

Public Open House

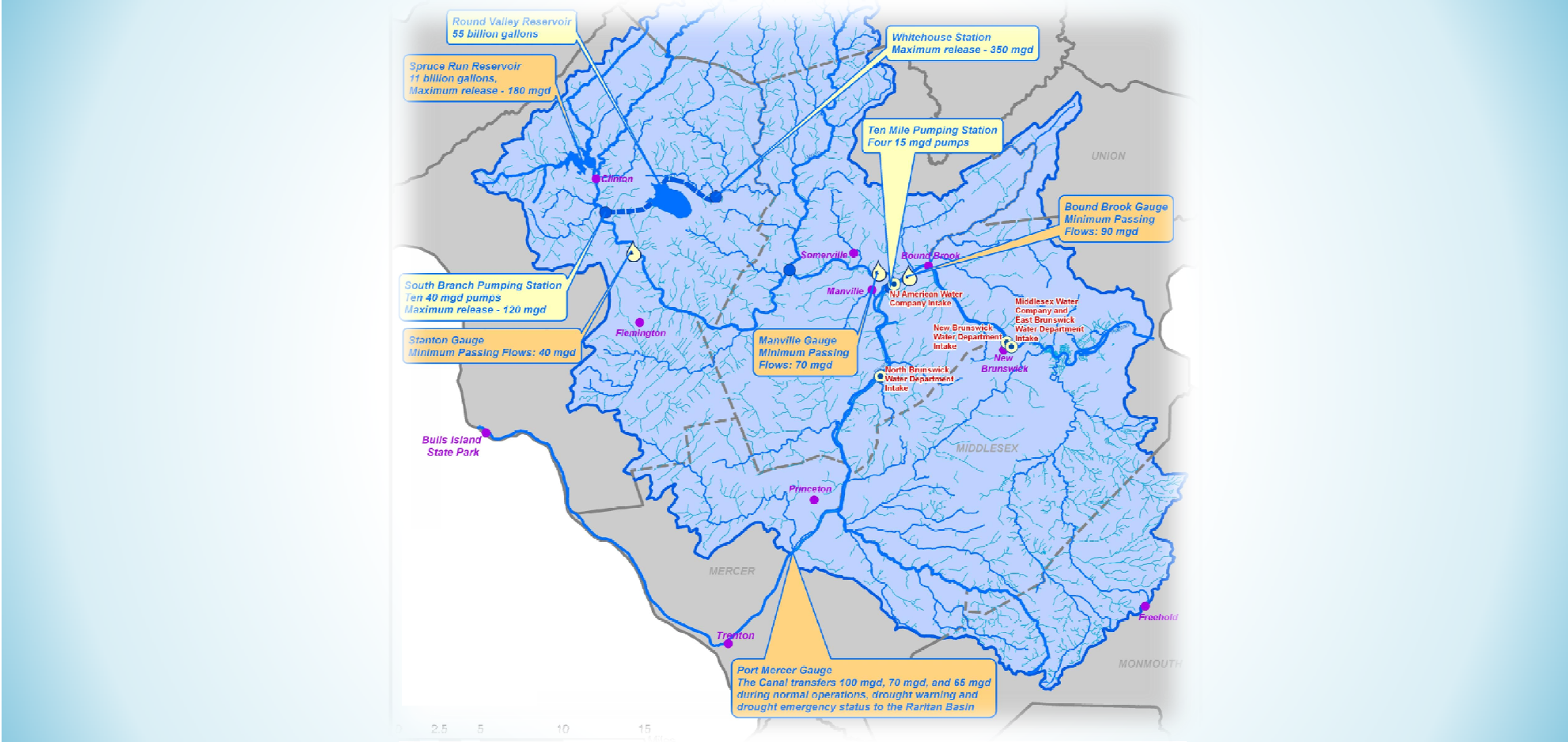
NEW JERSEY WATER SUPPLY AUTHORITY Dredging of the Delaware and Raritan Canal from Kingston to Amwell Road

September 15, 2011



Dredging of the Delaware and Raritan Canal from Kingston to Amwell Road

Raritan Basin Water Supply System



New Jersey Water



Supply Authority

Dredging of the Delaware and Raritan Canal from Kingston to Amwell Road

Project Objective

- Remove an estimated 270,000 cubic yards of sediment from the Canal in order to restore its flow capacity
- Remove and dispose of 45,000 cubic yards of sediment from the Authority's stockpile site in Delaware Township, Hunterdon County, NJ

Project Goals

- Protect the historical integrity of the Canal
- Minimize environmental and social impacts
- Maintain technical quality
- Maintain water supply

Critical Project Elements

- Develop dredging plan acceptable to stakeholders
- Focused outreach to public officials and stakeholders



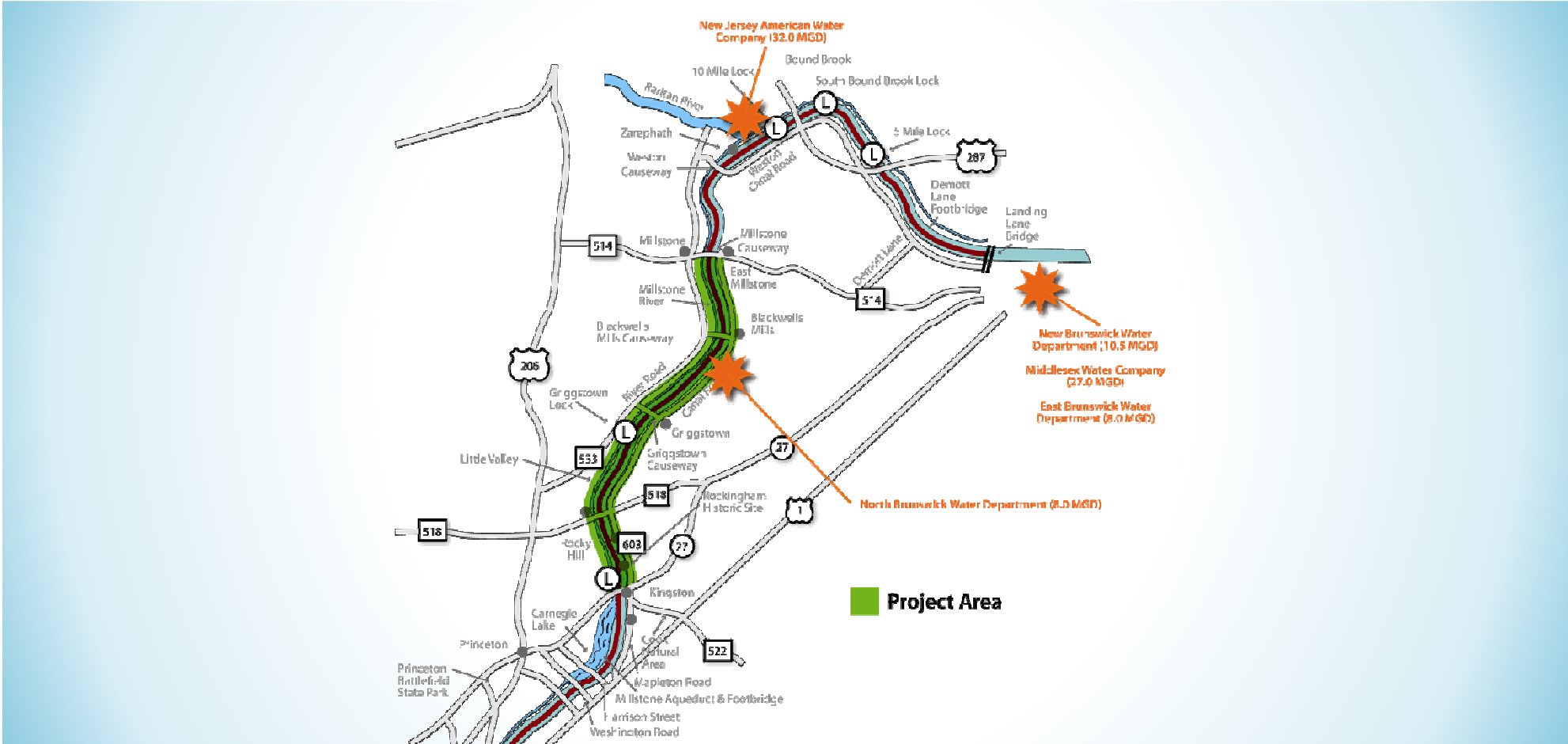
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Project Area



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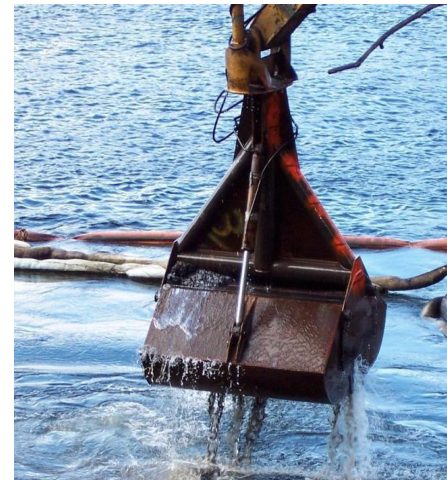


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Dredging of the Delaware and Raritan Canal from Kingston to Amwell Road

Mechanical Dredging (in the wet)

- Conducted in the wet using hydraulic excavator operating from shallow-draft barge or flexi-float
- Hydraulic clamshell bucket to be used on dredge to minimize turbidity (1-3 cubic yard bucket)
- Dredge maneuvering with non-penetrative methods (anchors, guidelines, etc.)
- Dredged sediment to be placed into 10-20 cubic yard scows /20 cubic yard containers on flexi-floats
- Scows unloaded to trucks and transported to dewatering area for air-drying/stabilization
- Potential for multiple dredge units operating simultaneously
- Access concerns in shoreline areas
- Risks include impacts to Canal Road to construction vehicle traffic
- Projected construction cost: \$30.9 to \$35.4 million
- Dropped from further consideration due to risk and projected construction cost



Dredging of the Delaware and Raritan Canal from Kingston to Amwell Road

Hydraulic Dredging with Mechanical Dewatering

- Conducted in the wet using hydraulic cutterhead dredge
- Requires separate Submerged Aquatic Vegetation (SAV) / debris removal operations prior to dredging
- Dredge maneuvering with non-penetrative methods (anchors, guidelines, etc.)
- Booster pumps required to facilitate transport of dredged sediment through plastic pipeline to mechanical dewatering area
- Water generation significantly more than other investigated removal methods
- Requires extensive water treatment / water management operations
- Potential risk to water users due to use of polymers used for sediment dewatering
- Projected construction cost: \$28.2 to \$31.6 million
- Dropped from further consideration due to projected construction cost



Dredging of the Delaware and Raritan Canal from Kingston to Amwell Road

Mechanical Excavation (in the dry)

- Canal separated into reaches varying in manageable lengths, with each provided with access area and truck ramp
- Flow Bypassed through work area via portadam or other structure with piping to convey flow to the Millstone
- Low-ground pressure excavators and dozers used to excavate sediment
- Sediment within the dewatered canal section will be reworked/air dried prior to excavation
- Allows for higher degree of accuracy during removal (increased volume control)
- Requires intensive water management operations
- Risks include impacts to Canal Road and/or the towpath due to construction vehicle traffic and potential impacts to water users resulting from blended Canal/Millstone River water
- Projected construction cost : \$21.7 to \$24.5 million



Dredging of the Delaware and Raritan Canal from Kingston to Amwell Road

Hydraulic Dredging with Geobags

- Conducted in the wet using hydraulic cutterhead dredge
- Requires separate SAV and debris removal operations prior to dredging to prevent clogging
- Dredge maneuvering with non-penetrative methods (anchors, guidelines, etc.)
- Booster pumps required facilitate transport of dredged sediment through plastic pipeline to dewatering area
- Dredged sediment to be dewatered using geobags
- High comparative production rate
- Water generation significantly more than other investigated removal methods
- Requires extensive water treatment / water management operations
- Potential impacts on water treatment plant operations due to use of polymers for sediment dewatering
- Reduced operational risk
- Projected construction cost: \$26.1 to \$29.3 million



Dredging of the Delaware and Raritan Canal from Kingston to Amwell Road

Dredging Support Equipment

- Silt Curtains
 - Control suspended solids and turbidity in the water column
 - Fabricated of flexible, vinyl fabric and provided with anchors to secure curtain bottom
 - Skirt to extend to bottom surface of the Canal
- Booster Pumps
 - Required to convey dredged sediment through plastic pipeline to dewatering area
 - Located along the western shoreline to facilitate refueling and maintenance operations
 - Equipped with double wall fuel storage tanks
 - Provided with oil containment booms to provide envelope around each booster pump



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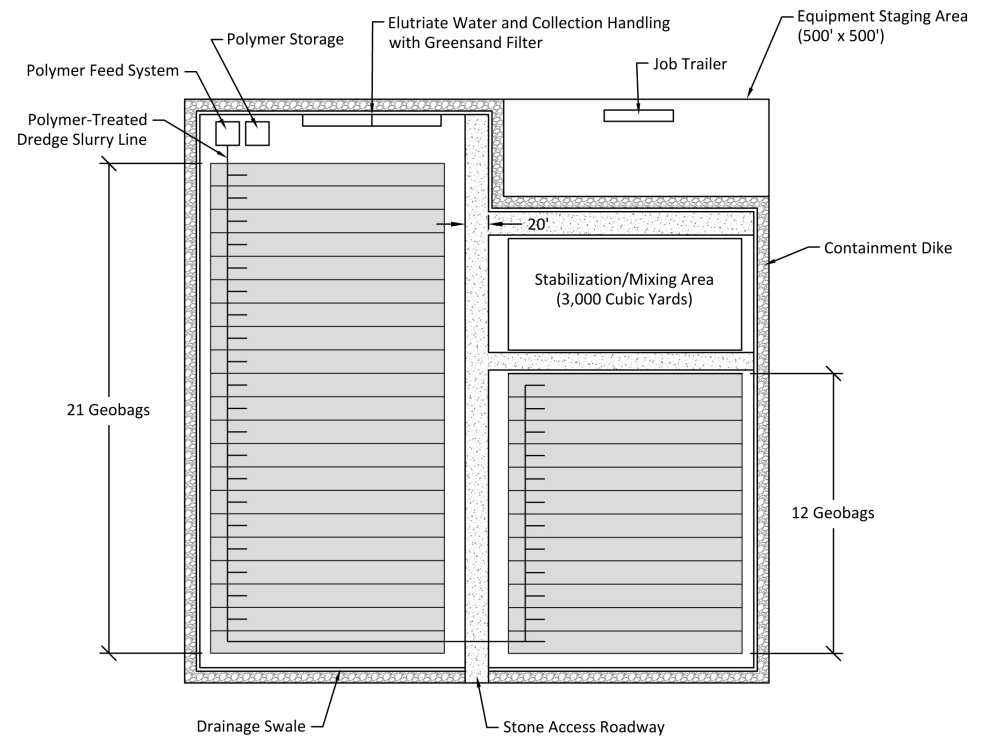


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Dredging of the Delaware and Raritan Canal from Kingston to Amwell Road

Geobag Staging Area

- Approximately 6 acres in total area
- Includes:
 - Geobag laydown area
 - Drainage swale/containment dike
 - Return water/stormwater treatment
 - Polymer metering equipment
 - Contractor office
 - Truck loading area
 - Stabilization/mixing area



Not to Scale

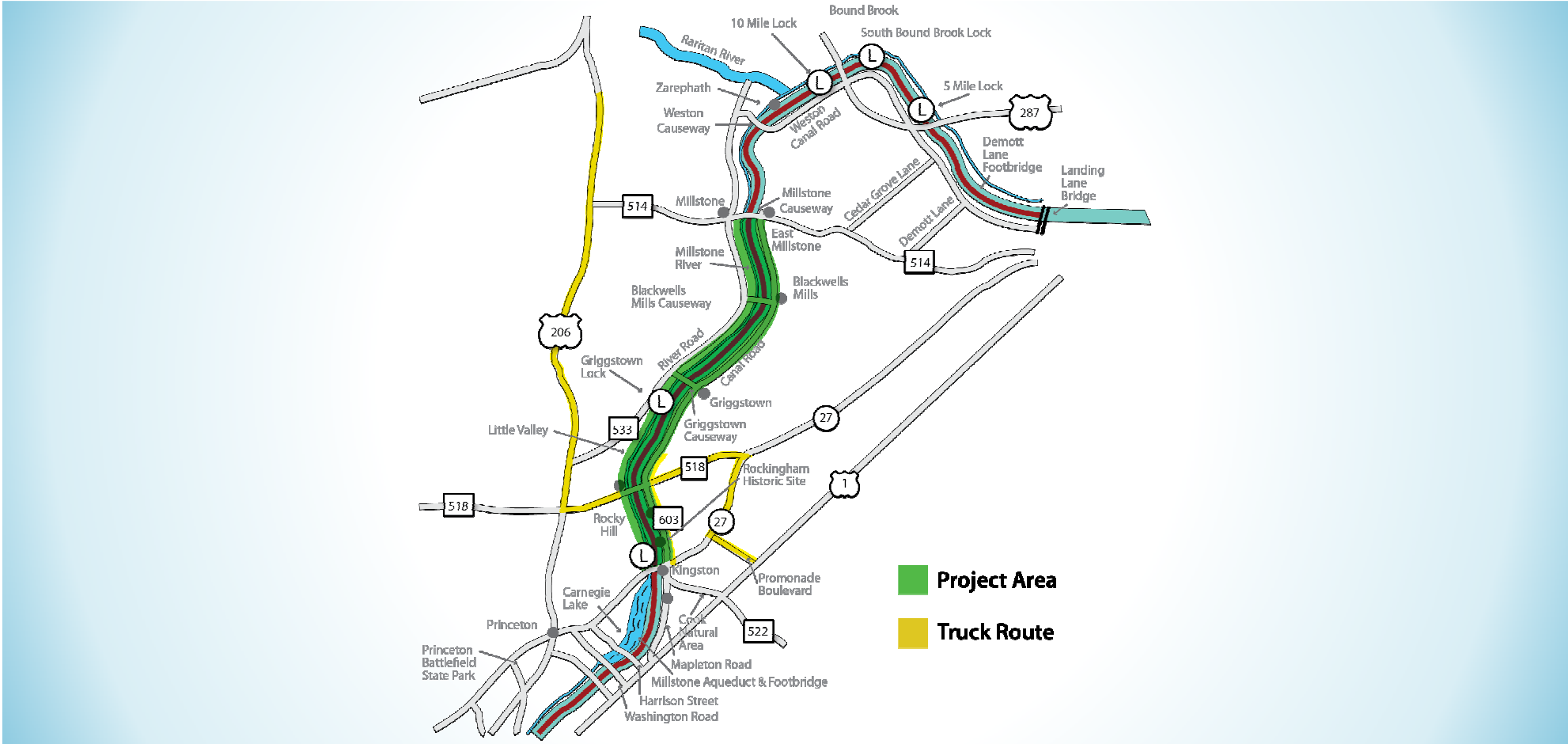
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Conceptual Traffic Routes



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Section 106 of the National Historic Preservation Act – Cultural Resources Investigations and SHPO Review



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Dredging of the Delaware and Raritan Canal from Kingston to Amwell Road

Potentially Required Permits

- U.S. Army Corps of Engineers
- Delaware and Raritan Canal Commission
- NJ Department of Environmental Protection
 - Freshwater wetlands
 - Flood hazard area
 - No net loss reforestation
 - Water lowering
 - Fish stocking
 - NJPDES Water Quality Certification
 - Section 106 consultation
- Somerset-Union County Soil Conservation District
 - NJPDES Construction
 - Soil erosion and sediment control



		Dredge Methodology		
		Mechanical Dredging (in the wet)	Mechanical Excavation (in the dry)	Hydraulic Dredging
Aesthetic Concerns	Canal Draining	○	●	○
	Staging Areas	▨	▨	▨
	Access Areas	▨	●	○
	Tree Clearing	▨	●	○
	Tree Trimming	▨	▨	▨
	Wetland and Wetland Transition Area Impacts	▨	●	○
	Species Relocation/ Restocking	○	●	○
	Flood Hazard Area Disturbance	▨	●	○
	Traffic	●	●	○
	Cultural Resources	▨	○	▨
	Trail Closures	○	●	○

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Dredging of the Delaware and Raritan Canal from Kingston to Amwell Road

Level II Environmental Information Document

- Key Environmental Issues
 - Public use
 - Surface water
 - Floodplains and riparian zones
 - Biotic (plant and animal communities)
 - Forest
 - Wetlands
 - Threatened and endangered species
 - Cultural resources
 - Impacts on water users



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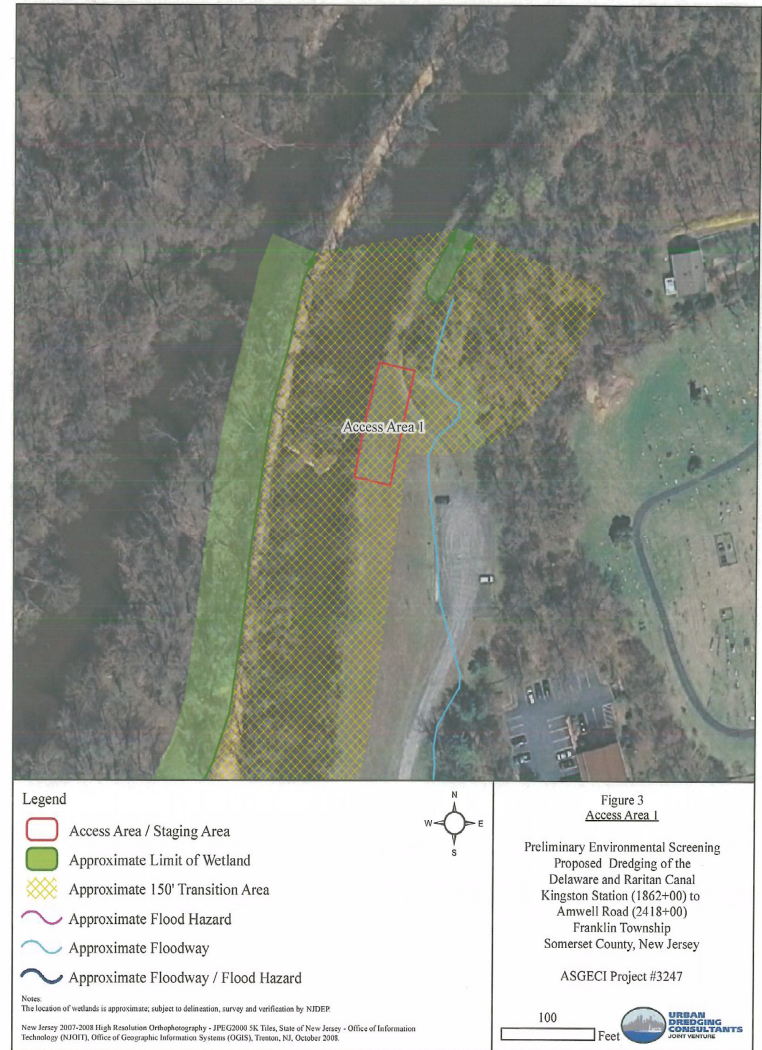


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Staging Area and Site Access Selection Process Environmental Constraints

- Wetlands and Transition Area
- Flood Hazard Area
- Riparian Zone
- Threatened and Endangered Species Habitat



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Public Officials Briefings:

- Rocky Hill
- Franklin Township
- Hillsborough
- South Brunswick
- Millstone Borough
- Somerset County
- Montgomery



Coordination Meetings

- NJDEP
- Governors Office
- D&R Canal State Park
- D&R Canal Commission
- D&R Canal interest groups briefing
- December 2010 Public Open House



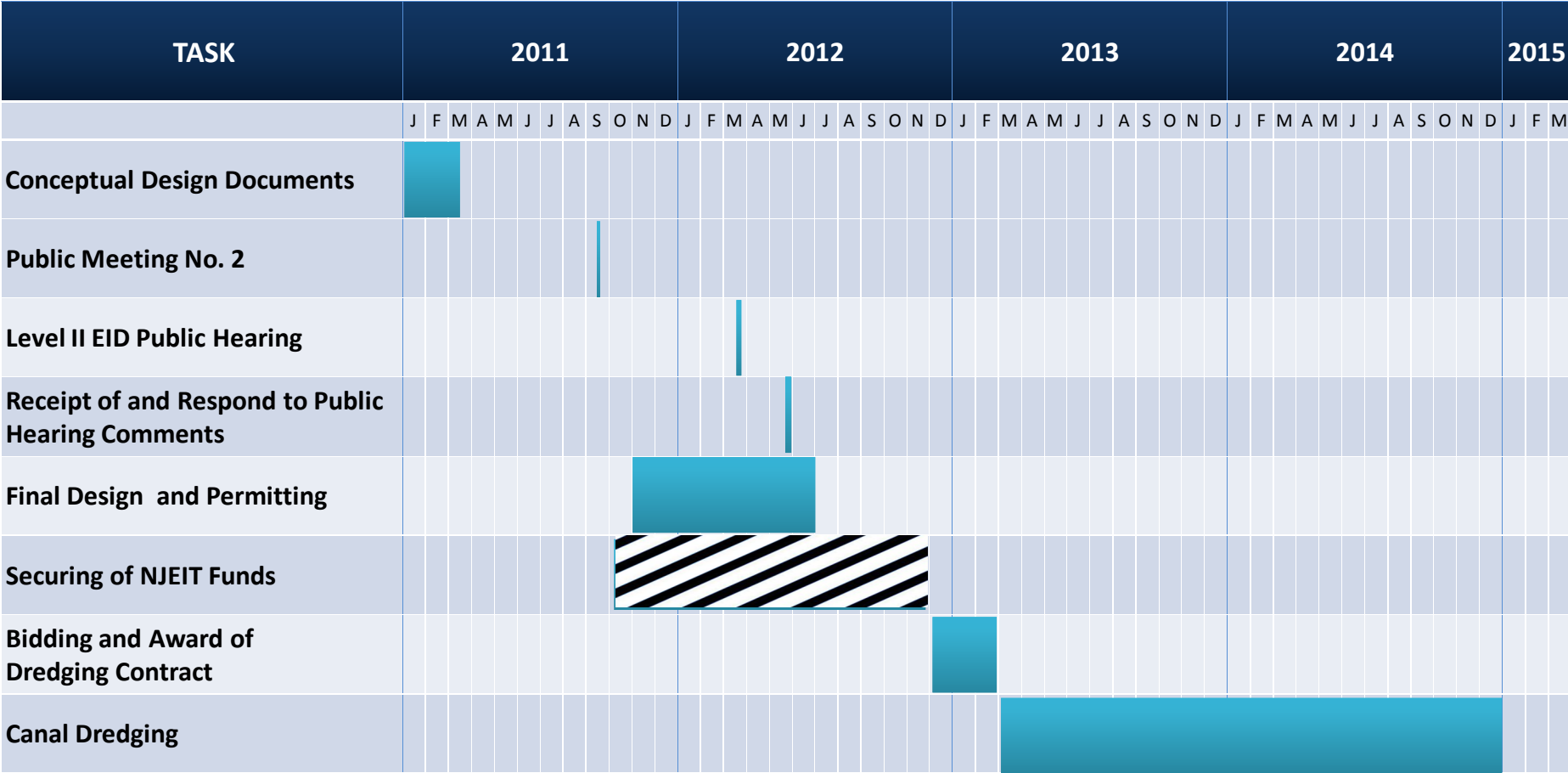
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Tentative Project Schedule



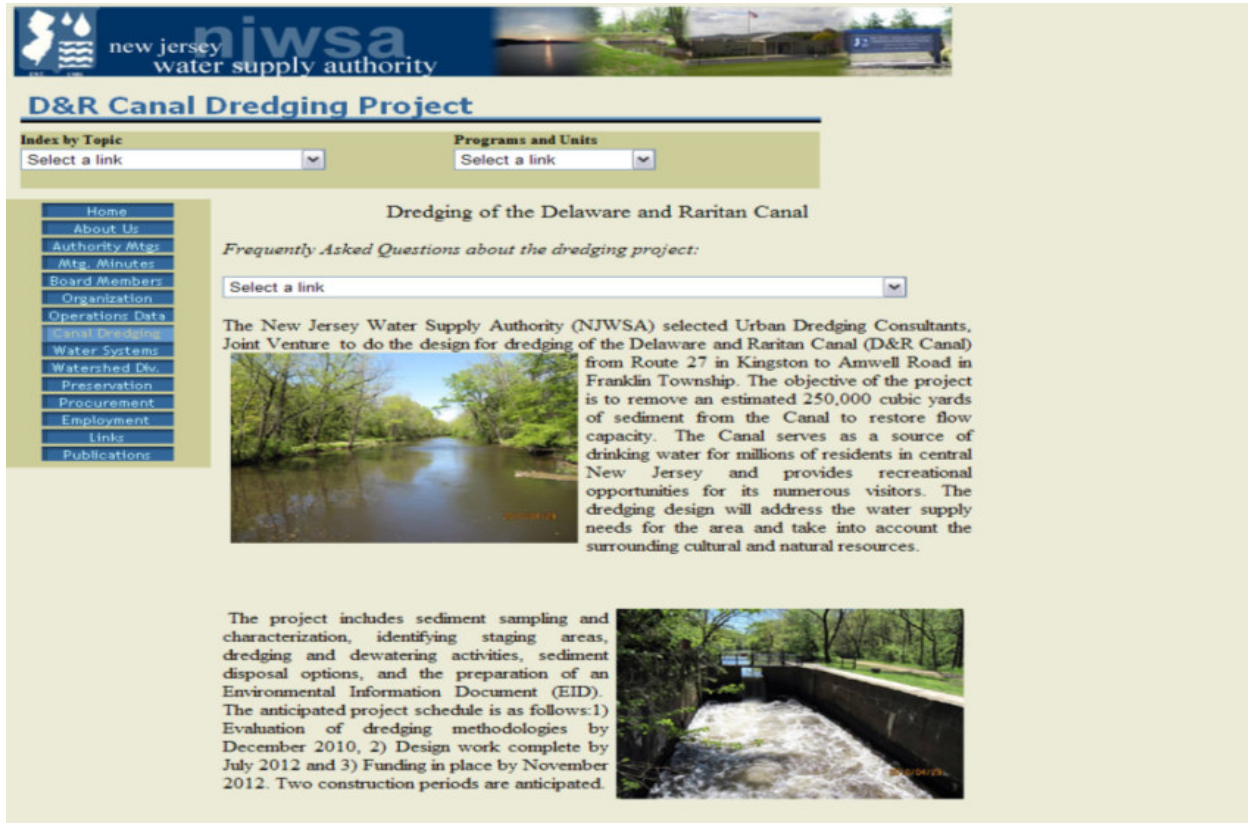
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View NJWSA Website for Continuing Project Updates



The screenshot shows the NJWSA website's "D&R Canal Dredging Project" page. At the top, the NJWSA logo is displayed alongside a banner image of a canal. Below the logo, the page title "D&R Canal Dredging Project" is centered. A navigation menu on the left lists various site sections, with "Canal Dredging" highlighted. The main content area features a "Frequently Asked Questions about the dredging project:" section with a dropdown menu. Below this, a paragraph of text describes the project's scope and objectives, accompanied by a photograph of a canal. A second paragraph details the project's schedule and activities, with a corresponding photograph of a canal structure.

new jersey **njwsa**
water supply authority

D&R Canal Dredging Project

Index by Topic Programs and Units

Home
About Us
Authority Mtgs
Mtgs Minutes
Board Members
Organization
Operations Data
Canal Dredging
Water Systems
Watershed Div.
Preservation
Procurement
Employment
Links
Publications

Dredging of the Delaware and Raritan Canal

Frequently Asked Questions about the dredging project:

The New Jersey Water Supply Authority (NJWSA) selected Urban Dredging Consultants, Joint Venture to do the design for dredging of the Delaware and Raritan Canal (D&R Canal) from Route 27 in Kingston to Amwell Road in Franklin Township. The objective of the project is to remove an estimated 250,000 cubic yards of sediment from the Canal to restore flow capacity. The Canal serves as a source of drinking water for millions of residents in central New Jersey and provides recreational opportunities for its numerous visitors. The dredging design will address the water supply needs for the area and take into account the surrounding cultural and natural resources.

The project includes sediment sampling and characterization, identifying staging areas, dredging and dewatering activities, sediment disposal options, and the preparation of an Environmental Information Document (EID). The anticipated project schedule is as follows: 1) Evaluation of dredging methodologies by December 2010, 2) Design work complete by July 2012 and 3) Funding in place by November 2012. Two construction periods are anticipated.

<http://www.njwsa.org/html/canaldredging.html>

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Questions

