

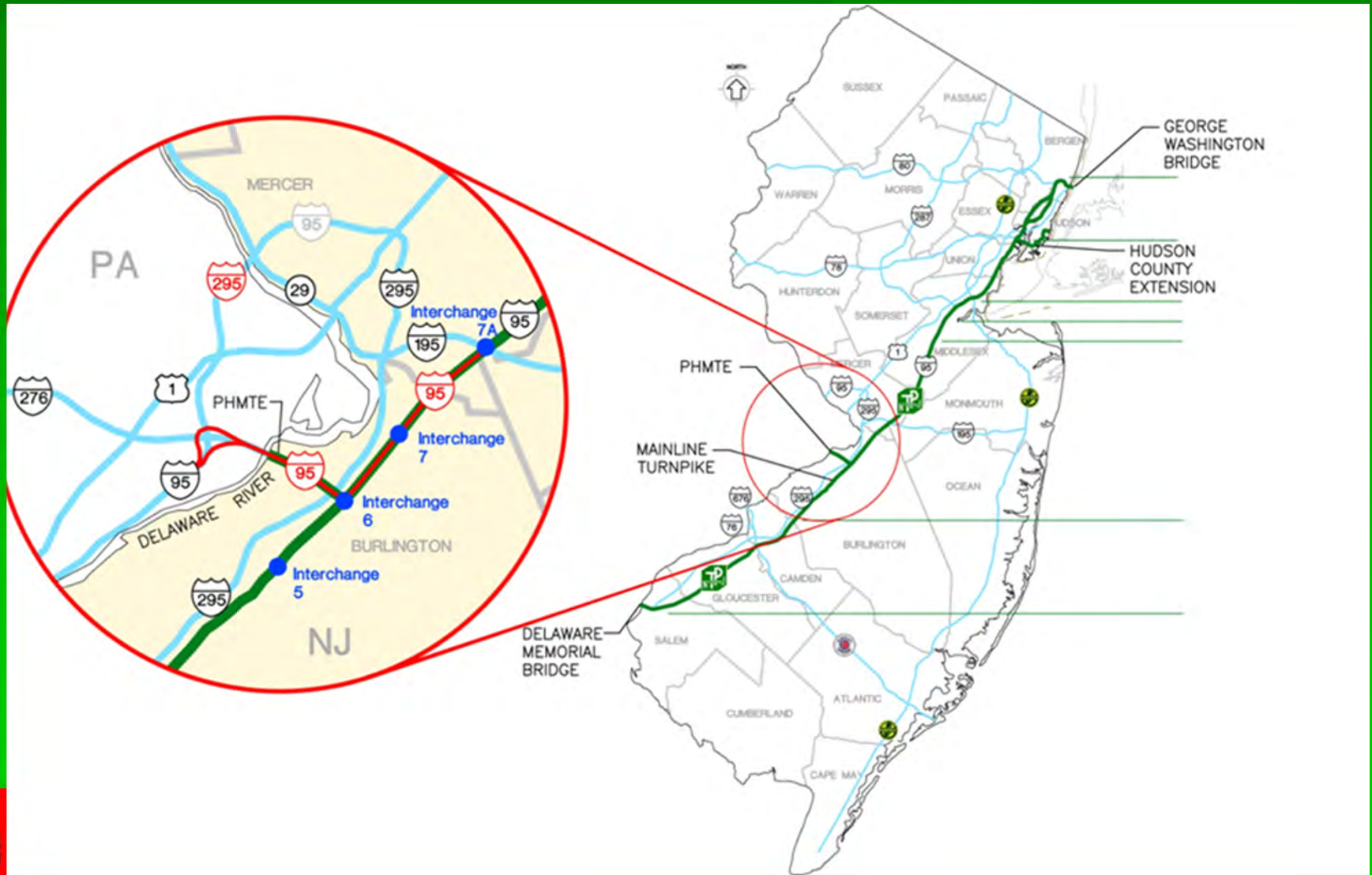
Maximizing Mitigation Efficiency through Credit Stacking

**NJ Turnpike Interchange 6 to 9
Widening Program**

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Project Location



What's the Problem?

Traffic growth over the next 20 years anticipated to be 68% or an average of 2.7% per year



Solution

Long Range Plan

Traffic Study - 2002

Identify Constraints - 2005

Develop Concept Studies - 2005

Public Information Centers - 2006

Environmental Impact Statement - 2007

Final Design / Permitting – 2008-2009

Construction – 2010 through 2015



Regulated Features

- Wetlands
- Threatened & Endangered Species/Critical Habitat
- Vernal Pool Habitat
- Riparian Zones



Environmental Impacts Included:

- Impacts to 120 acres of wetlands
- Potential Threatened/Endangered Species habitat (bog turtle, wood turtle, Indiana bat, Savannah sparrows, swamp pink)
- Category 1 Water (NJDEP N.J.A.C. 7:9)
- Forested Lands (NJ No-Net Loss Reforestation Act)
- Riparian Zones (NJDEP FHAPA, N.J.A.C. 7:13)
- Certified Vernal Pools (NJDEP FWPA, N.J.A.C. 7:7A)



Wetlands, Forests, Riparian Zones



Bog Turtle Habitat



Vernal Pools



Environmental Permits & Approvals

- Freshwater Wetlands Letter of Interpretation (LOI)
- Freshwater Wetlands Individual Permit (Assumption of Section 404)
- Flood Hazard Area Permit (Stream Encroachment Permit)
- Section 401 Water Quality Certification
- Reforestation Act Compliance
- Threatened and Endangered Species Approval (including Vernal Pool Certification)
- Soil Erosion and Sediment Control Plan Certification
- New Jersey Pollutant Discharge Elimination System (NJPDES)
- New Jersey Green Acres Program Approval (public parkland)
- Delaware and Raritan Canal Commission Approval
- State Agricultural Development Commission Approval



Wetland Permitting in NJ

- NJDEP Assumption of Section 404 in 1994 (Michigan the only other)
- NJDEP Freshwater Wetlands Individual Permit (FWIP)
- USEPA Review Triggered
 - Major Discharge – filling more than 5 acres
 - EPA had USACE review FWIP and provide comments to NJDEP
 - USACE allowed use of Wetland Mitigation Banks that were not approved by USACE
- NJDEP still administers Section 401-Water Quality Certificate



Wetland/Water Impacts

- **120.3 acres of Permanent Freshwater Wetland Impact**
 - 55.4 acres of Forested Wetlands
 - 21.1 acres of Scrub Shrub Wetlands
 - 19.1 acres of Emergent Wetlands
 - 24.7 acres of road side ditches* (replaced in-kind)
- **124 acres of Transition Area Impacts (wetland buffers)**
50 feet to 150 feet
- **2.1 acres of State open water Impacts**

* In NJ if stormwater features meet the criteria in the 1989 Federal Manual as a wetland, then the ditch is regulated by NJDEP.



Forested Wetland



Drained Agricultural Wetland



Roadside Ditch



Construction Impacts

- Streams



Construction Impacts

- Wetlands



Other Impacts

- **Reforestation**
 - 449 acres of trees removed in 7 municipalities
- **Riparian Zone**
 - 173 acres of impacts
- **Threatened and Endangered Species Habitat**
 - Bog Turtle (1 stream crossing)
 - Wood Turtle (3 stream crossings)
 - Swamp Pink (3 potential locations)
 - Indiana Bat (northern portion of Widening Program)
 - Bald Eagle (1 stream crossing)
- **Vernal Pools/Vernal Pool Habitat**
 - 2 pools impacted plus adjacent habitat



Mitigation Required:

- **Wetland and Open Water Impacts**
- **Vernal Pools/Vernal Pool Habitat**
- **Critical Habitat (threatened & endangered species)**
- **Riparian Zone**
- **Reforestation**



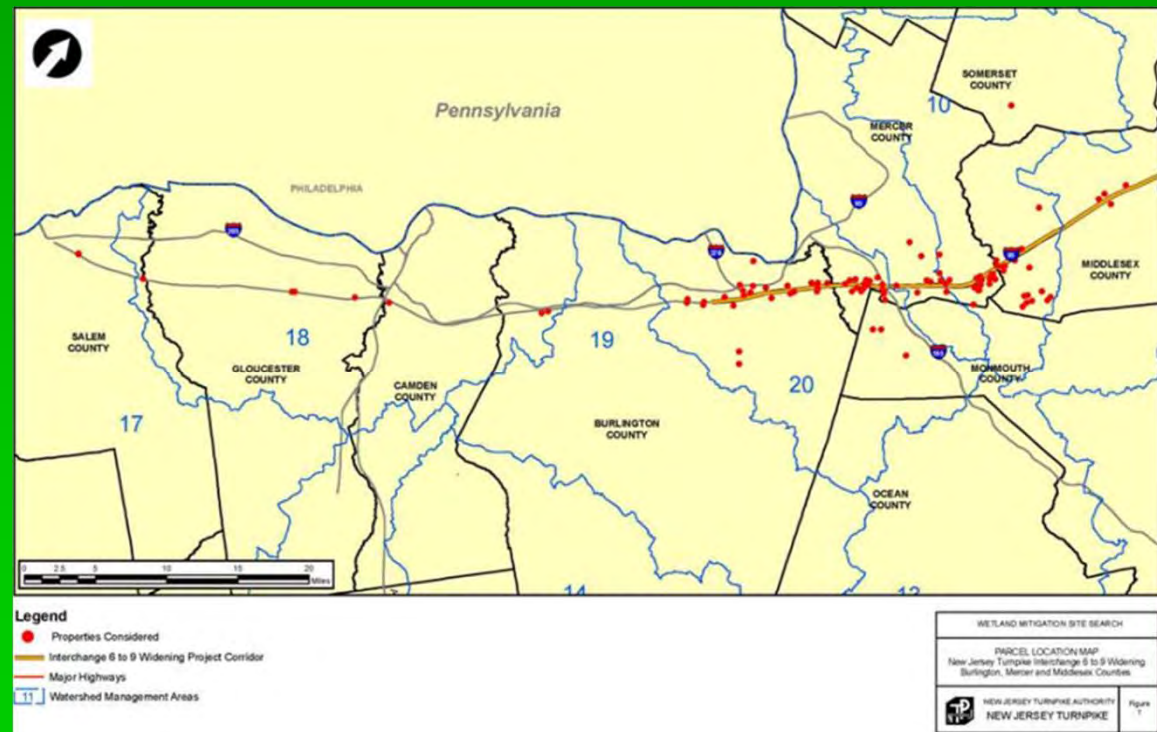
Regulatory Coordination

- **Conducted discussions with NJDEP Land Use staff and other NJDEP Divisions**
- **Obtained acceptance of overlapping mitigation**
- **Set parameters for determining when this overlapping of mitigation can be applied**
 - **Wetland Credit**
 - **Riparian Zone Credit**
 - **Reforestation Credit**
 - **Critical Habitat Credit**
- **Did not proceed with the use of this approach until we had all the regulatory acceptance for the project's mitigation effort**



Credit Stacking

- General Definition – using a created/enhanced resource to offset or mitigate impacts to several habitats, resources and/or environmental biota
- The NJ Turnpike Interchange 6 to 9 Widening Program is one of the first projects in NJ to use this much acreage in credit stacking.



"Rules" as Applied to this Project

- With the NJ Turnpike Widening Program, if several resources present at one impact location; then the impacted resources could be replaced at one mitigation site
- Mitigation proposal has to fit landscape (i.e. vernal pools or critical habitat able to be created at a wetland mitigation site)
- Not applicable for all situations. New stormwater management facilities in NJ designed as wetland basins can't also be used for wetland mitigation



Wetland Mitigation Sites

- About 11 credit acres was available from existing Wetland Mitigation Banks
- Remaining Wetland Mitigation needed was from the design of 5 Freshwater Wetlands Mitigation Sites
 - Restored and Created forested, scrub-shrub, emergent wetland habitat
 - Also provided enhancement and preservation of existing wetland/upland habitat
 - Created 3 vernal pools and buffers
 - Sites also provide mitigation for Reforestation and Riparian Zone impacts.
- Additional wetland mitigation was from a separately awarded design/build mitigation site



Mitigation Site Construction/ Planting



Wetland Mitigation Sites

Wetland Credits

Site	Enhancement @ 3:1	Restoration @ 2:1	Creation @ 2:1	Preservation @ 27:1	Credits Available (Ac)
Devils Brook	(0.22 acres) 0.07 credits	0.0	(4.05 acres) 2.03 credits	(217 acres) 8.04 credits	10.14 credits
Brookland	(33.3 acres) 11.1 credits	(40 acres) 20 credits	(8 acres) 5.53 credits	(271 acres) 10.04 credits	46.67 credits
Back Creek	(10.54 acres) 3.51 credits	(6.25 acres) 3.13 credits	(6.05 acres) 3.03 credits	0.0	9.66 credits
Upper Crafts Creek	(2.11 acres) 0.70 credits	(1.61 acres) 0.81	(3.83 acres) 3.92 credits	0.0	3.42 credits
Lower Crafts Creek	(1.15 acres) 0.38 credits	(3.37 acres) 1.69	(0.33 acres) 0.17 credits	0.0	2.23 credits
Total	(47.32 acres)	(53.86 acres)	(22.26 acres)	(488 acres)	72.12 credits



Wetland Mitigation Sites

Reforestation, Riparian Zone & Vernal Pool

- **Reforestation Act**
 - Provide 86.3 acres of the required 449 acres of Reforestation required at the 5 wetland mitigation sites
 - Balance of acreage provided was along the ROW and as grants to local communities
- **Riparian Zone**
 - Provide 134 acres within the 5 wetland mitigation sites to offset a portion of the 173 acres of impacts
- **Vernal Habitat/Pools**
 - Provide preservation of 8.13 acres of Vernal Pools and ~400 acres of Vernal Pool habitat
 - Creation of 2.03 acres of vernal pool habitat to off set the 2.13 acres of impact
- **Wood Turtle Habitat**
 - Creating/enhancing 5 acres of suitable habitat



Wetland Mitigation Sites Planting



Constructed
Vernal Pool



Other Mitigation

- **Threatened and Endangered Species Habitat**
 - **Bog Turtle/Wood Turtle habitat**
 - **Construction monitoring**
 - **Seasonal work restrictions**
 - **Swamp Pink**
 - **None; no habitat found in corridor**
 - **Indiana Bat**
 - **Seasonal work restrictions**
 - **Bald Eagle**
 - **Seasonal work restrictions**



Mitigation Site Monitoring

- 4 Freshwater Wetlands Mitigation Sites currently constructed
- Conducted monitoring at the mitigation sites:
 - Plant establishment/survival
 - Hydrology
 - Soils
 - Invasive species
- FWIP allows 5 years to meet planting goals for wetland mitigation (85% survival). Reforestation Act 5 year compliance (95% survival)



Construction Monitoring



- Bog Turtle/Wood Turtle habitat



Weather Related Impacts



April 16-17, 2011 storm
2+ inches of rain
50+ mph wind gusts



Credit Stacking Summary

5 Wetland Mitigation sites:

- Provided 72 acres of freshwater wetland mitigation
- Contributed 86 acres of reforestation
- Provided 134 acres of riparian zone mitigation
- Created 2.03 acres of new vernal pool habitat
- Creation/Enhancement of 5 acres of wood turtle habitat



Thank you.
Questions?

