

**D&R CANAL TREE REMOVAL AND TRIMMING PLAN**

Original: JANUARY 2020

Last revised: DECEMBER 2022

**SUBMITTED TO**

THE DELAWARE AND RARITAN CANAL COMMISSION

JANUARY 2023

**SUBMITTED BY**

THE NEW JERSEY WATER SUPPLY AUTHORITY

AND

DEPARTMENT OF ENVIRONMENTAL PROTECTION,  
DELAWARE AND RARITAN STATE PARK

IN ACCORDANCE WITH SCHEDULE B, SECTION I, SUBSECTION C(2)

OF

PROPERTY LEASE AGREEMENT

BETWEEN THE

DEPARTMENT OF ENVIRONMENTAL PROTECTION

AND

NEW JERSEY WATER SUPPLY AUTHORITY

DATED JUNE 17, 1986

## **D&R Canal Tree Removal and Trimming Plan 2023**

Prepared by:

New Jersey Water Supply Authority (“Authority”)

New Jersey Department of Environmental Protection, Delaware and Raritan Canal State Park (“Park”)

Introduction:

The Authority is responsible for maintaining the “transmission complex facilities” of the D&R Canal to ensure the transfer of up to 100 million gallons of water per day from the Delaware River watershed, which begins at Bulls Island, to the Raritan River watershed, which ends at Landing Lane. This activity provides up to 1.5 million central New Jersey residents with a raw water source of drinking water and irrigation. The “transmission complex facilities” include the waterway, embankments, flood guard banks, hydraulic and flow control structures, and land necessary to operate and maintain the Canal as a water supply system. A part of this maintenance responsibility is management of trees that currently threaten to damage or will threaten to damage in the future, the transmission complex facilities. To the extent the presence of trees is impeding the flow of water, is preventing Authority personnel from observing the embankments for evidence of seepage or burrowing animals, has or will cause extensive damage when undermined by age or storm, is harming or will harm structures, or is hindering the ability to perform other routine maintenance, the removal or trimming of trees and other vegetation is necessary.

Tree maintenance work by the Authority may be categorized as either ‘Planned’ or ‘Emergency’ work. Planned work typically occurs in the winter months. A section of the Canal targeted for planned work may not be completed in one season, and the Authority may work in portions of several sections in one season. Planned work may include the removal of select limbs or removal of entire trees. The removal of other woody material such as vines, shrub like plants and brush, normally included in routine embankment maintenance, may be necessary to access targeted trees during planned tree maintenance. Emergency work may occur at any time of year, may last for months, can occur anywhere, and may preempt planned work. Emergency work may also be dictated by weather and may include work on trees in Planned work areas. Emergency work includes removing downed

trees and limbs, stump grinding, root plate repairs, and most likely also includes towpath repairs. Soils disturbed during tree removal activities will be stabilized in accordance with the NJ Dept. of Agriculture's *Standards for Soil Erosion and Sediment Control in New Jersey*. If large areas of embankment are to be cleared of trees, an appropriate herbaceous vegetation will be selected for stabilization in consultation with Park staff with the intent to favor native vegetation and prevent invasive species from becoming established.

The Delaware and Raritan Canal State Park is responsible for management, maintenance, development, stewardship and operation of the Canal for public recreation for present and future generations. Park Service staff responsibilities include, but are not limited to, the creation of wildlife habitats, suppression of pest outbreaks, restoration of ecologically significant areas and insurance of public safety.

#### Tree Management:

1. Tree trimming/removal consideration factors:
  - 1.1. Embankment protection/restoration
  - 1.2. Public safety
  - 1.3. Maintenance of water flow through Canal
  - 1.4. Passage of Authority, Park and/or designee vehicles for maintenance or emergency work
  - 1.5. Allowing for a comprehensive visual inspection of the embankment to ensure it continues to impound the water of the Canal and to prevent waters from adjacent waterways from damaging the Canal or its structures
  - 1.6. Improved access for embankment/prism maintenance
2. Authority, Park staff or their designees shall be allowed to remove trees that meet any of the categories below:
  - 2.1. Ash trees.
  - 2.2. Less than 4 inches d.b.h.
  - 2.3. Threatening public safety

- 2.4. Inhibiting the ability of equipment to traverse the towpath or as necessary to maintain and carry out operations
- 2.5. Inhibiting the ability of equipment to access other portions of the embankment that need maintenance
- 2.6. Inhibiting the ability of Canal staff to make a necessary repair to the embankment
- 2.7. Dead
- 2.8. Dying
- 2.9. Damaged
- 2.10. Damaging or threatening to damage the embankment or any structure
  - 2.10.1 For the “feeder” section north of Canal Station 207+00 (the Railroad bridge over the Canal in Stockton), this shall be construed to mean any and all trees growing on the man-made embankment separating the Canal from the Delaware River. This section of embankment is unique because it is tall and/or narrow, with very steep side slopes, and because it is subject to unusual hydraulic loading during Delaware River flood events. Trees growing on this embankment have historically contributed to both partial slope failures and complete breaches.
- 2.11. Severely leaning over Canal (imminent danger of falling into canal)
- 2.12. Severely leaning over towpath (potential safety issue)
- 2.13. Invasive species
3. Emergency work:
  - 3.1. Storm damage – In the case of storm damage, Park Service and Authority staff often need to remove fallen and/or damaged trees. As stated above, other trees may need to be removed to safely fell partially downed or damaged trees to either access them or to do so in a safe manner.
  - 3.2. Park Service and Authority staff shall remove any limbs or trees that have snapped or fallen over
  - 3.3. Emergency embankment or structure repair
    - 3.3.1. In the case of emergency repairs to embankments or structures such as seepage or slumping, trees may need to be removed to allow for a proper repair to be diagnosed and/or accomplished.

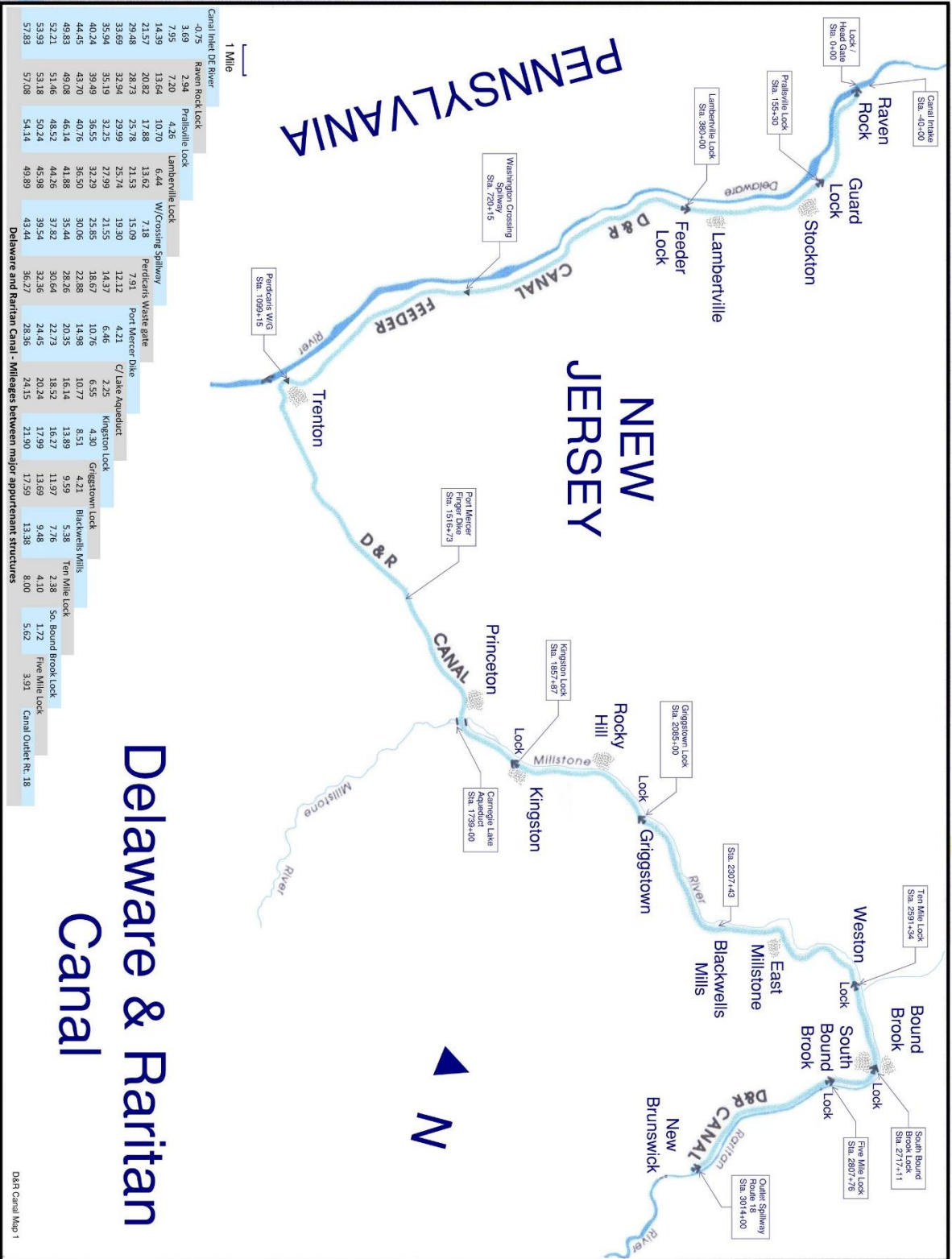
4. Planned work: the following are the areas generally planned for targeted tree removal/trimming beginning in 2022 as resource availability permits.

<u>Location</u>	<u>Approx. Stations (map pg. 6)</u>
4.1. Bull's Island South Spillway to old Railroad bridge in Stockton.	25 - 207
4.2. Wall on river side bank of Canal from Coryell Street (Lambertville) to lock	351 - 379
4.3. Wall on river side of towpath from South Lambertville into West Amwell	390 - 425
4.4. River side from Washington Crossing Spillway downstream	721 - 731
4.5. Passaic Street to Rose Street	1127 - 1158
4.6. Cherry Tree Lane to Route 1 over pass	1271 – 1286
4.7. Port Mercer Flood guard bank Route 1 to Province Line Road	1425 – 1509
4.8. Quaker Road to Alexander Road Guard bank & Canal embankment	1523 - 1653
4.9. Carnegie Lake Aqueduct to Kingston Lock	1741 - 1858
4.10. Route 27 to Griggstown Causeway	1862 - 2120
4.11. South Bound Brook Spillway to Queens Bridge	2699 - 2725

5. Tree Removal as part of other individual and/or Capital Projects:

5.1. All other proposed tree removal not subject to sections 2 through 4, or which are subject to sections 2 through 4 but are part of a planned capital project shall be reviewed by the D&R Canal Commission with an application for project approval.

6. This is a general plan and is subject to change based on actual weather & Canal conditions. This plan will be reviewed annually or on an as needed basis and updated accordingly.



Structure	Stationing	Mileage
Canal Inlet DE River	-0.75	
Raven Rock Lock	2.94	
Preliminary Lock	7.20	
Lambertville Lock	4.26	
Washington Crossing	6.44	
W/Crossing Spillway	7.18	
Perdicaris Waste gate	15.09	
Port Mercer Dike	12.12	
C/Lake Aqueduct	2.25	
Kingston Lock	4.30	
Griggstown Lock	4.21	
Bladwell's Mills	5.38	
Ten Mile Lock	2.38	
So. Bound Brook Lock	1.72	
Five Mile Lock	1.72	
Canal Outlet R. 18	3.91	
Canal Inlet DE River	3.69	
Raven Rock Lock	7.95	
Preliminary Lock	13.64	
Lambertville Lock	10.70	
Washington Crossing	13.62	
W/Crossing Spillway	13.62	
Perdicaris Waste gate	15.09	
Port Mercer Dike	12.12	
C/Lake Aqueduct	2.25	
Kingston Lock	4.30	
Griggstown Lock	4.21	
Bladwell's Mills	5.38	
Ten Mile Lock	2.38	
So. Bound Brook Lock	1.72	
Five Mile Lock	1.72	
Canal Outlet R. 18	3.91	
Canal Inlet DE River	14.39	
Raven Rock Lock	20.82	
Preliminary Lock	17.88	
Lambertville Lock	10.70	
Washington Crossing	13.62	
W/Crossing Spillway	13.62	
Perdicaris Waste gate	15.09	
Port Mercer Dike	12.12	
C/Lake Aqueduct	2.25	
Kingston Lock	4.30	
Griggstown Lock	4.21	
Bladwell's Mills	5.38	
Ten Mile Lock	2.38	
So. Bound Brook Lock	1.72	
Five Mile Lock	1.72	
Canal Outlet R. 18	3.91	
Canal Inlet DE River	29.48	
Raven Rock Lock	32.94	
Preliminary Lock	25.78	
Lambertville Lock	10.70	
Washington Crossing	13.62	
W/Crossing Spillway	13.62	
Perdicaris Waste gate	15.09	
Port Mercer Dike	12.12	
C/Lake Aqueduct	2.25	
Kingston Lock	4.30	
Griggstown Lock	4.21	
Bladwell's Mills	5.38	
Ten Mile Lock	2.38	
So. Bound Brook Lock	1.72	
Five Mile Lock	1.72	
Canal Outlet R. 18	3.91	
Canal Inlet DE River	35.94	
Raven Rock Lock	32.25	
Preliminary Lock	22.79	
Lambertville Lock	10.70	
Washington Crossing	13.62	
W/Crossing Spillway	13.62	
Perdicaris Waste gate	15.09	
Port Mercer Dike	12.12	
C/Lake Aqueduct	2.25	
Kingston Lock	4.30	
Griggstown Lock	4.21	
Bladwell's Mills	5.38	
Ten Mile Lock	2.38	
So. Bound Brook Lock	1.72	
Five Mile Lock	1.72	
Canal Outlet R. 18	3.91	
Canal Inlet DE River	40.24	
Raven Rock Lock	36.55	
Preliminary Lock	27.99	
Lambertville Lock	10.70	
Washington Crossing	13.62	
W/Crossing Spillway	13.62	
Perdicaris Waste gate	15.09	
Port Mercer Dike	12.12	
C/Lake Aqueduct	2.25	
Kingston Lock	4.30	
Griggstown Lock	4.21	
Bladwell's Mills	5.38	
Ten Mile Lock	2.38	
So. Bound Brook Lock	1.72	
Five Mile Lock	1.72	
Canal Outlet R. 18	3.91	
Canal Inlet DE River	44.45	
Raven Rock Lock	36.50	
Preliminary Lock	25.85	
Lambertville Lock	10.70	
Washington Crossing	13.62	
W/Crossing Spillway	13.62	
Perdicaris Waste gate	15.09	
Port Mercer Dike	12.12	
C/Lake Aqueduct	2.25	
Kingston Lock	4.30	
Griggstown Lock	4.21	
Bladwell's Mills	5.38	
Ten Mile Lock	2.38	
So. Bound Brook Lock	1.72	
Five Mile Lock	1.72	
Canal Outlet R. 18	3.91	
Canal Inlet DE River	49.83	
Raven Rock Lock	35.44	
Preliminary Lock	22.86	
Lambertville Lock	10.70	
Washington Crossing	13.62	
W/Crossing Spillway	13.62	
Perdicaris Waste gate	15.09	
Port Mercer Dike	12.12	
C/Lake Aqueduct	2.25	
Kingston Lock	4.30	
Griggstown Lock	4.21	
Bladwell's Mills	5.38	
Ten Mile Lock	2.38	
So. Bound Brook Lock	1.72	
Five Mile Lock	1.72	
Canal Outlet R. 18	3.91	
Canal Inlet DE River	52.21	
Raven Rock Lock	30.64	
Preliminary Lock	18.52	
Lambertville Lock	10.70	
Washington Crossing	13.62	
W/Crossing Spillway	13.62	
Perdicaris Waste gate	15.09	
Port Mercer Dike	12.12	
C/Lake Aqueduct	2.25	
Kingston Lock	4.30	
Griggstown Lock	4.21	
Bladwell's Mills	5.38	
Ten Mile Lock	2.38	
So. Bound Brook Lock	1.72	
Five Mile Lock	1.72	
Canal Outlet R. 18	3.91	
Canal Inlet DE River	53.93	
Raven Rock Lock	39.54	
Preliminary Lock	24.45	
Lambertville Lock	10.70	
Washington Crossing	13.62	
W/Crossing Spillway	13.62	
Perdicaris Waste gate	15.09	
Port Mercer Dike	12.12	
C/Lake Aqueduct	2.25	
Kingston Lock	4.30	
Griggstown Lock	4.21	
Bladwell's Mills	5.38	
Ten Mile Lock	2.38	
So. Bound Brook Lock	1.72	
Five Mile Lock	1.72	
Canal Outlet R. 18	3.91	
Canal Inlet DE River	57.83	
Raven Rock Lock	43.44	
Preliminary Lock	28.36	
Lambertville Lock	10.70	
Washington Crossing	13.62	
W/Crossing Spillway	13.62	
Perdicaris Waste gate	15.09	
Port Mercer Dike	12.12	
C/Lake Aqueduct	2.25	
Kingston Lock	4.30	
Griggstown Lock	4.21	
Bladwell's Mills	5.38	
Ten Mile Lock	2.38	
So. Bound Brook Lock	1.72	
Five Mile Lock	1.72	
Canal Outlet R. 18	3.91	

D&R Canal Map 1