However, they does not contribute as much to the P&G criteria and accounts compared to other alternatives. The benefits and impacts of Alternative 10a and Alternative 10b are generally due to the Peckman River Diversion Culvert, which is discussed in length previously in this section.

- Plan Selection

The study team considered the costs, benefits, and trade-offs related to each alternative. It was agreed that plans that include the Peckman River Diversion Culvert provide the most economic and social benefits; acceptably avoid significant impact to the environment and communities; and contribute the greatest to the P&G criteria and accounts. With its inclusion of floodwalls along the Peckman River, Alternative 9 is thought to be the least acceptable alternative of the five culvert alternatives.

The cost of Alternative 3 is significantly less than Alternative 10a and Alternative 10b, because the latter two alternatives include nonstructural measures upriver of the Peckman River Diversion Culvert in Little Falls. However, the economic benefits of the nonstructural measures in Little Falls outweigh their cost. Because of this Alternative 10a and Alternative 10b provide greater net economic benefits than Alternative 3. Of the two plans that include nonstructural measures, Alternative 10b provides greater net economic benefits.

Alternative 10b has been identified as the Tentatively Selected Plan (TSP). The plan provides the greatest NED benefits of any alternative ($12,856,000), with a BCR of 3.0. The plan includes

implementation of nonstructural measures within the 10 percent floodplain and construction of the Peckman River Diversion Culvert.

APPENDIX B

NJ Department of Environmental Protection
Historic Preservation Office
Historic Property Base Form

Little Falls Laundry Weir and Headrace

BASE FORM

Historic Sites #:

Property Name: Little Falls Laundry Weir and Headrace

Street Address: *Peckman Preserve:* _____ (Low) _____ (High) *Apartment #:* _____ (Low) _____ (High)

Prefix: _____ *Street Name:* Wilmore *Suffix:* _____ *Type:* _____

County(s): Passaic **Zip Code:** 07424

Municipality(s): Little Falls Township **Block(s):** 122

Local Place Name(s): Peckman River **Lot(s):** 49, 58

Ownership:: Peckman Preserve **USGS Quad(s)** Patterson 1981

Photograph:

Description: Concrete weir after being partially destroyed by Hurricane Irene. View northwest towards the concrete headgate and unlined headrace in the distance. The Little Falls laundry is further in the distance along East Main Street.

Registration and Status Dates:

National Historic Landmark: _____ SHPO Opinion: Eligible for NR

National Register: _____ Local Designation: _____

New Jersey Register: _____ Other Designation: _____

Determination of Eligibility: 29 August 2012 Other Designation Date: _____

Survey Name: **Phase I Cultural Resources Survey, Peckman River Flood Damage Reduction Project** Date: February 1, 2013

Surveyor: **Matthew Kirk**

Organization: **Hartgen Archeological Associates, Inc.**

BASE FORM

Historic Sites #:

Survey Name: **Phase I Cultural Resources Survey, Peckman River Flood Damage Reduction Project** Date: February 1, 2013

Surveyor: **Matthew Kirk**

Organization: **Hartgen Archeological Associates, Inc.**

Location Map:

See attached

Site Map:

See attached

Bibliography/Sources:

Additional Information:

More Research Needed? ☒ Yes ☐ No

INTENSIVE LEVEL USE ONLY

Attachments Included: ☐ Building ☐ Structure ☐ Object ☐ Bridge ☐ Landscape ☐ Industry

Within Historic District? ☐ Yes ☐ No

Status: ☐ Key-Contributing ☐ Contributing ☐ Non-Contributing

Survey Name: **Phase I Cultural Resources Survey, Peckman River Flood Damage Reduction Project** Date: February 1, 2013

Surveyor: **Matthew Kirk**

Organization: **Hartgen Archeological Associates, Inc.**

BASE FORM

Historic Sites #:

Associated Archaeological Site/Deposit? ☒ Yes

The Little Falls Laundry weir and headrace is an archeological site associated with the Little Falls Laundry property that was determined to be eligible for the National Register by the NJHPO. The archeological sites consist of a concrete weir dam, now damaged by floods, and an associated concrete headgate and unlined headrace. Additional features and deposits may be associated with the site.

BASE FORM

Historic Sites #:

THIS PAGE TO BE COMPLETED ONLY AT INTENSIVE LEVEL
AND
ONLY IF PROPERTY IS A FARM COMPLEX

Historic Farm Name: _____

Period of Agricultural Use: _____ To _____ **Source** _____

Agriculture Type: _____

Remaining Historic Fabric _____

Acreage: _____

Farm Description:

100 0 100 200 Feet

30 0 30 60 Meters

Legend

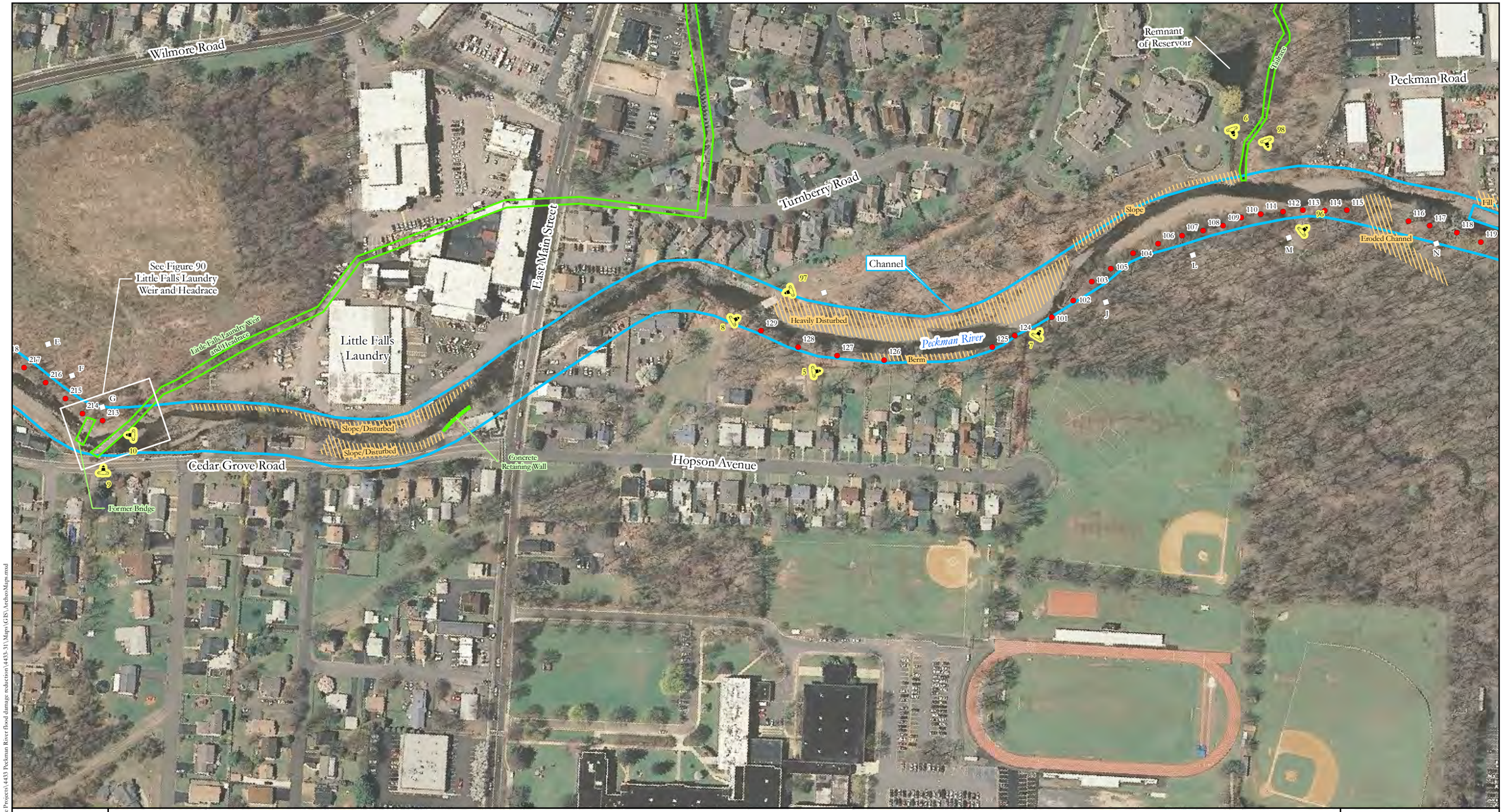
- Project Area
- Shovel Test Pit
- 1982 Shovel Test Pit
- Areas Not Tested
- Archeological/Architectural Features
- Map-documented Structure Location
- Photograph Angles

Archeological Investigation Map
(NJOIT/OGIS 2007, USACE 2011, Hartgen 2011)

HARTGEN archeological associates inc

Figure 69a

TSM November 29, 2012 R:\Active Projects\4433 Peckman River flood damage reduction\4433-31\Maps\GIS\ArcheoMaps.mxd



100 0 100 200 Feet

30 0 30 60 Meters

Legend

- Project Area
- Shovel Test Pit
- 1982 Shovel Test Pit
- Areas Not Tested
- Archeological/Architectural Features
- Map-documented Structure Location
- Photograph Angles

Archeological Investigation Map
(NJOIT/OGIS 2007, USACE 2011, Hartgen 2011)

HARTGEN archeological associates inc

Figure 69b

TSM November 29, 2012 R:\Active Projects\4433 Peckman River flood damage reduction\4433-31\Maps\GIS\ArcheoMaps.mxd

N

100 0 100 200 Feet

30 0 30 60 Meters

Legend

- Project Area
- Shovel Test Pit
- 1982 Shovel Test Pit
- Areas Not Tested
- Archeological/Architectural Features
- Map-documented Structure Location
- Photograph Angles

Archeological Investigation Map
(NJOIT/OGIS 2007, USACE 2011, Hartgen 2011)

HARTGEN archeological associates inc

Figure 69c

TSM November 29, 2012 R:\Active Projects\4433 Peckman River flood damage reduction\4433-31\Maps\GIS\ArcheoMaps.mxd

ELIGIBILITY WORKSHEET

Historic Sites #:

History:
The Little Falls Laundry is located on the south side of Main Street adjacent to the west side of the Peckman River. The laundry was begun by Dutch immigrants in 1912 and operated until 1970. The complex includes three buildings. The main building consists of several sections built between 1917 and 1932. The earliest of these replaced the original frame laundry facility constructed in 1912. The other buildings were built between 1915 and 1925 as garages and are now divided between multiple tenants
The Little Falls Laundry weir and headrace is constructed of board-formed concrete. These features were likely constructed after the laundry expanded in 1917 with the completion of the three-story brick building, or its subsequent expansion in 1922. The concrete features appear to date to about the 1920s, based on their material and form. It is possible that earlier elements of the complex were buried under the concrete or incorporated into the later configuration, but there is no surface evidence at this time of earlier components.
The weir consisted of a low concrete wall that helped to divert water from the man channel of the river into a small headrace that brought water into the laundry. The laundry facility was powered by coal, but it utilized the river water as part of its laundering services. Since the water was "hard" it was softened in a massive treatment facility.
The weir appears to have utilized a former dam and headrace that feed water to the mills ponds of the Sindle and Vann Mills formerly along Sindle and Vanness Avenues northwest of the Peckman River. These mills were originally constructed between 1856 and 1867, and later were demolished to make way for a larger felt mill constructed in 1877. The felt mill continued operation through World War I and closed after a conflagration in the early 1920s. The weir and headrace were likely shared by the felt mill and the laundry until its closure in the 1920s. After that point the headrace and gate were likely modified to meet the needs of the laundry, now that it had sole interest in the water.
The concrete weir appears to have been poured as a single structure. It is a broad-crested weir with a shallow apron on the downstream side to slow the water and reduce the effects of scouring. In cross section the weir is a trapezoid with a broad flat top, angled apron, narrow front and wide base. The weir appears to have been poured over a gravel embankment with minimal effort to anchor the structure into the riverbed, instead relying solely on the weight of the concrete and water to hold it in place. Since water was largely allowed to overflow the structure there was little need to develop an elaborate anchorage. The weir measured four feet tall with a crest 4.5 feet wide and apron nine feet long. The base of the weir measured 13 feet wide.
The westernmost section of the weir, which keyed into the land side was covered with large amounts of fill, obscuring most of that portion of the structure. The headrace of the laundry was clearly built separately, as evidenced by the difference in concrete material and aggregate and construction technique. The headrace walls were one-foot thick and extended 30 feet from the weir to a sluice gate. A small wing wall on the west side of the headrace helped to funnel water into the sluice gate from the small pond that likely formed behind the weir. In all, the wing wall was about 10 feet long. The sluice gate was also composed of concrete with a steel culvert inside. Over the headwall was a series of gears that operated a wooden gate, likely from a small gas-operated motor. The sluice gate allowed water to be regulated through the remainder of the headrace so the laundry used the appropriate amount of water. The headrace has been filled with silt and other sediment and its exact depth is not known.
After the headwall, the headrace is not concrete-lined and appears to be little more than an open ditch. The ditch continues well outside of the Project Area to the Little Falls Laundry facility and beyond to the old mills along Vanness and Sindle Avenues.
No other cultural material or features associated with the former mills or laundry were located in this area

Significance: The Little Falls Laundry facility has been determined eligible for the National Register. The NJHPO has also confirmed the associated archeological site is eligible based on its association with the main property. The site may also have vestiages of earlier industrial complexes that operated in the 19th century prior to the laundry. The site is considered eligible under Criterion C

Eligibility for New Jersey and National Registers: ☒ Yes ☐ No **National Register Criteria:** ☐ A ☐ B ☒ C ☐ D

Level of Significance ☐ Local ☒ State ☐ National

BASE SURVEY FORM

Historic Sites #:

Property Name: Little Falls Laundry

Street Address: *Street #:* 101 (Low) _____ (High) *Apartment #:* _____ (Low) _____ (High)

Prefix: E *Street Name:* Main *Suffix:* _____ *Type:* ST

County(s): Passaic **Zip Code:** 07424

Municipality(s): Little Falls **Block(s):** 122

Local Place Name(s): Little Falls **Lot(s):** 19-20

Ownership: Private **USGS Quad(s):** Paterson

Description: The Little Falls Laundry is a three-building complex located at 101 East Main Street adjacent to the Peckman River. The main building abuts Main Street and includes three separate sections. Along Main Street to the east are sections built between 1917 and 1925. The original Little Falls Laundry facility was a frame building built in 1912. This building was replaced in 1917 by a larger brick structure that was later enlarged in 1922. The offices for the laundry were also built in 1922. This section of the main building was enlarged again in 1925. The second section of the main building includes a 92-foot by 182-foot Flemish style brick building designed by Goodwillie & Moran of New York City constructed in 1925. This section of the main building sits behind the older sections that abut Main Street. The third section of the main building was built in 1932 and includes the Art Deco administration building on Main Street (Little Falls Historical Society 1991: 1-3). To the southeast of the main building is a large, one story building originally used as a garage and now divided between multiple tenants. Another similar building is located to the southwest of the main building. Both of these buildings were built between 1915 and 1925 (Sanborn Map Company 1915, 1925).

Registration and Status Dates:

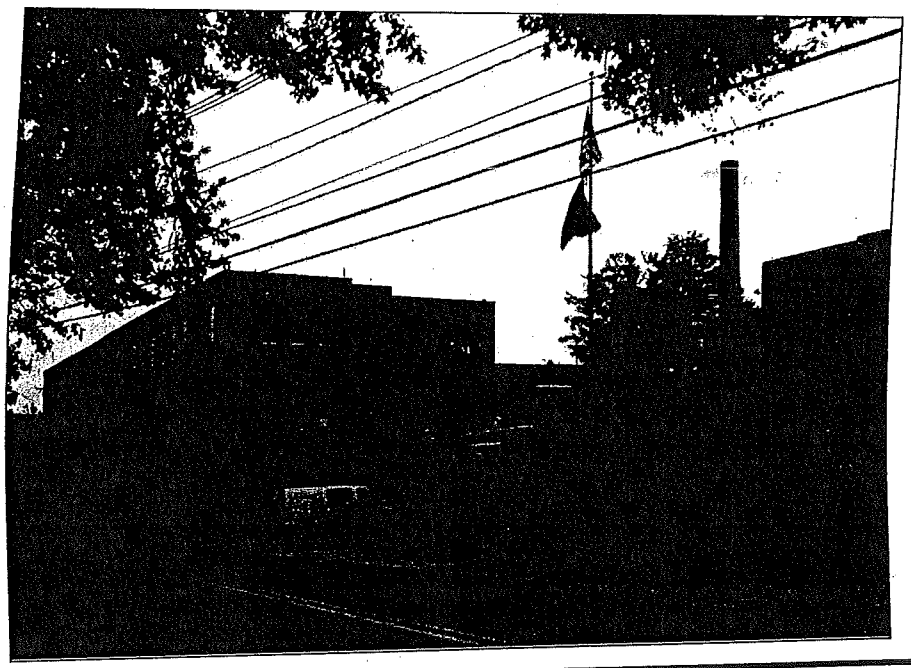
National Historic Landmark: _____ SHPO Opinion: _____

National Register: _____ Local Designation: _____

New Jersey Register: _____ Other Designation: _____

Determination of Eligibility: _____ Other Designation Date: _____

Photograph:



Survey Name: Andrew Realty Smokestack Date: 11/04

Surveyor: Donna Andrews

Organization: Richard Grubb & Associates

APPENDIX E

BASE SURVEY FORM

Historic Sites #:

Location Map:

Site Map:

Bibliography/Sources:

1915. 1925, 1957 Sanborn Map Company, Fire Insurance Maps for Little Falls
1991 Little Falls Historical Society, *Historic Little Falls*, Vol. 4, Issue 5, September 1991

Additional Information:

More Research Needed? ☐ Yes ☒ No

INTENSIVE LEVEL USE ONLY

Attachments Included: ☒ Building ☐ Structure ☐ Object ☐ Bridge ☐ Landscape ☐ Industry

Within Historic District? ☐ Yes ☒ No

Status: ☐ Key Contributing ☐ Contributing ☐ Non-Contributing

Associated Archaeological Site/Deposit? ☐ Yes ☐ No
(Known or potential Sites – If yes, please describe briefly)
Unknown

Survey Name: Andrew Realty Smokestack Date: 11/04
Surveyor: Donna Andrews
Organization: Richard Grubb & Associates

BUILDING/ELEMENT ATTACHMENT

☒ BUILDING ☐ STRUCTURE ☐ OBJECT

Historic Sites #:

Common Name: 101 East Main Street
Historic Name: Little Falls Laundry
Present Use: Commercial Activity: Personal Services
Historic Use: Industrial Activity
Construction Date: 1912-1932 **Source:** Historic Maps, Archival Research
Alteration Date(s): 1917, 22, 25, 32, 50-57 **Source:** Historic Maps, Archival Research
Designer: Goodwillie & Moran, 1925 **Physical Condition:** Good
Builder: **Remaining Historic Fabric:** Medium
Style: Art Deco
Form: Commercial **Stories:**
Type: **Bays:**
Roof Finish Materials: Unknown
Exterior Finish Materials Brick

Exterior Description: See Base Form

Interior Description:

Setting: The Little Falls Laundry is located on the south side of Main Street, west of the Peckman River. The surrounding neighborhood is a mix of industrial, commercial, and residential uses dating from the early twentieth century through the present.

Survey Name: Andrew Realty Smokestack Date: 11/04
Surveyor: Donna Andrews
Organization: Richard Grubb & Associates

ELIGIBILITY WORKSHEET

Historic Sites #:

History: The Little Falls Laundry began as the Little Falls Washing Company in 1912. The company was started by Dutch immigrants Nicholas, John, Garret, and Herman Vander May who had been successful vegetable peddlers in the Paterson suburbs. The Little Falls Washing Company began in response to requests for reliable "washer women" from their customers who bought vegetables (Little Falls Historical Society 1991: 1). The company grew quickly, expanding from finishing 40 washes in the first week of business in 1912 to 600 washes per hour in 1925. The company named changed to the Little Falls Laundry in 1925 to reflect the wider array of laundry-related services the company offered after their expansion. By the 1930s the company had added dry cleaning and rug shampooing and was one of the largest laundering plants on the East Coast (Little Falls Historical Society 1991: 2). The Little Falls Laundry ceased operations sometime in the 1970s.

Significance: The Little Falls Laundry is a locally significant example of an immigrant (Dutch) business that grew to be one of the largest and most modern commercial laundry facilities on the East Coast. The period of significance is from 1912-1970, representing the years the Little Falls Laundry was operational.

Eligibility for New Jersey and National Registers: ☒ Yes ☐ No **National Register Criteria:** ☒ A ☐ B ☒ C ☐ D

Level of Significance ☒ Local ☐ State ☐ National

Justification of Eligibility/Ineligibility: The Little Falls Laundry is eligible for listing on the National Register of Historic Places under Criteria A and C as a significant Dutch business enterprise within the township of Little Falls that serviced the growing suburban development around Paterson. The Little Falls Laundry complex retains a moderate level of integrity despite the removal of the laundry machinery and the division of the complex into spaces for multiple tenants. Alterations to the exterior of the buildings have tended to be reversible. Window openings have been filled in but the original openings are visible.

For Historic Districts Only:

Property Count: Key Contributing: _____ Contributing: _____ Non Contributing: _____

For Individual Properties Only:

List the completed attachments related to the property's significance:
101 East Main Street

Narrative Boundary Description: Block 122, Lots 19-20

Survey Name: Andrew Realty Smokestack Date: 11/04
Surveyor: Donna Andrews
Organization: Richard Grubb & Associates

APPENDIX E

ELIGIBILITY WORKSHEET

Historic Sites #:

Justification of Eligibility/Ineligibility: The site retains good intergrity despite the fact that part of the wier was destroyed in 2011 by Hurricane Irene.The site is within the Peckman Preserve and is a visible element within the Peckman River and Little Falls community. The site may provide importnant data concernig how the laundry operated in the early 20th century and how water power was harnessed from the river by earlier mills.

For Historic Districts Only:

Property Count: Key Contributing: _____ Contributing: _____ Non Contributing: _____

For Individual Properties Only:

List the completed attachments related to the property's significance:

Narrative Boundary Description:

Survey Name: Phase I Cultural Resources Survey, Peckman River Flood Damage Reduction Project Date: February 4, 2013

Surveyor: Matthew Kirk

Organization: Hartgen Archeological Associates, Inc.

BASE FORM

Historic Sites #:

Property Name: Little Falls Laundry (Revised to include archeological components)

Street Address: *Peckman Preserve and :* 101 *(Low)* *(High)* *Apartment #:* *(Low)* *(High)*

Prefix: E *Street Name:* Main *Suffix:* Street *Type:*

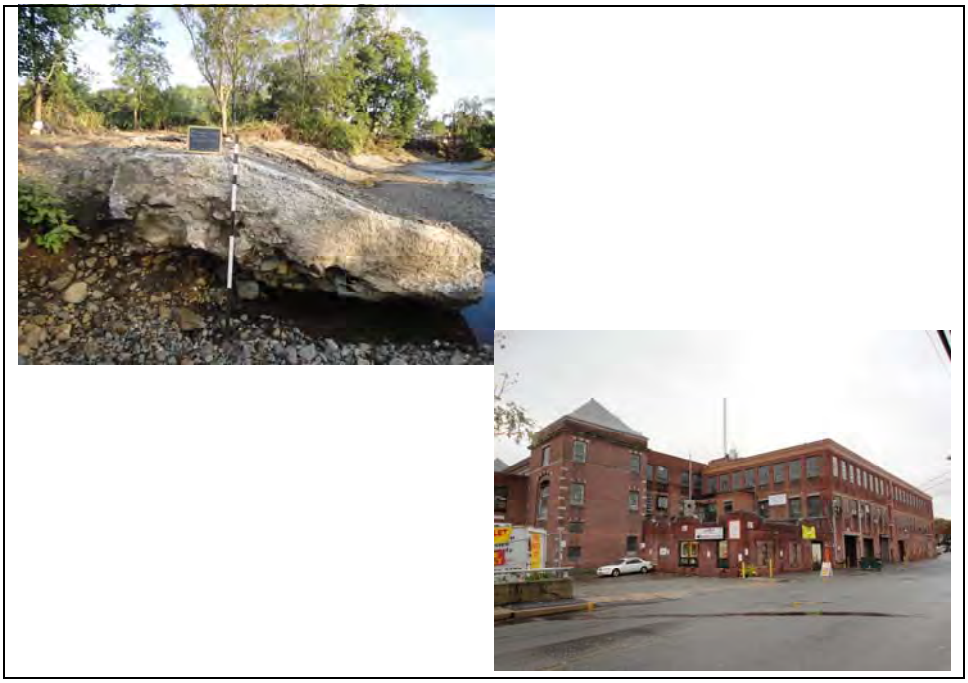
County(s): Passaic **Zip Code:** 07424

Municipality(s): Little Falls Township **Block(s):** 122

Local Place Name(s): Little Falls and Peckman River **Lot(s):** 19, 20, 49 and 58

Ownership:: Private and Peckman Preserve **USGS Quad(s)** Patterson 1981

Photograph:



Description: the property includes the main three-story complex that fronts along East Main Street and its appurtenant archeological features located upstream on the Peckman River. The upstream facilities include a sluiceway that brought water into the laundry to adequately supply the vast needs of the facility. These include a concrete weir, headgate, and sluiceway. The concrete weir was compromised after being partially destroyed by Hurricane Irene. Top left, view northwest towards the concrete headgate and unlined headrace in the distance. The Little Falls laundry is further in the distance along East Main Street. Bottom right, main complex viewed to the west from East Main Street.

Registration and Status Dates:

National Historic Landmark: SHPO Opinion: Eligible for NR

National Register: Local Designation:

New Jersey Register: Other Designation:

Survey Name: **Phase I Cultural Resources Survey, Peckman River Flood Damage Reduction Project** Date: February 1, 2013

Surveyor: **Matthew Kirk**

Organization: **Hartgen Archeological Associates, Inc.**

BASE FORM

Historic Sites #:

Status: ☐ Key-Contributing ☐ Contributing ☐ Non-Contributing

Associated Archaeological Site/Deposit? ☒ Yes

The Little Falls Laundry weir and headrace is an archeological site associated with the Little Falls Laundry property that was determined to be eligible for the National Register by the NJHPO. The archeological sites consist of a concrete weir dam, now damaged by floods, and an associated concrete headgate and unlined headrace. Additional features and deposits may be associated with the site.

BASE FORM

Historic Sites #:

THIS PAGE TO BE COMPLETED ONLY AT INTENSIVE LEVEL
AND
ONLY IF PROPERTY IS A FARM COMPLEX

Historic Farm Name: _____

Period of Agricultural Use: _____ To _____ **Source** _____

Agriculture Type: _____

Remaining Historic Fabric _____

Acreage: _____

Farm Description:

BASE FORM

Historic Sites #:

Determination of Eligibility: 11/04-see attached Other Designation Date: _____

Survey Name: **Phase I Cultural Resources Survey, Peckman River Flood Damage Reduction Project** Date: February 1, 2013

Surveyor: **Matthew Kirk**

Organization: **Hartgen Archeological Associates, Inc.**

Location Map:

See attached

Site Map:

See attached

Bibliography/Sources:

1915, 1925, 1957 Sanborn Map Company, Fire Insurance Maps for Little Falls,
1991 Little Falls Historical Society, *Historic Little Falls*, Vol. 4 issue 5, September 1991

Additional Information:

More Research Needed? ☐ Yes ☒ No

INTENSIVE LEVEL USE ONLY

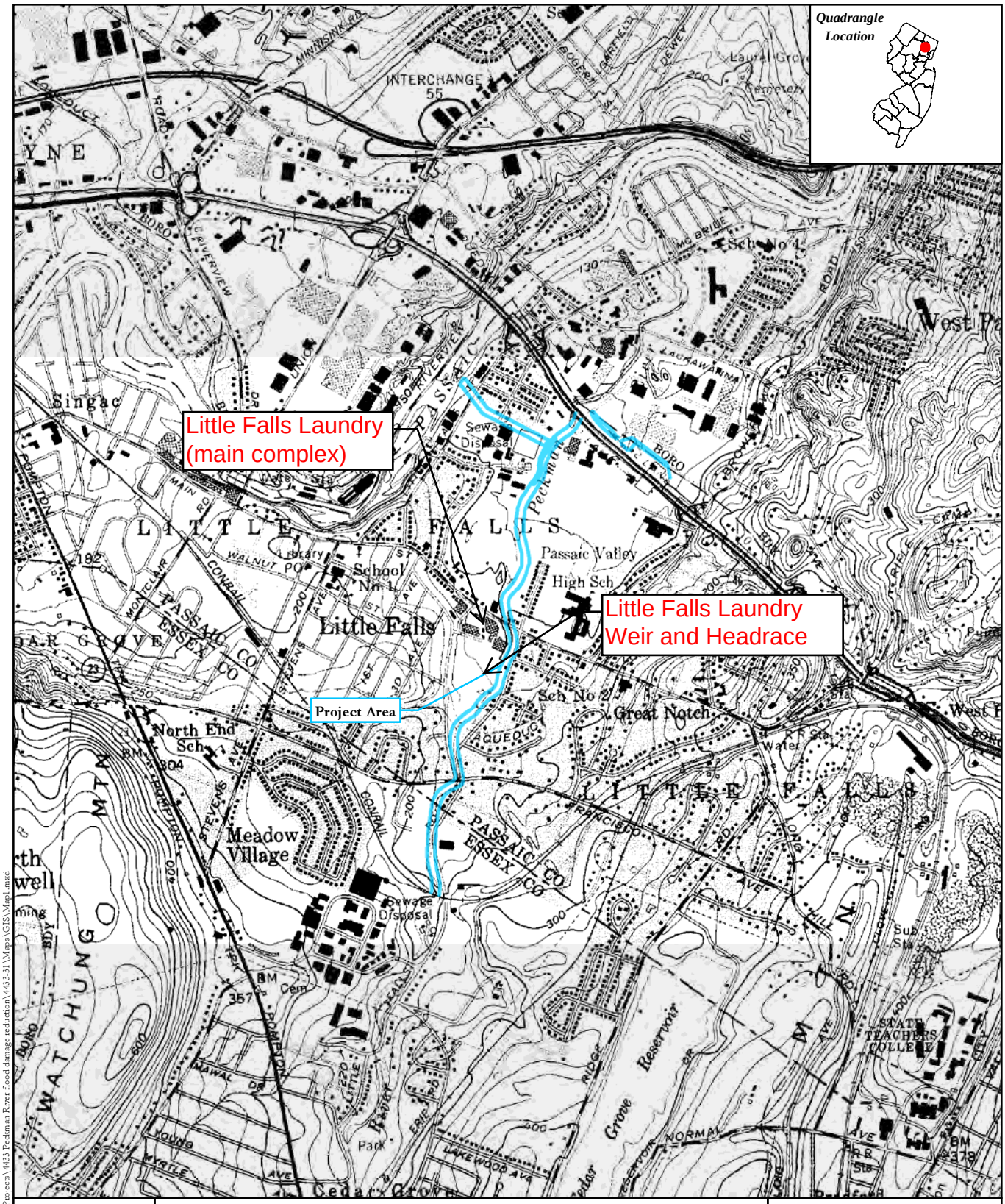
Attachments Included: ☐ Building ☐ Structure ☐ Object ☐ Bridge ☐ Landscape ☐ Industry

Within Historic District? ☐ Yes ☐ No

Survey Name: **Phase I Cultural Resources Survey, Peckman River Flood Damage Reduction Project** Date: February 1, 2013

Surveyor: **Matthew Kirk**

Organization: **Hartgen Archeological Associates, Inc.**



N

1,000 0 1,000 2,000 Feet

300 0 300 600 Meters

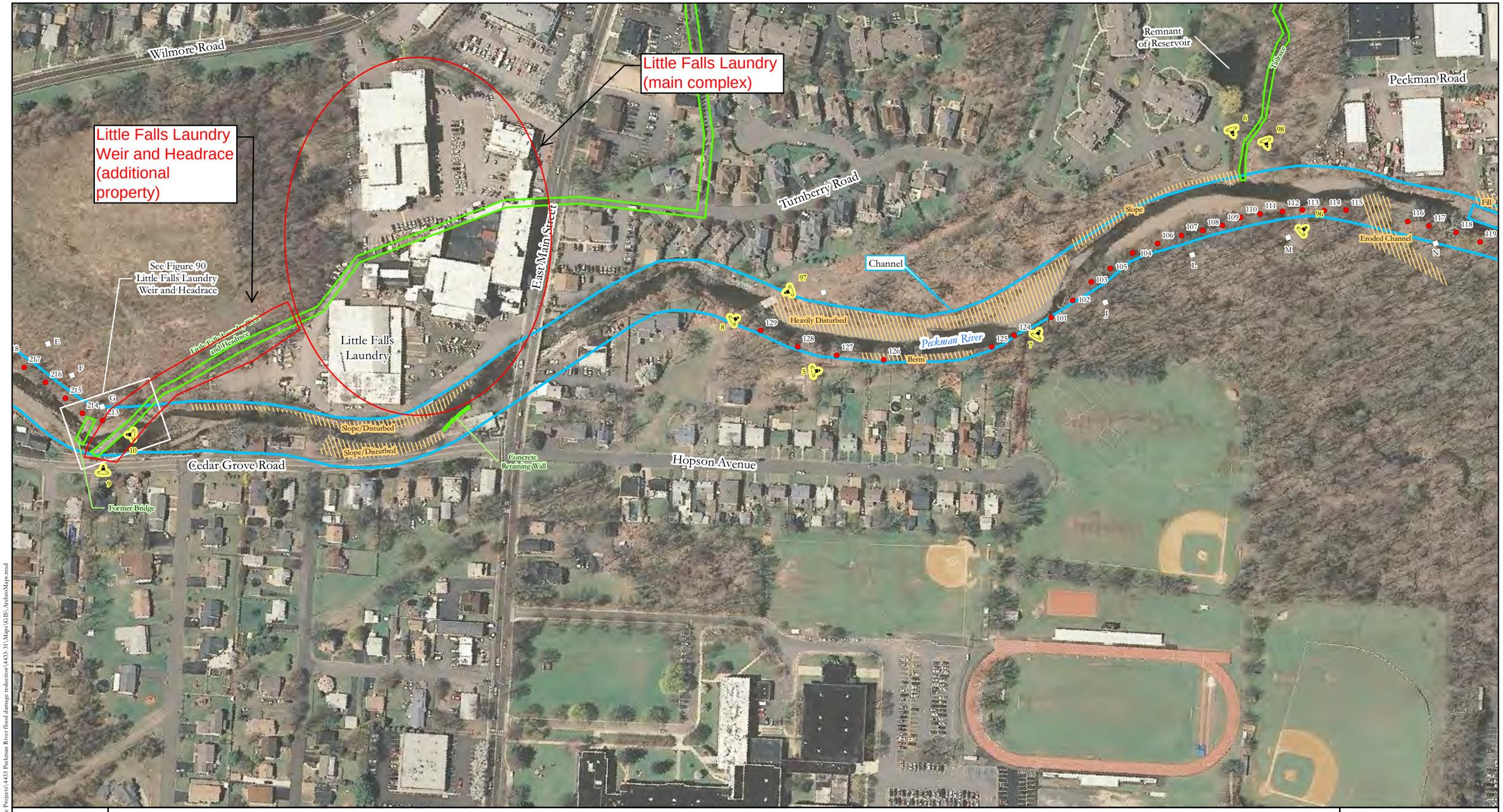
Note: Contour interval is 20 feet.

Project Location
(USGS *Orange*, & *Paterson* 1981)

HARTGEN archeological associates inc

Figure 1

TSM, January 4, 2012, R:\Active Projects\4433 Peckman River flood damage reduction\4433-31\Maps\GIS\Map1.mxd



Archeological Investigation Map
(NJOIT/OGIS 2007, USACE 2011, Hartgen 2011)

HARTGEN archeological associates inc

Figure 69b

TSM November 29, 2012 R:\Active Projects\4433 Peckman River flood damage reduction\4433-31\Maps\GIS\ArcheoMaps.mxd

Peckman River
Flow
214
213
Concrete Abutment
Former Bridge
95
Extant Portion of Concrete Weir
See Inset Photo
Fill
Gate
Mill Race
92
93
94
91
Washed Out August 2011
Cedar Grove Road

Inset Photo
Concrete Weir
Section View from South End
1 inch = 2 feet

N

10 0 10 20 Feet
3 0 3 6 Meters

Legend
- Shovel Test Pit
- Photograph Angle
- Project Area

Little Falls Laundry
Weir and Headrace
(Hartgen 2011,
NJOIT/OGIS 2007, USACE 2011)

HARTGEN archeological associates inc

Figure 90

P:\Active Projects\4433 Peckman River flood damage reduction\4433-3\Maps\CAD\LFLaundry.dwg, 1/5/2012 11:31:59 AM, TSM

Peckman River Basin, New Jersey
Flood Risk Management Feasibility Study

A.6 Record of Non-Applicability and Emissions Calculations

Environmental Analysis Branch
(CENAN-PL-E)

May 2, 2018

RECORD OF NON-APPLICABILITY (RONA)

Project Name: Peckman River Flood Risk Management Study
Reference: Equipment list developed by New York District Cost Engineering

Project/Action Point of Contact: Kimberly Rightler, Project Biologist

Begin Date: October 2024

End Date: June 2027

1. The project described above has been evaluated for Section 176 of the Clean Air Act. Project related emissions associated with the federal action were estimated to evaluate the applicability of General Conformity regulations (40CFR§93 Subpart B).

2. The requirements of this rule do not apply because the total direct and indirect emissions from this project are significantly less than the 100 tons trigger levels for NO_x, CO, and $PM_{2.5}$ and less than 50 tons for VOCs for each project year (40CFR§93.153(b)(1) & (2)). The estimated total annual NO_x emissions for the project is 51 tons, estimated total annual emissions for CO is 6.55 and the total annual emissions of VOC and $PM_{2.5}$, are all at or less than 3 tons per year for the project (see attached estimates).

3. The project is presumed to conform with the General Conformity requirements and is exempted from Subpart B under 40CFR§93.153(c)(1).

Peter Weppler
Chief, Environmental Analysis Branch

Enclosure

Emissions have been estimated using project planning information developed by the New York District, consisting of anticipated equipment types and estimates of the horsepower and operating hours of the diesel engines powering the equipment. In addition to this planning information, conservative factors have been used to represent the average level of engine load of operating engines (load factors) and the average emissions of typical engines used to power the equipment (emission factors). The basic emission estimating equation is the following:

$$\mathbf{E = hrs \times LF \times EF}$$

Where:

E = Emissions per period of time such as a year or the entire project.
hrs = Number of operating hours in the period of time (e.g., hours per year, hours per project).
LF = Load factor, an estimate of the average percentage of full load an engine is run at in its usual operating mode.
EF = Emission factor, an estimate of the amount of a pollutant (such as NO_x) that an engine emits while performing a defined amount of work.

In these estimates, the emission factors are in units of grams of pollutant per horsepower hour (g/hphr). For each piece of equipment, the number of horsepower hours (hphr) is calculated by multiplying the engine's horsepower by the load factor assigned to the type of equipment and the number of hours that piece of equipment is anticipated to work during the year or during the project. For example, a crane with a 250-horsepower engine would have a load factor of 0.43 (meaning on average the crane's engine operates at 43% of its maximum rated power output). If the crane were anticipated to operate 1,000 hours during the course of the project, the horsepower hours would be calculated by:

$$\mathbf{250 \text{ horsepower} \times 0.43 \times 1{,}000 \text{ hours} = 107{,}500 \text{ hphr}}$$

The emissions from diesel engines vary with the age of an engine and, most importantly, with when it was built. Newer engines of a given size and function typically emit lower levels of most pollutants than older engines. The emission factors used in these calculations assume that the equipment pre-dates most emission control requirements (known as Tier 0 engines in most cases), to provide a reasonable "upper bound" to the emission estimates. If newer engines are actually used in the work, then emissions will be lower than estimated for the same amount of work. In the example of the crane engine, a NO_x emission factor of 9.5 g/hphr would be used to estimate emissions from this crane on the project by the following equation:

$$\frac{\mathbf{107{,}500 \text{ hphr} \times 9.5 \text{ g } NO_x/\text{hphr}}}{\mathbf{453.59 \text{ g/lb} \times 2{,}000 \text{ lbs/ton}}} = \mathbf{1.1 \text{ tons of } NO_x}$$

As noted above, information on the equipment types, horsepower, and hours of operation associated with the project have been obtained from the project's plans and represent current best estimates of the equipment and work that will be required. Load factors have been obtained from various sources depending on the type of equipment. Land-side nonroad equipment load factors are from the documentation for EPA's NONROAD emission estimating model, "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling, EPA420-P-04-005, April 2004."

Emission factors have also been sourced from a variety of documents and other sources depending on engine type and pollutant. Nonroad equipment NOx and other emission factors have been derived from EPA emission standards and documentation. On-road vehicle emission factors have also been developed from the EPA model MOVES2014a run for 15-year-old single-unit short-haul trucks operating in CY 2017.

As noted above, the emission factors have been chosen to be moderately conservative so as not to underestimate project emissions. Actual project emissions will be estimated and tracked during the course of the project and will be based on the characteristics and operating hours of the specific equipment chosen by the contractor to do the work.

The following pages summarize the estimated emissions in sum for the project including the anticipated equipment and engine information developed by the New York District, the load factors and emission factors as discussed above, and the estimated emissions for the project.

U.S. Army Corps of Engineers
Project : Peckman River FRM Feasibility Study - Alternative 10b
General Conformity Related Emission Estimates
DRAFT
2/27/2018

Summary of Emissions

	tons				
Pollutants:	**NO_x**	**VOC**	**SO_x**	**$PM_{2.5}$**	**CO**
Calendar Year					
2024	14.19	0.29	0.0	0.25	1.83
2025	51.00	1.04	0.0	0.9	6.55
2026	51.00	1.04	0.0	0.9	6.55
2027	25.52	0.53	0.0	0.45	3.27
Totals	**141.8**	**2.9**	**0.1**	**2.5**	**18.2**

Off-Road Emission Sources

					g/hphr					tons				
Category	**Horsepower (approx.)**	**Load Factor**	**Hours**	**hphrs**	**NO_x**	**VOC**	**SO_x**	**$PM_{2.5}$**	**CO**	**NO_x**	**VOC**	**SO_x**	**$PM_{2.5}$**	**CO**
Rubber tired loader	300	0.59	1,949	344,973	9.5	0.19	0.0050	0.16	1.21	3.613	0.072	0.002	0.061	0.460
Other diesel engines	100	0.59	159	9,381	9.5	0.19	0.0050	0.16	1.21	0.098	0.002	0.000	0.002	0.013
Compactor	250	0.43	41,623	4,474,473	9.5	0.19	0.0050	0.16	1.21	46.857	0.937	0.025	0.789	5.968
Crane	300	0.43	0	0	9.5	0.19	0.0050	0.16	1.21	0.000	0.000	0.000	0.000	0.000
Excavator	300	0.59	79	13,983	9.5	0.19	0.0050	0.16	1.21	0.146	0.003	0.000	0.002	0.019
Excavator	500	0.59	21,318	6,288,810	9.5	0.19	0.0050	0.16	1.21	65.856	1.317	0.035	1.109	8.388
Skid Steer Loader	175	0.21	159	5,843	9.5	0.19	0.0050	0.16	1.21	0.061	0.001	0.000	0.001	0.008
Rubber tired loader	175	0.59	588	60,711	9.5	0.19	0.0050	0.16	1.21	0.636	0.013	0.000	0.011	0.081
Dozer	250	0.59	285	42,038	9.5	0.19	0.0050	0.16	1.21	0.440	0.009	0.000	0.007	0.056
Other diesel engines	50	0.59	173	5,104	9.5	0.19	0.0050	0.16	1.21	0.053	0.001	0.000	0.001	0.007
Other diesel engines	100	0.59	0	0	9.5	0.19	0.0050	0.16	1.21	0.000	0.000	0.000	0.000	0.000
Pump	50	0.43	8,311	178,687	9.5	0.19	0.0050	0.16	1.21	1.871	0.037	0.001	0.032	0.238
Dozer	300	0.59	285	50,445	9.5	0.19	0.0050	0.16	1.21	0.528	0.011	0.000	0.009	0.067
Rubber tired loader	110	0.59	23	1,493	9.5	0.19	0.0050	0.16	1.21	0.016	0.000	0.000	0.000	0.002
Off-road truck	100	0.59	105	6,195	9.5	0.19	0.0050	0.16	1.21	0.065	0.001	0.000	0.001	0.008
Generator	100	0.43	3,326	143,018	9.5	0.19	0.0050	0.16	1.21	1.498	0.030	0.001	0.025	0.191
Grader	135	0.59	80	6,372	9.5	0.19	0.0050	0.16	1.21	0.067	0.001	0.000	0.001	0.008
Rubber tired loader	300	0.59	0	0	9.5	0.19	0.0050	0.16	1.21	0.000	0.000	0.000	0.000	0.000
Off-road truck	250	0.59	21	3,098	9.5	0.19	0.0050	0.16	1.21	0.032	0.001	0.000	0.001	0.004
Compressor	75	0.43	1,595	51,439	9.5	0.19	0.0050	0.16	1.21	0.539	0.011	0.000	0.009	0.069
Compressor	100	0.43	24	1,032	9.5	0.19	0.0050	0.16	1.21	0.011	0.000	0.000	0.000	0.001
Compressor	125	0.43	387	20,801	9.5	0.19	0.0050	0.16	1.21	0.218	0.004	0.000	0.004	0.028
Compressor	75	0.43	47	1,516	9.5	0.19	0.0050	0.16	1.21	0.016	0.000	0.000	0.000	0.002
Other diesel engines	100	0.59	40	2,360	9.5	0.19	0.0050	0.16	1.21	0.025	0.000	0.000	0.000	0.003
Compactor	250	0.43	387	41,603	9.5	0.19	0.0050	0.16	1.21	0.436	0.009	0.000	0.007	0.055
Compactor	250	0.43	33	3,548	9.5	0.19	0.0050	0.16	1.21	0.037	0.001	0.000	0.001	0.005
Other diesel engines	225	0.59	1,595	211,736	9.5	0.19	0.0050	0.16	1.21	2.217	0.044	0.001	0.037	0.282
Crane	225	0.43	1,179	114,068	9.5	0.19	0.0050	0.16	1.21	1.195	0.024	0.001	0.020	0.152
Crane	300	0.43	9	1,161	9.5	0.19	0.0050	0.16	1.21	0.012	0.000	0.000	0.000	0.002
Crane	300	0.43	2,328	300,312	9.5	0.19	0.0050	0.16	1.21	3.145	0.063	0.002	0.053	0.401
Other diesel engines	225	0.59	1,179	156,512	9.5	0.19	0.0050	0.16	1.21	1.639	0.033	0.001	0.028	0.209
Other diesel engines	100	0.59	714	42,126	9.5	0.19	0.0050	0.16	1.21	0.441	0.009	0.000	0.007	0.056
Generator	100	0.43	1,663	71,509	9.5	0.19	0.0050	0.16	1.21	0.749	0.015	0.000	0.013	0.095
Excavator	300	0.59	115	20,355	9.5	0.19	0.0050	0.16	1.21	0.213	0.004	0.000	0.004	0.027
Skid Steer Loader	175	0.21	24	882	9.5	0.19	0.0050	0.16	1.21	0.009	0.000	0.000	0.000	0.001
Skid Steer Loader	175	0.21	40	1,470	9.5	0.19	0.0050	0.16	1.21	0.015	0.000	0.000	0.000	0.002
Rubber tired loader	175	0.59	274	28,291	9.5	0.19	0.0050	0.16	1.21	0.296	0.006	0.000	0.005	0.038
Rubber tired loader	250	0.59	21	3,098	9.5	0.19	0.0050	0.16	1.21	0.032	0.001	0.000	0.001	0.004
Rubber tired loader	110	0.59	5	325	9.5	0.19	0.0050	0.16	1.21	0.003	0.000	0.000	0.000	0.000
Other diesel engines	100	0.59	1,255	74,045	9.5	0.19	0.0050	0.16	1.21	0.775	0.016	0.000	0.013	0.099
Other diesel engines	100	0.59	1,073	63,307	9.5	0.19	0.0050	0.16	1.21	0.663	0.013	0.000	0.011	0.084
Pump	50	0.43	237	5,096	9.5	0.19	0.0050	0.16	1.21	0.053	0.001	0.000	0.001	0.007
Pump	50	0.43	1,179	25,349	9.5	0.19	0.0050	0.16	1.21	0.265	0.005	0.000	0.004	0.034
Pump	50	0.43	1,179	25,349	9.5	0.19	0.0050	0.16	1.21	0.265	0.005	0.000	0.004	0.034
Pump	50	0.43	1,179	25,349	9.5	0.19	0.0050	0.16	1.21	0.265	0.005	0.000	0.004	0.034
Other diesel engines	150	0.59	124	10,974	9.5	0.19	0.0050	0.16	1.21	0.115	0.002	0.000	0.002	0.015
Other diesel engines	250	0.59	0	0	9.5	0.19	0.0050	0.16	1.21	0.000	0.000	0.000	0.000	0.000
Other diesel engines	200	0.59	38	4,484	9.5	0.19	0.0050	0.16	1.21	0.047	0.001	0.000	0.001	0.006
Dozer	75	0.59	123	5,443	9.5	0.19	0.0050	0.16	1.21	0.057	0.001	0.000	0.001	0.007
Dozer	250	0.59	38	5,605	9.5	0.19	0.0050	0.16	1.21	0.059	0.001	0.000	0.001	0.007
Generator	7.5	0.43	652	2,103	9.5	0.19	0.0050	0.16	1.21	0.022	0.000	0.000	0.000	0.003
Other diesel engines	225	0.59	105	13,939	9.5	0.19	0.0050	0.16	1.21	0.146	0.003	0.000	0.002	0.019
Off-road truck	100	0.59	0	0	9.5	0.19	0.0050	0.16	1.21	0.000	0.000	0.000	0.000	0.000

U.S. Army Corps of Engineers
Project : Peckman River Feasibility Study – Alternative 10b
General Conformity Related Emission Estimates
DRAFT
2/27/2018

Category	Horsepower (approx.)	Load Factor	Hours	hphrs	g/hphr NO_x	VOC	SO_x	$PM_{2.5}$	CO	tons NO_x	VOC	SO_x	$PM_{2.5}$	CO
Compressor	100	0.43	329	14,147	9.5	0.19	0.0050	0.16	1.21	0.148	0.003	0.000	0.002	0.019
Compressor	75	0.43	657	21,188	9.5	0.19	0.0050	0.16	1.21	0.222	0.004	0.000	0.004	0.028
Other diesel engines	225	0.59	25	3,319	9.5	0.19	0.0050	0.16	1.21	0.035	0.001	0.000	0.001	0.004
Other diesel engines	225	0.59	38	5,045	9.5	0.19	0.0050	0.16	1.21	0.053	0.001	0.000	0.001	0.007
Crane	225	0.43	35	3,386	9.5	0.19	0.0050	0.16	1.21	0.035	0.001	0.000	0.001	0.005
Crane	225	0.43	209	20,221	9.5	0.19	0.0050	0.16	1.21	0.212	0.004	0.000	0.004	0.027
Crane	225	0.43	23	2,225	9.5	0.19	0.0050	0.16	1.21	0.023	0.000	0.000	0.000	0.003
Grader	138	0.59	20	1,628	9.5	0.19	0.0050	0.16	1.21	0.017	0.000	0.000	0.000	0.002
Excavator	300	0.59	139	24,603	9.5	0.19	0.0050	0.16	1.21	0.258	0.005	0.000	0.004	0.033
Excavator	400	0.59	348	82,128	9.5	0.19	0.0050	0.16	1.21	0.860	0.017	0.000	0.014	0.110
Excavator	300	0.59	348	61,596	9.5	0.19	0.0050	0.16	1.21	0.645	0.013	0.000	0.011	0.082
Skid Steer Loader	175	0.21	17	625	9.5	0.19	0.0050	0.16	1.21	0.007	0.000	0.000	0.000	0.001
Skid Steer Loader	175	0.21	497	18,265	9.5	0.19	0.0050	0.16	1.21	0.191	0.004	0.000	0.003	0.024
Rubber tired loader	175	0.59	514	53,071	9.5	0.19	0.0050	0.16	1.21	0.556	0.011	0.000	0.009	0.071
Rubber tired loader	175	0.59	348	35,931	9.5	0.19	0.0050	0.16	1.21	0.376	0.008	0.000	0.006	0.048
Rubber tired loader	250	0.59	77	11,358	9.5	0.19	0.0050	0.16	1.21	0.119	0.002	0.000	0.002	0.015
Rubber tired loader	110	0.59	81	5,257	9.5	0.19	0.0050	0.16	1.21	0.055	0.001	0.000	0.001	0.007
Rubber tired loader	110	0.59	1,133	73,532	9.5	0.19	0.0050	0.16	1.21	0.770	0.015	0.000	0.013	0.098
Other diesel engines	250	0.59	173	25,518	9.5	0.19	0.0050	0.16	1.21	0.267	0.005	0.000	0.005	0.034
Other diesel engines	150	0.59	25	2,213	9.5	0.19	0.0050	0.16	1.21	0.023	0.000	0.000	0.000	0.003
Other diesel engines	200	0.59	5	590	9.5	0.19	0.0050	0.16	1.21	0.006	0.000	0.000	0.000	0.001
Other diesel engines	150	0.59	25	2,213	9.5	0.19	0.0050	0.16	1.21	0.023	0.000	0.000	0.000	0.003
Other diesel engines	150	0.59	194	17,169	9.5	0.19	0.0050	0.16	1.21	0.180	0.004	0.000	0.003	0.023
Other diesel engines	200	0.59	20	2,360	9.5	0.19	0.0050	0.16	1.21	0.025	0.000	0.000	0.000	0.003
Dozer	250	0.59	329	48,528	9.5	0.19	0.0050	0.16	1.21	0.508	0.010	0.000	0.009	0.065
Dozer	340	0.59	20	4,012	9.5	0.19	0.0050	0.16	1.21	0.042	0.001	0.000	0.001	0.005
Totals										**141.5**	**2.8**	**0.07**	**2.4**	**18.0**

On-Road Emission Sources

Category	Miles	grams per mile* NO_x	VOC	SO_x	$PM_{2.5}$	CO	tons NO_x	VOC	SO_x	$PM_{2.5}$	CO
Short-haul diesel truck	3,976	9.315	2.183	0.011	0.667	5.339	0.041	0.010	0.000	0.003	0.023
Short-haul diesel truck	3,976	9.315	2.183	0.011	0.667	5.339	0.041	0.010	0.000	0.003	0.023
Short-haul diesel truck	3,334	9.315	2.183	0.011	0.667	5.339	0.034	0.008	0.000	0.002	0.020
Short-haul diesel truck	80	9.315	2.183	0.011	0.667	5.339	0.001	0.000	0.000	0.000	0.000
Short-haul diesel truck	2,034	9.315	2.183	0.011	0.667	5.339	0.021	0.005	0.000	0.001	0.012
Short-haul diesel truck	52	9.315	2.183	0.011	0.667	5.339	0.001	0.000	0.000	0.000	0.000
Short-haul diesel truck	3,334	9.315	2.183	0.011	0.667	5.339	0.034	0.008	0.000	0.002	0.020
Short-haul diesel truck	2,114	9.315	2.183	0.011	0.667	5.339	0.022	0.005	0.000	0.002	0.012
Short-haul diesel truck	524	9.315	2.183	0.011	0.667	5.339	0.005	0.001	0.000	0.000	0.003
Short-haul diesel truck	337	9.315	2.183	0.011	0.667	5.339	0.003	0.001	0.000	0.000	0.002
Short-haul diesel truck	2,248	9.315	2.183	0.011	0.667	5.339	0.023	0.005	0.000	0.002	0.013
Short-haul diesel truck	2,248	9.315	2.183	0.011	0.667	5.339	0.023	0.005	0.000	0.002	0.013
Short-haul diesel truck	20	9.315	2.183	0.011	0.667	5.339	0.000	0.000	0.000	0.000	0.000
Short-haul diesel truck	662	9.315	2.183	0.011	0.667	5.339	0.007	0.002	0.000	0.000	0.004
Short-haul diesel truck	34	9.315	2.183	0.011	0.667	5.339	0.000	0.000	0.000	0.000	0.000
Short-haul diesel truck	20	9.315	2.183	0.011	0.667	5.339	0.000	0.000	0.000	0.000	0.000
Short-haul diesel truck	524	9.315	2.183	0.011	0.667	5.339	0.005	0.001	0.000	0.000	0.003
Totals							**0.3**	**0.06**	**0.000**	**0.02**	**0.15**

* Emission factors from MOVES2014 for 2017, Union Co. NJ. MY 2002 (15-year-old) single-unit short-haul truck

Peckman River Basin, New Jersey
Flood Risk Management Feasibility Study

A.7 Environmental Compliance Coordination

Rightler, Kimberly CIV USARMY CENAN (US)

From: Weppler, Peter M CIV USARMY CENAN (US)
Sent: Tuesday, December 19, 2017 9:19 AM
To: Brighton, Nancy J CIV USARMY CENAN (US); Rightler, Kimberly CIV USARMY CENAN (US); Petersen, Aleksander J CIV USARMY CENAN (US); Greco, Robert M CIV CENAN CENAD (US)
Subject: FW: 30 Day Scoping Period and Public Availability of the Scoping Document for the Peckman River Flood Risk Management Study

FYI

-----Original Message-----
From: Poetzsch, Michael [mailto:Poetzsch.Michael@epa.gov]
Sent: Tuesday, December 19, 2017 9:14 AM
To: Weppler, Peter M CIV USARMY CENAN (US) <Peter.M.Weppler@usace.army.mil>
Subject: [EXTERNAL] RE: 30 Day Scoping Period and Public Availability of the Scoping Document for the Peckman River Flood Risk Management Study

Dear Mr. Weppler:

The U.S. Environmental Protection Agency (EPA), Region 2, has reviewed your November 2017 scoping document for the Peckman River Basin, Flood Risk Management Feasibility Study, Essex and Passaic Counties, NJ.

The primary water resources problem in the Peckman River Basin is flooding resulting mainly from two sources: flash flooding from rapid runoff in the Peckman River watershed and backwater flooding from the Passaic River. The U.S. Army Corps of Engineers (Corps), New York District (District), in partnership with the New Jersey Department of Environmental Protection (NJDEP) as the non-federal sponsor, is investigating the feasibility of implementing flood risk management measures to respond to this issue.

The National Economic Development (NED) Plan was identified as Alternative #10b which consists of a combination of non-structural improvements located within the 10-year floodplain within Little Falls, New Jersey with a bypass culvert designed to mitigate the flood risk of Woodland Park from the Peckman River. A Locally Preferred Plan (LPP) was developed and comprises: a) the diversion culvert; b) approximately 19,000 feet of levees/floodwalls; c) approximately 5,000 feet of channel improvements; and d) potential buyouts of seven structures along the Peckman River to provide flood risk management upstream/downstream of US Route 46.

Please note that Table 2 which compares both alternatives does not list the diversion culvert as being part of the LPP. It should be made clear whether it is part of the LPP or not.

EPA encourages the incorporation of sustainability and green design into any potential future development/construction plans with this project. Please go to: Blockedhttps://www.epa.gov/sustainability for information. We recommend that the DEIS and future documents include a separate sustainability section that addresses the ways in which this project incorporates sustainability in its planning, construction and operations phases.

During any phase of construction, project managers are encouraged to utilize local and recycled materials; to recycle materials generated onsite; and to utilize technologies and fuels that minimize emissions. If concrete removal occurs during repair of the existing structures, recycling and/or reuse of construction and demolition (C&D) material or

beneficial reuse of dredged materials should be considered in order to lessen the impacts of increasing disposal at solid waste facilities. If this is the case, EPA recommends applying these practices and identifying them in your future reports. You may find more detailed information about recycling of C&D waste at:
Blockedhttp://www.epa.gov/osw/conserve/imr/cdm/recycle.htm

EPA recommends implementing diesel controls, cleaner fuel, and cleaner construction practices for on-road and off-road equipment used for transportation, soil/sand movement, or other construction activities, including:
* Strategies and technologies that reduce unnecessary idling, including auxiliary power units, the use of electric equipment, and strict enforcement of idling limits; and
* Use of clean diesel through add-on control technologies like diesel particulate filters and diesel oxidation catalysts, repowers, or newer, cleaner equipment.
For more information on diesel emission controls in construction projects, please see:
Blockedhttp://www.northeastdiesel.org/pdf/NEDC-Construction-Contract-Spec.pdf
Blockedhttp://www.epa.gov/cleandiesel/technologies/index.htm

Thank you for the opportunity to comment on the scoping document for Peckman River Basin, Flood Risk Management Feasibility Study. Our comments contained in this letter are intended to help provide useful information that will ultimately inform local, state and federal decision-making and review related to land and water resource use and impacts. Should you have any questions regarding the comments and concerns detailed in this letter, please feel free to contact Michael Poetzsch of my staff at 212-637-4147.

Sincerely,

Grace Musumeci, Chief
Environmental Review Section

-----Original Message-----
From: Weppler, Peter M CIV USARMY CENAN (US) [mailto:Peter.M.Weppler@usace.army.mil]
Sent: Thursday, November 30, 2017 1:10 PM
To: Poetzsch, Michael <Poetzsch.Michael@epa.gov>; Musumeci, Grace <Musumeci.Grace@epa.gov>
Subject: FW: 30 Day Scoping Period and Public Availability of the Scoping Document for the Peckman River Flood Risk Management Study

No idea why it bounces back on group email!

-----Original Message-----
From: Weppler, Peter M CIV USARMY CENAN (US)
Sent: Thursday, November 30, 2017 1:06 PM
To: Rightler, Kimberly A NAN02 (Kimberly.A.Rightler@usace.army.mil) <Kimberly.A.Rightler@usace.army.mil>
Cc: Brighton, Nancy J NAN02 (Nancy.J.Brighton@usace.army.mil) <Nancy.J.Brighton@usace.army.mil>; Greco, Robert M CIV CENAN CENAD (US) <Robert.M.GRECO@usace.army.mil>
Subject: RE: 30 Day Scoping Period and Public Availability of the Scoping Document for the Peckman River Flood Risk Management Study

All

Update for General Questions - Robert Greco is currently deployed in Austin, TX until 8 Jan 2018. Any general questions regarding the Peckman River Basin Flood Risk Management Feasibility Study please also copy Mr. Alek Petersen, Project Planner, Aleksander.J.Petersen@usace.army.mil, 917-790-8624.

Thank you,

Peter

Peter Weppler
Chief, Environmental Analysis Branch
U.S. Army Corps of Engineers - Planning
26 Federal Plaza - Room 2151
New York, NY 10278-0090
(T): 917-790-8634
(C): 917-620-2862
(F): 212-264-0961

-----Original Message-----
From: Weppler, Peter M CIV USARMY CENAN (US)
Sent: Thursday, November 30, 2017 11:39 AM
To: Rightler, Kimberly A NAN02 (Kimberly.A.Rightler@usace.army.mil) <Kimberly.A.Rightler@usace.army.mil>
Cc: Brighton, Nancy J NAN02 (Nancy.J.Brighton@usace.army.mil) <Nancy.J.Brighton@usace.army.mil>; Greco, Robert M CIV CENAN CENAD (US) <Robert.M.GRECO@usace.army.mil>
Subject: 30 Day Scoping Period and Public Availability of the Scoping Document for the Peckman River Flood Risk Management Study

Good Morning All

The U.S. Army Corps of Engineers, New York District (District) announces the start of the 30 day Scoping Period and availability of the Peckman River Basin NEPA Scoping Document for the Peckman River Flood Risk Management Study. The District will be preparing an Environmental Impact Statement (EIS) and has initiate a formal 30 day Scoping Period to provide an opportunity for the public and agencies to comment on the scope of the environmental analysis in the EIS and to raise issues, concerns and ideas regarding potential impacts.

The Peckman River Basin NEPA Scoping Document has been prepared to assist interested parties and agencies in understanding the Feasibility Study history and alternatives to be scoped.

The NEPA Scoping Document is available on New York District's web site at:
Blockedhttp://www.nan.usace.army.mil/Missions/Civil-Works/Projects-in-New-Jersey/Peckman-River-Basin-Flood-Risk-Management-Feasibility-Study/.

Comments should be submitted by email to Peckman.River@usace.army.mil.

General questions regarding the Peckman River Basin Flood Risk Management Feasibility Study can be directed to Mr. Robert Greco, Project Manager, Robert.M.Greco@usace.army.mil, 917-790-8394.

The District will be accepting comments, concerns and information related to the Scoping process through December 28, 2018

All written comments, including contact information, will be made a part of the administrative record, available to the public under the Freedom of Information Act (FOIA). The Administrative Record, or portions thereof, may also be posted on a Corps of Engineers' Internet website. Due to resource limitations, this office generally cannot acknowledge receipt of comments or respond to individual letters of comments.

Please do not hesitate to forward to those who may have interest.

v/r,

Peter

Peter Weppler
Chief, Environmental Analysis Branch
U.S. Army Corps of Engineers - Planning
26 Federal Plaza - Room 2151
New York, NY 10278-0090
(T): 917-790-8634
(C): 917-620-2862
(F): 212-264-0961

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF PERMIT COORDINATION AND ENVIRONMENTAL REVIEW
P.O. Box 420 Mail Code 401-07J Trenton, New Jersey 08625-0420
Phone Number (609) 292-3600
FAX NUMBER (609) 292-1921

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

BOB MARTIN
Commissioner

December 27, 2017

Peter Weppler
Chief, Environmental Analysis Branch
New York District Army Corps of Engineers-Planning
26 Federal Plaza-Room 2151
New York, NY 10278-0090

RE: Peckman River Basin
Flood Risk Management Feasibility Study
Cedar Grove, Little Falls, and Woodland Park
Essex and Passaic Counties, New Jersey

Dear Mr. Weppler:

The New Jersey Department of Environmental Protection's (Department) Office of Permit Coordination and Environmental Review (PCER) distributed, for review and comment, the Flood Risk Management Feasibility Report for the Peckman River Basin Project. The Peckman River Basin is prone to flooding mainly from two sources: flash flooding from rapid runoff and backwater flooding from the Passaic River. The proposed project will investigate the feasibility of implementing flood risk management measures along the Peckman River and its tributary, Great Notch Brook, located in Woodland Park and Little Falls in Passaic County, and Cedar Grove in Essex County. The Locally Preferred Plan (LPP) consists of a levee/floodwall system in Little Falls along with the bypass culvert for the Peckman River and floodwalls along Great Notch Brook in Woodland Park. An Environmental Impact Statement (EIS) will be forthcoming from the U.S. Army Corps of Engineers, New York District.

Based on the information provided for review, the Department offers the following comments for your consideration:

New Jersey Division of Fish and Wildlife

The NJ Division of Fish and Wildlife (DFW) offer the following comments:

Endangered and Nongame Species:

The Endangered and Nongame Species Program will not be reviewing or submitting comments regarding the above referenced project, as there are no populations of endangered, threatened or special concern wildlife species or significant nongame wildlife habitats in the project area.

Fisheries:

The Peckman River and tributaries are FW2-NT waters. A timing restriction from May 1st through July 31st would be recommended on any in-water and\or sediment generating activities in order to protect warm-water fish nest building and spawning; April 1st through July 31st if pickerel are also present.

Any changes to lake levels in the watershed would require a Water Lowering Permit which may include additional timing constraints, rates of lowering / refilling and fish / aquatic biota salvage requirements, if applicable, are found in this permit; preliminary consultation with the Bureau of Freshwater Fisheries is highly recommended to avoid delays or complications with a Water Lowering Permit.

If you have any general questions or concerns regarding the New Jersey Division of Fish and Wildlife, please contact Mr. Kelly Davis at (908) 236-2118 or Kelly.Davis@dep.nj.gov.

Historic and Cultural Resources

According to the documentation submitted, the proposed undertaking requires consultation with the United States Department of the Army, Corps of Engineers (Corps), pursuant to their obligations under Section 106 of the National Historic Preservation Act of 1966, as amended, and it's implementing regulations, 36 CFR §800. Consultation between the Corps and the HPO is currently ongoing. The HPO looks forward to further consultation with the Corps for the identification, evaluation and treatment of historic properties within the project's area of potential effects. The HPO will notify the Office of Permit Coordination of any developments as consultation moves forward.

If additional consultation with the HPO is needed for this undertaking, please reference the HPO project number 11-0128 in any future calls, emails, submissions or written correspondence to help expedite your review and response.

If you have any additional questions, please contact Jesse West-Rosenthal at (609) 984-6019.

Green Acres

The Green Acres Program did not provided comments within the 30 day comment period. There may be Green Acres encumbered and DEP-owned within the project areas. For the Green Acres Program to do a detailed jurisdictional determination, they require an inventory of the parcels (by

Block and Lot) included in the project area and/or shapefiles of the proposed temporary and permanent easement areas.

Please consult with Sean Moriarty (609) 984-0622 for project locations in Essex County and Adam Taylor (609) 984-0542 for project locations in Passaic County.

Division of Land Use Regulation

1. Land Use met with representatives from USACE on 11/16/2016 to discuss options and advised that the NED plan appears to result in less environmental impact when compared to the LPP plan. However, the Division recognizes that all factors must be considered and a cost/benefit analysis will be conducted.
2. Based on the preliminary information presented, a Flood Hazard Area Verification and Individual Permit would be required for either option.
    a. Engineering: The requirements set forth at N.J.A.C. 7:13-12.7, 12.12, and 12.13, must be addressed in detail. The proposed flood control project has the potential to adversely impact properties not owned by the applicant therefore, the requirements set forth at N.J.A.C. 7:13-12.1(f), (g) and (h) must be satisfied. In addition, the proposed project is exempt from the requirements set forth at N.J.A.C. 7:13-11.4, provided the flood storage displacement is minimized, and a downstream impact analysis is provided. Please note that if the proposed regulated activity does not meet one or more of the requirements cited above the applicant may request for a hardship exception for an individual permit.
    b. Environmental: Any permit application would need to address impacts to channels, riparian zones, and fishery resources. Disturbance to riparian zone vegetation is limited to 3,000 SF in a 50-foot riparian zone and 9.000 SF in a 150-foot riparian zone for a flood control project, unless the applicant demonstrates that there is a compelling public need for the project and it cannot be accomplished without exceeding these limits. Riparian zone mitigation is required for impacts that exceed these limits.
3. Freshwater Wetlands: Based on the potential impacts stated for each plan, a Freshwater Wetland Individual Permit is likely required to address the construction of levees, stream cleaning, expansion/diversion of channels and stormwater outfalls and intake structures proposed. Wetland mitigation would be required for all impacts to wetlands under an Individual Permit. It may be useful to apply for a Letter of Interpretation-Line Verification for the project area to better assess the wetland impacts.
4. Based on the preliminary information, the project is above the head of tide and does not propose any dredging. Therefore, the Office of Dredging and Sediment Technology would <u>not</u> be involved.

The Division of Land Use Regulations recommends a pre-application meeting with Land Use once more specific information is available to discuss potential environmental impacts and specific application requirements as well as mitigation.

If you have any additional questions, please contact Stacey MacEwan at (609) 984-0143.

Air Compliance and Enforcement

Based on the information provided, the Division of Air Compliance and Enforcement offer the following comments:

Construction Equipment: Stationary construction equipment, may require air pollution permits. The applicant should review the requirements of NJAC 7:27-8.2(c) 1-21 for stationary permitting requirements.

Fugitive Dust and Odors: Dust emissions either windblown or generated from construction equipment or activities should be controlled to prevent offsite impacts. The applicant should be aware of potential offsite impacts of odors pursuant to NJAC 7:27-5.

Idling Vehicles: Any vehicles involved on the project must adhere to the idling standards (less than 3 minutes) in NJAC 7:27-14 and 15.

If you have any questions or concerns, please contact Jeffrey Meyer at (973)-656-4444.

Air Planning

The Bureau of Evaluation and Planning (BEP) has reviewed the USACE Scoping Document for the Peckman River Basin Flood Risk Management Feasibility Study and will not be submitting comments. The Scoping Document indicates that the USACE will be conducting a General Conformity Applicability Analysis for the project.

If you have any additional questions, please contact Angela Skowronek at (609) 984-0337.

Air Mobile Sources

Diesel exhaust contributes the highest cancer risk of all air toxics in New Jersey and is a major source of NOx within the state. Therefore, NJ DEP recommends that construction projects involving non-road diesel construction equipment operating in a small geographic area over an extended period of time implement the following measures to minimize the impact of diesel exhaust:

- All on-road vehicles and non-road construction equipment operating at, or visiting, the construction site shall comply with the three-minute idling limit, pursuant to N.J.A.C. 7:27-14 and N.J.A.C. 7:27-15. Consider purchasing "No Idling" signs to post at the site to remind contractors to comply with the idling limits. Signs are available for purchase from the Bureau of Mobile Sources at 609/292-7953 or http://www.stopthesoot.org/sts-no-idle-sign.htm.

- All non-road diesel construction equipment greater than 100 horsepower used on the project for more than ten days should have engines that meet the USEPA Tier 4 non-road emission standards, or the best available emission control technology that is technologically feasible for that application and is verified by the USEPA or the CARB as a diesel emission control strategy for reducing particulate matter and/or NOx emissions.

- All on-road diesel vehicles used to haul materials or traveling to and from the construction site should use designated truck routes that are designed to minimize impacts on residential areas and sensitive receptors such as hospitals, schools, daycare facilities, senior citizen housing, and convalescent facilities.

While entering and leaving the project area, trucks should avoid neighborhoods as much as possible.

If you have any additional questions, please contact Alina Nagtalon at (609) 633-2007.

NJDPES Discharge to Surface Water

If any part of the chosen alternative for this project involves dewatering from construction (i.e., during raising of buildings or barrier installation, etc.) that will be discharged to a surface water, a NJPDES Discharge to Surface Water Permit will be required.

Provided that the discharge is not contaminated, the appropriate discharge permit will be the B7-Short term De minimis permit (see http://www.state.nj.us/dep/dwq/pdf/b7-rfa-checklist.pdf). This is determined by running a pollutant scan as described in the application checklist where the data can be collected up to a year in advance of the discharge.

If, however, the discharge is contaminated (the analytical results demonstrate levels greater than the Appendix A standards as specified in the De minimis permit see http://www.state.nj.us/dep/dwq/pdf/b7-deminimis-final-permit-5-20-15.pdf), the appropriate NJPDES discharge to surface water permit will be the BGR – General Remediation Cleanup permit (see http://www.state.nj.us/dep/dwq/pdf/sw-gp-chklst.pdf) . The BGR permit can generally be processed in less than 30 days although a treatment works approval may be needed for any treatment.

If you have any questions or concerns, please contact Kelly Perez at (609) 292-4860.

Stormwater Management

Construction projects that disturb 1 acre or more of land, or less than 1 acre but are part of a larger common plan of development that is greater than 1 acre, are required to obtain coverage under the Stormwater construction general permit (5G3). Applicants must first obtain certification of their soil erosion and sediment control plan (251 plan) form their local soil conservation district office. Upon certification, the district office will provide the applicant with two codes process (SCD certification code and 251 identification code) for use in the DEPonline portal system application. Applicants must then become a registered user for the DEPonline system and complete the application for the Stormwater Construction General Authorization. Upon completion of the application the applicant will receive a temporary authorization which can be used to start construction immediately, if necessary. Within 3-5 business days the permittee contact identified in the application will receive an email including the application summary and final authorization.

If you have any additional questions, please contact Eleanor Krukowski at (609) 633-7021.

Thank you for giving the New Jersey Department of Environmental Protection the opportunity to comment on the Flood Risk Management Feasibility Report for the Peckman River Basin Project.. Please contact Katherine Nolan at (609) 292-3600 if you have any additional questions or concerns.

Sincerely,

DAVID PEPE FOR DR. Ruth Foster

Ruth W. Foster, PhD., P.G., Acting Director
Permit Coordination and Environmental Review

c. John Gray, Deputy Chief of Staff
Kelly Davis, New Jersey Division of Fish and Wildlife
Jesse West-Rosenthal, NJDEP Historic Preservation Office
Stacey MacEwan, NJDEP Division of Land Use Regulation
Angela Skowronek, NJDEP Air Planning
Jeffrey Meyer, NJDEP Air C&E
Alina Nagtalon, NJDEP Bureau of Mobile Sources
Sean Moriarty, NJDEP Green Acres Program
Adam Taylor, NJDEP Green Acres Program
Eleanor Krukowski, NJDEP Stormwater
Kelly Perez, NJDEP DSW

From: West-Rosenthal, Jesse
To: CENAN-Peckman-River
Subject: [EXTERNAL] Scoping Document for the Peckman River Flood Risk Management Study
Date: Thursday, December 28, 2017 12:12:13 PM

HPO Project # 11-0128-5

HPO- L2017-191

Re: Essex and Passaic Counties

Scoping Document

Peckman River Basin Flood Risk Management

Thank you for providing the Historic Preservation Office (HPO) with the opportunity to review and comment on the potential for the above-referenced project to affect historic and archaeological resources. According to the documentation submitted, the proposed undertaking requires consultation with the United States Department of the Army, Corps of Engineers (Corps), pursuant to their obligations under Section 106 of the National Historic Preservation Act of 1966, as amended, and it's implementing regulations, 36 CFR §800. According to our records, consultation was initiated in 2011 and is still ongoing at this time. The HPO looks forward to further consultation with the Corps for the identification, evaluation and treatment of historic properties within the project's area of potential effects.

If additional consultation with the HPO is needed for this undertaking, please reference the HPO project number 11-0128 in any future calls, emails, submissions or written correspondence to help expedite your review and response. If you have any questions, please feel free to contact me.

Take Care,

Jesse

Jesse West-Rosenthal, M.A.¦Senior Historic Preservation Specialist

Historic Preservation Office¦New Jersey Department of Environmental Protection

501 E. State Street¦Mail Code 501-04B¦PO Box 420¦Trenton, New Jersey 08625-0420

P: 609-984-6019¦F: (609) 984-0578¦Website: Blockedhttp://www.nj.gov/dep/hpo
<Blockedhttp://www.nj.gov/dep/hpo>

NJ HPO’s cultural resources GIS data is available via NJ Geoweb <Blockedhttp://www.nj.gov/dep/gis/geowebsplash.htm> or direct download at NJ DEP’s Statewide Digital Data Downloads <Blockedhttp://www.state.nj.us/dep/gis/stateshp.html>

** PLEASE NOTE: The HPO does not currently accept consultation requests for regulatory review via e-mail, at this time. All consultation requests must be submitted in hard copy via mail. **

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
26 FEDERAL PLAZA
NEW YORK, N.Y. 10278-0090

December 30, 2010

Environmental Analysis Branch

Mr. Daniel Saunders
Deputy State Historic Preservation Officer
Historic Preservation Office
New Jersey Department of Environmental Protection
CN 404
Trenton, New Jersey 08625-0404

11-0128-2 WM.
HPO-A2011-065

RE: Peckman River Flood Damage Reduction Project

Dear Mr. Saunders:

The U.S. Army Corps of Engineers, New York District (District), is initiating the feasibility phase of the Peckman River Flood Damage Reduction and Ecosystem Restoration project. Your office reviewed this project during the initial reconnaissance phase in 1982 when the Corps submitted the report *Cultural Resources Reconnaissance, Peckman River, Little Falls and West Paterson, NJ* (Hunter et. al. 1982) (Attachments 1 and 2). The Corps is moving forward with a plan which includes channelization, construction of flood walls, and a diversion tunnel. Channelization is proposed along the Peckman River from the Conrail Bridge along Cedar Grove Avenue to a point 500 feet south of the U.S. Route 46 overpass. A diversion tunnel is proposed from the Peckman River at the northern limits of proposed improvements directly west to the discharge into the Passaic River. Flood walls are also proposed along Great Notch Brook.

The Corps will be preparing an environmental impact assessment to ensure that the selected plan is in compliance with applicable laws and regulations. In accordance with Section 106 of the National Historic Preservation Act of 1966, as amended, the Corps shall be undertaking a cultural resources survey of the current project area in order to update the archaeological investigations, address areas that were not part of the project in 1982, and to evaluate historic resources that may have only become eligible for the NRHP in recent years. Additionally the survey will investigate the projects potential to impact three historic resources that were identified in the 1982 survey.

More specifically, the survey will include the following:

11-0128-2 vm
HPO-A2011-065

1) Document all architectural features within the APE, specifically the twentieth century elements that were not addressed in 1982.
2) Collect twentieth century history and background information on the project area in order to develop a context for the historic bridges and other architectural features from that period and to assess their eligibility for the NRHP.
3) Identify the boundaries and features of the NRHP-listed Morris Canal and the NRHP-eligible Little Falls Water Treatment Plant, and reevaluate the eligibility of the Sindle/VanNess Raceway System.
4) Conduct a Phase I archaeological survey of the project APE. This includes further investigation into areas that were tested in the 1982 survey as well as new areas including the diversion tunnel and a stretch of channelization along the Peckman River from the Conrail bridge at the southern limits of the project to Fransisco Avenue. The floodwall footprint along Great Notch Brook will not be subject to archaeological investigation due to recent disturbances caused by widening of U.S. Route 46 and the construction of the nearby shopping centers.

The Corps is planning to move ahead with this work in the coming months and would like to have your office's comments regarding how we intend to proceed. Please review the 1982 report and the attached documentation and provide the Corps with your comments pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended. If you or your staff require additional information or have any questions, please contact Carissa Scarpa, Project Archaeologist, at (917)790-8612. Thank you for your assistance.

CONCUR

1/11/11

DANIEL D. SAUNDERS — DATE

DEPUTY STATE HISTORIC PRESERVATION OFFICER

Sincerely,

L. Houston

Leonard Houston
Chief, Environmental Analysis Branch

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
26 FEDERAL PLAZA
NEW YORK, N.Y. 10278-0090

Reply to
Environmental Analysis Branch

July 17, 2012

Mr. Daniel Saunders
Deputy State Historic Preservation Officer
Historic Preservation Office
New Jersey Department of Environmental Protection
CN 404
Trenton, NJ 08625-0404

Re: HPO-A2011-065
11-0128-2 VM
Peckman River Flood Damage Reduction Project

Dear Mr. Saunders:

The U.S. Army Corps of Engineers, New York District (District), is pleased to furnish you with a copy of the draft report *Phase I Archaeological Investigation and Architectural Inventory, Peckman River Flood Damage Reduction Project, Borough of Woodland Park (formerly West Paterson) and Townships of Little Falls and Cedar Grove, Passaic and Essex Counties, New Jersey* (Enclosure 1). This survey serves as an update to a 1982 cultural resources survey prepared by Richard Hunter. The Area of Potential Effect (APE) for the current study is being defined as an area extending along 50 feet on either side of the Peckman River from the Conrail Bridge along Cedar Grove Avenue in Cedar Grove at its southern limit to the US Route 46 overpass at the Woodland Park/Little Falls boundary. The APE also includes a diversion culvert alignment in Little Falls and flood walls along a portion of the Great Notch Brook in Woodland Park (Enclosure 2). The scope of work for this study included evaluation of new areas that were added to the APE since the 1982 study and the reassessment of the condition and National Register of Historic Places (NRHP) eligibility of all structures within the APE. This survey has been carried out in accordance with a recent consultation letter dated 30 December 2010 (Enclosure 3).

The study identified four resources eligible for the National Register of Historic Places (NRHP): the Cedar Grove Railroad overpass, Marley Mill site, Morris Canal Aqueduct, and Little Falls Laundry weir and headrace. In addition, there is one listed resource, the Morris Canal, and two resources, the Little Falls Laundry and a valve house associated with the Jersey City Water Supply that had been previously determined eligible for the NRHP that are present within the current APE. The Corps will begin developing alternatives for this project in the

near future and further consultation will be carried out at that time when project effects can be assessed.

At this time we would appreciate receiving any comments in accordance with 36 CFR 800.4 that you may have regarding the enclosed report findings and, of course, an indication of your concurrence with the report's recommendations. Thank you for your assistance in the Section 106 process. If you or your staff require additional information or have any questions, please contact Carissa Scarpa, Project Archaeologist at (917) 790-8612.

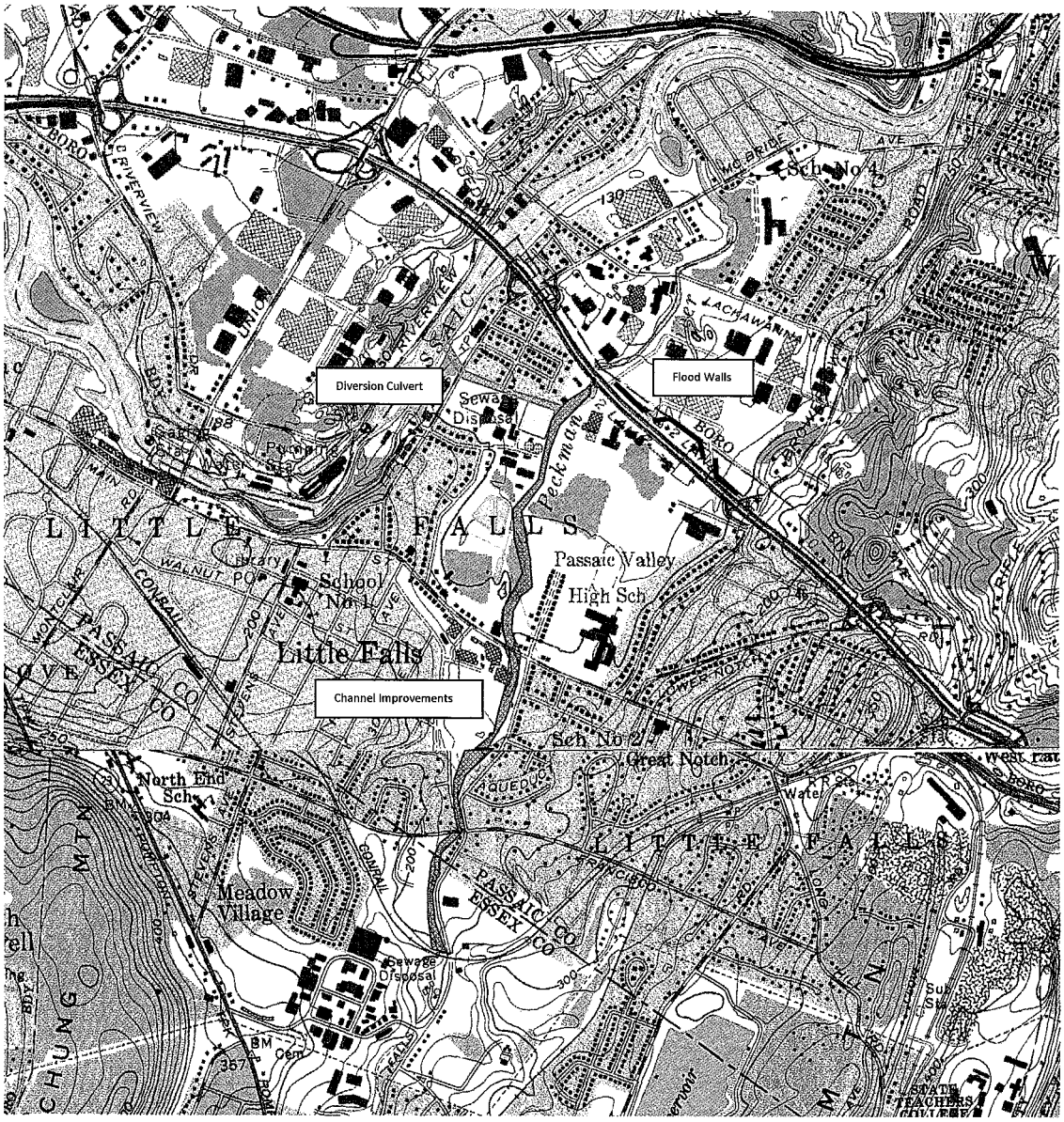
Sincerely,

L. Houston

Leonard Houston
Chief, Environmental Analysis Branch

Enclosures

Enclosure 2 – Study Area



USGS 7.5 min. Orange and Paterson Quadrangle (1981).

Enclosure 3

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
26 FEDERAL PLAZA
NEW YORK, N.Y. 10278-0090

December 30, 2010

Environmental Analysis Branch

Mr. Daniel Saunders
Deputy State Historic Preservation Officer
Historic Preservation Office
New Jersey Department of Environmental Protection
CN 404
Trenton, New Jersey 08625-0404

11-0128-2 WM.
HPO 2011-065

RE: Peckman River Flood Damage Reduction Project

Dear Mr. Saunders:

The U.S. Army Corps of Engineers, New York District (District), is initiating the feasibility phase of the Peckman River Flood Damage Reduction and Ecosystem Restoration project. Your office reviewed this project during the initial reconnaissance phase in 1982 when the Corps submitted the report *Cultural Resources Reconnaissance, Peckman River, Little Falls and West Paterson, NJ* (Hunter et. al. 1982) (Attachments 1 and 2). The Corps is moving forward with a plan which includes channelization, construction of flood walls, and a diversion tunnel. Channelization is proposed along the Peckman River from the Conrail Bridge along Cedar Grove Avenue to a point 500 feet south of the U.S. Route 46 overpass. A diversion tunnel is proposed from the Peckman River at the northern limits of proposed improvements directly west to the discharge into the Passaic River. Flood walls are also proposed along Great Notch Brook.

The Corps will be preparing an environmental impact assessment to ensure that the selected plan is in compliance with applicable laws and regulations. In accordance with Section 106 of the National Historic Preservation Act of 1966, as amended, the Corps shall be undertaking a cultural resources survey of the current project area in order to update the archaeological investigations, address areas that were not part of the project in 1982, and to evaluate historic resources that may have only become eligible for the NRHP in recent years. Additionally the survey will investigate the projects potential to impact three historic resources that were identified in the 1982 survey.

More specifically, the survey will include the following:

11-0128-2 vm
HPO-A2011-065

1) Document all architectural features within the APE, specifically the twentieth century elements that were not addressed in 1982.
2) Collect twentieth century history and background information on the project area in order to develop a context for the historic bridges and other architectural features from that period and to assess their eligibility for the NRHP.
3) Identify the boundaries and features of the NRHP-listed Morris Canal and the NRHP-eligible Little Falls Water Treatment Plant, and reevaluate the eligibility of the Sindle/VanNess Raceway System.
4) Conduct a Phase I archaeological survey of the project APE. This includes further investigation into areas that were tested in the 1982 survey as well as new areas including the diversion tunnel and a stretch of channelization along the Peckman River from the Conrail bridge at the southern limits of the project to Fransisco Avenue. The floodwall footprint along Great Notch Brook will not be subject to archaeological investigation due to recent disturbances caused by widening of U.S. Route 46 and the construction of the nearby shopping centers.

The Corps is planning to move ahead with this work in the coming months and would like to have your office's comments regarding how we intend to proceed. Please review the 1982 report and the attached documentation and provide the Corps with your comments pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended. If you or your staff require additional information or have any questions, please contact Carissa Scarpa, Project Archaeologist, at (917)790-8612. Thank you for your assistance.

CONCUR

1/11/11

DANIEL D. SAUNDERS — DATE

DEPUTY STATE HISTORIC PRESERVATION OFFICER

Sincerely,

L. Houston

Leonard Houston
Chief, Environmental Analysis Branch

State of New Jersey
MAIL CODE 501-04B
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NATURAL & HISTORIC RESOURCES
HISTORIC PRESERVATION OFFICE
P.O. Box 420
Trenton, NJ 08625-0420
TEL. (609) 984-0176 FAX (609) 984-0578

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

BOB MARTIN
Commissioner

August 29, 2012

Leonard Houston, Chief
Environmental Analysis Branch
Department of the Army
Corps of Engineers, New York District
Jacob K. Javits Federal Building
New York, NY 10278-0090

Dear Mr. Houston:

As Deputy State Historic Preservation Officer for New Jersey, in accordance with 36 CFR Part 800: Protection of Historic Properties, as published in the *Federal Register* on December 12, 2000 (65 FR 77725-77739) and amended on July 6, 2004 (69 FR 40544-40555), I am providing Consultation Comments for the following proposed undertaking:

Passaic County, Little Falls Township Township
Phase I Cultural Resources Survey
Peckman River Flood Damage Reduction Project
United States Department of the Army, Corps of Engineers

Summary: This **new SHPO opinion** finds the **Little Falls Laundry weir and headrace contribute to the Little Falls Laundry** which was previously determined eligible for listing in the New Jersey and National Registers of Historic Places on December 28, 2004. The addition of the weir and headrace to the opinion of eligibility represent a boundary expansion for the Little Falls Laundry to include the footprint of both additional resources.

Thank you for submitting the following cultural resources report, received at the Historic Preservation Office (HPO) on July 23, 2012 for the above-referenced undertaking:

Blair, Lori J., Walter R Wheeler, and Matthew J. Kirk
2012 *Draft Phase I Archeological Investigation and Structure Inventory, Peckman River Flood Damage Reduction Project, Borough of Woodland Park (formerly West Paterson) and Townships of Little Falls and Cedar Grove, Passaic and Essex Counties, New Jersey.* Prepared for the United States Department of the Army, Corps of Engineers, New York District. Prepared by Hartgen Archeological Associates, Inc. Rensselaer, New York.

800.4 Identification of Historic Properties

Archaeology

The above-referenced report states that a Phase I archaeological investigation was undertaken as part of the Peckman River Flood Damage Reduction Project. The purpose of the proposed project will be to employ a series of flood reduction measures to help alleviate the frequent flooding in the drainage basin. A Phase I cultural resources survey was conducted to assess the Project for its potential impacts to historic properties within the project's area of potential effects (APE). Through background research, pedestrian reconnaissance, and subsurface excavation, three archaeological historic properties were identified within the APE: the Little Falls Laundry Weir and Headrace, the Morris Canal Aqueduct, and the Marley mill site.

According to the report, the Little Falls Laundry weir and headrace are archaeological components of the Little Falls Laundry property, which was determined eligible for listing in the New Jersey and National Registers of Historic Places on December 28, 2004. According to the report, the weir and sluicegate were constructed in the early twentieth-century to help funnel water into the laundry, where it was then treated and used in the cleaning process. As a result, the report recommends that the headrace and weir are contributing resources to the Little Falls Laundry and are eligible under Criterion D, for their ability to yield important information in history. The HPO concurs with this recommendation. Therefore, it is my opinion as Deputy State Historic Preservation Officer that the **Little Falls Laundry weir and headrace contribute to the Little Falls Laundry** which was previously determined eligible for listing in the New Jersey and National Registers of Historic Places on December 28, 2004. The addition of the weir and headrace to the opinion of eligibility represent a boundary expansion for the Little Falls Laundry to include the footprint of both additional resources.

The HPO would like to note that based on historic map research, the headrace associated with the Little Falls Laundry appears to predate the construction and operation of the Laundry itself. The 1877 E.B. Hyde and Co. Passaic County Atlas clearly shows the presence of the headrace within the subject property. Previous consultation with the Army Corps of Engineers identified this resource as the Sindle/Van Ness Raceway System. While the headrace may have been repurposed during the twentieth-century to accommodate the Little Falls Laundry, the HPO would like to point out that additional industrial resources predating the Little Falls Laundry may be present along the headrace alignment. As a result, these potential historic properties should be considered in any future research pertaining to the area surrounding the headrace.

Two additional historic properties were also identified during Phase I survey: the Morris Canal Aqueduct Site and sites relating to the Marley Mill, including the Marley Mill Dam. At this point in time however, detailed project plans were not available for review and comment. As a result, while the HPO does not dispute that these historic properties are present, project effects on these historic properties cannot be evaluated until detailed project plans associated with the Peckman River Flood Control project become available. Once detailed project plans are developed, they should be submitted to the HPO for review and comment. Only then can the HPO assess project effects on the identified resources.

In addition to the historic properties identified, the report also recommends that archaeological monitoring be employed during construction for the diversion culvert outlet into the Passaic River. It is the opinion of the HPO that this methodology for identification is not appropriate for this portion of the project alignment, based on the information provided. According to the report, geotechnical borings and limited shovel test pit excavation identified the presence of fill along this portion of the project alignment. The report also notes that the excavation of shovel test pits was not sufficient for the identification of historic properties, due to the depth of the fill present.

Based on the information provided it is not clear whether the fill identified represents the archaeological signature of former industrial practices in the area. It is also unclear whether there is potential for earlier historic properties to be present below the historic fill deposits identified. As a result, the HPO recommends that further mechanically assisted Phase I testing be employed to identify the presence or absence of historic period archaeological resources within the project alignment. In addition, a geomorphologist should be employed to review the results from the soil borings to examine the potential for Native American archaeological resources to exist within the APE.

Finally, the HPO requests further clarification regarding Phase IB archaeological testing methodology along the western bank of the Peckman River within the Peckman Preserve property. According to the earlier referenced 1877 E.B. Hyde and Co. Passaic County Atlas, the presence of a structure is notated along this section of the project alignment. Results from the shovel testing program also indicate the presence of historic period domestic artifacts within the Peckman Preserve. The HPO requests further clarification regarding why a more intensive testing protocol was not employed within the vicinity of this historic structure to identify potential historic properties in this area.

Architecture

The submitted report documented the results of a reconnaissance-level architectural survey of 81 structures within the project's Area of Potential Effects (APE).

The HPO concurs with the consultant's determination that one previously listed property and two properties previously identified as eligible are located within the APE for the proposed undertaking:

The Morris Canal was listed in the New Jersey Register of Historic Places on November 26, 1973 and the National Register of Historic Places on October 1, 1974.

The Little Falls Laundry was determined eligible for listing in the New Jersey and National Registers of Historic Places in a SHPO Opinion of Eligibility on December 28, 2004.

The Valve House located at the southwest quadrant of the Francisco Avenue Bridge over the Peckman River (Block 155/Lot 4) was previously identified as a contributing structure within

the New Jersey and National Registers of Historic Places eligible Jersey City Water Works Historic District, which received a SHPO Opinion of Eligibility on February 20, 2003.

The consultant recommended one additional resource, the Cedar Grove Railroad Overpass, a single-arch stone masonry span carrying the former Erie Railroad over Cedar Grove Road, eligible for listing in the New Jersey and National Registers of Historic Places. The HPO staff concurs that the structure is potentially eligible, however, at this time, the HPO does not have sufficient information to make a definitive eligibility determination for this resource as no historical background or contextual information was provided in the report.

The consultant concluded that none of the remaining 77 properties possessed architectural or historical significance and recommended them not eligible for the New Jersey and National Registers of Historic Places. The submitted report did not even include photographs and/or approximate dates of construction for many of the properties within the APE. It is important to note that, the New Jersey Guidelines for Architectural Survey (1999) require the completion of an intensive-level survey and the submission of a complete set of architectural survey forms for each property within the APE when a report is being submitted for regulatory purposes. In this particular instance, HPO staff was able to proceed with an evaluation of the properties within the APE based upon staff familiarity with the project area and a review of additional information on file at the HPO. However, in the future, the failure to conduct an appropriate intensive-level survey that includes complete sets of architectural survey forms could result in significant project delays.

The HPO does request that the U.S. Army Corps or its consultant submit a completed set of architectural survey forms for the Cedar Grove Railroad Overpass so that we may evaluate the eligibility of the structure. Please note that the "Eligibility Worksheet" submitted in the report is actually the Base Form. The submission should include a Base Form, Bridge Attachment, Eligibility Worksheet, and Continuation Sheets as needed.

New Jersey Register of Historic Places Act

Please note that from the documents submitted, it appears that a portion of the proposed project is being undertaken within the boundaries of the Morris Canal Historic District. The portion of the Morris Canal Historic district is listed in the New Jersey Register of Historic Places and owned by Little Falls Township. Under the New Jersey Register of Historic Places Act, projects which may impact New Jersey Register listed properties must have prior written authorization from the Commissioner of the Department of Environmental Protection. As such, once detailed project plans are developed, it may be necessary for Little Falls Township to submit an Application for Project Authorization, under the New Jersey Register of Historic Places Act. For more information about the New Jersey Register of Historic Places Act, please see: http://www.nj.gov/dep/hpo/2protection/njrrevew.htm

Additional Comments

Thank you for providing the opportunity to review and comment on the potential for the above-referenced project to affect historic properties. The HPO looks forward to further

consultation with the Army Corps of Engineers regarding the further development and implementation of the proposed project. If additional consultation with the HPO is needed for this undertaking, please reference the HPO project number 11-0128 in any future calls, emails, or written correspondence to help expedite your review and response. Please do not hesitate to contact Jesse West-Rosenthal (609-684-6019) of my staff with any questions regarding archaeology or Jonathan Kinney (609-984-0141) of my staff with questions regarding historic architecture.

Sincerely,

Daniel D. Saunders
Deputy State Historic
Preservation Officer

Cc: Carissa Scarpa - USACE

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
26 FEDERAL PLAZA
NEW YORK, N.Y. 10278-0090

Reply to
Environmental Analysis Branch

February 5, 2013

Mr. Daniel Saunders
Deputy State Historic Preservation Officer
Historic Preservation Office
New Jersey Department of Environmental Protection
CN 404
Trenton, NJ 08625-0404

Re: HPO-H2012-211 PROD
11-0128-3
Peckman River Flood Damage Reduction Project

Dear Mr. Saunders:

Thank you for your letter, dated August 29, 2012 in which you provided Section 106 consultation comments on the draft report *Phase I Archaeological Investigation and Architectural Inventory, Peckman River Flood Damage Reduction Project, Borough of Woodland Park (formerly West Paterson) and Townships of Little Falls and Cedar Grove, Passaic and Essex Counties, New Jersey*. The U.S. Army Corps of Engineers, New York District (District) acknowledges your finding of the Little Falls Laundry weir and headrace as eligible for listing in the National Register of Historic Places. Pursuant to Section 106 of the NRHP, the District will take into account these contributing elements, avoiding adverse effects where feasible, and in the design of alternatives for the Peckman River Flood Damage Reduction Project.

In addition to an opinion of eligibility for the Little Falls Laundry weir and headrace, the letter also included a number of comments pertaining to the archaeological investigations and the architectural survey. The District has attempted to adequately respond to each comment here and has addressed these items in the final draft of the report which is enclosed with this letter.

Archaeology

The HPO has highlighted the early history of the headrace associated with the Little Falls Laundry as a major component of the mid to late nineteenth century Sindle/Van Ness Raceway System identified as such in the 1982 report prepared for the District. The HPO noted that additional industrial resources predating the Little Falls Laundry may be present along the

headrace alignment and advised that potential historic properties should be considered in any future research pertaining to the area surrounding the headrace.

The District is aware of the origins of the Little Falls Laundry weir and headrace as a source of waterpower for the Sindle and Vann Mills originally constructed between 1856 and 1867. The establishment of the mills and the raceway system and the evolution of the raceway and repurposing of it for the Laundry are described in the Archaeological Survey Results section of the current Phase I report. In the development of alternatives the District will strive to avoid disturbance of the headrace and sluice gate so as not to adversely impact the resource. In consideration of the HPOs concerns for impacts to earlier resources predating the Laundry the recommendations of the report have been revised to propose additional archeological study to record additional details concerning the creation and maintenance of the structure over time and the relationship between the laundry and downstream mills and the complex water system developed by the laundry required for its operation. These revised recommendations and better clarification about the raceway's historical use has been added to the final report along with a base form and eligibility worksheet.

The HPO has refrained from providing an opinion of eligibility for the Morris Canal Aqueduct Site and the Marley Mill and Dam although the District has determined the sites eligible under Criterion C. The District agrees that project effects on these historic properties cannot be evaluated by the HPO at this time because detailed project plans associated with the Peckman River Flood Control project have not been completed. Therefore, upon development of project plans the Corps shall carry out consultation with your office to determine next steps. The recommendations of the report have been revised to clarify the status of these resources as potentially eligible for the National Register of Historic Places and calls for additional research and archaeological testing.

The HPO has also recommended Phase I mechanical testing in the area of the culvert outlet. The District agrees that there is some potential for deeply buried remains within the culvert alignment in the vicinity of the Passaic River and Patterson Avenue. The District does not, therefore, object to this suggested approach, however, testing of this nature would be extremely disruptive and should be carried out after plans have been developed when the exact alignment and depth of the culvert is known. The recommendations of the report have been revised to reflect this approach.

Finally, the HPO has asked for clarification regarding Phase IB testing in the vicinity of a map documented historic structure. The District assumes that the structure in question is the Seuchlung Slaughterhouse building and house. This structure was documented in 1982 as a concrete foundation of the slaughterhouse and a pile of charred timbers where the house once was. A thorough inspection of the area and shovel tests failed to locate remains of the slaughterhouse. The District supports the conclusions of the report that additional archaeological investigations in the vicinity are not warranted. A more thorough discussion of the investigations has been added to the revised report to support the methodology.

Architecture

The HPO refrained from providing an opinion of eligibility on the Cedar Grove Railroad Overpass due to a lack of historical background and contextual information. The District has revised the recommendation of this resource to potentially eligible in the survey report and added a base form. At this time the conceptual plans do not include any modifications to this structure or the channel below. Should future project plans involve impacting the Cedar Grove Railroad Overpass the District shall carry out a complete NRHP eligibility assessment of the structure.

The HPO requested that in future, the District submit an intensive-level architectural survey which, as described in the New Jersey Guidelines for Architectural Survey (1999) includes a complete set of architectural survey forms for each property within the APE. The District is aware of the state's guidelines and will carry out an intensive-level architectural survey on the structures within the project APE when project effects can be determined. However, the District asks for clarification on what HPO considers an appropriate level of survey for projects in the early stages of alternative analysis and lacking a well defined APE such as this. The District would argue that the reconnaissance level of survey is better suited. Base forms for the NRHP eligible structures within the study area, including the Cedar Grove Railroad Overpass and the Little Falls Laundry weir and headrace have been added to Appendix 4 of the report.

Finally, the HPO has noted that the District's sponsor, Little Falls Township, would be responsible for submitting an Application for Project Authorization under the New Jersey Register of Historic Places Act (N.J.S.A. 13:1B-15.128). Under Section 106 of the National Historic Preservation Act, it is the obligation of the Federal agency to fulfill the requirements of Section106. The District has long been carrying out consultation with the HPO on projects that impact resources listed on the NJ Register of Historic Places through our Section 106 process. The Section 106 process provides an ideal platform for addressing potential impacts and receiving early input from the HPO and other interested parties. The District would ask for clarification on the applicability of the law on federal projects and its function within the context of the Section 106 process.

Thank you for your assistance in the Section 106 process. If you or your staff require additional information or have any questions, please contact Carissa Scarpa, Project Archaeologist at (917) 790-8612.

Sincerely,

L. Houston

Leonard Houston
Chief, Environmental Analysis Branch

Enclosure

Peckman River Basin, New Jersey
Flood Risk Management Feasibility Study

Appendix A.8: Draft Compensatory Mitigation, Monitoring and Adaptive Management Plan

1.0 Introduction

The U.S. Army Corps of Engineers (Corps), New York District (District) in partnership with the New Jersey Department of Environmental Protection (NJDEP) has developed feasibility level plans to provide flood risk for the Town of Little Falls and the Borough of Woodland Park Passaic County, New Jersey.

In accordance with the Council of Environmental Quality National Environmental Policy Act (NEPA) regulation, mitigation includes (a) avoiding the impact by not taking a certain action or parts of an action; (b) minimizing the impact by limiting the degree of the action and its implementation; (c) rectifying the impact by repairing, rehabilitating or restoring the effected environment; (d) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; (e) compensating for the impact by replacing or providing substitute resources or environments.

This document outlines the feasibility level Compensatory Mitigation, Monitoring and Adaptive Management Plan for the Peckman River Basin Flood Risk Management study, and only addresses the compensatory mitigation method. The other forms of mitigation (e.g. avoidance, minimization, reduction of impact) are addressed within the integrated Draft Feasibility Report/Environmental Assessment.

The Tentatively Selected Plan (TSP) consists of the following elements: a) treatment of approximately 118 structures located within the 10-yr floodplain with nonstructural measures in the Town of Little Falls to include the installation of ringwalls; b) installation of a diversion culvert from the Peckman River to the Passaic River; c) construction of floodwalls and a levee along the Peckman River; d) construction of floodwalls and a levee along Great Notch Brook; e) installation of an additional culvert within the Great Notch Brook under Browertown Rd to increase flow capacity.

For the purposes of the draft report, a range of impacts were developed to take into account optimization of the TSP footprint and available existing data. The impacts will be refined with greater accuracy and precision during optimization and will be presented in the final report. Specific habitat types that may be permanently impacted include the following: a) 0.50 – 4 acres of forested wetland; b) 550 – 1,100 linear ft of open water; c) 1 – 2.5 acres of riparian zone ; and d) 1 -1.5 acres of upland forest that serves as a transition area to forested wetlands.

This plan identifies and describes the mitigation, monitoring and adaptive management activities proposed and the estimated cost of the effort. The general purpose of this plan is to provide a systematic approach for improving resource management outcomes and a structured process for recommending decisions, with an emphasis on uncertainty to improve management.
More specifically, the plan will:

- Establish the method for determining mitigation requirements.

- Establish the framework for effective monitoring, assessment of monitoring data and decision making for implementation of adaptive management activities in the project area.
- Provide the process for identifying adaptive management actions in the project.
- Establish decision criteria for vegetation and wildlife evaluation and modification of adaptive management activities.

Per the Corps Civil Works Planning process, a feasibility level habitat functional assessment and incremental cost analysis will be performed to identify the appropriate level of mitigation required for the optimized NED Plan and will be presented in the final Feasibility Report/Environmental Assessment. The plan will be then reviewed and revised as needed during the Preconstruction Engineering Design Phase (PED) as specific design details are made available.

1.1 Compensatory Mitigation Guidelines

1.1.1 Federal Compensatory Mitigation Guidelines

The following laws and Corps implementation guidance provide distinct Corps policy and guidance pertinent to developing this mitigation, monitoring and adaptive management plan:

- CECW-PC 31 August 2009 Memo: Implementation Guidance for Section 2036(a) of the Water Resources Development Act of 2007 (WRDA 07) – Mitigation for Fish and Wildlife and Wetlands Losses" – requires: 1) monitoring until successful, 2) criteria for determining ecological success, 3) a description of available lands for mitigation and the basis for the determination of availability, 4) the development of contingency plans/adaptive management plans, 5) identification of the entity responsible for monitoring; and 6) establish a consultation process with appropriate Federal and State agencies in determining the success of mitigation.
- ER 1105-2-100 dated 22 April 2000, Planning Guidance Notebook, Section C-3 e. Mitigation Planning and Recommendations
- Compensatory Mitigation for Losses of Aquatic Resources; Final Rule; Federal Register, Volume 73, No. 70, April 10, 2008.
- Water Resource Reform and Development Act (WRRDA) 2014, Section 1040 Fish and Wildlife Mitigation.
- Water Infrastructure Improvements for the Nation Act (WIIN Act) 2016, Sections 1162 Fish and Wildlife Mitigation, and 1163 Wetlands Mitigation. Implementation Guidance has not been issued by USACE HQ.
- CECW-P 02 February 2018 Memo Implementation Guidance for Section 1162 of the Water Resources Development Act of 2016 (WRDA 2016)- Fish and Wildlife Mitigation. Section 1162 authorizes the use of Preconstruction, Engineering Design funds to satisfy mitigation requirements through 3rd party arrangements or acquire lands for mitigation requirements.
- 16 November 2017 Memorandum for the Commanding General of the U.S. Army Corps of Engineers - Implementation Guidance for Section 1163 of the Water Resources Development Act of 2016 (WRDA 2916), Wetlands Mitigation. Rescinds CECW-P 06 November 2008 Memorandum Implementation Guidance for WRDA 2007 – Section 2036

(c). Establishes the following criteria for the use of mitigation banks and in-lieu fee credits as a mitigation alternative: a) demonstration of an approved mitigation banking instrument; b) the mitigation bank and/or in-lieu fee program operates within the service area of the impact; c) completion of a functional analysis of the potential credits using the approved Corps of Engineers certified habitat assessment model specific to the region; d) demonstration that the statutory (and regulatory) mitigation requirements, including monitoring or demonstrating mitigation success have been met; and e) purchase of credits prior to award of a construction contract for the project.

Corps regulations stipulate that the recommended plan must contain sufficient mitigation measures to ensure that the plan selected will have no more than negligible net adverse impacts on fish and wildlife resources, including impacts of the mitigation measures themselves. Regarding wetlands, however, the guidance contains very specific requirements that the District "ensure that adverse impacts to wetland resources are fully mitigated...as required to clearly demonstrate efforts made to meet the Administration's goal of no net loss of wetlands" as determined by a habitat functional assessment method.

1.1.1.1 Federal Compensatory Mitigation Hierarchy

The Mitigation Rules' preference hierarchy for types of compensatory wetland mitigation is as follows:

- The purchase of wetland credits from an approved wetland mitigation bank
- In-Lieu fee program credits (monetary contribution)
- On-site and in-kind restoration, enhancement, establishment or preservation.
- Off-site and/or out of kind restoration, enhancement, establishment or preservation.

Based the District's experience with compensatory mitigation on other projects, the purchase of credits through a state approved mitigation bank has been the most cost-effective option. Therefore, should compensatory mitigation be required, the District will first evaluate the feasibility of purchasing of mitigation credits prior to assessing other compensatory mitigation methods.

Off-site compensatory mitigation will be performed if either a state approved mitigation bank is unavailable, or if a wetland mitigation bank does not conform to the requirements stipulated in the implementation guidance listed in Section 1.1.1. Both the Corps Civil Works guidance and 2008 Federal Mitigation Rule give priority to restoration of impacted resources over enhancement, establishment or preservation when providing on-site or off-site compensation. Corps policies and regulations do not apply a mitigation hierarchy to non-wetland habitats (e.g. upland forest).

1.2 State Mitigation Guidelines

The state of New Jersey assumed responsibility for administering the 404 authority in 1993. The following documents provide New Jersey policy and guidance that are pertinent to developing this monitoring and adaptive management plan:

- New Jersey Freshwater Wetlands Protection Act, N.J.S.A. 13:9B; Freshwater Protection Act Rules N.J.A.C. 7:7A: Outlines requirements for compliance with Sections 401 and 404 of Clean Water Act.
- N.J.A.C. Coastal Zone Management Rules: Establishes compliance and mitigation requirements related to Sections 401 and 404 of the Clean Water Act for tidal wetland and open water resources.

1.2.1.1 State Compensatory Mitigation Hierarchy

Compensatory mitigation hierarchy for freshwater wetland impacts or state open water greater than 1.5 acres as outlined in the Freshwater Wetlands Protection Act Rules is as follows:

1. On-site restoration, creation, or enhancement.
2. Purchase of in-kind credits from a mitigation bank with a service area that includes the area of disturbance;
3. Off-site restoration, creation or enhancement in the same watershed as disturbance
4. Monetary contribution to the New Jersey In-lieu fee program;
5. Upland preservation;
6. Land donation in accordance with Freshwater Wetland Act Rules.

Compensatory Mitigation hierarchy for freshwater wetland impacts less than 1.5 acres as outlined in the Freshwater Wetlands Act Rules is as follows:

1. Purchase from a NJDEP approved wetland mitigation bank in the same Hydrologic Unit Code 11 (HUC-11) as the disturbance;
2. Off-site creation, restoration or enhancement;
3. Monetary contribution to the New Jersey In-lieu fee program;
4. Upland preservation; and
5. Land donation.

The NJDEP Freshwater Wetlands Protection Act Rules require a mitigation ratio of 2:1 for wetland restoration or creation, and a minimum mitigation ratio of a 3:1 for wetland enhancement. The purchase of wetland mitigation credits is based on a 1:1 mitigation ratio.

1.3 Roles and Responsibilities

The District will be responsible for the proposed mitigation construction and monitoring until the initial success criteria as defined in Sections 3.1 – 3.3 are met. Initial construction and monitoring will be funded in accordance with all applicable cost-share agreements with the non-federal sponsor.

It should be noted that the state might require mitigation beyond what has been determined to be appropriate by the functional assessment analysis due to their use of a ratio based mitigation approach. In event this occurs, the non-federal sponsor will be required to pay the for the mitigation costs that exceed what is necessary to meet the federal requirements.

The District will monitor (on a cost-shared basis) the completed mitigation to determine whether additional construction, invasive plant species control, and/or plantings are necessary to achieve initial success criteria. If, during the monitoring period the mitigation is failing to meet the success

criteria, the District will consult with the NJDEP to determine the appropriate management or remedial actions required to achieve ecological success. The non-federal sponsor will perform any additional monitoring of the site as part of their O&M obligations once the District has determined that the mitigation goals are met.

The District will retain the final decision on whether or not the project's required mitigation benefits are being achieved and whether or not remedial actions are required. If additional site modifications are deemed necessary to achieve ecological success, the District will implement the appropriate measures in accordance with the adaptive management plan. The adaptive management measures will be subject to cost-sharing requirements, availability of funding, and current budgetary and other guidance.

2.0 Habitat Mitigation Alternatives

2.1 Wetland Mitigation Banks and In-lieu Fee Programs

Based on a review of the State of New Jersey Approved Wetlands Mitigation Banks List (dated 24 March 2017), the Pio Costa mitigation bank currently has freshwater forested wetland credits available and operates within the HUC-11 in which the Peckman River watershed located. The District will assess the availability of mitigation credits at this wetland mitigation bank during the Preconstruction Engineering Design Phase when permits are acquired.

There are no privately operated In-lieu Fee Programs within the state. The state operates its own In-lieu Fee Program through its Wetland Mitigation Fund. However, as noted in Section 1.2.1.1, this option is lower in the mitigation hierarchy structure than on-site restoration or off-site mitigation, of which opportunities exist within the project area. Therefore, as an authority responsible for administering Section 404 of the Clean Water Act, it is unlikely that the state would approve a monetary contribution.

2.2 Off-Site Wetland Mitigation

A portion of the proposed levee along the Peckman River will impact a forested wetland complex located within an undeveloped tract of land owned by the Town of Little Falls. On-site compensatory mitigation is not expected to be feasible, therefore if mitigation credits cannot be purchased, the District will evaluate performing off-site compensatory mitigation.

A 12 acre park owned by Passaic County, known as the Peckman Preserve, is approximately 0.50 miles upstream of the proposed levee. The County acquired the park in 2005 and developed a conceptual plan in 2010 that included the creation of wetlands within the park. To date, the conceptual plan has not been implemented. The District will coordinate with Passaic County and New Jersey Green Acres staff to determine the feasibility of utilizing the park for mitigation purposes.

2.2.1 Evaluation of Planned Wetlands Assessment

The District will be using the Evaluation of Planned Wetlands (EPW) model to assess the functional value of the wetlands impacted and determine mitigation needs.

The EPW model was approved for regional use by the Corps Ecosystem Restoration Planning Center of Expertise in July 2016. In accordance with the Corps Civil Works Planning Policy, the EPW analysis and the incremental cost analysis to determine the appropriate level of mitigation required will occur during optimization of the TSP. The results of these analyses will be presented in the final report.

2.3 Open Water

The District will evaluate the need for compensation to open water resources during optimization. Should it be determined that compensatory mitigation is required, the District will evaluate stream restoration measures such as streambank stabilization with native vegetation, restoring pool and riffle complexes within the waterbody, and applying proposed riprap in a manner that provides foraging and resting habitat for fish and aquatic macroinvertebrates.

2.3.1 New Jersey HGMI and Northern NJ FIBI

The District will be using the New Jersey High Gradient Macroinvertebrate Index and Northern New Jersey Fish Index of Biological Integrity to evaluate the functions and values of open water systems impacted by the proposed project and determine mitigation needs. Both models use the stream assessment worksheet developed as part of the U.S. Environmental Protection Agency Rapid Bioassessment Protocol (EPA RBP) to evaluate stream habitat.

The models were approved for regional use by the Corps Ecosystem Restoration Planning Center of Expertise in February 2014. In accordance with the Corps Civil Works Planning Policy, the impact analysis utilizing these models and the incremental cost analysis to determine the appropriate level of mitigation required will occur during optimization of the TSP. The results of these analyses will be presented in the final report.

2.4 Off-site Riparian Zone Mitigation

The laws and implementation guidance cited in Section 1.1.1 provides a mean for compensating for riparian zone impacts as part of an overall watershed approach and requirement to ensure that the proposed action will have no more than negligible net adverse impacts on fish and wildlife resources.

New Jersey Flood Hazard Area Control Act (NJFHACA) requires mitigation for impacts to riparian zone resources. Per the NJFHACA Rules, riparian zone mitigation can consist of the following:

- Removal of any impervious surface within 100 feet of streambank;
- Herbicide application for invasive species management;
- Clearing/grubbing of invasive plant species; and/or
- Planting native trees and shrubs within 100 feet of streambank.

2.4.1 U.S. EPA RPB Stream worksheet

The EPA RBP stream assessment worksheet contains evaluation and scoring criteria for riparian habitat. The District will utilize this worksheet as part of the NJ HGMI and NNJFIBI models to evaluate the functional value of riparian habitat and determine the necessary compensatory mitigation required.

TSP the District will use the EPA RBP Stream Assessment Worksheet to assess the functions and values of riparian zone impacts to determine the need for and level of compensatory mitigation.

Any compensatory riparian zone mitigation will be conducted off-site. There are many locations throughout the Peckman River Watershed where riparian zone mitigation can be performed. Although specific locations will be investigated and acquired during the PED Phase, the District may evaluate conducting riparian mitigation at the Peckman Preserve. The State also allows for the purchase of riparian zone credits from state approved mitigation banks. There are currently no riparian mitigation banks that operate within the service area in which the project is located. However, the District will evaluate the status of such banks during the PED Phase.

2.5 Off-Site Upland Forest Mitigation

The upland forests being impacted serve as a transition area for the wetland complex within the levee footprint. Therefore, the District is proposing off-site mitigation for this resource. In order to provide a comprehensive mitigation strategy, the District will evaluate utilizing the Peckman Preserve to create upland forest adjacent to function as a transition area for any wetlands the District constructs within the park. The District will coordinate with Passaic County and NJDEP Green Acres Program staff to determine the feasibility of using the Peckman Preserve for mitigation purposes.

2.5.1 Habitat Suitability Index

The District will be using one or more Habitat Suitability Index (HSI) models for bird species known to inhabit the project area to assess the functional value of the upland forest being impacted and determine mitigation needs. The specific HSI model(s) to be used will be determined during optimization. However, HSI models that will be considered include those for great blue heron, hairy woodpecker, downy woodpecker, and black-capped chickadee given that they are known occur within the overall project area. In addition, those models have been approved for use by the Corps Ecosystem Restoration Planning Center of Expertise.

2.6 Vegetation

For any habitat compensatory mitigation, the District will use native vegetative species with an emphasis on those that can compete with invasive plant species, and support federally and/or state endangered and threatened species, and pollinator species. A list of common tree and shrub species used for habitat mitigation is included in Attachment 1. This not an exhaustive list and may change during finalization of any compensatory mitigation plans. A list of plants that support pollinator species is included in Attachment 2.

2.7 Preliminary Cost Estimate

A preliminary cost estimate was prepared and included costs for open water, wetland, riparian zone and upland forest compensatory mitigation. The costs included any necessary excavation required to construct the proposed mitigation, removal of invasive plant species, herbicide applications, replanting native vegetation, installation of anti-herbivory measures such as fencing and tree guards, post construction monitoring and adaptive management.

The Total Project Cost for the low range mitigation is $10,925,016.00. The Total Project Cost for the high range mitigation is $11,749,738.00. The costs are presented in Account 06 "Fish and Wildlife Facilities" in Appendix D Cost Engineering.

The cost estimate will be revised during optimization of the TSP pending the results of the functional assessment and incremental cost analyses and will be included in the final report.

3.0 Monitoring and Reporting

An effective monitoring program will be required to determine if the mitigation performed is consistent with original project goals and objectives. Information collected under this monitoring plan will provide insights into the effectiveness of mitigation and adaptive management strategies and indicate where goals have been met, if actions should continue and/or whether more aggressive management is warranted. The information generated by the monitoring plan will be used by the District in consultation with the non-federal sponsor to guide decisions on operation changes that may be needed to ensure that the mitigation project meets the success criteria.

Federal wetland mitigation rules require monitoring until success criteria is met and do not establish a minimum required monitoring period. The New Jersey Freshwater Wetlands Protection Act Rules require a minimum monitoring period of five years for any wetland enhancement, restoration or creation, and establish specific criteria for determining success. Therefore, for cost estimating purposes, the District is assuming a minimum monitoring period of **five years** for each mitigation type.

3.1 Open Water Monitoring Protocol

Surveys utilizing the NJ HGMI and Northern FIBI with the EPA RBP stream habitat assessment method will be conducted to determine mitigation success. Surveys will be conducted prior to construction to form baseline conditions. Once construction is completed, surveys will occur minimally one time per year as recommended in each of the methods respective guidance documents. A report discussing the results of the surveys and whether adaptive management measures may be required will be prepared annually. The report will be submitted to the NJDEP LURP and will be made available by the District for the public to review.

3.2 Forested Wetlands Monitoring Protocol

The District will conduct a wetland delineation annually utilizing the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and northeast Region (Version 2.0). As part of the wetland delineation, a minimum of six soil pits will be dug and described to a depth of 20 inches within the mitigation area. The soil profiles will document the depth of topsoil placement as well as indicators of hydric soil. The depth to saturated soil and free water will also be recorded for each soil profile. The location of each soil pit will be documented using GPS and plotted onto a map for inclusion in the Monitoring Report.

The success criteria at the end of the five year monitoring period for which mitigation success is determined includes: 1) 85 percent survival and 85 percent area coverage of the mitigation

plantings or target hydrophytes which are species native to the area and similar to ones identified in the mitigation planting plan; 2) Any trees planted are at least five feet in height; 3) The site contains hydric soils or there is evidence of oxidative reduction (redox) occurring in the soil; 4) Evidence that the site is meeting the hydrologic regime as specified in the mitigation proposal; 5) The site is less than 10 percent occupied by invasive or noxious species; and 6) The site delineates as a wetland using the 1989 Federal Manual for Identifying and Delineated Jurisdictional Wetlands.

Stem densities of woody plants will be generated using stem counts within permanent 10-meter square sample plots randomly located within upland forest mitigation area. The location of each sample plot will be determined prior to conducting field work by randomly by establishing a 10-meter square grid over the area to be monitored as shown on the As-Built plans, assigning each grid block a number, and generating a series of random numbers. The random numbers corresponding to the first ten grid blocks will be used to establish the sample locations. Within each plot the number of trees and shrubs will be counted, by species, and recorded onto a data form. The height of each tree and shrub will also be recorded. In addition, the presence and extent of any invasive plant species will be documented.

The location of each sample plot will be determined prior to conducting field work by randomly by establishing a 10- meter square grid over the area to be monitored as shown on the As-Built plans, assigning each grid block a number, and generating a series of random numbers. The random numbers corresponding to the first ten grid blocks will be used to establish the sample locations. The location of each quadrat will be shown on the plans contained in the monitoring report.

3.3 Riparian Zone and Upland Forest Monitoring Protocol

Stem densities of woody plants will be generated using stem counts within permanent 10-meter square sample plots randomly located within upland forest mitigation area. The location of each sample plot will be determined prior to conducting field work by randomly by establishing a 10-meter square grid over the area to be monitored as shown on the As-Built plans, assigning each grid block a number, and generating a series of random numbers. The random numbers corresponding to the first ten grid blocks will be used to establish the sample locations. Within each plot the number of trees and shrubs will be counted, by species, and recorded onto a data form. The height of each tree and shrub will also be recorded. In addition, the presence and extent of any invasive plant species will be documented.

The location of each sample plot will be shown on the plans contained in the monitoring report.

The success criteria at the end of the five year monitoring period for which mitigation success is determined includes: 1) 85 percent survival and 85 percent area coverage of the mitigation plantings or target hydrophytes which are species native to the area and similar to ones identified in the mitigation planting plan; and 2) The site is less than 10 percent occupied by invasive or noxious species.

3.4 Monitoring Costs

Preliminary cost estimates for the monitoring of each mitigation type are presented in Tables 1 and 2. Costs include the level of effort needed to complete the required field investigations and report preparation and coordination.

Table 1: Preliminary Mitigation Monitoring Costs (Low Range)

Mitigation Feature	Annual Monitoring Cost	Total Monitoring Period (5 yrs) Cost
Forested Wetland	$6,000.00	$30,000.00
Open Water	$7,400.00	$37,000.00
Riparian Zone	$9,000.00	$45,000.00
Upland	$11,400.00	$57,000.00
Total	**$33,800.00**	**$169,000.00**

Table 2: Preliminary Mitigation Monitoring Costs (High Range)

Mitigation Feature	Annual Monitoring Cost	Total Monitoring Period (5 yrs) Cost
Forested Wetland	$18,000.00	$90,000.00
Open Water	$12,000.00	$60,000.00
Riparian Zone	$14,000.00	$70,000.00
Upland	$ 7,600.00	$38,000.00
Total	**$51,600.00**	**$258,000.00**

3.5 Reporting

The District will prepare an annual Monitoring Report summarizing the results of monitoring efforts conducted for each mitigation type and describing any necessary adaptive management measures.

The format of the report will contain, but not be limited to: 1) Executive Summary; 2) Requirements and goals of approved mitigation proposal have been achieved 3) Documentation including wetland delineations, stream survey locations and results, habitat assessment worksheets, topographical surveys, photos and field notes; 4) suggested adaptive management measures and their estimated costs.

Figures contained within the report will include but not be limited to: 1) mitigation site location delineated on USGS quad map; 2) mitigation site delineated on an aerial; 3) mitigation site delineated on tax map; and 4) preconstruction and post construction habitat type map.

Appendices will include but not be limited to: 1) permits; 2) as-built plans; 3) vegetation species table and survey data sheets; 4) photograph log and location map; and 5) soil investigation report.

As required by NJDEP, the District submit the Monitoring and Adaptive Management Report to the agency by 31 December each year the monitoring is conducted. The District will also post the report on the District webpage and will submit the report to the Corps Headquarters (Corps HQ) for inclusion to the annual mitigation report that is submitted to Congress and posted on the Corps HQ website.

4.0 Adaptive Management

A comprehensive adaptive management plan will be prepared, if needed, during post construction monitoring. However, the following sections describe common adaptive management measures associated with each habitat type.

4.1 Open Water (e.g. stream restoration)

- Additional morphological changes to enhance aquatic habitat
- Repairing or relocating in-stream habitat features
- Replanting vegetation along the streambanks

4.2 Forested Wetlands

- Replanting vegetation in areas where plantings do not meet predetermined criteria
- Enhancing survival of planted vegetation (by applying a fertilizer)
- Elevation modifications through additional grading/excavation to achieve desired hydrology.
- Invasive species management through mechanical landscaping techniques, physical removal and/or replanting of desirable species
- Installation/maintenance of anti-herbivory measures (e.g. fencing, tree guards)

4.3 Riparian Zone and Upland Forest

- Enhancing survival of planted vegetation (by applying a fertilizer)
- Suppressing encroachment by Phragmites and/or other invasive plant species through herbicide application, physical removal, landscaping techniques (e.g. weed mats) and/or replanting of desirable species
- Installation/maintenance of anti-herbivory measures (e.g. fencing, tree guards)

For the purposes of the feasibility level cost estimate, the cost of adaptive management was assumed to be 10% of the total mitigation cost and is included in the Account 6 “Fish and Wildlife Facilities”.

5.0 References

NJDEP, Office of Policy Implementation. Site available at: http://www.state.nj.us/dep/opi/wetland-bank-photos.html#pio-costa. Site accessed 5 January 2018.

Attachment A

Tables of Common Tree and Shrub Species Used for Habitat Mitigation

Table 1: Native Forested Wetland Tree Species

Common Name	Latin Name
Sugar Maple	*Acer saccharinum*
River birch	*Betula nigra*
Green ash	*Fraxinus Pensylvanica*
Sycamore	*Platanus occidentalis*
Black willow	*Salix nigra*

Table 2: Native Wetland Shrub Species

Common Name	Latin Name
Alder	*Alnus serrulata*
Red chokeberry	*Aronia arbutifolia*
Common buttonbush	*Cephalanthus occidentalis*
Silky dogwood	*Cornus amomum*
Red osier dogwood	*Cornus sericea*
Inkberry	*Ilex glabra*
Common winterberry	*Ilex verticillata*
Northern Spicebush	*Lindera benzoin*
Black elder	*Sambucus Canadensis*
Steeplebush	*Spiraea tomentosa*
Highbush blueberry	*Vaccinium corymbosum*

Table 3: Native Upland and Riparian Tree Species

Common Name	Latin Name
Ash-leaf maple	*Acer negundo*
Red maple	*Acer rubrum*
Canadian serviceberry	*Amelanchier Canadensis*
Shagbark hickory	*Carya ovata*
American beech	*Fagus grandifolia*
Tuliptree	*Liriodendron tulipfera*
Black gum	*Nyssa sylvatica*
White oak	*Quercus alba*
Northern red oak	*Quercus rubra*

Attachment B

Native Pollinator Species

NRCS Natural Resources Conservation Service

220 Davidson Avenue 4th Floor
Somerset, NJ 08873
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NJ BIOLOGY TECHNICAL NOTE

Habitat Development for Pollinators

As many as two-thirds of the world's crop species depend on insects for pollination, and this may account for 15-30 percent of the food we consume. In the United States one third of all agricultural output depends on pollinators. More than 90 crops in North America depend upon bees for pollination. In New Jersey crops such as apples, peaches, strawberries, blueberries, cranberries, pumpkins, cucumbers, squash and more depend upon insect pollination. The seeds of many forage crops used by New Jersey livestock producers such as clover and alfalfa require insect pollinators. Pollinators are also important to the function of many terrestrial ecosystems because they enhance native plant reproduction. Native plants provide food and cover for numerous wildlife species, help stabilize the soil and improve water quality. As a group, pollinators are threatened worldwide by habitat loss and fragmentation, pesticides, disease, and parasites. This has serious economic implications for native ecosystem diversity and stability, for agricultural producers, and for all consumers of agricultural products.

Honey bees, first brought to the United States from Europe in the 1600s, have been used by farmers for many years for pollination of crops. Honey bee populations are experiencing sharp declines recently due to honey bee pests and diseases. Prices for rental of honey bee colonies have doubled in recent years and many crop producers report it has even become hard to secure any honey bees for pollination services. Wild honey bee colonies, once common on New Jersey farms, are almost non-existent due to the recent pests and diseases.

Native pollinators such as bees and butterflies are often underestimated when it comes to pollination. Except for the larger bumble bees, many native bees are small, solitary, non-social insects. While some species look like bees, many are very small and look like flies or flying ants. Native bees can contribute significantly to crop pollination, and if the proper conditions exist on farms they may provide all the pollination needs of some crops. Some researchers suggest that crops pollinated by wild bees in the United States are valued at $2 to $3 billion annually. Researchers around the country are learning more about native pollinators such as their role in crop pollination and what producers can do to benefit habitat for native bees on their farms.

To provide habitat for native pollinators, diverse floral sources that provide a succession of flowers are needed. Some floral sources should be available throughout the spring, summer and fall so nectar and pollen are available to insects for the entire growing season. Bees and butterflies have good color vision so choose flowers of several colors – particularly blues, purple, violet, yellow and white. Provide flowers of different shapes to attract pollinators with different body sizes and mouthparts. Use native plants first since these are usually adapted to New Jersey's growing conditions and native pollinators evolved with these plants.

Quality nesting sites must also be available for native pollinators to thrive. Many native bee species are digger bees that nest underground. Nesting sites may be underground in sunny, well drained, partially bare areas adjacent to crop fields. Other species nest in hollow twigs of dead shrubs,

tunnels in dead trees left behind by wood-boring beetles, or excavate nests in above-ground rotting logs and stumps. Cranberry growers report some success in providing artificial nesting structures or "trap nests" made by drilling ten to twenty 5/16" diameter holes, 4"-10" deep, in blocks of wood that are erected near bogs for leaf-cutting bees. Bumble bees are social insects and build nests just under or near the soil surface in small depressions such as old mammal borrows or under fallen plant matter. Leaf cutting bees and bumble bees are very effective pollinators of cranberries and blueberries. Bee nesting areas can be established on sunny, south facing slopes on well-drained soils. A combination of bare soil, brush piles, standing dead trees and flowering forbs, shrubs and trees is ideal. Several of these areas could be located strategically around a farm since many native pollinators do not fly long distances like honeybees.

Another practice important to native pollinators on farms is integrated pest management. Pesticides can inadvertently kill beneficial insects or beneficial plants. Contaminated nectar and pollen can be collected by bees and brought back to nests to feed to larvae, causing reproduction failures. Insecticides, if necessary, should be chosen wisely and applied during times when beneficial insects are least active. Indiscriminant herbicide use should be discouraged, and herbicides should be targeted directly at specific weed problems. Odd areas, hedgerows, filter strips and field borders may appear "weedy" but can provide important pollinator habitat and should be protected from pesticides.

NRCS can assist landowners with habitat enhancement for pollinators by encouraging them to establish an array of plants that flower throughout the growing season to provide a source of nectar for adult pollinators and a diversity of herbaceous material for immature pollinator life stages. In addition, bee shelter areas can be designated on farms to provide nesting sites. The Upland Wildlife Habitat Management or Early Successional Habitat Development/Management standards and specifications could be used in conservation plans for pollinator habitat. In general, diverse upland wildlife habitat on farms, in areas such as hedgerows, odd areas and field borders, with diverse native plants and if protected from pesticides, will be good pollinator habitat.

The pollinator habitat development practices discussed above will help enhance farms for native pollinators and likely help with crop pollination. One or more of the items discussed above could easily be worked into most farm conservation plans. These practices will also provide habitat for many other wildlife species including many beneficial insects. In 2007, the New Jersey Wildlife Habitat Incentive Program (WHIP) includes cost sharing assistance for "Pollinator Meadows" as a component of Early Successional Habitat Development/Management (Practice Code 647). The plants on the attached list provide some good guidance on pollinator plants for New Jersey and will be updated as further results are obtained from ongoing local research projects. For specific planting recommendations or developing seed mixes, contact the NRCS Biologist in your region. The references listed provide more detailed information on specific pollinator topics and should be reviewed prior to adding pollinator practices into conservation plans. Selected references could also be provided to landowners interested in pollinator habitat enhancement.

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Beneficial Plant Species for NJ Pollinators on Farms

Common Name	Scientific Name	Early-Mid-Late Summer Flowering Period	Wetland Indicator Status*	Benefits
Native Herbaceous Perennials				
Goldenrods	*Solidago* spp.	Mid and Late	various	Many native bee spp. and honeybees use, one of the best bee plants
Asters	*Aster* spp.	Late	various	Many native bee spp. and honeybees use, one of the best bee plants
Bee Balm, Wild Bergamot	*Monarda fistulosa*	Mid	UPL	Excellent bee plant. Substitute M. *punctata* (horsemint) in S. Jersey
Showy Tick Treefoil	*Desmodium canadense*	Mid	FAC	Long summer flowering period
Wild Columbine	*Aquilegia canadensis*	Early	FAC	Good early bee plant
Wild Indigo	*Baptisia tinctoria*	Mid	**U**	Yellow flowers
Common Boneset	*Eupatorium perfoliatum*	Mid to Late	FACW	Excellent butterfly and bee plants
Joe-Pye Weed	*Eupatorium purpureum*	Mid to Late	FAC	Excellent butterfly and bee plants
Giant Sunflower	*Helianthus giganteus*	Mid to Late	FACW	Large, up to 8' tall, very showy
Ox Eye Sunflower	*Heliopsis helianthoides*	Mid to Late	**U**	Long bloom period, up to 4' tall, yellow flowers
Round-headed Bush Clover	*Lespedeza capitata*	Late	FACU	Native clover
Milkweeds	*Asclepias* spp.	Mid	various	Excellent butterfly and bee plants
Blazing Star	*Liatris spicata*	Mid	FAC	Pink, purple spikes
Wild Lupine	*Lupinus perennis*	Early	**U**	Large blue flowers
Beardtounge	*Penstemon digitalis*	Early	FAC	White to purple tinged flowers
Black-eyed Susan	*Rudbeckia hirta*	Mid to Late	FACU	Common volunteer
Blue Vervain	*Verbena hastata*	Late	FACW	Moist areas
Jewelweed	*Impatiens capensis* or *pallida*	Mid	FACW	Common in moist woodlands, no commercial seed source
Great Blue lobelia	*Lobelia siphilitica*	Late	FACW	Showy blue flowers
Purple Coneflower	*Echinacea purpurea*	Mid	**U**	Showy pink flowers
Evening Primrose	*Oenothera biennis*	Mid to Late	FACU	Common volunteer, showy yellow flowers
Fleabanes	*Erigeron* spp.	Mid to Late	various	Common weed on farms, no seed sources
Non-native Herbaceous Perennials				
White Clover	*Trifolium repens*	Mid	FACU	Excellent honeybee nectar source, native bee use
Red Clover	*Trifolium pratense*	Mid	FACU	Excellent honeybee nectar source, native bee use
Crimson Clover (annual)	*Triflium incarnatum*	Early to Mid	**U**	Excellent honeybee nectar source, native bee use
Bird's Foot Trefoil	*Lotus corniculatis*	Mid	FACU	Excellent honeybee nectar source, native bee use
Sweet Clover (biennial)	*Melilotus officinalis*	Mid	**U**	Excellent honeybee nectar source, native bee use. Can be invasive
Mustards	*Brassica* spp.	Early	various	Very early yellow flowers
Dandelion	*Taraxacum officinale*	Early	FACU	Very common weed, good pollen source. Can be invasive
Daisies	*Chrysanthemum* spp.	Mid to Late	various	Showy white flower

Trees/Shrubs				
New Jersey Tea	*Ceanothus americanus*	Mid	**U**	Low upland woodland shrub
Sweet Pepperbush	*Clethra alnifolia*	Mid	FAC	Moist woodland shrub, sweet smelling flowers
Wild Plum	*Prunus americana*	Early	FACU	Shrub. Substitute *P. maritima* (Beach Plum) in coastal areas
Black locust	*Robinia pseudoacacia*	Early	FACU	Tree. Excellent bee nectar source. Some authors list as non-native
Steeplebush, Meadowsweet	*Spirea tomentosa*	Mid to Late	FACW	Small shrub in moist soils
Willow	*Salix* spp.	Early	various	Trees and shrubs. Early pollen source, impt. to many native bees.
Hawthorns, Thorn Apple	*Crataegus* spp.	Early to Mid	various	Many species, thorny shrubs
Red Maple	*Acer rubrum*	Early	FAC	Tree provides abundant early pollen sources
Sumac	*Rhus* spp.	Mid	various	Common shrub of odd areas on farms
Juneberry, Shadbush	*Amalanchier* spp.	Early	various	Small tree with early white flowers attract many insects
Dogwoods	*Cornus* spp.	Early-Mid	various	Showy white spring flowers attract many insects
Apple, Crabapple (non-native)	*Malus* spp.	Early-Mid	various	Showy white spring flowers attract many insects
Raspberries, Blackberries	*Rubus* spp.	Early-Mid	various	Showy white spring flowers attract many insects
Black Cherry	*Prunus serotina*	Early-Mid	FACU	Common tree on NJ farms. Good fall fruit for wildlife
Button Bush	*Cephalanthus occidentalis*	Mid	OBL	Shrub of very wet sites only

*From US Fish Wildlife Service National List of Plant Species That Occur in Wetlands – Northeast Region. Plants with a "**U**" normally would not occur in wetlands and are totally upland species and are not on the list ("**U**" is not an official US FWS designation). Plants with the "various" designation include several species that are good pollinator plants, with several different wetland indicator status designations. Check the wetland indicator status from the US FWS list for the specific plant chosen.

Plant List References:

Alternative Pollinators: Native Bees. 1999. Lane Greer. National Sustainable Agriculture Information Service - National Center for Appropriate Technology. Publication #IP126.

Conservation and Management of Native Bees in Cranberry. Loose, J.L.; Drummond, F.A.; Stubbs, C; Woods, S. and Hoffmann, S. 2005. Maine Agricultural and Forest Experiment Station. Technical Bulletin 191. Orono, ME.

New Jersey Wild Plants. 1983. Mary Y. Hough. Harmony Press. Harmony, NJ.

Newcomb's Wildflower Guide. 1977. Lawrence Newcomb. Little Brown and Company. Boston –Toronto.

Peterson's Field Guide to the Trees and Shrubs. 1972. George Petrides. Houghton Mifflan Co. Boston, MA.

Plants Attractive to Native Bees. USDA Agricultural Research Service. Pollinating Insect- Biology, Management, Systematics Research. Utah State University. Logan, Utah.

Plants for Native Bees. Shepherd, M. The Xerces Society. Portland, OR

Some Recommended Native New Jersey Plants for Pollinators

Upland: Plants that occur almost always (estimated probability 99%) under natural conditions in non-wetlands.

	Species	Characteristics	Some benefiting species	Bloom time
Perennial flower	Common milkweed (*Asclepias syriaca*)	Erect perennial with deep green leaves and clusters of lavender-pink flowers. Deer resistant, hardy once established, can reseed. Plant seeds in the fall.	Host plant for monarch	June-August
	Wild bergamot/ beebalm (*Monarda fistulosa*)	Pink/lavender flowers, grows 2 to 4 feet tall. Grows in thickets and woodland borders, highly drought resistant.	Larval host for hermit sphinx moth, gray marvel moth	June-September
Shrub	New Jersey tea/redroot (*Ceanothus americanus*)	Small white clusters of flowers at the tip of branches. Prefers full sun to partial shade in dry to medium wet soils. Drought tolerant.	Attractive to hummingbirds and butterflies	March-April

Facultative Upland: Plants that usually occur in non-wetlands (estimated probability 67%-99%), but occasionally found on wetlands (estimated probability 1%-33%).

	Species	Characteristics	Some benefiting species	Bloom time
Perennial flower	Purple coneflower (*Echinacea purpurea*)	Rose pink flower, 2-4 feet high, tolerates sun to partial shade.	Host plant for silvery checkerspot	June-September
	Black-eyed-susans (*Rudbeckia hirta)*	Yellow, daisy-like flower heads around a brown central cone. Grows well in poor soils, no flood tolerance.	Host plant for silvery checkerspot	June-September
	Lanceleaf tickseed (*Coreopsis lanceolata*)	Yellow flower with yellow center. Prefers full sun and dry to medium soils. Deer and drought tolerant.	Attractive to butterflies	April-June
	Blue false indigo (*Baptisia australis*)	Blue-purple flowers. Hardy, attractive. Tolerates sun to partial shade.	Host plant for hoary edge	May-June
	Butterfly milkweed (*Asclepias tuberosa*):	Yellow to orange flowers. Very deer resistant, hardy once established, can reseed, attractive flowers. Plant seeds in the fall.	Host plant for monarch	May-August
	Canada goldenrod (*Solidago canadensis*)	Yellow flowers. Can be used to revegetate disturbed sites. Prefers full sun to partial shade and moist soils.	Host plant for Baltimore checkerspot	June-October
Annual forb	Common sunflower (*Helianthus annuus*)	Yellow flower, 1-8 feet tall. Requires full sun. Moderately deer resistant.	Host plant for silvery checkerspot	July-October

Warm season grass	Big bluestem (*Andropogon gerardii*)	Bunchgrass that has red, blue and brown flowers and foliage. It has a distinctive 3 part, finger-like flower cluster. Tolerant of moderate salinity, good for erosion control. Can grow to 7 or more feet tall with roots nearly as deep.	Host plant for Delaware skipper, dusted skipper	August-November
Tree	Redbud (*Cercis canadensis*)	Magenta pink flowers. Shade tolerant, nitrogen fixer, highly vulnerable to deer browse.	Host plant for Henry's elfin butterfly	March-May

<u>Facultative</u>: Plants that are equally likely to occur in wetlands or non-wetlands (estimated probability 34%-66%).

	Species	**Characteristics**	**Some benefiting species**	**Bloom time**
Perennial flower	Blazing star (*Liatris spicata)*	Lavender to rose-purple flowers. Flowers top to bottom, tolerates a variety of soils.	Special value for native bees	July-October
	Wild columbine (*Aquilegia canadensis*)	Erect, branching plant with red and yellow flowers. Can reseed, drought tolerant.	Host plant for columbine dustywing	April-June
Shrubs	Arrowwood (*Viburnum dentatum)*	Shrub with white, flat top flower clusters. Tolerates seasonal inundation, somewhat salt tolerant, grows in clay soils, attractive flowers and berries.	Host plant for spring azure	May-June
	Nannyberry (*Viburnum lentago*)	White flowers with dense, dark green foliage. Shade tolerant, tolerates seasonal inundation, fruits late summer, and tolerates a variety of conditions.	Host plant for spring azure	May-June
Warm-season grass	Switchgrass (*Panicum virgatum*)	Clump-forming grass with open, lacy sprays with small seeds. Good for erosion control and is drought tolerant.	Host plant for Delaware skipper	August-October

<u>Facultative wetland</u>: Plants that usually occur in wetlands (estimated probability 67%-99%), but occasionally found in non-wetlands.

	Species	**Characteristics**	**Some benefiting species**	**Bloom time**
Perennial flower	Joe-pye weed (*Eupatorium maculatum)*	Large pinkish-purplish, flat-topped cluster of fuzzy flower heads, 2-7 ft., with narrow, lance-shaped leaves. Plant seeds in the fall.	Host plant for bordered patch and painted lady	July-September
	Ironweed (*Vernonia noveboracensis*)	Small red, purple flower heads occur in flat-topped, terminal clusters. Tolerates seasonal inundation. Requires cold stratification.	Host plant for painted lady	August-October
	Turk's cap lily (*Lilium superbum*)	Native lily with drooping, orange flowers with strongly recurved petals. Requires full sun to partial shade and medium to wet soils. Vulnerable to deer browse.	Attracts hummingbirds	July-September
	New England aster (*Aster novae-angliae*)	Bright, rose-purple flowers with orange-yellow centers. Requires full sun and medium wet soils.	Host plant for pearl crescent caterpillars	August-September

	Cardinal flower (*Lobelia cardinalis*)	Red or blue-violet flowers. Partial shade tolerant, tolerant of irregular inundation.	Attracts hummingbirds and butterflies	July-September
	Swamp sunflower (*Helianthus angustifolius*)	Yellow, flower like heads. Plant in partial shade in wet soils.	Native bees	August-October
Shrubs	Elderberry (*Sambucus canadensis*)	White flowers in broad, flat, conspicuous clusters up to 10 inches or more in diameter. Tolerant of seasonal inundation, good for riparian areas and flood plains, attractive flowers and fruits. Poisonous. Fruits in mid-summer before most other shrubs.	Mason bees, berries are a favored food for birds (e.g. bluebirds)	June-July
	Sweet pepperbush (*Clethra alnifolia*)	Fragrant flowers are white and are followed by brown capsules which persist through winter. Shade tolerant, tolerates irregular inundation, long bloom time, disease resistant, hardy.	Attractive to butterflies and especially good for native bees	July-August
	Spicebush (*Lindera benzoin*)	Dense clusters of tiny, pale yellow flowers. Shade tolerant, tolerates seasonal inundation, fruits in late summer, can grow under black walnut.	Host plant for spicebush swallowtail	April
	Cranberry bush (*Viburnum opulus var. americanum*) (*V. trilobum*)	White, flat-topped clusters of flowers, followed by persistent red berries. Tolerates irregular inundation, provides fruits for birds in fall and winter (e.g. cedar waxwing).	Host plant for spring azure	May-July

Obligate wetland: Plants that occur almost always (estimated probability 99%) under natural conditions in wetlands.

	Species	**Characteristics**	**Some benefiting species**	**Bloom time**
Perennial flower	Swamp milkweed (*Asclepias incarnate*)	Deep pink flowers clustered at the top of a tall, branching stem. Very deer resistant, hardy once established, can reseed, attractive flowers.	Host plant for monarch	June-October
	Blueflag iris (*Iris versicolor*)	Down-curved, violet flowers. Plant in full sun to partial shade, in medium to wet soils. Flood tolerant (18-30 inches), salt tolerant.	Good for rain gardens	June-July
	Pickerelweed (*Pontederia cordata*)	Deep blue flowers are on a spike about 6 inches long that bloom from the bottom up. Plant in wet soils, in full sun. Flood tolerant (12 inches), salt tolerant.	Attractive to butterflies, good for rain gardens	June-November
Shrub	Buttonbush (*Cephalanthus occidentalis*)	White or pale-pink blossoms formed into one-inch globes. Shade tolerant, flood tolerant (12 inches), fruits in the fall, and is good for erosion control.	Attractive to butterflies. Good for birds such as wood duck	June-September

Resources:

www.pollinators.org

www.wildflower.org

www.plants.usda.gov

Peckman River Basin, New Jersey
Flood Risk Management Feasibility Study

A.9 Draft Feasibility Report/Environmental Assessment Distribution List

Draft Feasibility Report/Environmental Assessment Distribution List

Federal Agencies

U.S. Environmental Protection Agency Region 2 Attn: Grace Musumeci 290 Broadway New York, NY 10007-1866	U.S. Fish and Wildlife Service New Jersey Field Office Attn: Eric Schrader 4 East Jimmie Leeds Road, Unit 4 Galloway, New Jersey 08205

Federally Recognized Tribes

Delaware Nation Kim Penrod P.O. Box 825 Anadarko, OK 73005 kpenrod@delawarenation.com	Delaware Tribe of Indians Ms. Susan Bachor Delaware Tribe Historic Preservation Representative P.O. Box 64 Pocono Lake, PA 18347 temple@delawaretribe.org

State Agencies

New Jersey Department of Environmental Protection, Division of Dam Safety and Flood Control Attn: John Moyle	New Jersey Historic Preservation Office Ms. Katherine Marcopul Deputy State Historic Preservation Officer P.O. Box 420 Trenton, NJ 08625-0420 Kate.Marcopul@dep.state.nj.us
New Jersey Department of Environmental Protection, Office of Permit Coordination and Environmental Review Attn: Michelle Brunetti 401 East State Street P.O. Box 420 Trenton, NJ 08625	

County Agencies

Passaic County Freeholders Passaic County Administration Building 401 Grand Street Paterson, NJ 07505 contact@passaiccountyny.org	Passaic County Parks and Recreation Passaic County Administration Building 401 Grand Street Paterson, NJ 07505
Passaic County Planning Department Attn: Jonathan Pera, Principal Engineer 401 Grand Street Paterson, NJ 07505	Friends of Passaic County Parks (County established non-profit) fopcparks@gmail.com

Municipalities

Township of Cedar Grove Mayor Peter Tanella 525 Pompton Ave Cedar Grove, NJ 07009	Town of Little Falls Mayor James Damiano 225 Main Street Little Falls, NJ 07424
Woodland Park Borough Mayor Keith Kazmark 5 Brophy Lane Woodland Park, NJ 07424	

Non-Government Organizations

Sierra Club New Jersey Chapter 139 West Hanover Street Trenton, NJ 08618	Passaic River Coalition 330 Speedwell Avenue Morristown, NJ info@passaicriver.org
Association of New Jersey Environmental Commissions (ANJEC) P.O. Box 157 Mendham, NJ 07945	Little Falls Historical Society PO Box 1083 Little Falls, New Jersey 07424

Peckman River Basin, New Jersey
Flood Risk Management Feasibility Study

A.10 Draft Finding of No Significant Impact

Draft Finding of No Significant Impact (FONSI)

I. DESCRIPTION OF ACTION

The proposed action involves the implementation of flood risk management measures in the Town of Little Falls and the Borough of Woodland Park, Passaic County. Specific project elements include: a) treatment of approximately 118 structures located within the 10-yr floodplain with nonstructural measures in the Town of Little Falls to include the installation of ringwalls; b) installation of a diversion culvert from the Peckman River to the Passaic River; c) construction of floodwalls and a levee along the Peckman River; d) construction of floodwalls and a levee along Great Notch Brook; e) installation of an additional culvert within the Great Notch Brook under Browertown Rd to increase flow capacity.

The proposed action is authorized by the U.S. House of Representatives Resolution Docket 2644 dated 21 June 2000.

II. ALTERNATIVES

In addition to the proposed action described in section I of the FONSI, the following alternatives were evaluated in the *Peckman River Basin Flood Risk Management Feasibility Report and Environnmental Assessment*:1) No Action; 2) Nonstructural measures; 3) Diversion Culvert; 4) Channelization upstream and downstream of Rt. 46; 5) Levee/floodwall upstream and downstream of Rt. 46; 6) Levee/Floodwall downstream of Rt. 46; 7) Channelziation downstream of Rt. 46; 8) Channelization upstream of Rt. 46 plus Diversion Culvert; 9) Levee/floodwall upstream of Rt. 46 plus Diversion Culvert; 10a) Diversion Culvvert plus 50 year nonstructural measures upstream of Rt. 46; and 10b) Diversion Culvert plus 10 year nonstructural measures upstream of Rt. 46.

III. ANTICIPATED ENVIRONMENTAL CONSEQUENCES

A full assessment of impacts associated with the No Action Alternative and Proposed Action were evaluated in the attached *Peckman River Basin Flood Risk Management Feasibility Report and Environmental Assessment.* A summary of anticipated environmental consequences is as follows:

- The project will not negatively impact public health or safety. Rather, the project serves to improve public health and safety through the implementation of flood risk management measures.
- The project will not negatively impact the quality of the human environment.
- The project will not have significant long-term impact on endangered, threatened or special concern State and Federal species. To comply with Section 7 of the Endangered Species Act, a tree clearing restriction window of 15 April through 30 September will be established during construction as a precautionary measure to protect Indiana bat (*Myotis sodalist*), a federally endangered species and northern long-eared bat (*Myotis septentrionalis*), a federally threatened species.
- A restriction on the clearing of shrubs and trees from 1 April through 31 August will be implemented during construction activities to comply with the Migratory Bird Treaty Act.
- An in-water work restriction from 1 May – 31 July will be implemented during construction activities to protect any spawning freshwater fish species.

- Standard erosion control techniques, including turbidity barriers, will minimize excess sedimentation to the Peckman and Passaic Rivers and the Great Notch Brook during construction.
- Approximately four acres of forested wetlands may be permanently impacted and one acre of forested wetlands will experience temporary impacts as a result of the construction of the levee along the Peckman River. The District will provide compensatory mitigation for the permanent impact through either the purchase of mitigation credits at a New Jersey State approved mitigation bank, or through off-site compensatory wetland mitigation, or a combination of these two options. The temporary impacts will be mitigated on site through any modifications to the topography necessary to maintain wetland hydrology and re-establishment of native wetland vegetation.
- Approximately 1,000 linear feet of the Peckman River will be permanently impacted by channel improvements associated with the installation of a weir to the diversion culvert. In addition, approximately 100 linear feet of the Passaic River will be permanently impacted through the installation of a riprap stilling basin at the discharge location of the diversion culvert. The District will provide compensatory mitigation through the purchase of mitigation credits from a New Jersey State approved mitigation bank, or through enhancement and/or restoration of 1,100 linear feet of open water habitat within the Peckman and Passaic Rivers, or a combination of these options.
- Approximately 2.5 acres of riparian zone will be permanently impacted by the construction of the levee along the Peckman River, the levee and floodwalls along Great Notch and the stilling basin along the Passaic River. The District is proposing compensatory mitigation through either the purchase of riparian mitigation credits at an approved New Jersey State approved mitigation bank, or though off-site enhancement and/or restoration of riparian zone within the project area, or a combination of these options.
- There is a potential for adverse effects to archaeological sites within the identified Area of Potential Effects for the project area. A Programmatic Agreement has been prepared in coordination with the New Jersey State Historic Preservation Office, the Advisory Council on Historic Preservation, federally-recognized Tribes and other interested parties to ensure that adverse effects are managed in accordance with Section 106 of the National Historic Preservation Act as the project moves forward. Avoidance, minimization, and mitigation measures will be employed as appropriate to reduce or eliminate adverse impacts to historic properties.
- The Peckman Preserve, which may be evaluated by the District for potential off-site wetland and riparian habitat mitigation is encumbered by New Jersey Green Acres restrictions. Any proposed habitat mitigation will be designed in conformance with the parks overall master plan and will therefore be in compliance with Green Acres regulations.
- The anticipated emission levels for NOx emissions from construction equipment are below the *de minimis* levels established for General Conformity and have been documented with a Record of Non-Applicability (see Appendix A6).
- No adverse cumulative impacts are associated with project implementation when assessed in conjunction with other past, present or future actions. When assessed with other past, present, or future flood risk management efforts, within the Peckman River Basin, positive

cumulative impacts include a regional long term risk reduction to loss of life and property/infrastructure damages resulting from flood events.

IV. COORDINATION

The New York District has coordinated this project with Federal and State resource agencies and the interested public and issued a Notice of Availability of the draft Environmental Assessment (EA) in order to:

a. Inform agencies and stakeholders of the proposed work and the environmental evaluation contained in the draft EA, and
b. Provide an opportunity for comments on that evaluation and findings.

V. CONCLUSION

Based on my review and evaluation of the environmental effects as presented in the Environmental Assessment, I have determined that the proposed action to provide flood risk management for the Town of Little Falls and the Borough of Woodland Park, Passaic County is not a major federal action significantly affecting the quality of the human environment. Therefore, I have determined that this project is exempt from the requirement to prepare an Environmental Impact Statement.

Date:_____ _____

Thomas D. Asbery
Colonel, U.S. Army
Commander

Peckman River Basin, New Jersey
Flood Risk Management Feasibility Study

A.11 Phase I Environmental Site Assessment

PHASE I ENVIRONMENTAL SITE ASSESSMENT
PECKMAN RIVER FLOOD RISK MANAGEMENT PROJECT
PASSAIC COUNTY, NEW JERSEY
JANUARY 2018

Richard Dabal
US Army Corps of Engineers, New York District

Acronyms:
ESA - Environmental Site Assessment
HTRW – Hazardous, Toxic, Radioactive Wastes
NJAC – New Jersey Administrative Code
NJDEP - New Jersey Department of Environmental Protection
PCBs – Polychlorinated biphenyls
PPM – Part Per Million
RCRA – Resource, Conservation, Recovery Act
SVOA – Semi-Volatile Organics
TSP – Tentatively Selected Plan
VOA – Volatile Organic

Executive Summary:
As part of the overall flood risk management feasibility study of the Peckman River Basin a Phase I Environmental Site Assessment (ESA) and sub-surface site characterization was conducted. The purpose of this assessment is to determine any potential environmental contamination issues that could impact the proposed project. The project currently proposed is a combination of flood walls, diversion culvert, levees, channel modification and non-structural measures within the Township of Little Falls along the Peckman River and a system of floodwall and levee on the Great Notch Brook in the Borough of Woodland Park. The culvert would be located just upstream of the Route 46 Bridge. The culvert's purpose is to reduce the flooding potential at Route 46 and Woodland Park. Records review of several data bases for any current and past industrial, commercial or other activity that may pose potential impact to the project was conducted. Review of these data bases showed no major activities that would impact the project.

Introduction:
The purpose of this Phase I is to identify any HTRW conditions that indicate past or current release of potential contaminants to ground water or surface waters of the project site. A Phase I is required by US Army Corps of Engineers Engineering Regulation(ER) 1165-2-132 Hazardous, Toxic, Radioactive Waste (HTRW) Guidance for Civil Works Projects.

The scope of this ESA is limited to the areas of the proposed construction for this project as defined by the Tentatively Selected Plan (TSP). Sites identified from environmental databases will be classified according to their potential impact on the project area. Sites will be identified as having significant

impacts to project construction or as no impact. The Phase II site assessment involved the analysis of soil borings taken within the study area.

Site Location/Description:

The area of the proposed construction is located within the Township of Little Falls and the Borough of Woodland Park, Passaic County. The Peckman River is a small stream that flows northward from its origin in Essex County several miles north through several municipalities before joining the Passaic River in the Borough of Woodland Park. The entire river basin is approximately eight square miles. Within that area is a densely developed suburban environment with a mix of mainly single family homes, commercial areas, a major highway with strip mall commercial zones and occasional small wooded areas adjacent to the river. Historically the area has been residential with locally small scale light manufacturing or warehouses. These activities disappeared or re-located to other areas and the locations have now been redeveloped into housing or office buildings. Because of the high density of development the Peckman River is prone to flash floods. Over the years, this type flooding has caused considerable damage to homes, commercial properties and caused closure of Route 46 which a major east west route for this part of the state.

Records Review:

The following databases were reviewed:
National Priorities List (NPL)
CERCLIS (Comprehensive Environmental Response Compensation and Liability Information System)
SEM (Superfund Enterprise Management System)
Resource Conservation and Recovery Information System (RCRIS)
KCS – Known Contaminated Sites (Database maintained by the NJDEP)
Toxic Release Inventory System (TRIS)

Based on the database review, there are no known contaminated sites within the proposed project area.

Site Reconnaissance:

The US Army Corps of Engineers, New York District (District) in addition to the database review, completed a series of borings in October 2011 within the project area. Borings were conducted using a direct push ("GeoProbe") and truck mounted rotary type drill rig. Soil samples were collected from surface to top of bedrock or 25 feet below ground surface, which ever was encountered first.

Site Reconnaissance Findings:

A total of 23 soil borings were completed. The boring locations along the Peckman River in Verona, Little Falls and Woodland Park. Additional borings took place along Route 46 in Little Falls along the Great Notch Brook, a tributary to the Peckman River. Like the Peckman River, the Great Notch Brook is also prone to flash flooding. The 23 soil collected were analyzed for: 1) Volatile Organics+15 (VOA); 2) Semi-Volatile Organics+25 (SVOA); 3) Pesticides; 4) PCBs; and 5) RCRA metals. Analytical results were compared to the NJAC -7:26D – Non-Residential Direct Contact Soil Remediation Standard, 2017 (NRDCSRS). The reason for using this standard is that no residential areas were/are adjacent to these boring locations and the potential location of the flood control structures in these areas. Of the five

categories analyzed, VOAs, Pesticides and PCBs were found at levels below threshold levels or non-detect, therefore they will not impact the proposed project.

Of the two other categories, SVOAs and RCRA metals were levels detected. Four SVOA compounds were detected but they did not exceed NRDCSRS thresholds. There was no pattern to the distribution of these detections and levels found. The soil borings where the SVOAs were detected were taken from the Township of Little Falls Department of Public Works (DPW) yard and the off-ramp from Route 46. Of the eight RCRA metals analyzed for, only two, arsenic and lead, were detected. Only two samples had detects of these metals. These samples came from a parking lot for a commercial office building and the DPW yard. The arsenic detect barely exceeds the NJDEP threshold (22 ppm verses NJDEP limit of 19 ppm). The lead detects from the DPW yard is 600 ppm and from the commercial office building parking lot was 403 ppm, both below the NJDEP threshold of 800 ppm. The detects at the DPW yard is likely the result of the activities undertaken at the yard and the presence of fill in this area. Similarly, the detect at the office building is most likely from backfill used at time of construction.

Non-Structural Measures:
A number of structures within the Township of Little Falls have been identified for non-structural measures, including wet and dry floodproofing and elevations. Many of these structures are fifty years or older and are likely to have lead-based paint (LBP) and/or asbestos-containing materials (ACM).

According to USACE policy, no elevation or floodproofing can occur to structures with asbestos, ACM, or LBP if the proposed actions may affect these contaminants. Prior to any actions being conducted, the asbestos, ACM, or LBP that may be disturbed by the elevation or floodproofing activity must be removed. For all structures proposed for nonstructural activities, an asbestos investigation will be conducted to confirm the presence/absence of damaged or friable asbestos, ACM, or LBP. If damaged or friable asbestos, ACM, or exposed LBP are confirmed on a property and will be impacted by the implementation of nonstructural measures, the property owner and/or non-Federal sponsor will be obligated, at their sole expense, to conduct all necessary response and remedial activities in compliance with all applicable local, state, and federal laws and regulations. Asbestos, ACM, and LBP that would not be affected by construction of the recommended nonstructural element(s) would not need to be removed prior to construction.

Recommendations:
Based on the review of the databases and the results of the geotechnical survey, there is no known impacts to the project elements. The structural measures should be constructed with minimal additional protocols for excavation and movement of the lead impacted soil. The SVOA impacted soils should not need additional protocols during excavation. Prior to construction, additional soil borings may be taken to the areal extent of the lead impacted soil or at other segment locations not previously subjected to soil borings to determine if additional management controls are required.

In accordance with ER 1165-2-132 *HTRW Guidance for Civil Works Projects*, if additional soil borings indicate the existence of any materials regulated by CERCLA within the project area that would be affected by construction, any necessary actions to remove these materials would be the responsibility of the non-Federal sponsor and are a full non-federal cost. The non-Federal sponsor would be required to

remove these materials prior to any construction activities being undertaken within the area of the identified contaminated area.

References:

ASTM E1527 Standard Practice for Environmental Site Assessments: Phase One Environmental Site Assessment Process. November 2005.
ASTM E1903-11 Standard Practice for Environmental Site Assessments: Phase Two Environmental Site Assessment Process
NJAC 7-26D Remediation Standards; 2017 – Non Residential Direct Contact Soil Remediation Standard