

Newtown Creek Superfund Site and an Introduction to Natural Resource Damage Assessment

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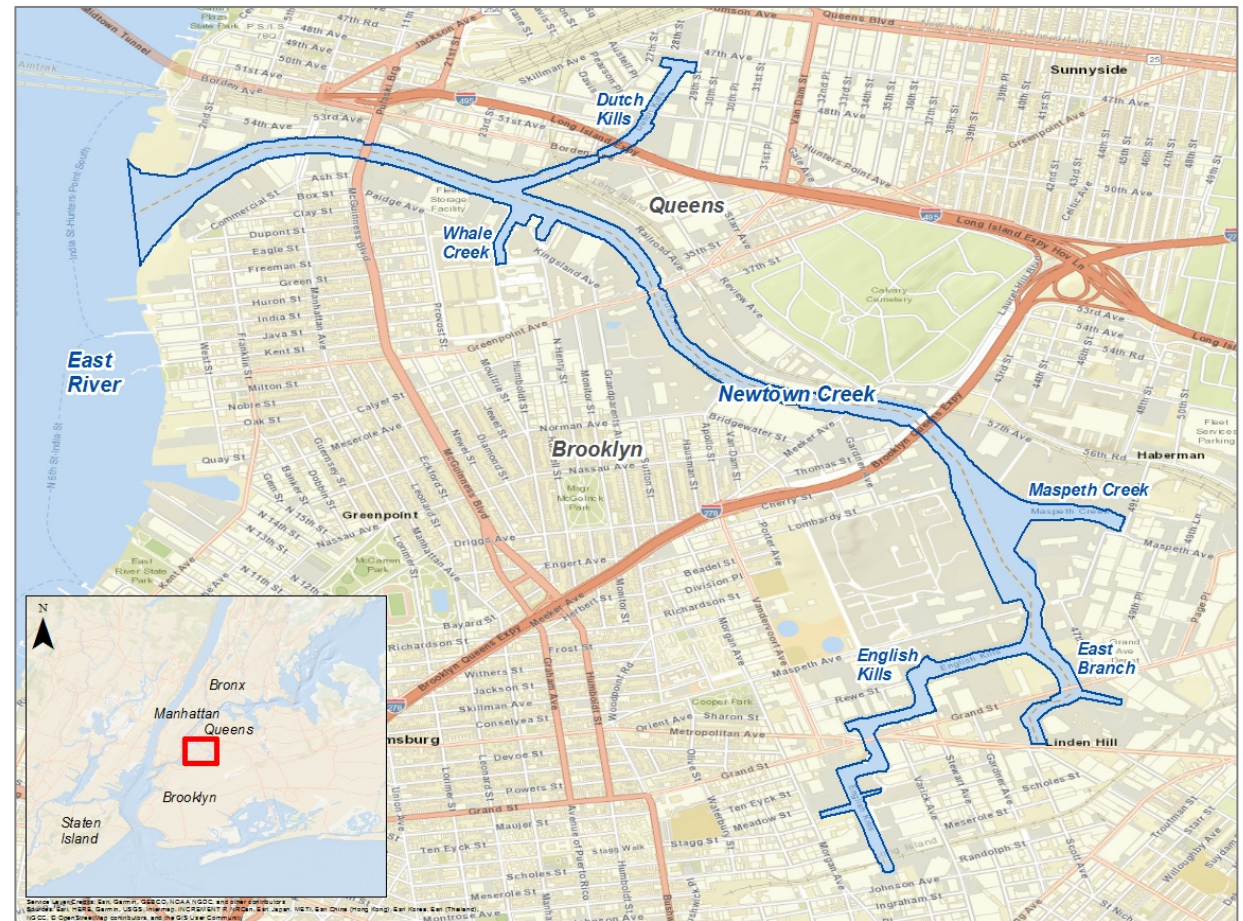
Overview

- Newtown Creek
- Natural Resource Damage Assessment
 - Natural Resources
 - Injury
 - Resource Services
 - Injury Determination and Quantification
 - Damage Determination
 - Restoration
- Newtown Creek NRDA



Newtown Creek

- Located in Brooklyn and Queens, NY
- 166 acres
- Mouth of the creek at the confluence with the East River to the upstream ends of the waterway



Newtown Creek

Industrialization began in the 18th century, substantial expansion in 19th century

- Channelization



Map circa 1844



Aerial image 2013

- Shoreline hardening



Henderson (Wikipedia 2016)

Newtown Creek

Riverine habitat, supporting both in-water species and species that use the river for feeding, breeding, and resting. Examples:

- Benthic invertebrates (amphipods)
- Crabs (blue crabs)
- Fish (mummichog, striped bass, Atlantic menhaden)
- Birds (spotted sandpiper, double-crested cormorants)
- Mammals (racoons)



Newtown Creek

People use the natural resources in Newtown Creek

- Fishing
- Crabbing
- Boating
- Kayaking



Newtown Creek

Industrialization also led to the release of contaminants via:

- Direct discharge
- Leaks and spills
- Surface runoff
- Wastewater



Mobil Refinery 1960

NCA 2016

Newtown Creek

Federal and state environmental regulatory processes underway, focused on contamination

- Remedial process – EPA/NYSDEC
 - Federal Superfund RI/FS – Newtown Creek
 - Partial remediation has been conducted at some upland sites since 1979
 - New upland federal Superfund site – Greenpoint
- Activity under the Clean Water Act
- **Natural Resource Damage Assessment**

Natural Resource Damage Assessment (NRDA)

What is it?

- A process to determine:
 - Natural resource injuries and service losses
 - Appropriate amount and type of restoration needed
- Goal is to “make public whole” following release of hazardous substances & oil
- “Trustees” act on behalf of public
- NRD success:
 - Measured by degree to which actual injuries restored
- Implemented under Federal statutes and regulations



Purpose of NRDA = 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.
- Compensation must restore, replace, or acquire the equivalent of lost resources/ resource services (restoration).

Cleanup 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
- May not eliminate natural resource injuries caused by exposure to that substance
- Don't address losses to resources and/or resource uses over time (i.e., past and future)

Trustees – Restoration

- Act on behalf of the public to restore natural resources injured by releases of hazardous substances, and obtain compensation for both lost natural resource functions and the public's lost uses of the resources over time (past, present, and future)
- Accounts for remedial actions

What NRDA Isn't

- A “Second clean-up.”
- Remedial actions to reduce future risk to human health and environment.
- A mechanism to ameliorate losses beyond natural resource injuries.

Newton Creek NRDA Trustees

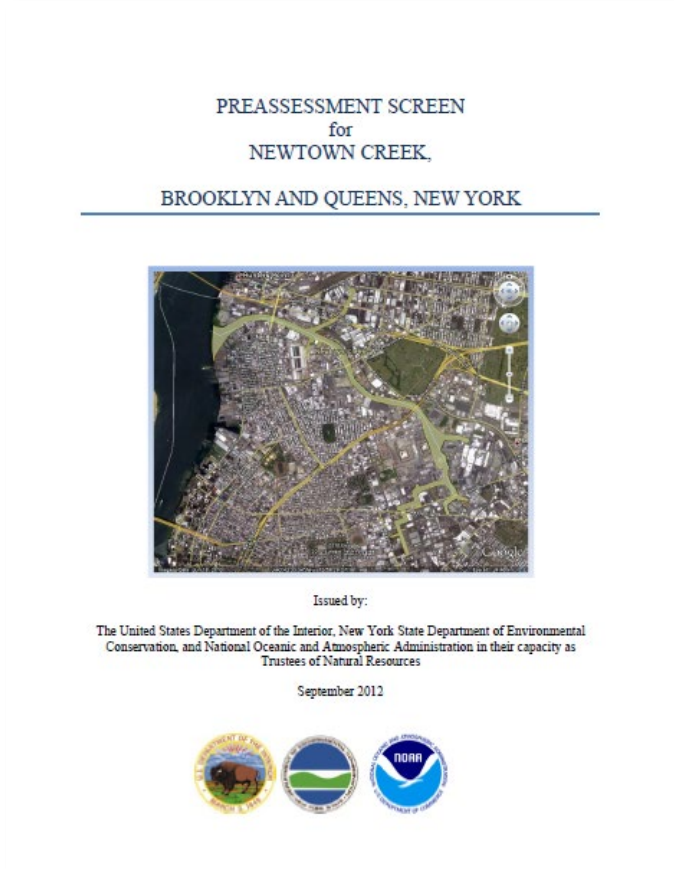
- U.S. Department of the Interior Fish and Wildlife Service
- National Oceanic and Atmospheric Administration
- State of New York Department of Environmental Conservation

(actual Trustees are specific individuals in each agency)



**Department of
Environmental
Conservation**

NRDA Process



Preassessment

- Preassessment Screen
- Preliminary Determinations (Injury/Damages)

Planning and Assessment

- Injury Assessment
- Damages Determination

Restoration (Damages) Claim

Settlement or Litigation

Restoration

- Planning
- Implementation
- Monitoring

(Public Input)

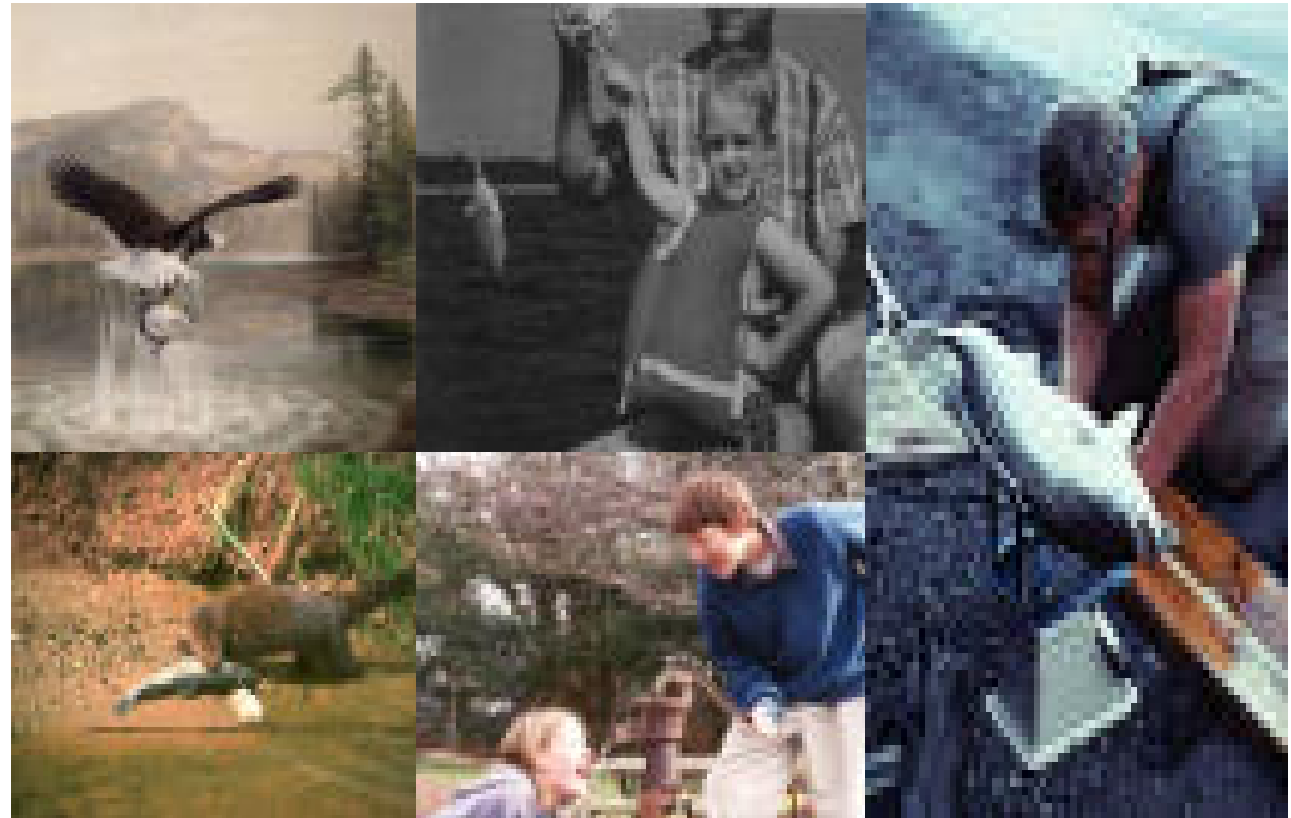
Natural Resources

- Trustees can recover damages for injuries to natural resources.
- Humans are not natural resources.
- Natural Resources:
 - Land
 - Fish
 - Wildlife
 - Biota
 - Air
 - Water
 - Ground water
 - Drinking water supplies
- And other such resources belonging to, managed by, held in trust by, appertaining to, or otherwise controlled by the United States, any State or local government, any foreign government, any Indian tribe.

Natural Resources

Resources that Trustees may consider within the NRDA process:

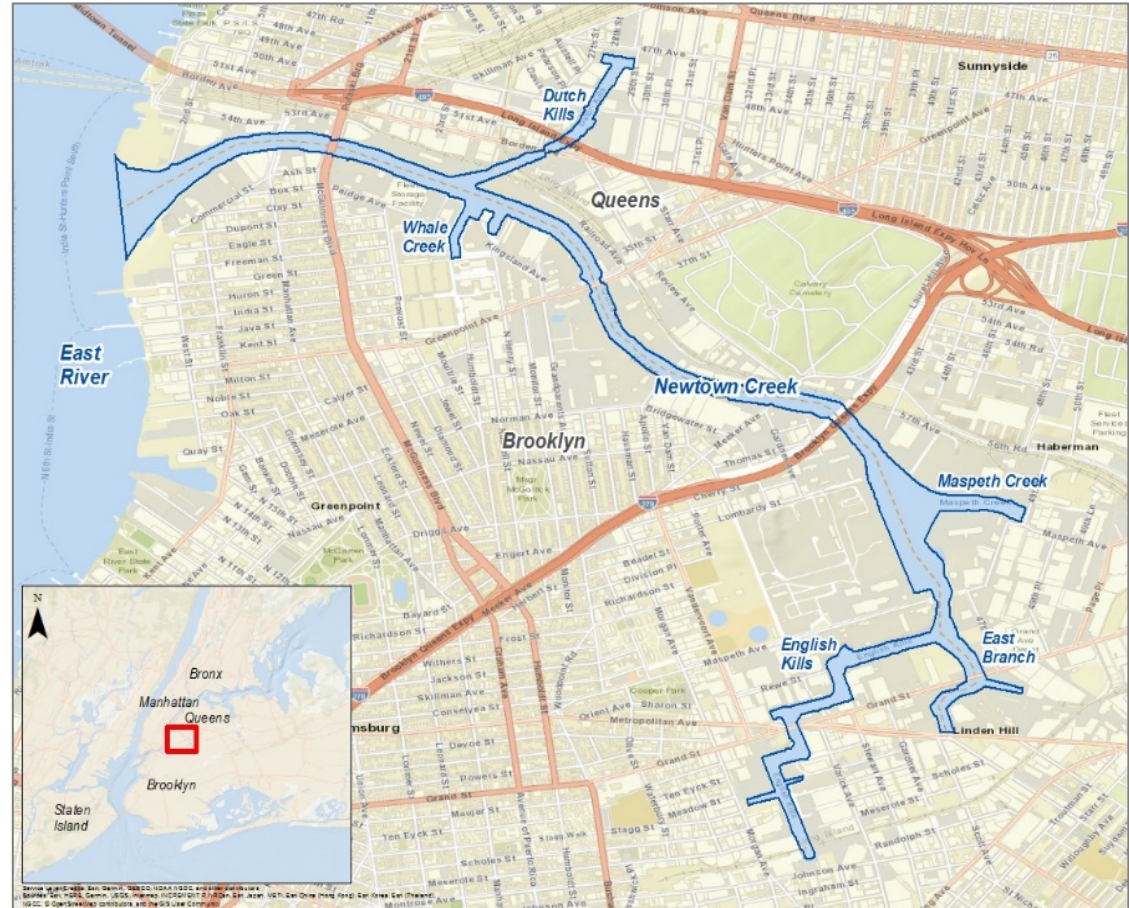
- Biota and their habitats
- Surface water and sediment
- Ground water
- Geologic (soils and upland)
- Air



Natural Resources at Newtown Creek

Current Trustee focus for assessing injury is footprint of the Creek and associated shoreline and natural resources:

- Surface water
- Sediment
- Aquatic-dependent biota



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.
- Trail walking.

- Ecological:

- Nutrient cycling.
- Provision of habitat.
- Predator-prey interactions.
- Organism viability.
- Ecosystem sustainability.



What Are Natural Resource Injuries?

- Adverse effects on the viability of a resource such that it results in a loss in resource services. Examples:
 - Death
 - Disease
 - Cancer
 - Genetic Mutations
 - Physiological Malfunctions
 - Physical Deformities
 - Behavioral Abnormalities
 - Reproductive Impairment
- Consumption Advisories
- Exceedance of regulatory criteria



Injury Determination

Establish Pathway: demonstrate the connection between the release of hazardous substances and exposure of a resource to a hazardous substance.

- Establishing injury. Examples:
 - Exceedance of a standard/criteria.
 - Existence of a consumption advisory.
 - Change in organism function.
 - Change in ecological community .
 - Change in ecosystem function (e.g., loss of prey).
- Regulations define certain applicable thresholds, identify methodologies for demonstrating injury (e.g., fish kills, specific biological responses, laboratory toxicity testing, etc.)
- Trustee burden to establish causation

Injury Quantification

Purpose: “to quantify the effects of the discharge or release on the injured natural resource for use in determining the appropriate amount of compensation.” (43 CFR § 11.70(b))

Key steps:

- Determine baseline condition of injured resource.
 - **Baseline:** the condition that would have existed had the discharge of oil or release of a hazardous substance not occurred.
 - Measured using pre-release (historical) and/or reference data.

Injury Quantification (continued)

Key Steps (continued):

- Identify level of services provided by the injured resource.
- Determine recoverability of injured resource: estimate time required for restoration activities (or no action/natural recovery) to return injured resources to baseline level of services.
- Quantify reduction in services: determine the extent to which injuries have reduced the level/type/quality of natural resource services (relative to baseline).
 - Human use losses: lost trips, lost value.
 - Ecological losses: quantity of lost resource or percentage reduction in resource or habitat services.

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” plus compensable value of interim lost services (43 CFR § 11.80(a)(1)).

Key Steps

- Link benefits provided by compensation/restoration to losses resulting from injury.
- Where damages = cost of restoration, scale benefits and losses to ensure equivalency.
- Where damages = lost value, ensure value is appropriate.

Restoration Planning and Implementation

- Restoration Plan required under 42 USC Section 111(i)
- All restoration must be related to the actual injuries (nexus).
- Public involvement in restoration planning.
 - Informal briefings and restoration scoping.
 - Public review and comment on Restoration Plan.
- Trustee Council remains the final decision maker.

Applicable Restoration Criteria

Ten regulatory criteria for restoration projects (43 CFR 11.82(d)). Examples:

- Comply with applicable/relevant federal, state, local laws and regulations.
- Not endanger public health and safety.
- Not otherwise required (e.g., by an existing government program, law, court mandate)

Trustees may identify additional criteria

Achieving Restoration

Typical examples:

- Increase amount of quality habitat for species by restoration or acquisition.
- Enhance or restore quality of existing habitat.
- Increase access to recreational opportunities



Newtown Creek NRDA

- Preassessment Screen released (2012).
- Trustees anticipate additional public outreach as the assessment proceeds
- Currently engaged in assessment planning.
 - Developing an Assessment Plan
 - Describe the Trustees' plan for gathering and analyzing information (existing data and primary studies) and the expected approach for injury determination, injury quantification, and damage determination.
 - Opportunity for public review and comment.

Newtown Creek NRDA

- Additional considerations as the NRDA process moves forward...
 - Climate change and sea level rise
 - Navigation status
 - Cleanup timing
 - Environmental Justice
 - Coordination to develop effective restoration

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