

Freshwater Wetland Restoration / Mitigation resulting from Enforcement Actions between 2003 and 2017

Andrew Edelhauser & Robert Clark, NJDEP Bureau of Coastal and Land Use Enforcement

Background

One of the Bureau of Coastal and Land Use Enforcement (CLUE) responsibilities is enforcing the regulatory program established under the Freshwater Wetlands Protection Act that became effective on July 1, 1988. The intent of the Act is to “preserve the purity and integrity of freshwater wetlands from unnecessary and undesirable disturbance.” CLUE personnel respond to reports or complaints of possible land use violations received from municipal and county officials, private citizens, and other public and private organizations. CLUE also conducts permit compliance inspections of project sites with Land Use permits to ensure compliance with their conditions, requirements, and limitations. If violations are found, the size, scope, and circumstances are documented and the Bureau issues enforcement actions, such as Notices of Violation and Administrative Orders, to compel compliance.

Data and Methodology

The purpose of this map is to identify freshwater wetlands that have been restored or mitigated as a result of enforcement actions between 2003 and 2017. Following the discovery of a violation, CLUE personnel record all inspection information into a Compliance Evaluation activity screen in NJEMS (New Jersey Environmental Management System) including an inspection attribute for “Area Filled or Disturbed – fw wetland” to reflect the size of disturbance that has occurred.

Once a site comes into compliance, a second attribute is entered into an Enforcement Action activity screen that documents the area that has been restored or otherwise mitigated. The types of mitigation are:

- Restored – Illegally Filled or Degraded Wetlands returned to preexisting topography and planted with native trees and shrubs.
- Land Donated – Land that is permanently preserved, sometimes at another location.
- Deed Restricted – Land that is permanently protected by a conservation easement.
- Mitigated – Land is restored or created at another site, which may include a Mitigation Bank.
- Contribution to the Mitigation Fund – Monetary donation to Wetland Mitigation Fund that is used by the Mitigation Council to fund a mitigation project.

A Web Intelligence report was created to compile specific site information including responsible party, site location by State Plane coordinates (stored in Masterfile), mitigation type, and total area mitigated during a fifteen-year period from 2003 to 2017. The report was exported as an Excel spreadsheet and opened in ArcGIS Pro. An XY Event Layer was created for each type of mitigation using the State Plane coordinates. The XY Event Layers were then exported as feature classes for each category. The symbology of the feature classes was set to graduated symbols to reflect the size of the mitigation type. Symbols were manually grouped into eight size categories for all feature classes except Contribution to Mitigation Fund, which was grouped into six categories. For display purposes, the “Disperse Markers” tool was used to spread out clusters of points.

★ Site 1



Agricultural property in Montgomery Township, Somerset County where the property owner illegally cleared 0.4 acres of a wooded freshwater wetland to create a pond. The wetland was documented breeding habitat for the State-threatened Barred Owl (*Strix varia*).



The freshwater wetland was restored by backfilling the illegal pond to reestablish the natural topography and planting native trees and shrubs.

Why Protect Wetlands?

Until the 1970’s wetlands were viewed as wastelands and were often used as dumps, filled for development, or drained for agriculture. The U.S. Fish and Wildlife Service estimated that by the mid 1970’s, 20 percent of New Jersey’s wetlands had been destroyed, with losses as high as 72 percent in Hunterdon County and 50 percent in parts of the Passaic River basin. Freshwater wetlands play a vital role in the social, economic, and environmental health of our nation in the following ways:

- Water Quality protection – Wetlands protect drinking water by filtering out chemicals, pollutants, and sediments that would otherwise clog and contaminate our waters.
- Water Storage – Wetlands provide natural flood protection by soaking up runoff from heavy rain and snow melts and recharge groundwater during times of drought.
- Wildlife Habitat – Wetlands provide essential breeding, spawning, nesting, and wintering habitats for a major portion of the State’s fish and wildlife, including migrating birds, endangered species, and commercially and recreationally important wildlife.
- Wetlands provide high quality open space for recreation and tourism.

★ Site 2



Site in Bernardsville, Somerset County where property owner illegally cleared 1.1 acres of a freshwater wetland and channelized over 500 feet of a Category One stream. The wetland was classified as exceptional resource value as it was documented habitat for the State-threatened Wood Turtle (*Glyptemys insculpta*) and was associated with a trout production watercourse.



Post restoration photograph. Restoration included planting native trees, shrubs, and herbaceous plugs throughout the wetland area and modifying the stream channel to create more sinuosity, create aquatic habitat, and stabilize the stream banks.



Eight years after restoration. In 2009, prior to site restoration, a fish survey was conducted with the assistance of New Jersey Division of Fish and Wildlife, Bureau of Freshwater Fisheries to document the quantity of Brown Trout (*Salmo trutta*). A follow-up survey was conducted in 2013 and found a 185% increase in the number of Brown Trout using the restored stream channel.

Restoration/Mitigation Type

● Area Restored	● 0 - 0.1 Acre	Area Restored - 325 Acres
● Area of Land Donation	● 0.1 - 0.5 Acre	Area Donated - 206 Acres
● Area Deed Restricted	● 0.5 - 1 Acre	Area Deed Restricted - 130 Acres
● Area Mitigated	● 1 - 5 Acres	Area Mitigated - 20 Acres
	● 5 - 10 Acres	
	● 10 - 20 Acres	
	● 20 - 40 Acres	
	● 40 - 191 Acres	Total - 681 Acres
● Contribution to Mitigation Fund	● \$500 - \$4,000	Total - \$1,345,900
	● \$4,001 - \$21,000	
	● \$21,001 - \$45,000	
	● \$45,001 - \$200,000	
	● \$200,001 - \$360,000	
	● \$360,001 - \$450,000	

Watershed Management Areas

0 5 10 20 30 40 Miles



References

Basemap - Esri, Garmin, GEBCO, NOAA NGDC, and other contributors
Association of New Jersey Environmental Commissioners, Freshwater Wetlands Protection in New Jersey, Third Edition
NJDEP Division of Land Use Regulation - <http://www.nj.gov/dep/landuse/>
Photos Credit: Robert Clark & Michael Palmquist, NJDEP CLUE

Special Acknowledgments: Elizabeth Dragon, Bureau Chief, NJDEP CLUE
Barbara Baus, Section Chief, NJDEP CLUE
Pete Keledy, Supervising Environmental Specialist, NJDEP CLUE

Map Production: Andrew Edelhauser & Robert Clark, NJ DEP CLUE 4/2018

