

An Introduction To Natural Resource Damage Assessment

Mark Barash, Esq.
Office of the Solicitor
U.S. Department of the Interior

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Goals of This Presentation

- Explain the Natural Resource Damage Assessment (NRDA) process
- Explain the different roles and responsibilities of NRDA and EPA (Remedy)
- Share NRDA activities at Pompton Lakes to date
- Identify future steps in the NRDA process

Natural Resource Damage Assessment

- Designated government officials (Trustees) act for the public to require restoration of injuries to natural resources from hazardous substances
- Trustees identify natural resource injuries and service losses
- Determine appropriate type and amount of restoration
- Goal is to “make public whole” through restoration



Purpose of NRDA is Restoration

- To compensate the public for injuries to natural resources and resulting resource service losses caused by a discharge of oil or release of a hazardous substance.
- Compensation is measured as damages, calculated in projects or dollars necessary to implement restoration.
- Damages must be used to restore, replace, or acquire the equivalent of lost resources/ resource services (restoration).

RESPONSE v NRDA

EPA CLEANUP

Reduce or eliminate present and future threats to human health and/or the environment from release of a hazardous substance

Often directed at the substance itself (e.g., removal via dredging) and the risk of exposure

Cleanups do not make up for injuries to natural resources



NRDA

Assess past, present and future injuries to natural resources from hazardous substances.

Collect damages to be expended for restoration

Damages are in addition to cleanup

Implementing Statute and Regulations

- Cause of action for natural resource damages created by the CERCLA (Comprehensive Environmental Response, Compensation, and Liabilities Act).
- The Department of the Interior (DOI) published regulations implementing NRDA.
- System Unit Resource Protection Act applies damage assessment to NPS resources.

NRDA TRUSTEES per the NCP

- States
- Tribes
- Certain Federal Departments
- Here, Interior (FWS and NPS), and New Jersey



NRDA Process



Assessing Injuries to Trustee Natural Resources

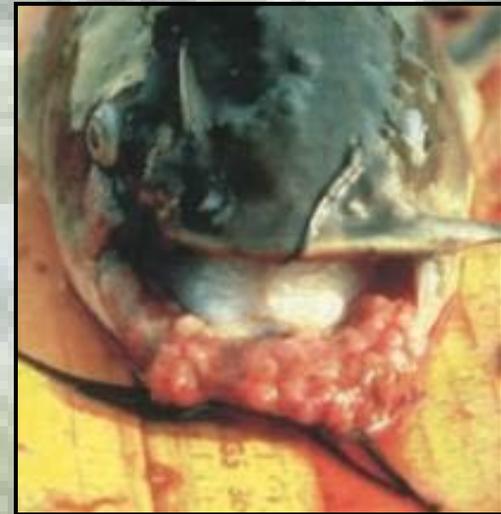
- Biota and their habitats
- Surface water and sediment
- Ground water
- Geologic (soils and upland resources)
- Air



What Are Natural Resource Injuries?



- Death
- Disease
- Cancer
- Genetic Mutations
- Physiological Malfunctions
- Physical Deformities
- Behavioral Abnormalities
- Reproductive Impairment
- Consumption Advisory
- Exceed water quality criteria



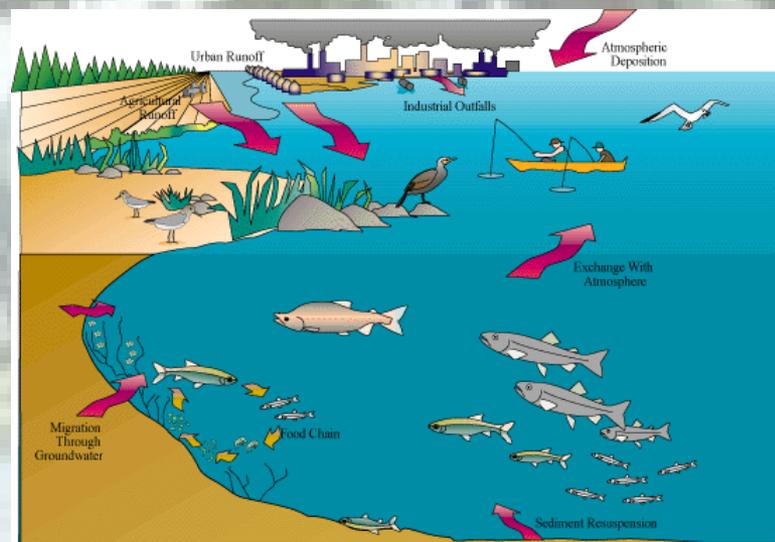
Resource Services

- Resource Services: the physical and biological functions performed by the resource including the human uses of those functions, as a result of resource quality.
 - Human Use:
 - Fishing.
 - Boating.
 - Hiking.
 - Ecological:
 - Nutrient cycling.
 - Provision of habitat.
 - Predator-prey interactions.
 - Organism viability.
 - Ecosystem sustainability.



Injury Determination

- Establish Pathway: demonstrate the connection between the release of a hazardous substance and exposure of a resource to a hazardous substance.
- Establish injury: Examples:
 - Exceedance of a standard/criteria.
 - Existence of a consumption advisory.
 - Change in organism function.
 - Change in ecosystem function (e.g., loss of prey).

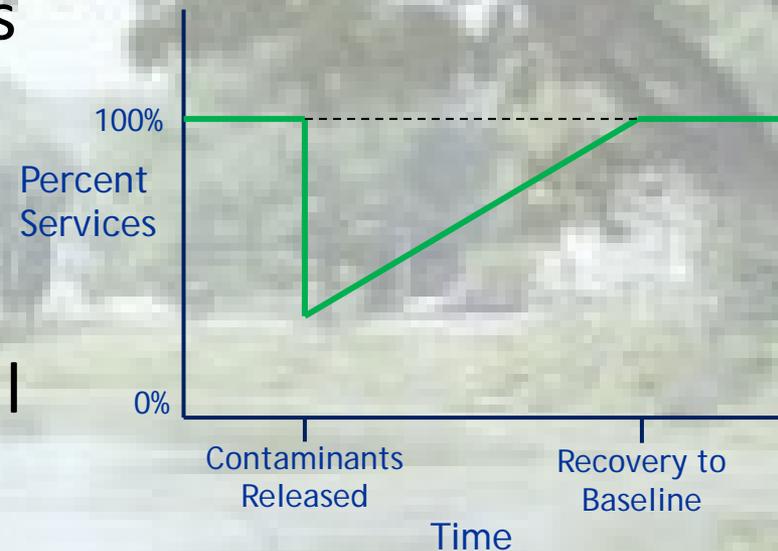


Contaminant pathways

Injury Quantification

- Determine the condition of injured resource that would have existed if the release of hazardous substance(s) had not occurred. This is baseline condition.
- Identify the difference between the actual condition of the natural resources and the services they provide, and the baseline.
- Quantify the total loss, both past and present.

Ecological Losses:
Resource Service
Loss Example



Damage Determination

Measure of damages

- The cost of restoration, rehabilitation, and/or acquisition of the equivalent of the injured natural resources, and the services those resources provide.
- Identify appropriate restoration.
 - Link benefits provided by compensation/restoration to losses resulting from injury.
- Scale benefits and losses, that is determine how much restoration is appropriate to the injury.
- Determine cost to implement restoration.

Restoration Planning and Implementation

- Public involvement in restoration planning.
 - Informal briefings and restoration scoping.
 - Public review and comment on Restoration Plan.
- Restoration Plan is required.
- All restoration must be connected to the actual injuries (nexus).
- Trustee Council must remain the final decision maker.

Applicable Restoration Criteria

- Basic threshold requirements.
 - Project must be legal and comply with applicable/relevant federal, state, local laws and regulations.
 - Project must not endanger public health and safety.
 - Project cannot be otherwise required by an existing government program, federal or state law, regulation, court mandate, etc.
- Additional Trustee generated criteria
- All restoration must be connected to the actual injuries

Achieving Restoration- Examples

- Increase amount of quality habitat for species by restoration or acquisition.
- Enhance or restore quality of existing habitat.
- Increase populations through reintroduction or restocking.



What NRDAR Isn't

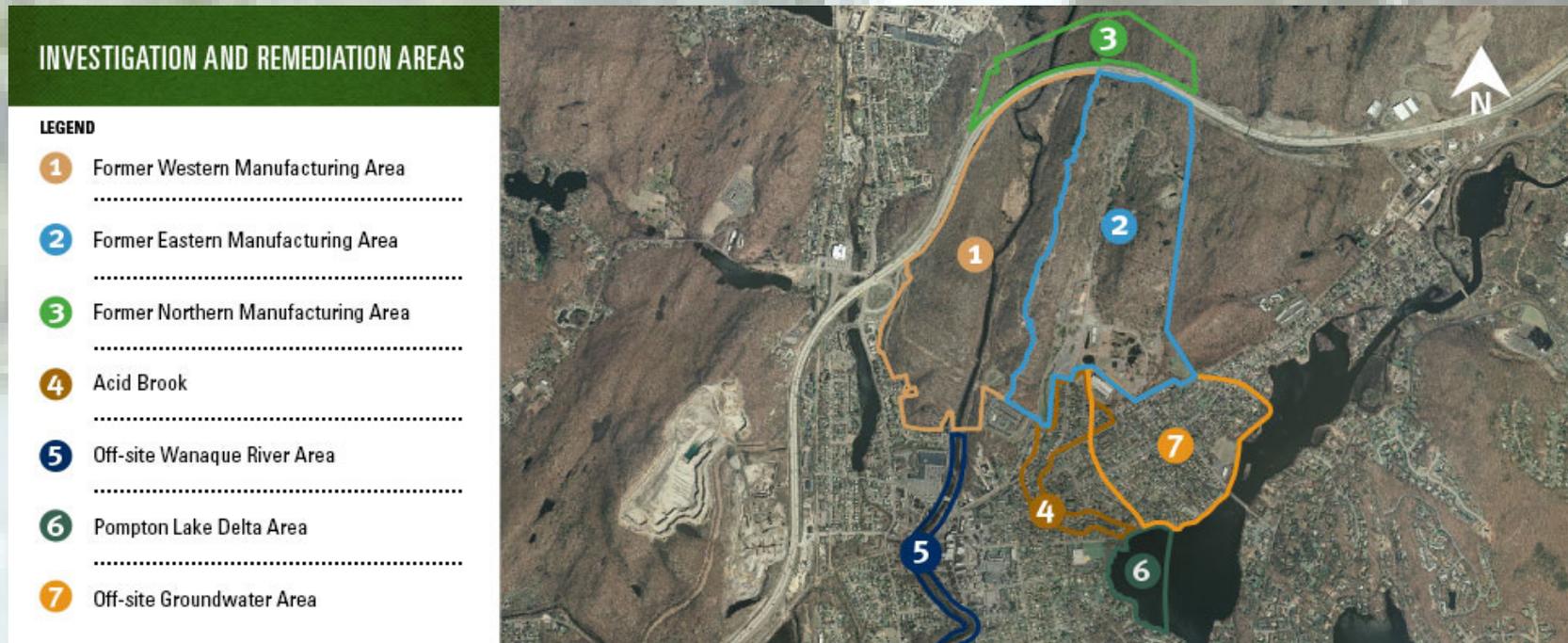
- Restoration is not 'clean up'.
- Remedial objectives are reduction of future risk to human health and environment; NRDA is based on restoration of injuries to natural resources.
- Is not a mechanism to compensate for losses beyond natural resource injuries.

Pompton Lakes Works (PLW) Site NRDA Status Update

Melissa Foster
U.S. Fish and Wildlife Service
New Jersey Field Office

PLW Site – History

- 570 acres within the Boroughs of Pompton Lakes and Wanaque



From: DuPont® Pompton Lakes Works Remediation Project Information Center. 2016. <http://www.pomptonlakesworks.com/>

PLW Site – History

- Former manufacturing facility for explosive compounds (*e.g.*, mercury fulminate) and military products (*e.g.*, tracer bullets and hand grenades)
- Chemicals used during the manufacturing processes to degrease and clean machines
- Manufacturing began in 1902 and ceased in 1994

Trust Resources for the PLW Site – DOI and NJ

- **Surface water (including sediment)**
- **Biological resources**
- **Geologic resources**
- **NPS resources***
- **Air resources**
- **Groundwater**



DOI Trust Resources

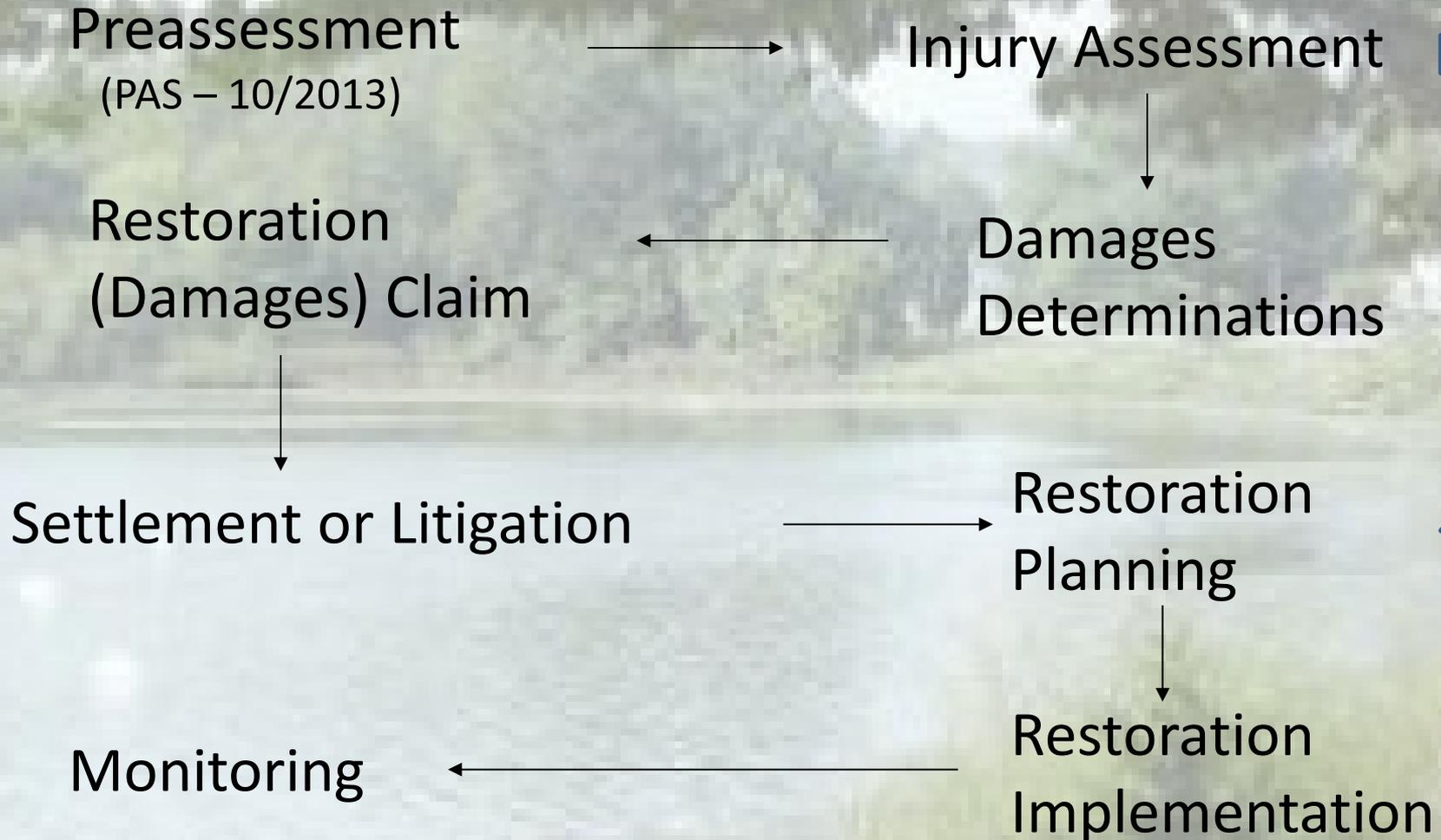
Trustees are stewards of the public's natural Resources, including:



PLW Preassessment Screen Determination (PAS)

- Documented that specific criteria required to proceed with an assessment were met.
- Used readily available data from:
 - EPA
 - New Jersey Department of Environmental Protection
 - Agency for Toxic Substances and Disease Registry
 - DuPont
- Elevated concentrations of mercury, methylmercury, lead, and copper in surface water and sediment
- Mercury and methylmercury accumulation in invertebrates, fish, and other organisms

NRDA Process



NRDA “Milestones” - Assessment

- Preassessment Screen (PAS)* (10/2013)
Is an assessment warranted?
- Notice of Intent to Perform an Assessment (NOI) (9/2014)
Provides notice to Potentially Responsible Party (PRP) that the Trustees are proceeding with a damage assessment.
- Assessment Plan*
Described steps the Trustees will take to determine and quantify injury and determine damages.
- Implementation of the Assessment Plan
- Report of Assessment*
Summarizes / compiles all information from the assessment phase

Cooperative Agreement between DuPont (now Chemours, Co.) and DOI (April 2014)

What it does:

- Provides a framework for the sharing of information between Chemours and DOI
- Allows Chemours the opportunity to provide input in the planning process
- Provides funding for non-study costs of assessment
- Provides funding for **mutually agreed-to** studies
- Enhances the ability to take advantage of early restoration options
- Maximizes dollars spent **on restoration**

What it DOESN'T do:

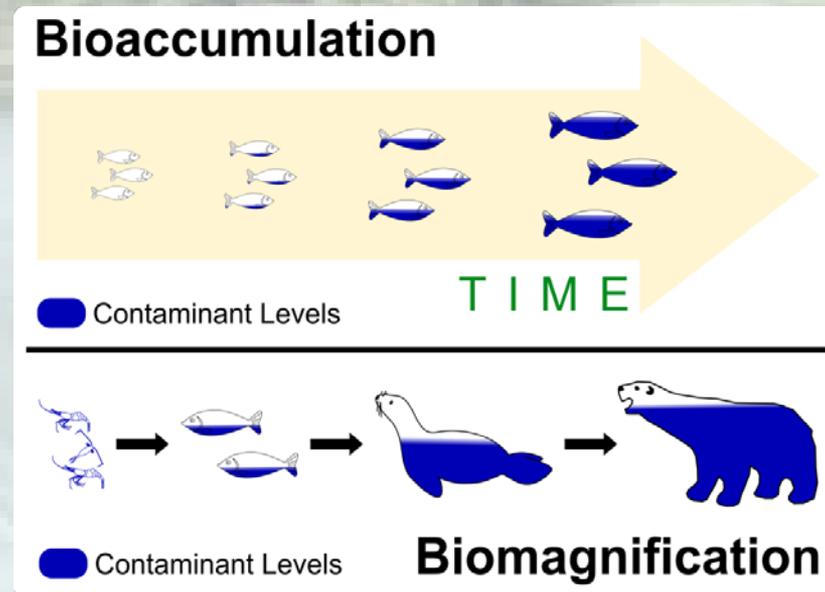
- Give Chemours control over the process
- Prevent DOI (or Chemours) from carrying out its own studies
- Ensure the case will not proceed to litigation

Scoping Studies (Pre-Injury Assessment)

- 2014 & 2015 - Focused on areas within the Pompton River and Ramapo River downstream of Pompton Lake Dam
- 2016 - Focus is on the Wanaque River

Primary Contaminant of Ecological Concern

- Mercury
 - In wildlife, can cause developmental, neurological, physiological, and behavioral abnormalities; impair reproduction and survival
 - **Bioaccumulates** and **biomagnifies** in the food chain



Other Hazardous Substances Released at the PLW Site

- Lead
 - In wildlife, can impair central nervous system function, red blood cell synthesis, and other physiological processes
 - Bioaccumulates, but does not biomagnify to the same degree as mercury
- Volatile Organic Compounds (VOCs)

2014 Objectives

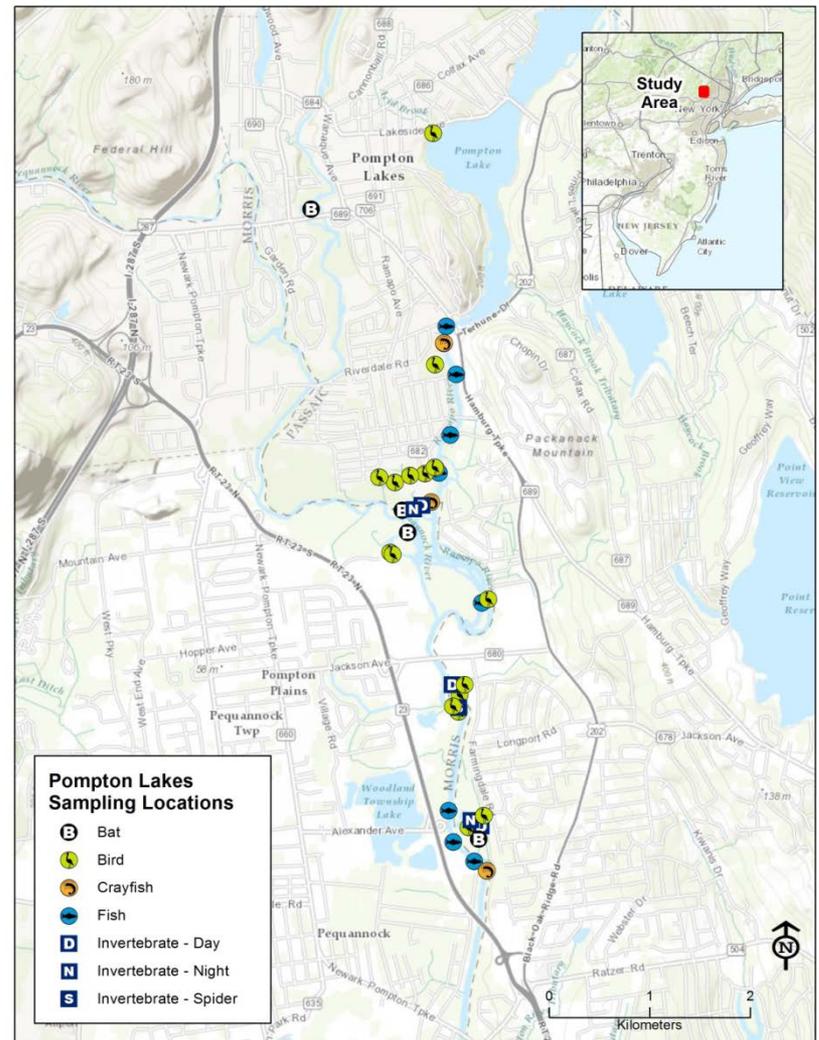
- Evaluate mercury levels in biota downstream of Pompton Lake, where data are lacking, **before** remedial action (“current conditions”)
- Survey different taxonomic groups (fish, aquatic invertebrates, terrestrial invertebrates, bats, birds) for mercury
- Evaluate foodchain relationships to identify potential pathways for mercury

Objective 1: Evaluate mercury in biota before remedial action

- Get information on conditions now, before the conditions within and downstream of the Lake change as a result of the pending remedial action.
- Develop a basis for determining (and quantifying) any improvement in conditions after remediation

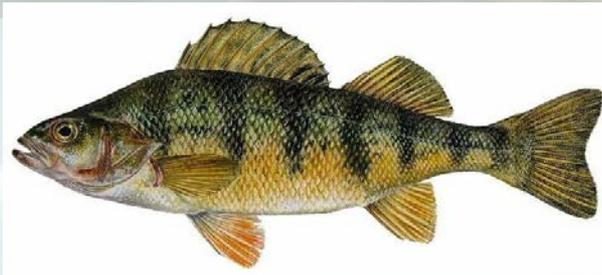
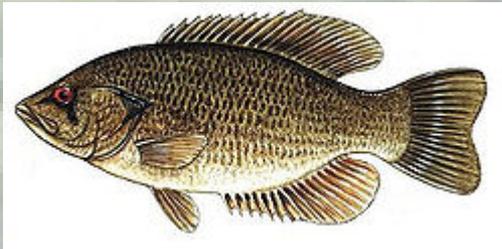
Study Area

Objective 1:
Evaluate mercury
in biota
downstream of
Pompton Lake,
where data are
lacking, **before**
remedial action



Objective 2: Survey different taxonomic groups for mercury in tissues

FISH



Aquatic Invertebrates



Terrestrial Invertebrates

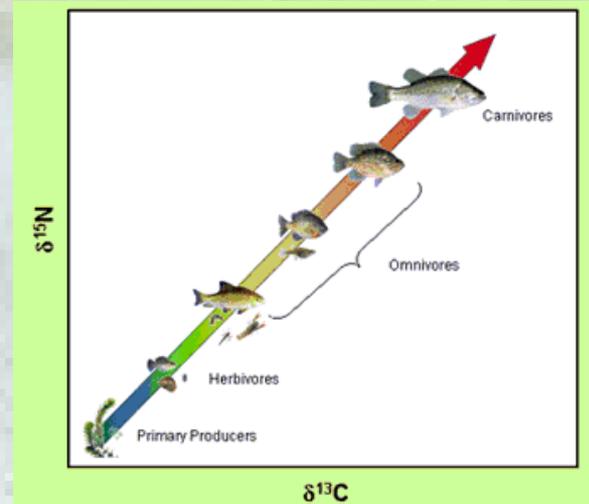


Birds and bats



Objective 3: Evaluate foodchain relationships to identify potential pathways for mercury in biota

- Used isotopes of carbon and nitrogen in blood and tissue to determine dietary source and trophic position for organisms sampled

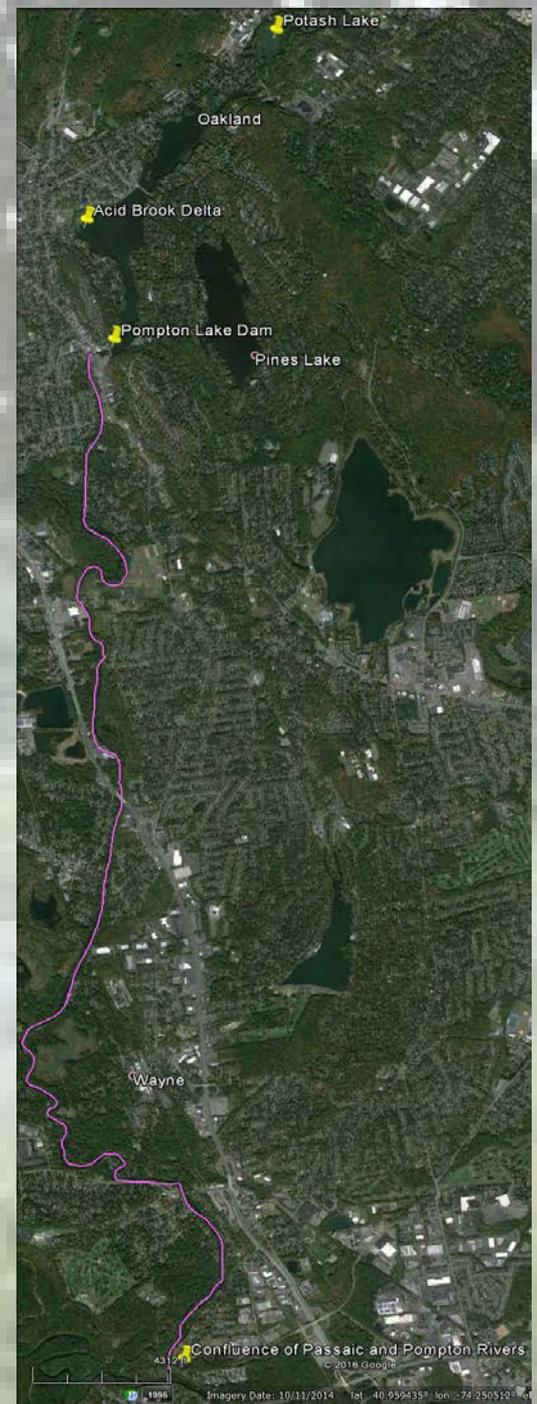


2014 study results indicate:

- **Mercury is found in the tissues of some taxonomic groups**
Some individuals in some taxonomic groups showing concentrations at or above literature-based effects thresholds.
- **Spatial trends vary with taxonomic group**
Some taxonomic groups show a decrease with distance from Pompton Lake; others do not.
- **Food web not clear**
Generally, some individuals sampled did not represent the trophic levels we expected.

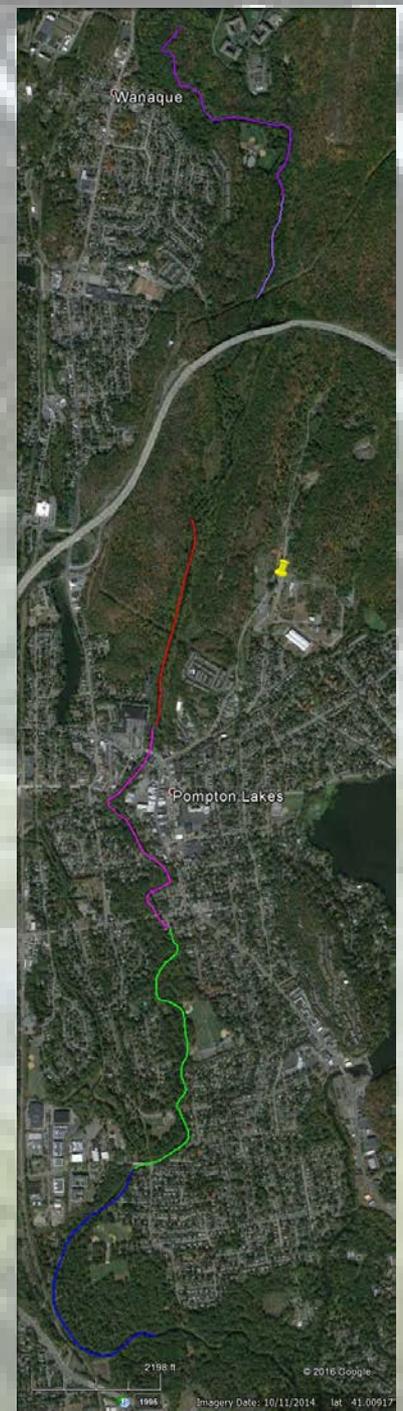
2015 Study

- Includes upstream reference location for comparison to “background”
- Focused on invertebrates and birds
- Expanded study area farther downstream



2016 Study

- Focuses on Wanaque watershed
- Includes upstream reference
- More targeted sampling on specific species
- Still incorporates a variety of organisms (birds, invertebrates, fish)



Next Steps – Assessment Plan

- Summarize the data available to date
- Evaluate data in comparison to known harmful levels
- Identify potential future injury studies
- Will be released for public review and comment

Next Steps – Restoration Planning

Guidance for restoration project selection includes:

- Link to injury
- Effectiveness
 - Feasibility
- Cost-effectiveness
- Coordination with existing plans



Steps in the Restoration Planning Process

1. Identify categories for types of projects.
2. Develop restoration ideas.
3. Solicit additional ideas from the public.
4. Scale restoration. (Match injured natural resources to restoration projects.)
5. Review and select preferred projects.
6. Develop & implement Restoration Plan.

NRDA “Milestones” - Restoration

- Restoration Plan*
 - Evaluates a reasonable number of possible alternatives to restore, rehabilitate, replace, and / or acquire equivalent resources.
 - Identifies the selected alternative(s).
 - Presents the rationale for selecting the alternative(s).
 - May include an Environmental Assessment or Environmental Impact Statement for the selected alternative(s)

*Document will be available for public review and comment



National Park Service

Damage Assessment under the Park Service System Unit Resource Protection Act (SURPA, 54 U.S.C. 100721)

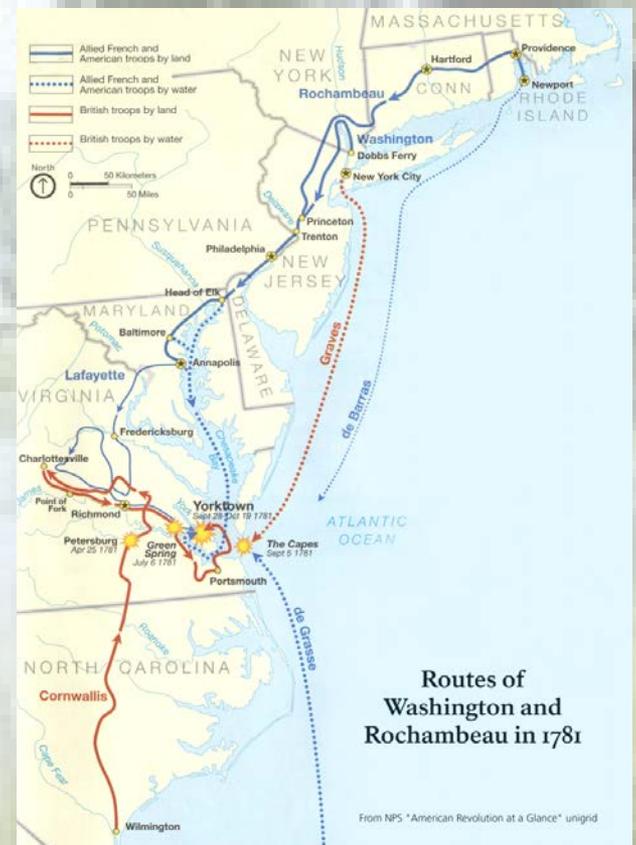
Nancy Werdel
Damage Assessment Case Officer
Environmental Quality Division

System Unit Resource Protection Act

- Applies only to NPS
- Covers any NPS “system unit,” i.e. “any area of land and water administered by the Secretary, acting through the Director, for park, monument, historic, parkway, recreational, or other purposes.”
- Resources include natural and cultural resources, park facilities, and the services these resources provide.
- Used in addition to CERCLA authorities.

Washington-Rochambeau National Historical Trail (WARO)

- Revolutionary route taken by General Washington and the French General Rochambeau leading to the siege at Yorktown, securing American independence from Great Britain.
- Designated an Historical Trail in 2009.
- Passes through Pompton Lakes.



NPS Resources and Damages for Washington-Rochambeau NHT

- Resources potentially affected include historical revolutionary war artifacts impacted by remedial activities or restoration projects, or that are non-recoverable due to contamination.
- These colonial-era resources are highly valued to the American people for their historical relevance.
- The buildings and landscapes associated with the NHT provide educational and recreational opportunities related to the Revolutionary war.

NPS Resources and Damages for Washington-Rochambeau NHT

- NPS has general information regarding the NHT in New Jersey. Additional information is needed regarding specific activities that occurred in Passaic County.
- NPS will search historic literature and document significant NHT resources in the Pompton Lakes area.
- NPS is currently working on a contract to conduct this study.



Learn More

Learn about NRDAR in the Northeast

<http://www.fws.gov/northeast/ecologicalservices/nrdar.html>

Visit NJFO's website

<http://www.fws.gov/northeast/njfieldoffice/NRDAR>

Contact us

Mark Barash – (617)527-2103 / mark.barash@sol.doi.gov

Melissa Foster - (609)382-5262 / melissa_foster@fws.gov

Nancy Werdel – (303)969-2745 / nancy_werdel@nps.gov