

# Passaic River Environmental Plan (PREP)



Presented By: Mark Mattheiss & Kevin Waters

# Overview

- Problem Statement
- Mission Statement
- History
- Governance Organizations
- Existing Plans & Actions
- Issues in the Watershed
- Proposed Solutions



# Problem Statement

- Due to increased urbanization and development in northeast New Jersey, the water temperatures of the Passaic River Watershed have become warmer. This has led to a decrease in the population of wild brook trout, which the NJDEP considers a good indicator of water quality. Also the influx of buildings and roads limits the amount of permeable land. This lowers groundwater recharge and increases chances of flooding.

# Mission Statement

- PREP's goal is to extend the area of wild brook trout spawning from the headwaters of Morris County downstream and into the surrounding waters of Passaic and Essex County.

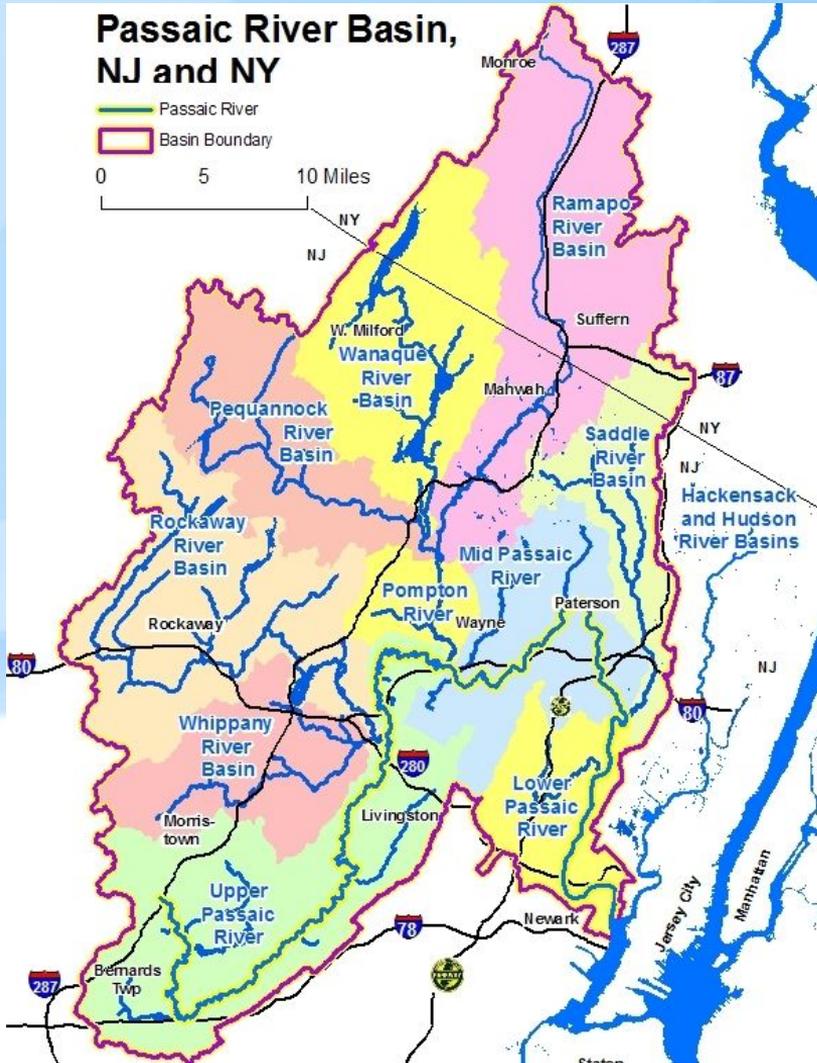
# Passaic River Watershed Characteristics

- River length: 80 mi
- Basin: 935 sq mi
- Discharge(for little falls): 2,100 cu ft/s avg
- Source: Unnamed pond in Mendham, NJ
- Mouth: Newark Bay, NJ
- Elevation Drop: 540 ft
- Counties in the Watershed: Hudson, Essex, Bergen, Passaic, Morris, Union, Somerset

# Passaic River Basin, NJ and NY

- Passaic River
- Basin Boundary

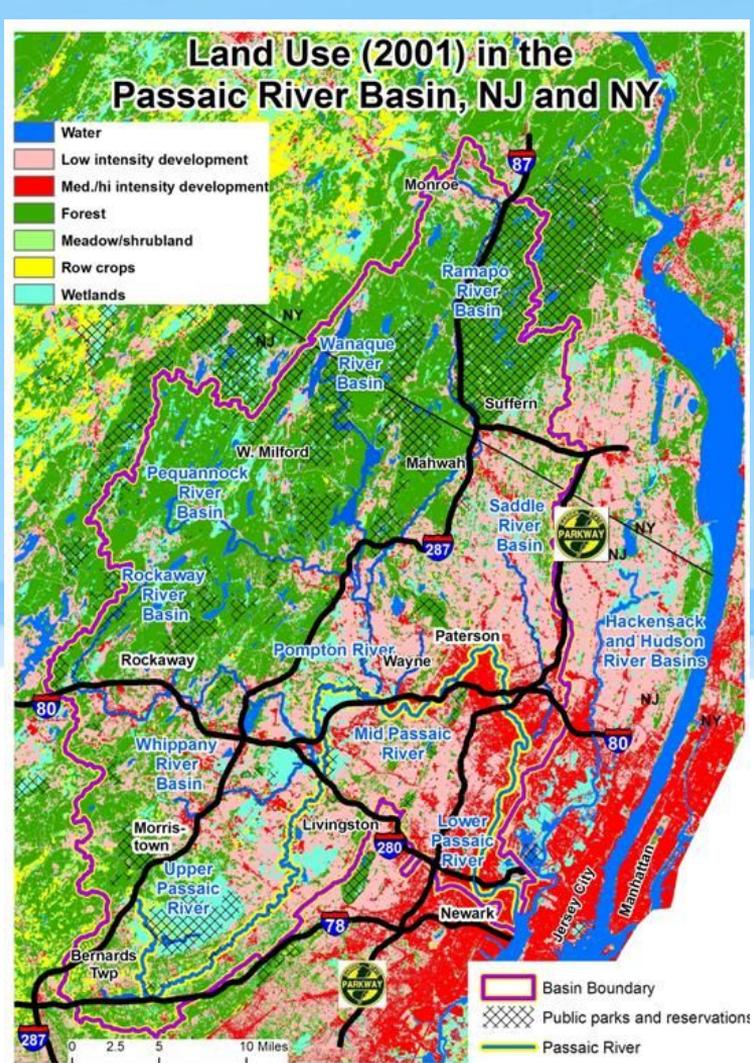
0 5 10 Miles



# Land Use

## Land Use (2001) in the Passaic River Basin, NJ and NY

- Water
- Low intensity development
- Med./hi intensity development
- Forest
- Meadow/shrubland
- Row crops
- Wetlands



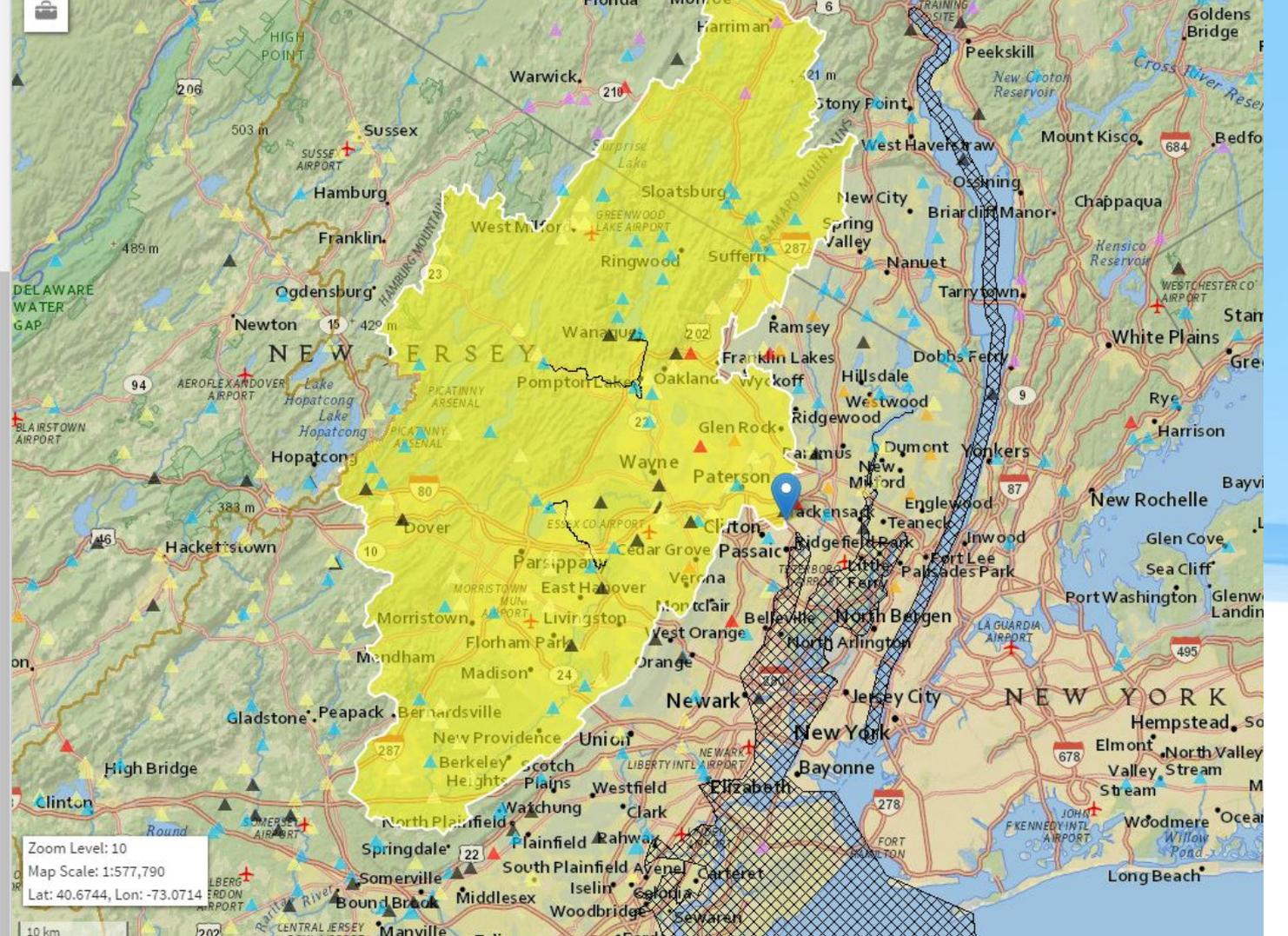
Basin Characteristics can be edited here

Parameter	Value
Percentage of developed (urban) land from NLCD 2011 classes 21-24	36
Average percentage of impervious area determined from NLCD 2011 impervious dataset	8.87
Basin Population Density	1350
Percentage of area of storage (lakes ponds reservoirs wetlands)	15.2
Percentage of area covered by forest	46
Area that drains to a point on a stream	811

Select available reports to display:

Basin Characteristics Report

Continue



# Water Use

- Upper tributaries are a drinking source for millions of people in northern NJ
- North Jersey District Water Supply Commission serves 107 municipalities
- Passaic Valley Water Commission serves Clifton, Passaic, Paterson and numerous other surrounding towns
- NJ American Water Company Serves around 42 towns
- The Passaic River and thousands of acres of floodplains serve as a habitat for many animals and endangered animals and also absorb flood waters
- The harbor the Passaic River flows into is home to the third biggest port in the country Port Newark

# History

- Originally formed by glacier waters escaping the Glacial Lake Passaic (30,000 yrs. - 11,000 yrs. ago)
- George Washington used the Passaic for his camp during Revolutionary War (1778)
- City of Paterson harnessed The Great Falls and became the first industrial city in America thanks to Alexander Hamilton (1792)

# History (Contd.)

- Dundee Dam was built in Garfield to provide power for all of the factories next to the river (1859)
- Population of NJ exceeds 1 million (1880)
- Heavy Metals, Pesticides, Agent Orange Waste were released into the river by various industries (Early 1900's - 1970's)
- Fire raged for hours on the surface of the water between Newark and Harrison (1918)



# Organizations

- **Passaic River Coalition** - Est. 1969 and protects water quality and quantity of entire watershed in NJ also Rockland & Orange County, NY
- **Pequannock River Coalition** - Improve ecosystems of Pequannock & Wanaque Rivers
- **Great Swamp Watershed Association** - Educates communities about their effect
- **Whippany River Watershed Action Committee** - Community action projects
- **Greenwood Lake Commission** - Improve quality of the lake
- **Hackensack Riverkeeper** - Independent & Non-Governmental
- **American Rivers** - National Organization dedicated to preserve for future generations
- **River Network** - National Organization includes over 2,000 grassroots organizations
- **Waterkeeper Alliance** - Made up of over 200 local waterkeeper organizations

# Existing Plans & Actions

- **1972 Clean Water Act** - Health of river has improved due to this enactment
- **2008 US EPA Settlement With Occidental Chemical Corp. & Tierra Solutions** - Major lawsuit from dioxin contamination from chemical companies and they agreed to pay \$165 million for ecological damages
- **2010 Passaic River Basin Flood Advisory Commission** - Executive order signed by Christie to develop and recommend solutions to chronic flooding problems
- **2014 US EPA Announced New Plan** - A 1.7 billion dollar plan to remove 4.3 million cubic yards of toxic mud from the lower 8 miles of the river. That section of river is considered one of the most polluted stretches of water in the nation.

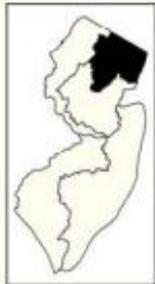
# Issues In The Watershed

<b>Problem</b>	<b>Description</b>	<b>Causes</b>
P1: Decrease in Trout Spawning Grounds	Brook Trout used to be all over the Passaic River watershed and now they are only spawning in the headwaters of Morris County	The trout problem is caused by the water temperature. In order for trout to spawn they need cold water and the waters downstream are significantly higher in temperature.
P2: Increase in Severe Flooding	There have been many instances of flooding and many people's homes receiving massive water damage due to their close proximity to the river.	Due to increased urbanization and less available land more and more people are moving closer and closer to the river. The runoff from this urbanization also contributes to the flooding because less water is absorbed into the ground.
P3: Horrendous Factory Pollution	The water quality in the Passaic River is notorious for its terrible quality.	There are many factories from Paterson to Newark that have been dumping toxic chemicals into the river over the past century. One major example of this was the Agent Orange Factory in Newark that severely polluted the watershed.

Map 1  
**NORTHEAST  
WATER  
REGION**

Pompton,  
Pequannock,  
Wanaque  
and  
Ramapo

Lower Passaic  
and  
Saddle



Upper Passaic,  
Whippany  
and  
Rockaway

Hackensack,  
Hudson  
and  
Pascack

**AMNET Assessment Categories**

- Excellent
- Good
- Fair
- Poor
- Not Sampled

Index



High Gradient Macroinvertebrate Index (HGMI)

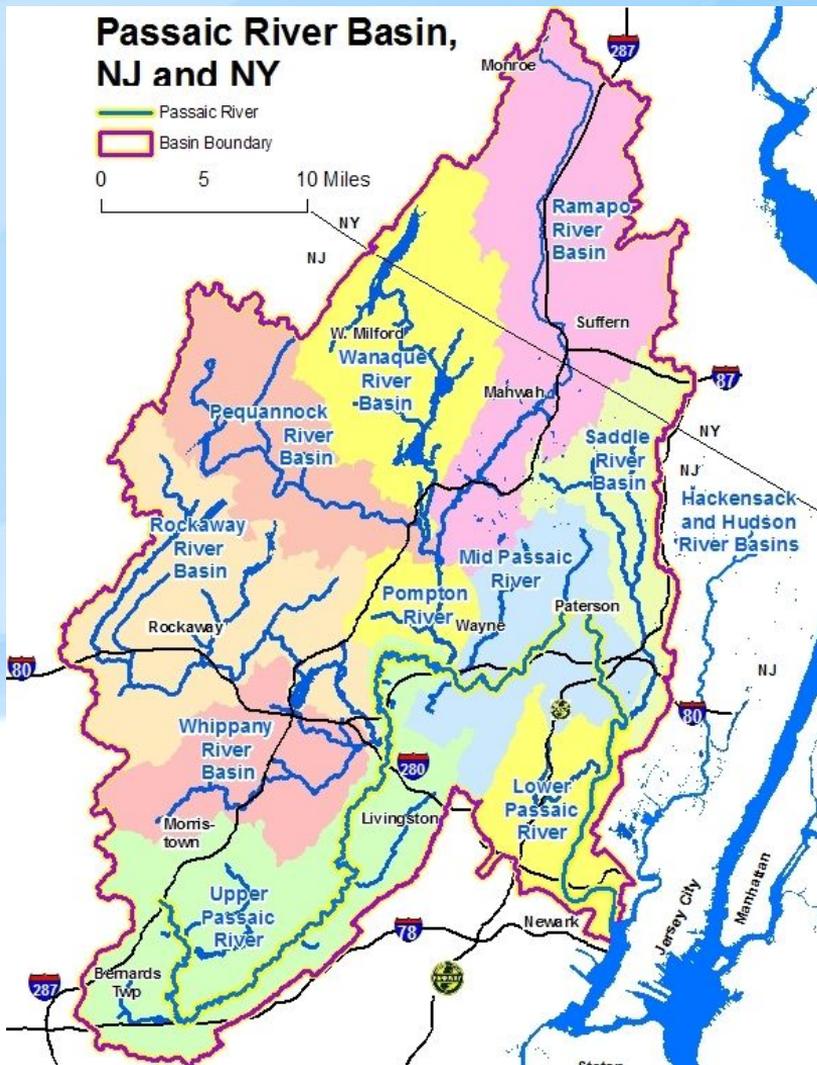


Watershed Management Area



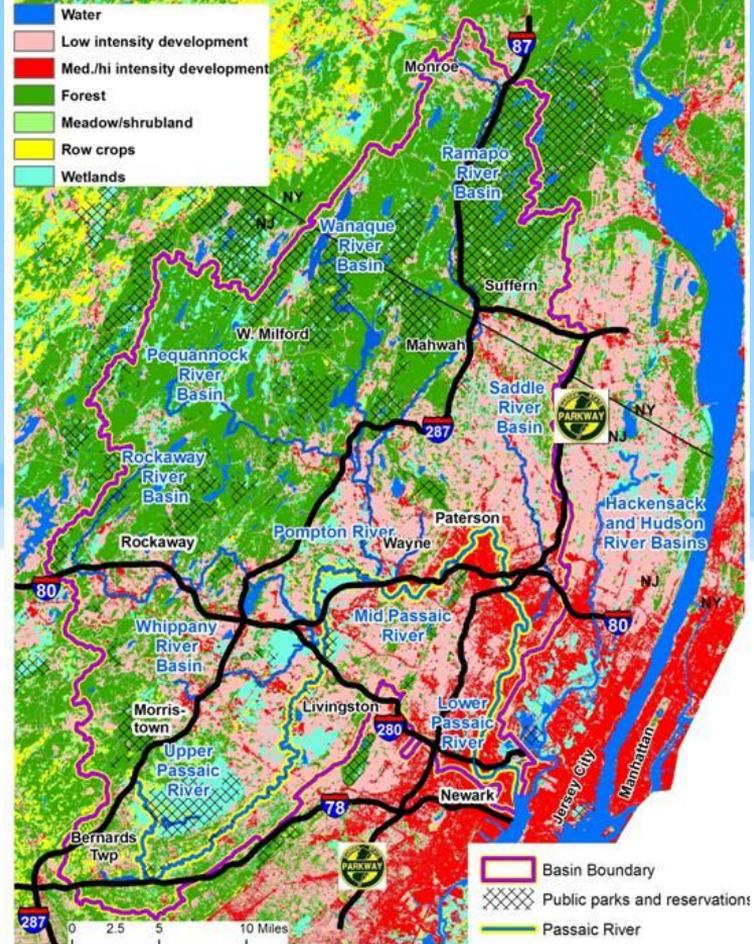
1 inch equals 5.15 miles

# Passaic River Basin, NJ and NY



# Land Use

## Land Use (2001) in the Passaic River Basin, NJ and NY



# Goals and Objectives

**G1: To increase the trout spawning population.** By decreasing the water temperature by two degrees we hope to see an increase of brook trout as far as the towns of fairfield.

**G2: Decrease the severity and frequency of flooding** By increasing the area of floodplains and retention ponds as well as adding non-livable zones, flood water management could be improved and the amount of people affected by the flooding would be reduced. This is a difficult problem because of the dense human population throughout the watershed.

**G3: Limiting industrial pollution.** One taxpayer costly step to combat the toxic chemicals would be to remove the already toxic mud by dredging. Another way to limit the chemicals entering the river would be to have strict regulations on industries the dumping in close proximity to the river.

# Solutions

**S1: To increase the trout spawning population** - Shade a larger portion of the stream by riparian (riverbank) vegetation and limit runoff by increasing the amount of stormwater that seeps into the ground

**S2: Decrease the severity and frequency of flooding** - New zoning laws must be made to prohibit building within 75 feet from either side of the waterway and also prohibit building in current flood plains. Along with government buybacks and establishing new parks next to the river.

**S3: Limiting industrial pollution** - Increase and enforce fines for properties that are next to the river and polluting it with garbage. Continue dredging and skimming of the lower Passaic for floating garbage



# Conclusion

By the end of 2025 if these solutions are enacted then we estimate that brook trout will be able to be caught recreationally as far as the Dundee Dam in Garfield! Improvement in the water quality of the Passaic River Watershed would enhance the condition of the surrounding environment and make the river area much more aesthetic. This would promote economic and recreational activity.

