New Jersey’s Rancocas Creek Watershed Mount Holly and Arneys Mount Cuestas

High Tide
New Jersey’s North Branch Rancocas Creek
Rancocas Natural Area/Long Bridge Burl Co Park
Photograph Joe Pluck’s Hot Air Ballon, July, 2024

Who's that knocking ?

Rancocas Creek Water Trail

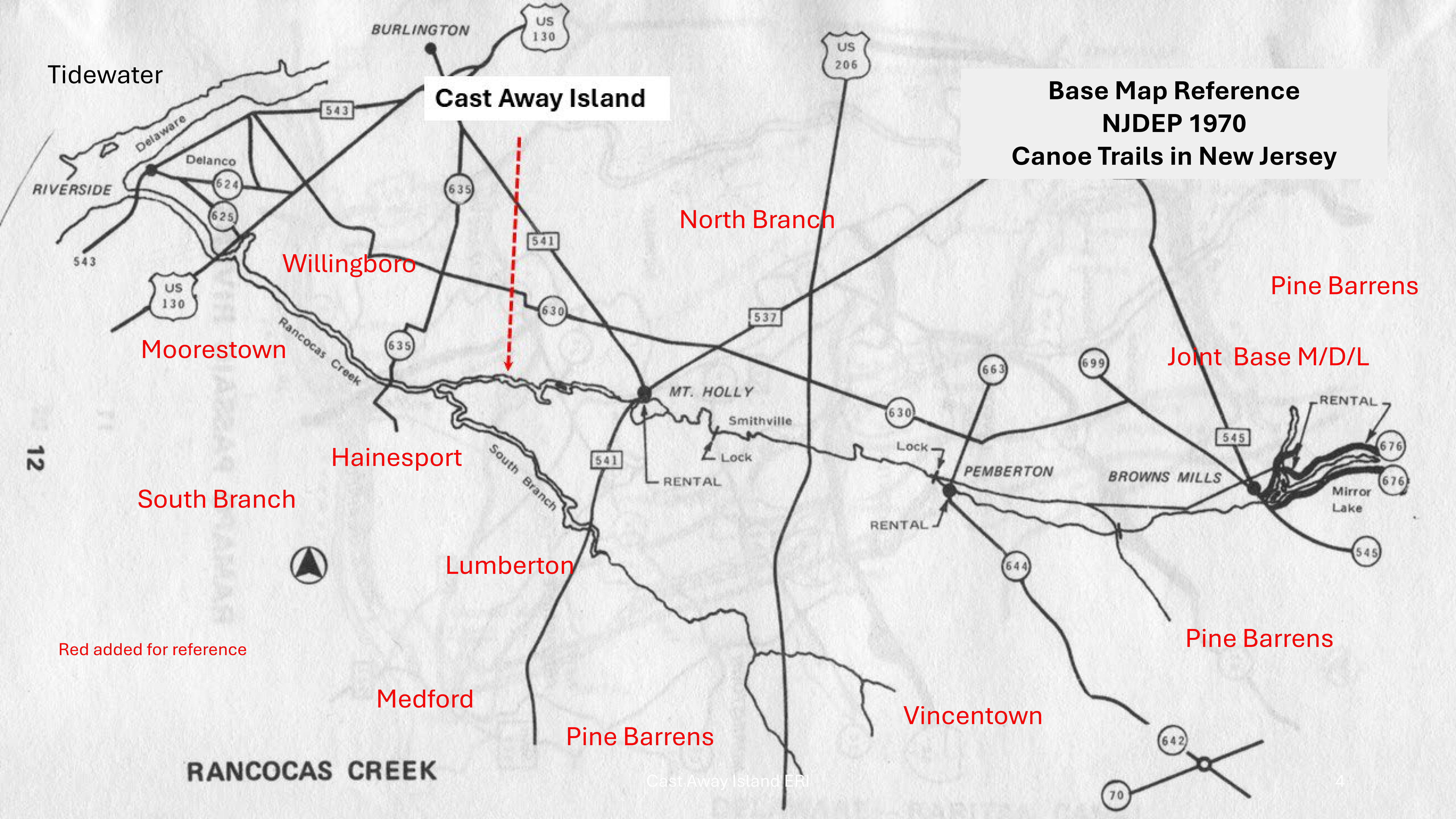
Naturally, here is where we find a peaceful, tranquil symmetry of nature, tides, history, heritage, people, & community stewardship

Cast Away Island Ethos

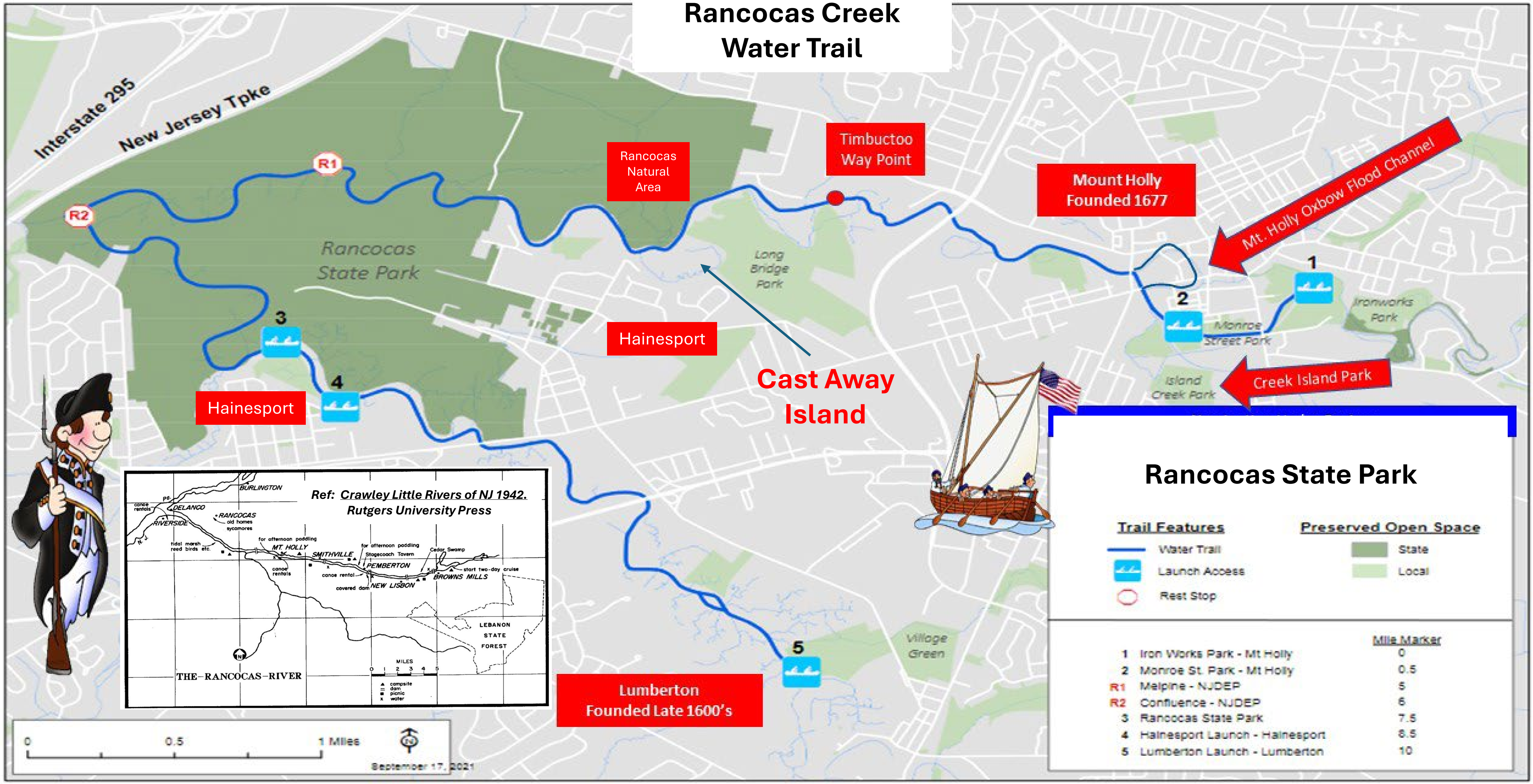


Gateway Natural Resource - Fidelity - Environmental Resource Inventory

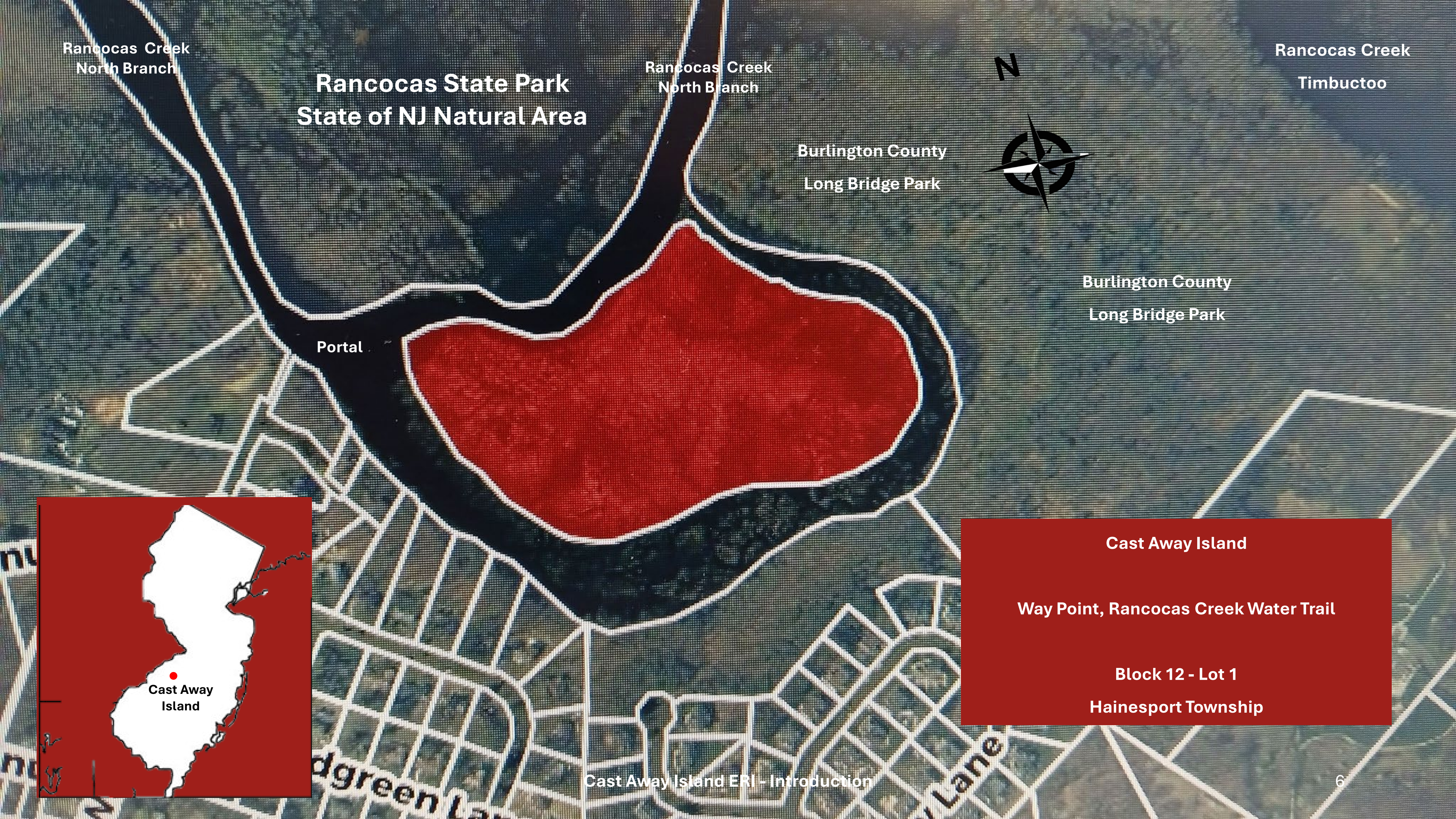
Cast Away Island - Stewardship - Rancocas Creek Water Trail

Base Map Reference
NJDEP 1970
Canoe Trails in New Jersey
Cast Away Island
Tidewater
BURLINGTON
US 130
US 206
543
Delaware
Delanco
RIVERSIDE
624
625
635
541
630
537
North Branch
Willingboro
Pine Barrens
Moorestown
Rancocas Creek
Joint Base M/D/L
663
699
RENTAL
676
MT. HOLLY
Smithville
Lock
RENTAL
545
Hainesport
South Branch
PEMBERTON
BROWNS MILLS
Mirror Lake
South Branch
Lumberton
644
Red added for reference
Pine Barrens
Medford
Vincentown
Pine Barrens
642
70
RANCOCAS CREEK
12



Rancocas Creek Water Trail
Interstate 295
New Jersey Tpke
R1
R2
Rancocas Natural Area
Timbuctoo Way Point
Mount Holly Founded 1677
Mt. Holly Oxbow Flood Channel
Rancocas State Park
Long Bridge Park
Ironworks Park
Monroe Street Park
Island Creek Park
Creek Island Park
Hainesport
Hainesport
Cast Away Island
Village Green
Lumberton Founded Late 1600's
Ref: Crawley Little Rivers of NJ 1942. Rutgers University Press
BURLINGTON
DELANCO
RIVERSIDE
RANCOCAS old homes sycamores
tidal marsh reed birds etc.
for afternoon paddling
MT. HOLLY
SMITHVILLE
for afternoon paddling
Stagecoach Tavern
Cedar Swamp
PEMBERTON
canoe rentals
canoe rental
covered dam
NEW LISBON
start two-day cruise
BROWNS MILLS
LEBANON STATE FOREST
MILES
0 1 2 3 4 5
campsite
dam
picnic
water
THE-RANCOCAS-RIVER
0 0.5 1 Miles
September 17, 2021
Rancocas State Park
Trail Features
Water Trail
Launch Access
Rest Stop
Preserved Open Space
State
Local
Mile Marker
1 Iron Works Park - Mt Holly 0
2 Monroe St. Park - Mt Holly 0.5
R1 Melpine - NJDEP 5
R2 Confluence - NJDEP 6
3 Rancocas State Park 7.5
4 Hainesport Launch - Hainesport 8.5
5 Lumberton Launch - Lumberton 10


Rancocas Creek
North Branch
Rancocas State Park
State of NJ Natural Area
Rancocas Creek
North Branch
N
Rancocas Creek
Timbuctoo
Burlington County
Long Bridge Park
Burlington County
Long Bridge Park
Portal
Cast Away Island
Cast Away Island
Way Point, Rancocas Creek Water Trail
Block 12 - Lot 1
Hainesport Township
Lane

Habitat Description Cast Away Island

Cast Away Island, is located on the North Branch of New Jersey's Rancocas Creek. It is sandwiched between New Jersey's Rancocas State Park, New Jersey's Rancocas Natural Area, and Burlington County's Long Bridge Park.

This 15-acre island is owned by a legally registered 501c3 organization.

The wildlife habitat of this uninhabited island is flanked by the remains of industrial sand, marl, and clay mining; early American tide meadow farms; and long-established creekfront homes.

The island is partially submerged by river tides with a range of 6-8 feet. Patches of this tidewater marsh contain arrow arum, tickseed sunflower, water hemp, sweet flag, and other native plants, and are the home of beaver, fox, otter, muskrat and mink. The island is the apex of New Jersey's largest remaining wild rice marsh.

Drift material and natural detritus is dense enough to form tidepools at low water which are used as year-round feeding areas for migrating and resident fish-eating birds and mammals of the 360 square-mile Rancocas Creek Watershed. The only access to Cast Away Island is by watercraft.

Bittersweet Nightshade*
Cast Away Island, Rancocas Creek

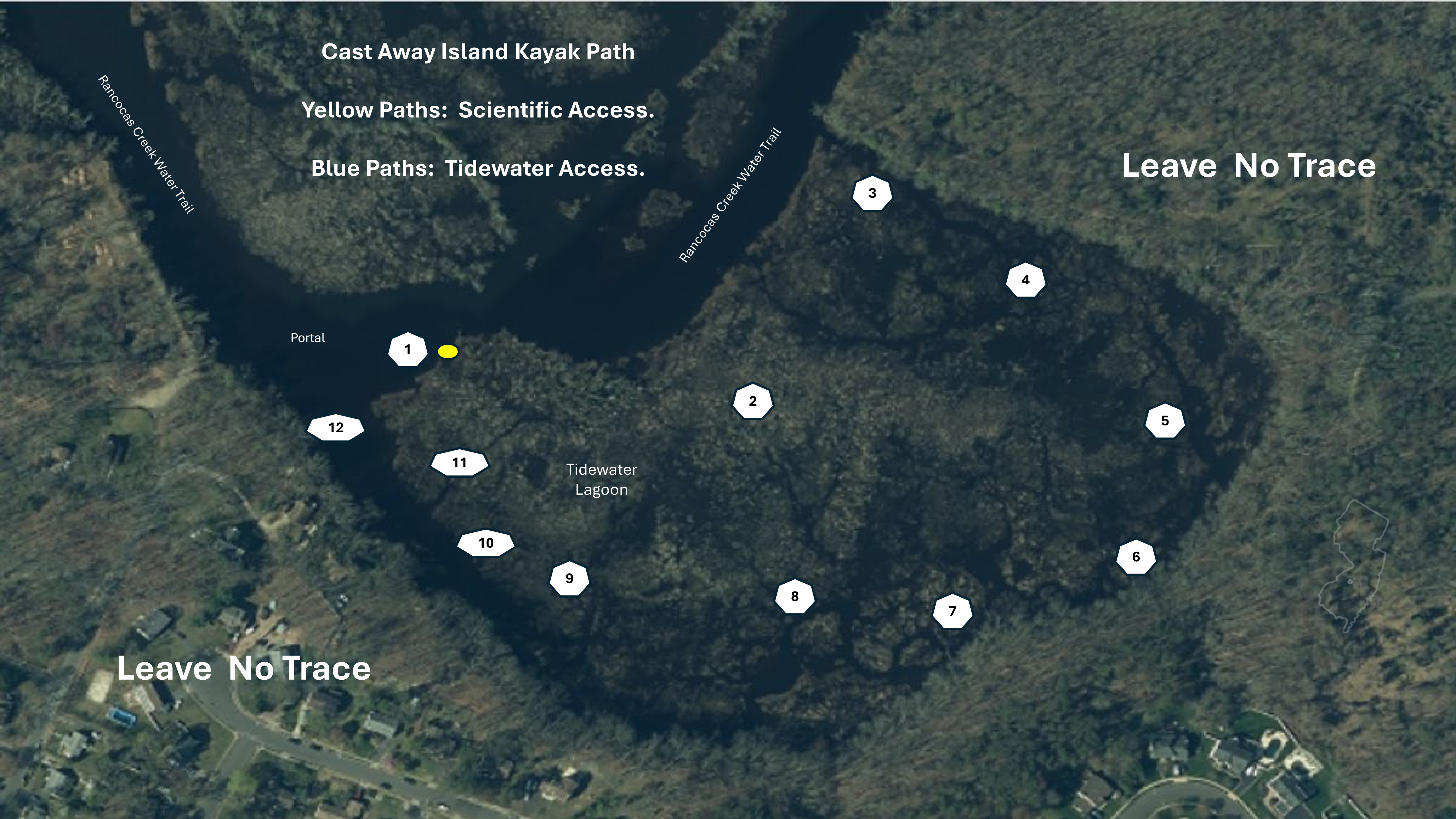
*** Symbol of Nature's Fidelity**

Conservation

Cast Away Island Bald Eagle

Naturally, Rancocas Creek freshwater tidal wetlands are important habitats of New Jersey's 360 Square Mile Rancocas Creek Watershed that anchor vibrant and diverse ecosystems here in the most densely populated State.

These fresh water wetlands act as a natural storm surge buffer and protection. They help with carbon storage, and they push along nutrients.


Cast Away Island Kayak Path
Yellow Paths: Scientific Access.
Blue Paths: Tidewater Access.
Leave No Trace
Rancocas Creek Water Trail
Rancocas Creek Water Trail
Portal
Tidewater Lagoon
1
2
3
4
5
6
7
8
9
10
11
12
Leave No Trace

HIGH TIDE

1. Cast Away Island

2. Expansive Interior

3. East border Long Bridge Burlington County Park

4. Open Channel

5. Base of Southern Sand Bluffs

6. Tidewater Pool

Rancocas Creek Cast Away Island "Duck Potato"
Sagittaria

Amber Snails

Anchors foundation food source for sand-pipers, heron's, ducks and other wildlife

HIGH TIDE

7. Terraced Sand Barge Tie-Off

8. North viewshed - Rancocas Natural Area

9. Beaver Lodge

10. Sand Bluffs elevation 40 feet

11. Cast Away Island (South)

12. “Portal”

Cast Away Island is a isolated tidewater way-point on New Jersey's expansive Rancocas Creek Water Trail*. The island is isolated inside the 360 square mile Rancocas Creek watershed by Rancocas State Park and Long Bridge Burlington County Park. Its neighbor is Timbuctoo.

Bathed by twice-daily tides and constantly flowing past amber Pine Barrens waters, the island hosts a wild rice ecosystem. It is the home to eagles, kingfishers, turtles, migrating fish and numerous other wildlife. See attached link to an Environmental Resource Inventory (ERI).

For centuries, Rancocas Creek has supported people - from Native Americans to early American intrigue, the underground rail-road and 19th-century industrialization. Historic maps and charts show how navigation shaped New Jersey's Rancocas Creek many and diverse landscapes and communities.

* See NJDEP Rancocas Canoe Trail Map 1970

Enroute Timbuctoo

North Branch - Rancocas Creek Water Trail

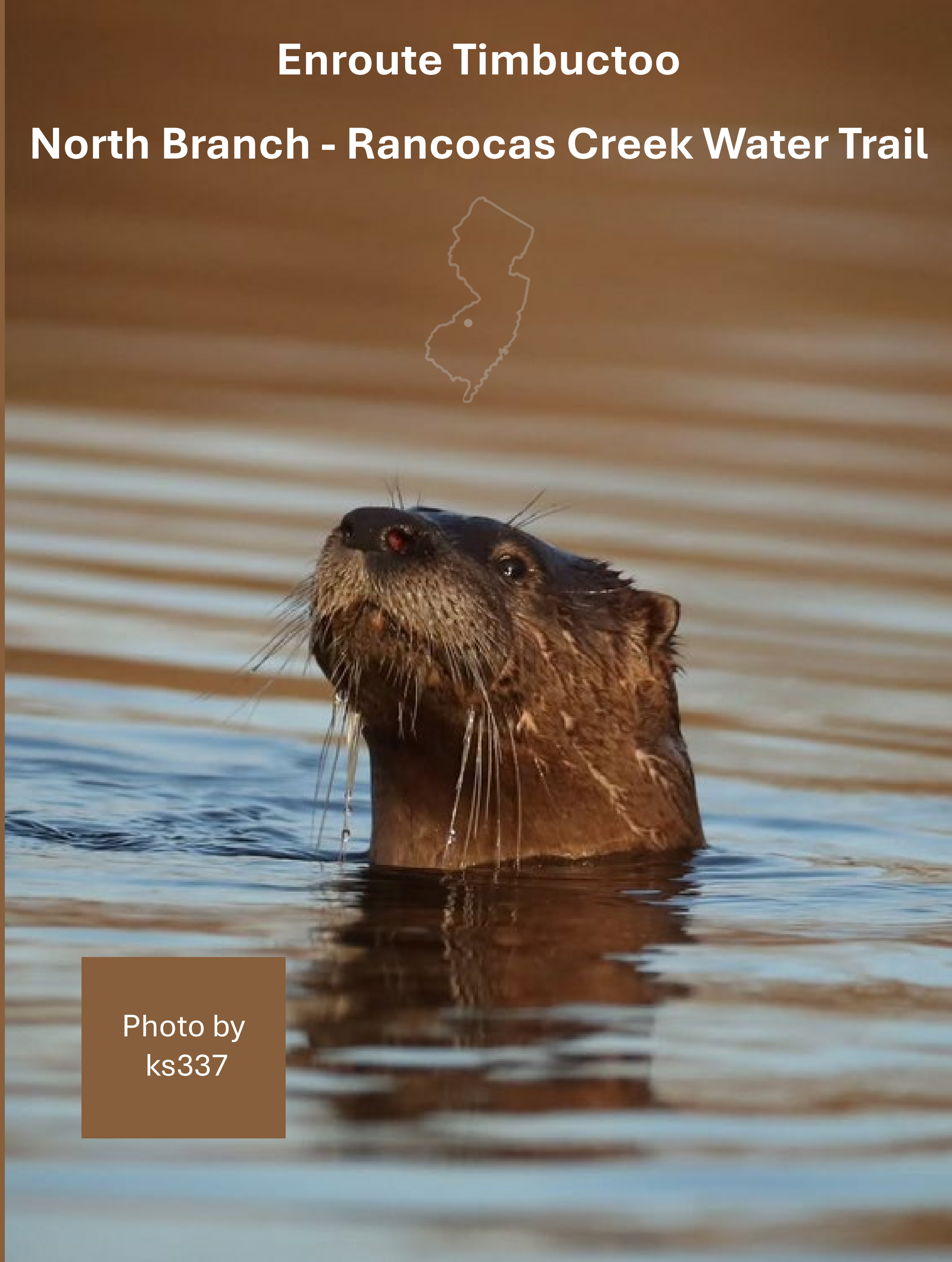


Photo by ks337

Acknowledgement to Local Knowledge.

Cast Island ERI was curated through a multi-year grass-root very informal community collaborative infusion of people with diverse and at time opposing interests enjoying a common ground: stewardship, conservation and public access to NJ's gateway, the quintessential natural-resource, NJ's Rancocas Creek. Respect multi-use access regulations and the privacy of land-owners.

Thank-you and Much Obliged

Cast Away Island Ethos

Cast Away Island
Buckle of Rancocas Creek's

"Green Belt"

Stewardship
Heritage

Conservation
Public Access


Cast Away Island ERI

Enhanced Awareness

Welcome to Cast Away Island on a Rancocas Creek Tidewater Wild Rice Marsh. Cast Away Island is privately owned by a legally registered 501c3 organization.

Cast Away Island is located 10 miles East of the Delaware River Federal tidal navigation channel. It is 2 miles west of Burlington County's County Seat, historic Mount Holly. Guarded against urban development to the North and West by Rancocas State Park and the State of NJ Rancocas Natural Area. Cast Away Island is flanked on the East and South by Burlington County's Long Bridge Park. Cast Away Island, sentinel of isolation preserves, protects and restores a natural ecosystem, naturally.

Here among "green-sand" Cast Away Island is sculpted by expansive seasonal quilts of yellow flowering Begger-ticks, bounding to life after the natural life cycles of a 1,700-acre wild rice tidewater marsh. NJ's largest remaining colony of wild rice.

Here as bald eagle snap up ducks a plenty, where eels and fishes spawn and migrate to the sea, here where hummingbirds call, here is where we find a peaceful, tranquil symmetry of nature, history, heritage, people and community.

All Photos Unless Otherwise Noted from Cast Away Island

Cast Away Island's ERI is an interdisciplinary integrated fusion of natural and social sciences, conservation and public access.

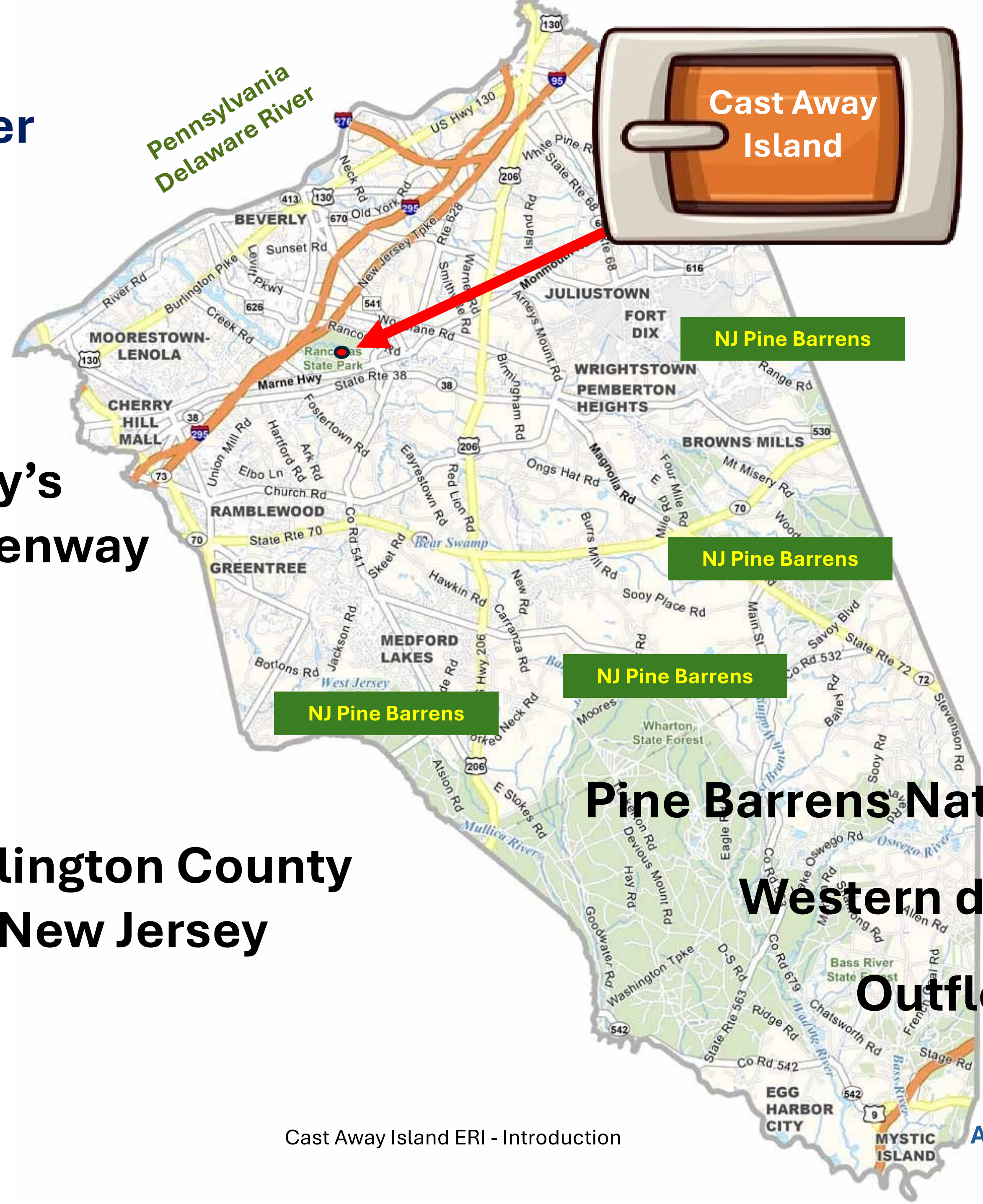
This ERI emphasis is the importance of getting incentives right in both the public and political sectors.

Rancocas Creek Watershed Inner Coastal Plain Fresh Water Spring

Rancocas Creek watershed fresh-water source springs correspond to NJ's unique inner-coastal plain complex capillary hydrogeologic matrix and vibrant natural history associated with Cast Away Island tidal resources

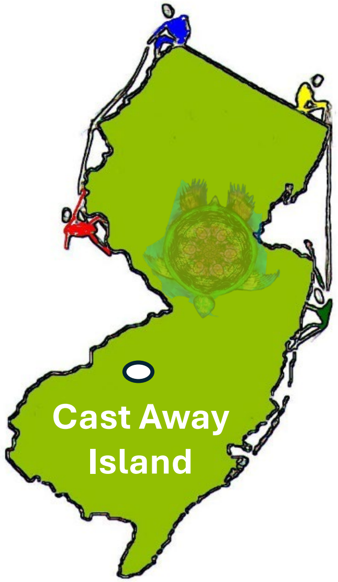
Delaware River tidewater In-flow

Buckled Green Belt



360 square mile Rancocas Creek Watershed

Burlington County's Rancocas Creek Greenway



Burlington County New Jersey

Pine Barrens National Reserve

Western drainage

Outflow

Cast Away Island

Wood Duck

Introduction to the Cast Away Island ERI

This ERI seeks not to plot every detail of the island. Rather this ERI is snap-shot of the lay of the land. The purpose of the ERI is to provide a window, a portal into the heart of New Jersey's natural beauty. This ERI promotes elements of multi-use conservation that we catalogue by eye. These we should not overlook. The ERI is meant to share the knowledge from those who know the wonders, mysteries, the tides, currents, winds , the open spaces and communities of New Jersey's Rancocas Creek, from the Pinelands to the Delaware River tides.

Growth in South Jersey, in Burlington County and in the Rancocas Creek Watershed expands as populations and communities grow. Pressure is placed on all areas and manner of open space. Sometimes however there is a space, there is a spot, there is a location, 6 miles from the nearest public boat launch that say's "hold yer horses".

We seldom wonder if a creek, a tidewater, a marsh, has its own history, its own story, its own connections to people, place and community. Cast Away Island ERI presents an agreeable variant of multi-use year-round activity that is a path for those who have yet to learn, to see, listen and study field, forest, the water, the tides, the marsh, the creek and ourselves.

Cast Away Island ERI connects a relaxing sociability that is worth knowing.

All Photos Unless Otherwise Noted from Cast Away Island

On the “Buckle”

Rancocas – Clay Marl is exposed at the abandoned brickyard on the northwestern bank of the Rancocas Creek, north of Borton Landing, West of Rancocas. An extensive plant was abandoned.

***Clays of NJ*. Henry B. Kümmel, 1904**

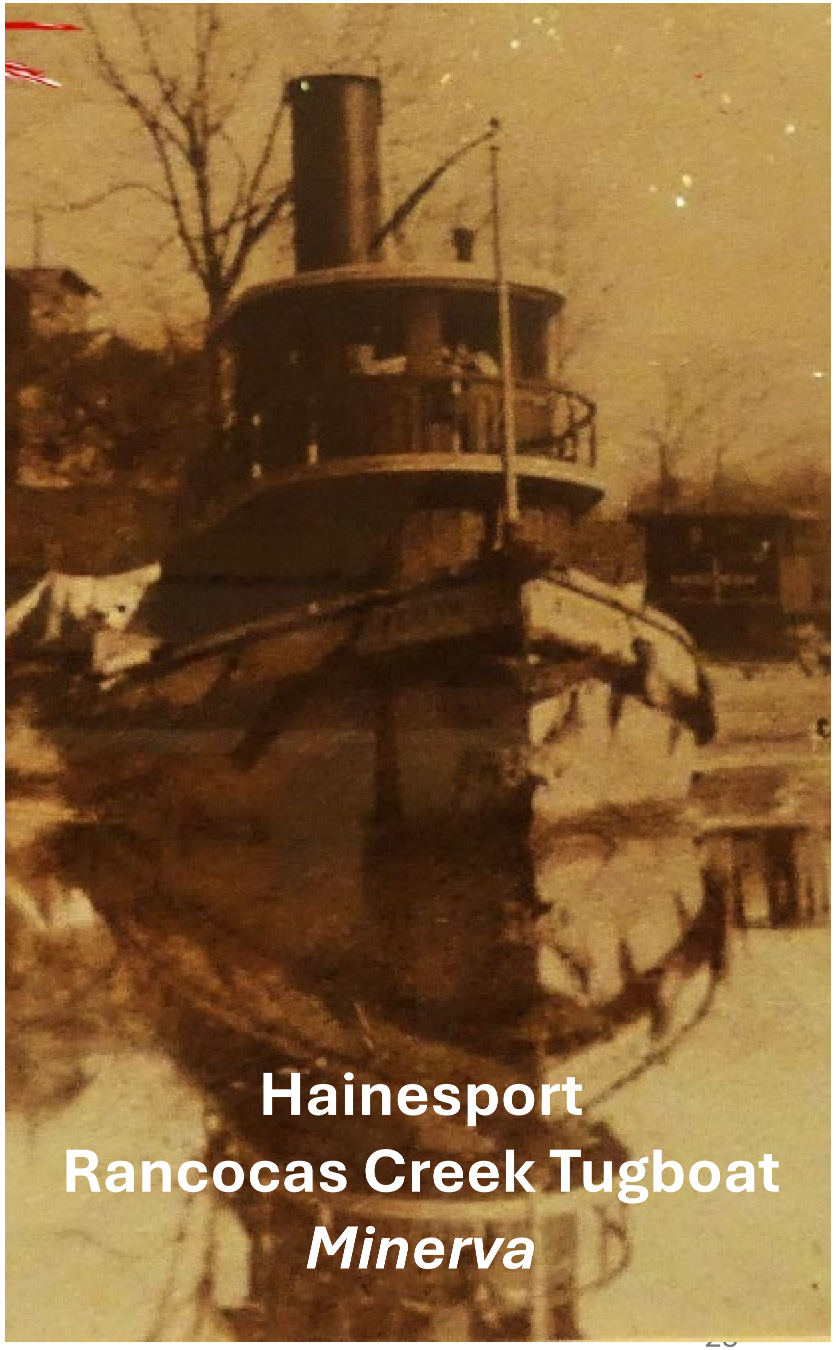
Henry Barnard Kümmel
NJ State Geologist: 1902 to 1945
Ref: NJGS

First, however is location. Maps and Charts of the Cast Away Island ERI

Preamble, the first step in this ERI is to define the precise location of the North Branch Rancocas Creek's Cast Away Island. These maps and navigation charts set the foundation of the Cast Away Island ERI. The brevity of these maps and navigation charts help the reader ascertain location.

The arrangement of the Cast Away Island ERI maps, navigation charts, and a table of contents provides information that portrays Cast Away Island as an exercise on the economy of simple graphics and explanations.

The Cast Away Island ERI opens your immersion into NJ's Rancocas Creek amber flowing pine barrens waters emptying into tidewater dynamics fusion with, natural history, ecology, conservation and a more personal inquiry. The ERI is geared to people of all walks of life who want to know more about what happens why, how and when the last remaining hidden niches of New Jersey are exposed.



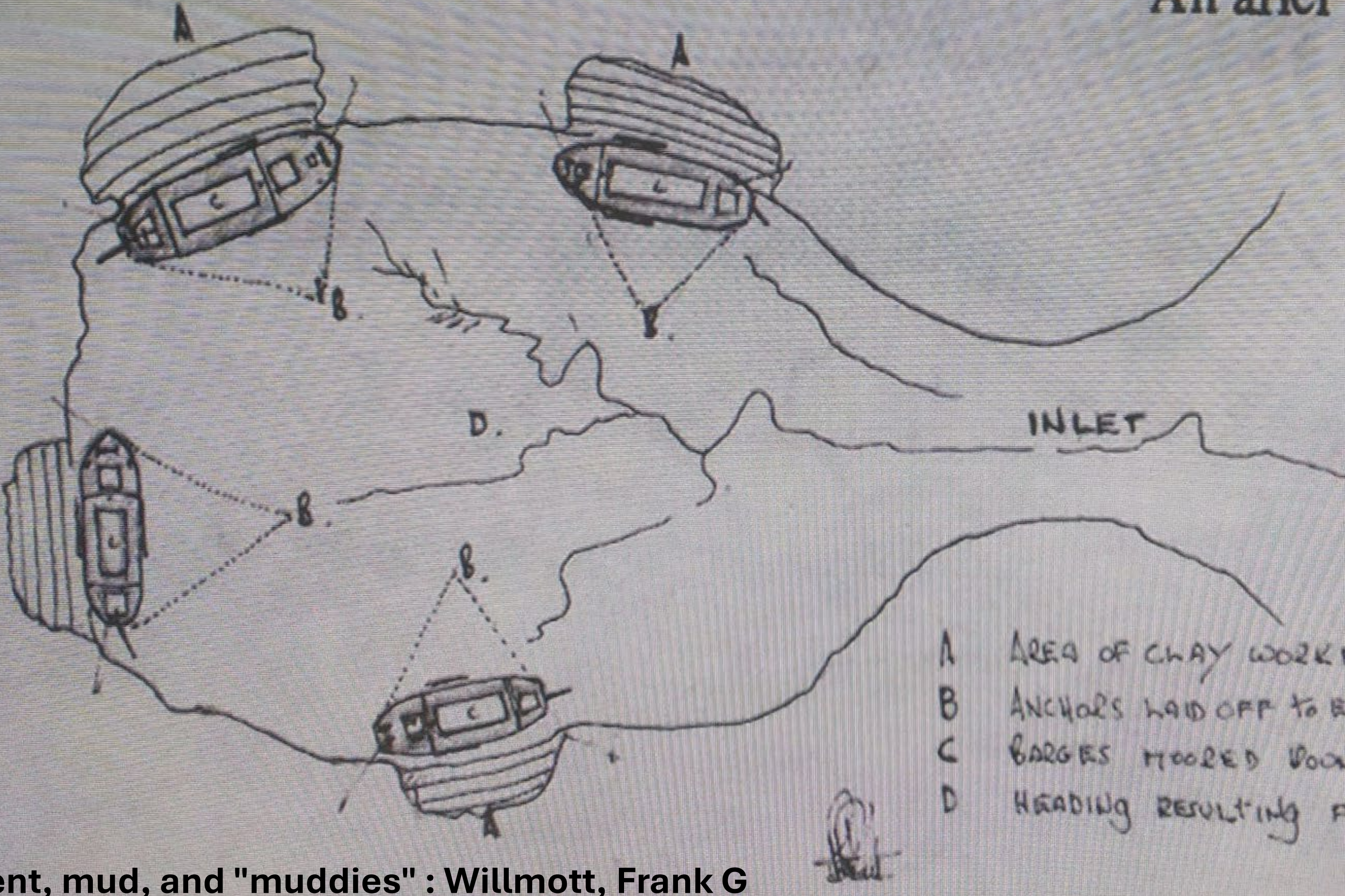
Mud and Muddies

11

1851

Extraction Method for Clay/Sand Holes Along a Tidewater Creek/River (as an example)

An ariel view of a clay hole.



Cement, mud, and "muddies" : Willmott, Frank G

Hainesport

Paradise Hill
Lumberton Creek

SSW Cast Away
Island

Cedar Water/Low Tide

1870's Sand Mine Piers

Rancocas State Park


Cast Away Island ERI - Introduction

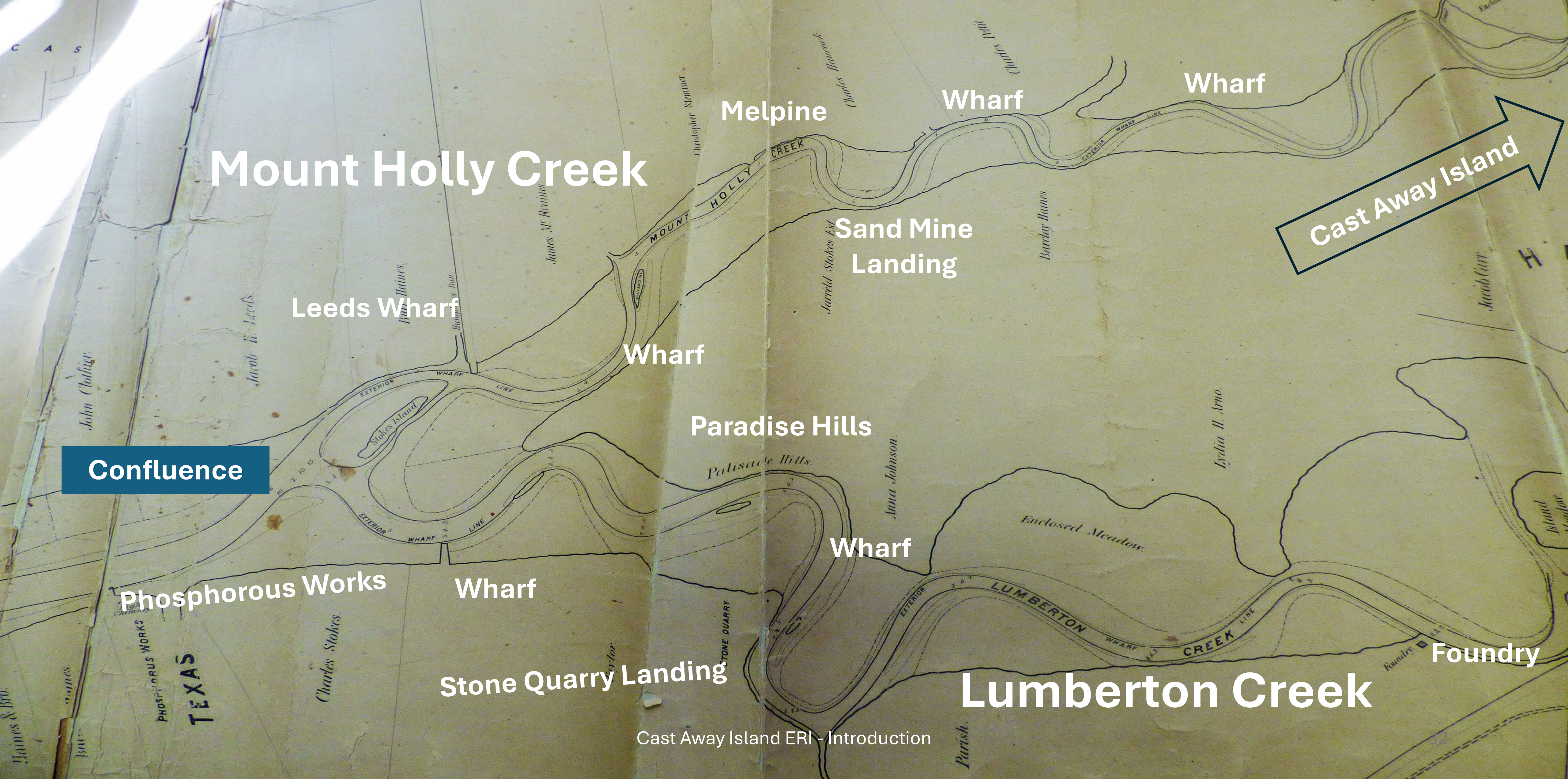

Conservation
High Tide - Cast Away Island
Looking East, Up North Branch, Rancocas Creek
Cast Away Island ERI - Introduction

Cast Away Island

Photo by ks337

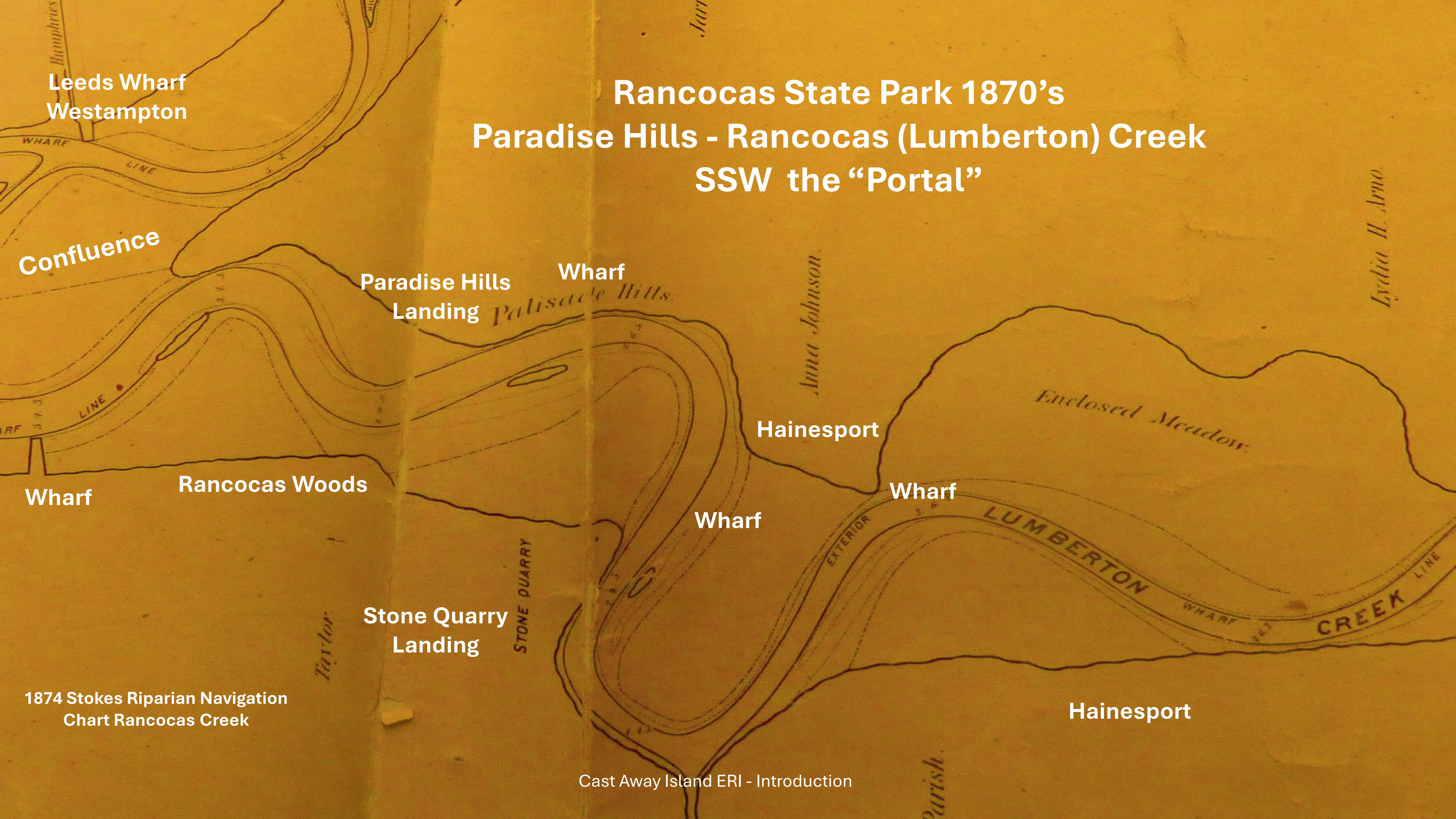
Confluence of the Rancocas River, 1880 Report to Congress

1875 Stokes Riparain and Navigation Chart of the Rancocas River



Access

Confluence - Rancocas Creek - Rancocas State Park


Rancocas State Park 1870’s
Paradise Hills - Rancocas (Lumberton) Creek
SSW the “Portal”
Leeds Wharf
Westampton
Confluence
Paradise Hills
Landing
Wharf
Hainesport
Wharf
Wharf
Rancocas Woods
Wharf
Stone Quarry
Landing
Hainesport
1874 Stokes Riparian Navigation
Chart Rancocas Creek
WHARF
LINE
Palisade Hills
Anna Johnson
Enclosed Meadow
EXTERIOR
LUMBERTON
CREEK
WHARF
LINE
STONE QUARRY
Taylor

Cast Away

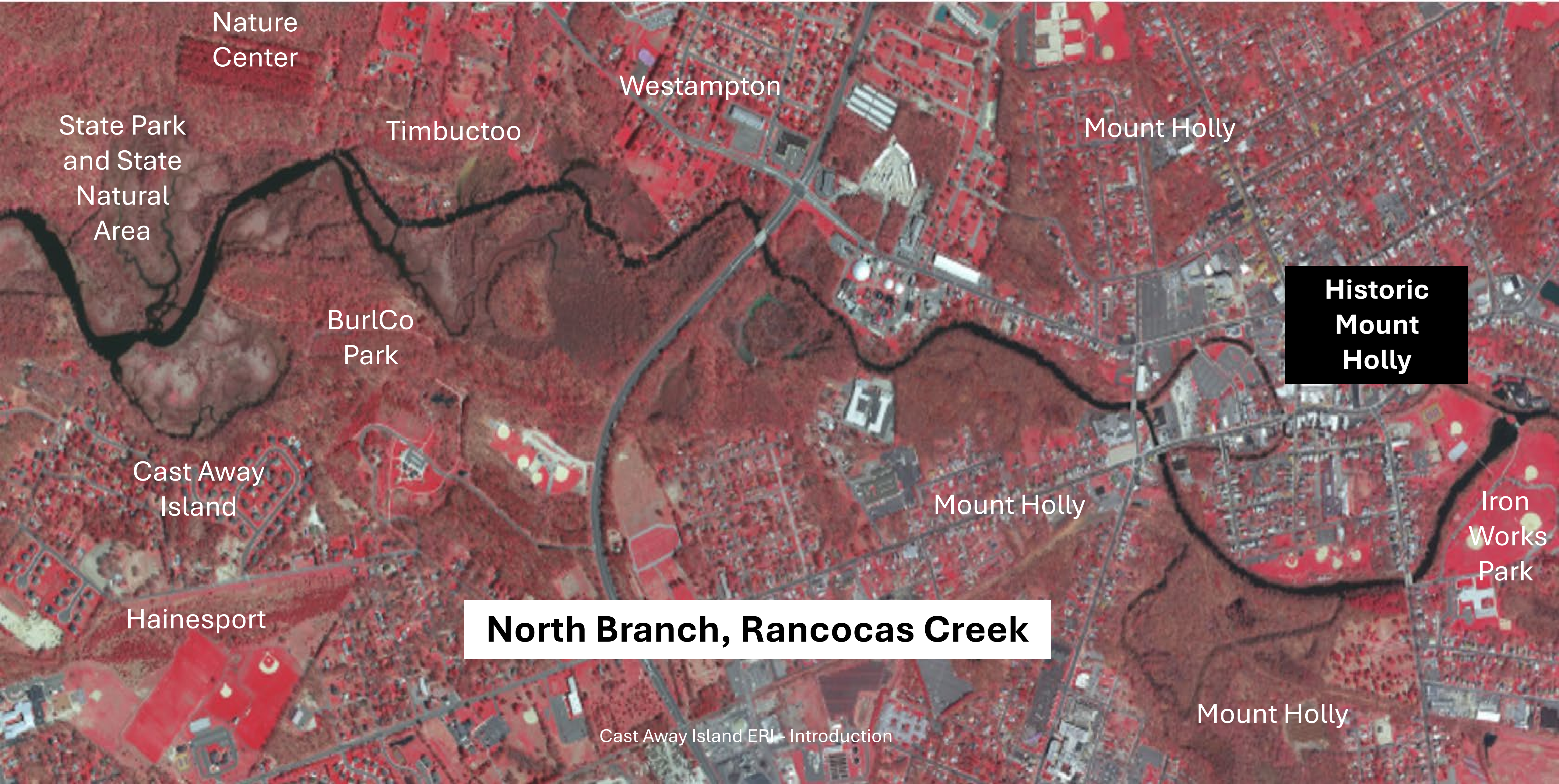
Island

Photo by
ks337

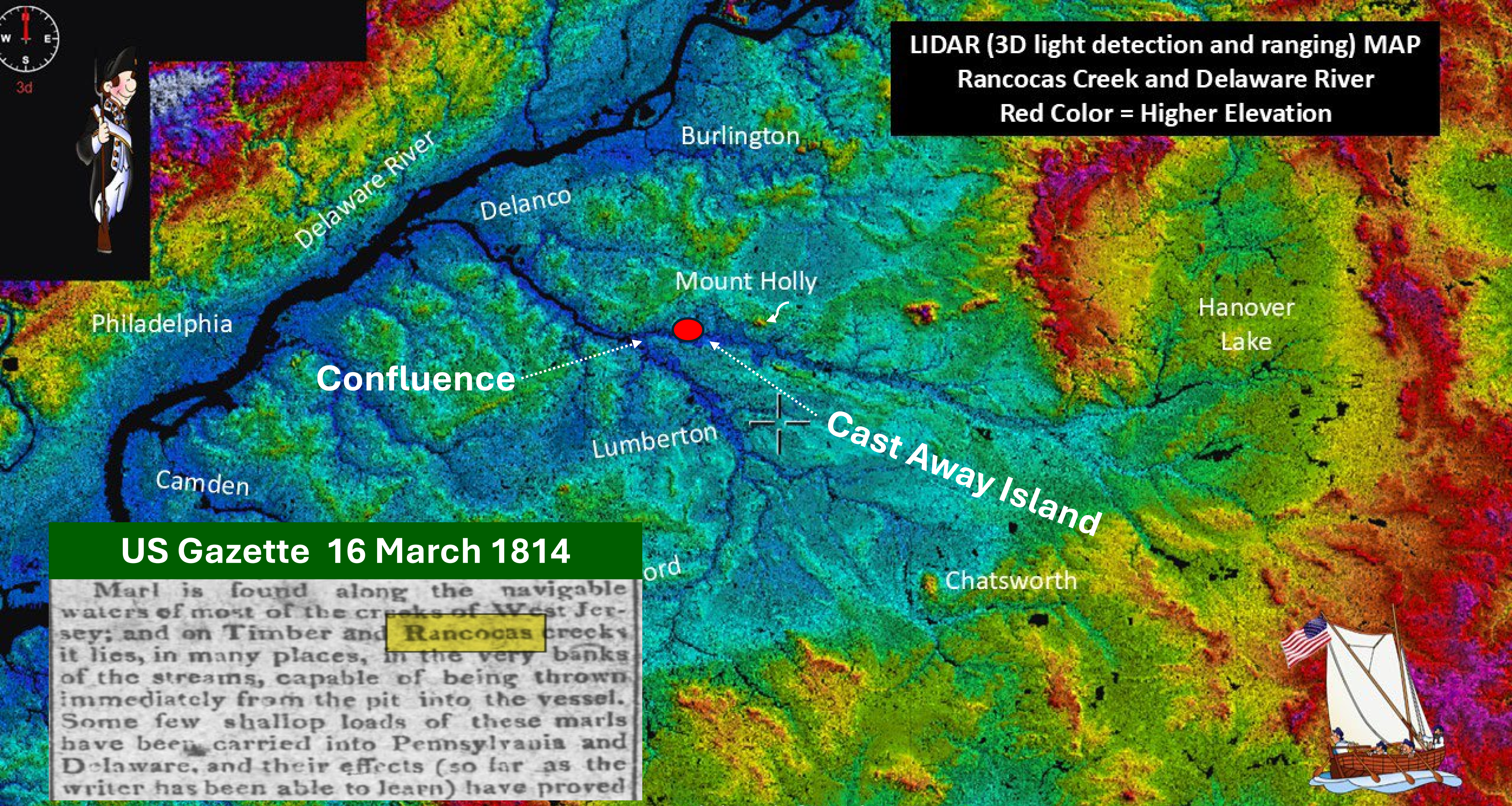
Forks of the Rancocas

Photo Credit R. Ben

Cast Away Island is not accessible by car or foot. To protect the fragile tidewater ecology access is permission only



Rancocas Creek tidewater marshes are bordered by tidal water downstream and upstream pine barrens cedar water western outflows.



US Gazette 16 March 1814

Marl is found along the navigable waters of most of the creeks of West Jersey; and on Timber and Rancocas creeks it lies, in many places, in the very banks of the streams, capable of being thrown immediately from the pit into the vessel. Some few shallop loads of these marls have been carried into Pennsylvania and Delaware, and their effects (so far as the writer has been able to learn) have proved

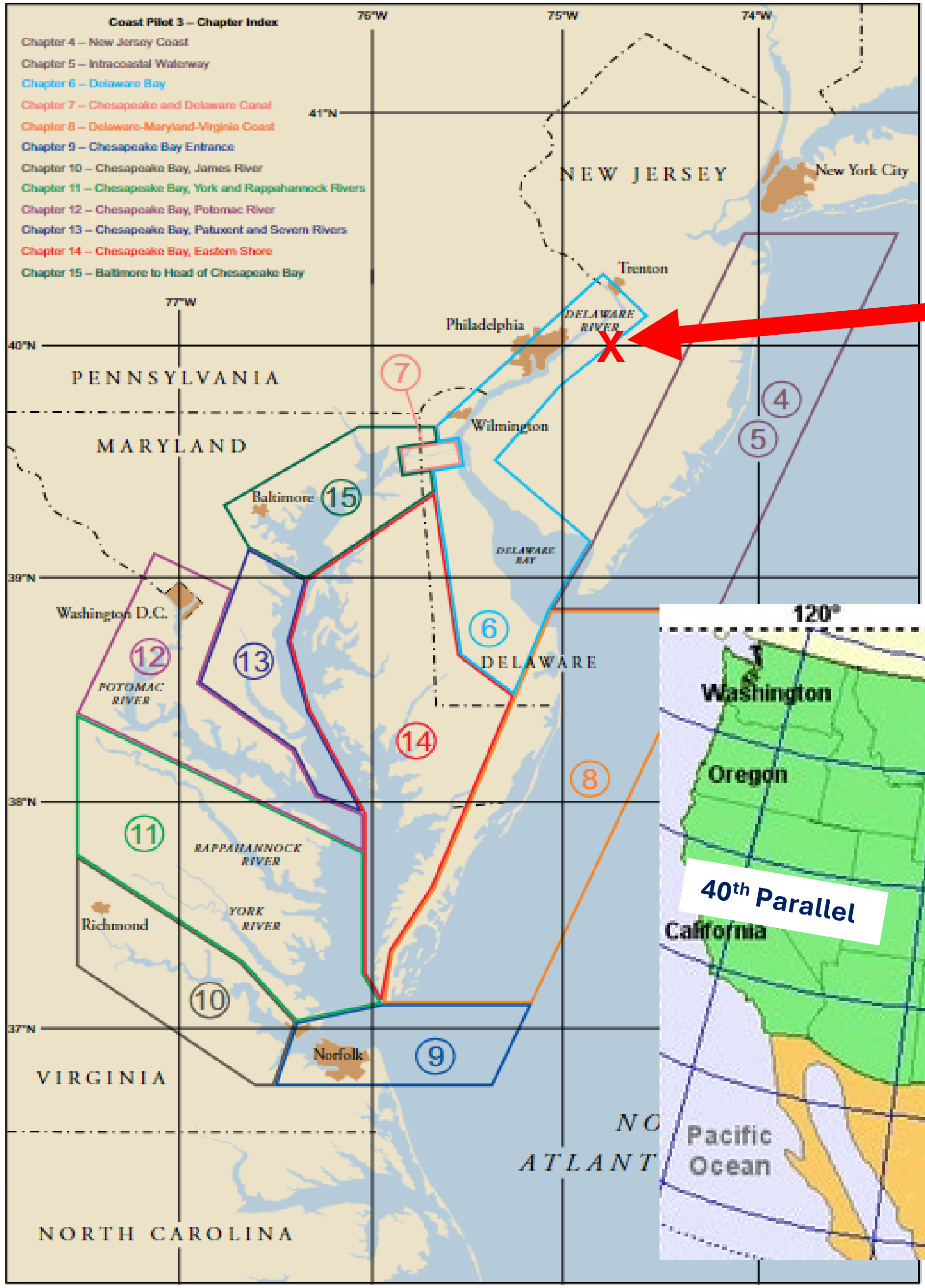
"X" Marks the Spot

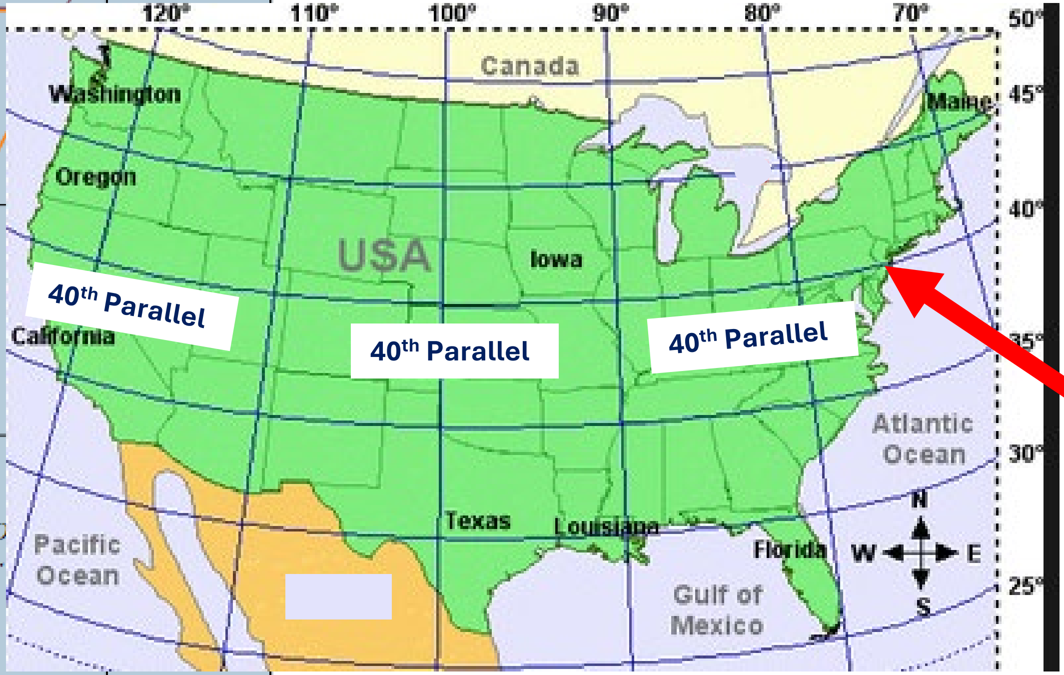
Coast Pilot Local Knowledge

Rancocas Creek

40th Parallel

Ref: US Coast Pilot 3





Rancocas Creek

Cast Away

Island

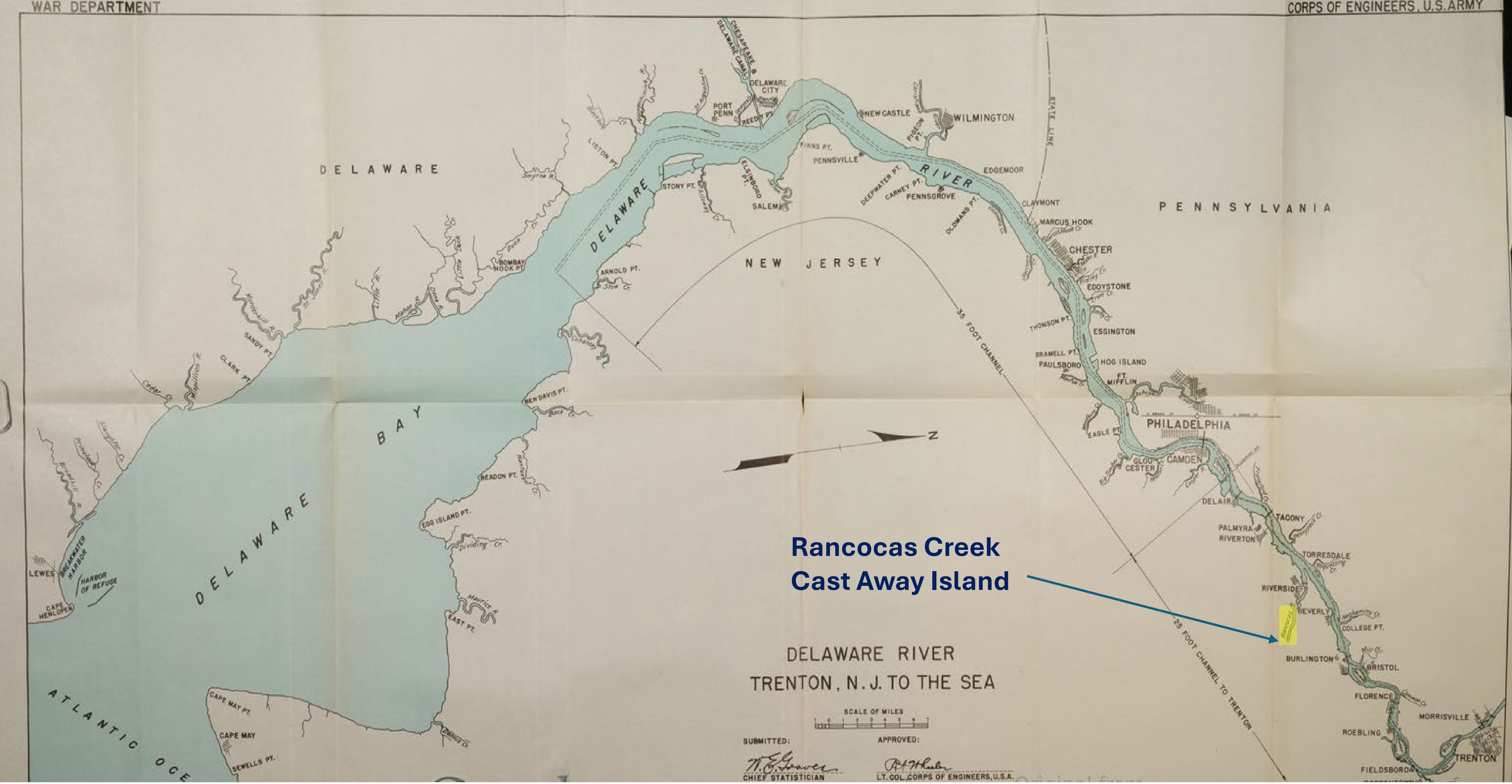
Stewardship

J.B. VanSciver, Sr. was born in Hainesport, 14 May 1861. He and his brother George developed the Hainesport Mining and Transportation Company and the DeFrain Sand Company.

These companies consolidated into the VanSciver Sand Company. Mr. Van Sciver was also a director at Knickerbocker Lime Company.

By the 1920's these were the premier manufactures and distributors of building material in South Jersey and NE Pennsylvania.

In WW1 VanSciver supplied sand, gravel and concrete to build the Emergency Fleet at Hog Island . In 1929 VanSciver was sold to the Warner Company.



WAR DEPARTMENT
CORPS OF ENGINEERS, U.S. ARMY
Rancocas Creek
Cast Away Island
DELAWARE RIVER
TRENTON, N.J. TO THE SEA
SCALE OF MILES
SUBMITTED:
CHIEF STATISTICIAN
APPROVED:
LT. COL. CORPS OF ENGINEERS, U.S.A.
DELAWARE
NEW JERSEY
PENNSYLVANIA
DELAWARE BAY
DELAWARE RIVER
ATLANTIC OCE
35 FOOT CHANNEL
25 FOOT CHANNEL TO TRENTON
STATE LINE
CHESAPEAKE & DELAWARE CANAL
DELAWARE CITY
PORT PENN
REEDY PT.
NEW CASTLE
WILMINGTON
PIGEON PT.
FINNS PT.
PENNSVILLE
DEEPWATER PT.
CARNEY PT.
PENNSGROVE
EDGEMOOR
OLDMANS PT.
CLAYMONT
MARCUS HOOK
CHESTER
EDDYSTONE
THOMSON PT.
ESSINGTON
BRAMELL PT.
PAULSBORO
HOG ISLAND
FT. MIFFLIN
PHILADELPHIA
EAGLE PT.
GLOUCESTER
CAMDEN
DELAIR
TACONY
PALMYRA
RIVERTON
TORRESDALE
RIVERSIDE
BEVERLY
COLLEGE PT.
BURLINGTON
BRISTOL
FLORENCE
MORRISVILLE
ROEBLING
TRENTON
FIELDSBORO
LISTON PT.
STONY PT.
ELSINBORO PT.
SALEM
ARNOLD PT.
BOMBAY HOOK PT.
SANDY PT.
CLARK PT.
BEN DAVIS PT.
BEADON PT.
EGG ISLAND PT.
EAST PT.
LEWES
BREAKWATER HARBOR
HARBOR OF REFUGE
CAPE HENLOPEN
CAPE MAY PT.
CAPE MAY
SEWELLS PT.

Tidewater Marshes Around Cast Away Island Come Alive in April

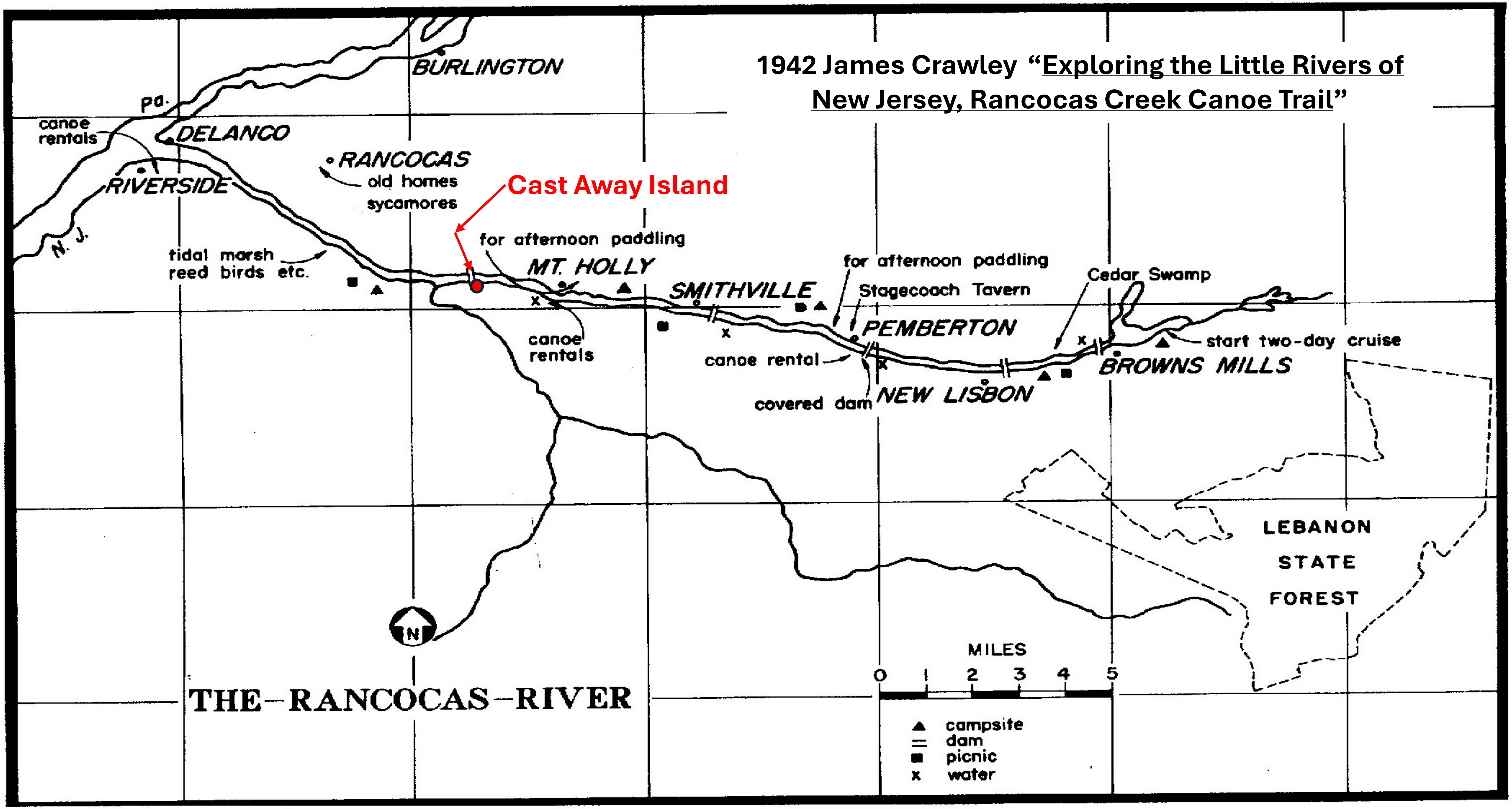
Red Wing Blackbird

Tidewater migratory, seasonal visitor

By fall migration the wild rice marshes that make the fabric of Cast Away Island tidewater ecology are covered in quilts of red wings, bobolinks, meadowlarks, grackles.

A natural crescendo.

1942 James Crawley "Exploring the Little Rivers of New Jersey, Rancocas Creek Canoe Trail"



Fall Migration

Red Wing Blackbirds

Wild Rice draws flocks of Red Wing Blackbirds


Rancocas Creek
North Branch
Rancocas Creek
North Branch
Rancocas State Park
State of NJ Natural Area
Cast Away Island
Block 12 - Lot 1
Hainesport Township
N
Portal
Landing
Block 12 Lot 1
Burlington County
Long Bridge Park
Not Passable at Low Ride
30 - 45 Foot High Sand Bluffs
County Park
Trail System
Cast Away
Island
Lane

Tidal freshwater wetlands (TFWs) are important habitats that support a variety of ecosystem services for diverse food webs, storm surge protection, carbon storage, and nutrient removal. (Xu et al. 2020).

Cast Away Island ERI - Introduction



- Rancocas Creek Navigation Channel
- 1890’s Navigation Channel Wing Dams
- Note: height of wild rice tidewater marsh

Low -Tide Snapping Turtle
Cast Away Island

Stewardship

Sections

Introduction: Stewardship

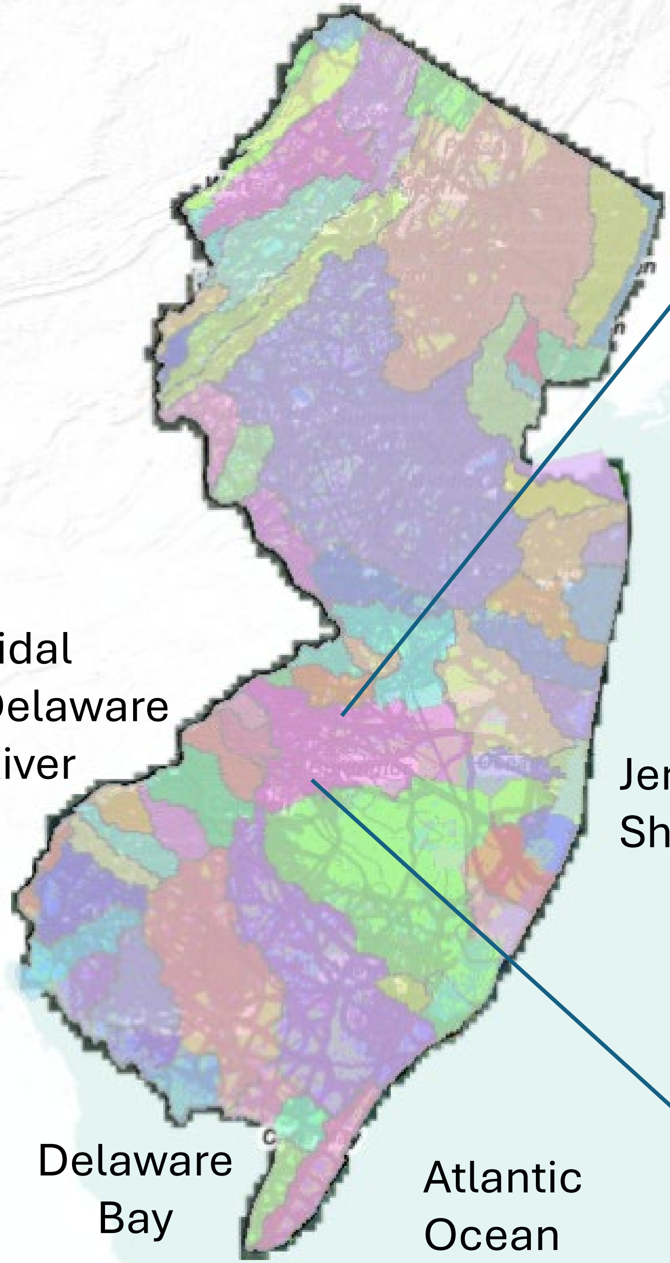
Table of Contents

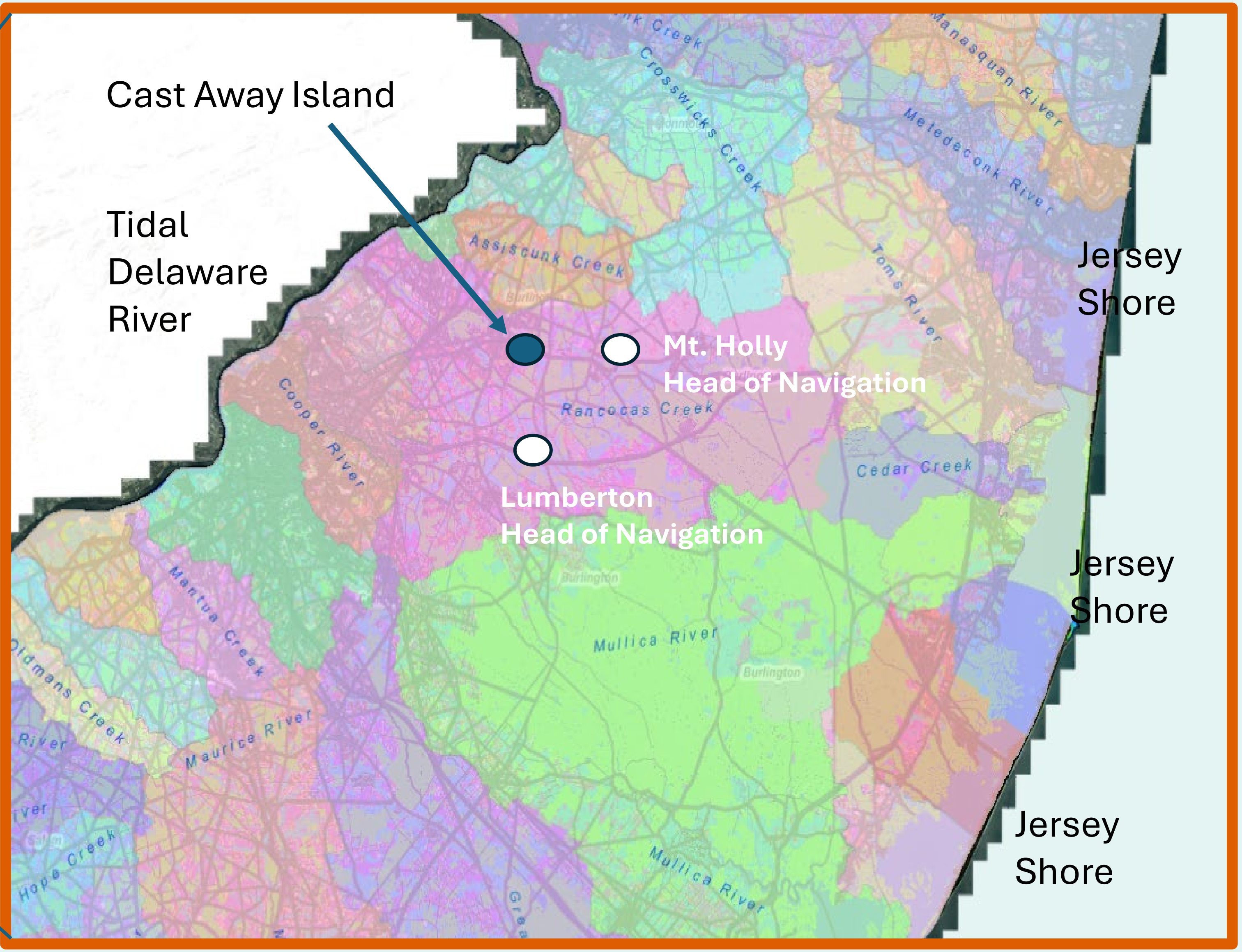
Cover Photo: Looking East. Cuestas poking up from the mist
High Tide. N Branch Rancocas Creek Water Trail .   State of NJ Rancocas Natural Area , left.
Cast Away Island, right. Timbuctoo, Mt. Holly, center. Arney's Mount, upper right.
Photograph Joe Pluck's Hot Air Ballon, July, 2024.

Environmental Resource Inventory - Table of Contents

Hainesport
Tug *Minevra* tethered sand barge.
Background (sand) train.
Tied off Haines Landing

Rancocas Creek Watershed





Ref: General Map NJDEP

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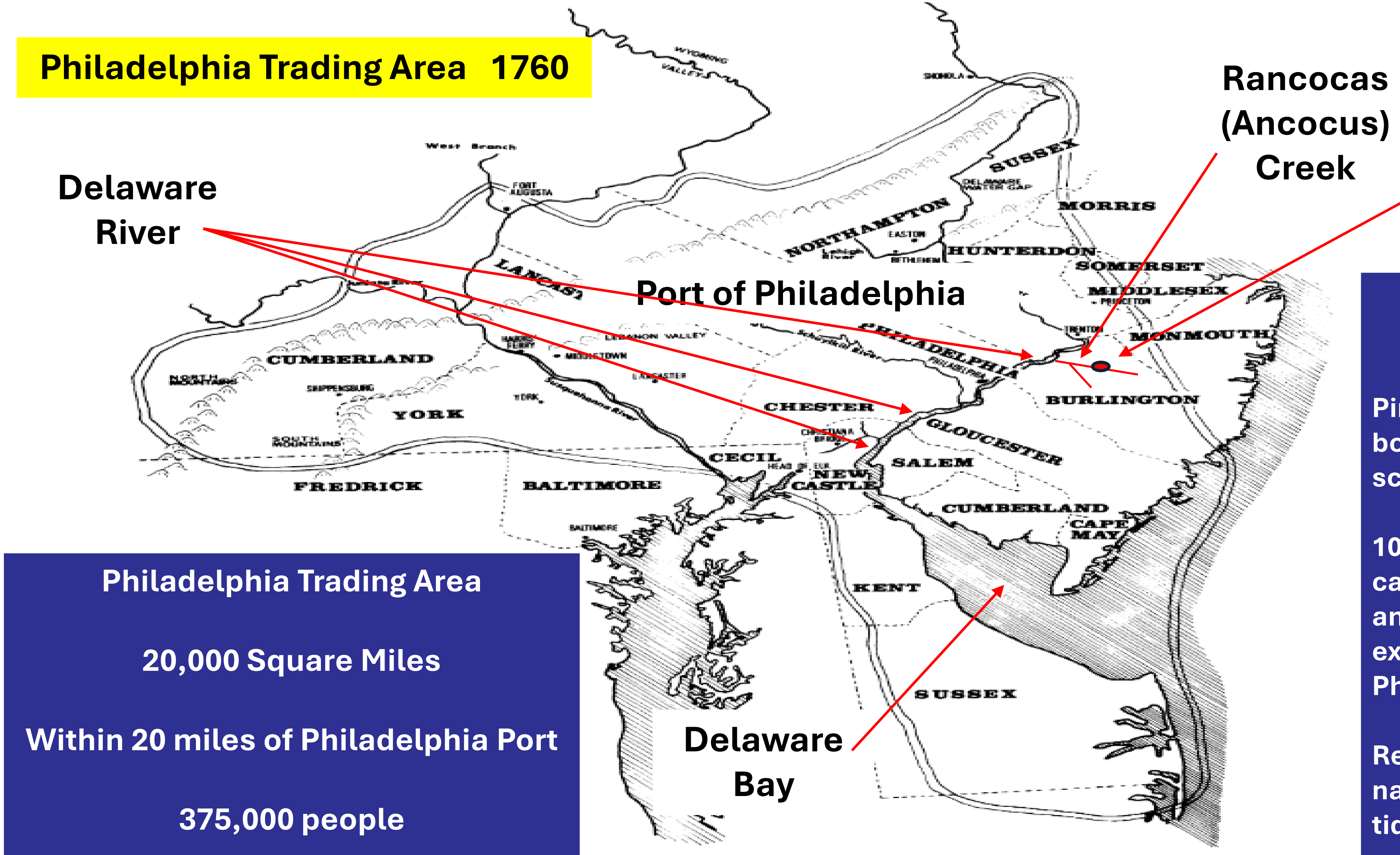
High Tide – Beggar Tick Flowers hold their blossoms under water
Cast Away Island

Foundation of Maritime Commerce



Philadelphia Trading Area

20,000 Square Miles

Within 20 miles of Philadelphia Port

375,000 people

Ref: Rob Howard, Winterthur

1760

Pine Barrens yielded thousands of board feet planks, beams ands scantlings.

10 months a year sailing shallops carried grain, flour, fence rails, cheese and meats of South Jersey "at a trifling expense" to Front Street, Port of Philadelphia

Relied on tides vs sailing power to navigate South Jersey Delaware River tidewater tributaries.

Ref: ***Maritime Commerce of Colonial Philadelphia***

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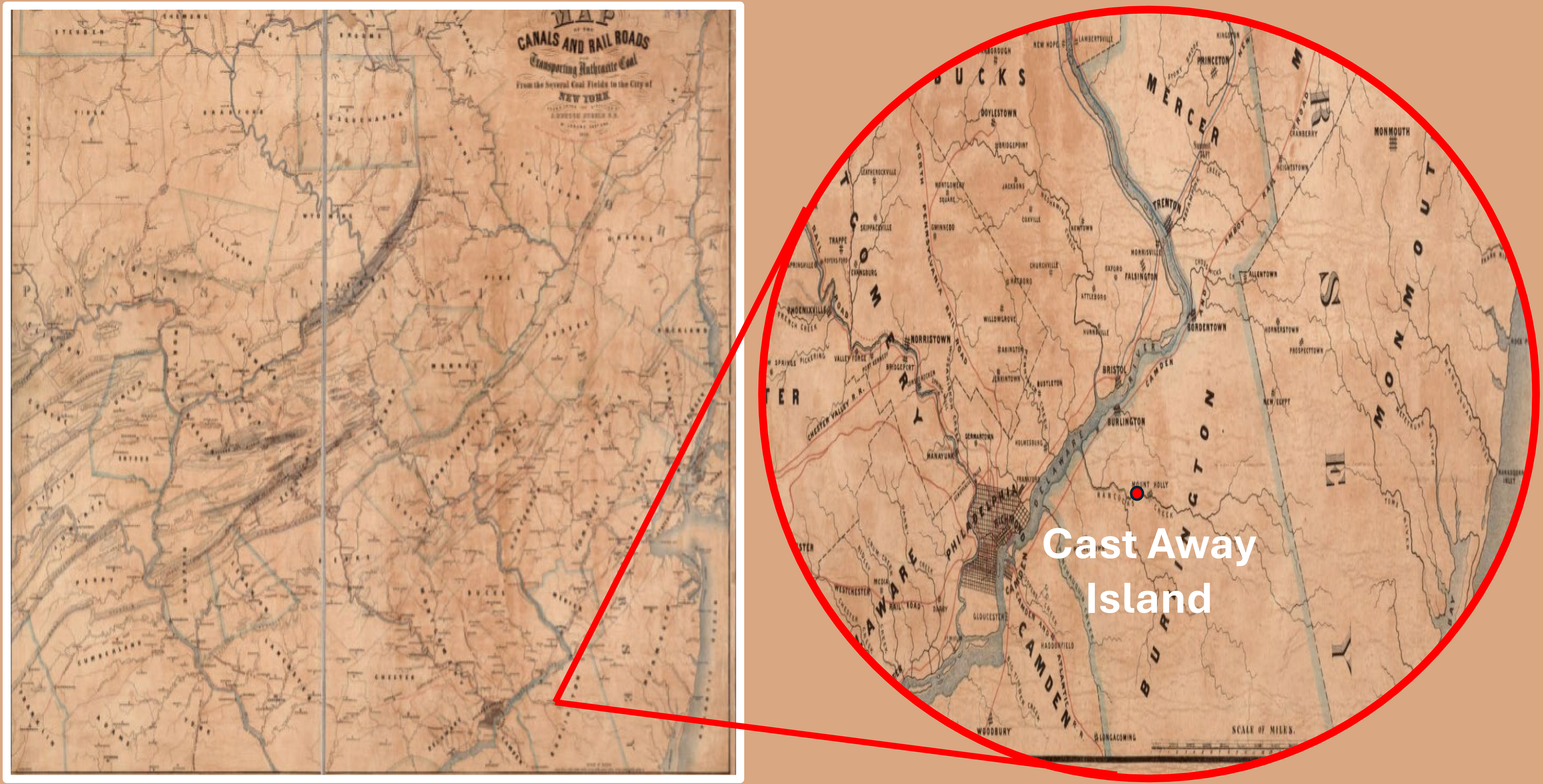
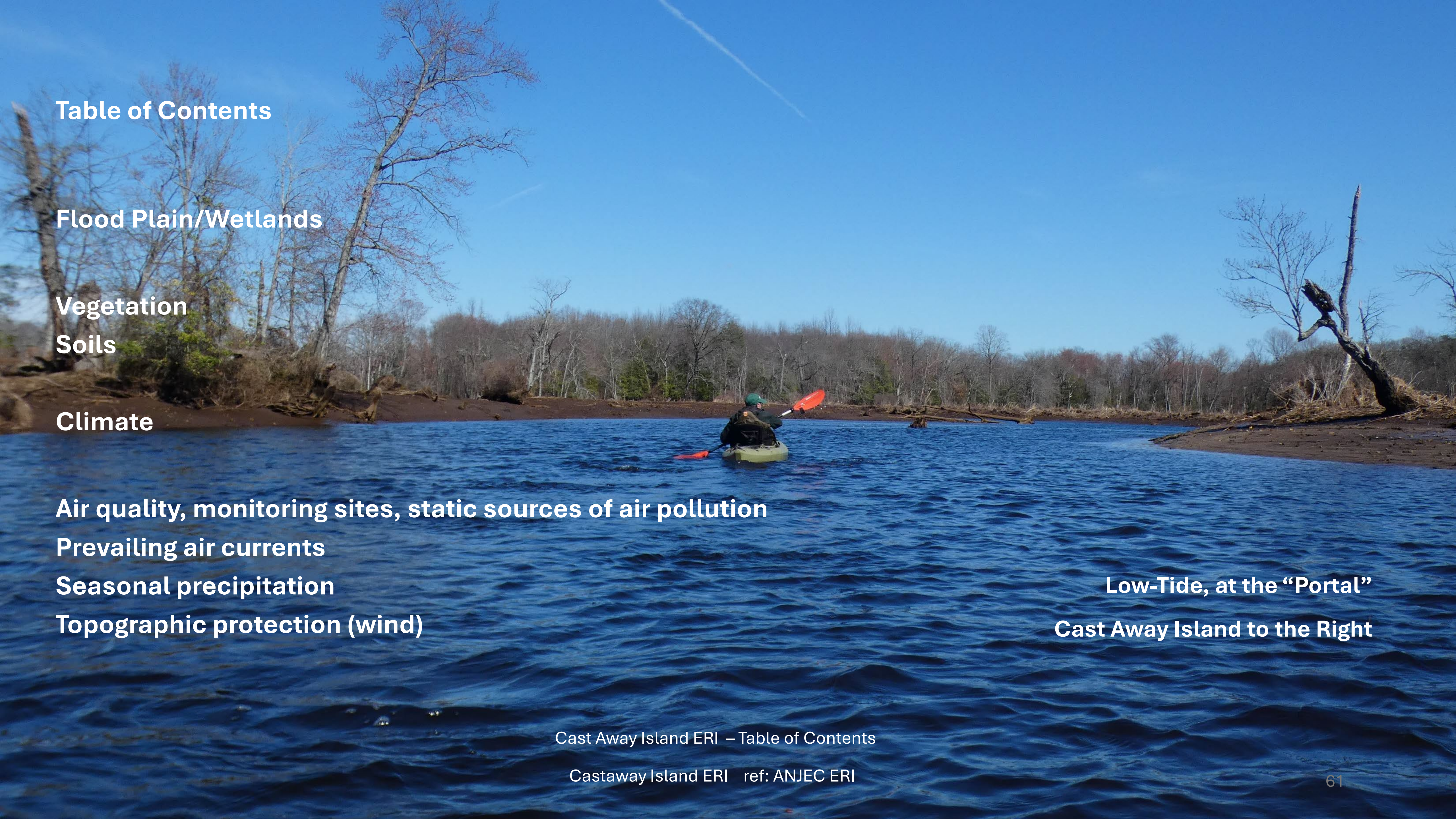
Cast Away Island

Incoming Tide

9 minute take down

Water snake ambushes eel.
Cast Away Island


MAP
CANALS AND RAIL ROADS
Transporting Anthracite Coal
From the Several Coal Fields to the City of
NEW YORK
BUCKS
MERCER
MONMOUTH
PRINCETON
TRENTON
DOYLESTOWN
NORRISTOWN
BORDENTOWN
BRISTOL
BURLINGTON
MOUNT HOLLY
PHILADELPHIA
CAMDEN
BURLINGTON
WOODBURY
SCALE OF MILES.
Cast Away Island



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Flood Plain/Wetlands

Vegetation

Soils

Climate

Air quality, monitoring sites, static sources of air pollution

Prevailing air currents

Seasonal precipitation

Topographic protection (wind)

Low-Tide, at the "Portal"

Cast Away Island to the Right

Maritime Commerce, North Branch

Rancocas Creek

Commerce Rapid

Growth from Location

of Delaware River

Ports, People,

Community, Heritage,

The rise in the river gave raftsman much trouble.

Mt. Holly News 1882

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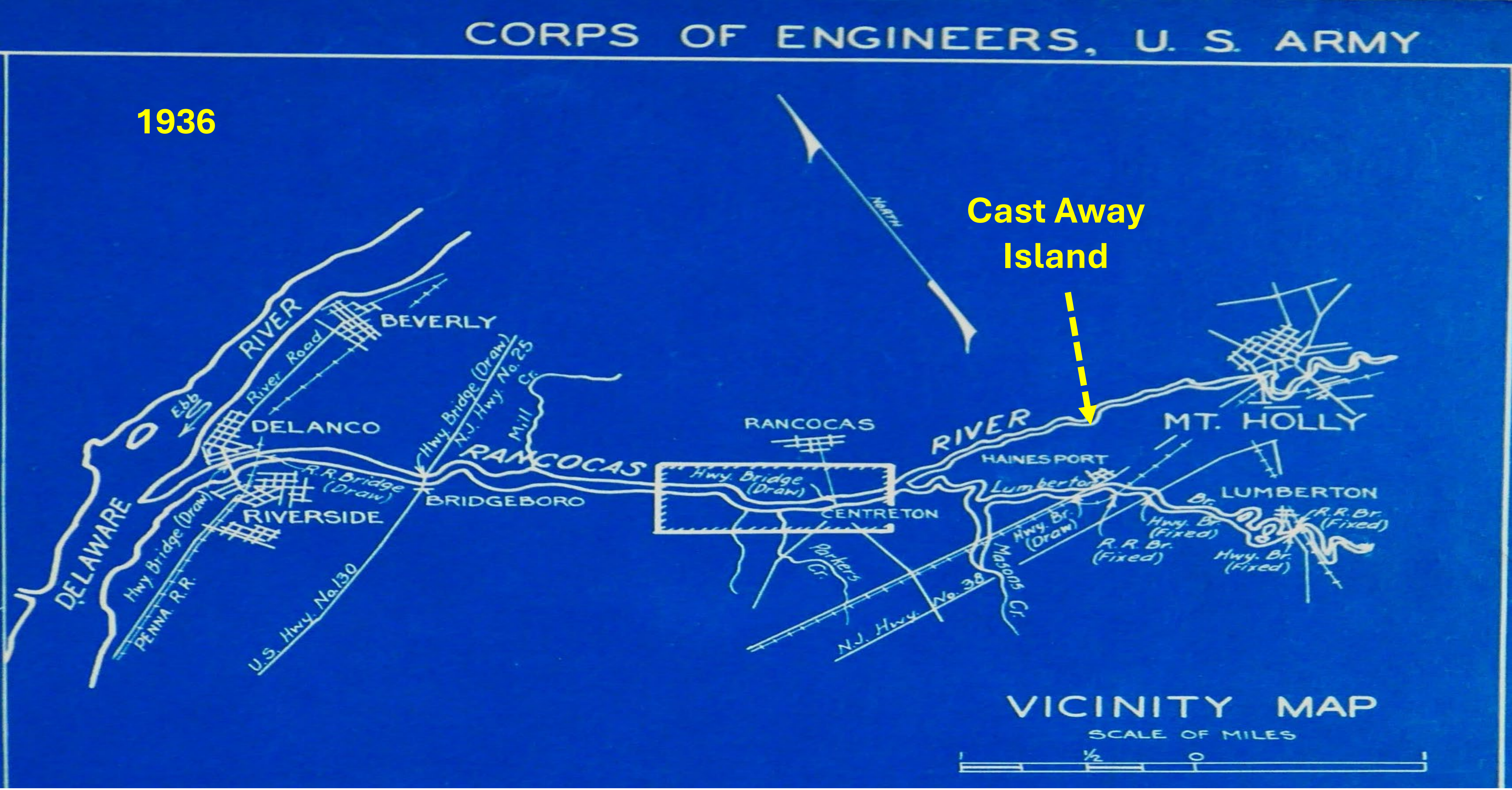
Vegetation

Cast Away Island Viewshed


CORPS OF ENGINEERS, U. S. ARMY
1936
Cast Away Island
North
DELAWARE
RIVER
Ebb
River Road
BEVERLY
DELANCO
RIVERSIDE
R.R. Bridge (Draw)
Hwy Bridge (Draw)
PENNA R.R.
U.S. Hwy. No. 130
Hwy. Bridge (Draw) N.J. Hwy. No. 25
Mill Cr.
BRIDGEBORO
RANCOCAS
RANCOCAS
Hwy. Bridge (Draw)
CENTRETON
Parkers Cr.
N.J. Hwy. No. 38
RIVER
HAINES PORT
Lumberton Br.
Hwy. Br. (Draw)
Masons Cr.
R.R. Br. (Fixed)
Hwy. Br. (Fixed)
MT. HOLLY
LUMBERTON
R.R. Br. (Fixed)
Hwy. Br. (Fixed)
VICINITY MAP
SCALE OF MILES
½
0

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Land Use is Multi-Use

Existing

Zoning

Open space, public and private

(including easements)

Roads, railroads, pipelines

Recreation, public and private

Urban areas

Agricultural areas

Waste treatment and disposal

Cast Away Island

Leave No Trace

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Historic and Cultural Factors

Historic sites and areas

Possible or existing archaeological sites

Scenic qualities, viewsheds

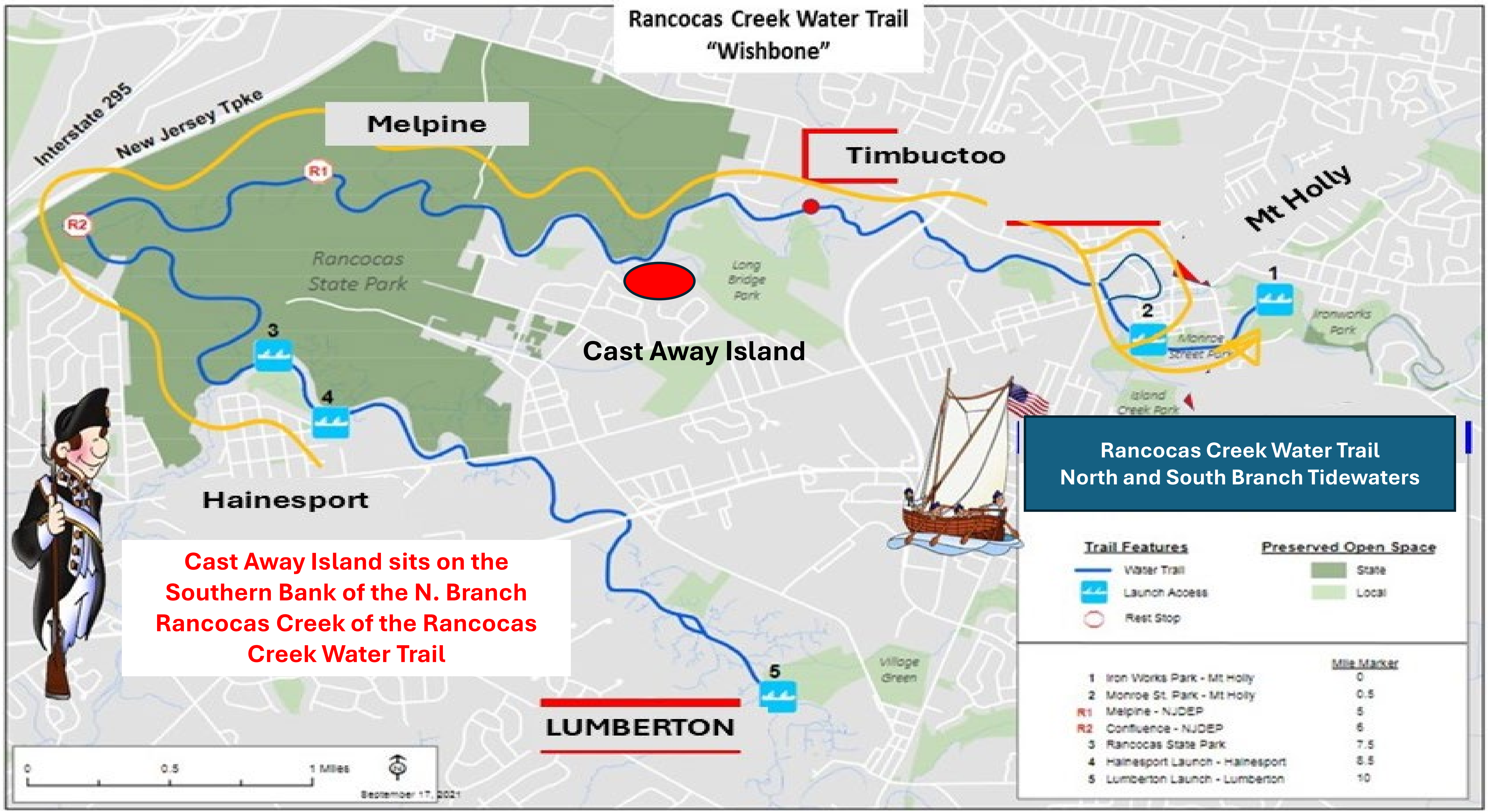
Historic roads, bridges and trees

Multi-Use

Noise sensitive areas

Equivalent sound level

Day/night sound level



Rancocas Creek Water Trail
"Wishbone"
Interstate 295
New Jersey Tpke
Melpine
Timbuctoo
Mt Holly
R1
R2
Rancocas State Park
Long Bridge Park
Cast Away Island
1
2
3
4
5
Ironworks Park
Monroe Street Park
Island Creek Park
Hainesport
Cast Away Island sits on the Southern Bank of the N. Branch Rancocas Creek of the Rancocas Creek Water Trail
Village Green
LUMBERTON
Rancocas Creek Water Trail
North and South Branch Tidewaters
Trail Features
Water Trail
Launch Access
Rest Stop
Preserved Open Space
State
Local
Mile Marker
1 Iron Works Park - Mt Holly 0
2 Monroe St. Park - Mt Holly 0.5
R1 Melpine - NJDEP 5
R2 Confluence - NJDEP 6
3 Rancocas State Park 7.5
4 Hainesport Launch - Hainesport 8.5
5 Lumberton Launch - Lumberton 10
0
0.5
1 Miles
September 17, 2021

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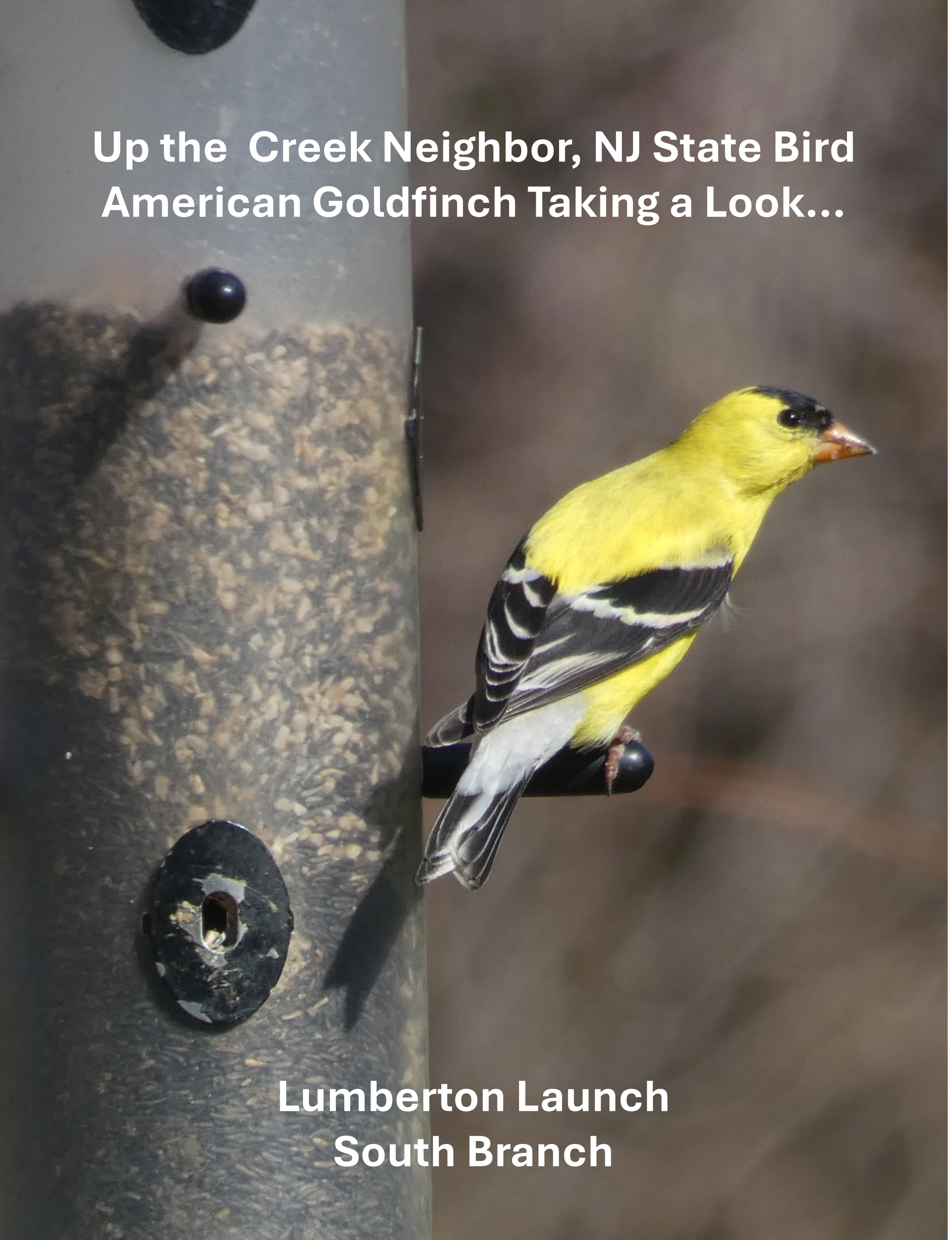
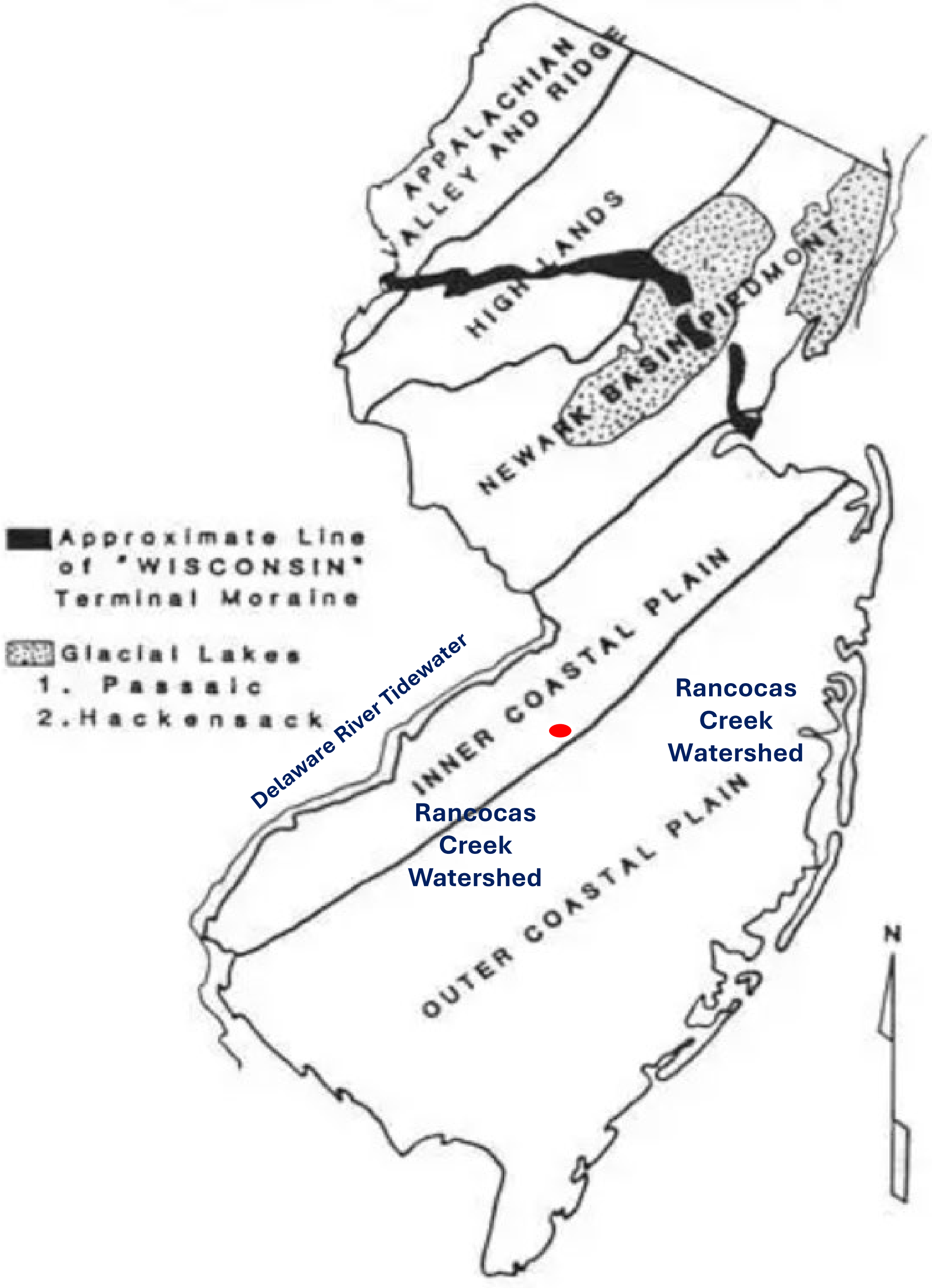


Section One:

Location of Cast Away Island

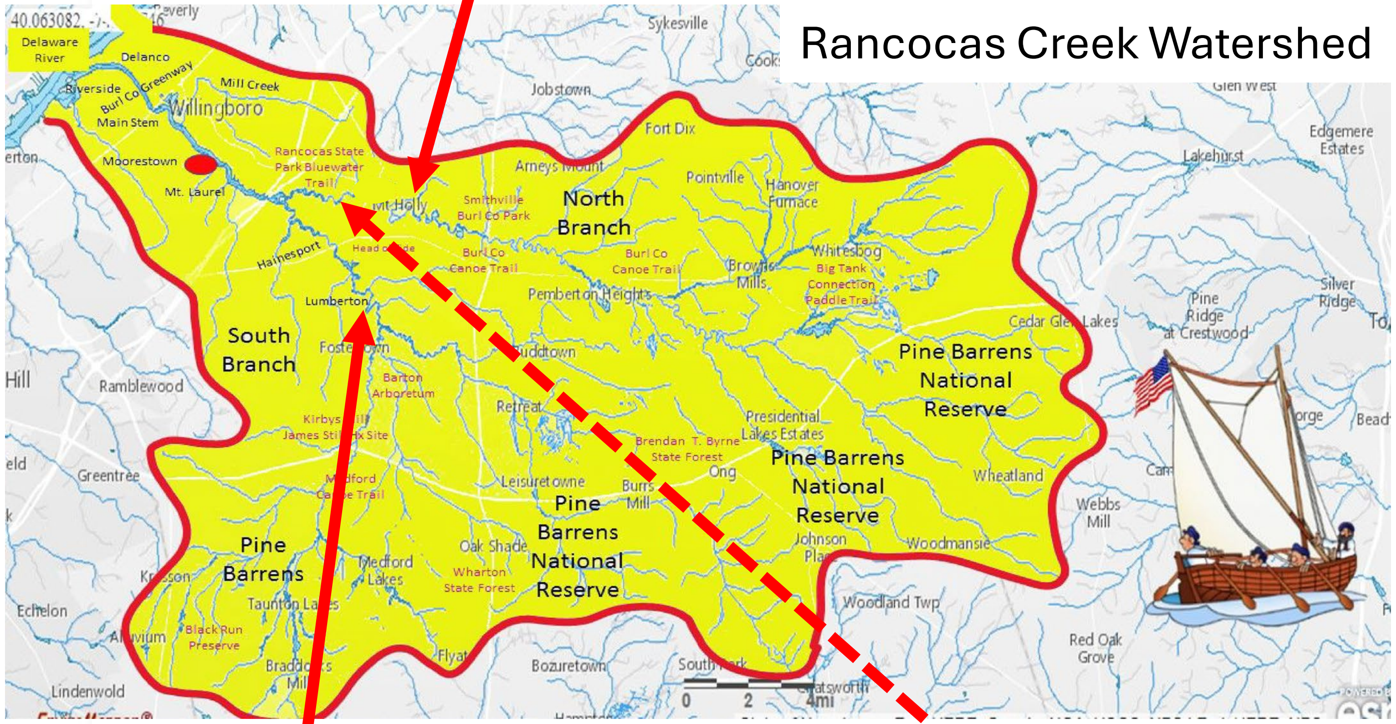
Rancocas Creek drains a 360 square mile bisected watershed. Its headwater sources are found deep inside 3 sub-watersheds of the NJ Pine-Lands National Reserve. Rancocas Creek empties and slowly winds, meanders across Western New Jersey's outer coastal plain, coursing through pine barrens forested glades, entering the inner coastal plain to join the tide at Mt. Holly on the North Branch and Lumberton on the South Branch.

The tidal reaches of the Rancocas Creek, sailed by Swedes in the mid 1600's and Native American's before, extend in a north-western direction from its Pine Barrens headwaters. The Rancocas tides flow east from Delanco, North of Philadelphia. Here on the tide Rancocas Creek widens, bordered by lush heavily wooded forests and wild rice marshes. These tidewaters connect people to the Burlington County Rancocas Creek Greenway. The Rancocas joins the Delaware River Federal Navigation Channel, Mile 102N.



Head of Tide N Branch Mount Holly

Rancocas Creek Watershed



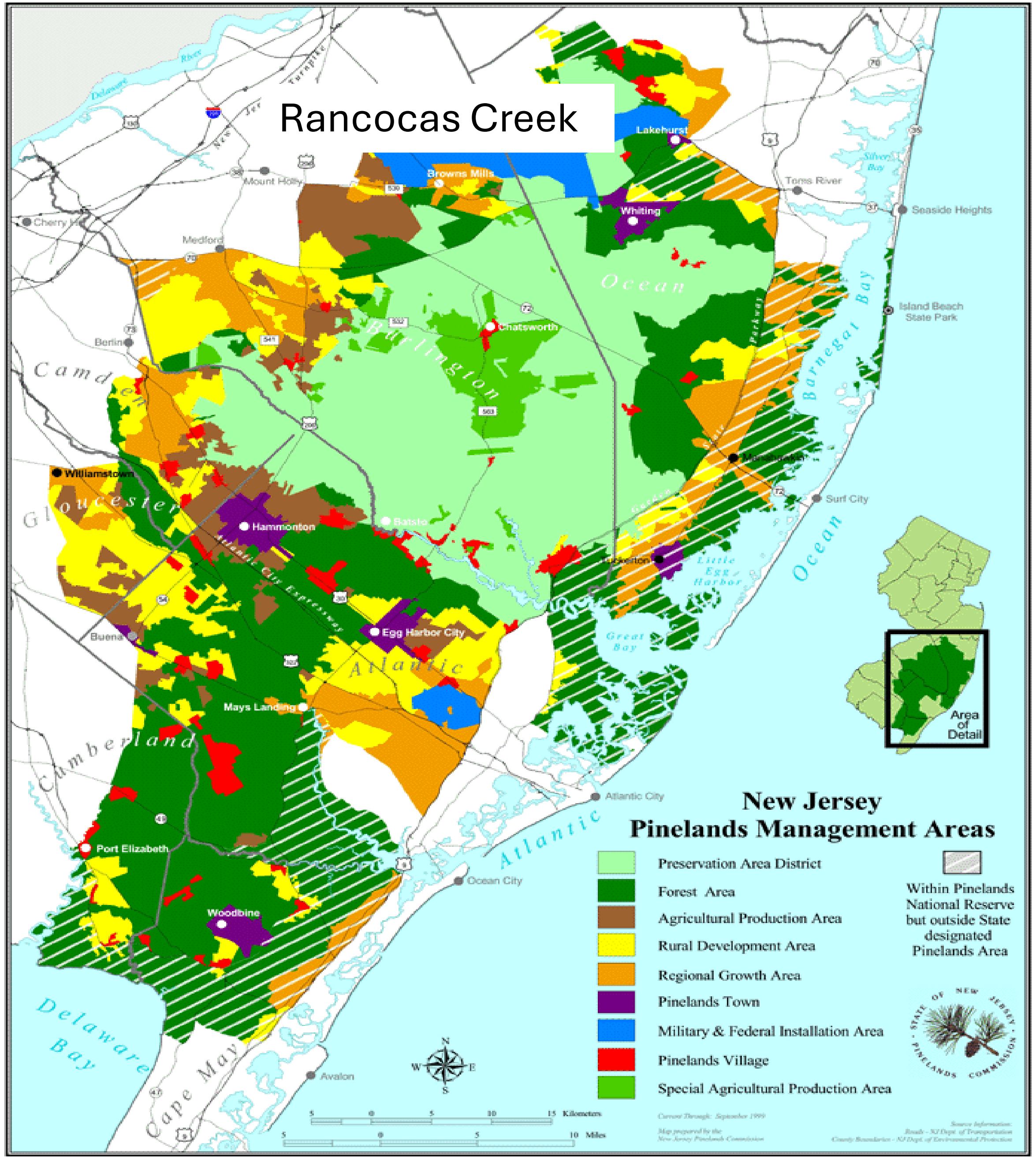
Cast-Away Island

Head of Tide S Branch Lumberton

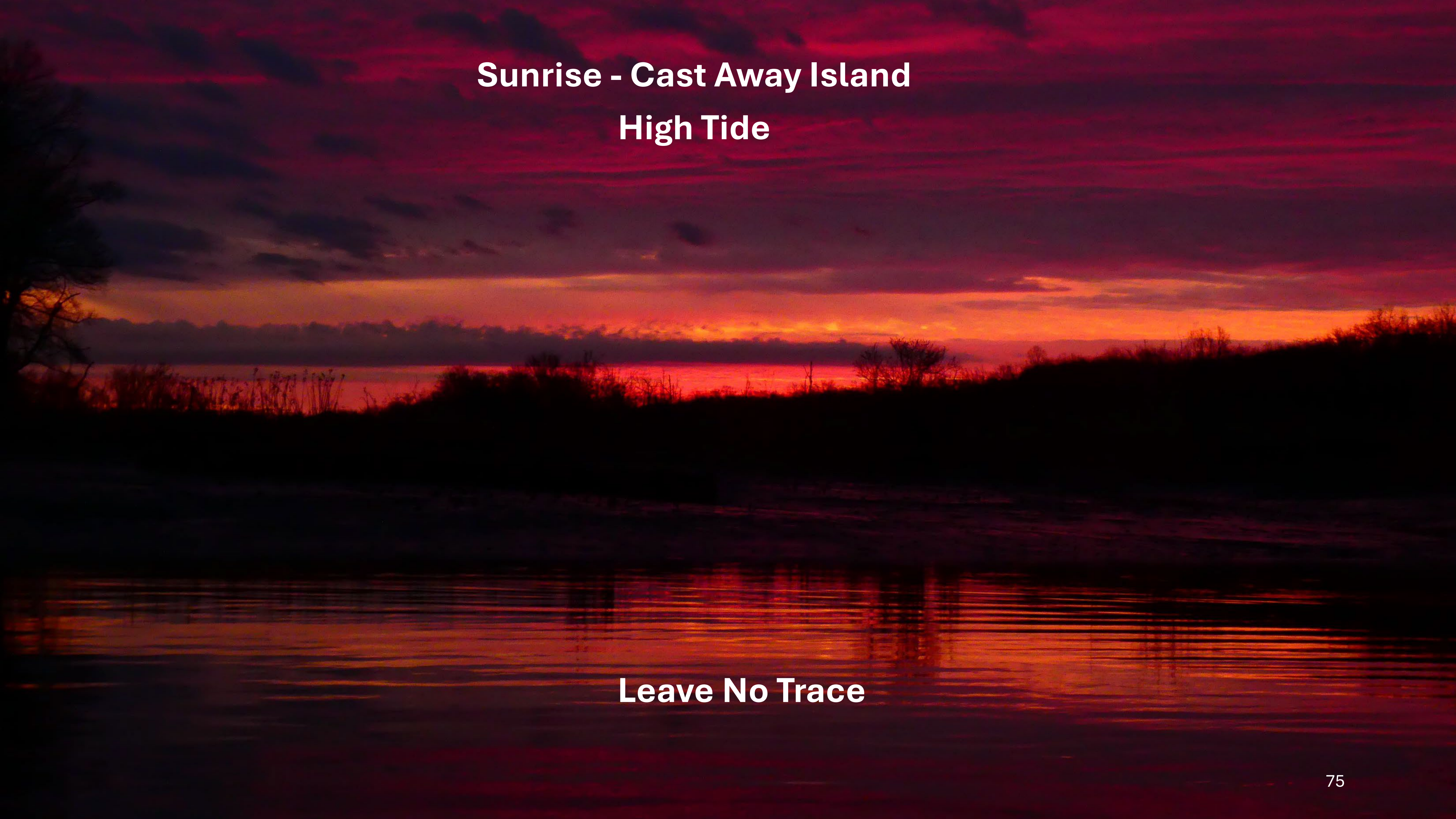
Pine Barrens Western Outflow

Rancocas Creek is one of the major waterways of the NJ Pine Barrens. Its 360 square mile watershed western outflow drains and empties to the west, into the Delaware River.

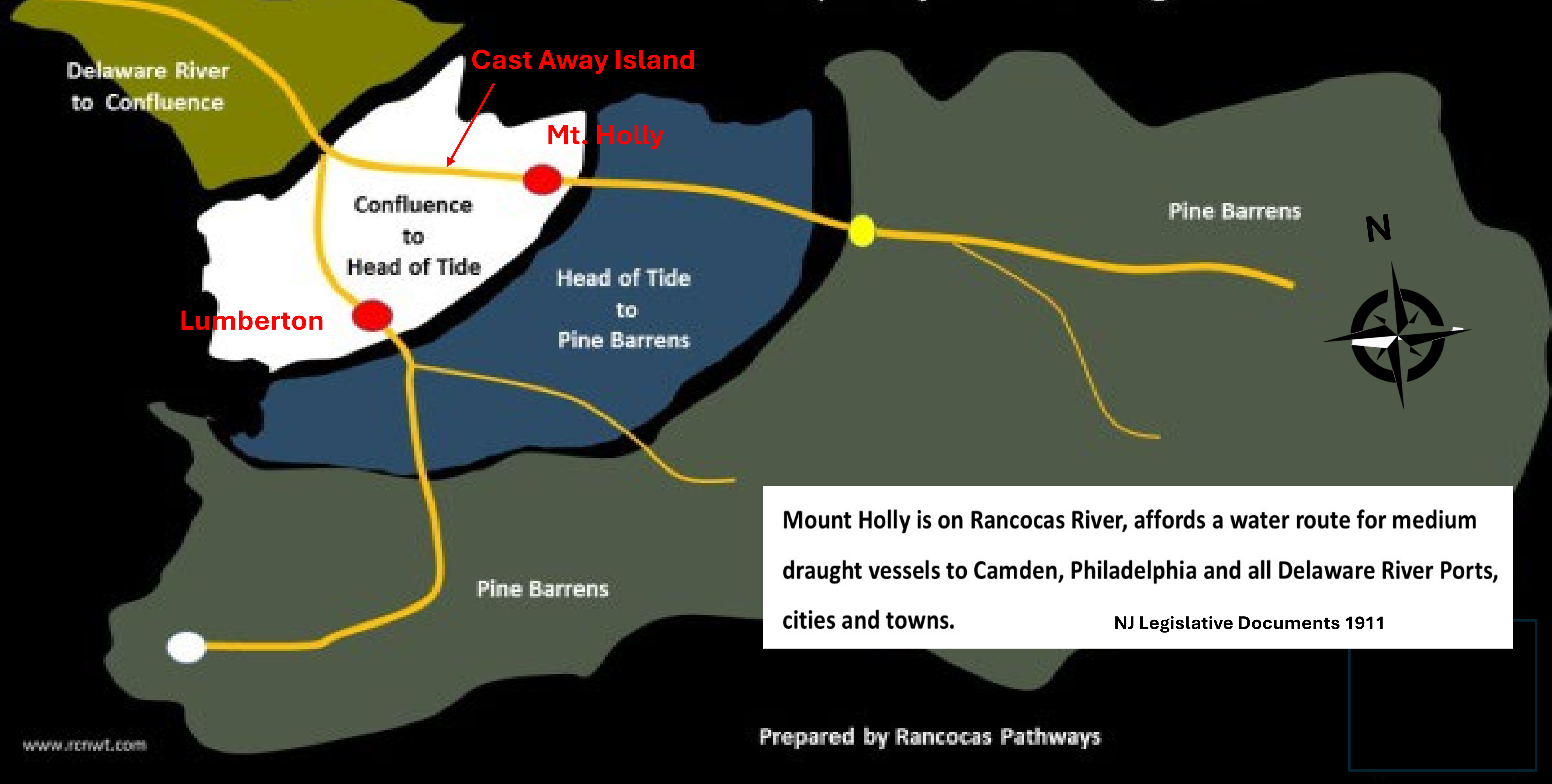
The Pinelands National Reserve (PNR) was created by Congress under the National Parks and Recreation Act of 1978. The PNR is the first National Reserve in the U.S. This internationally- important, ecological region is 1.1 million acres in size, covers portions of seven counties and occupies 22% of New Jersey's land area. It is the largest body of open space on the Mid-Atlantic seaboard between Richmond and Boston. It is underlain by aquifers containing an estimated 17 trillion gallons of pure water. In 1983, the area was designated a U.S. Biosphere Reserve by UNESCO.




North Branch
Heading Towards Cast Away Island


Sunrise - Cast Away Island
High Tide
Leave No Trace

Rancocas Creek Watershed Geographic Regions



Mount Holly is on Rancocas River, affords a water route for medium draught vessels to Camden, Philadelphia and all Delaware River Ports, cities and towns.

NJ Legislative Documents 1911

From 1930 to 1950 ACOE had a full scale working tidal-flow model of the Bay and River Delaware, including tributaries

Information from the model focuses on the tidal range of Cast Away Island, 152 miles from twin Delaware Capes

<u>Description of Model</u>

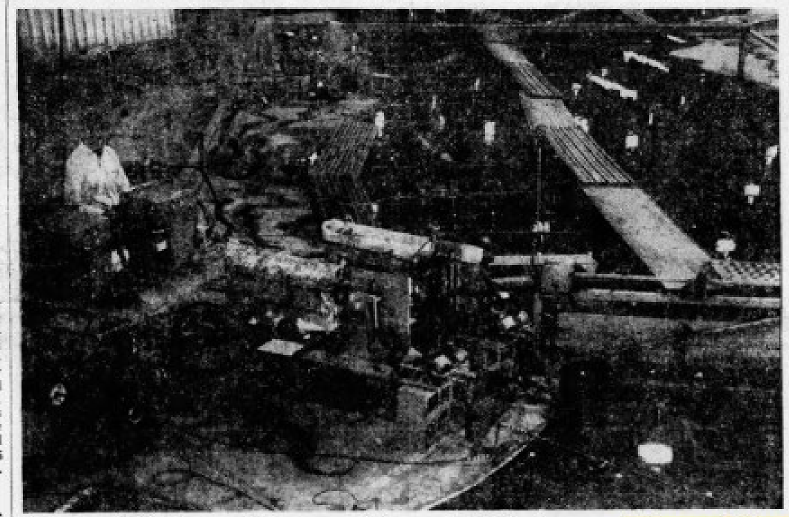
1. The Delaware River model reproduces the entire tidal estuary of Delaware River and Bay, beginning at Capes May and Henlopen at the downstream end and extending to Trenton, New Jersey, at the upstream end. The tidal portions of major tributary streams (Maurice, Cohansey, Salem, Christiana, Schuylkill, and Rancocas Rivers) are reproduced to correct lengths and cross sections, but the tributaries are bent to conform to the general alignment of the main stream. That portion of the Chesapeake and Delaware Canal from its junction with the Delaware River to Biddle Point, approximately 3.0 miles, is also reproduced. The limits

4. The model is equipped with the necessary appurtenances to reproduce and measure all pertinent phenomena of the prototype. These appurtenances include primary and secondary tide control mechanisms, tide recorders, inflow measuring devices, salinity measuring and recording apparatuses, current motors, tide gages, and apparatus for injecting and retrieving shoaling material. The rise and fall of the tide in the model, and the resulting flood and ebb tidal currents, are reproduced by pumping water into the model to reproduce the flooding tide and removing it from the model by gravity to reproduce the ebbing tide.

Rancocas Creek tidal periods change from day to day. Rancocas Creek tides have 2 high and 2 low tides tidal cycle. Tidal period is the length of time between successive high or low tides

Ref: 1950 ACOE Waterways Experiment Station <u>Delaware River Model</u>

Delaware River Model, Tidal Estuaries and Effects of Nuclear Weapons



Corps of Engineers Measures Thermal Pollution on Delaware River Model in Vicksburg, Miss., simulates actual conditions on river here

Delaware River Down in Mississippi? 100-Yard-Long Model Helps Planners

By MIKE CLARK
Of The Inquirer Staff

The Delaware River has a little brother approximately 1500 miles from Philadelphia. It's not nearly so wide, not as long as the local version, but it is extremely important.

The little brother actually is a scale model of the Delaware and is one of many built by the U. S. Corps of Engineers at its Waterways Experiment Station in Vicksburg, Miss.

Located on a corner of the 850-acre station, the Delaware River model is inside a large tin house almost the size of a football field. The model includes the area from the Delaware Bay up to Trenton and is exact, down to placement of the large bridges spanning the river. The piers are lined up just as they are on the river here, and there are representations of water intakes, dischargers and streams emptying into the Delaware.

For example, the model, based on surveys of the river, has Camden's Cooper River flowing into it as well as Pennypack Creek. The Tinicum Marsh is there along with the huge loading and unloading piers at U. S. Steel's Fairless Hills Works.

The Vicksburg station of the Corps of Engineers came into being after the disastrous Mississippi River floods of 1927. The corps wanted to advise local areas in their attempts to control flooding on the lower reaches of the river.

Since this beginning the corps has been adding to the facility, creating hundreds of models of virtually every major body of water in the United States.

The models are much more than toys, according to Henry Simmons, an engineer in charge of constructing the models.

After a detailed survey of the Delaware River was completed more than 20 years ago, the first step in constructing the model involved making wooden forms on which concrete was poured. Then, using charts developed in the survey, the engineers drew special configurations into the wet cement to simulate physical characteristics peculiar to the Delaware. When the cement dried, the model duplicated the real thing.

The Delaware River model is approximately 100 yards long but is dwarfed by the huge 250-acre outdoor model of the Mississippi.

The models don't stop at simply rivers. For instance, the Vicksburg facility built a scale model of the Tocks Island Dam long before actual work began on acquiring land for the project. Results of studies, conducted four to five years ago, resulted in some basic changes in the final design.

When plans were made to build the Salem nuclear power plant at Artifical Island, the

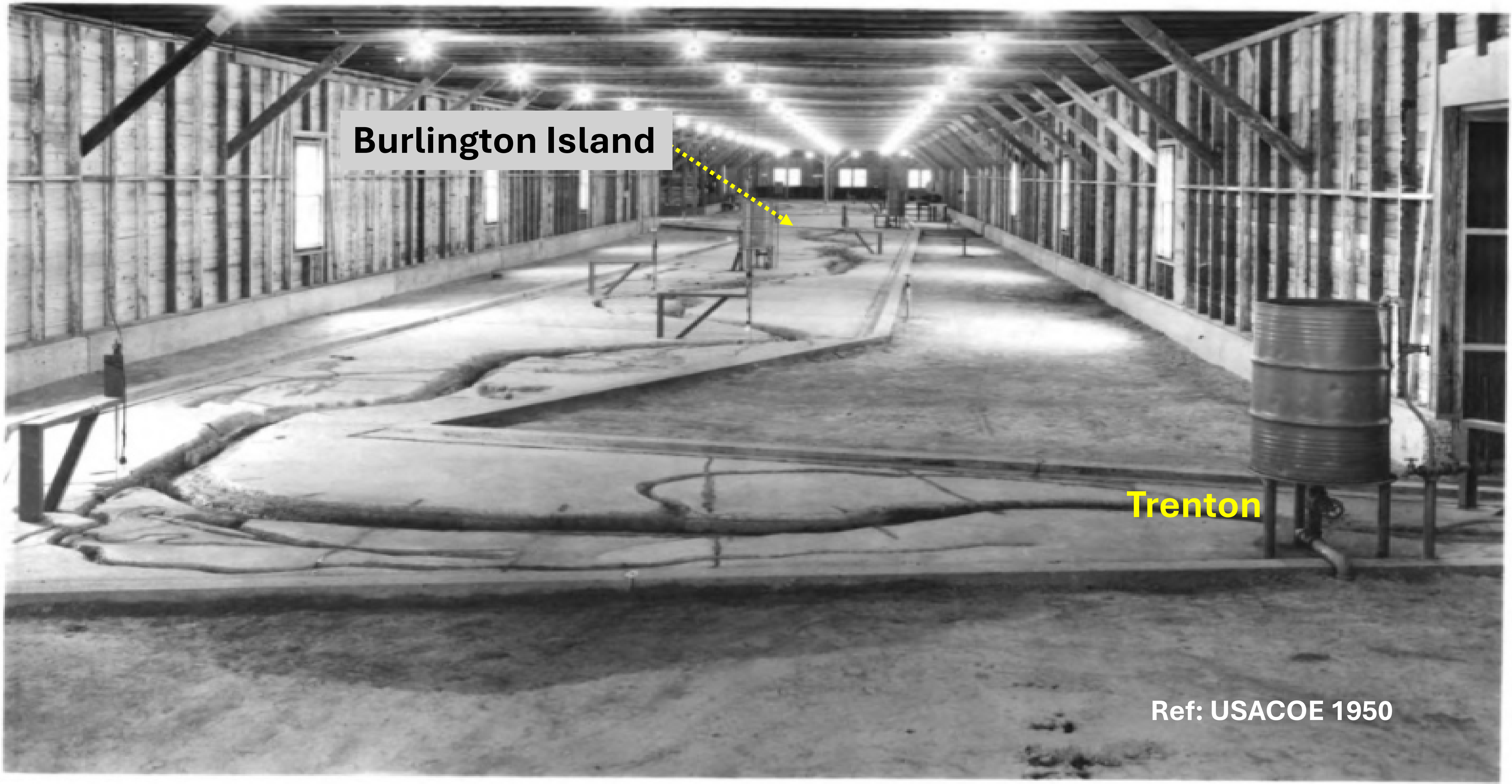
Continued on Page 6, Col. 1

Revolutionary Spirit Returns t

STANDING ON THE SOUTH BANK of the Chesapeake and Delaware Canal reproduced on a hydraulic model (left to right) Col. J. A. Johnson, District Engineer, Philadelphia; H. Willis Jackson, Chairman of the Joint Executive Committee for Improvement and Development of the Philadelphia Port Area; and Colonel Ernest D. Peixotto, Director of the Waterways Experiment Station, where the model is located; discuss plans for duplicating all of the predominating forces of nature to scale to determine the net transport of fresh water through the canal.

Delaware River Philadelphia/Camden

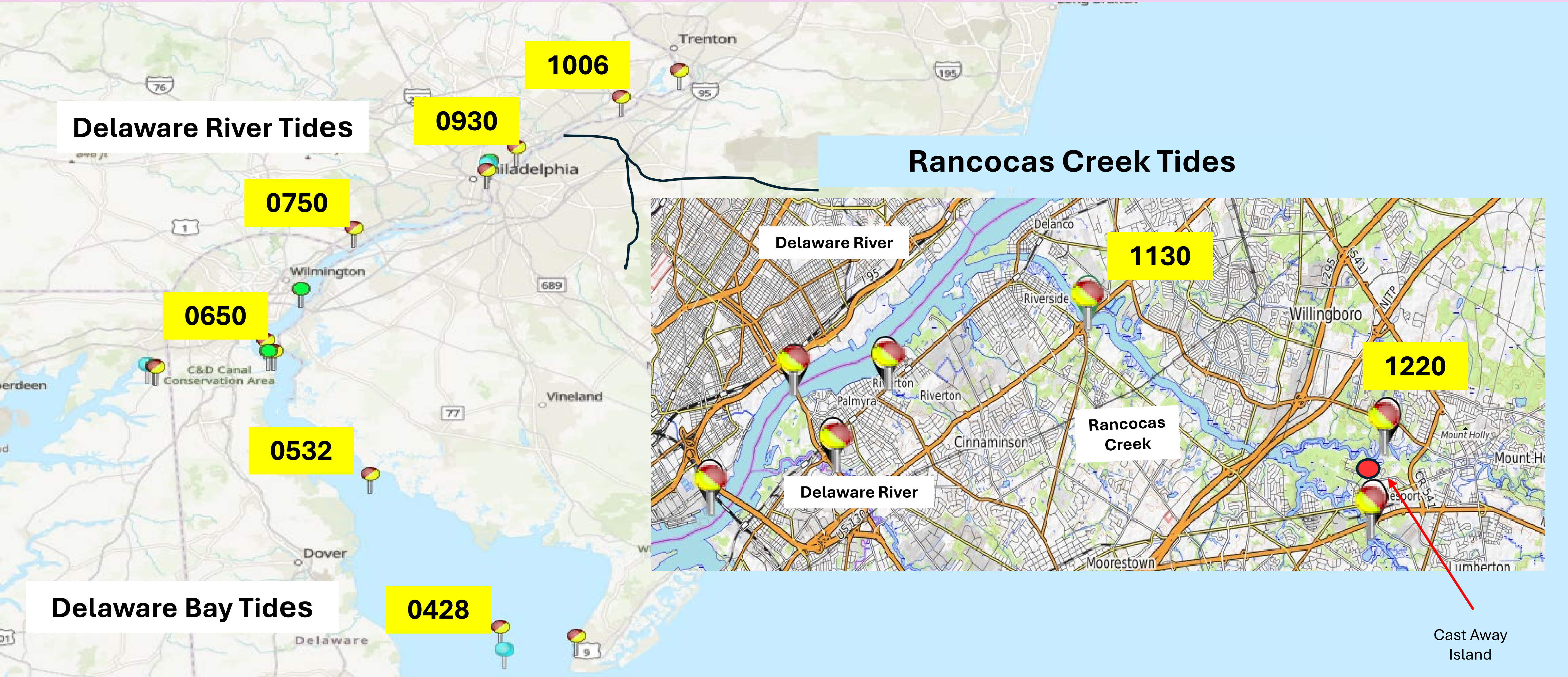

Cast Away Island



Photograph 8.

Upper Delaware River, looking downstream from Trenton.

Snap-Shot of Incoming High Tide: Delaware Bay to River to Rancocas Creek



How long does it take high tide to reach Cast Away Island ? Tidal Progression

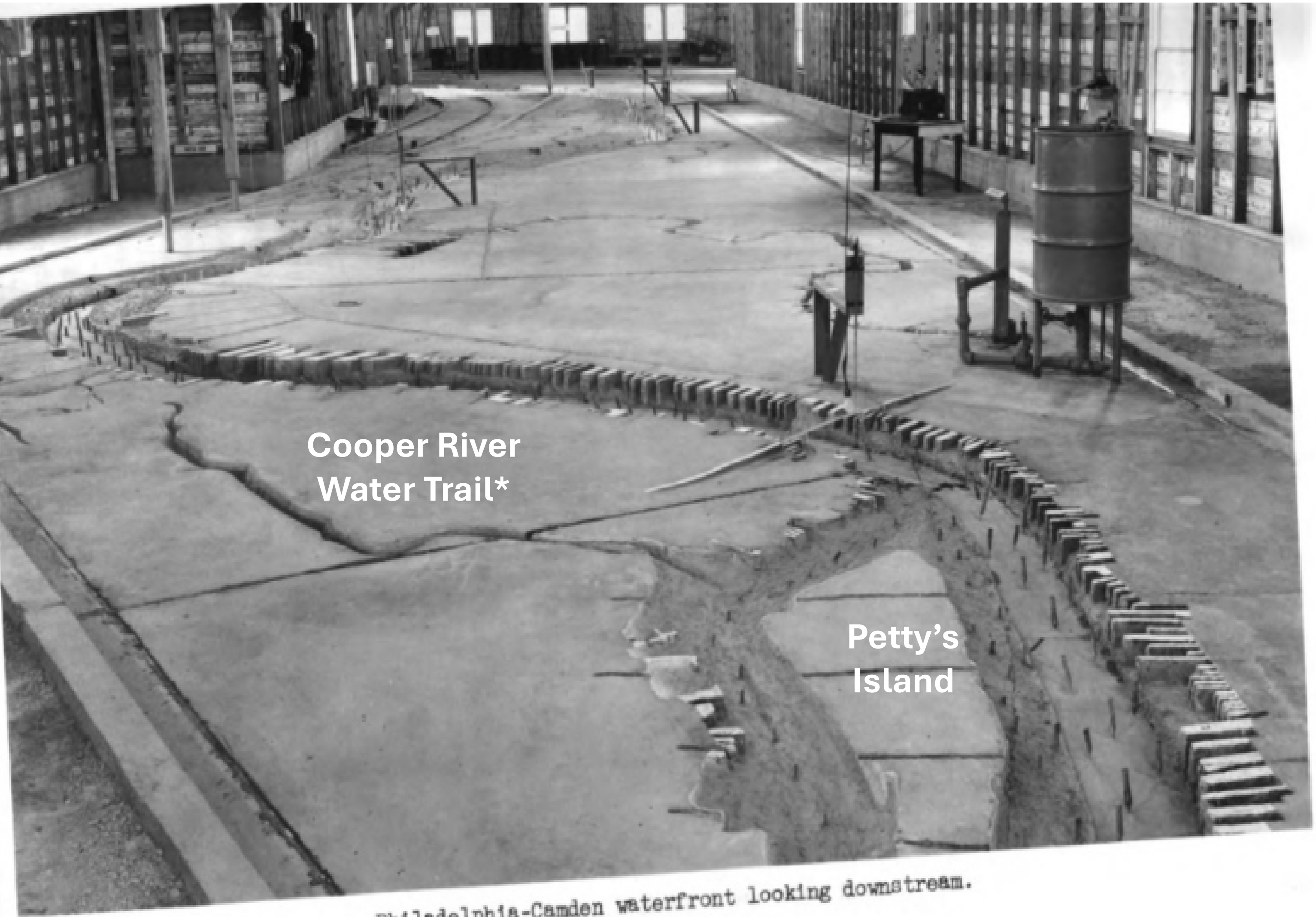

Low Tide – Cast Away Island Landing

Atlantic Ocean, Delaware Bay and River Tidal Morphology
to the Mouth of the Rancocas Creek, to the Forks of the Rancocas, Up the North or South Branch

Delaware Bay, looking upstream from model headbay.

The Delaware River model / prepared for the Committee on Tidal Hydraulics [by the] Waterways Experiment Station.

Delaware Bay, looking downstream from Artificial Island.

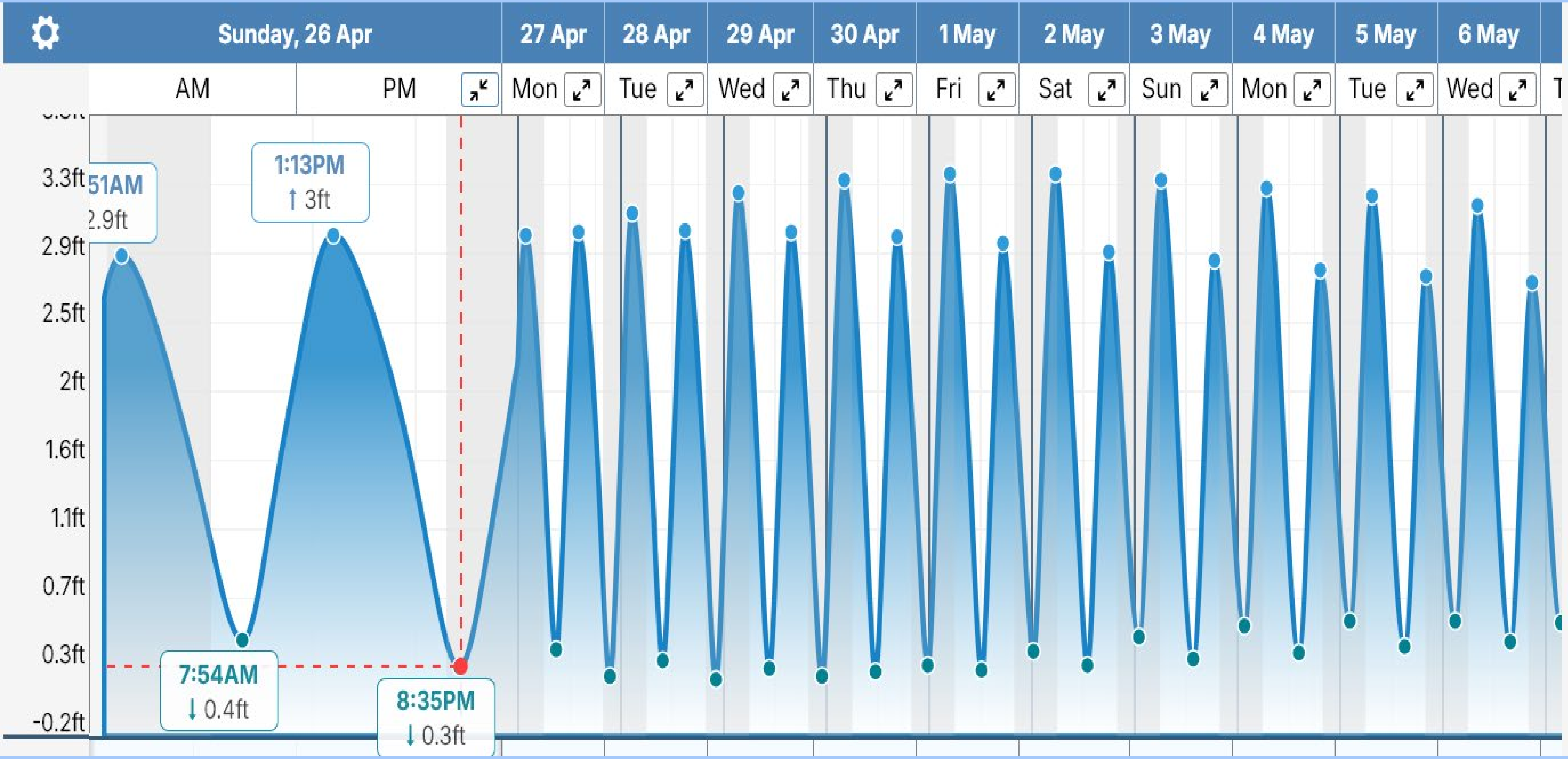


Photograph 7.

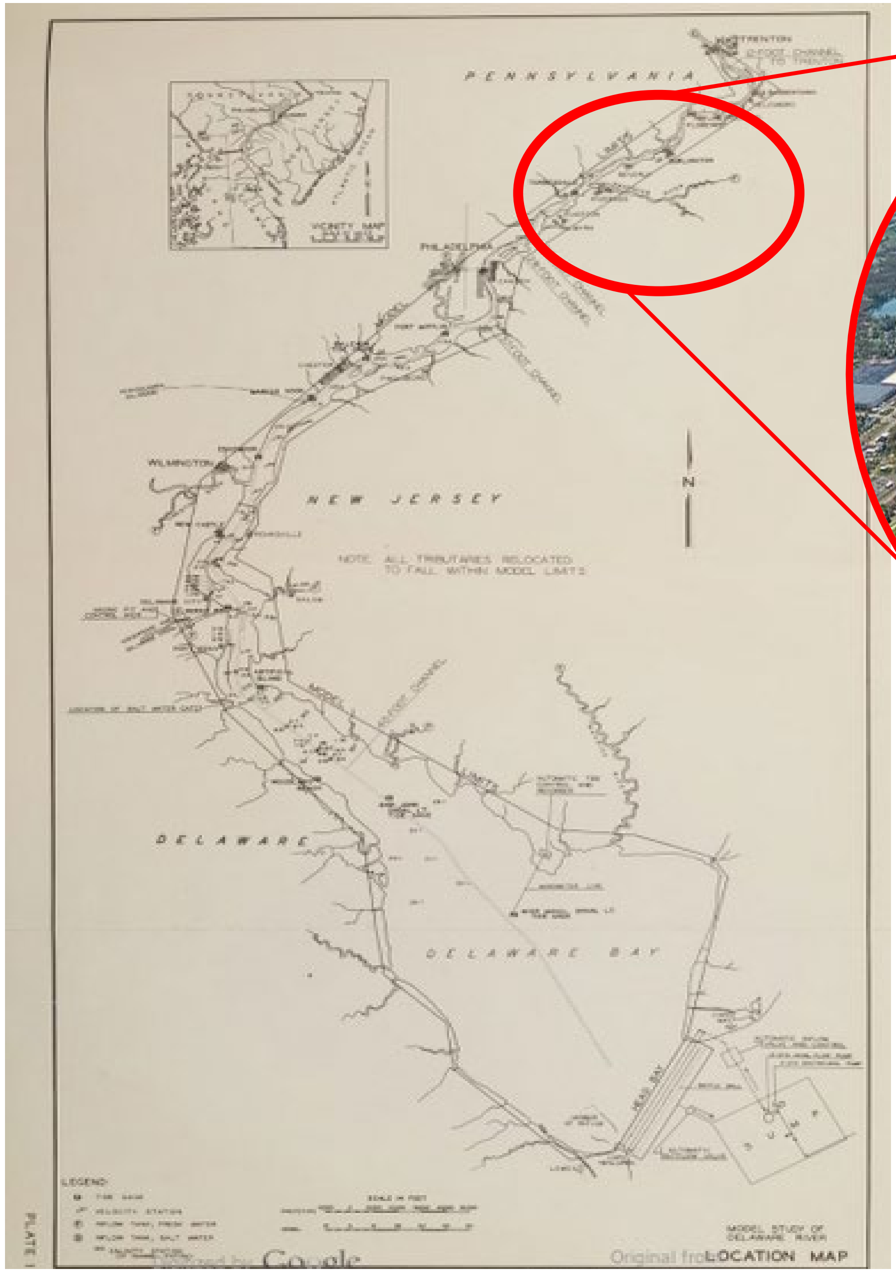
Philadelphia-Camden waterfront looking downstream.

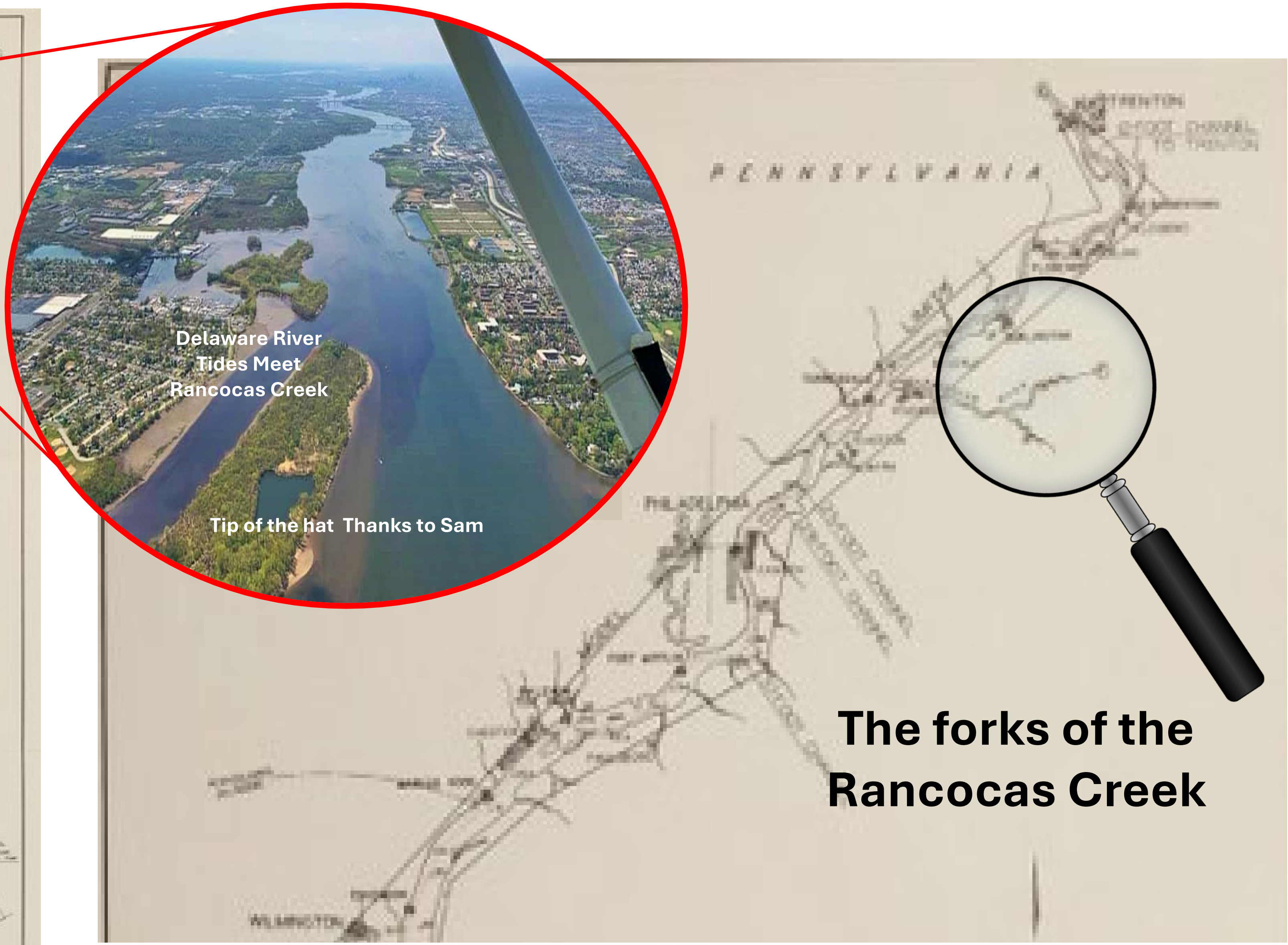
*** Tributaries may-not follow exact water course**

Cast Away Island Range of Daily Tides



High Tide – Cast Away Island Landing





The forks of the Rancocas Creek

Cast Away Island

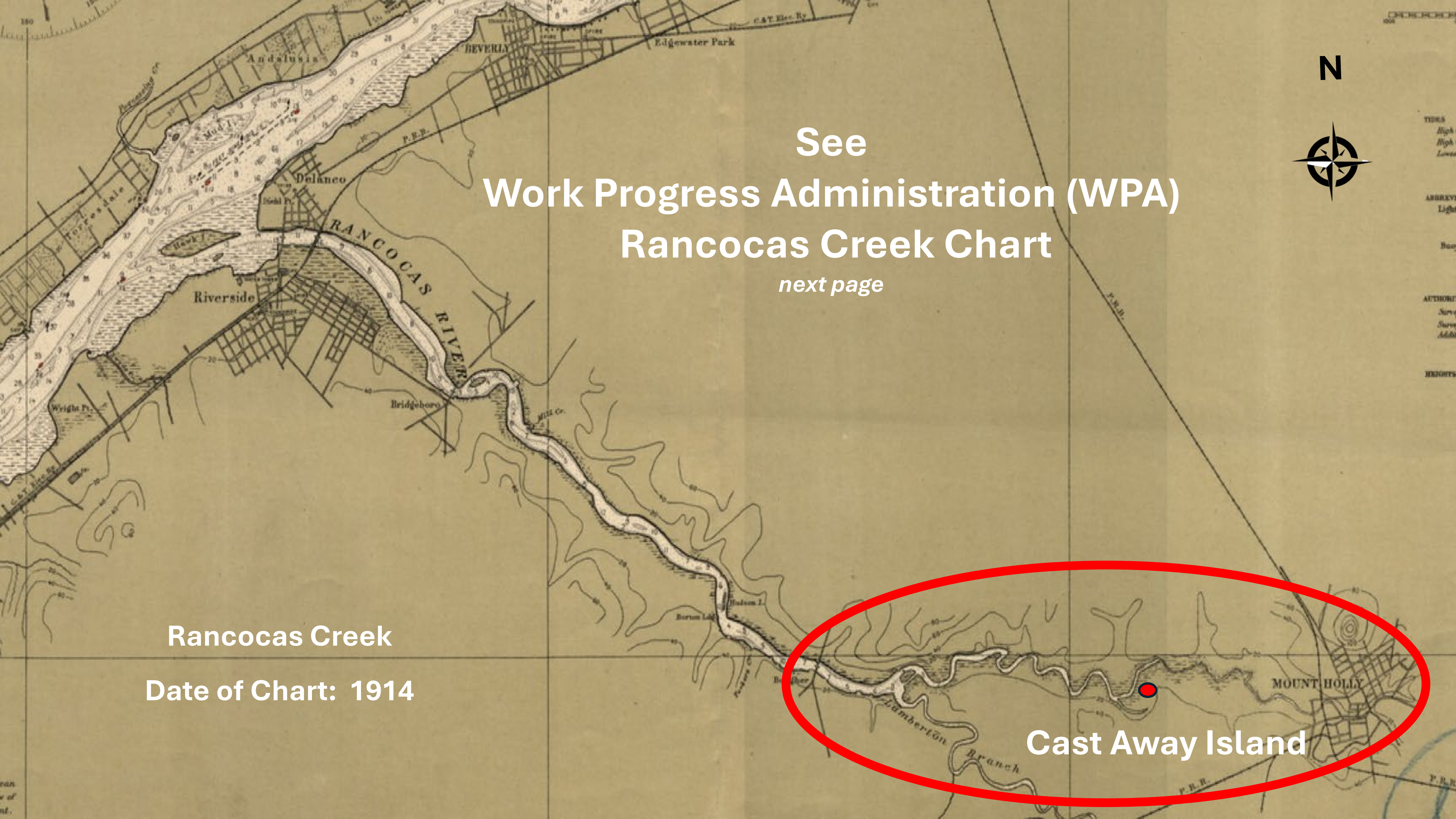
North Branch

Westampton
Timbuctoo
Mt. Holly

Tip of the Hat
Ray B.
for photo

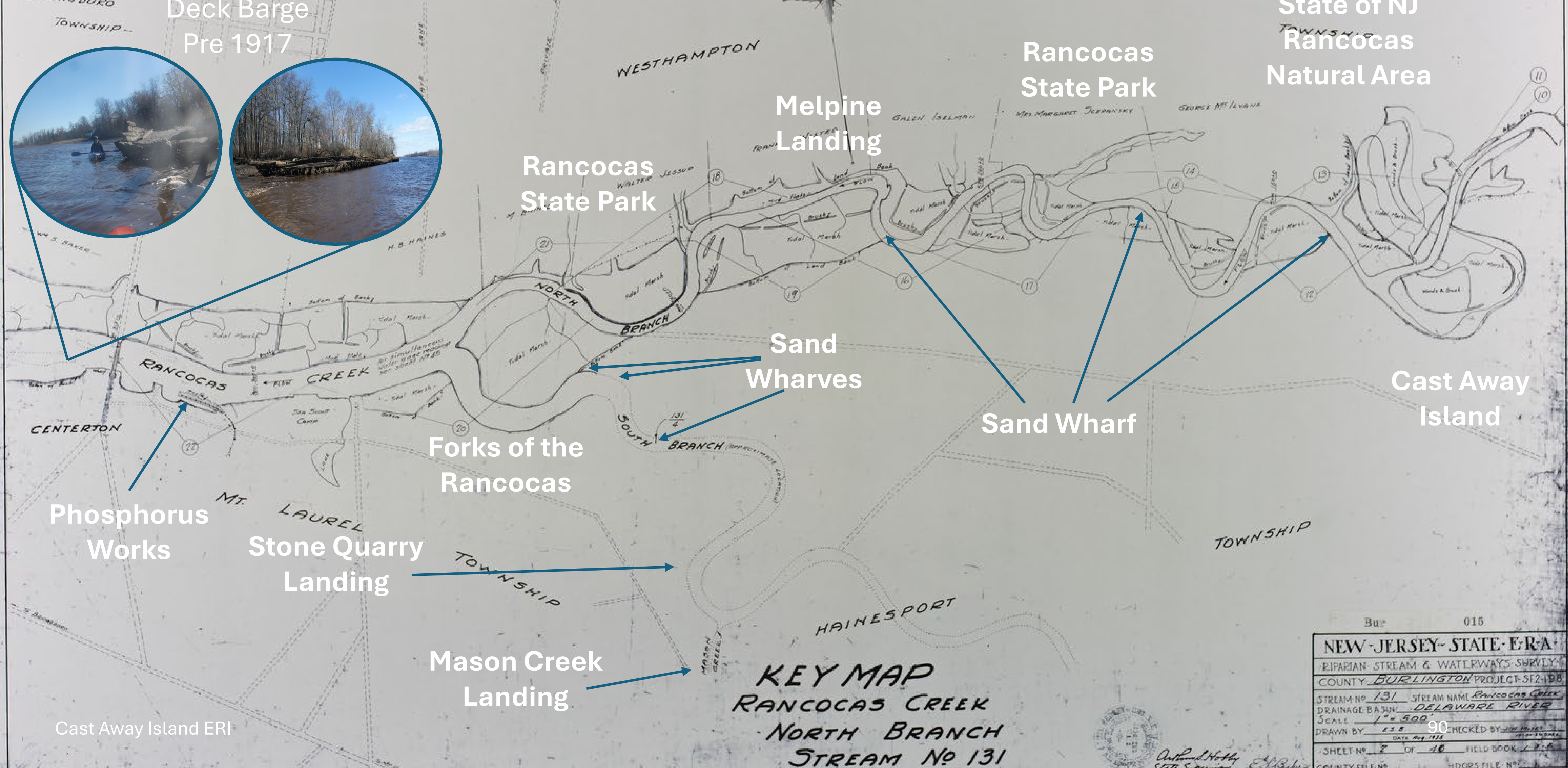
South Branch

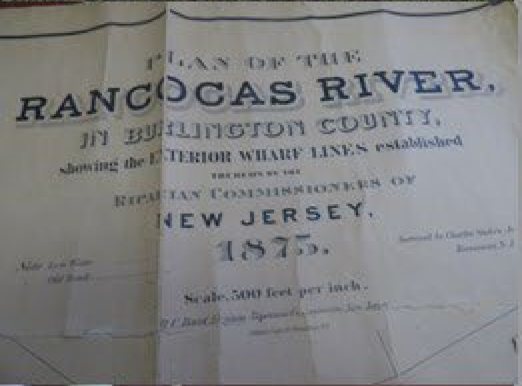
Hainesport
Lumberton
Mt. Laurel

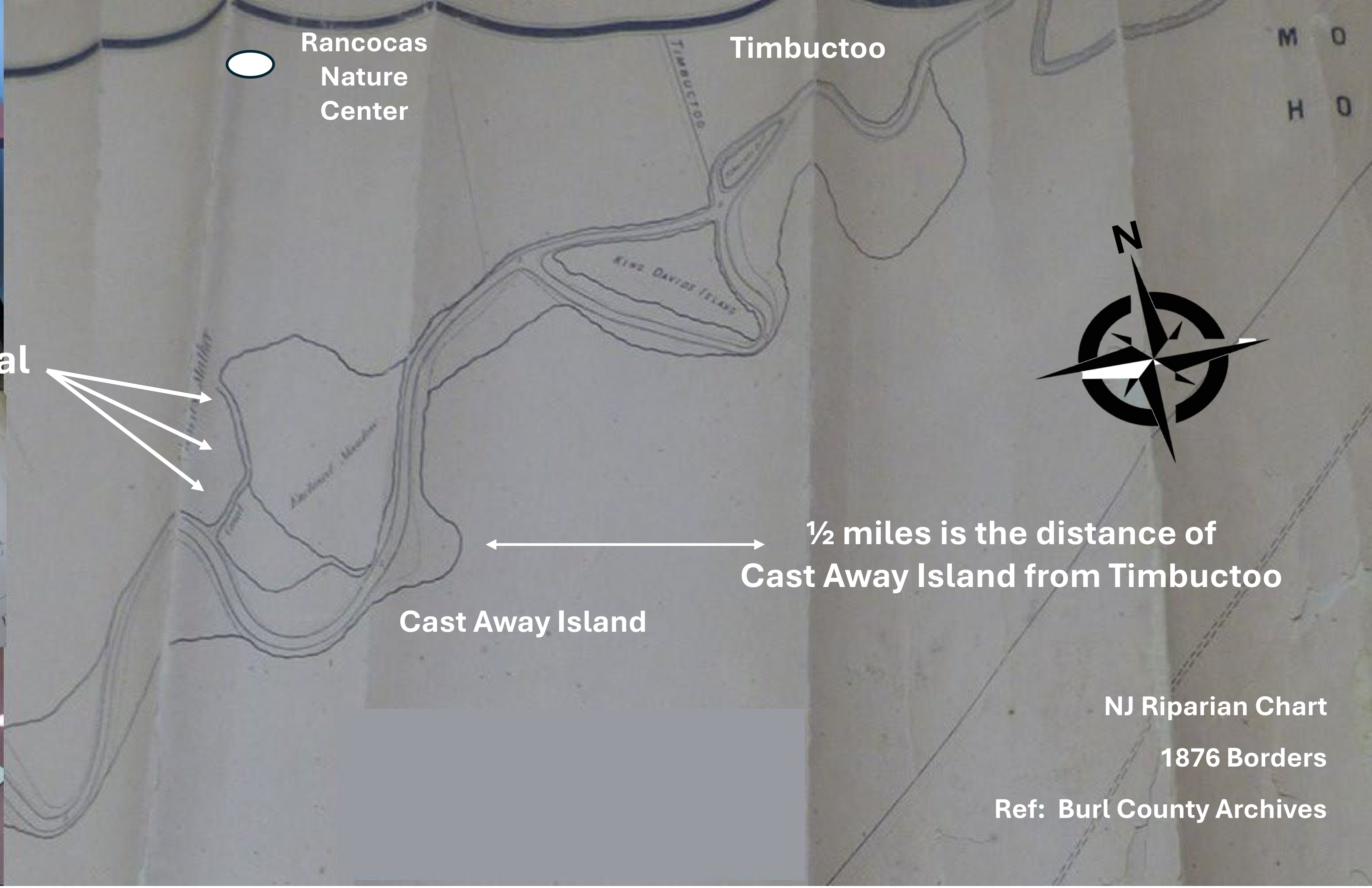


See
Work Progress Administration (WPA)
Rancocas Creek Chart
next page
N
Rancocas Creek
Date of Chart: 1914
Cast Away Island
Andalusia
BEVERLY
Edgewater Park
Delanco
RANCOCAS RIVER
Riverside
Bridgeboro
Torresdale
Lumberton Branch
MOUNT HOLLY
P.R.R.

1936 - WPA (Work Progress Administration)
Centerton to Cast Away Island



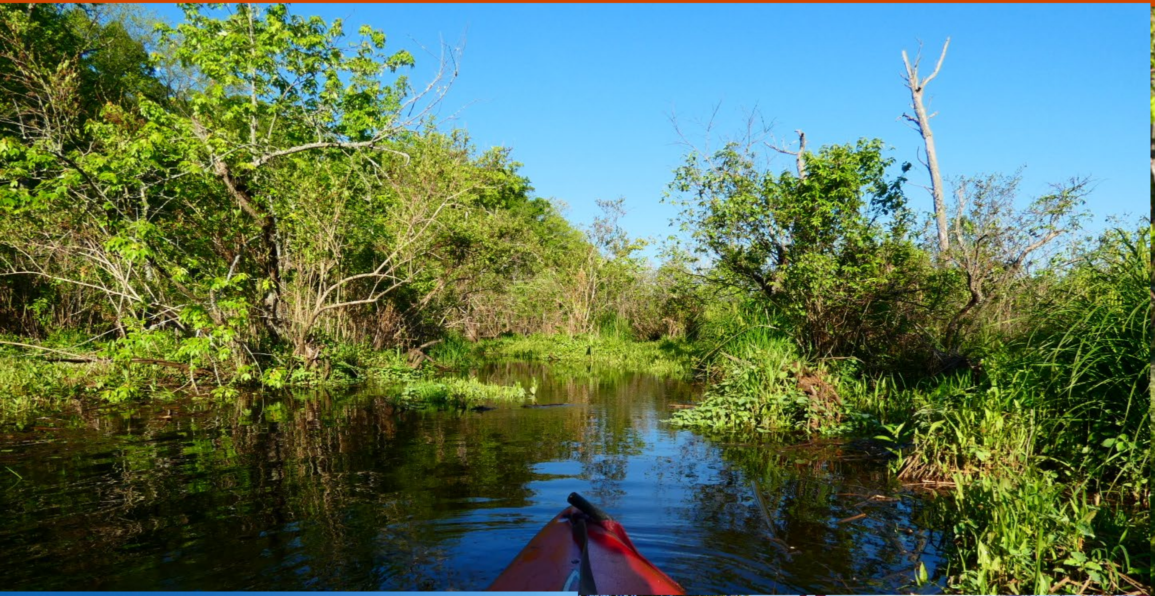

RANCOCAS RIVER,
NEW JERSEY,
1875.
Scale 500 feet per inch.


Rancocas Nature Center
Timbuctoo
TIMBUCTOO
KING DAVIDS ISLAND
N
Canal
½ miles is the distance of Cast Away Island from Timbuctoo
Cast Away Island
NJ Riparian Chart
1876 Borders
Ref: Burl County Archives

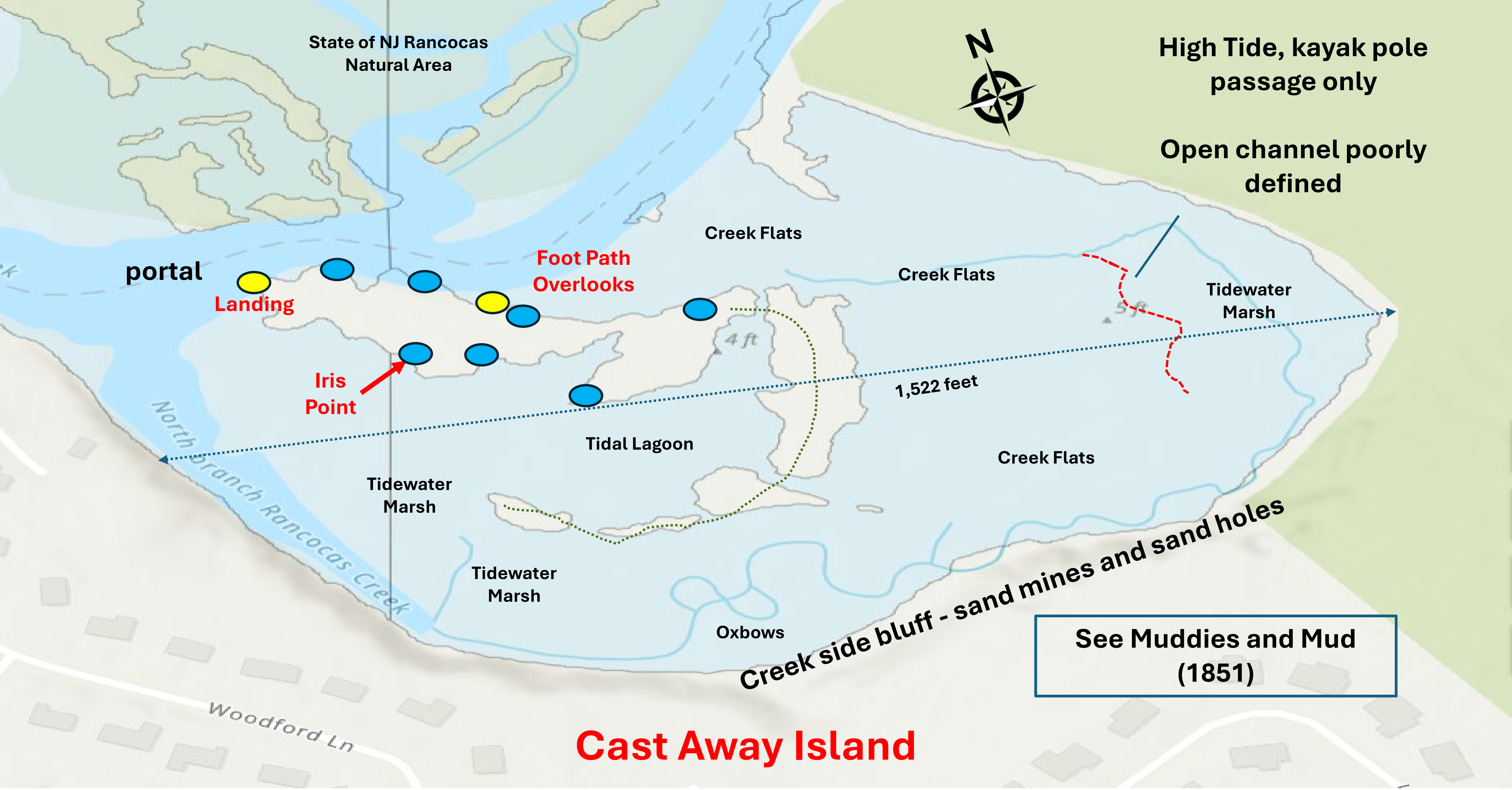
Cast Away Island 1936 WPA Chart

Cast Away Island ERI

Tidal Lagoon - Spotted Sand Piper




Leave No Trace



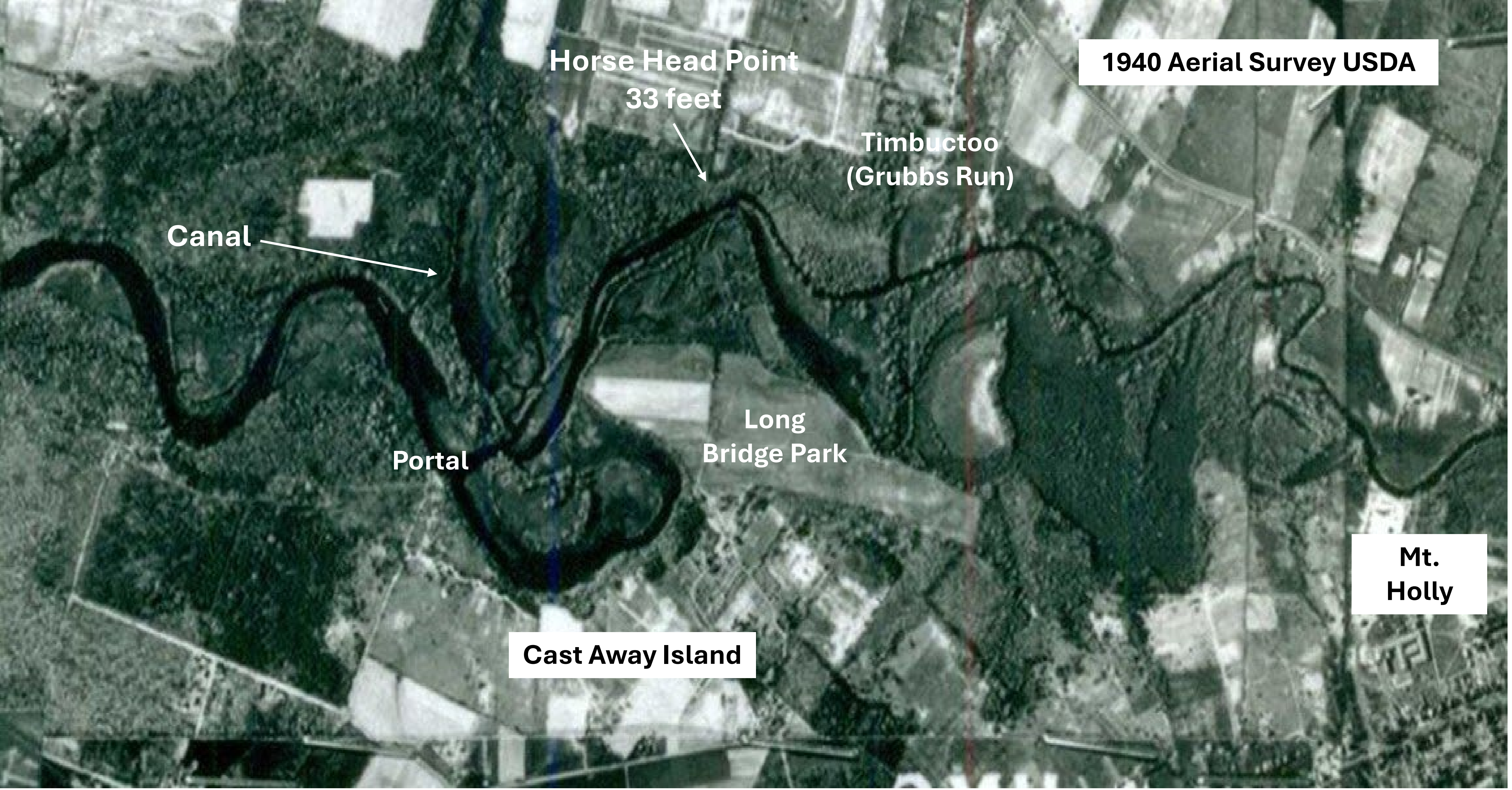
State of NJ Rancocas Natural Area
N
High Tide, kayak pole passage only
Open channel poorly defined
portal
Landing
Foot Path Overlooks
Creek Flats
Creek Flats
Tidewater Marsh
5 ft
4 ft
Iris Point
1,522 feet
Tidal Lagoon
Creek Flats
North Branch Rancocas Creek
Tidewater Marsh
Tidewater Marsh
Oxbows
Creek side bluff - sand mines and sand holes
See Muddies and Mud (1851)
Woodford Ln
Cast Away Island

Mellow

Yellow

Iris Point


High Tide – Viewshed - Cast Away Island


Horse Head Point
33 feet
1940 Aerial Survey USDA
Timbuctoo
(Grubbs Run)
Canal
Long
Bridge Park
Portal
Mt.
Holly
Cast Away Island

Tide Ebbing - Portal - Cast Away Island


Today's
Rancocas Nature Center
20-380
1959
Horse Head Point
33 feet
Timbuctoo
(Grubbs Run)
Canal
Long
Bridge Park
Portal
Mt. Holly
Cast Away Island
20-378

To the North / NW / NE: State of New Jersey Rancocas Natural Area, Rancocas State Park

Rancocas Natural Area
Management Plan

Adoption Date
September 8, 1998

New Jersey Department of Environmental Protection
Division of Parks and Forestry
Office of Natural Lands Management
P.O. Box 404
Trenton, New Jersey 08625-0404

Introduction

The Rancocas Natural Area occupies 58 acres within the Rancocas State Park (Figures 1 and 2). The park is located in Westampton Township, Burlington County, New Jersey, and contains roughly 1,252 acres. The natural area is adjacent to land currently leased from the Division of Parks and Forestry by the NJ Audubon Society for its Rancocas Nature Center (Figure 2).

The management plan provides an outline for conserving and protecting the natural resources and associated values of the Rancocas Natural Area, as summarized in the management objective of this natural area. It provides a brief overview of the physical and biological features of the area and describes the current objectives and concerns for managing the natural area.

The Natural Areas System was established and is administered pursuant to N.J.S.A. 13:1B-15.4 et seq. and N.J.S.A. 13:1B-15.12a et seq. A "Natural Area" is defined as: "an area of land or water, owned in fee simple or as a conservation easement by the Department, which has retained its natural character, although not necessarily completely undisturbed, or having rare or vanishing species of plant or animal life, or having similar features of interest, which are worthy of preservation for present and future residents of the State" (N.J.A.C. 7:5A-1.3). Rancocas was added to the Natural Areas System in 1978 through promulgation of rules associated with the Natural Areas System Act of 1975.

The Division of Parks and Forestry, through Lebanon State Forest, serves as the local agency responsible for administration and implementation of policy and land management practices affecting Rancocas Natural Area. As part of its responsibilities to implement management policies and practices, Lebanon State Forest may consult with other Divisions, organizations and individuals, as well as the ONLM, as necessary to achieve the management objective of this plan.

The Office of Natural Lands Management (ONLM) is responsible for overall administration of the Natural Areas System, promulgation and revision of rules governing System lands, and preparation of management plans. The ONLM also periodically monitors implementation of the management techniques outlined in management plans, and may propose amendments to plans as needed.

Management Objectives and Concerns

The management objective of the natural area is the "preservation of freshwater marsh and southern floodplain habitat, including one of the largest stands of wild rice in New Jersey." Several activities are consistent with this objective:

- Identify the natural area boundary with natural area signs.
- Monitor and assess the impact of public use in the natural area.
- Promote natural resource education in the natural area.
- Maintain and enhance interpretive loop trail.
- Monitor and control erosion on foot paths not maintained as trails.
- Monitor and control invasive exotic species.
- Protect archeological features.
- Maintain and enhance habitat for threatened and endangered species.

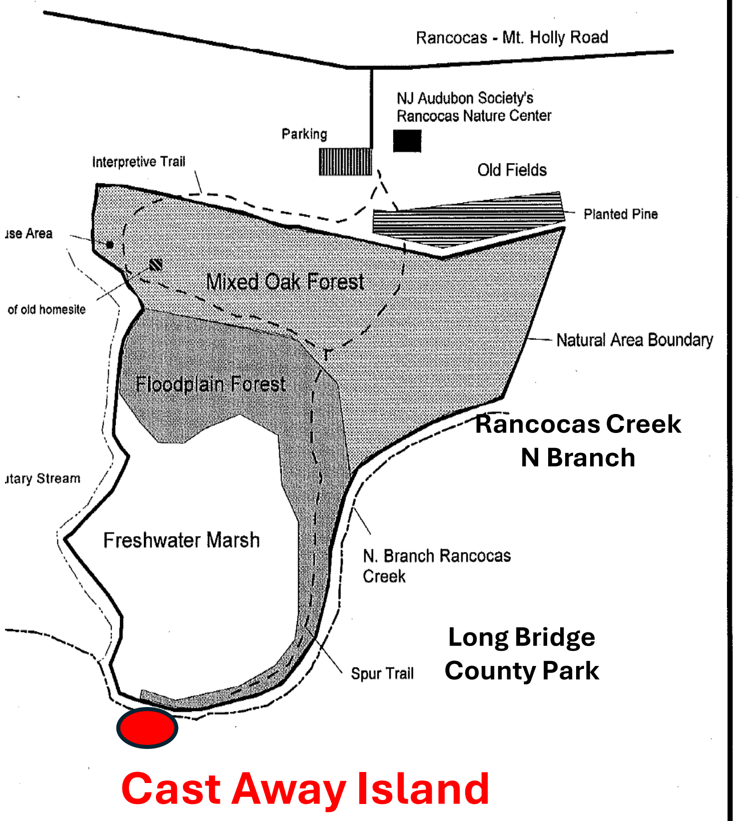


Figure 3. Rancocas Natural Area
Boundary and Biotic Communities

N

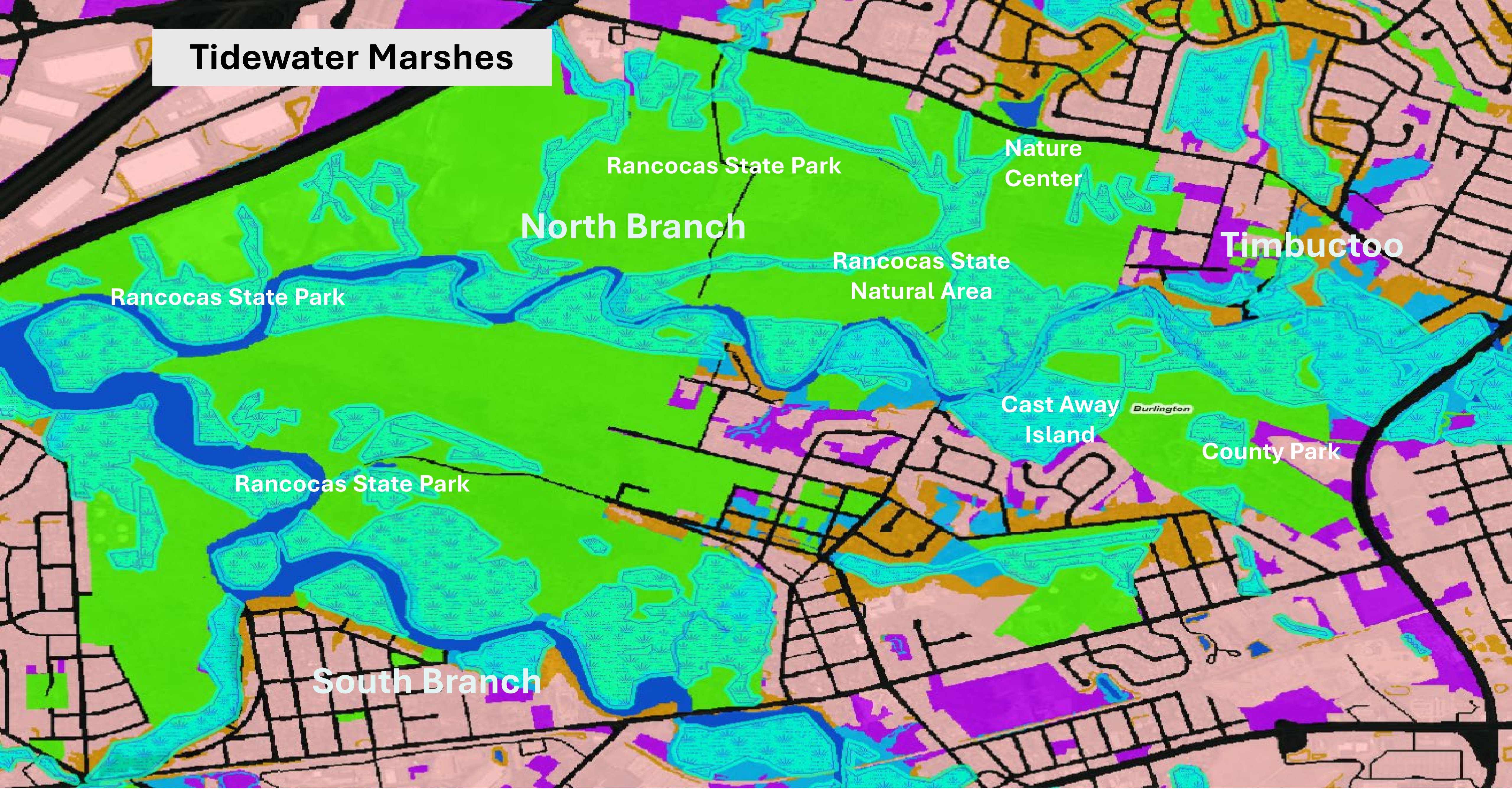
Photograph Joe Pluck's Hot Air Ballon, July, 2024.

To the East and South East,
Long Bridge Burlington County Park
Rancocas Creek Burlington County Greenway

Cast Away Island haven for wildlife fusion with the natural world is guarded against development and incursions by people flanked by Burlington County's Long Bridge Park.

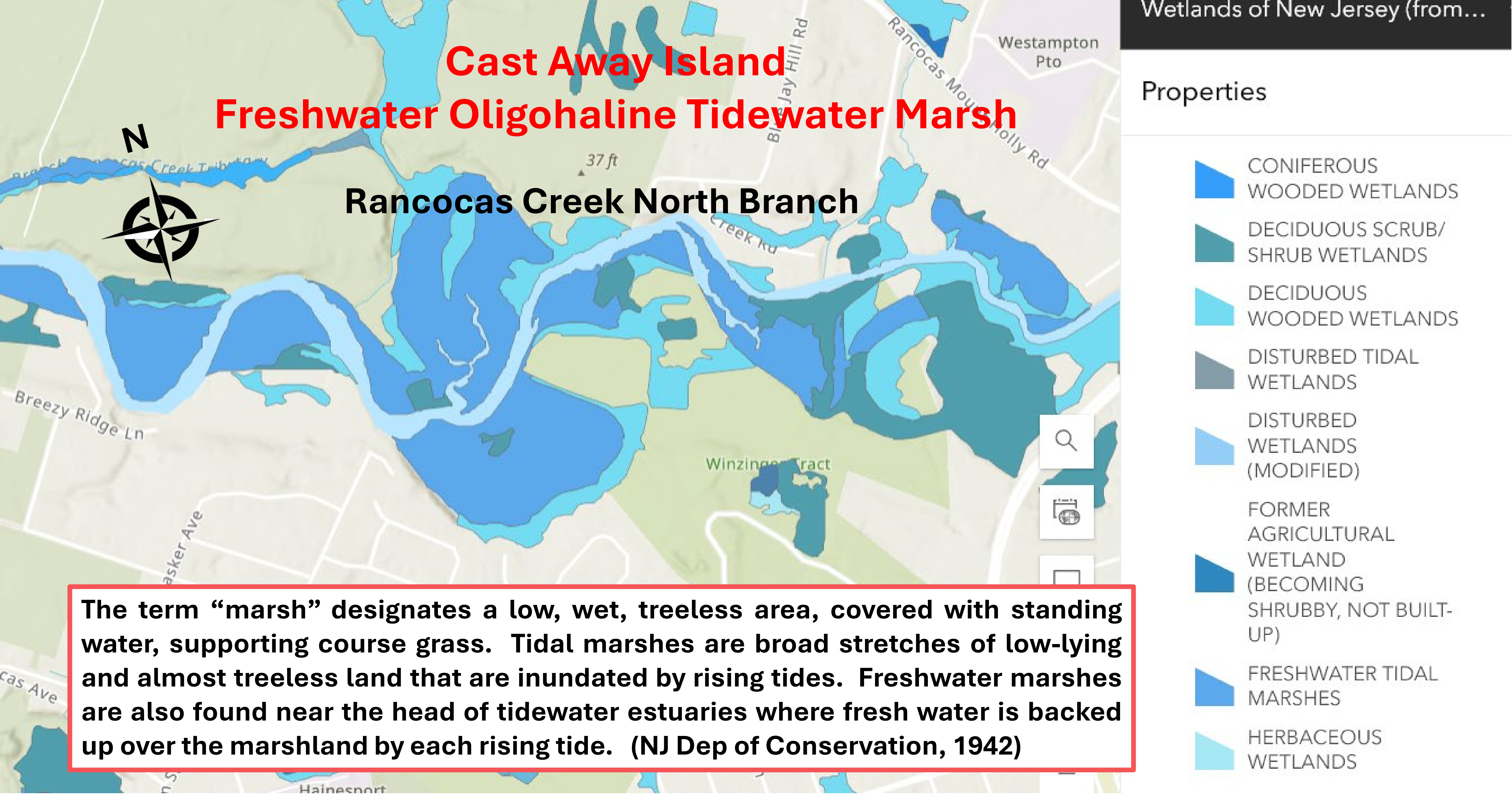
This location isolates Cast Away Island, naturally. It's isolation protects and restores an exemplary natural resource of New Jersey.

Tidewater Marshes



Ref: General Map NJDEP

Cast Away Island
Freshwater Oligohaline Tidewater Marsh



The term "marsh" designates a low, wet, treeless area, covered with standing water, supporting course grass. Tidal marshes are broad stretches of low-lying and almost treeless land that are inundated by rising tides. Freshwater marshes are also found near the head of tidewater estuaries where fresh water is backed up over the marshland by each rising tide. (NJ Dep of Conservation, 1942)


Timbuctoo
Horse Head Point
33 feet
Long Bridge
Burlington
County Park
Long Bridge Park
30 feet
Hainesport Township Municipal Park
Rancocas State Park
30 feet
Cast Away Island
5 feet
30 feet
N
State of NJ Rancocas
Natural Area
5 feet
30 feet
Portal
North Branch Ranco
Rancocas State Park
30 feet
Map of Elevations
Cast Away Island Elevation: 5 feet

Freshwater Oligohaline Tidewater Marsh

Rancocas Creek's freshwater oligohaline tidewater marshes natural diversity are crucial for healthy sustainable estuarine and tidewater ecosystems. Rancocas Creek tidewater areas provides essential habitats for fish, crustaceans, birds, other wildlife and people enjoying the tide.

Rancocas Creek daily tides flood these tidewater areas. Here they are infused with a constant daily passage of pine barrens cedar water. These diverse wetlands are the fulcrum in nutrient cycling and water quality.

Naturally, the ecological significance of oligohaline marshes extends beyond their role of wildlife and the fisheries.

These connections anchor year-round multi-use public access conservation on Rancocas Creek's tidewater.

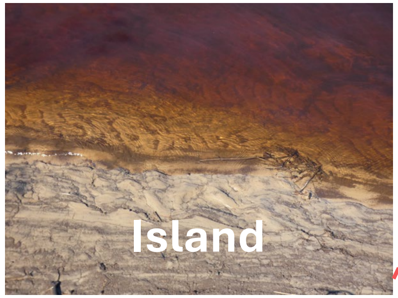
Vital Rancocas Creek Watershed cedar waters are capillaries promoting stepping stones for enhanced awareness.

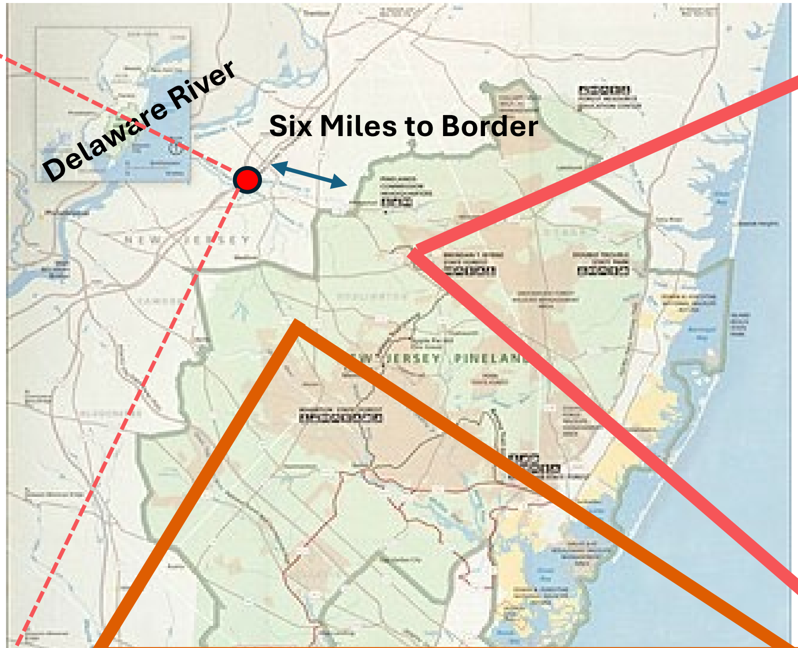
Cast Away Island, constantly washed by New Jersey's Pinelands National Reserve Western Outflow empty's amber-colored, cool-flowing cedar water into Delaware River tide-waters.

Cast Away Island harbors unique micro-habitats

Cedar

Water





Naturally, Rancocas is one part of exploring, discovering and enjoying West Jersey's diverse tidewaters heritage, history and communities.

Rancocas Creek ERI

Cast Away Island – High Tide

Rancocas State Park – Rancocas State Natural Area – Long Bridge Park

Section Two

Cast Away Island Wildlife

Cast Away Island wildlife is protected from people because its isolated from people.

Wildlife thrives in their private world, naturally. Here man intrudes.

The following section offers a partial listing of the flora, fauna and wildlife that use Cast Away Island as home.

Cast Way Island Food Web and Ecology anchors a natural vibrancy and diversity on the numerous remains of old wooden creek vessels/boats (detritus) found on Cast Away Island and on the Rancocas Creek tidewaters and the little critters, like *fairy shrimp*, that thrive in these conditions.

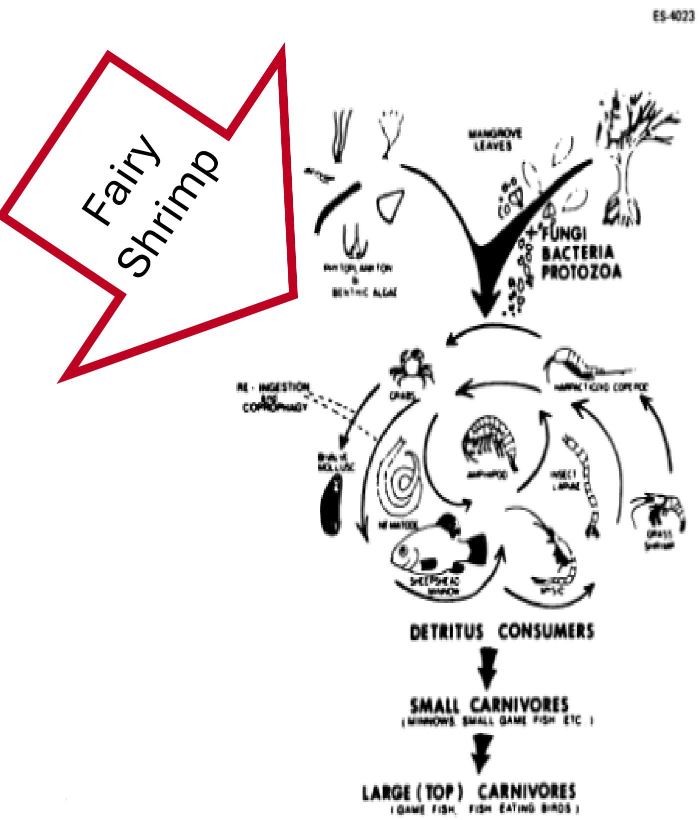


Fig. 2.2. Diagram of the detritus-based food web. The omnivorous detritus consumers ingest small amounts of living algae along with large quantities of vascular plant, largely *Rhizophora*, detritus. Much detrital material recirculates in the form of fecal matter. Source: L. Eugene Cronin, Ed., *Estuarine Research*, vol. 1, Academic Press, Inc., New York, 1975, p. 200. (Reprinted by permission)

Detritus is broadly defined as any form of non-living organic matter, including different types of plant tissue: leaf litter, dead wood, aquatic macrophytes, algae), carrion, dead microbes, manure, dung, pellets, guano, as well as products secreted, excreted or exuded from organisms (e.g. extra-cellular polymers, nectar, root exudates and leachates, dissolved organic matter, extra-cellular matrix, mucilage), basically anything they can thrive on in their own ecosystems.

Wooden detritus around Cast Away Island

Connection of heritage to natures food chain, ecology and people


Rudder 1840's Schooner


Sand Mine Wharf

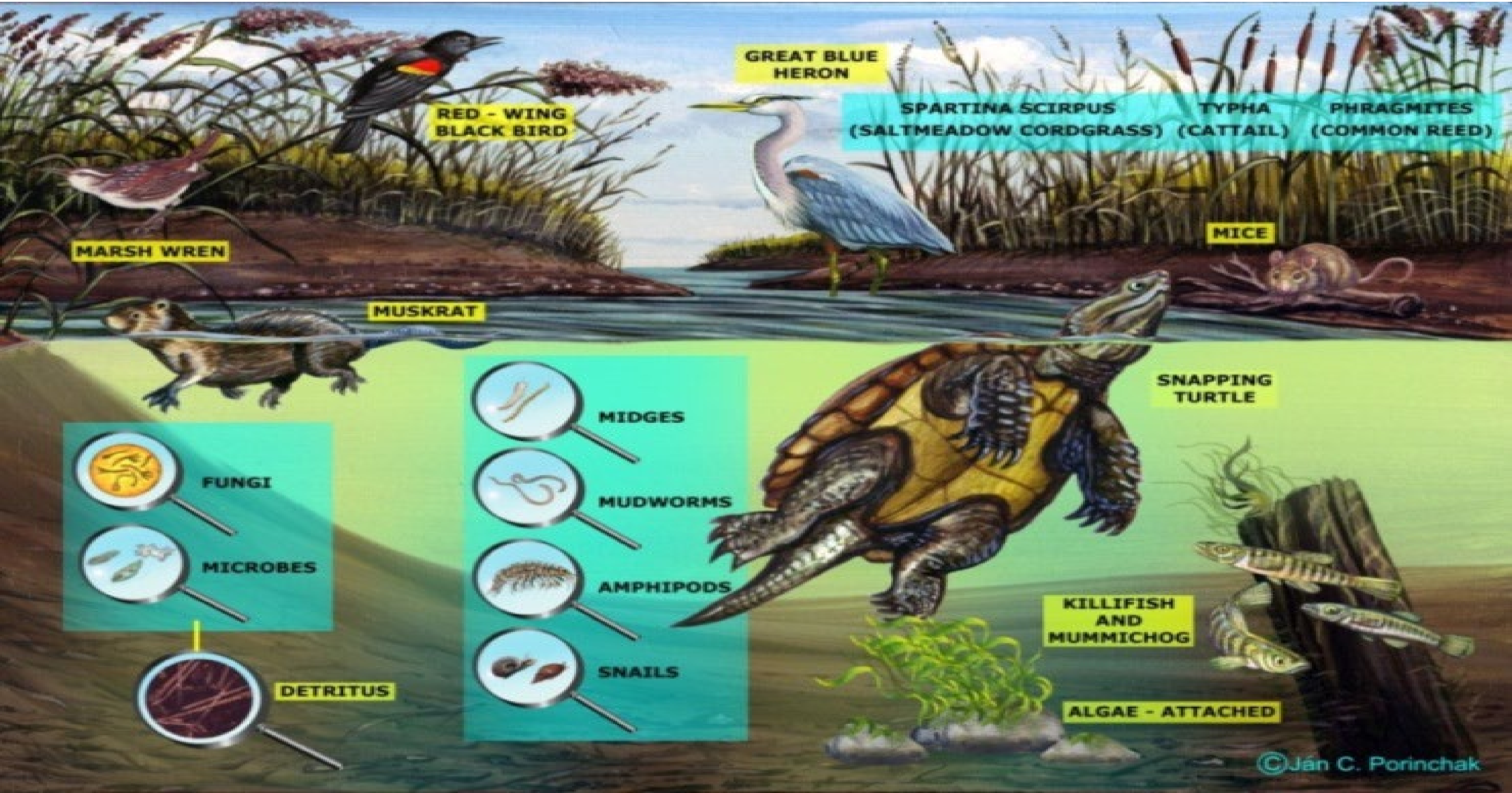

Cast Away Island


Rancocas Creek Deck Barge


Cast Away Island Sand Barrel


Tugboat Minerva Boat Hook

Wooden remains of Cast Island Wharf and Vessels: Detritus Based Food Web



Cast Away Island Vernal/Tide-Water Pools

Fairy Shrimp

Archetypal crustacean lives off wooden debris microbes

11 pairs of swimming legs that also function as gills. Glide gracefully through the water upside down, swimming by beating their legs in a complex, wavelike movement that passes from front to back

Common resident of Cast Away Island vernal tidewater pools and the foundation of natures, natural, food chain: fairy shrimp.

Fairy Shrimp
6–25 millimeter


5 Star residence for schools of minnows,killifish, other small fish and crustations
Cast Away Island ERI


Low Tide


Snacking Time

Spotted Sandpiper (Actitis macularius) is a small, widespread shorebird that breeds across most of Canada and the northern U.S.. Migrates south each fall to wintering grounds in the southern U.S., Mexico, Central America, and the Caribbean. In spring, it returns north for breeding.

Spring migration typically begins in late April to early May for many populations, with some individuals arriving as early as mid-April and others later into May .

They travel singly or in small groups, often along rivers, lakes, and streams. Migration is often nocturnal.

Make like a “heron”

Photo enhanced tide-water “killifish”

Foundation

Sandpipers, Egrets, Herons

Food Chain and Ecology


Spotted Sandpiper “wolfing-down” killifish

North Branch “Portal” - 06 May 2018

We Have a Qurom

Rare and Endangered Plants of Cast Away Island Intertidal Zone

Smith's Club-rush, *Schoenopectus smithii* S2 (imperiled because of rarity; 6 to 20 occurrences).

Awl-leaf Arrowhead, *Sagittaria subulata* S3 (rare in the state, with 21 to 50 occurrences).

Parker's Pipewort, Eriocaulon parkeri S2 (imperiled because of rarity; 6 to 20 occurrences).

Shore Quillwort, *Isoetes riparia* S3 (rare in the state, with 21 to 50 occurrences).

American Waterwort, *Elatine americana* S2 (imperiled because of rarity; 6 to 20 occurrences).

Mississippi Arrowhead, *Sagittaria calycina* S2 (imperiled because of rarity; 6 to 20 occurrences).

REFERENCES:

Ferren, Wayne R., and Alfred E. Schuyler. 1980. Intertidal Vascular Plants of River Systems near Philadelphia. Proceedings of the Academy of Natural Sciences of Philadelphia, Vol. 132.

NJ Department of Environmental Protection. List of Endangered Plant Species and Species of Concern, May 2016.

For explanation of the State ranks (S2,S3) see above NJDEP publication.

Citation, Naturally

Cast Away Island Sunrise & Wildlife
Osprey, Black Crowned Night Heron, Wood Duck, Red Fox

Kingfisher

Cast Away Island

American

Bittern

Inhabitant
of
Rancocas
Creeks
“Wild Rice
Tidewater
Marshes”

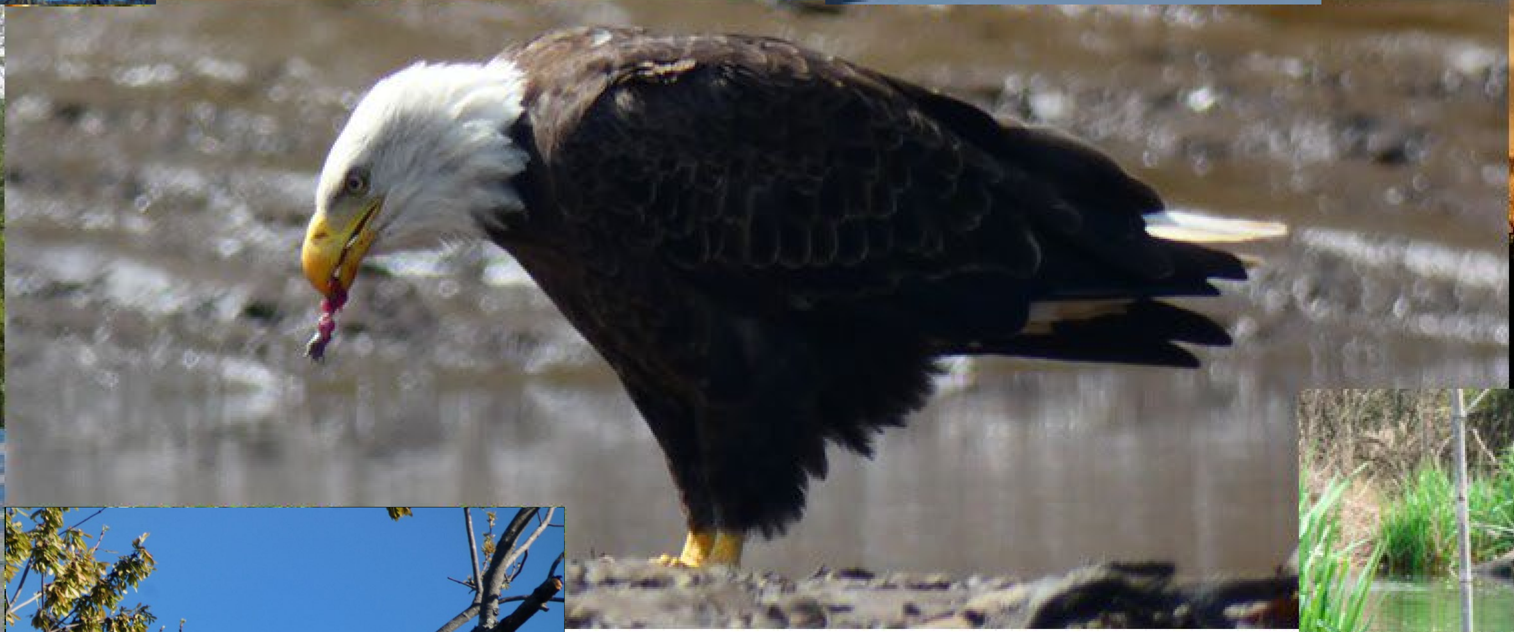
Cast Away Island Viewshed

North into the State of NJ Rancocas Natural Area

North Branch - Rancocas Creek - High Tide







Cast Away Island Bald Eagles

Bald Eagle Facts

The bald eagle's ecology is deeply intertwined with its habitat and the ecosystem it inhabits. As an apex predator, it plays a crucial role in maintaining ecological balance by regulating fish and small mammal populations, preventing overgrazing of aquatic vegetation, and maintaining water quality. Its scavenging habits also contribute to the decomposition process, recycling nutrients back into the soil, which supports the growth of new plant life. The bald eagle's presence can even influence the behavior of other species, leading to a more diverse distribution of plant seeds and other resources.

The large, majestic bald eagle was selected as the U.S. national emblem in 1782 "as a symbol of strength, courage, beauty, and freedom."[1] During the nesting season, bald eagles are always found close to a water body where a ready supply of fish or waterfowl is available. They typically nest in old, large trees with a clear flight path on one or more sides, and often, a view of the water. The bird's population in the lower 48 states decreased drastically in the 1960s, from environmental contamination, loss of habitat, and illegal shooting of wildlife.

Biggest threat to Bald Eagles are over-development, loss of habitat, politicians who could care less and people not respecting Eagle's privacy.

Cast Away Island Bald Eagle Habitat


Cast Away Island: Eagle “scarfing” duck


State of New Jersey Rancocas Natural Area

Cast Away Island Eagle Feeding


EAGLES EARS ARE SMALL HOLES ON EITHER SIDE OF THE HEAD BACK BEHIND THE EYES, UNDER THE FEATHERS
CAN SEE 7X BETTER THAN HUMANS
LIFESPAN 30 YEARS
EAGLES CAN SEE BOTH FORWARD AND SIDEWAYS AT THE SAME TIME
BOTH EYES FOCUS FORWARD ON A SINGLE ITEM, AND THIS PERMITS VERY ACCURATE DEPTH PERCEPTION ALLOWING THEM TO SWOOP IN FOR THE KILL
CRUISING SPEED 30-50 KM/HR
BALD EAGLES ARE NOT BALD AT ALL
HUNDREDS OF YEARS AGO, THE ENGLISH WORD FOR WHITE WAS BALDE AND THE WORD PIEBALDE MEANT MOTTLED WITH WHITE, SO THE EAGLES WITH WHITE HEADS WERE CALLED BALDE EAGLES
EAGLE BILLS ARE MADE OF KERATIN, SIMILAR TO HUMAN FINGERNAILS
BALD EAGLES HAVE BETWEEN 7000 AND 7200 FEATHERS
FEATHERS ARE MADE OUT OF KERATIN THAT GROW CONTINUOUSLY LIKE HAIR
THEY ARE LAYERED TO TRAP AIR TO INSULATE BIRDS AGAINST COLD & RAIN
TOP SPEED 120 KM/HR
TOP ALTITUDE

Indicator Species: The Health of Ecosystems

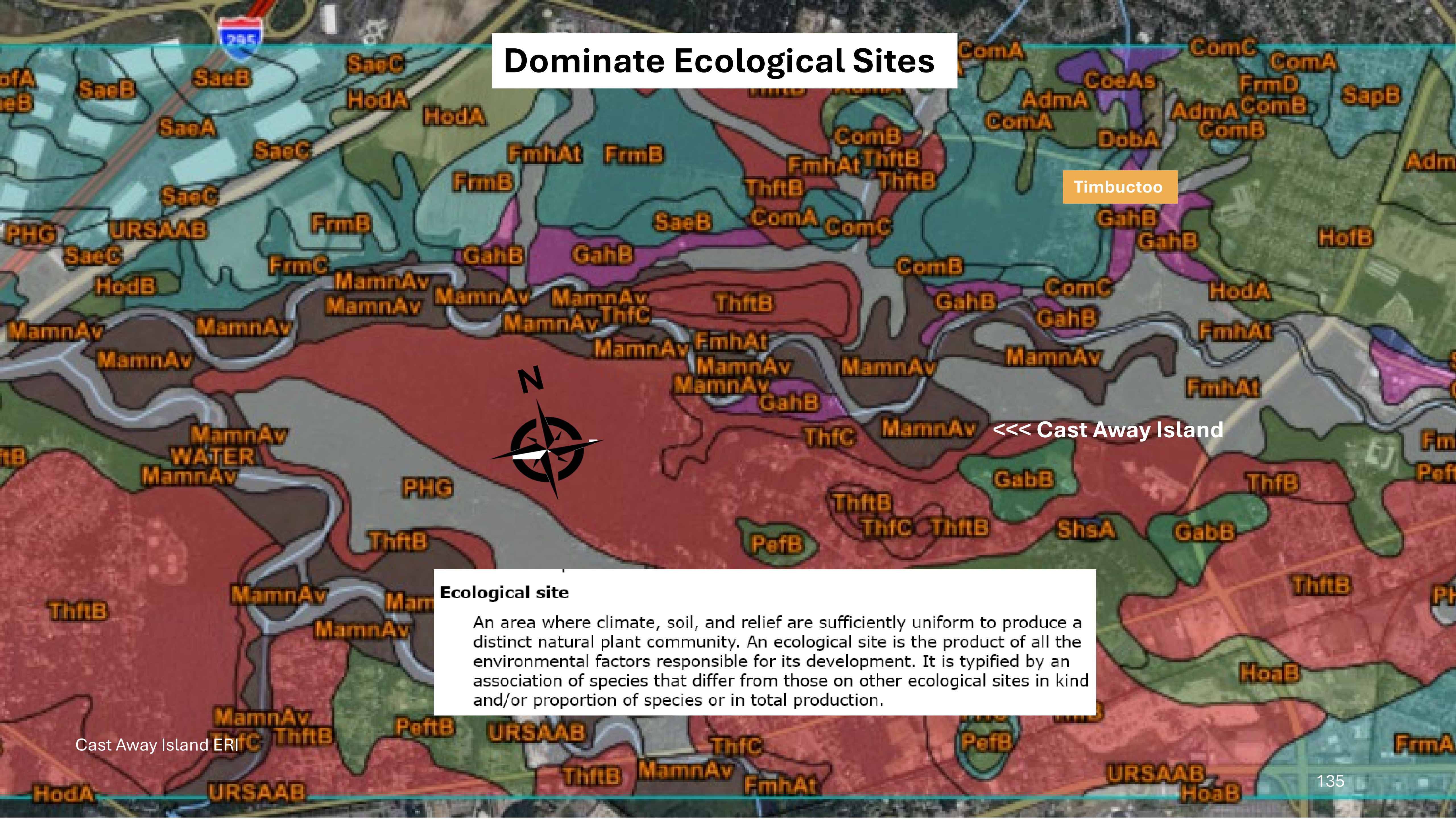
Bald eagles act as an indicator species—a biological marker that reflects the health of the environment. Their population trends can provide insights into the overall ecosystem's condition.

A decline in bald eagle populations may signal environmental issues such as pollution, habitat loss, or decline in prey availability. Monitoring eagle populations, is important for multi-use conservation and managing ecosystems sustainably. A robust population of Bald Eagle's generally indicates a healthy environment capable of supporting diverse populations of wildlife and these connections to multi-use.

Rancocas Creek, Hainesport

Leave No Trace

Dominate Ecological Sites



Ecological site

An area where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. An ecological site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other ecological sites in kind and/or proportion of species or in total production.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AdmA	Adelphia fine sandy loam, 0 to 2 percent slopes	82.0	1.8%
CoeAs	Colemantown loam, 0 to 2 percent slopes, occasionally flooded	16.3	0.3%
ComA	Collington fine sandy loam, 0 to 2 percent slopes	108.2	2.3%
ComB	Collington fine sandy loam, 2 to 5 percent slopes	49.5	1.1%
ComC	Collington fine sandy loam, 5 to 10 percent slopes	18.1	0.4%
DobA	Donlonton loam, 0 to 2 percent slopes	4.6	0.1%
FmhAt	Fluvaquents, loamy, 0 to 3 percent slopes, frequently flooded	317.8	6.8%
FrfB	Freehold loamy sand, 0 to 5 percent slopes	13.7	0.3%
FrfC	Freehold loamy sand, 5 to 10 percent slopes	7.9	0.2%
FrmA	Freehold fine sandy loam, 0 to 2 percent slopes	124.1	2.7%
FrmB	Freehold fine sandy loam, 2 to 5 percent slopes	180.2	3.9%
FrmC	Freehold fine sandy loam, 5 to 10 percent slopes	43.0	0.9%
FrmD	Freehold fine sandy loam, 10 to 15 percent slopes	5.3	0.1%
GabB	Galestown sand, 0 to 5 percent slopes	44.3	0.9%
GahB	Galloway sand, 0 to 5 percent slopes	86.9	1.9%
GakB	Galloway fine sand, 0 to 5 percent slopes	1.7	0.0%
HoaB	Holmdel loamy sand, 0 to 5 percent slopes	46.5	1.0%
HodA	Holmdel fine sandy loam, 0 to 2 percent slopes	119.6	2.6%
HodB	Holmdel fine sandy loam, 2 to 5 percent slopes	11.7	0.2%
HofB	Holmdel-Urban land complex, 0 to 5 percent slopes	97.2	2.1%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
MamnAv	Mannington-Nanticoke complex, 0 to 1 percent slopes, very frequently flooded	436.4	9.3%
PefB	Pemberton sand, 0 to 5 percent slopes	31.0	0.7%
PeftB	Pemberton sand, thick surface , 0 to 5 percent slopes	222.0	4.8%
PHG	Pits, sand and gravel	163.9	3.5%
SaeA	Sassafras fine sandy loam, 0 to 2 percent slopes	121.5	2.6%
SaeB	Sassafras fine sandy loam, 2 to 5 percent slopes	154.8	3.3%
SaeC	Sassafras fine sandy loam, 5 to 10 percent slopes	31.1	0.7%
SapB	Sassafras-Urban land complex, 0 to 5 percent slopes	18.9	0.4%
ShsA	Shrewsbury fine sandy loam, 0 to 2 percent slopes	4.3	0.1%
ThfB	Tinton sand, 0 to 5 percent slopes	295.5	6.3%
ThfC	Tinton sand, 5 to 10 percent slopes	133.6	2.9%
ThftB	Tinton sand, thick surface, 0 to 5 percent slopes	1,337.4	28.6%
UdrB	Udorthents, refuse substratum, 0 to 8 percent slopes	2.4	0.1%
URSAAB	Urban land, sandy, 0 to 8 percent slopes	139.1	3.0%
WATER	Water	178.2	3.8%
WofA	Woodstown fine sandy loam, 0 to 2 percent slopes	7.2	0.2%
WofB	Woodstown fine sandy loam, 2 to 5 percent slopes	14.1	0.3%
Totals for Area of Interest		**4,670.4**	**100.0%**

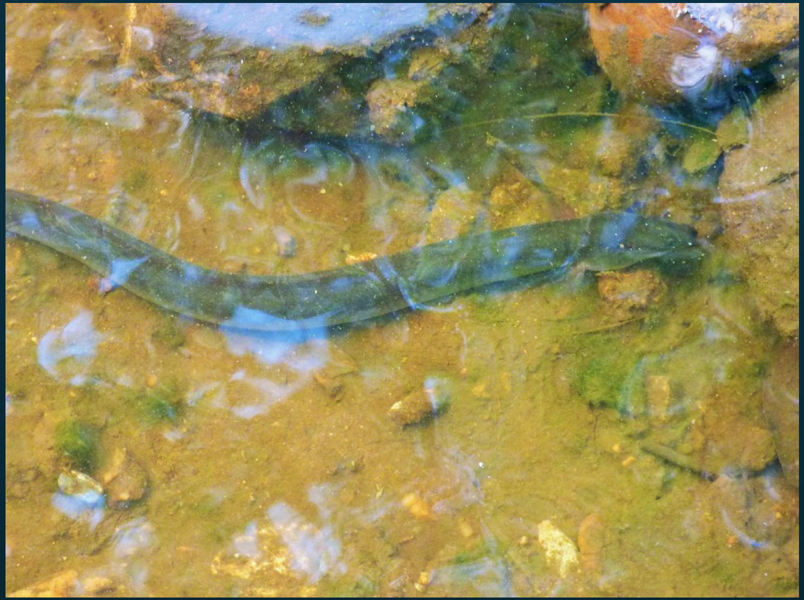


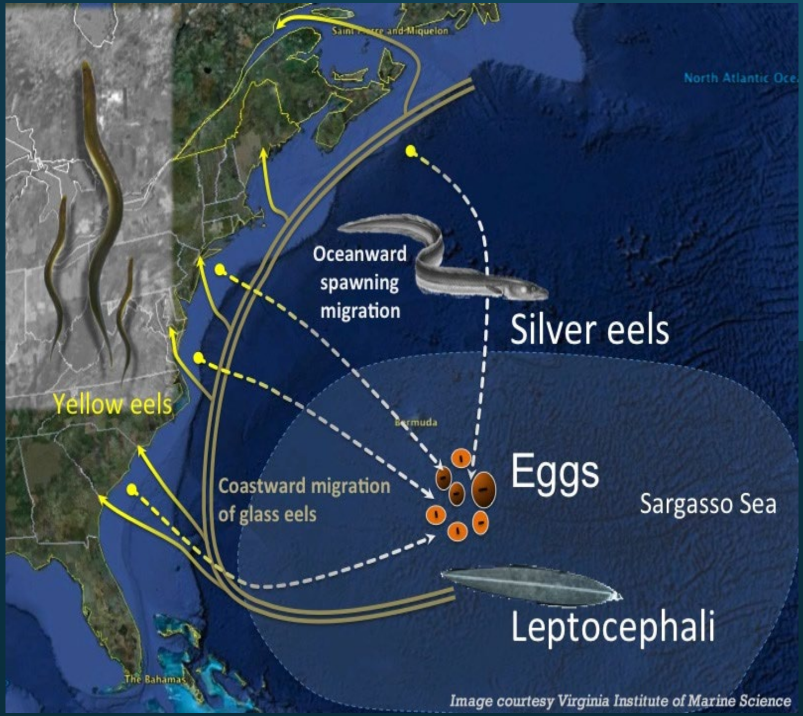


Cast Away Island Migration
Selected Examples

Lifecycle of Cast Away Island eels.

Leave No Trace

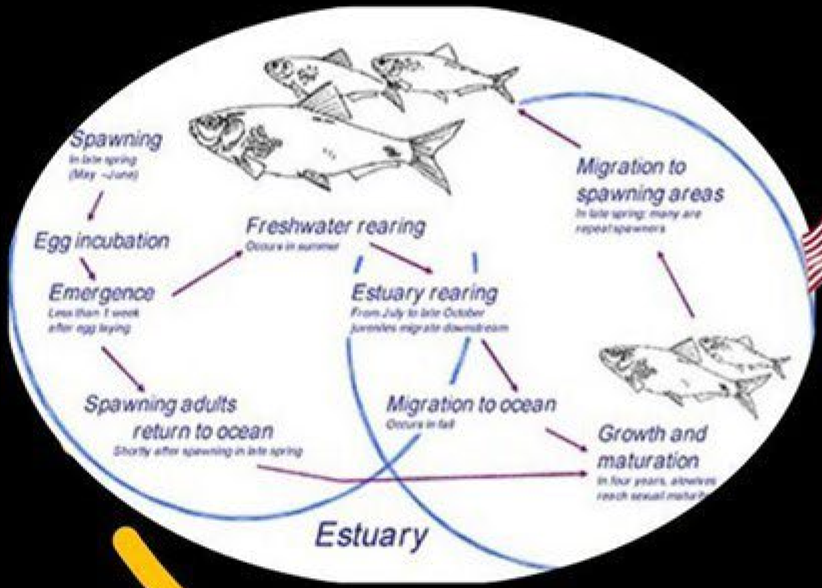


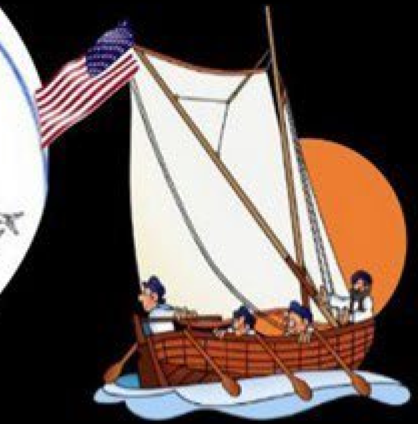


Leave No Trace

Leave No Trace

Cast Away Island
blueback herring

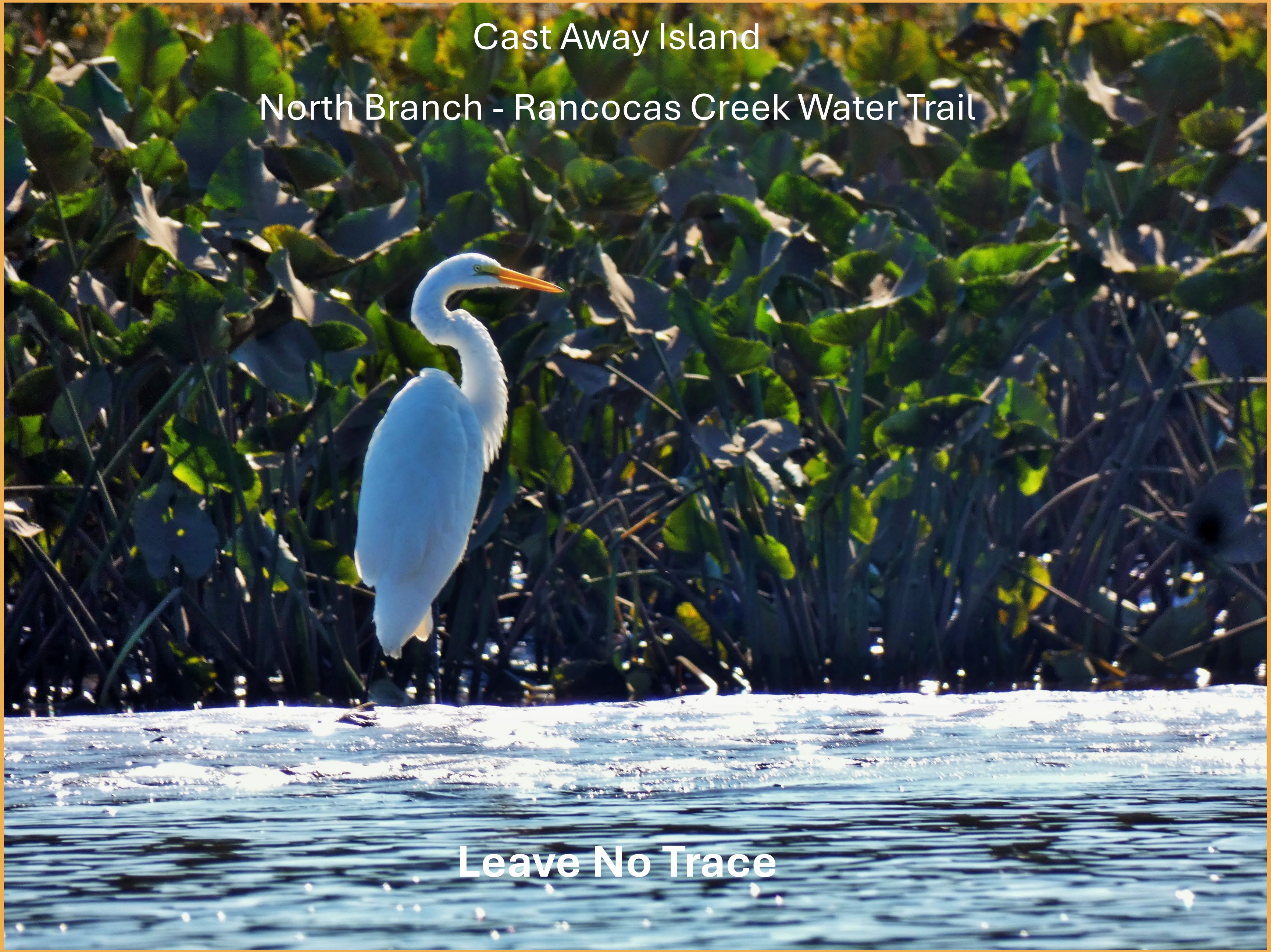




- Spawning migrations of adult alewife and blueback herring have been confirmed in the Rancocas main-stem as well as the north, south and southwest branches..

- Rancocas Creek herring are anadromous (lives in saltwater and returns to freshwater to spawn) and spawn in coastal rivers during the spring. River herring refers to alewife (*Alosa pseudoharengus*) and blueback herring (*Alosa aestivalis*).

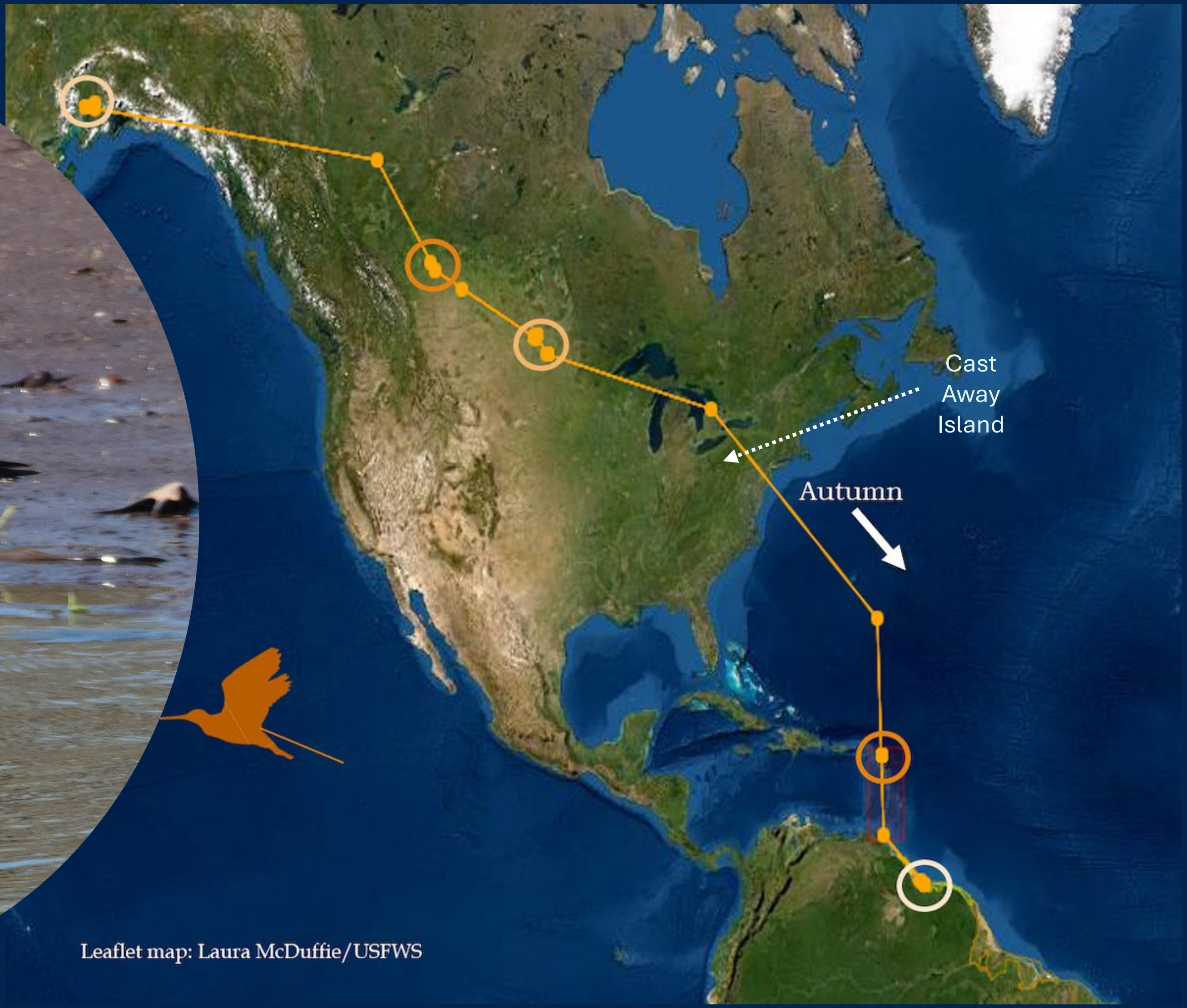
- Blueback herring move into coastal rivers during March and April when the water temperatures reach the mid-50s. The spawning site can be from the tidal zone to more than 100 miles upstream. Females release as many as 250,000 eggs in shoreline areas where they are fertilized by the male. Upon spawning, the adults return to offshore areas to overwinter. Newly hatched fish remain in the lower riverine area for several months before moving to sea.


Cast Away Island
North Branch - Rancocas Creek Water Trail
Leave No Trace

Yellow Leg Sand-piper Rancocas Creek Yearly Cast Away Island Visitor

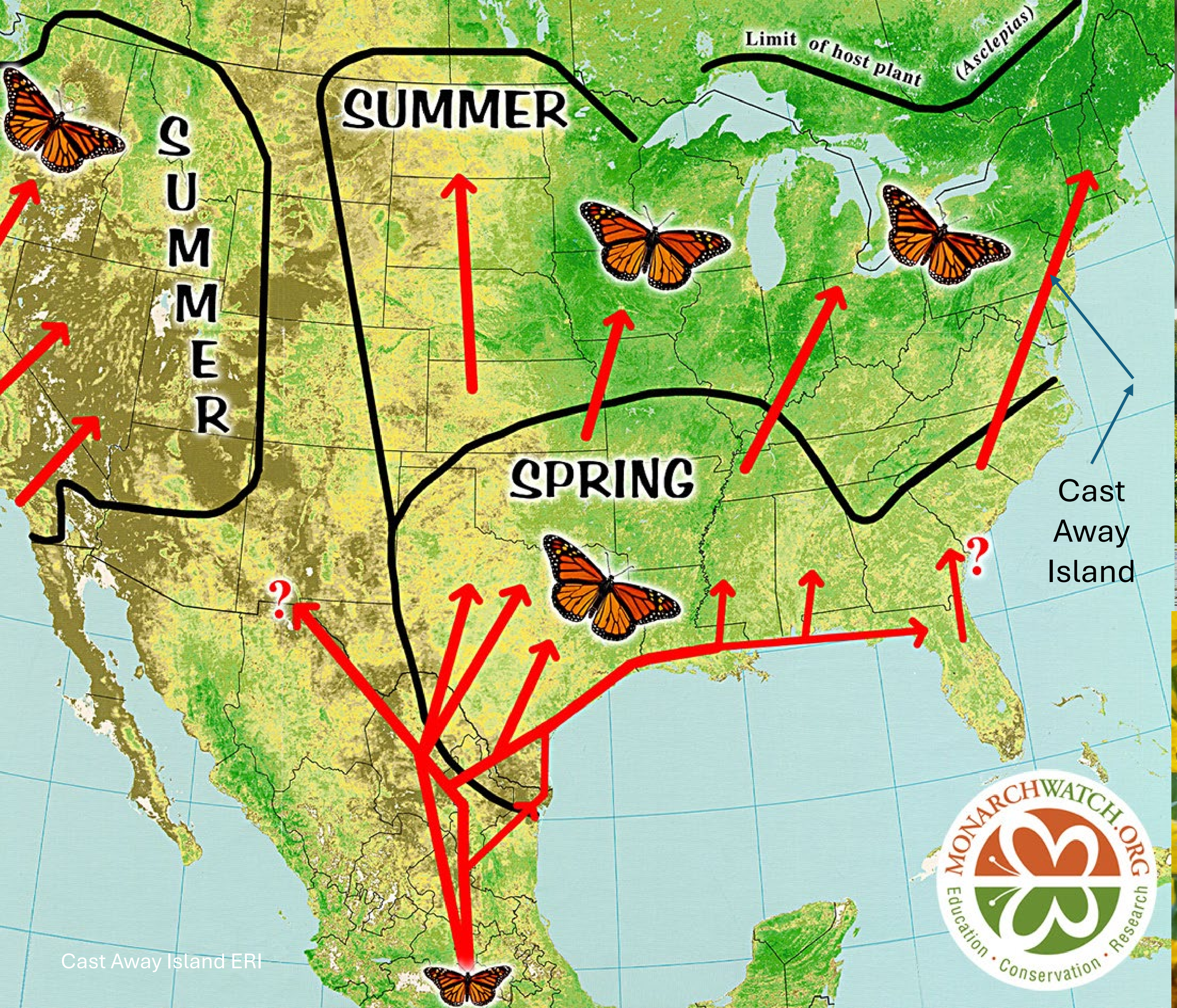
Migration

Medium- to long-distance migrant. Spring migration is earlier than most other shorebirds, with the species beginning to leave South America by late February and arriving in the U.S. 2-3 weeks later. Fall migration is prolonged and variable. Adult Greater Yellowlegs leave around the end of July, with young birds following 4-6 weeks later.

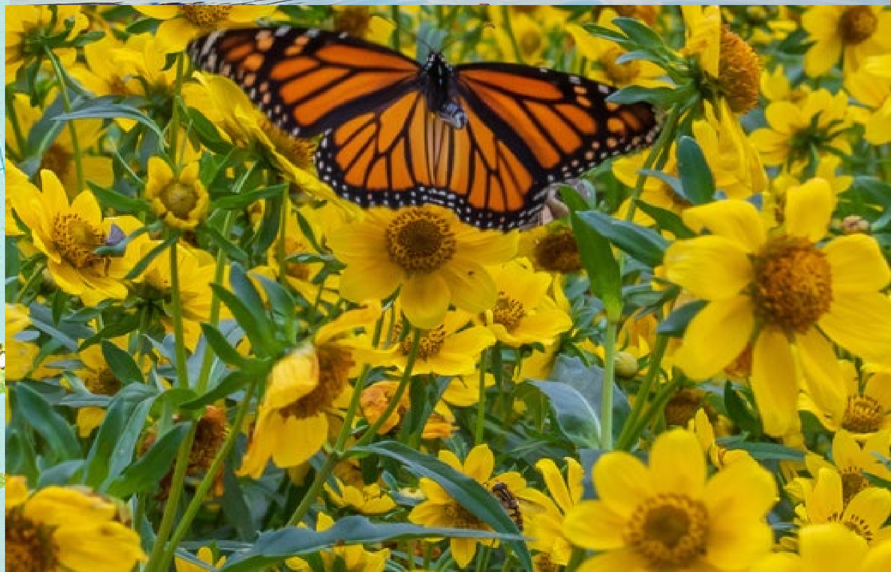



Cast Away Island Spring Migration
Leave No Trace

Rancocas Creek Tidewater Migratory Pathway
Cast Away Island Monarchs and Begger Tick Ecology

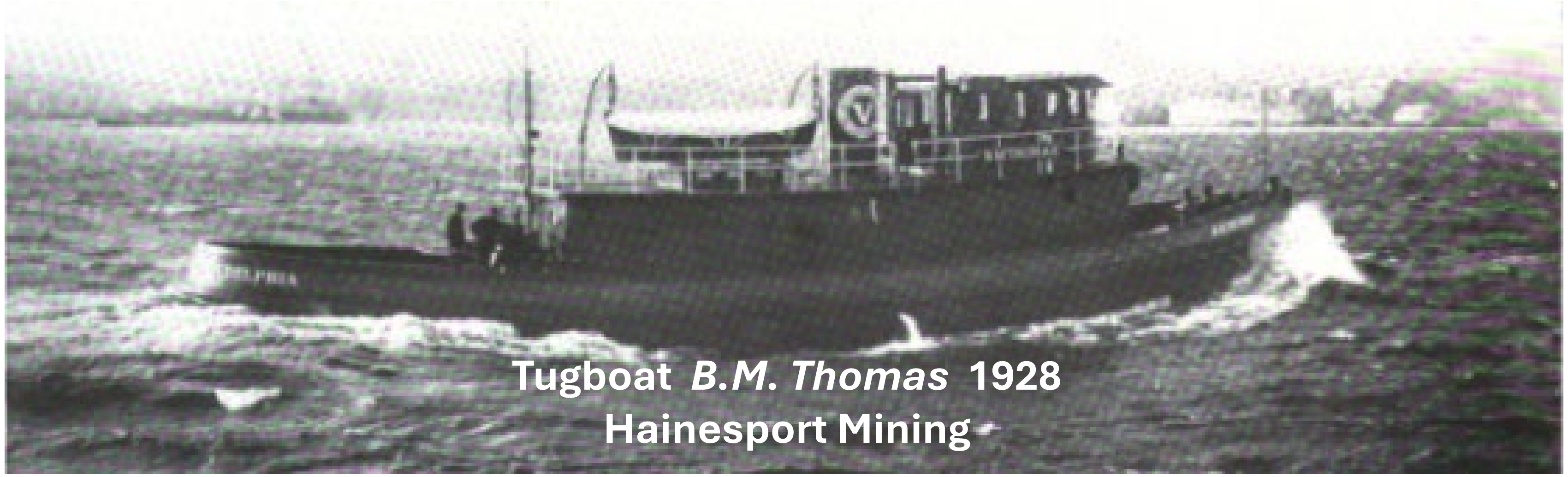

Limit of host plant (Asclepias)
SUMMER
SUMMER
SPRING
?
?
Cast Away Island
Cast Away Island ERI
MONARCHWATCH.ORG
Education · Conservation · Research


Cast Away Island Monarchs



Cast Away Island

Section Three: Who was here first?


Tugboat *B.M. Thomas* 1928
Hainesport Mining

Industrial Sands of Cast Away Island

Rancocas Creek Maritime Occupations 1664-1703
Underground Railroad

Farmers
Bargemen
Boatmen
Ship Chandlers
Coopers
Ferrymen
Lightermen
Mariners and Seamen
Ropers
Shipbuilders
Shipwrights
Ship Carpenters
Watermen
Whalemen and Whalers

James Forten - Notable Delaware River, Philadelphia Sail Loft Owner. By Nature of the Delaware River maritime trade he knew of the Pine Barrens Western Outflow – Rancocas and Other West Jersey Delaware River tidewaters

1798 - James Forten purchased a sail making business in Philadelphia. Became one of the wealthiest businessmen in Philadelphia. Abolitionist.

Reference: 1664-1703 West Jersey Documents NJ State Archives as Published

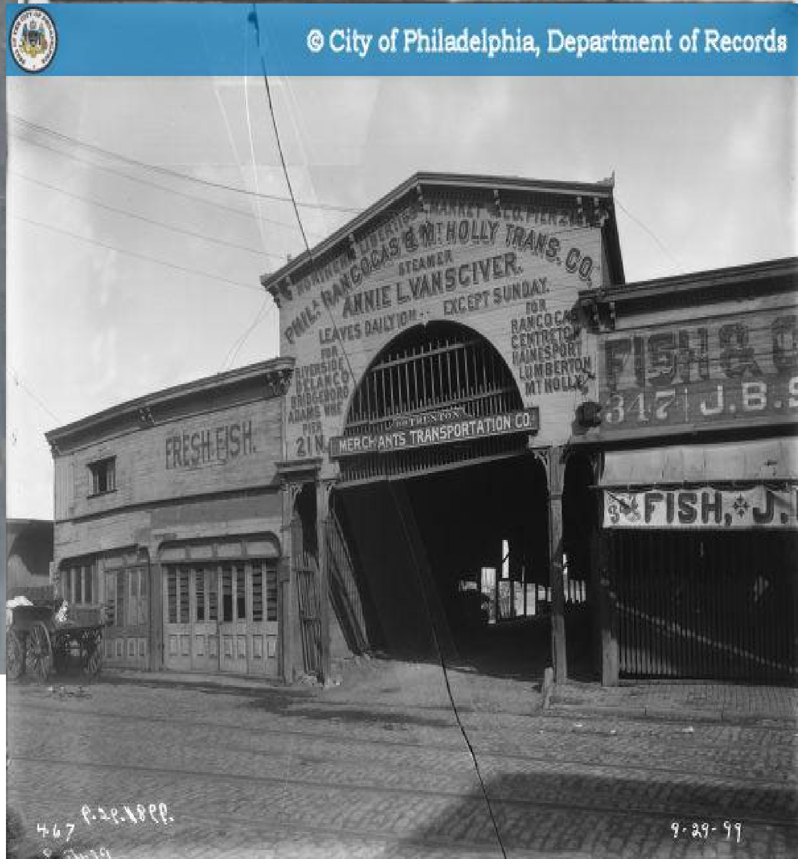
Annie VanSciver Approaching Rancocas Creek Landing

Moving mostly Passengers and Freight

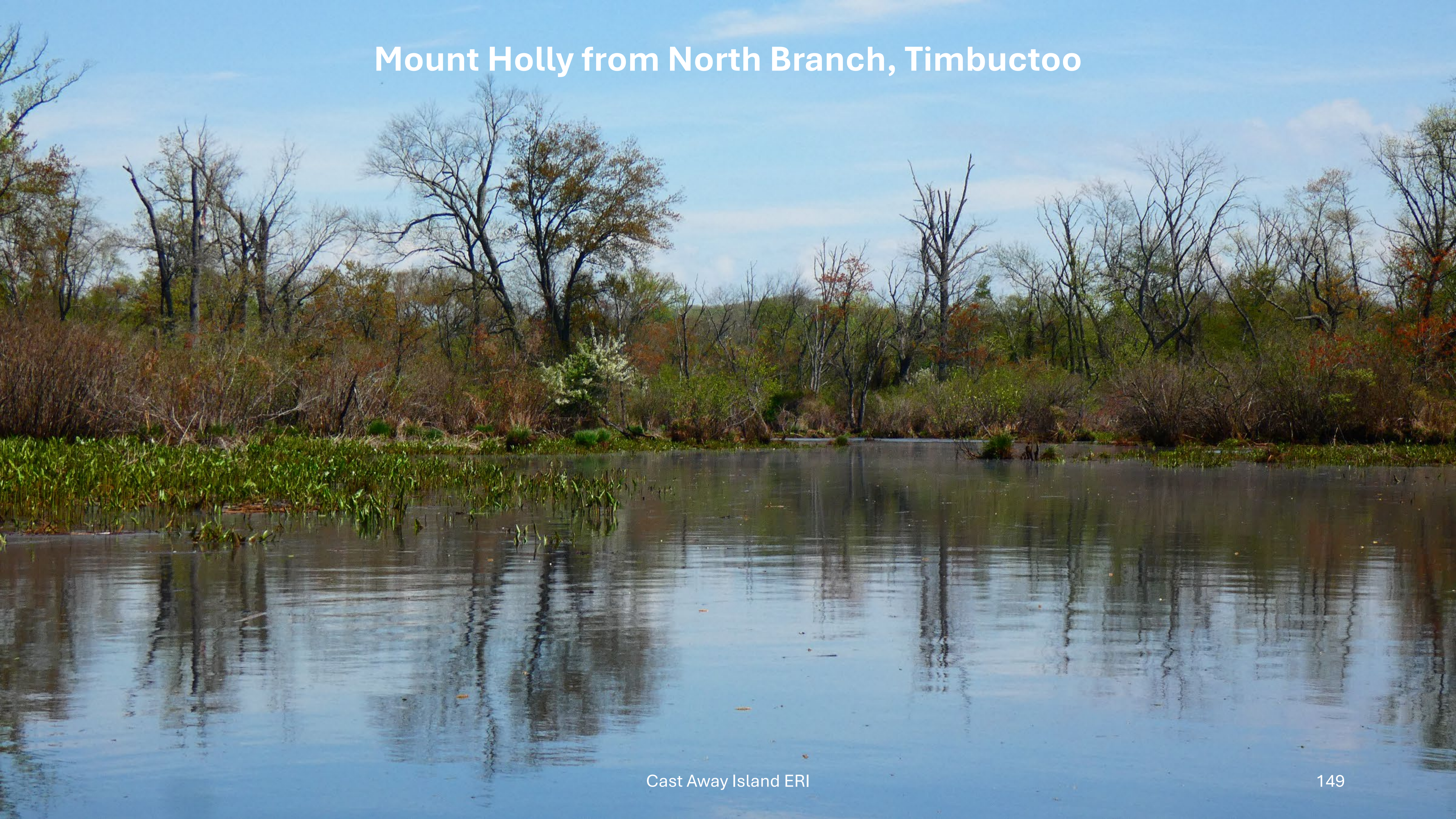
Note: Wide and expansive cargo doors on first deck.

Phila. Rancocas and Mt. Holly Transportation Co.
(Passengers and Freight.)

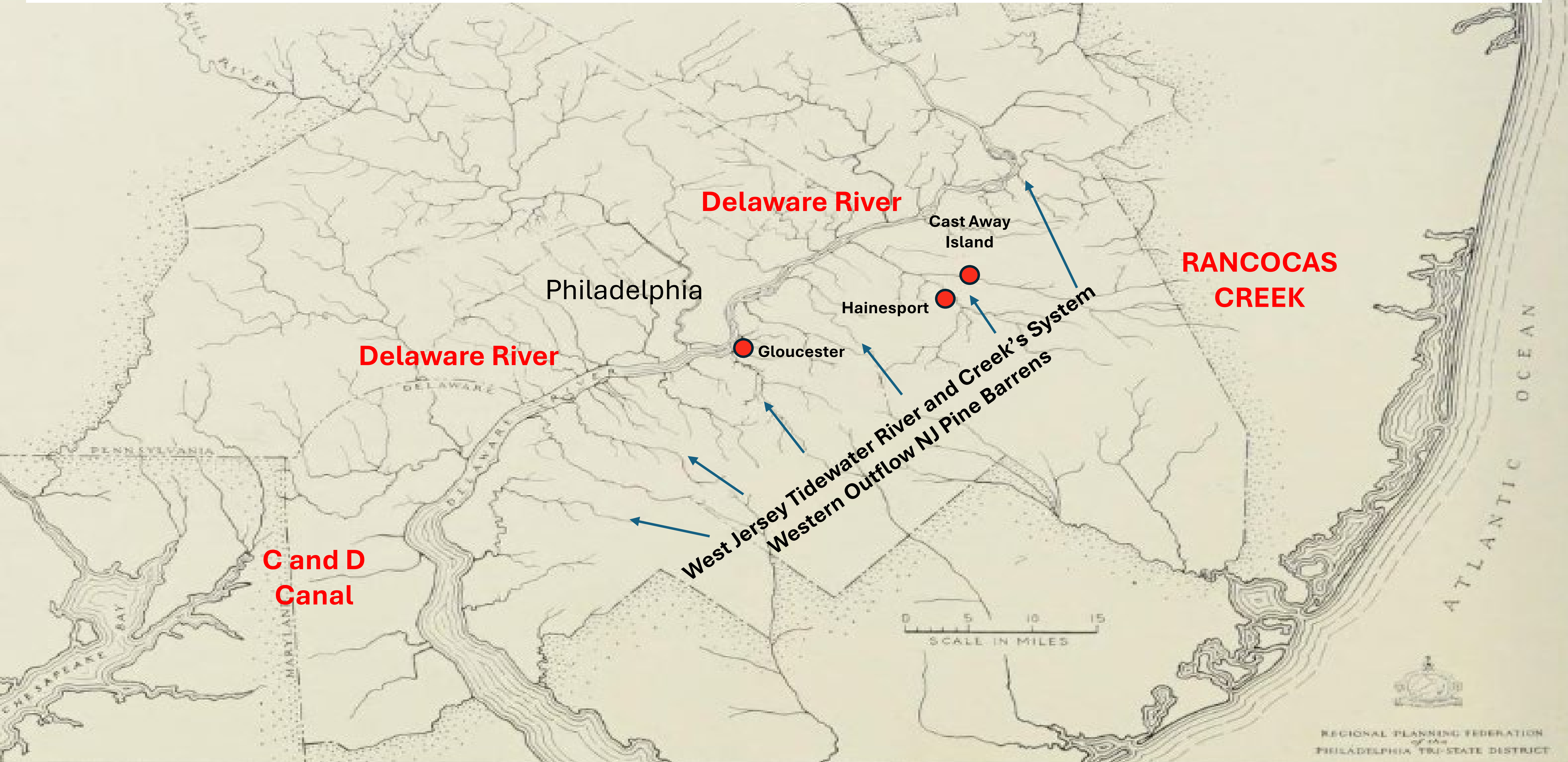
STEAMER ANNIE L. VAN SCIVER leaves 10.30 a. m. daily at Arch Street Wharf, for Riverside, Delanco, Bridgeboro, Moorestown, Stanwick, Adams' Wharf, Rancocas, Centretown, Masonville, Hainesport, Lumberton and Mt. Holly. Connection made at Riverside for Trenton and points on the Camden and Trenton Trolley line.



Mount Holly from North Branch, Timbuctoo



The greatest navigation possibilities are on the Rancocas where boats plied as far upstream as Hainesport, a distance of 20 miles: ref DVRPC 1931



Do Not Disturb Nesting Wildlife and Eagles

Raptors are most vulnerable during reproductive season. Raptors are easily stressed when paddlers are near their nests. Protect Raptors w Enhanced Awareness on Basic Facts about Raptor Nestings. Respect Closures.

Late Winter

Raptors pair set up breeding territory, nest site and mate

Early Spring

Both adults incubate eggs which takes 30+ days

Late Spring

Adults protect and feed chicks, Takes 6-7 weeks to learn to fly

Summer

Chicks learn to fly on their own but adults still supply food

Different raptors have different length of times on nests. If you hear a high pitched scream your too close. Paddle Clear. Do Not Disturb. Zap Rancocas Pathways questions. www.rcnwt.com

If Disturbed raptors may not select a breeding / nesting site. Paddle Clear

Disturbed adult raptors may leave nest. Eggs vulnerable to exposure and predators. Paddle Clear

Disturbed adults forced to defend nests. Provide less food. Chicks early fledge and death. Paddle Clear

Chicks less dependent on nests , sensitivity to disturbance remains. Paddle Clear

1860 Steamer Barclay Leaves Arch Street Wharf, daily at 2 ½ p.m.. Progress, Delanco, Bridgeboro, Centretown, Hainesport. Leaves Hainesport Daily at 7 a.m..

1861Stages meet boat for Mt. Holly and Lumberton

A few other places on or near the Delaware secured steamboat connections, generally with Philadelphia as the other terminal. In 1823 the *Norristown*, a small vessel formerly used as a ferry-boat at Camden, steamed between Philadelphia and the various landings on Rancocas Creek.[121] The next year leading citizens of Mount Holly organized a company which operated the *La Fayette* over the same route.[122] Trips were made semiweekly and a through fare of 50 cents was charged, which included a stage ride of four miles between Mount Holly and Hilliard's Wharf. The venture did not attract sufficient patronage, however, and the *La Fayette* was sold at auction in 1826.

THE SOSUA.

THE HAINESPORT.

(District Court, E. D. Pennsylvania. March 15, 1921.)

No. 60 of 1920.

1. **Collision ⇐71 (3)—Failure to keep lookout or give signals is fault.**
A loaded steamship, passing up Delaware river at night on a flood tide and without a lookout, which, after reaching Philadelphia, overtook and passed a tug with five barges in tow, going within 75 feet on the port side of the tug, and after proceeding a short distance further across the course of the tug anchored about mid-stream, allowing her stern to swing across the channel, all such maneuvers having been made without warning signals, *held* in fault for a collision with one of the barges of the following tow. The tug, which did all possible to avoid collision after discovering that the steamship had stopped in the fairway, *held* not in fault.

2. **Collision ⇐71 (3)—Navigable waters ⇐23—Obstruction by anchoring in fairway.**
The anchoring of a steamship near the middle of Delaware river in the night, without warning signals and only a few hundred feet in front of a tug following with a tow, *held* a violation of Act March 3, 1899, c. 425, § 15 (Comp. St. § 9920), making it unlawful to anchor in navigable channels "in such a manner as to prevent or obstruct the passage of other vessels."

In Admiralty. Suit for collision by the Frugart Aktieselkabet, owner of the Norwegian steamship Sosua, against the steam tug Hainesport. Decree for respondent.

H. Alan Dawson, of Philadelphia, Pa., and Haight, Sandford, Smith & Griffin, of New York City, for libelant.
Willard M. Harris, of Philadelphia, Pa., for respondent.

THOMPSON, District Judge. [1] The collision which is the subject of the present suit occurred about 11 o'clock on the night of April 19, 1920, in the Delaware river, between Philadelphia and Camden.

The Sosua is a Norwegian steamship, about 240 feet in length over all, and had come up the river loaded with a cargo of fruit, to be landed at the piers of the United Fruit Company at the foot of Arch street, Philadelphia. The tide was flood; the weather clear; the night dark. It being too late for the Sosua to be towed into her berth, she cast anchor in the channel slightly above the Arch street piers.

The Hainesport, having in tow five light barges in two tiers, three on the port and two on the starboard side, had proceeded up the river from Gloucester, and, directly after the Sosua had dropped her anchor, attempted to pass her stern, when the bow of the forward starboard barge came into collision with the Sosua, striking her starboard quarter underneath the stern and her rudder, causing injury to her plates and rudder.

The libelant's contention is that the collision was due to the negligence of the Hainesport in running too close to the Sosua without warning, after her anchor had been dropped and she was lying with her bow downstream, angling towards the New Jersey shore with

May 19th 1915.

DATE.	KIND OF TOWS. Tug and one scow	Tug and two scows	Tug and three scows	Tug and four scows	Tug and five scows	Tug and six scows	No. double Headers 2 tugs 3 scows	Total Number times draw opened	Total number boats passing through draw	Total number of trains delayed	Total number of minutes trains were delayed.
Jan. 1914	21	7	4	1				122	182	17	57
Feb. 1914	15	1	-	-				45	60	4	12
Mar. 1914	16	6	10	9			1	98	189	13	32
April 1914	43	31	23	7				201	389	40	139
May 1914	41	30	32	16			1	259	522	36	149
June 1914	67	22	22	19				221	567	49	165
July 1914	62	26	17	19				163	506	39	148
Aug. 1914	83	37	26	12				266	617	44	141
Sept. 1914	68	54	30	17	2	1		307	690	35	138
Oct. 1914	63	46	29	12	1			313	634	51	232
Nov. 1914	67	46	25	8				269	593	45	187
Dec. 1914	43	22	13	6			1	164	314	24	92
Jan. 1915	46	17	5	4				105	224	14	84
Feb. 1915	27	10	7	5				96	165	18	52
Mar. 1915	60	18	12	4				189	332	35	101
Apr. 1915	67	38	26	10				209	461	42	144

There are four drawbridges across this river, consisting of 3 highway and one railroad bridge. The navigation on this river consists of tugs, an occasional pleasure boat, also manure and sand scows. The channel is fairly straight at the railroad bridge and approaches on the upstream side on a broad curve, as shown on Government plan, easily navigable we believe for a tug and one scow.

Where more than one scow is taken through by a tug, we believe that the pilots take a grave chance of accident as it is extremely difficult to control the second scow in spite of the fact that helmsmen are usually at the wheel of each scow.

From the above analytical table it will be seen that one tug has occasionally taken through as many as six scows, but we consider that extremely bad judgment was shown by the pilot in doing this.

The sand scows are from 110 ft. to 120 ft. long and 27 ft. to 30 ft. wide with square ends, loaded on top of the deck. The tug boats will average about 70 ft. in length and the distance between the barges is about 15 feet.

We have had a number of accidents to our bridge caused by the scows colliding with the fenders, etc., on the approach to the channel. Below we give you a list of these accidents occuring during the past few years:

determine just what constitutes a navigable stream, the following extracts from decisions of the U. S. Supreme Court, which have

Rancocas Creek Sand Scows

100-120 feet 27-30 wide, square ends,

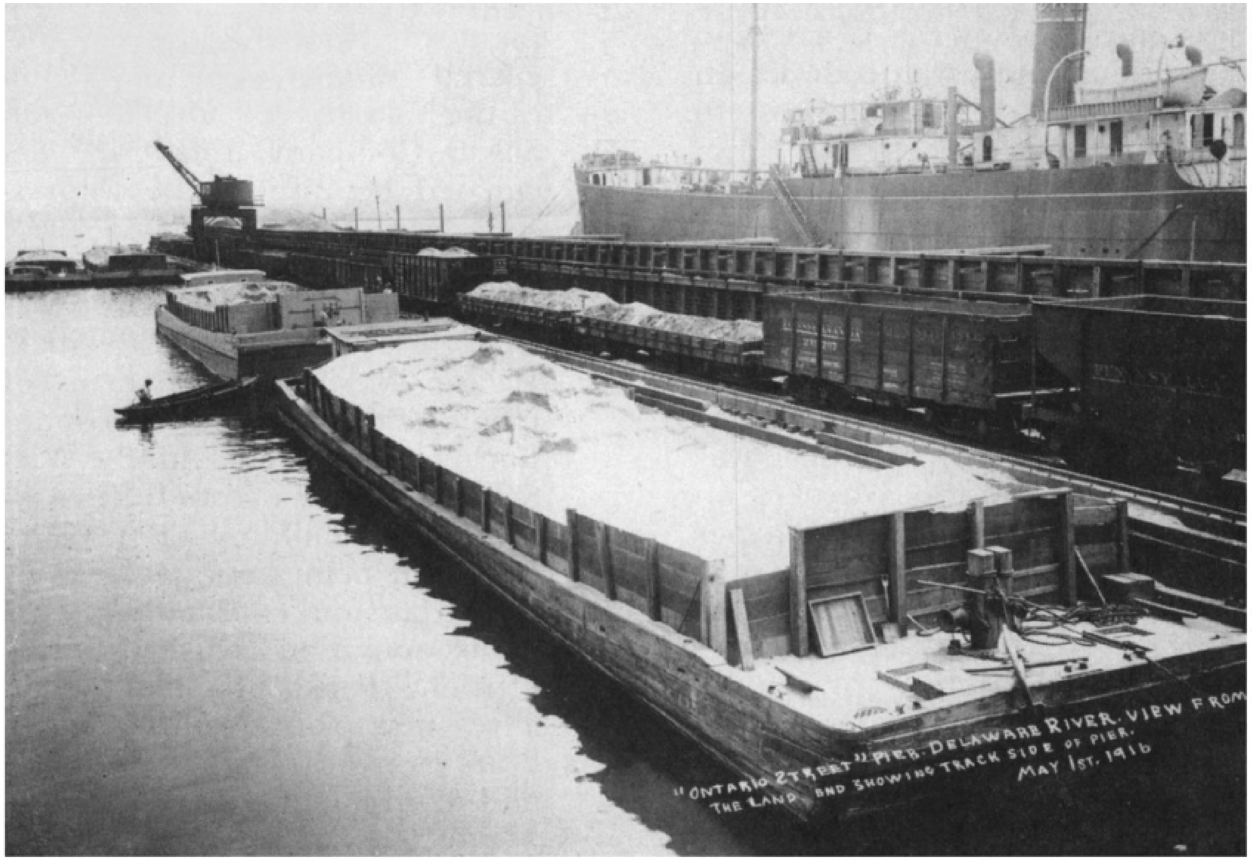
deck top load, 70-80 feet long.

Distance between barges 15 – 20 feet

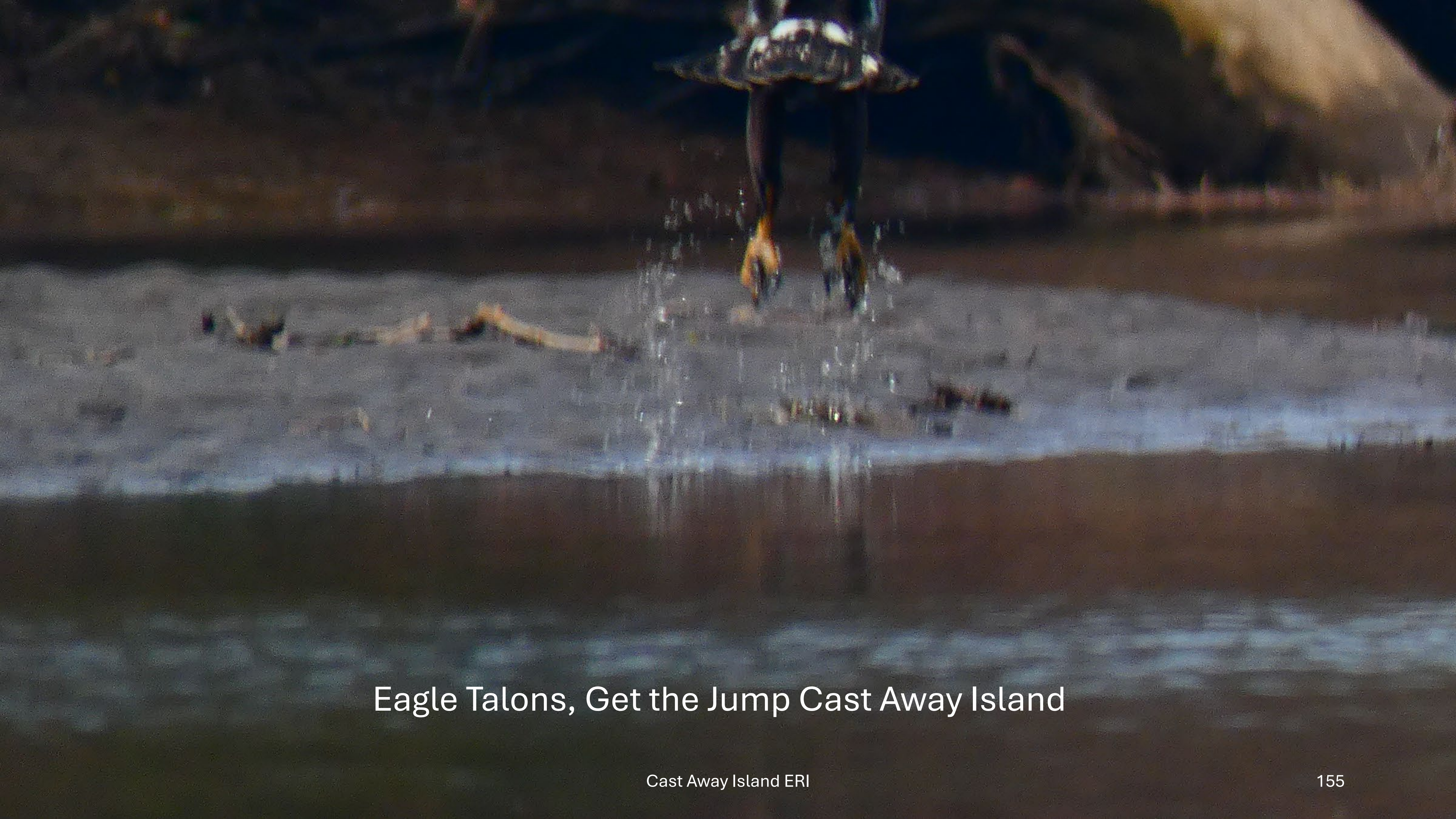
Extractive Resources and Sand Mining

“these sands are dug at the most available points along the Rancocas Creek to market, in this case the Delaware River” (Smith, 1926)

Rancocas Creek - Winter
Short Tether - Tugboat and Sand Barge
Breaking Ice
(note ice “pancakes” wake characteristics)



Transportation continues to be a major factor in the sand and gravel business. This 1916 photo is of a Warner pier located at the juncture of the Delaware River and Ontario Street in Philadelphia. Barge loads were transferred to railroad cars, horse drawn wagons and ocean going vessels. The ship in the background transported sand and gravel used for construction in Florida.



Eagle Talons, Get the Jump Cast Away Island

Location and Extent

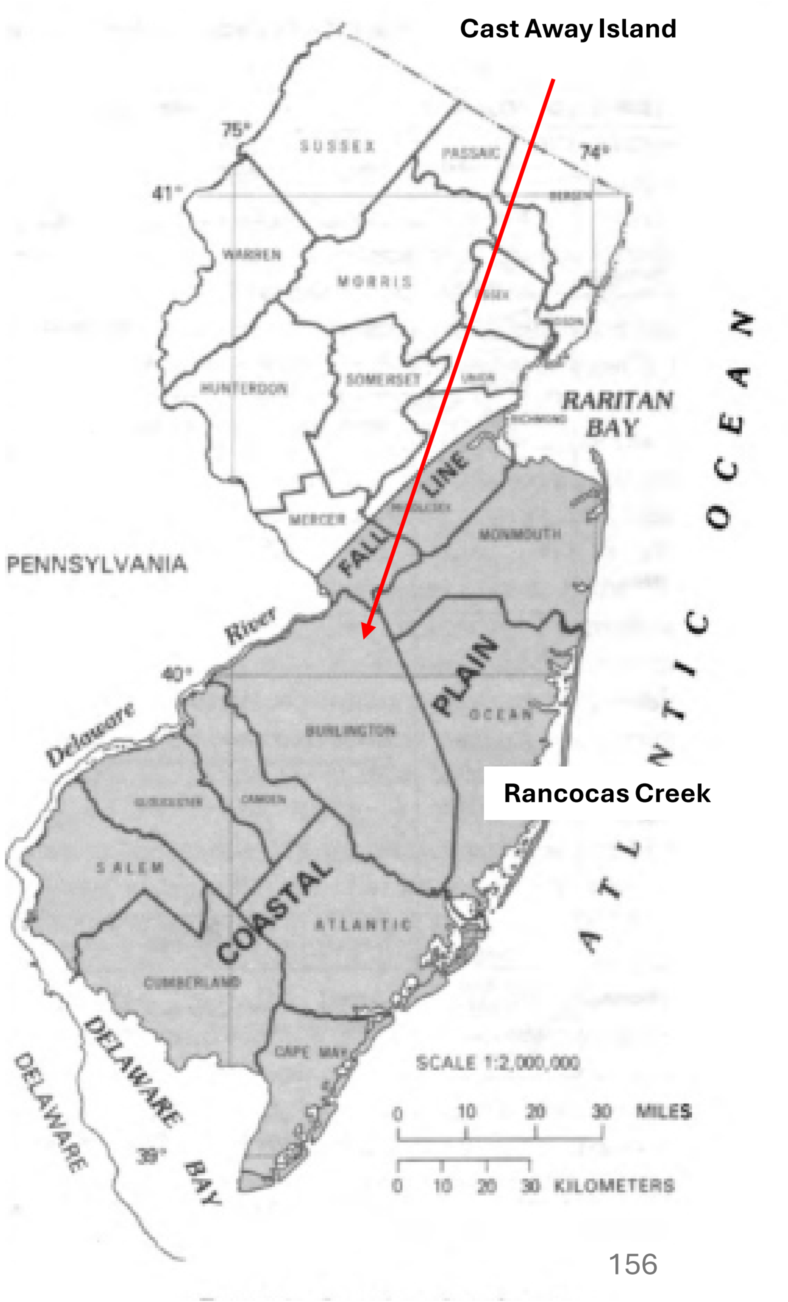
New Jersey's Coastal Plain, Outer and Inner extends from Delaware Bay in the SW to Raritan Bay in the NE and from the geologic Fall Line in the west to the Atlantic Ocean.

4,200 square miles

Part of the larger Atlantic Coastal Plain

Coastal Plain is dived intro the Inner and Outer Coastal Plan.

Zapecza, O. S. (1989). *Hydrogeologic framework of the New Jersey Coastal Plain.* [Reston, Va.] : Dept. of the Interior, U.S. Geological Survey ; Denver, Colo.: for sale by Books and Open-File Reports Section.



Summary of New Jersey Coastal Plain Geology

1. **Seaward dipping wedge of unconsolidated sediments from the Cretaceous to the Holocene**

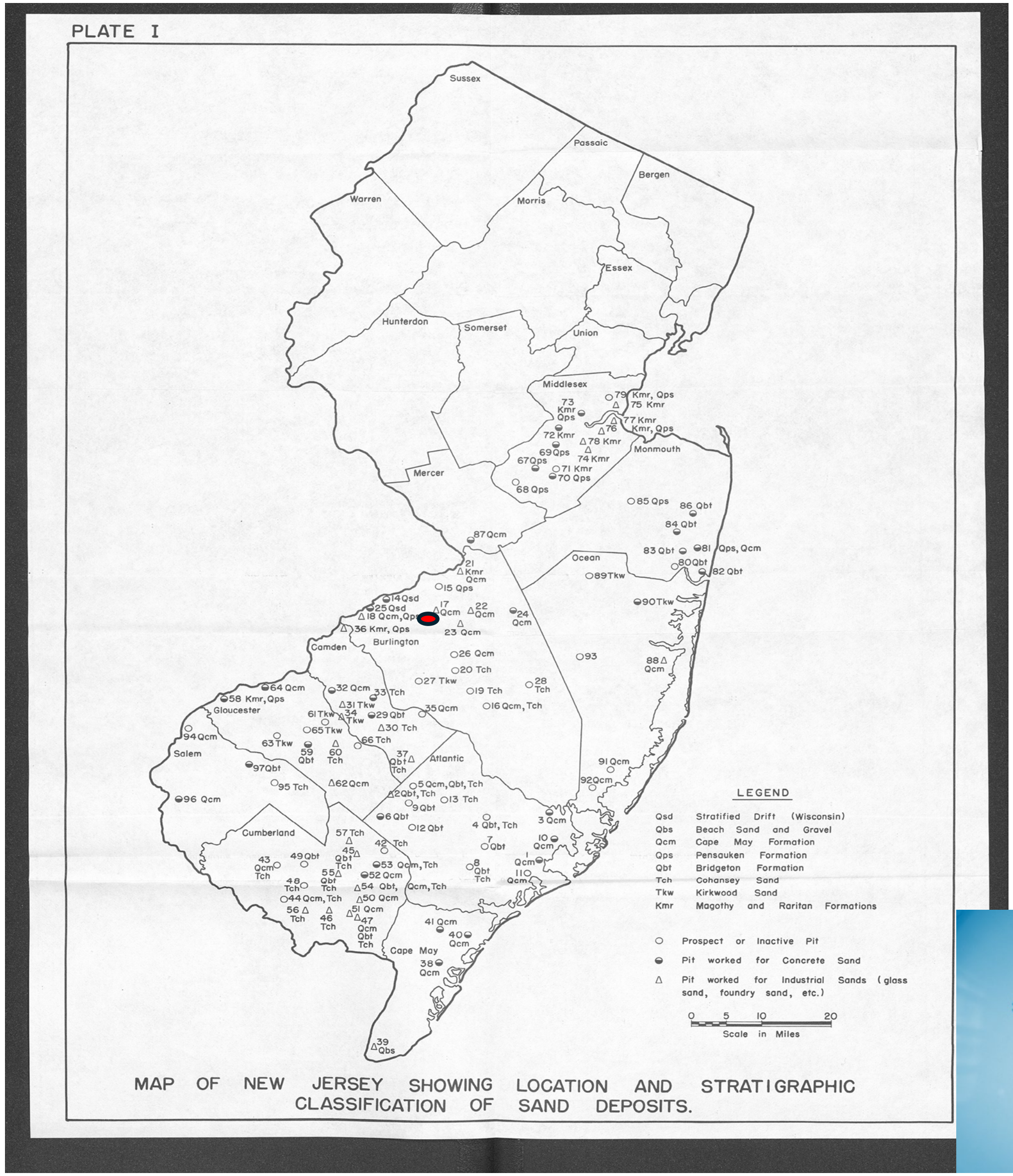
2. **Sediments of clay, sand, gravel, classified as continental, coastal or marine deposits**

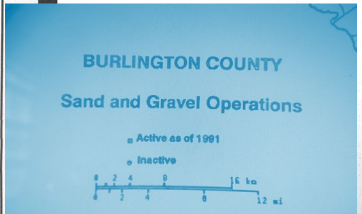
TABLE 1.—*Generalized stratigraphic correlation chart of the northern Atlantic Coastal Plain*

ERA	SYSTEM	SERIES	NORTH CAROLINA	VIRGINIA	MARYLAND	DELAWARE	NEW JERSEY
Cenozoic	Quaternary	Pleistocene	Unnamed	Undifferentiated deposits	Undifferentiated deposits	Undifferentiated deposits	Cape May Formation Undifferentiated deposits
	Tertiary	Pliocene	Chowan River Formation Yorktown Formation	Chesapeake Group: Chowan River Formation Yorktown Formation	Chesapeake Group: Yorktown Formation	Undifferentiated deposits	
		Miocene	Pungo River Formation Belgrade Formation	Chesapeake Group: Eastover Formation St. Marys Formation Choptank Formation Calvert Formation	Chesapeake Group: Eastover Formation / Brandywine Formation St. Marys Formation Choptank Formation Calvert Formation	Chesapeake Group undivided	Pensauken Formation Bridgeton Formation Cohansey Sand Kirkwood Formation
		Oligocene	River Bend Formation	Unnamed			
		Eocene	Castle Hayne Formation	Chickahominy Formation Piney Point Formation Nanjemoy Formation	Piney Point Formation Nanjemoy Formation	Piney Point Formation Nanjemoy Formation	Piney Point Formation Shark River Formation Rancocas Group: Manasquan Formation
		Paleocene	Beaufort Formation	Marlboro Clay Aquia Formation Brightseat Formation	Aquia Formation Brightseat Formation	Rancocas Group: Vincentown Formation Hornerstown Formation	Rancocas Group: Vincentown Formation Hornerstown Sand

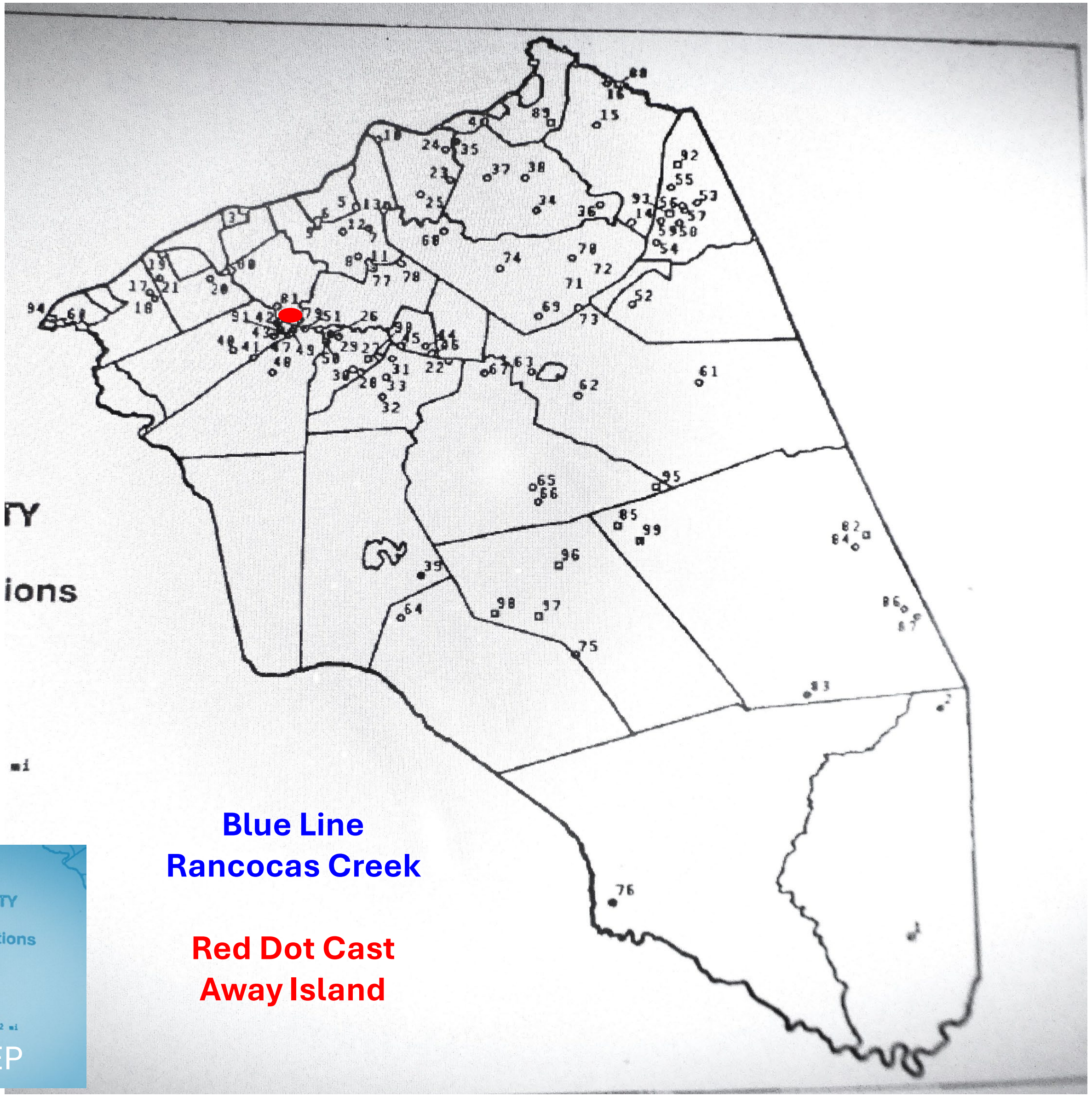
Hydrogeologic Framework of the New Jersey Coastal Plain

Industrial Sands of New Jersey





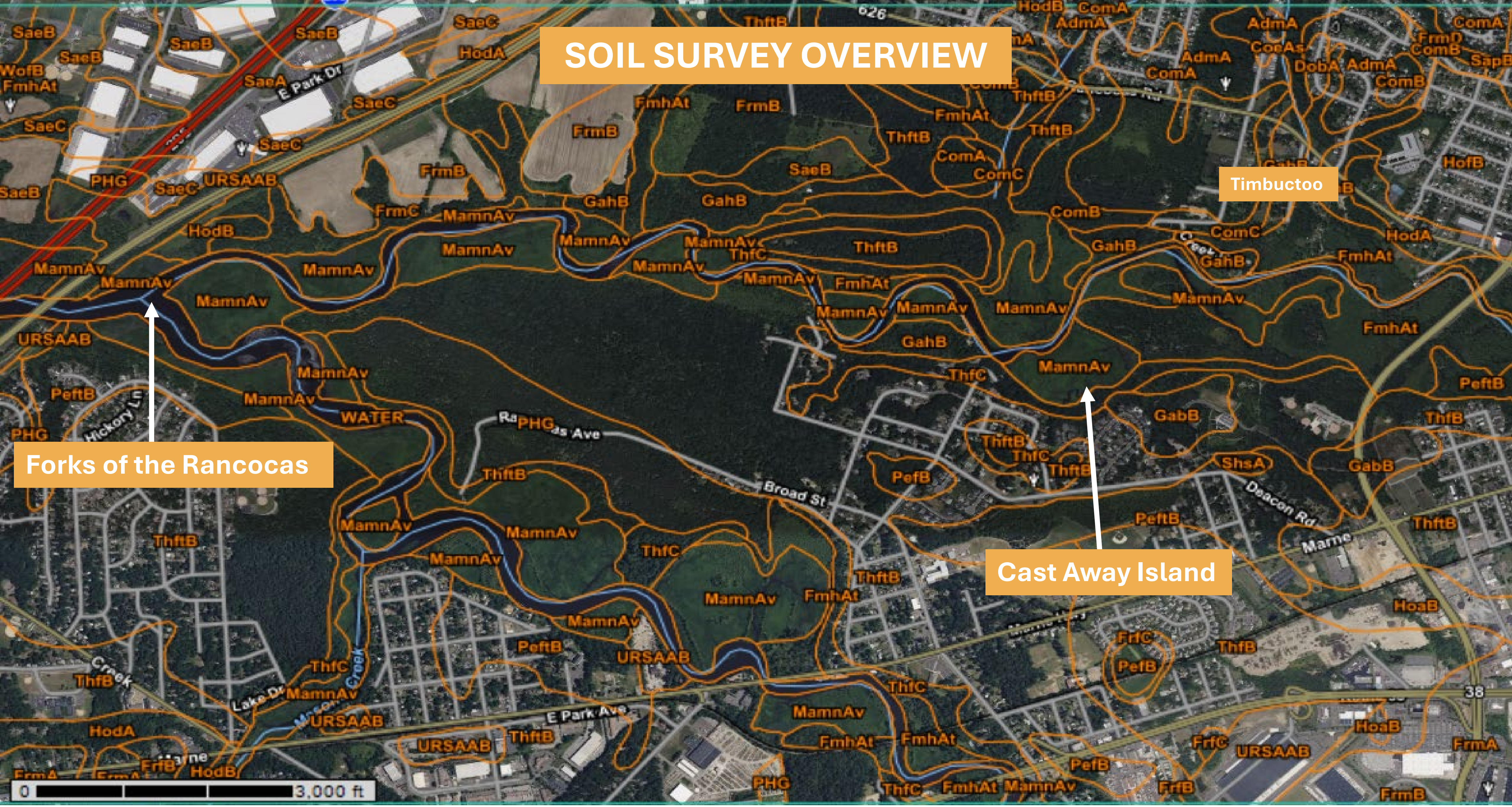
REF: NJDEP

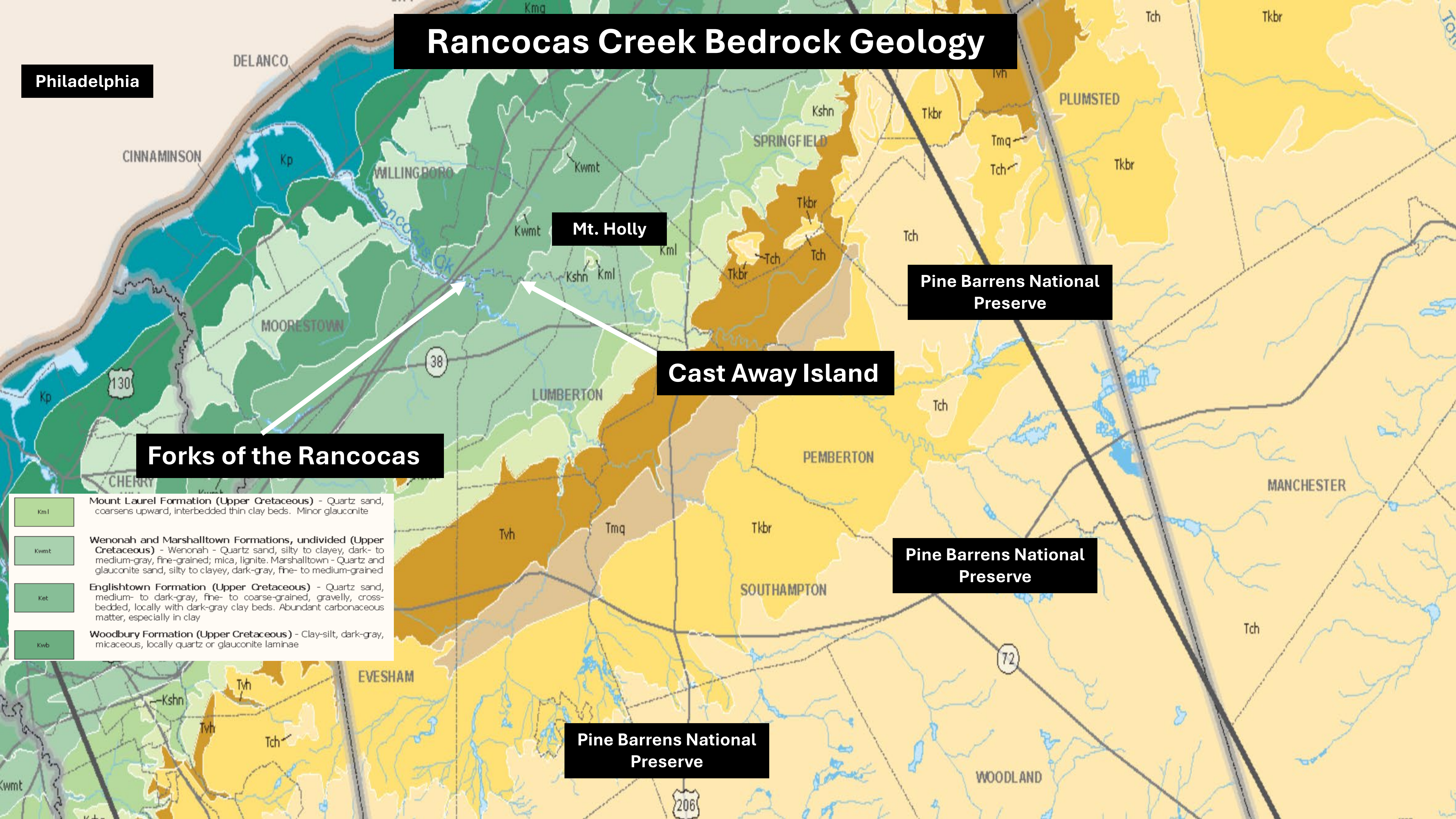


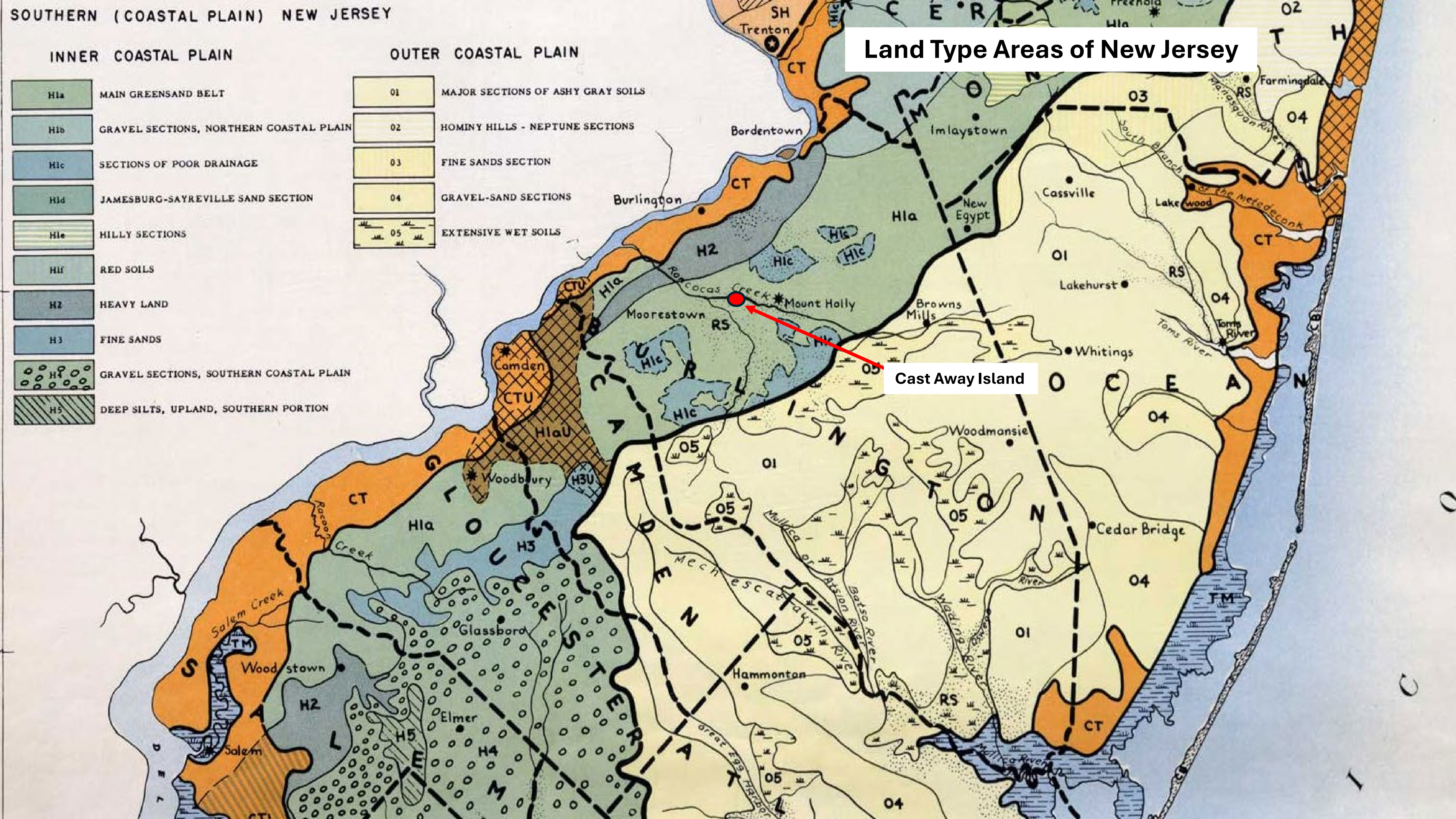
Blue Line
Rancocas Creek

Red Dot Cast
Away Island

SOIL SURVEY OVERVIEW

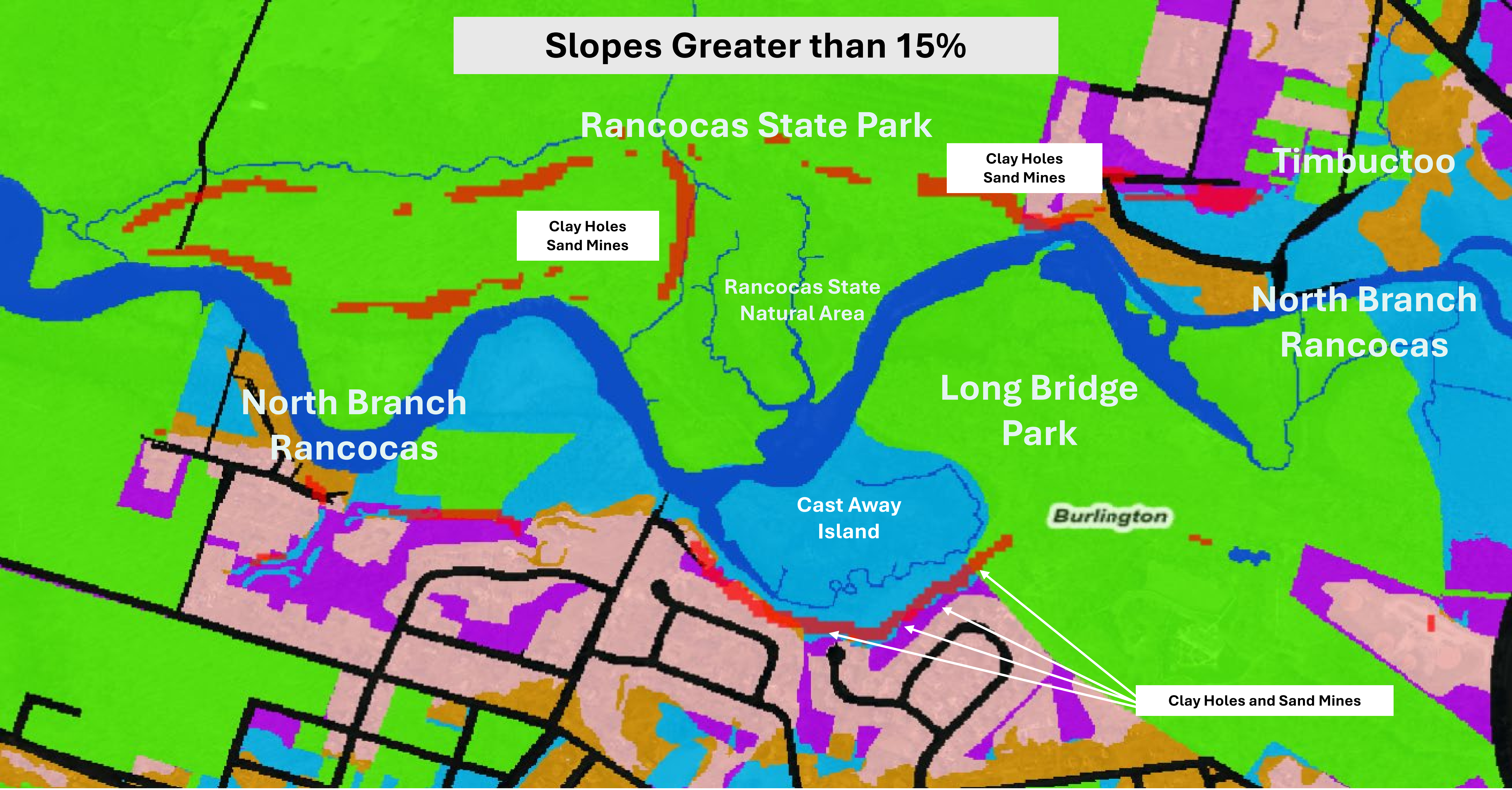



Rancocas Creek Bedrock Geology
Philadelphia
Mt. Holly
Pine Barrens National Preserve
Cast Away Island
Forks of the Rancocas
Pine Barrens National Preserve
Pine Barrens National Preserve
DELANCO
CINNAMINSON
WILLINGBORO
MOORESTOWN
LUMBERTON
SPRINGFIELD
PLUMSTED
PEMBERTON
SOUTHAMPTON
MANCHESTER
EVESHAM
WOODLAND
CHERRY
Rancocas Ck
Kp
Kwmt
Kml
Kshn
Tkbr
Tch
Tvh
Tmq
38
130
72
206
Kml
Mount Laurel Formation (Upper Cretaceous) - Quartz sand, coarsens upward, interbedded thin clay beds. Minor glauconite
Kwmt
Wenonah and Marshalltown Formations, undivided (Upper Cretaceous) - Wenonah - Quartz sand, silty to clayey, dark- to medium-gray, fine-grained; mica, lignite. Marshalltown - Quartz and glauconite sand, silty to clayey, dark-gray, fine- to medium-grained
Ket
Englishtown Formation (Upper Cretaceous) - Quartz sand, medium- to dark-gray, fine- to coarse-grained, gravelly, cross-bedded, locally with dark-gray clay beds. Abundant carbonaceous matter, especially in clay
Kwb
Woodbury Formation (Upper Cretaceous) - Clay-silt, dark-gray, micaceous, locally quartz or glauconite laminae



Land Type Areas of New Jersey
SOUTHERN (COASTAL PLAIN) NEW JERSEY
INNER COASTAL PLAIN
H1a MAIN GREENSAND BELT
H1b GRAVEL SECTIONS, NORTHERN COASTAL PLAIN
H1c SECTIONS OF POOR DRAINAGE
H1d JAMESBURG-SAYREVILLE SAND SECTION
H1e HILLY SECTIONS
H1f RED SOILS
H2 HEAVY LAND
H3 FINE SANDS
H4 GRAVEL SECTIONS, SOUTHERN COASTAL PLAIN
H5 DEEP SILTS, UPLAND, SOUTHERN PORTION
OUTER COASTAL PLAIN
01 MAJOR SECTIONS OF ASHY GRAY SOILS
02 HOMINY HILLS - NEPTUNE SECTIONS
03 FINE SANDS SECTION
04 GRAVEL-SAND SECTIONS
05 EXTENSIVE WET SOILS
Cast Away Island
Trenton
Bordentown
Imlaystown
Farmingdale
Burlington
New Egypt
Cassville
Lakewood
Rancocas Creek
Mount Holly
Moorestown
Browns Mills
Lakehurst
Whitings
Toms River
Camden
Woodbury
Woodmansie
Cedar Bridge
Glassboro
Woodstown
Elmer
Salem
Hammonton
Salem Creek
Mullica River
Batsto River
Wading River
Great Egg Harbor
BURLINGTON
CAMDEN
GLOUCESTER
SALEM
OCEAN
MONMOUTH

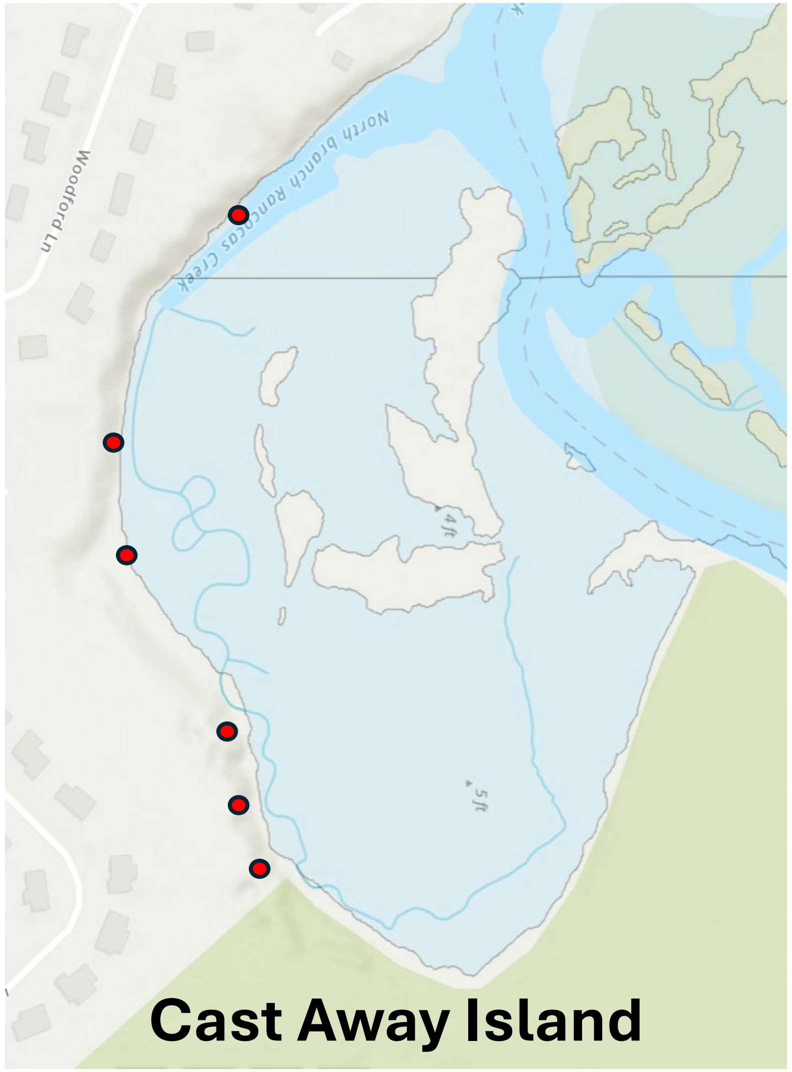
Cast Away Island from State of NJ Natural Area



Ref: General Map NJDEP

Cast Way Island "Green Sand"

Rancocas Creek Cast Away Island Clay Holes
Precursor to Rancocas Creek Sand Mining



Cast Away Island
Clay and Sand Pits

As an example: Woodbridge, NJ Clay Mining
Ref: NJ Geologist, 1910

Remains of clay pits/sand mines/sand holes

Found along the South Bluff overlooking Cast Away Island

Burlington County Long Bridge Park

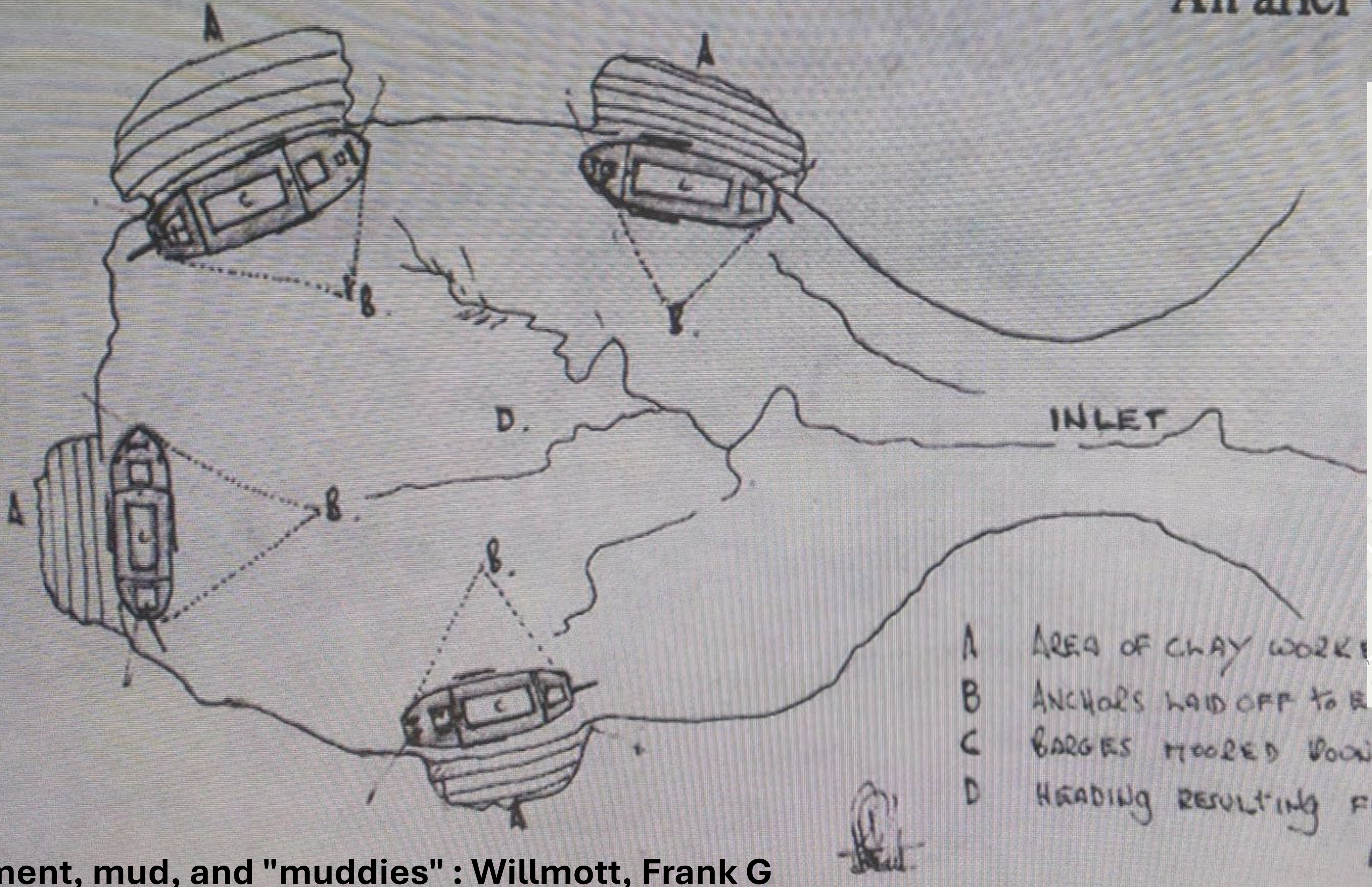
From Beacon Hill Trail
Top of Creek Side Bluff

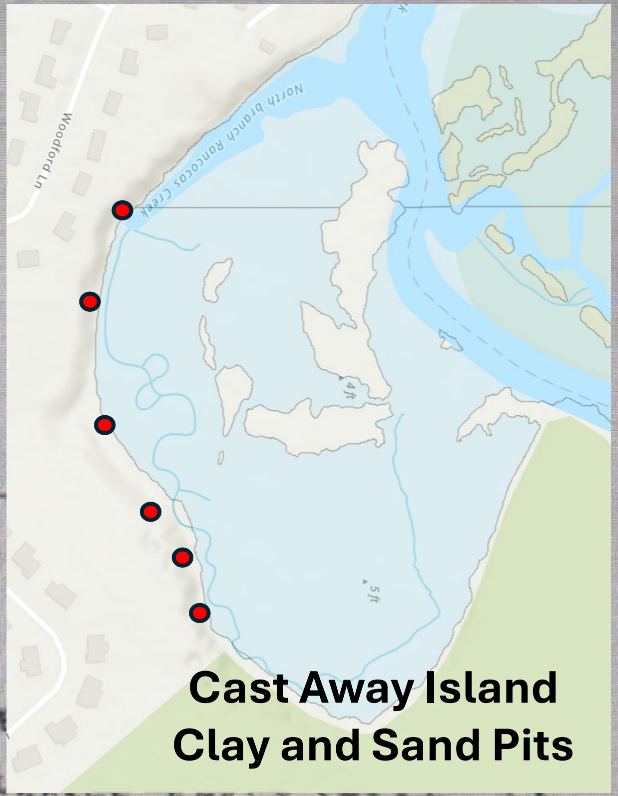
Mud and Muddies

1851

Extraction Method for Clay/Sand Holes Along a Tidewater Creek/River (as an example)

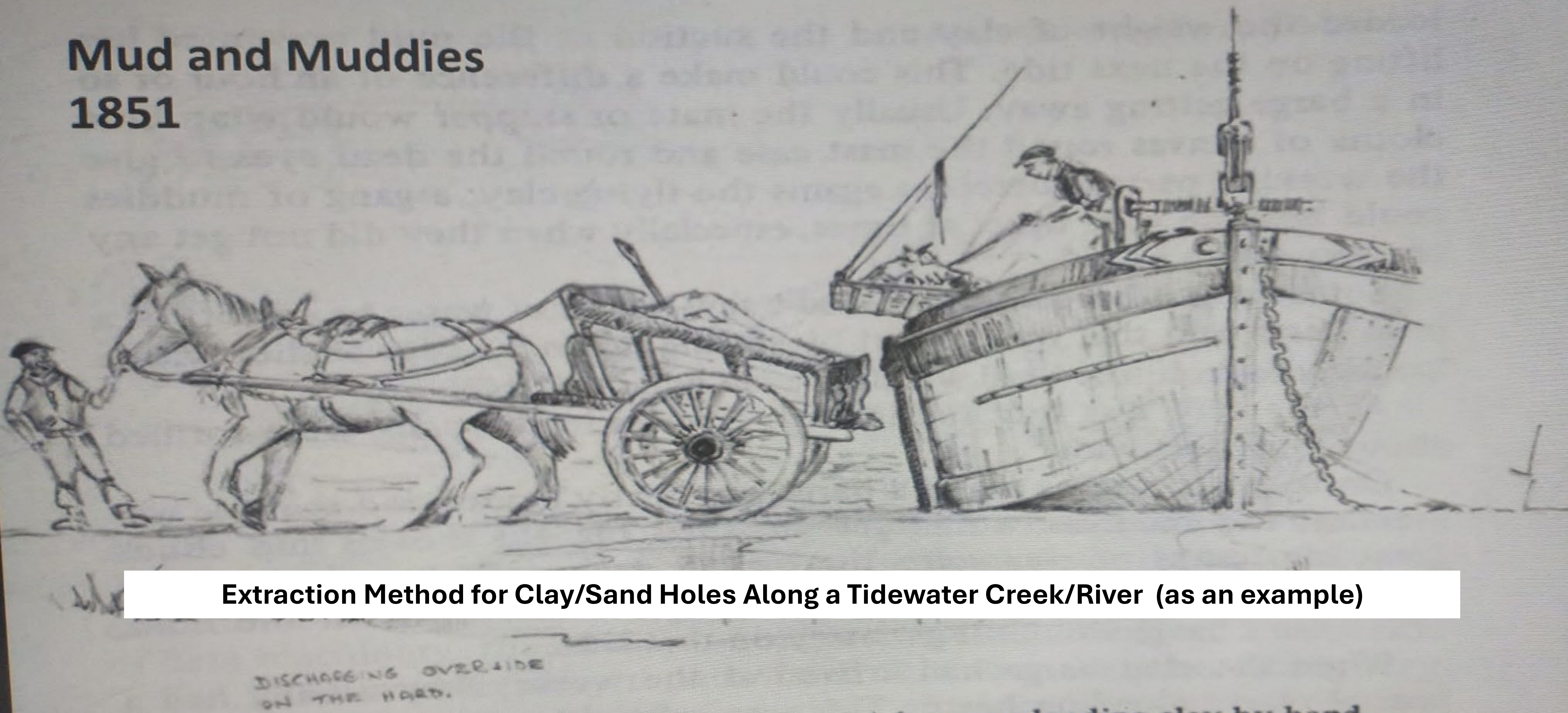
An ariel view of a clay hole.





Cement, mud, and "muddies" : Willmott, Frank G

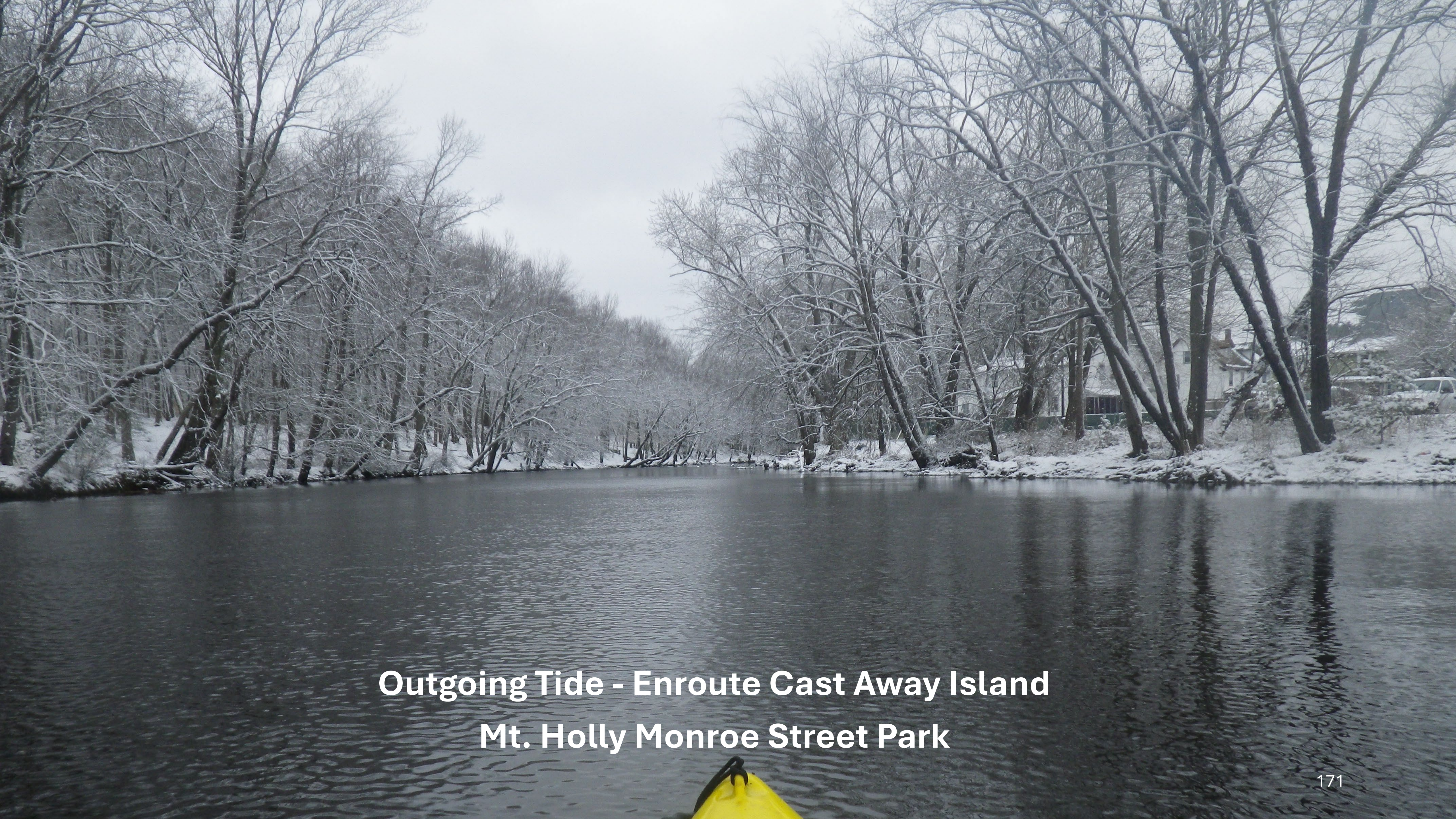
Mud and Muddies
1851



A barge unloading clay by hand.

Extraction Method for Clay/Sand Holes Along a Tidewater Creek/River (as an example)

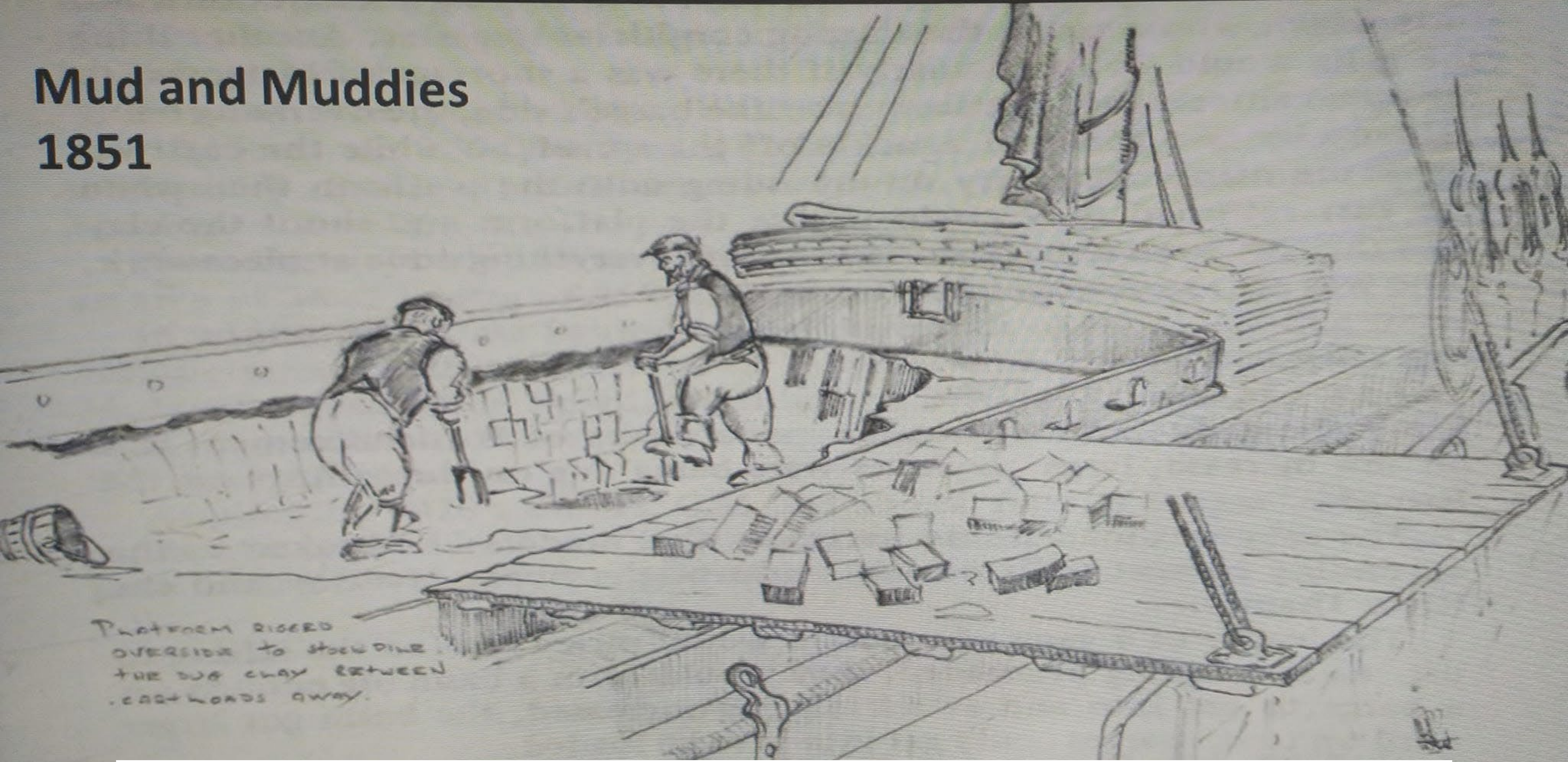
Ref: Sand and Clay Mining Cornwall England
Circa: 1972



Outgoing Tide - Enroute Cast Away Island

Mt. Holly Monroe Street Park

Mud and Muddies
1851

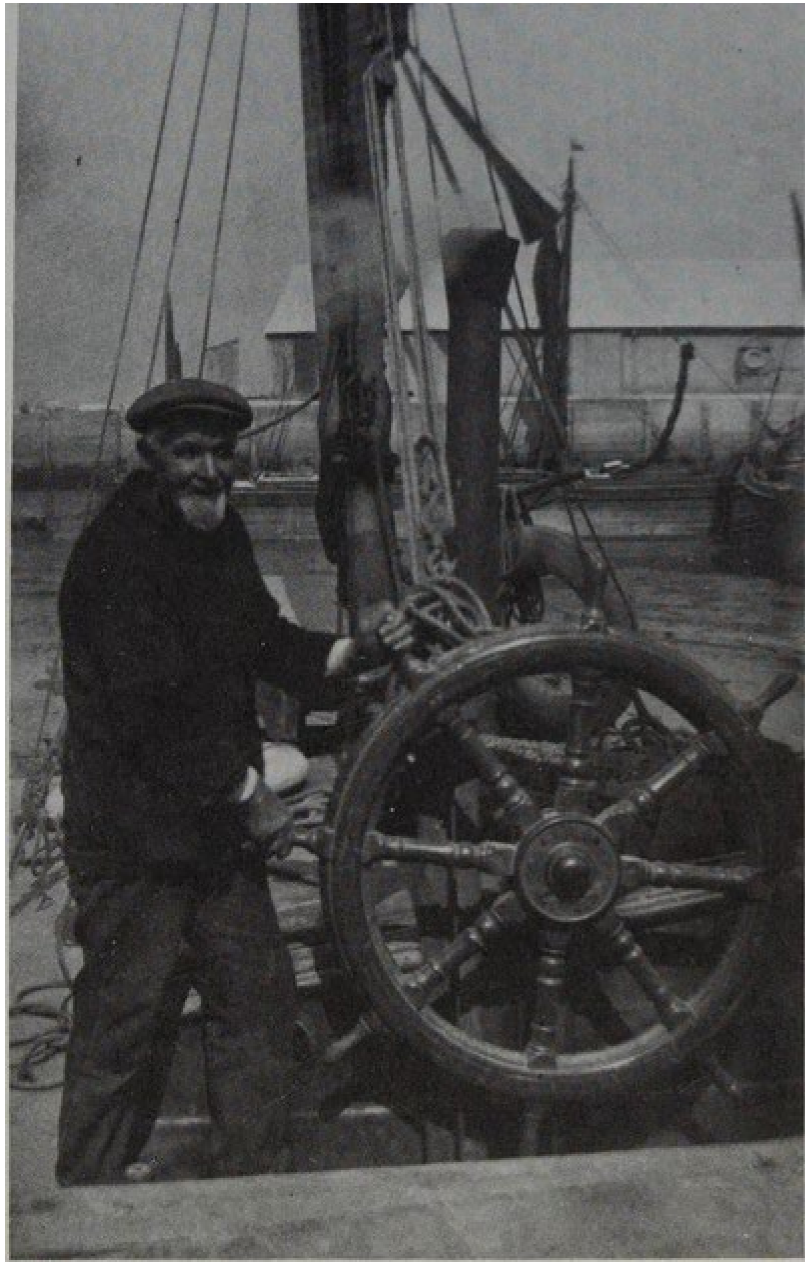


Extraction Method for Clay/Sand Holes Along a Tidewater Creek/River (as an example)

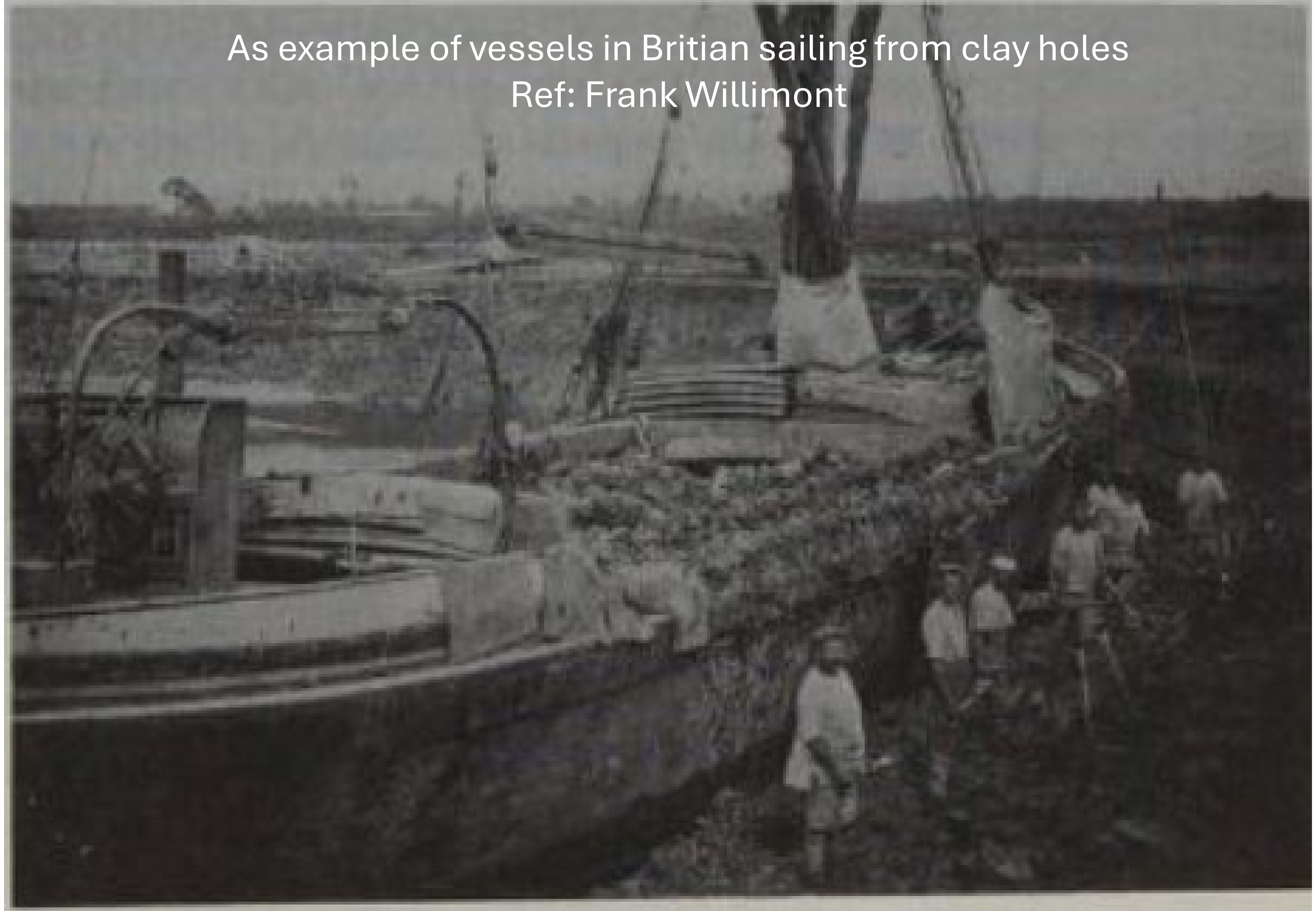
Unloading clay by hand.

Down in the old Sand Mine

Mergansers – Cast Away Island

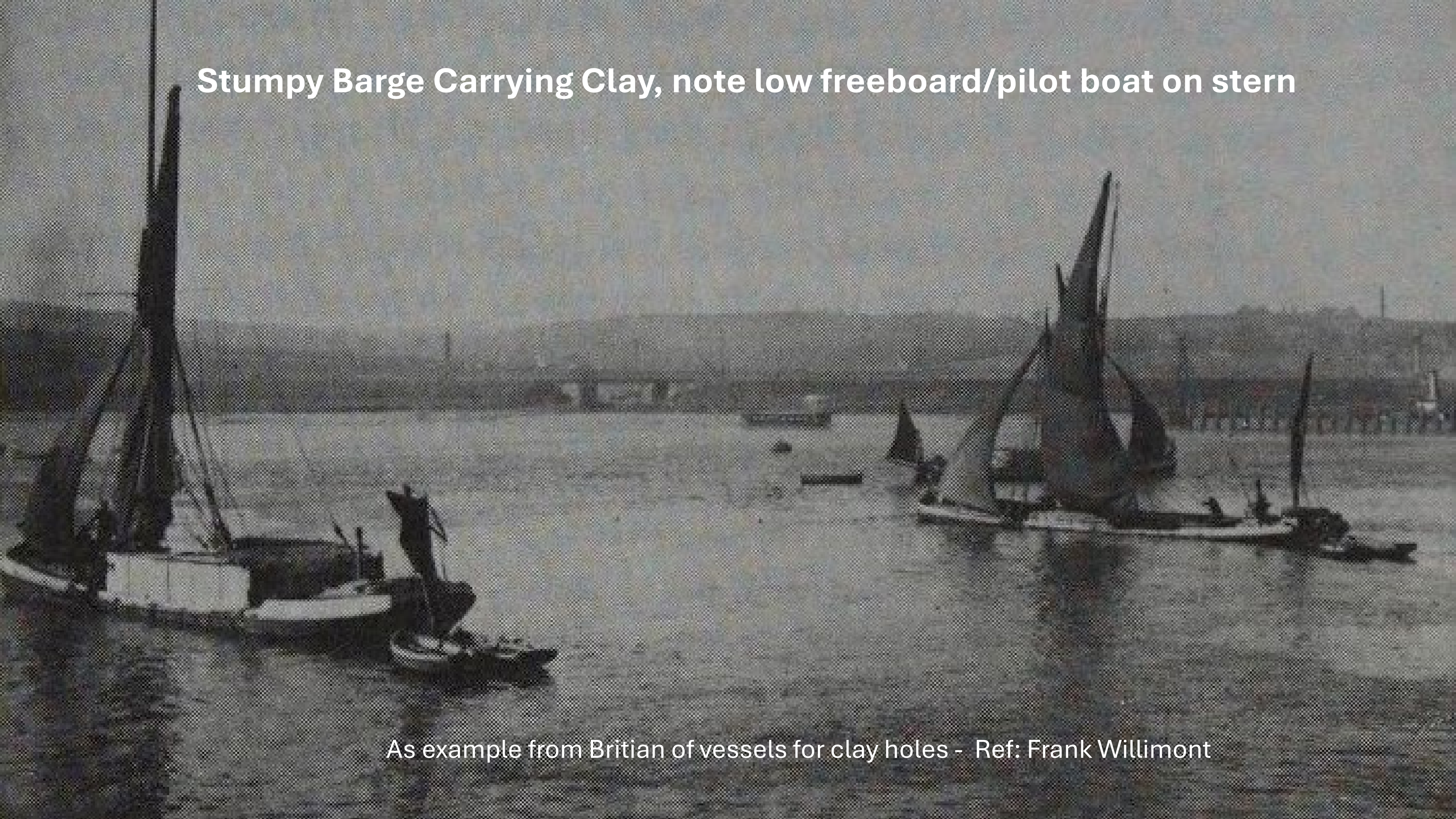


Mark (Curly) Ransley skipper of the Goldsmith Iron-pot *Gloria* which capsized in a squall in December 1929



Muddies loading *Mahatma* at Stoke Saltings. Note – The lime cloths around the standard rigging and mast case.

Stumpy Barge Carrying Clay, note low freeboard/pilot boat on stern



As example from Britian of vessels for clay holes - Ref: Frank Willimont

March 1909 >>>

Rancocas Creek

Hainesport

The vicinity of Hainesport is probably the greatest sand shipping center on the Rancocas. Here, farms that were abandoned for agricultural purposes are daily turning earth to gold and amassing fortunes for their owners. It is not unusual for these mines to ship twenty barges, each containing 600 tons, a day. At this point more pretentious and labor-saving methods are in use. Huge steam shovels, reminding one of those used on the Panama canal, are continually eating into and down the sand banks until the water line is reached, and which compels them to stop. The ground all around is scattered with the roots of trees, reminding one of the huge spiders, and on the edge of the mine is a growth of small pines and scrub oak, which gives the scene a picturesque appearance.

It takes many drops to make a water drop

Rain falling Cast Away Island

Hainesport Mining and Transport Company

The Hainesport Mining & Transportation Company, owner of the tug Hainesport, has filed a libel in the United States Court against the coal barge C. F. Pritchard to recover salvage for services rendered to the barge when she caught fire July 30, while at anchor in the Delaware River off the Port Richmond coal piers. Security to release the vessel was fixed at $10,000.

GEORGE D. VAN SCIVER

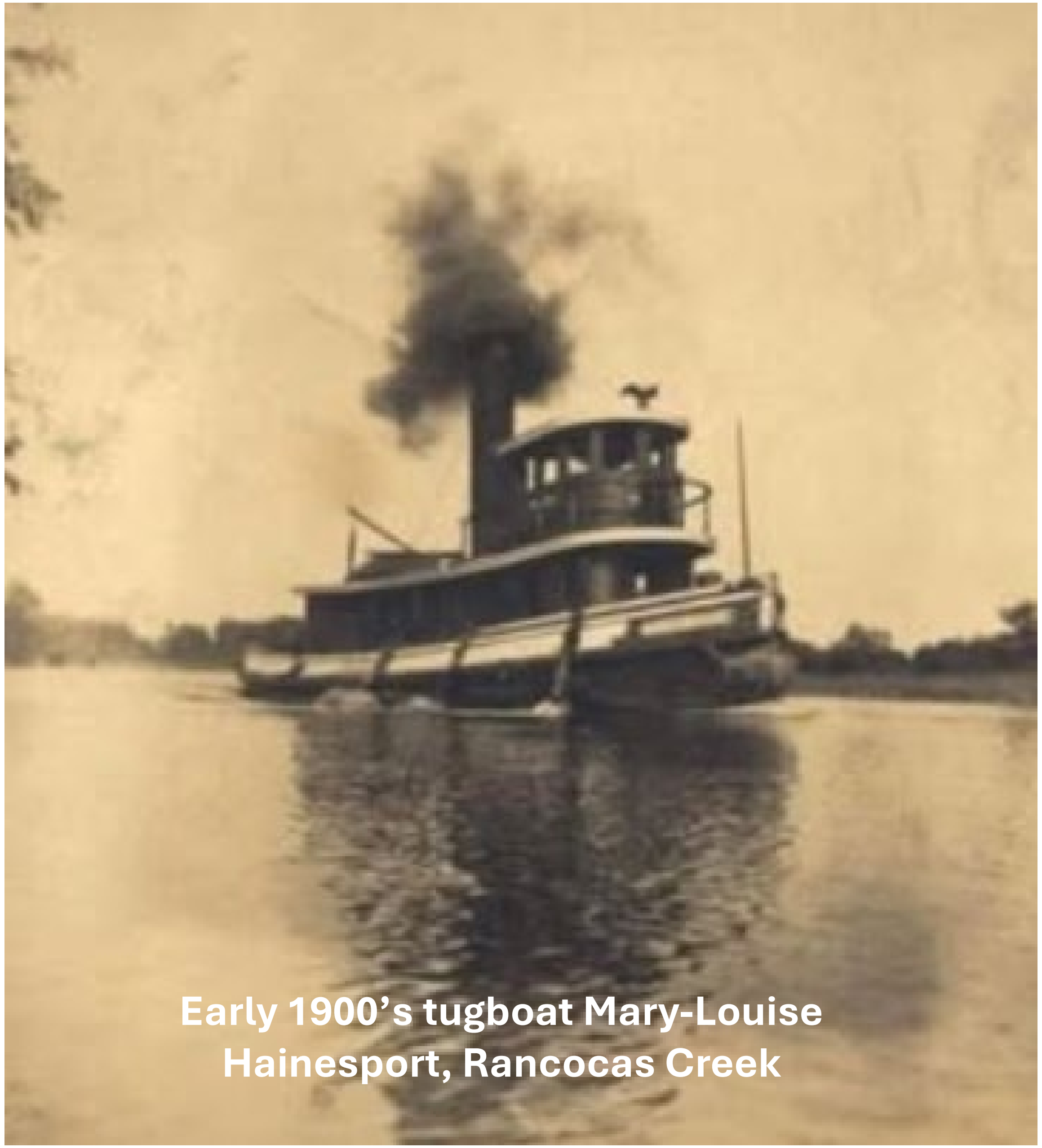
Atlantic City Gazette-Review
Mon, Mar 31, 1919 ·Page 4

H. M. BOUGHER.

There is no question about the industrial activity of today having a metallic ring to it. Iron and the metals generally come forth in many diverse shapes and forms, and to get them into working order takes a great deal of manipulation. In this respect the foundry may be taken as representative of the yeoman service performed by metal workers. To supply foundries with foundry supplies is the mission of the J. W. Paxon Co. Or, to be personal, we might say the mission of H. M. Bougher, president of that immense concern. Mr. Bougher is conceded to be one of the most expert in his line of endeavor in the entire country. Along the paths of economic discrimination in the selection of foundry supplies, moulding sands and gravels for iron and steel foundries, domestic and foreign graphites, Mr. Bougher and his staff of able assistants know how to advise prospective purchasers. And this is one reason for the fine showing which this enterprise has always made. It is probably the largest concern of the kind in the country. Speaking of the magnitude of their operations, an idea of what they are doing may be gleaned from the fact that over a half-million tons of molding sand is produced by them annually. But Mr. Bougher has other important connections. He was president of the Lumberton Sand Co. before it was merged with the J. W. Paxon Co. He is president of the Burlington Island Park Co. and of the Diamond-P Boat Line. He is also secretary and general manager of the Penn Facing Mills Co. He is president of the Foundry Supply Manufacturers' Association, and he figured very prominently at the convention of that excellent association which was held at the Traymore Hotel, Atlantic City, the latter part of last August. The offices of the J. W. Paxon Co. are at 1021 No. Delaware avenue, where Mr. Bougher is usually to be found.

H.M. Bougher, Captain

- J.W. Paxson (Director, Sand Mining and Transportation)
- President of Lumberton Sand Company
- President of Burlington Island Park Co.
- President of Diamond P Boat Line
- General Manager of Penn Fencing Mill
- Resident of Centreton (Centerton) or Bougher (Rancocas Woods)



Early 1900's tugboat Mary-Louise
Hainesport, Rancocas Creek

Hainesport Tugboats

Further details and references to be published

James Logan, Master of the Steamship "Travancore" vs. The Ship "Manuel Llaguno," and the Steam Tugs "Newcastle" and "Mary Louise"	U. S. D. C. E. D. of Pa. In Admiralty No. 9, of 1889

Statement of Facts and Conclusions of Law

Argument in behalf of the Steamship "Travancore"

II. That on Sunday, March 30, 1902, the barge Rogers was lying at Hainesport, Rancocas Creek, having on board a cargo of gravel to be carried to a wharf on the Schuylkill River, and that on said day the said barge and the barge "Jennie Bailey" were towed down the Rancocas Creek by the tug Maurice and were moored at Otis Street Wharf on the Delaware River over night.

Hainesport Tugboats
Further details and references to be published

Tugboat and barge companies known to have worked in Hainesport in the 1870's to the 1920's. This is not a complete list.

Steamboat and barges

"Samuel H. Hartman, Emily, etc…

Patterson Barge Company Steam Barges

Diamond P Boat Lines

Home Port Pier 45 North Philadelphia

Examples of 1870's – 1920's steamboat and barges. Photos from Great Lakes

The heavily-loaded steamer Charles H. Bradley towing three heavily-loaded consorts. Date and location unknown.

Image from the Historical Collections of the Great Lakes, Bowling Green State University

DIAMOND P. BOAT LINE

Pier 45 N. Philadelphia, Pa.

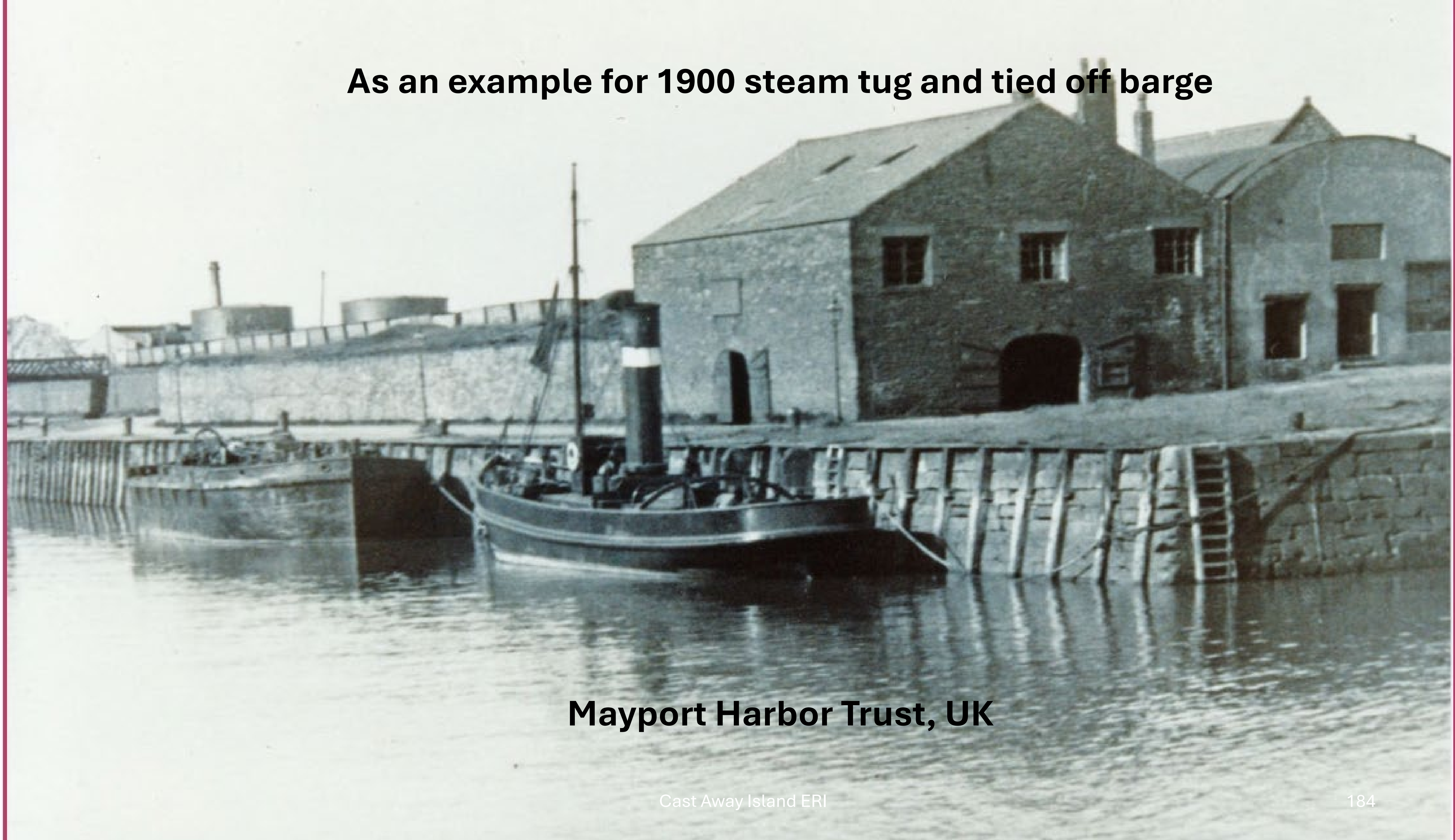
HOWARD M. BOUGHER, Pres. **JAMES L. CRAWFORD, Marine Supt.**

NAME	Date Built	Where Built	HULL M.	HULL Type	HULL Length	HULL B.	HULL D.	TONNAGE Gr.	TONNAGE Net	ENGINE Type	ENGINE Cylinders	ENGINE Str.	ENGINE I.H.P.	BOILER No.	BOILER Type	BOILER Dia.	BOILER Length	BOILER W.P.
Samuel H. Hartman	1891	Wilmington, Del....	W	P.P....	130	23.5	9	245	131	C.....	........10, 18	16	200	1	R.T...	5.4	9.6	120
Maderia...........	1892	Philadelphia, Pa....	W	Tug....	64.5	16.5	8	52	25	S.....	16	16	200	1	R.T...	6.9	12	110
Peerless...........	1892	Bordentown, N. J...	W	Tug....	55.2	15	6	34	17	S.....	14	14	125	1	R.T...	6	11	120
Ethel............	1902	Wilmington, Del....	W	P.P....	145	26	8	266	161	C.....	........10, 18	16	200	1	R.T...	7	10	125

Yellow Legs – Spring Migration

Examples of 1870’s – 1920’s steamboat and barges. Photos from Great Lakes

As an example for 1900 steam tug and tied off barge



Mayport Harbor Trust, UK

Pretty Rancocas' Field.

The banks of the upper Rancocas, that beautiful, winding stream, whose dark cedar waters spring from the pine barrens of interior New Jersey and flow down the Delaware, where they commingle at Delanco, is one of the greatest sections for sand mining in the East. Its banks are dotted with wharves at Barton's landing, Centerton, Rancocas Park, Hainesport and Lumberton. All day long men dig in the fields near by and other men with carts haul the yellow dirt to the wharves, where it is dumped into the waiting barges to be towed to Philadelphia and other points. The bulk of the sand shipped by boat is used for iron molding, while that hauled by train away from the river points is sold for filtration purposes.

March

1909

Passing Cast Away Island, Creek Right

Hainesport Mining and Transport Company

HAINESPORT MINING & TRANSPORTATION COMPANY

1920

Maurice	1892	Philadelphia, Pa.	W	Tug	55.6	15.7	6.5	36	18	S.	14	14	....	1	Rt.	5.6	10.6	140
Hainesport	1904	Madison, Md.	W	Tug	72	18.4	8	67	46	C.	12, 26	18	120	1	Rt.	7	12	125
Rancocas	1910	Camden, N. J.	S	Tug	79	20	9.2	106	71	C.	15, 30	20	350	1	Rt.	9.6	13	135

IN THE

District Court of the United States,

FOR THE DISTRICT OF NEW JERSEY.

IN ADMIRALTY.

THE NAMES OF THE PARTIES.

Harry W. Whiteman, owner of the lighter "Allegheny," and the Hainesport Mining and Transportation Company, owner of lighter No. 17, libellants, and the steam tug "Emily Marie" and Nelson H. Gildersleeve, John McAteer and Anna P. Ganer, her owners, respondents.

DOCKET ENTRIES.

Harry W. Whiteman, Owner of Lighter "Allegheny," v. *Steam Tug "Emily Marie" and Nelson H. Gildersleeve, John McAteer and Anna P. Ganer, Her Owners.* — No. 4719. In Admiralty.

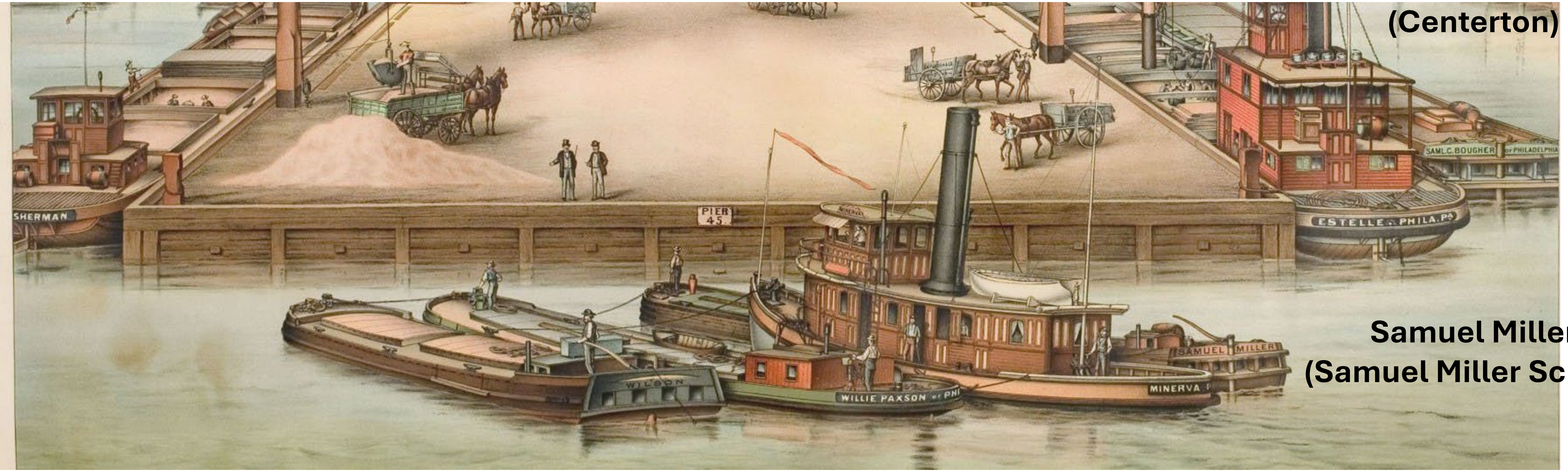
1. That the lighter "Allegheny" is a deck lighter, built of wood, 112 feet long and 33 feet beam, with a carrying capacity of about 700 tons, and at the time hereinafter mentioned and is now owned by libellant. That said lighter at the time of the collision hereinafter mentioned was loaded with a full cargo of pebbles and was tight, staunch and strong and in every respect seaworthy and properly manned and equipped,

2. That the tug "Emily Marie" is a small harbor tug hailing from the port of Philadelphia, is 66 feet in length, 16 feet beam and 8 feet depth of hold, and at the time hereinafter mentioned was owned by John McAteer, Nelson H. Gildersleeve and William Ganer in equal shares, the latter being her master and in charge of her navigation.

After the tug "Emily Marie" had started with her tow made up as aforesaid and sometime before reaching the Pennsylvania Railroad bridge crossing the Delaware River near Bridesburg, lighter No. 14 was taken out of the tow by the tug "Hainesport," belonging to the Hainesport Mining and Transportation Company, leaving lighter No. 17 astern of No. 20 and the "Allegheny" astern of No. 17. The tug "Emily Marie" with the tow thus made up continued down the Delaware River, reaching the Pennsylvania Railroad bridge crossing the Delaware River as aforesaid about 7 P. M., it being dark, in the meantime the lighters in the tow having put up their usual and customary lights, which lights were put up as soon as it became dark. The tug and tow proceeded slowly, making but little headway, owing to the capacity of the tug and the size

Connection to Mount Holly

Saml C. Bougher (Centerton)



Samuel Miller (Samuel Miller School)

Wilson

Willie Paxson

Minerva

Education is the enrichment of the individual, 1927

Journal of the Presbyterian Historical Society (1901-1930). Vol. 12, No. 7

THE SAMUEL MILLER SCHOOL AT MOUNT HOLLY, N. J.*

BY NORMAN W. HARKER, ESQ.

The Samuel Miller School is the accomplishment of a task, the furtherance of an idea, and the recognition of a man. Mr. Hart has told you fully of the accomplishment of the task which the growth of the school population of Mount Holly put upon your Board of Education. With the conviction that what was right would in the end prevail, and with some perseverance, the task today stands accomplished. It remains for me to tell you of the idea and of the man: indeed a privilege, for the two most interesting, vital and dynamic things in the world are ideas and men.

The idea is education. It needs no argument nor plea in this community. A town which has given birth or shelter to such educators as John Woolman, John Brainerd, Samuel Aaron, Dr. Samuel Miller, William Collom Cook, Alexander Forbes, Dr. Francis Newton Thorpe, and Dr. James S. Dunham, needs no apostle to arise and champion education. This new building will further that idea and be an equipment for the instruction of future generations in Mount Holly, the potentialities of which can be realized only as the years advance.

If education is worth having in Mount Holly, it is always worth making adequate provision for in this town, the tax rate to the contrary notwithstanding. This seems like a strange statement but it brings me to a phase of this idea of education which I wish to touch upon briefly. Education pays in dollars and cents. It is an old warning that if you hold a penny too

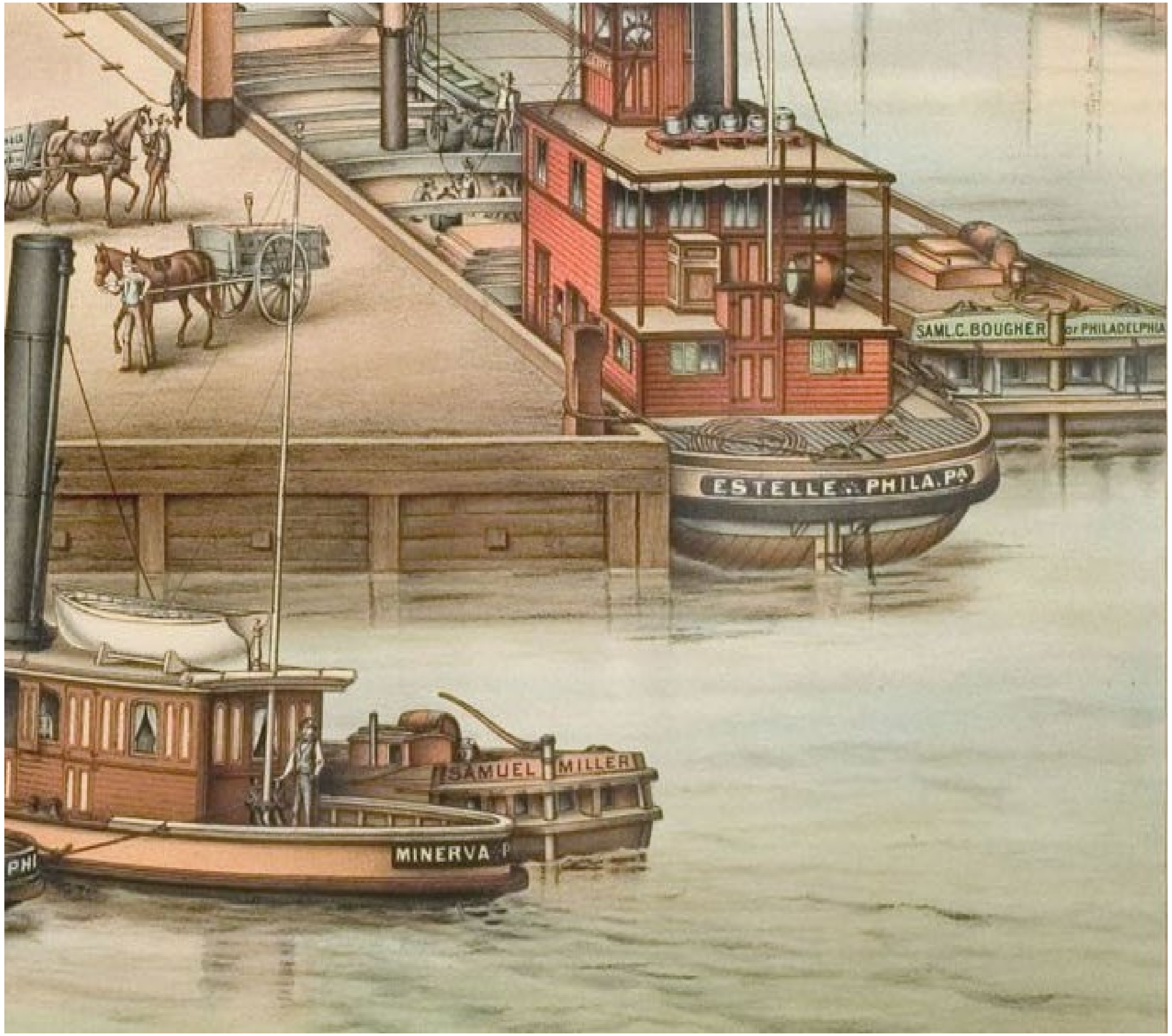
of a valuation which must be counted in six figures. Again, in this day when Mount Holly must bid for its fair share of an increase in desirable residential population from the opening of the Delaware River Bridge, we are able to say to the prospective resident, " We have modern and adequate school facilities for your children," while without this building we were compelled to admit that school facilities were very inadequate. There is no better advertisement for a town than proper school equipment and no worse advertisement than poor and inadequate school facilities. A new school brings growth and development. This new building makes Mount Holly a better town to live in.

Education is also an enrichment of the individual. I will


October - Sunset
Cast Away Island

Barge *Samuel Miller* tied off Tug-Boat *Minerva*

Dr. Samuel Miller was one of the eleven children of the eminent Rev. Samuel Miller, D.D., LL.D., the second Professor in the Theological Seminary at Princeton. The son Samuel Miller was born in Princeton, January 23, 1816, and graduated from the College of New Jersey, in the class of 1833, at the age of seventeen. He served as a tutor in the College in 1835-36. Subsequently he studied law, and practiced at the bar for a short time, but feeling that he was called to a higher duty, he took a course in the Theological Seminary at Princeton, and in October, 1844, was ordained an Evangelist by the Presbytery of New Brunswick. He served the little body of Mount Holly Presbyterians as " stated supply " when he took up his residence at Mount Holly in 1845, and became their regualr pastor in 1850. In 1845, he established the West Jersey Collegiate Institute, filling the position of Principal for the twelve years of its existence. After the school was discontinued in 1857, Dr. Miller devoted his whole time to pastoral duties. In addition to devoted service to his Mount Holly congregation, he served the little church at Columbus, as " stated supply," for twenty years ('45 to '65) and until the congregation had grown strong enough to support a regular pastor. For some four years he also supplied Tuckerton and Bass River, making the journey from Mount Holly, forty to fifty miles, through the pines and sand, on horseback, in winter and summer, in fair weather and in storm, ambitious only to further his Master's cause and to serve his fellowmen. From 1865 to 1873 he gave most of his time to the Mount Holly Church, but extended his labors outside as opportunity pre-



Cast Away Island - Bones of old Sand Barge

Libellant's Statement of Facts.

The iron steamship *Travancore* of 1,149 tons registered burden was lying at Point Breeze on the Schuylkill River, February 19, 1889, receiving a cargo of case oil. She was properly moored with her port side against the wharf and bow down stream. By about two o'clock in the afternoon she had received upwards of 53,000 cases of oil, her entire cargo with the exception of some 250 cases, which were then being rapidly loaded. Her pilot had been engaged, was actually on board, and intended taking the steamer down the river as soon as the cargo was all in.

2.

The large American ship *Manuel Llaguno* was towed up the Schuylkill that afternoon by the steam tugs *Newcastle* and *Mary Louise* for the purpose of receiving a cargo of oil at the same wharf as that at which the *Travancore* was lying. The *Newcastle* was lashed upon the starboard quarter of the *Llaguno*, and the *Louise* was towing ahead by a hawser of about twenty or thirty fathoms length and leading out of the ship's starboard bow chock. The master of the *Newcastle* and the master of the *Llaguno* were aboard the latter and the mate was on the forecastle in charge of the tow line. A crew of eight stevedores were also aboard the *Llaguno* under a boss, assisting in shifting her, one of whom was at her wheel, and others on her forecastle under the orders of the mate. As the *Travancore* was not entirely loaded, the master of the *Newcastle* was directed by the Harbor Master employed by the Standard Oil Company

Tug-Boat Mary Louise

1891

It is known from this lawsuit tugboats and tows operated differently on the Rancocas as compared to sand barge tow on the open tidal waters of the Delaware River.

Shorter tow lines on the Rancocas are attributed to the meandering course of Rancocas Creek tidewaters.

There are not many real-time photos of Rancocas Creek steam tugs and barges. Such vessels followed the patterns of 1870s'-1920's maritime tugboats and barges. Examples of English and Scottish Steam Barges are shown to provide a general overview of period steam barges.

Rancocas Creek Steam Tugs and Barges

Ref: Report to Congress 1880

DIAMOND P. BOAT LINE

Pier 45 N. Philadelphia, Pa.

HOWARD M. BOUGHER, Pres.

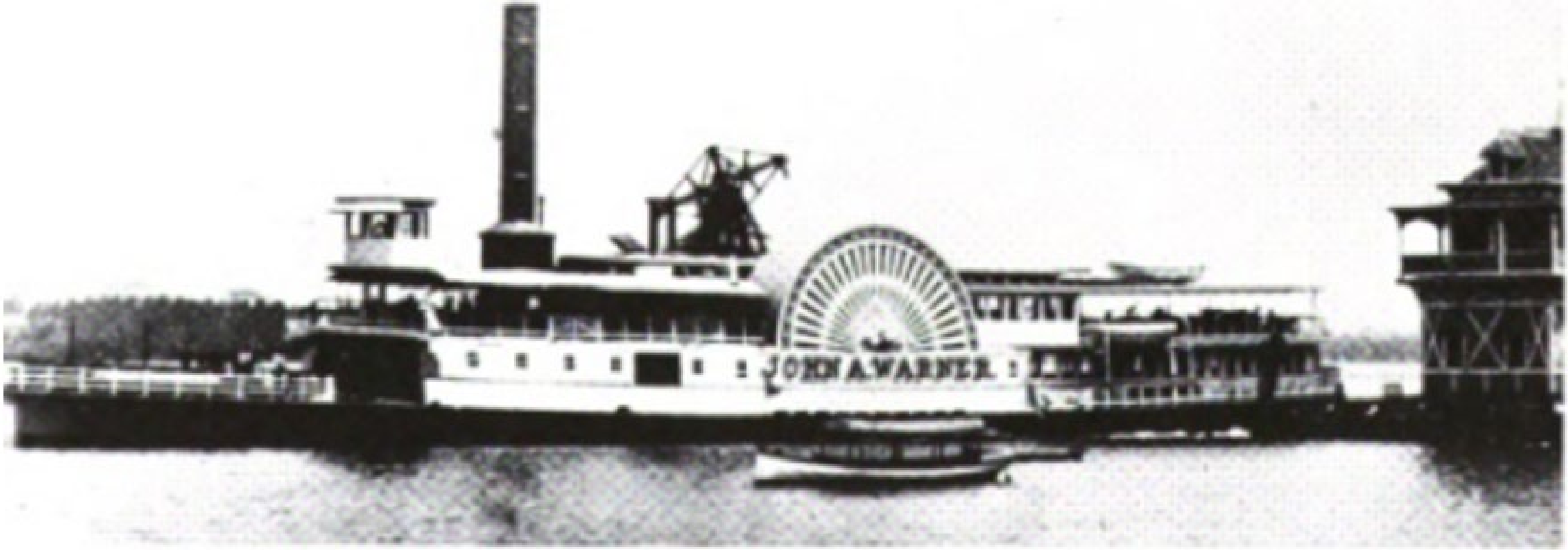
JAMES L. CRAWFORD, Marine Supt.

NAME	Date Built	Where Built	HULL					TONNAGE		ENGINE				BOILER				
			M.	Type	Length	B.	D.	Gr.	Net	Type	Cylinders	Str.	I.H.P.	No.	Type	Dia.	Length	W.P.
Samuel H. Hartman	1891	Wilmington, Del....	W	P.P....	130	23.5	9	245	131	C.....	........10, 18	16	200	1	R.T...	5.4	9.6	120
Maderia..........	1892	Philadelphia, Pa....	W	Tug....	64.5	16.5	8	52	25	S.....	16	16	200	1	R.T...	6.9	12	110
Peerless..........	1892	Bordentown, N. J...	W	Tug....	55.2	15	6	34	17	S.....	14	14	125	1	R.T...	6	11	120
Ethel............	1902	Wilmington, Del....	W	P.P....	145	28	8	266	161	C.....	........10, 18	16	200	1	R.T...	7	10	125

1925 Report of the Joint Committee on Molding Sand Research
American Foundryman Association

Lab. No.: 524.
Location: Near Hainesport, Burlington County.
Producer: J. W. Paxson Co., operator.
Formation: Cape May (Pleistocene).
Grade: Lumberton fine molding sand.
Notes: Transportation: By rail to Camden, etc. Carts haul from pit about ½ mile to loading platform. Dimensions: About 50 acres said to be yet uncut. Structure: Simple horizontal layers of soil and sand; show practically no stratification lines. Overburden: From 2 to 3½ feet of pale yellowish unbonded sand carrying some glauconite grains, above which there is about 6 inches of top soil with organic material. Working face: About 2 to 3 feet of fine brownish yellow bonded sand, with numerous glauconite grains. Not notably different from other material dug in this Lumberton region. See Sample 519. Downward operations limited by a sharp unbonded sand. Method of working: By hand shovelling as described in connection with No. 519. Carts haul material about ½ mile to loading platform on siding. "Sometimes the output is from 2 to 4 railroad cars per day." Method of taking sample: Several slices down the front of the molding sand layer, mixed and sample taken from the mixture.

Cast Away Island



The 527-ton *John A. Warner* was built of iron by Harlan & Hollingsworth in 1856 for Jonathan Cone and others. She ran to Sea Breeze, N. J., after the construction of the Warner Hotel at that place in 1877. Later, renamed *Burlington*, she ran between Philadelphia and Trenton. She hit a rock and foundered in 1911. (Courtesy of N. R. Ewan.)

State of Pennsylvania Appellate Court Records: 1926

The main facts are clearly stated in the opinion of the lower court (Record, p. 84):

"The libellant was the insurer of a cargo of coal amounting to 558 tons that was taken on board the barge 'Listie,' to be carried in tow from the Port Richmond coal piers, on the Delaware River, to a wharf on the river Schuylkill. The barge was a hinged, or two-section vessel, each section about 78 feet long, 18 feet beam and 8 feet 4 inches from the water's edge to the top of the covering board. The capacity of each was from 270 to 278 tons, and on the voyage in question the forward section or box was carrying 269 tons and the after section 289 tons. The voyage began about half-past six o'clock on the morning of August 1, 1908, and proceeded without event for about three miles down the Delaware River, the

Indicative of the size and scale

of

Rancocas Creek

Sand and Coal Barges that would

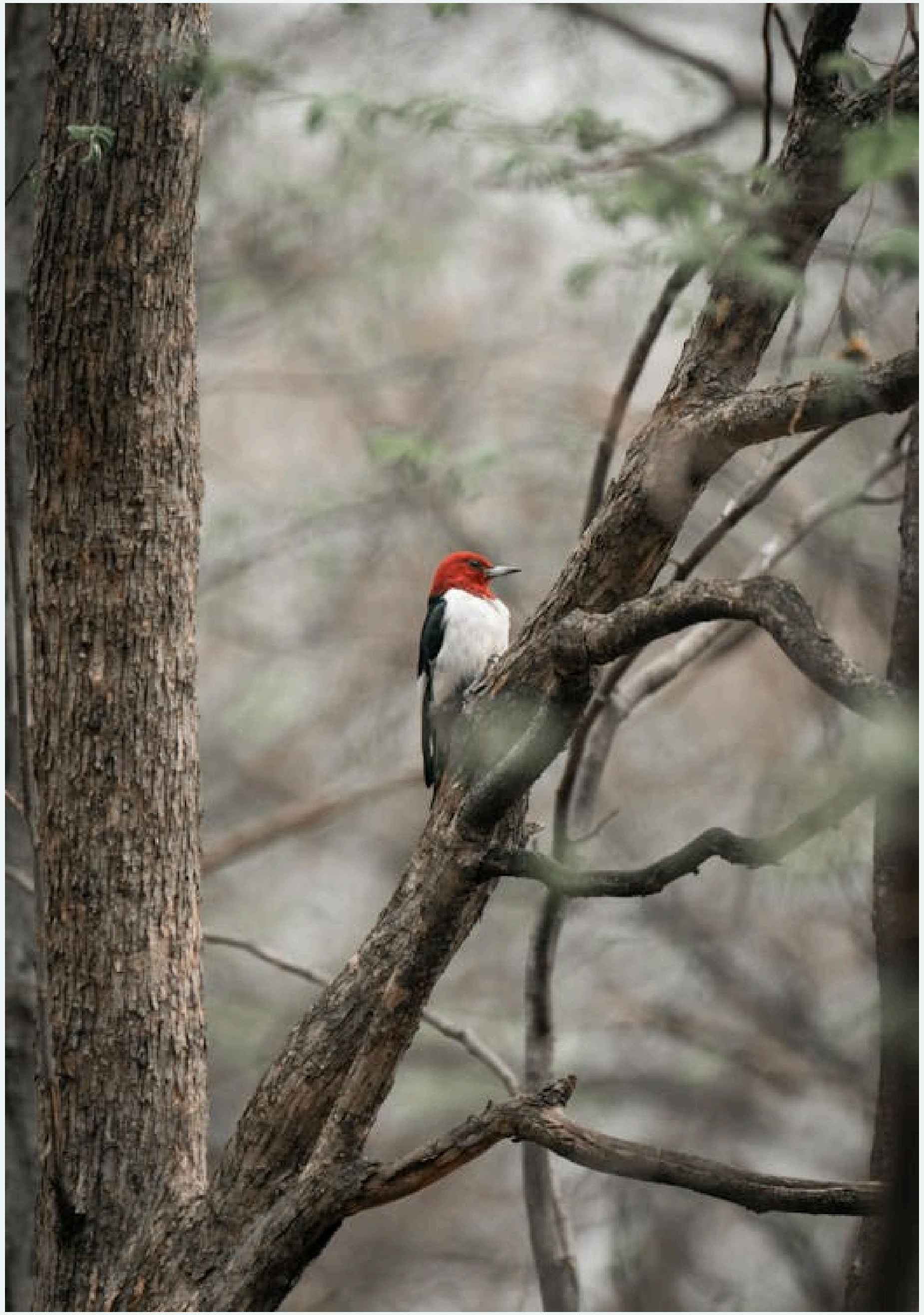
"tie-off"* at

Cast Away Island

* Tied off – tugboat/barge is secured by ropes or chains to creek or river bank.

Example of barge shipping molding sand "tie-off" at South Jersey Tidewater Landing

B. *Shipping molding sand by barge from Dorchester, Cumberland County.*



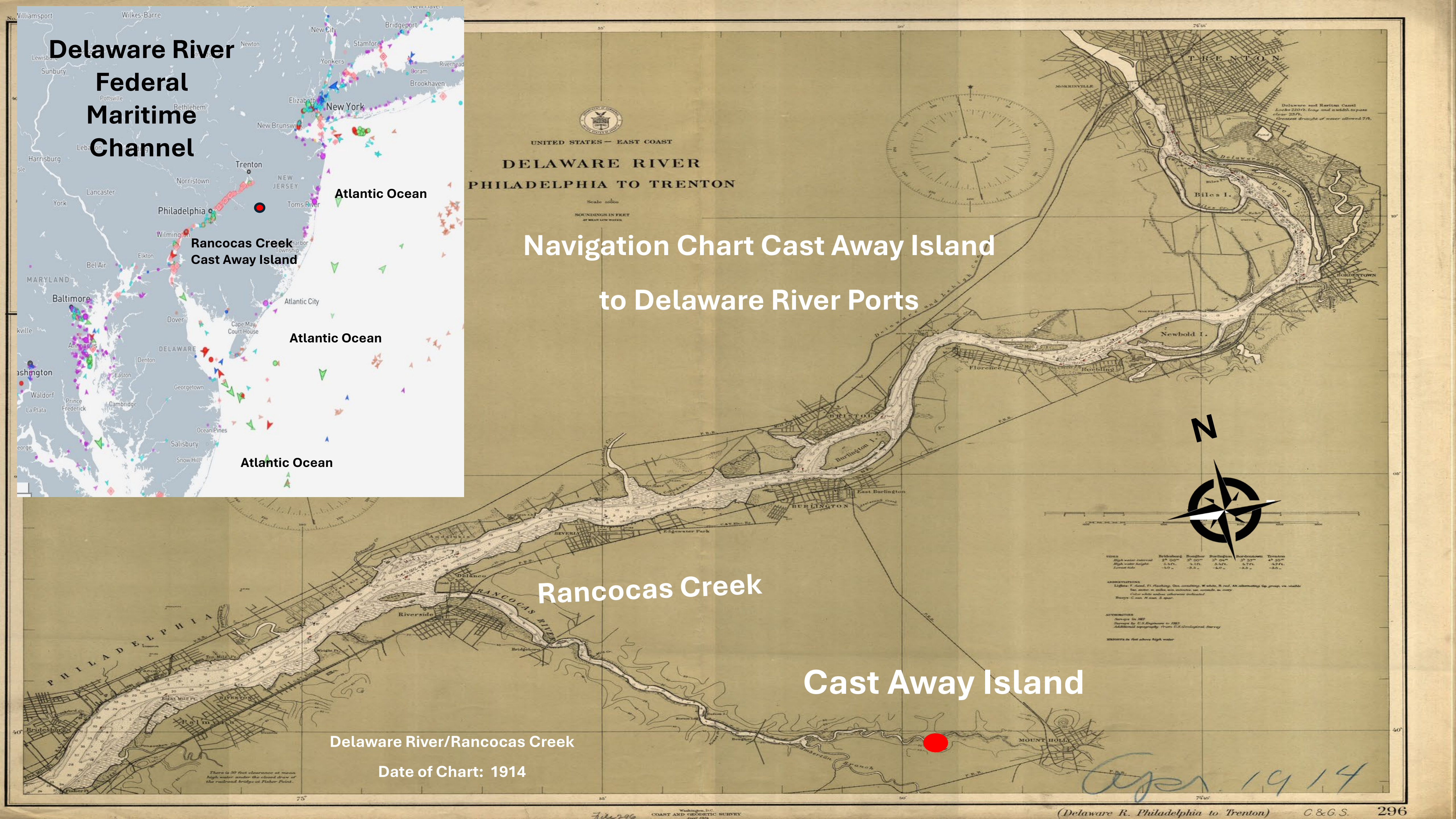
Cast Away Island

Red-Headed Woodpecker

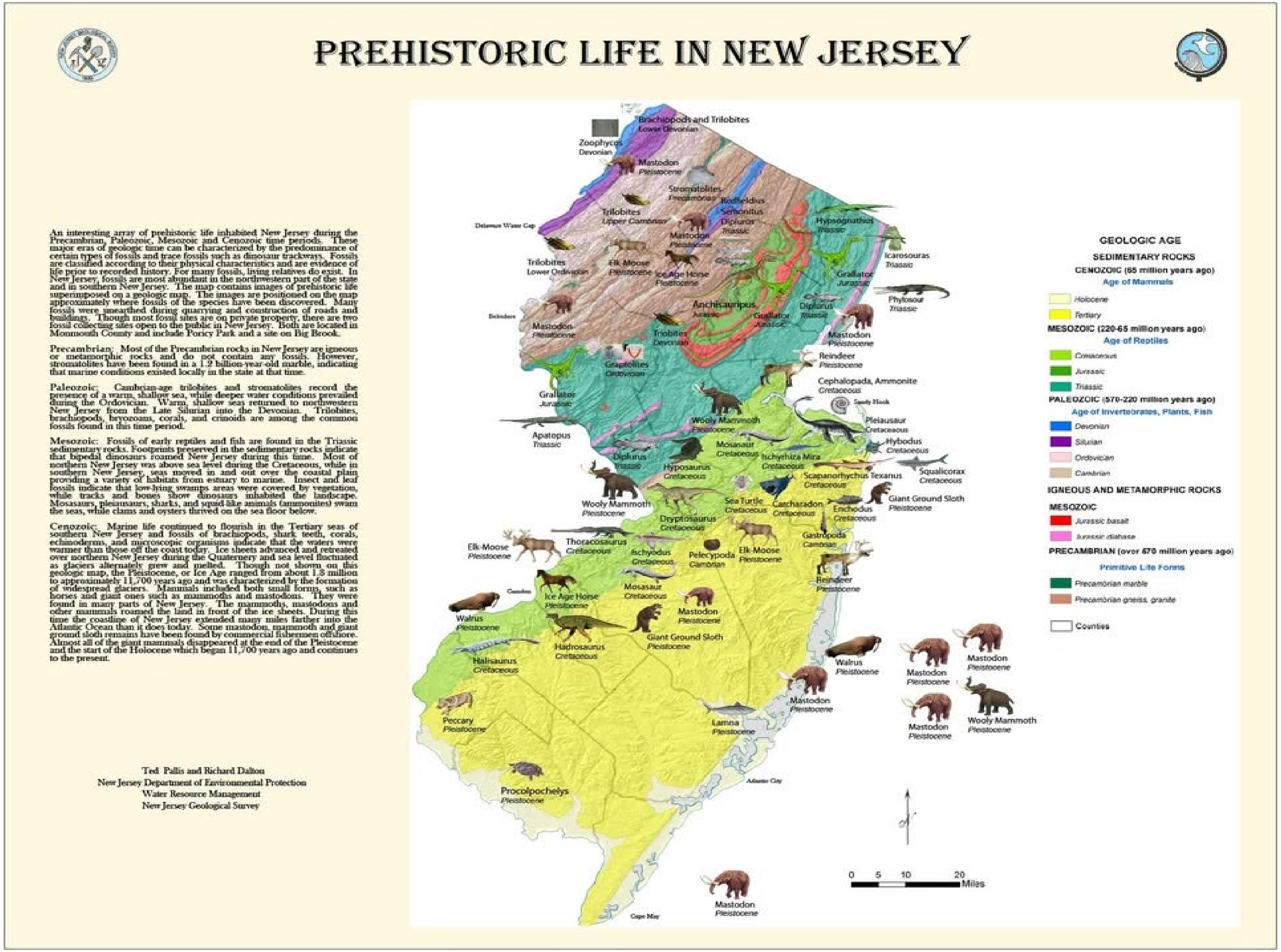
Rare in the NE USA

Red-headed woodpecker is a threatened species in New Jersey

Cast Away North Branch Channel



Delaware River Federal Maritime Channel
Atlantic Ocean
Rancocas Creek
Cast Away Island
Atlantic Ocean
Atlantic Ocean
Trenton
Philadelphia
New York
Baltimore
UNITED STATES — EAST COAST
DELAWARE RIVER
PHILADELPHIA TO TRENTON
SOUNDINGS IN FEET
Navigation Chart Cast Away Island
to Delaware River Ports
TRENTON
Biles I.
Newbold I.
Florence
BRISTOL
Burlington I.
BURLINGTON
East Burlington
BEVERLY
Edgewater Park
Delanco
RANCOCAS RIVER
Riverside
PHILADELPHIA
N
Rancocas Creek
Cast Away Island
MOUNT HOLLY
Delaware River/Rancocas Creek
Date of Chart: 1914
Apr. 1914
(Delaware R. Philadelphia to Trenton)
C.&G.S.
296



Simple Explanation

Fossils turned into Marl and Sand.

Marl and Sand Exploited by Man

Industrialization transformed the area around Cast Away Island from farming to industrial mining of clay and sand. Navigation and commerce are the foundation of Hainesport's, Lumberton and other Rancocas Creek Communities heritage

❤ Dinosaurs, Mosasaurs and Ocean Lizards

Cretaceous Period of the Mesozoic Era

Mosasaurus Teeth
Collected Lumberton, NJ
December 8, 1877
Academy of Natural Sciences

144 million years ago - Early Cretaceous Period

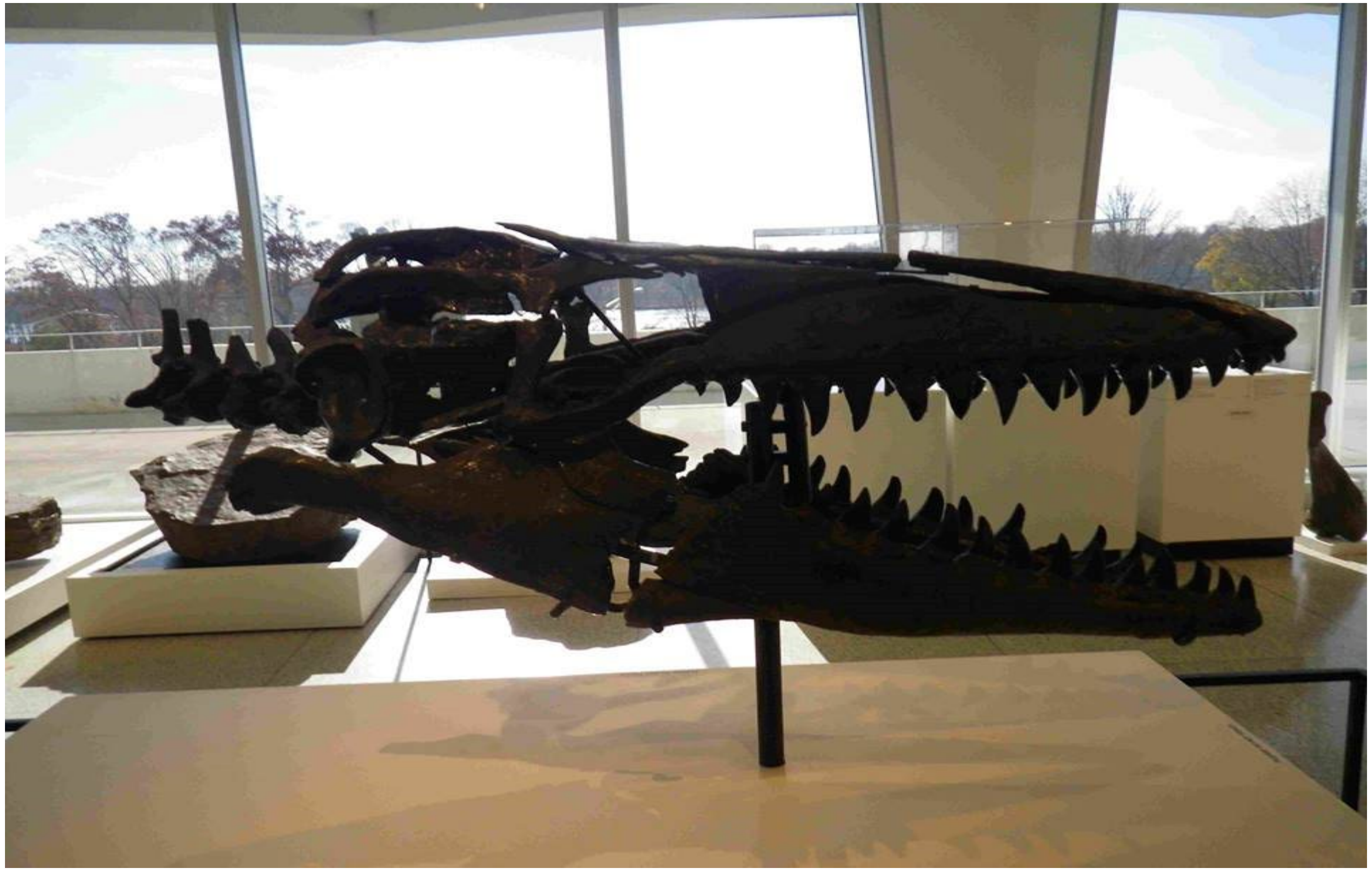
Rancocas Creek Back in the Day

Their Past Speaks to the Present and Our Future

Beggar Ticks Rioting

Rancocas Creek Mosasaurus

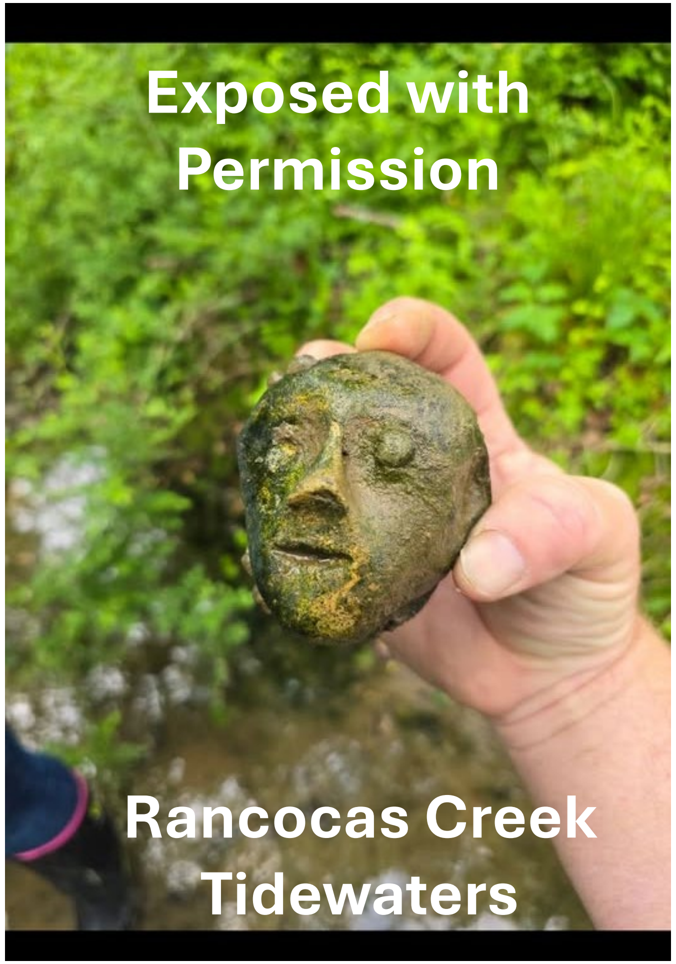
NJ State Museum



Private Collection

Rancocas Creek Marl

Before navigation, colonization, and industrialization, came Native Americans



Native Americans Lived off the Natural Resources in and around Cast Away Island.

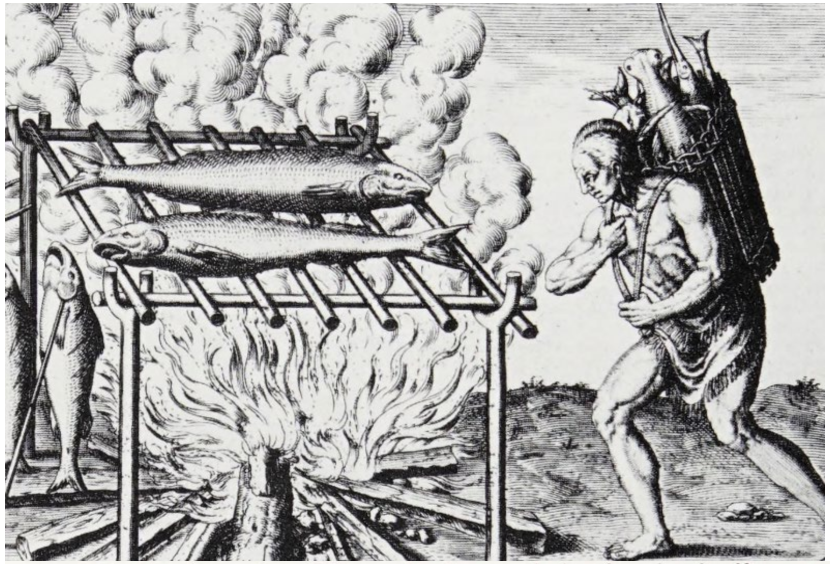
Fishing, fishing weirs, hunting, trapping, shell fish gathering etc....

Ref: Indian Fishing, early methods on the Northwest Coast, 1977 (one of the only references on Native American fishing weirs)

Courtesy R.F. Early Rancocas Creek Watershed Argillite Knife. Argillite easily worked into tools and weapons. ca 6,000 – 8,000 years old

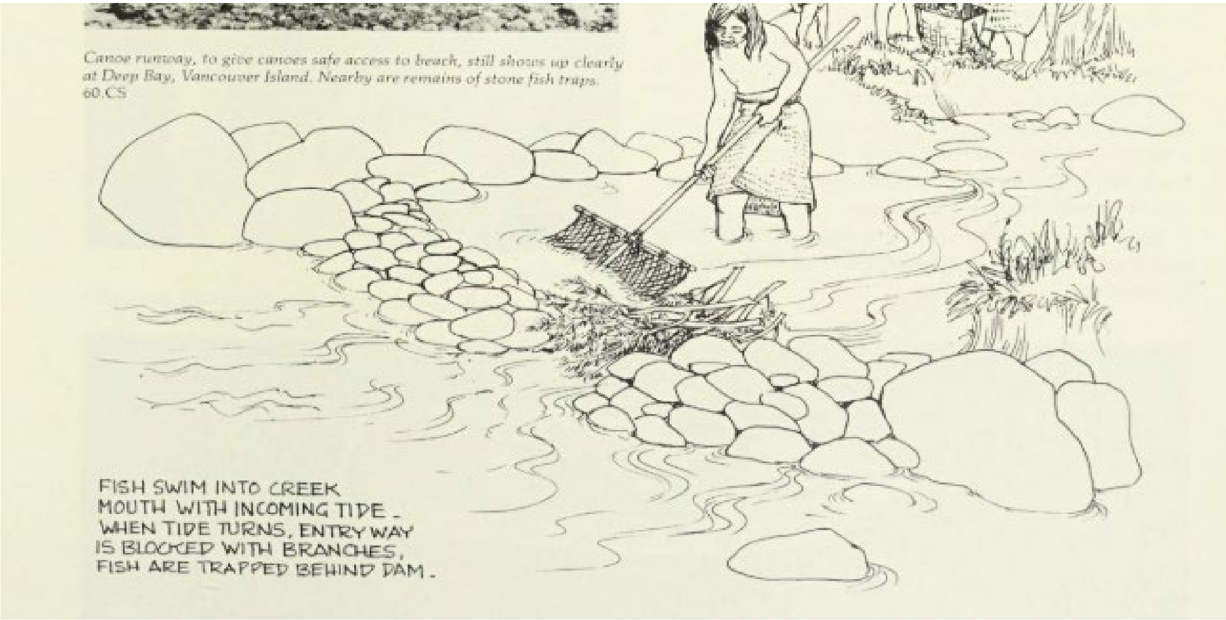
Courtesy M.A. Notched biface tool or weapon. Most likely a variety of cryptocrystalline chert or chalcedony in the tidal regime ca 6,000 – 8,000 years old

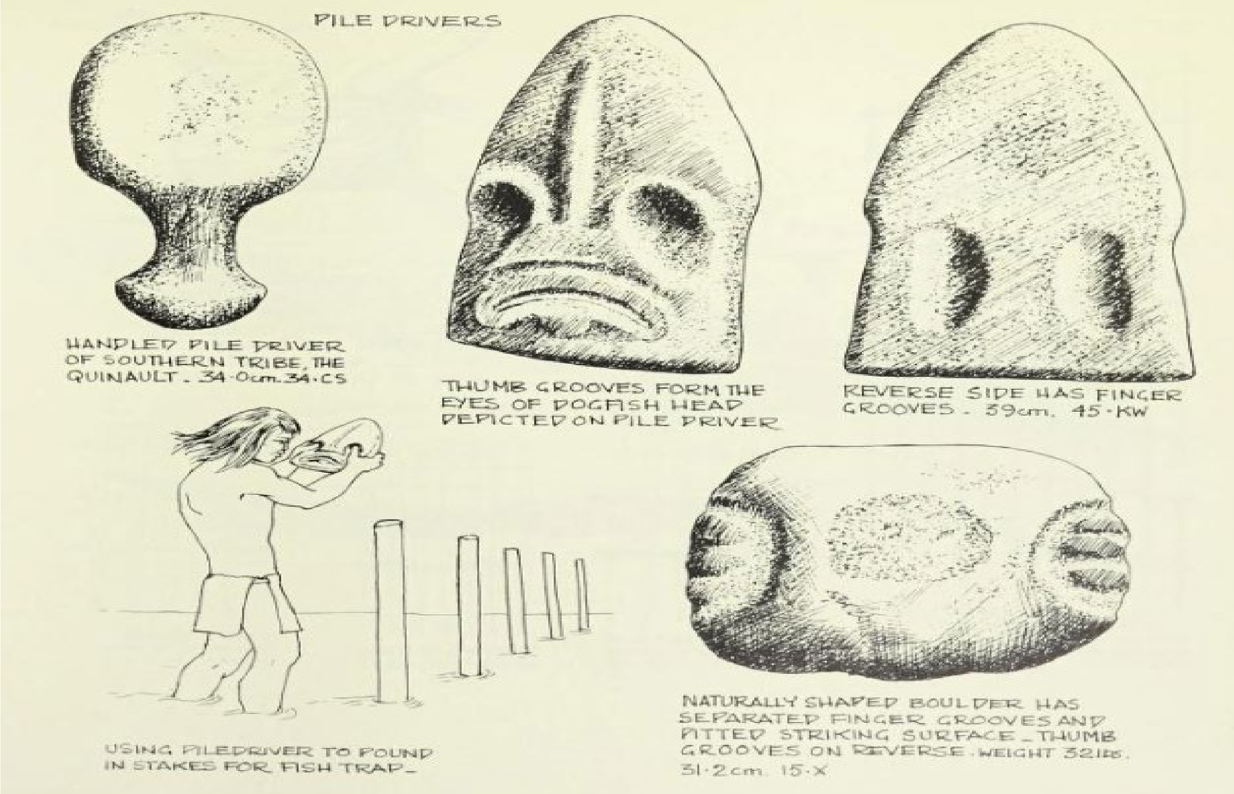
Note different fish weirs, methods of spearing fish at low tide shallows, variety of tidewater wildlife, capacity of canowes

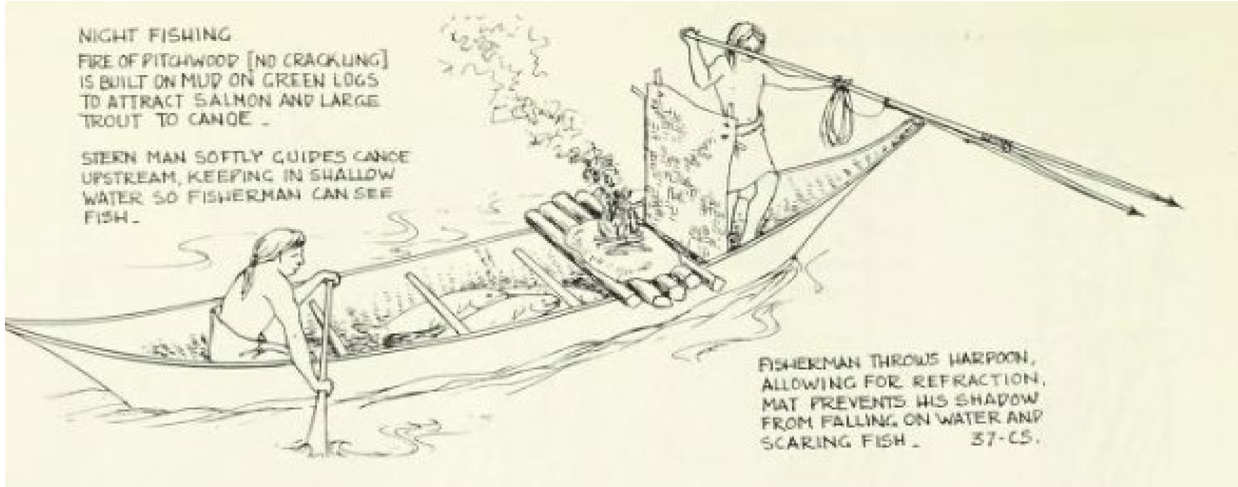


ern North America. Though the pack-basket is similar to the type known throughout eastern America, the wicker-work technique appears to be European rather than Indian. A gar and hammerhead shark can be made out among the fish in the basket.

Publishers engraving note: ...woman and one of the fish in the canoe may be identified as a gar, The creatures in the water are more numerous, and include string rays, a hammerhead shark, a loggerhead turtle, land crab, snake.

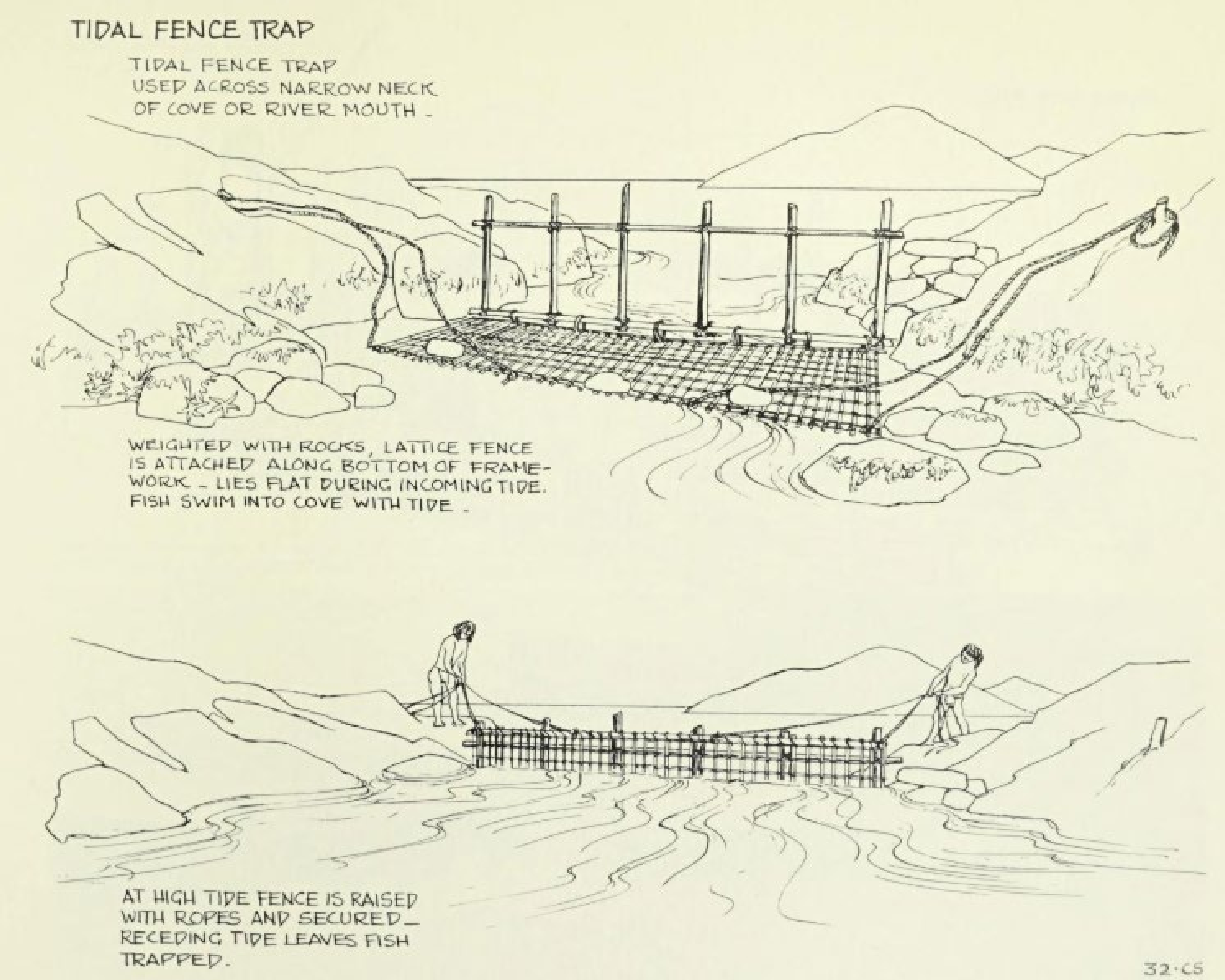


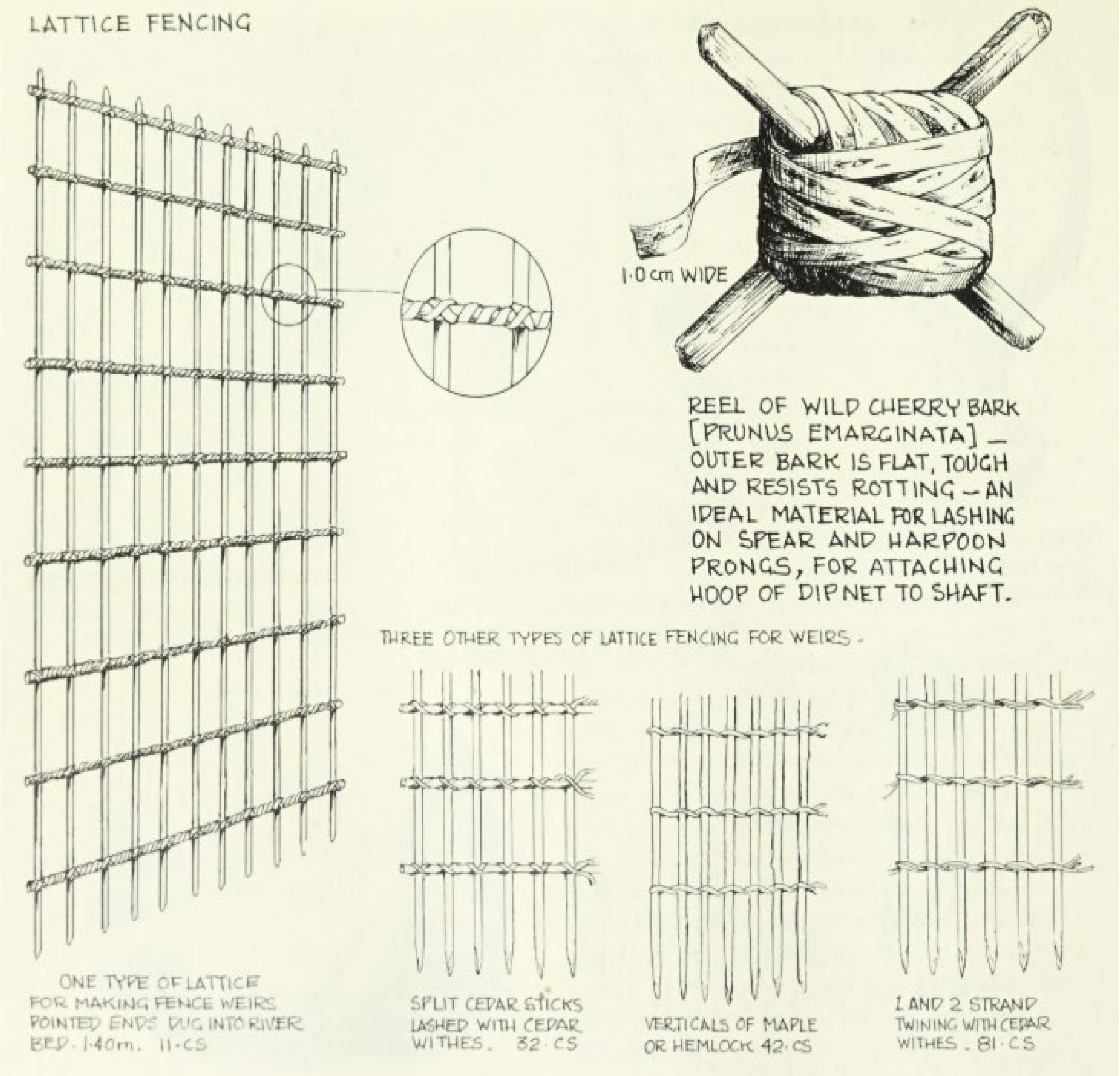


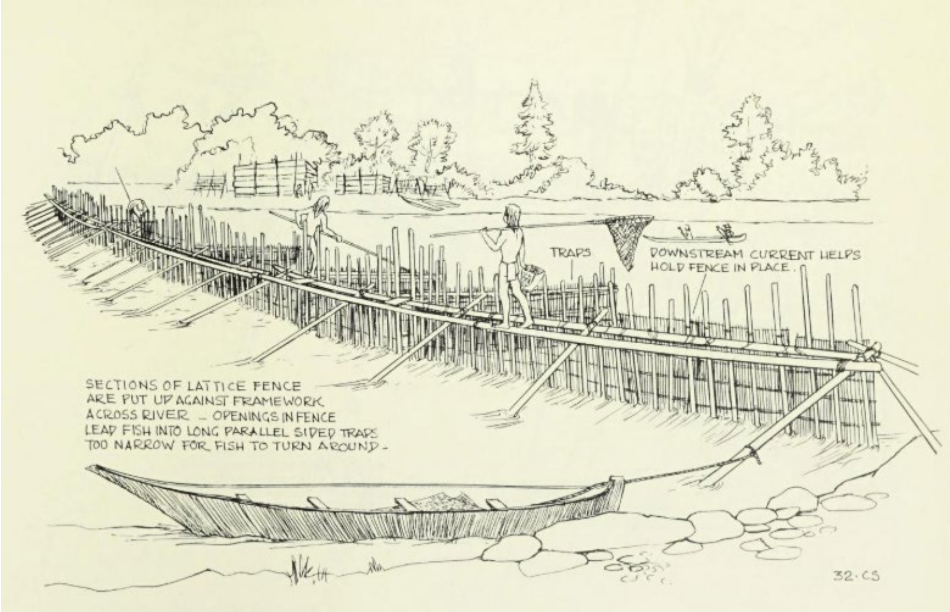


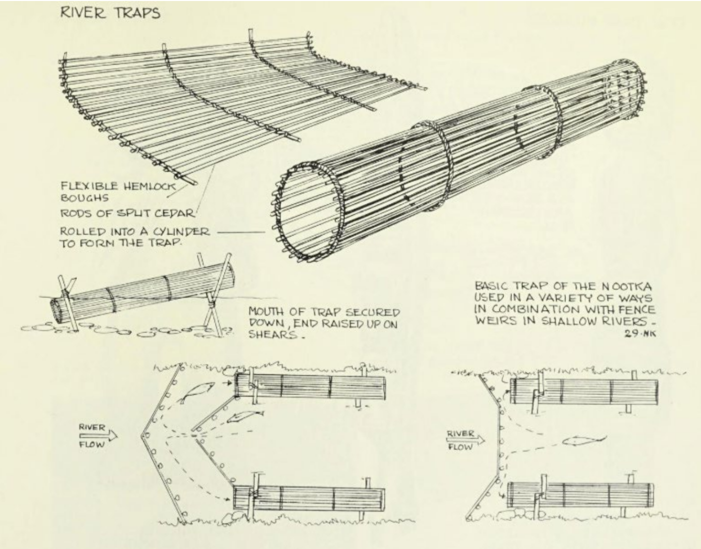
Native American Fish Weirs and Fish Traps

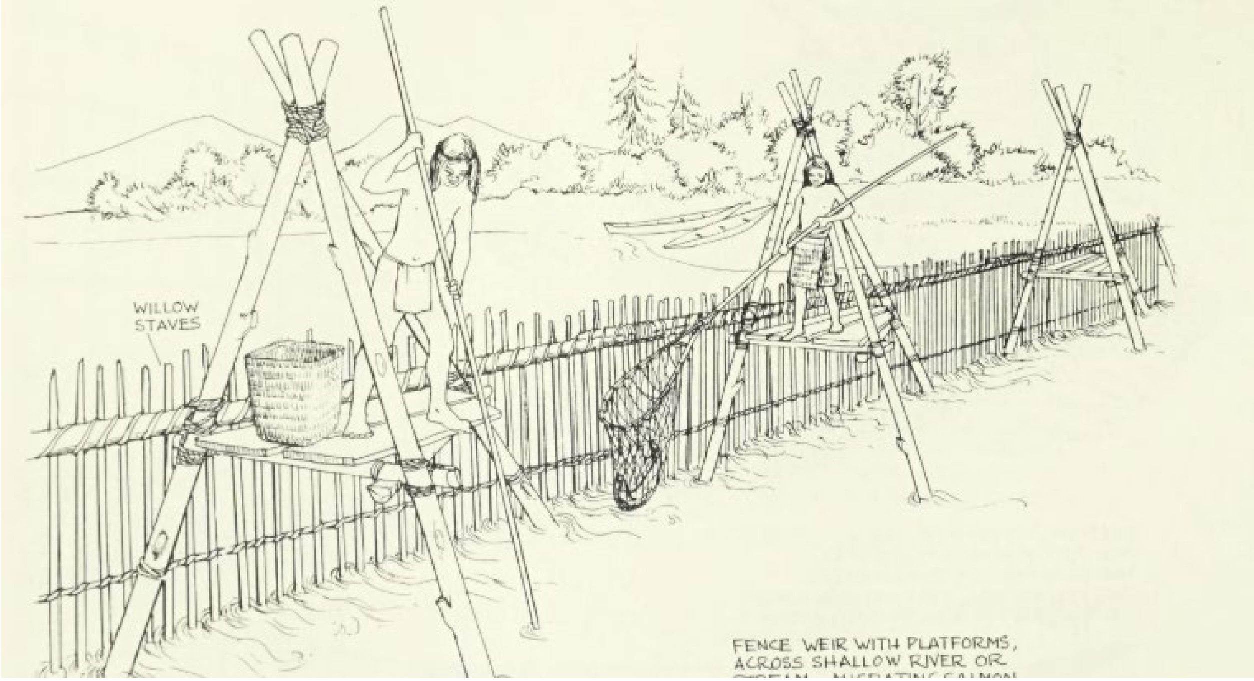
Variations in fishing weirs and fish traps depended on fish, location, type of waterway, building material available, background of tribes. Fishing weirs underline Native American's keen observations about the natural world. Fish drift shoreward on an incoming tide, and recede to deep water on the ebb tide (p. 99)



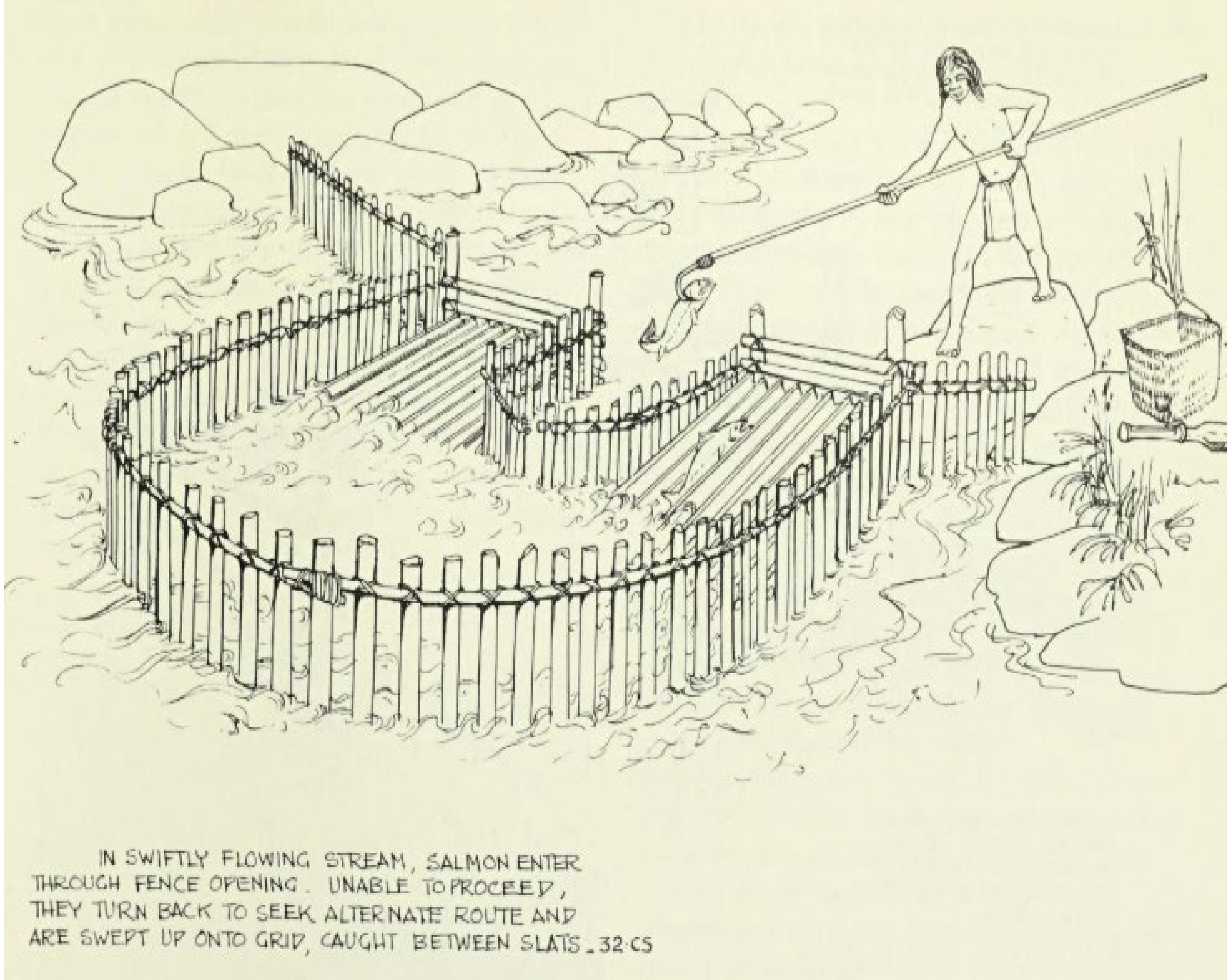


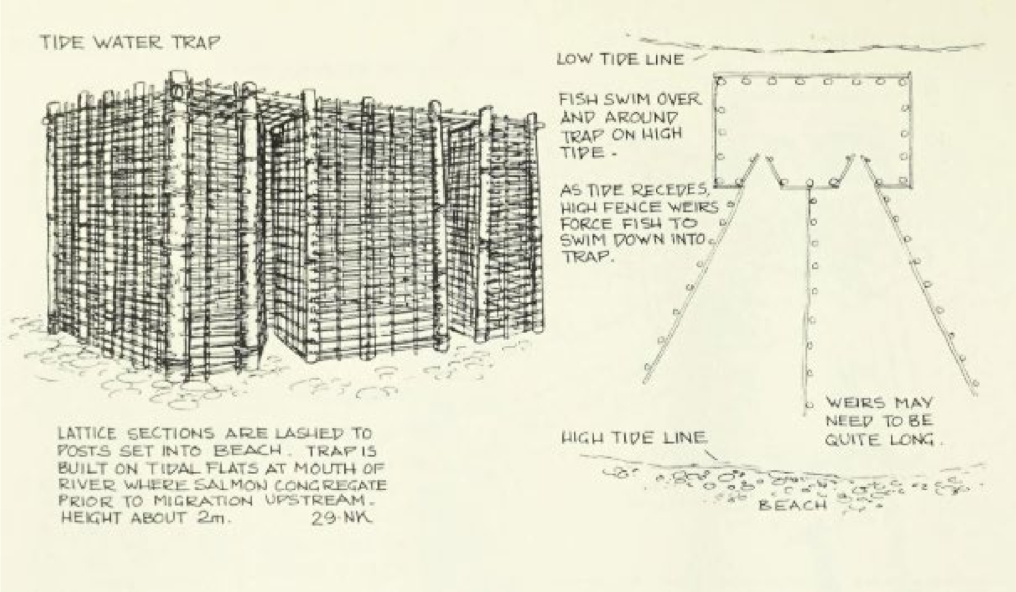


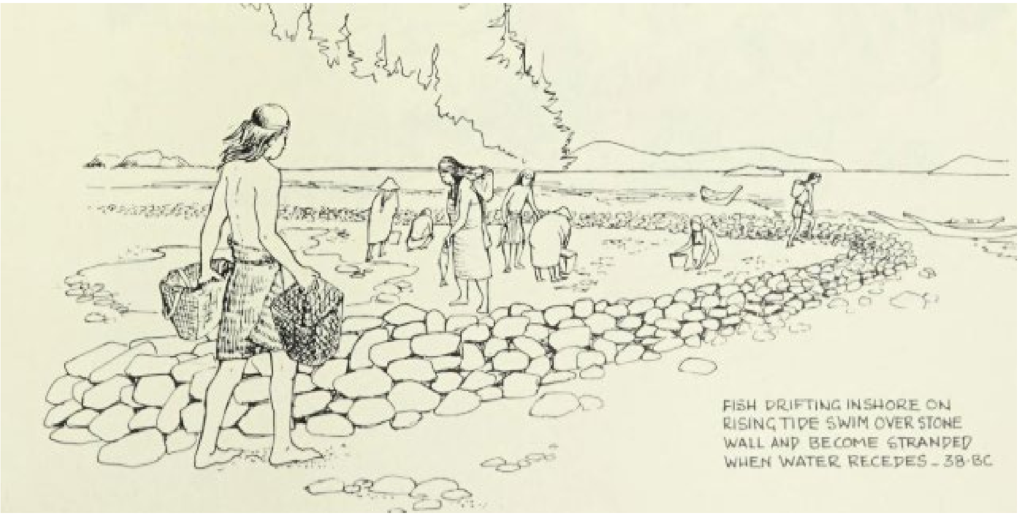




Native American Fish Weirs and Fish Traps

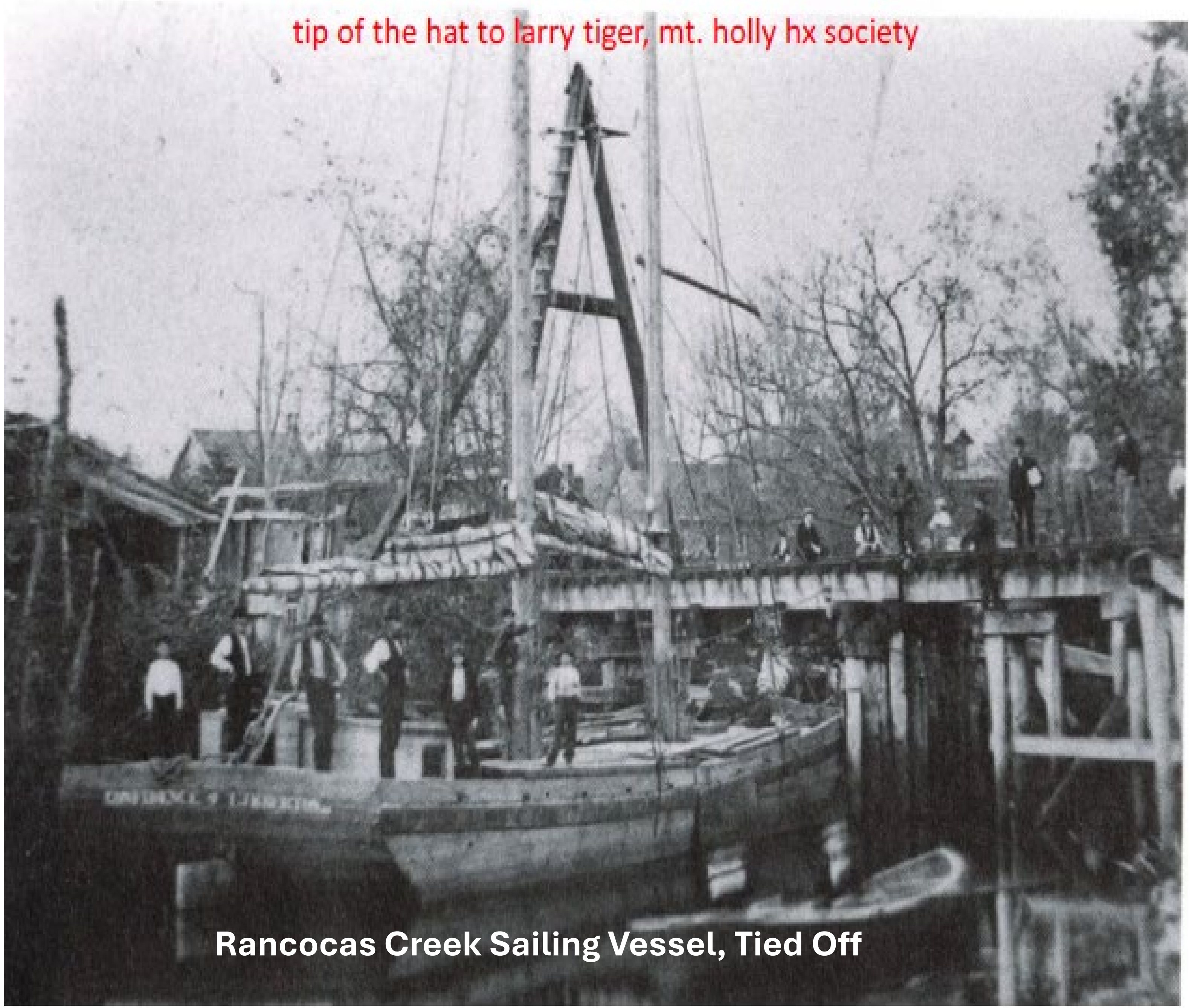






Native American Fish Weirs and Fish Traps


Cast Away Island



Rancocas Creek Sailing Vessel, Tied Off

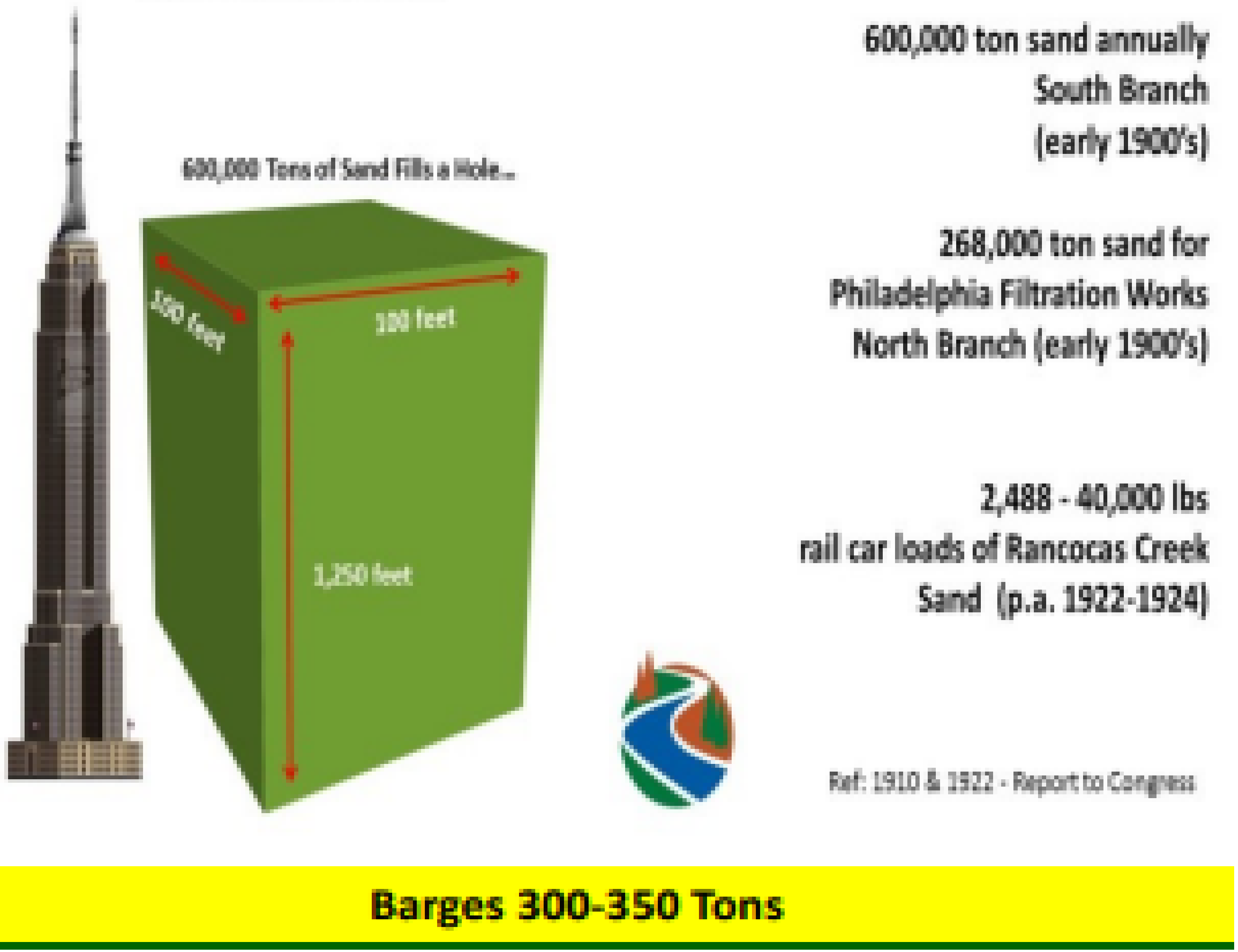
Section Four:

Where does the all the Rancocas Creek marl and sand go?

Maritime Cultural Landscape

Cast Away Island

Volume of Sand Mined from Hainesport (1910 & 1920)



600 barge movements per year (see statistics)

Daily Movements

2-3 barge and tugboat movements per day. Maybe as high as 4-6 barge and tug movements per day

----

These statistics are under-estimated on total movements from the Rancocas Creek, proper.

See National Archive files

This snap-shot does not factor in numerous vsl issues and tidal schedules

End-use markets for tug and barge Rancocas Creek marl and molding sand.

Local

New Jersey

- Agriculture/Foundries

Delaware River Ports

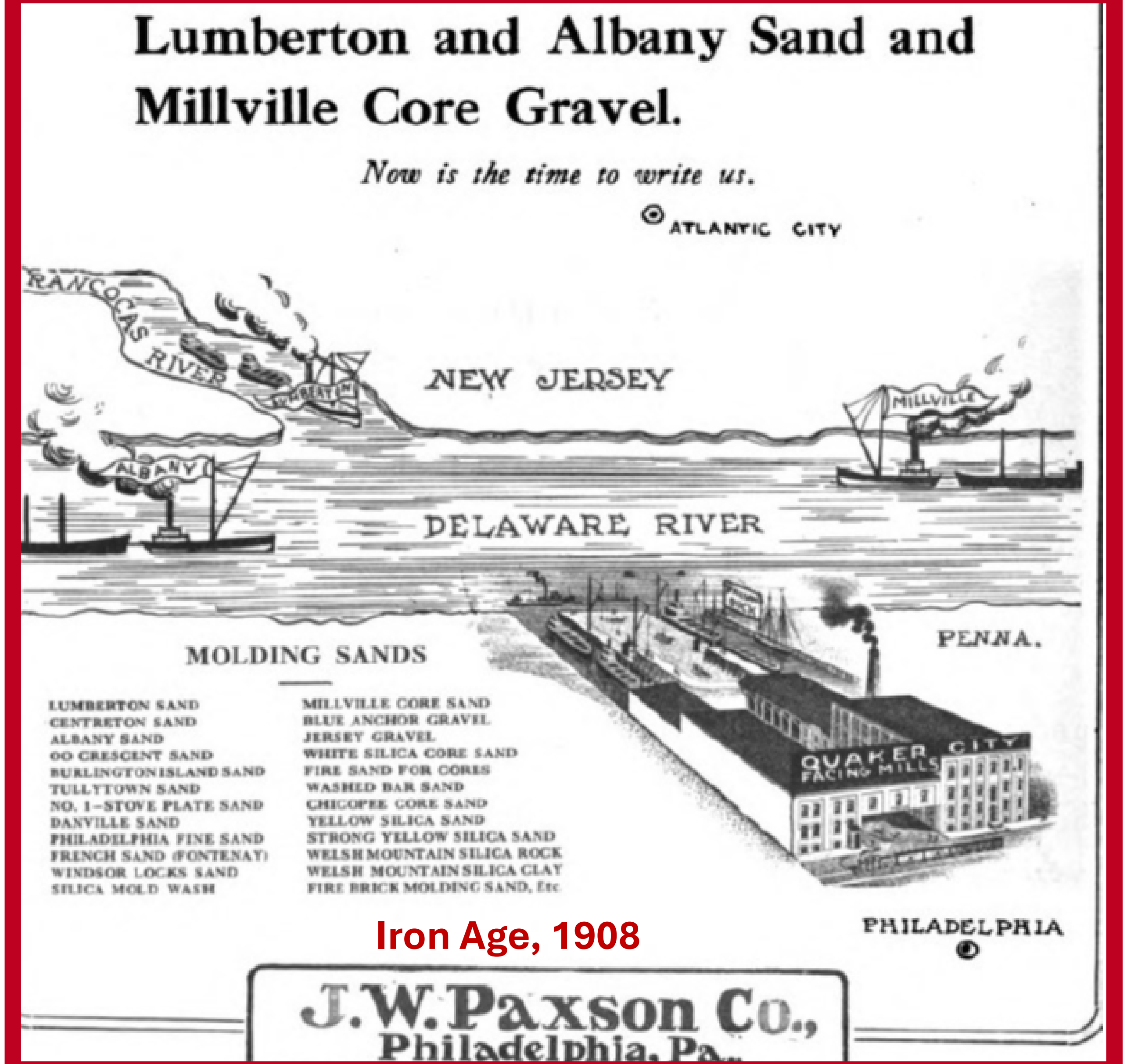
- Philadelphia/Camden
- Florence/Burlington

Port of Baltimore

- Foundries/Manufactures

Port of Albany

World Markets



Iron Age, 1908

Rancocas Creek (1915)
Hainesport Mining and Transport Co.

75 foot radius, 5 cubic yard grab bucket w manganese lip. 4,000 cy in a 10 hr day. Hoisting speed of 150 p/m. Cars loaded beneath receiving hopper than dumped into scows for delivery Phila and Camden Ports

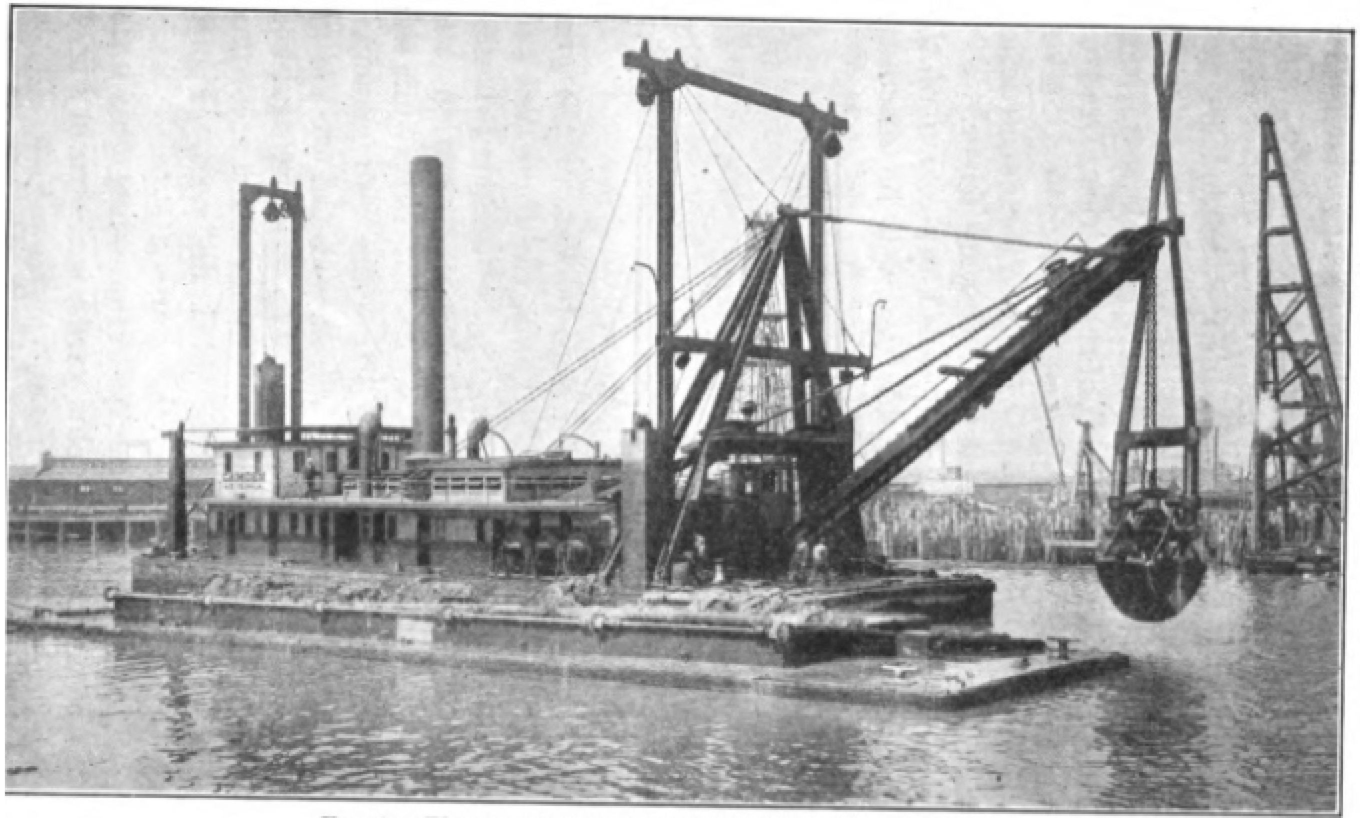


FIG. 1.—The Camden—American Dredging Co., Phila., Pa.


Photo by
ks337

16,000 tons of sand per day

Sand Docks for Loading Barges

Digging the Sand with a Steam Shovel

mobiling, with an occasional ride in a special train over the very rails over which he collected tickets for many years.

Farms around Hainsport that a few years ago were yielding their owners only a meagre living now are amassing fortunes for those wise enough to retain the titles to them. It is an easy matter for the sand to be scooped out by great steam shovels, and run through washeries to remove the decayed vegetable matter before being dumped into scows or railroad cars. It is not unusual for scores of these mines or diggings to ship 16,000 tons of sand in a day, and the mining is carried on by truly scientific methods, borings being made frequently in search of more valuable deposits underlying the surface sand. New diggings are being continually opened, but the great supply of valuable sand seems almost inexhaustible.

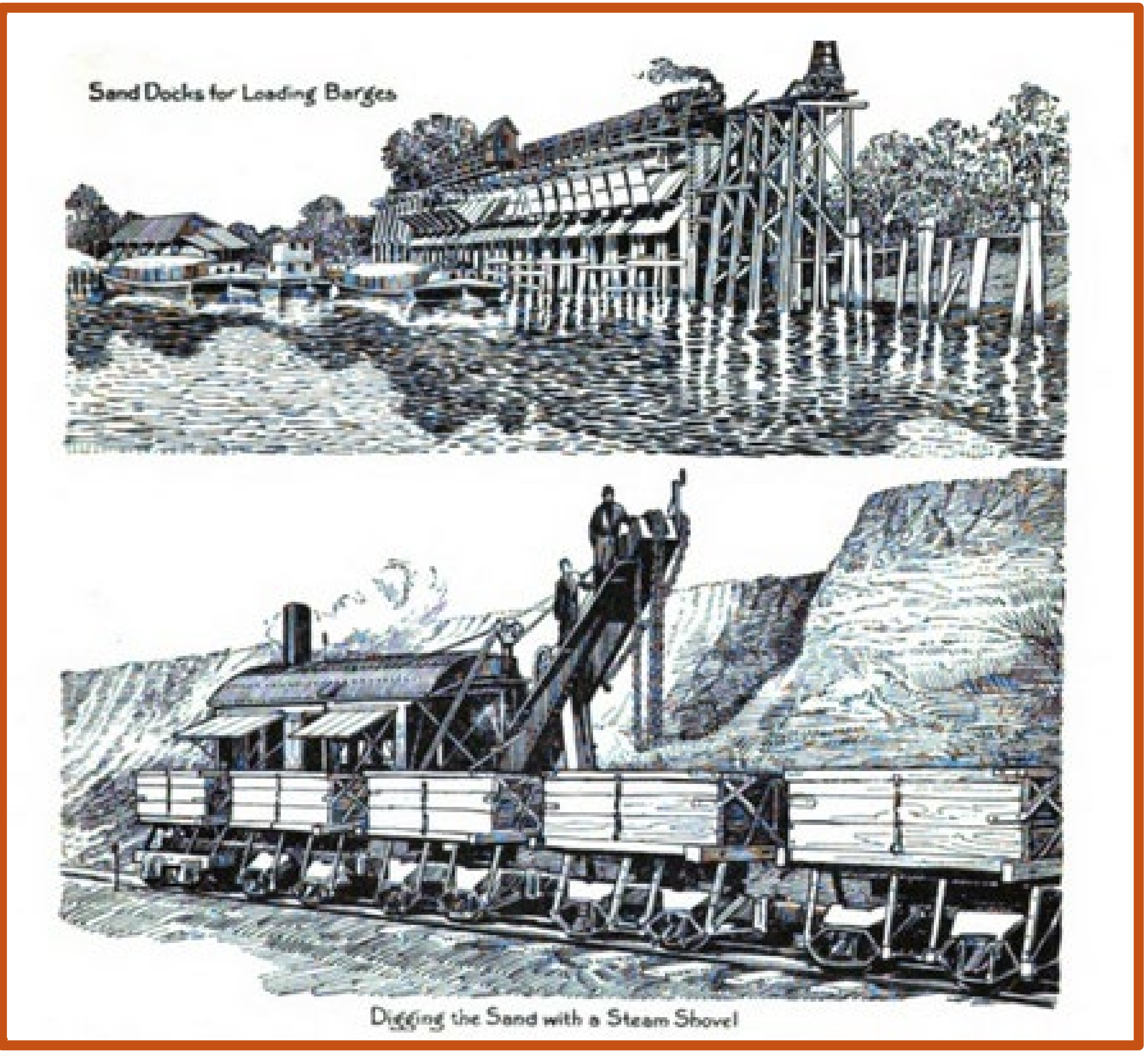
AMMUNITION SUPPLY SHIPS FOR NAVY

If the recommendation to be made by Rear-Admiral Mason, chief of the Bureau of Ordnance, is adopted the United States navy will have two ammunition supply ships, one for the Atlantic and the other for the Pacific. These ships would be virtually floating naval magazines. The necessity for such vessels was clearly shown in the recent cruise of the fleet. It was found difficult to get explosives to the ships through other transportation means than colliers and storeships, which was considered unsatisfactory.

Hainesport

November

1909



Sand dumped into scows and tugboats or rail cars

James Stokes, Centeron Sand Mine

Reference: P. Uhland Collection....Thanks and Obliged

Rancocas Creek Sand Dredge

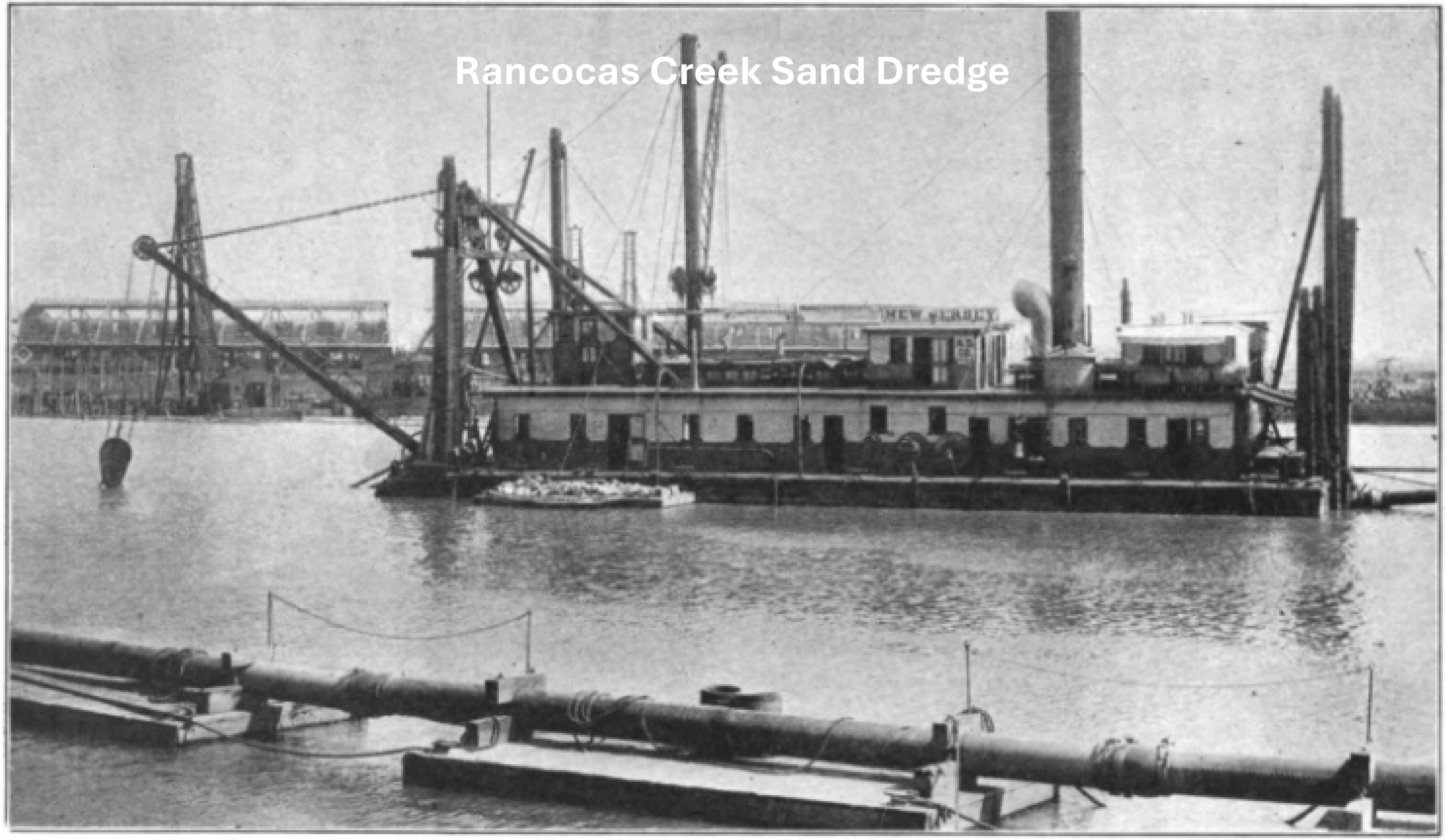
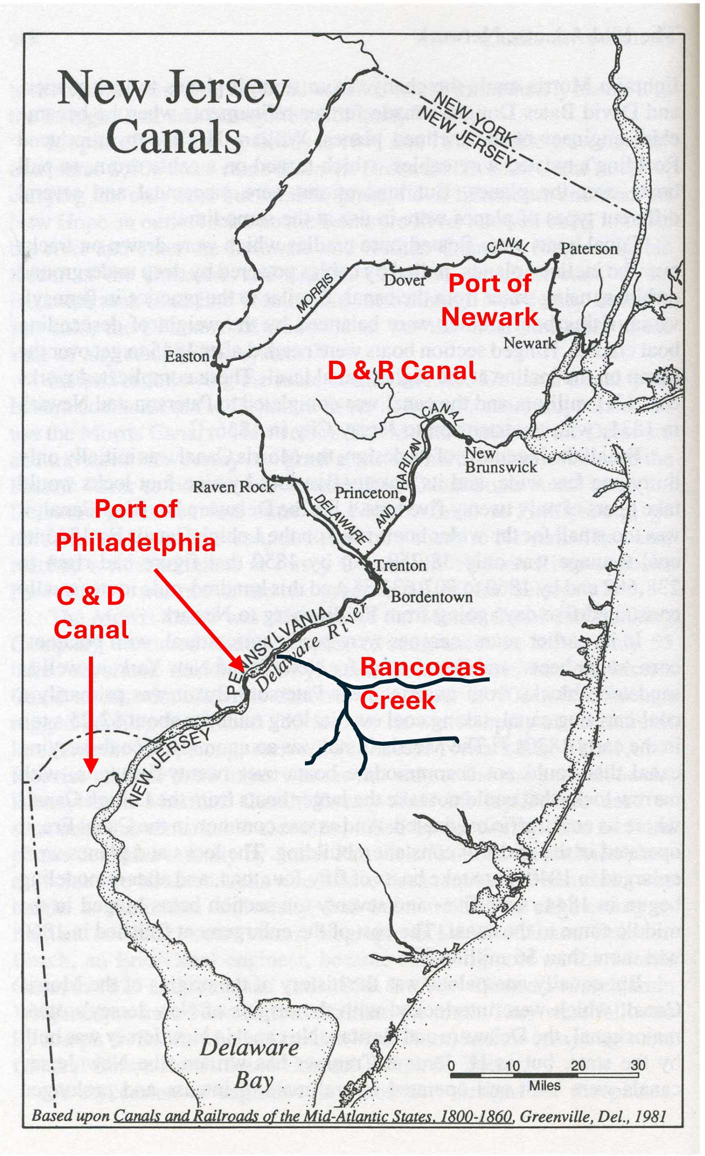
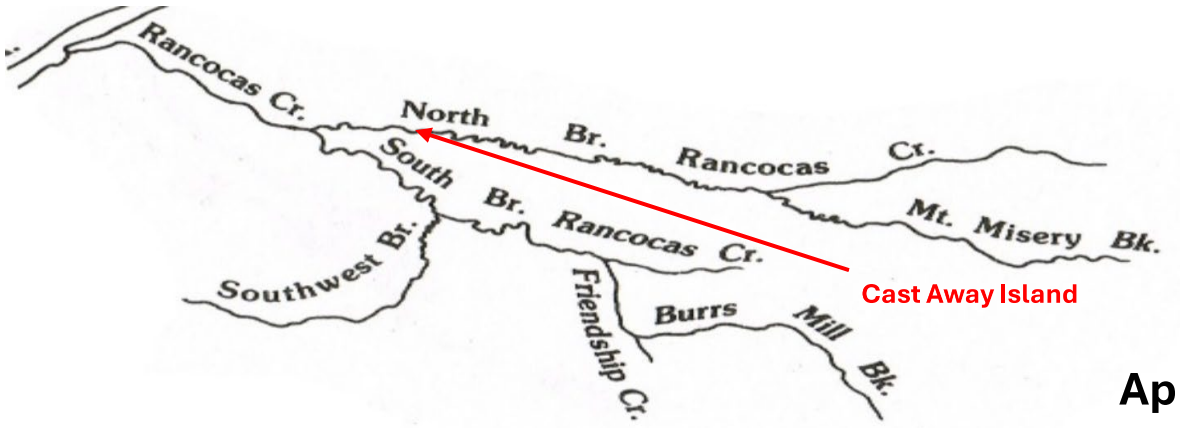


FIG. 29.—The New Jersey and pontoon line—American Dredging Co.

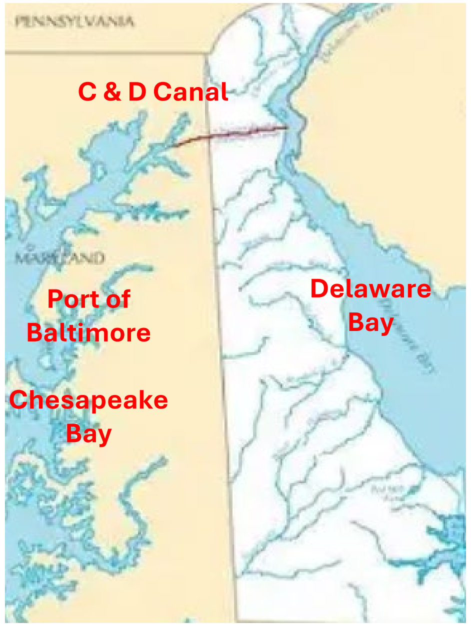
Abundance of Plenty

Market Access

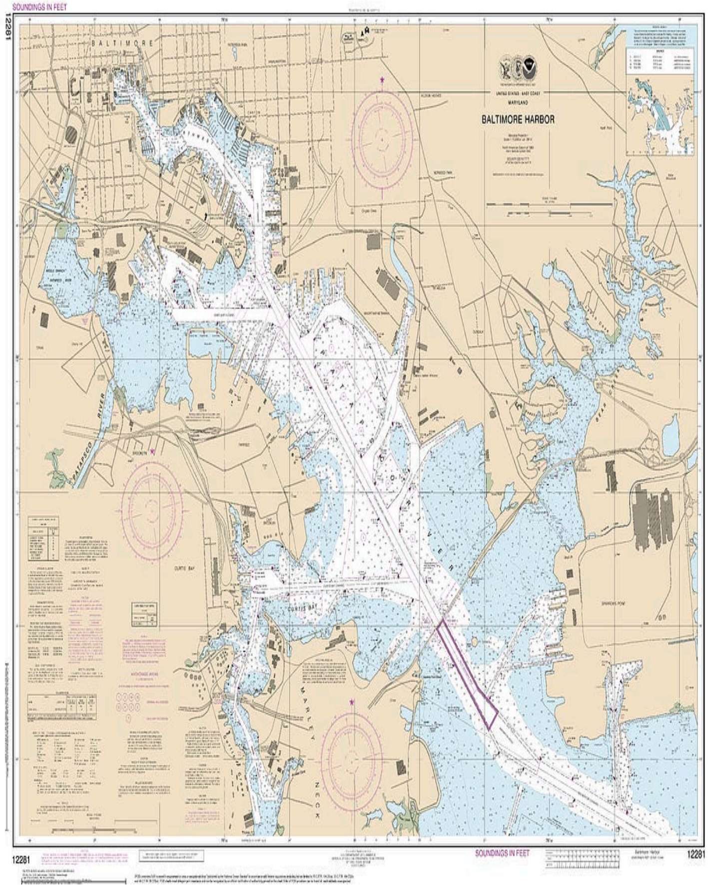




South C & D Canal



Approach to Baltimore




Cast Away Island ERI


2.
5.
3.
BALTIMORE HARBOR
4.
Baltimore Harbor - 1909
1. Curtis Bay
2. Frederick Street Dock
3. Shryock's Wharf
4. McComas Wharves
5. Inner Harbor
Tugboat
"Day" Voyage
from
Philadelphia
1.

Arrival Baltimore (1900 - 1910)*

- Barge Sirius, from Rancocas, molding sand
- Stmr Belle Miller from Rancocas, molding sand, Frederick Street Dock, Inner Harbor
- Stmr Belle Miller from Rancocas, molding sand, Bartlett and Hayward
- Barge Bertha from Rancocas, molding sand, Curtis Bay
- Barge Truner from Rancocas, molding sand, Curtis Bay
- Stmr Barge Florence, molding sand (Barge frozen up Delaware City)
- Stmr Samuel H. Hartman, from Rancocas, Frederick Street Dock
- Stmr Samuel H. Miller, from Rancocas, at Shryocks wharves, foot of Caroline Street
- Stmr Barge Lute, from Rancocas, molding sand, McComas Wharves, off York Street
- Stmr Barge Frank M. Riley from Rancocas, molding sand
- Stmr Barge Campbell, from Rancocas, molding sand
- Stmr Howard McQuilton, with barge, from Rancocas, molding sand

* Not a complete list, does not show numerous multiple Port of calls, delivery dates, volumes, end-use delivery, etc…

Snap-Shot of End Markets for Rancocas Creek Sand

Ref: Port of Baltimore, daily maritime report, Baltimore Maritime Exchange: Arrivals

Port of Baltimore

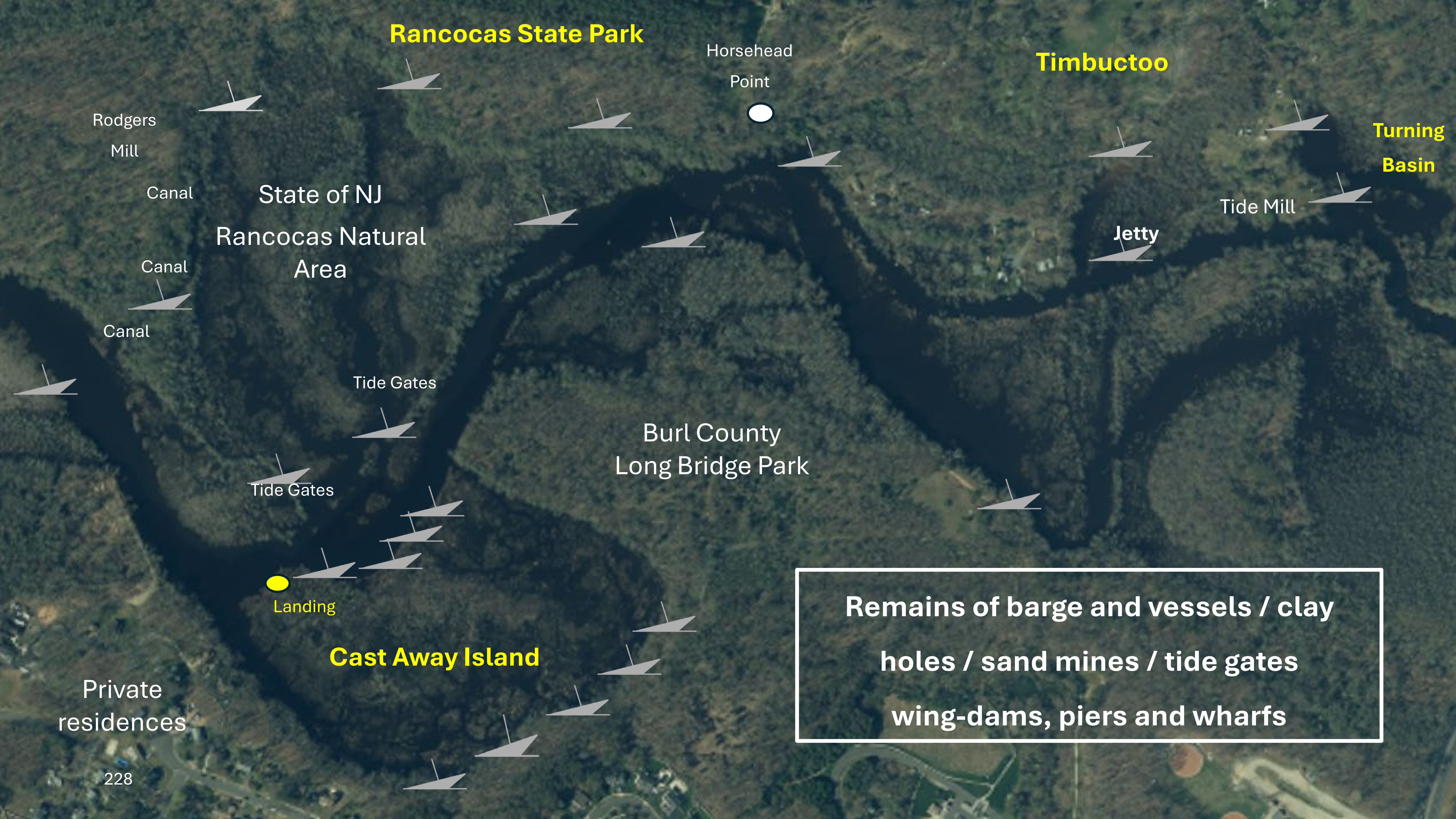
FOUNDRY, COR. SCOTT AND PRATT STS.
OFFICE, 24 LIGHT STREET.

End Use of Rancocas Sand

Bartlett-Hayward Company was an American metalworking company with a large foundry, fabrication, and construction business lines, located in Baltimore, Maryland. Founded in the 1830s.

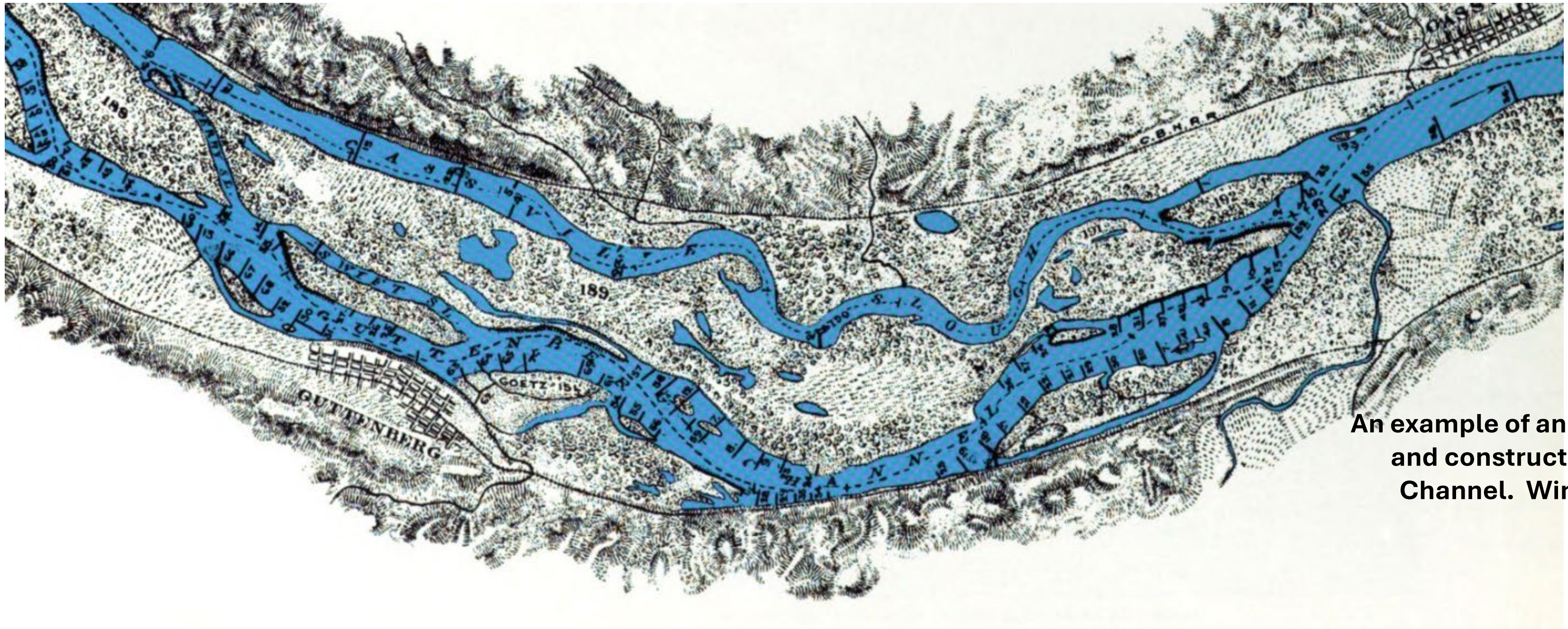
By the end of the nineteenth century, it was the largest iron foundry in the United States. Manufactured cast-iron architecture, steam heating equipment, machine parts, railroad engines and piston rings.

During World War I, the company made munitions, ship propellers, and other materiel for the United States and its allies. It made millions of artillery shells and the artillery fuzzes for them (9.6 million shells in World War II.


Rancocas State Park
Horsehead
Point
Timbuctoo
Turning
Basin
Rodgers
Mill
Canal
State of NJ
Rancocas Natural
Area
Canal
Canal
Tide Mill
Jetty
Tide Gates
Burl County
Long Bridge Park
Tide Gates
Landing
Cast Away Island
Private
residences
228
Remains of barge and vessels / clay
holes / sand mines / tide gates
wing-dams, piers and wharfs

Navigation enhancements and improvements to the North Branch Rancocas Creek, on and around Cast Away Island

In the mid to late 1800's Congress authorized navigation improvements and enhancements to the North Branch of the Rancocas Creek., This was done to meet local and regional demands for inexpensive and reliable transportation between Burlington County and Delaware River Ports. Snags, sandbars, shallows and fast currents delayed and at times stranding and at times sinking Creek steamers, tugboats and barges. Wing dams narrowed the Rancocas, increased its speed and cut through sand-bars and debris.



An example of an early 1900's navigation chart showing wing dams and constructing a wing dam on the Upper Mississippi River Channel. Wing dams are constructed of stones and brush.

Cast Away Island relics, now detritus, naturally

Sites A. B. C. D.

1902 a Report to Congress

IMPROVEMENT OF RIVERS AND HARBORS IN SOUTHERN NEW JERSEY, OF CERTAIN RIVERS AND HARBORS IN DELAWARE, AND OF INLAND WATERWAY FROM CHINCOTEAGUE BAY TO DELAWARE BAY, VIRGINIA, MARYLAND, AND DELAWARE.

This district was in the charge of Capt. C. A. F. Flagler, Corps of Engineers. Division engineer, Col. Amos Stickney, Corps of Engineers.

1. *Rancocas River, New Jersey.*—The Rancocas River is a tributary of the Delaware River, its mouth being about 11 miles above the Pennsylvania Railroad terminal and ferry at Camden, N. J.

In the original condition the minimum depth was 4½ feet at mean low water from the junction of the forks near Centerton to its mouth, a distance of 7½ miles. Above Centerton the depth on the Mount Holly Branch, a distance of 5½ miles, was generally about 2½ feet. From the forks to Moores Landing, the head of navigation on the Lumberton Branch, a distance of 3.6 miles, the low-water depth over shoal places was 3 feet. The mean range of tides at Centerton is about 5 feet.

The original project of 1881 proposed the formation, by a dike at Coates bar and dredging elsewhere, of a channel from 150 to 200 feet wide and 6 feet deep at mean low water from the mouth to Centerton and thence to Mount Holly a channel 5 feet deep. Operations under this project were carried on from 1881 to 1895, and were directed to the formation of a low-water channel 100 feet wide and 6 feet deep from the mouth to Centerton and 50 feet wide and 5 feet deep for a distance of about 1¾ miles above Centerton. The unexpended balance, $399.70, has been returned to the surplus fund of the Treasury.

An appropriation of $2,000 for this river, made in the act of June 3, 1896, was required by the act to be expended in the improvement of the Lumberton Branch and was applied in the fiscal year 1898 to dredging through the shoals at Pattersons Landing, below Paxsons Landing, and partly through the shoal above Paxsons Landing, the channel having a width of 30 feet and a mean low-water depth of 6 feet, and an appropriation of $2,000, made in the river and harbor act of March 3, 1899, was likewise required to be expended in the Lumberton Branch and was applied to dredging a channel with a depth of from 6 to 7 feet at mean low water and a width of 30 feet through the shoal below Moores Landing.

The river and harbor act of June 13, 1902, appropriated $3,000 for continuing the improvement of the Lumberton Branch, and for its expenditure a project was approved providing for the construction of contraction works, consisting of low wing dams, to be located at places where the channel had been dredged and had refilled. The work was completed on July 24, 1903. In all, 18 wing dams were built. Of these, 11 were placed on the north side and 7 on the south side, covering the stretch from the forks up to the highway bridge at Hainesport, a distance of about 2½ miles.

The expenditure during the year was for contingent expenses.

The amount expended on this improvement to June 30, 1905, is $44,479.45, of which $6,979.24 was on the Lumberton Branch.

The maximum draft that could be carried June 30, 1905, at mean low water, over the shoalest part of the river between the mouth and the forks and Centerton was 7 feet, and above, to Moores, about 6 feet.

A wing dam is an underwater wall of piling and rock extending from the bank of a waterway into the waterway. Its purpose is to control currents, deepen water over shallows, stop erosion. Wing dams are placed at right angles to a channel. Generally visible at low tide. Boatmen avoid wing dams following the channel. They are indicated by eddies or swirls.

There are two known wing dams on and near Cast Away island

Construction of low wing dams where North Branch Rancocas Creek Channel was dredged. 11 wing dams were placed on the North Branch and 7 on the South Branch

Mohawk River (1807) & Mississippi River Wings Dams (pre-Civil War)

One method employed by the Western Inland Lock Navigation Company to overcome shallow river waters was the construction of low rock dams to retain and direct the water at the rifts into narrow, and slightly deeper, channels. As many of the rifts were less than two feet deep, workers could easily pile up the rocks while standing in the river.

These dams were patterned after Indian eel weirs or fish traps that also existed on the Mohawk River. The channel in some instances is not more than eight feet in width, which will barely permit a boat to pass by rubbing on both sides. "This is sometimes caused by natural or accidental obstructions of rocks in the channel; but oftener by artificial means.

This, which at first view would appear to be an inconvenience, is produced by two lines or ridges of stone, generally constructed on sandy, gravelly, or stony shallows, in such a manner as to form an acute angle were they to meet, the extremities of which widen as they extend up the river; whilst at the lower end there is just space enough left to admit the passage of a boat.

"The water being thus collected at the widest part of these ridges, and continually pent up within narrower limits as it descends, causes a rise at the passage; so that where the depth was no more than eight inches before, a contrivance of this kind will raise it to twelve; and, strange as it may appear, a boat drawing fifteen inches will pass through it with safety and ease.

The cause is simply this; the boat, being somewhat below the passage, is brought forward with considerable velocity, and the moment it dashes into the passage, its resistance to the current is such as to cause a swell of four or five inches more, which affords it an easy passage over the shoal." Christian Schultz, 1807

As an example

Remains of mid to late 1800’s Cast Away Island Wing Dams

Found throughout the Rancocas Creek are piles of stone and brush in the Creek, known as wing dams.

They focus the flow of the Creek to develop a deeper, narrower main channel to aid commercial navigation.

The wing dams comprised the first large scale efforts to improve navigation on the Rancocas Creek as early as the 1700's, along with dredging and removal of tree’s shoals and snags. Low flows, shallow areas, and fast moving currents provided obstacles to commercial navigation on the Rancocas Creek.

Wing dams are long narrow berms of alternate layers of rock and brush extending radially into the river from each bank. The brush, usually willow, was tied in bundles and then fastened into mats.

N. Branch Wing Dam
Approach to Cast Away Island

General Reference: United State Army Corp of Engineers

Cast Away Island Wing Dam

Work on the wing dams commonly began in the winter with the dumping of rock and brush mats on the ice. Wing dams constrict the flow of the channel.

These remains are niches for food for fish and wildlife.

Over the years sediment and sand has filled in the spaces between Rancocas Creek wing dams, providing areas for trees and brush to grow, thus forming fine wildlife habitats. Having a navigation channel consisting of constructing wing dams, digging cutoffs, closing side channels, dredging, and shoreline protection up until the last Congressional funding in the early 1902.

Navigation locks and dams are found on the non-tidal sections of the Rancocas.

Wing dams can be spotted by those on the water and walking along the Rancocas Creek as ripples in the water.

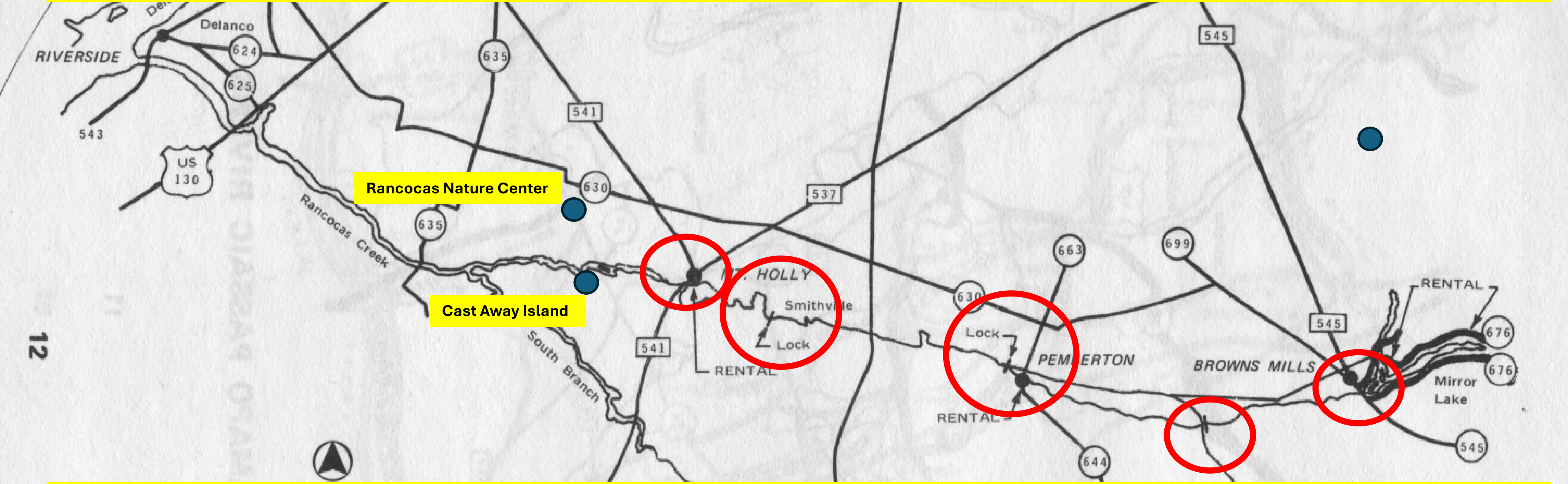
Cast Away Island Wing Dam

General Reference: United State Army Corp of Engineers

Cast Away Island ERI


Yellow Leg Sandpiper - Cast Away Island

Ref: NJ DEP map (1970) that show location of Non-Tidal North Branch of the Rancocas Creek Locks and Dams



This is not a complete list.

For Rancocas Creek Watershed water capillaries see Whitesbog and other Rancocas Creek Cranberry farming bogs for micro-locks and scaled to sites dams.

Ref: NJ Legislative Records, NJ Archives

RANCOCAS, OR ANCOCAS CREEK.

1783.	To build and sustain mill-dam across the north branch of Ancocas creek at Fork Bridge.....	7 ses.	2 sit.,	"
1788.	Act for the improvement of the navigation of the southwest branch of Ancocas creek, amended	13 "	1 "	"
1792.	Act for the improvement of the navigation of the southwest branch of Ancocas creek, of November 28, 1788, amended..................	17 "	1 "	"
1791.	Biddle, Stacy, to authorize, to erect a dam across the north branch of Rancocas creek at Slab bridge..	16 "	1 "	"
1792.	Jones, Benjamin, junior, to erect a dam across the north branch of Rancocas creek at Slab bridge	16 "	2 "	"
1792.	President, Managers and Company of Rancocas Toll Bridge, incorporated	17 "	1 "	"
1798.	President, Managers and Company of Rancocas Toll Bridge, act amended, part of act of November 28, 1792, repealed..................	22 "	2 "	"
1807.	President, Managers and Company of Rancocas Toll Bridge, amended..........................	32 "	1 "	"
1793.	Parker, Jacob, for dam on main branch of Ancocas creek..	17 "	2 "	"
1795.	The President, Managers and Company for the improvement of the navigation of the north branch of Rancocas creek.......................	19 "	2 "	"
1796.	The President, Managers and Company for the improvement of the navigation of the north branch of Rancocas creek, act of November			

RANCOCAS, OR ANCOCAS CREEK—*Continued.*

1819. To clear out and improve the navigation of the north main branch of Rancocas creek, between the town of Mount Holly and the south main branch of Rancocas creek, act of January 21, 1817, amended................

1817. Eayre, Asa, to erect a dam and lock across the main south branch of Rancocas creek........

1817. Act to clear out and improve the navigation of the north main branch of Rancocas creek...

1818. Davis, Benjamin, and Hezekiah Stokes, to erect and maintain dam and flood-gates across the south branch of Rancocas creek, near the Union bridge, in the township of Evesham.

1818. Act relative to the toll bridge over Rancocas creek ....

1819. Act relative to the toll bridge over Rancocas creek, of January 23, 1818, amended.........

1819. Act concerning the draw in the bridge over Rancocas creek, on the road leading from Burlington to Cooper's ferry, in the county of Burlington ....

1823. To authorize the board of chosen freeholders of the county of Burlington to build a bridge over Rancocas creek..................................

1835. To erect dam and flood-gates across the main north branch of Rancocas creek...............

1845. Rancocas Steamboat Company, incorporated....

1846. Act relative to fishing in Rancocas creek.........

1853. Act to authorize a draw or swing bridge over Rancocas creek......................................

1787 NJ Copper Penny – Recovered Approximate Cast Away Island

March 21, 1817

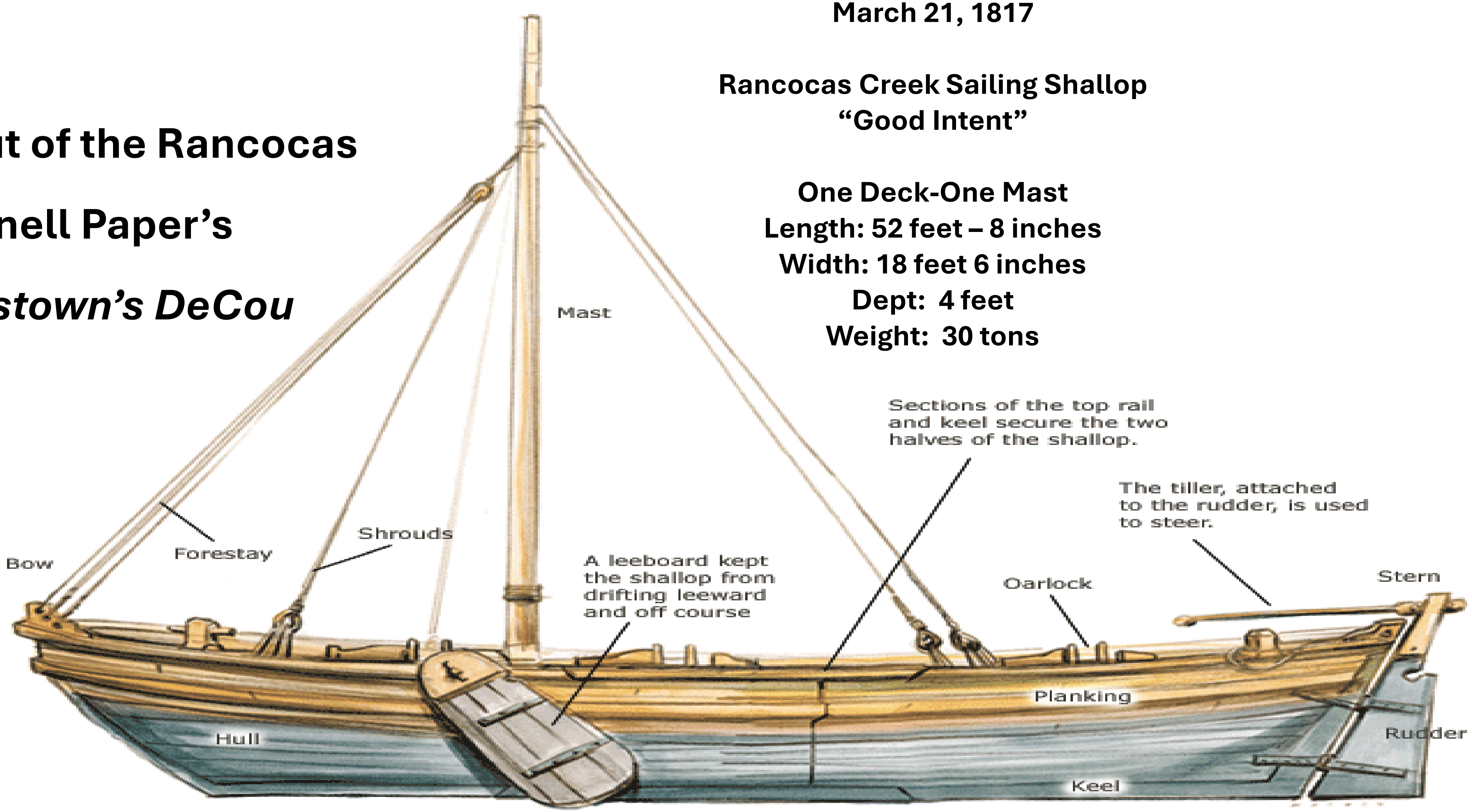
Rancocas Creek Sailing Shallop
“Good Intent”

One Deck-One Mast
Length: 52 feet – 8 inches
Width: 18 feet 6 inches
Dept: 4 feet
Weight: 30 tons

Trading out of the Rancocas

Darnell Paper’s

Moorestown’s DeCou



Mostly Produce (Jersey Fresh)-Lumber-Charcoal to the Philadelphia Port Market

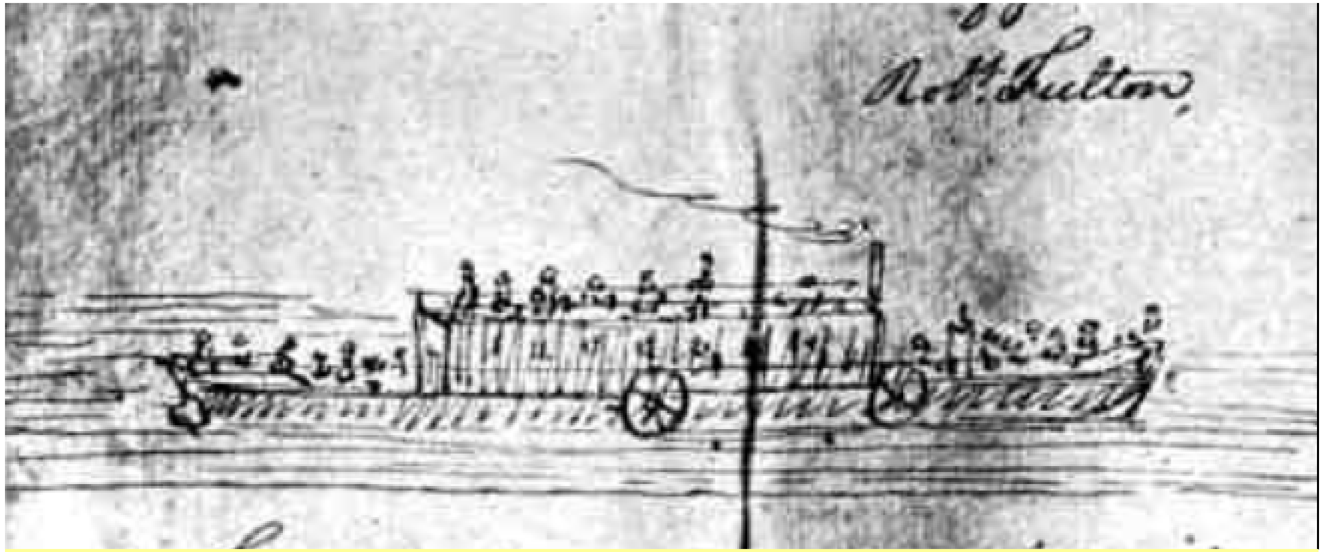
1823
Steam Navigation begins (dates approximate) on the Rancocas

Norristown, Capt. John Gardner

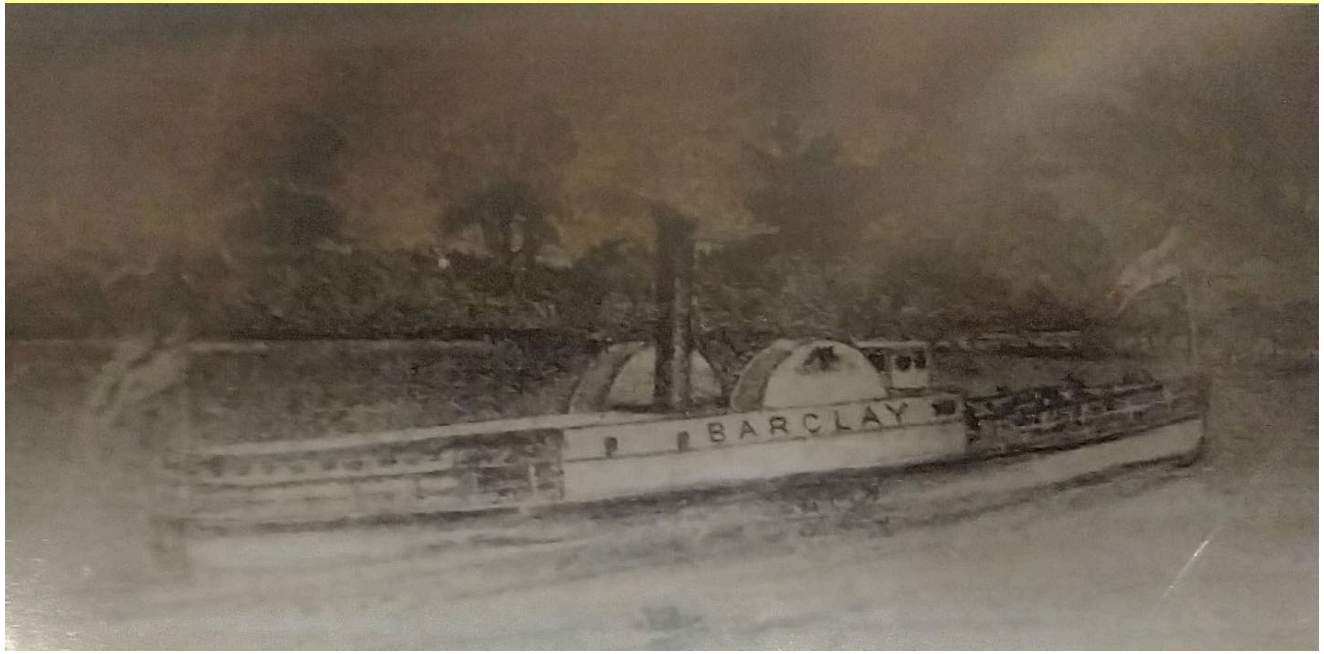
1849
Mt. Holly and Rancocas Steamboat Company

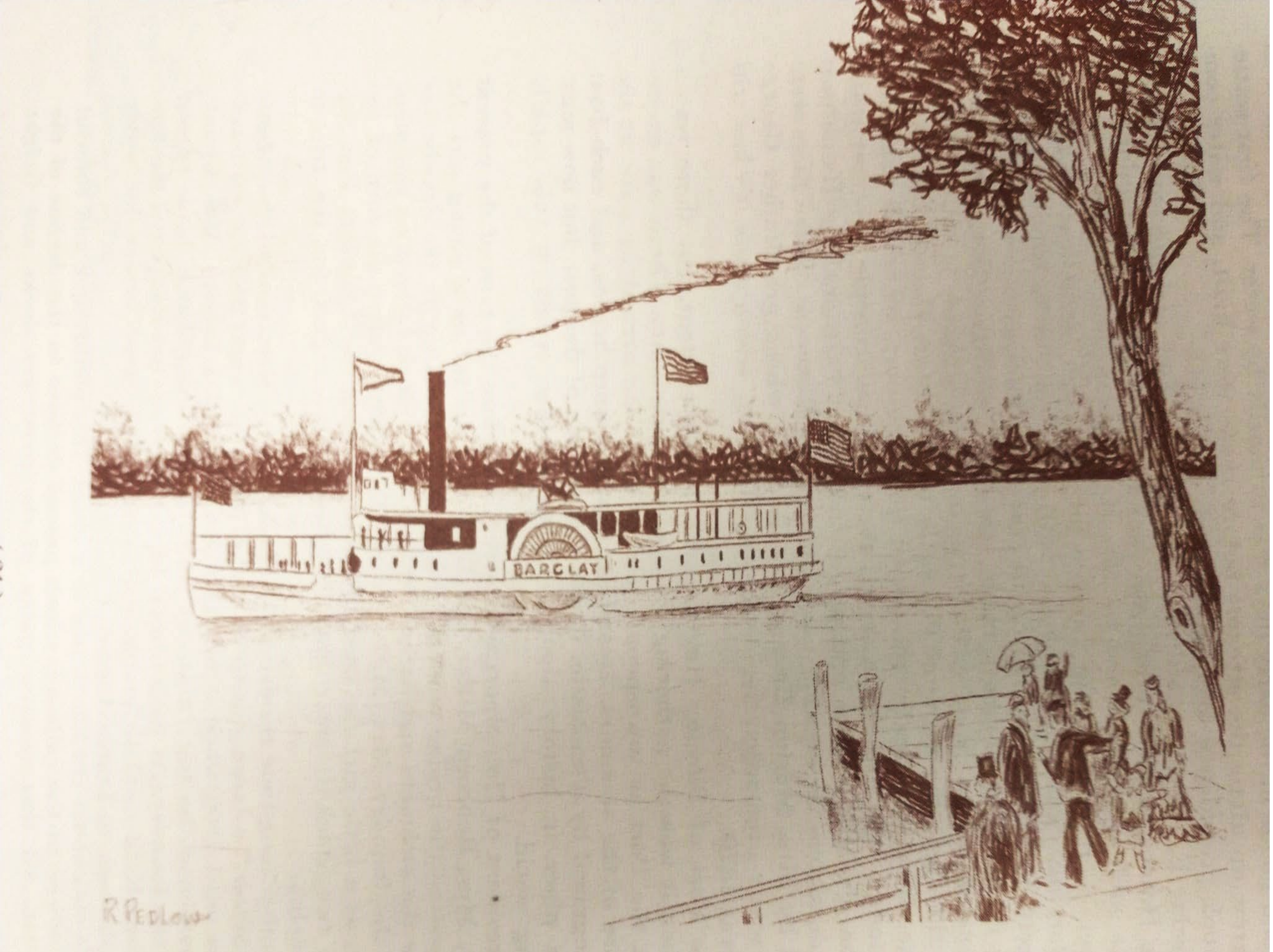
Barclay
(Built at Lumberton's "Navy Yard")
120 feet long. 24 feet wide.

Lafyette, Band-Box, Mayflower, Barclay



Maritime Heritage Incubator





1860

Steamer Barclay Leaves Arch Street Wharf, daily at 2 ½ p.m.. Progress, Delanco, Bridgeboro, Centretown, Hainesport.

Leaves Hainesport Daily at 7 a.m.

Stages meet boat for Mt. Holly and Lumberton

High Tide

Charles Longstreth Mather
1816 - 1902

5-420. Samuel, b. Nov. 6, 1854. *Coffreth.*

4-127. CHARLES LONGSTRETH MATHER, b. Jan. 30, 1816, at Little Miami Mills, O.; d. July 17, 1902, buried at Mt. Holly, N. J.; m. May 1, 1845, *Naomi P. McIlvain*, daughter of Hugh and Hannah (Hunt) McIlvain, of West Philadelphia, (see 4-202).

Charles L. Mather was born in the log cabin built as the first shelter in the pioneer days of his parents in Ohio. He came east, and lived many years at Mt. Holly, where his widow still resides at the old farm.

Six children:

MATHER.

5-421.	Eliz. Longstreth,	b. Feb. 14, 1846; d. Sept. 29, 1863.	
5-422.	Lydia McIlvain,	b. May 18, 1848.	MATHER.
5-423.	Charles Sidney,	b. Apr. 19, 1850.	*Mitchell.*
5-424.	Susan Longstreth,	b. May 7, 1853; living at Mt. Holly.	*Unm.*
5-425.	Naomi,	b. Apr. 9, 1857.	*Loveland.*
5-426.	Hugh McIlvain,	b. June 1, 1859; d. Aug. 30, 1861.	

Built and resided in what is today's

Rancocas Nature Center

in

1846/1856.

Timber/Lumber Dealer

Note McIlvain Daughter Marriage
See McIlvaine Dairy Rancocas Creek

Charles Mather early proponent
Rancocas Creek Commercial Navigation

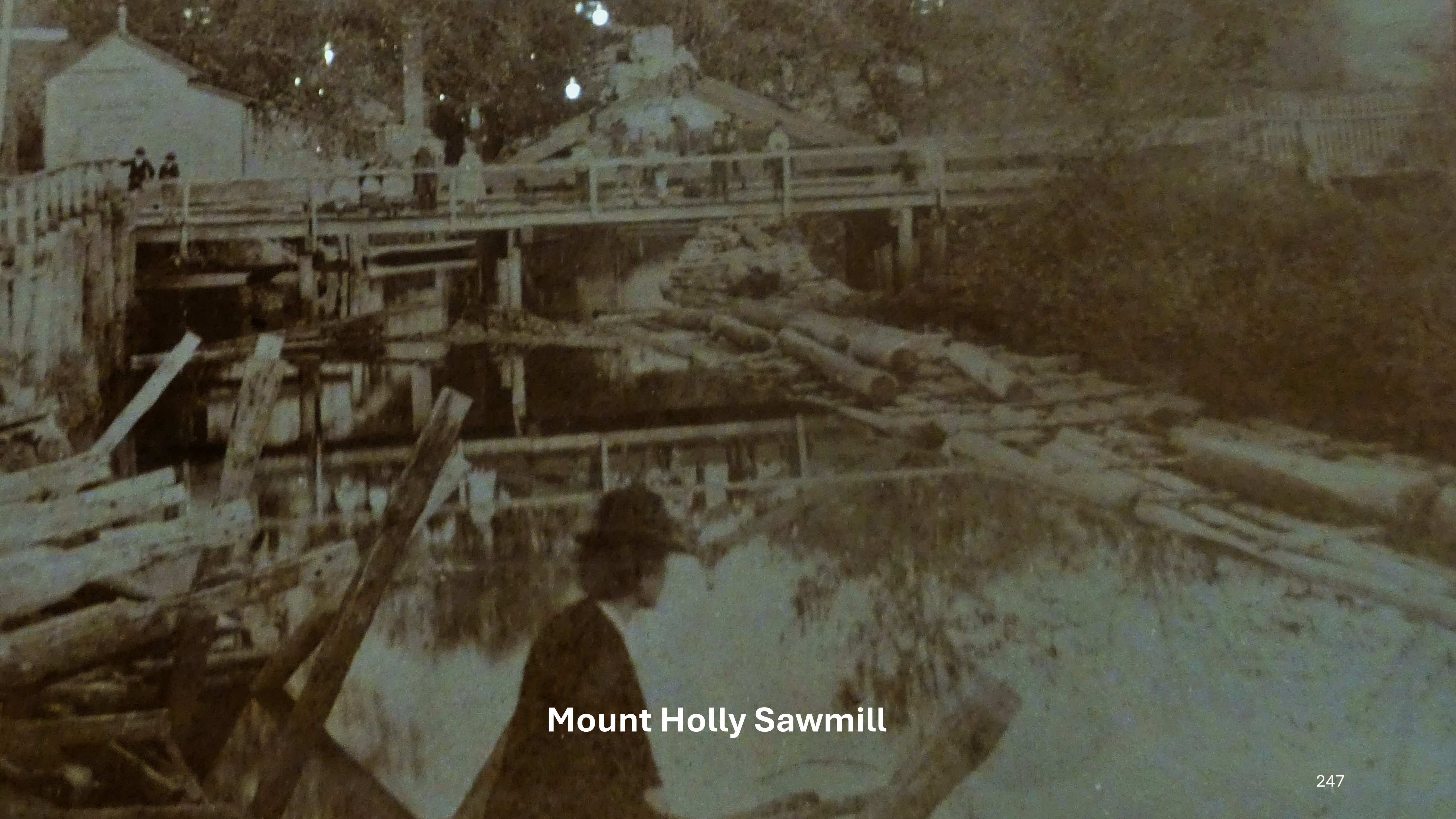
Great interest in improving the Rancocas Creek for Commercial Navigation

Straighten Rancocas Creek for commercial navigation having canals cut-throughs, cut-offs and channel improvements to shorten distance from Delaware River to Mt. Holly.

Early pioneer bringing a steam tug up the Rancocas. Faced tremendous opposition and ridicule. He secured steam-boat and tug. Opened one of the first commercial tugboat trips into Mt. Holly.

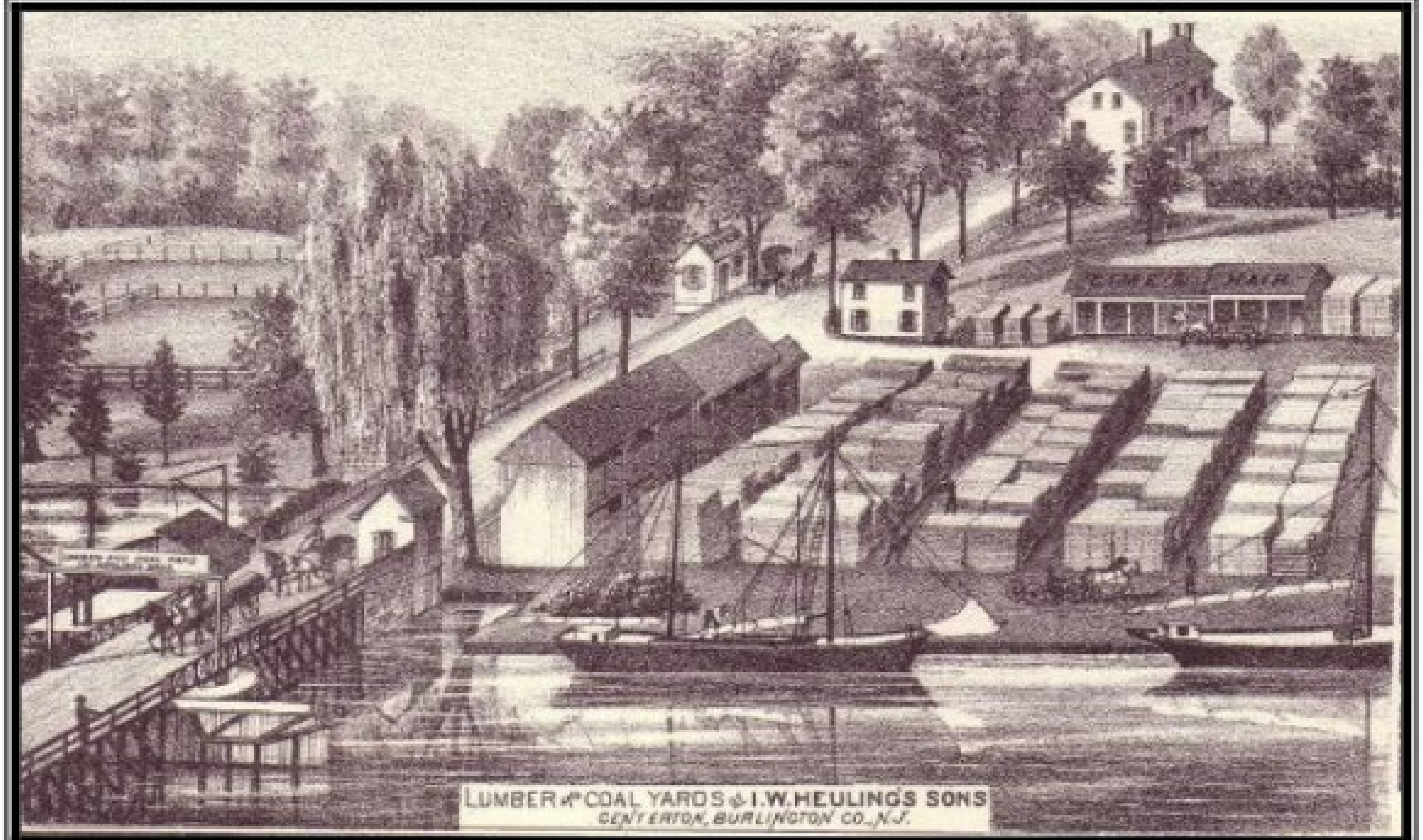
Opened up Rancocas Creek to larger volumes of maritime traffic to Delaware River Ports: Trenton, Philadelphia & Camden; greater regional, national and world markets.

Ref: Captain Charles McIlvaine Dairy 03 Jan 1894



Mount Holly Sawmill

Rancocas Creek Timber and Lumber Connections
This is one of the few representations of trade along the Rancocas.
Note Sailing Sloops, Centerton Bridge a draw. Pre 1900.



Landing for Rancocas, Bougher, Centreton, etc..

Creek Vessels Remains

Public Ledger
Mon, Apr 24, 1854 ·Page 4

Charles Mather was in the timber trade

offers to give lessons in private families. Address 90 WALNUT Street. ap14-1m*37

YOUNG MEN—Who desire to learn BOOK-KEEPING, will find it to their advantage to go to Prof. DE LAGUNA'S Institute, 198 Chesnut. 13 2w*185

FRENCH, SPANISH AND GERMAN—Taught practically, to speak with facility, at Prof. DE LAGUNA'S Institute, 198 CHESNUT St. ap12-2w*194

CO-PARTNERSHIPS.

DISSOLUTION OF CO-PARTNERSHIP.—The undersigned hereby give notice that the Partnership heretofore existing between them has this day been dissolved by mutual consent. The business of the late firm will be settled up by JOHN STUART, who continues the business at the old stand, S. E. corner of MARKET and EIGHTEENTH Streets.
JAMES McHUGH,
JOHN STEWART.
ap22-2t 442

DISSOLUTION.—Notice is hereby given, that the Co-partnership heretofore existing between ANDREW M. GRAUEL & JOHN J. FRY, trading under the firm of Grauel & Co., was this day dissolved by mutual consent. Andrew M. Grauel is authorized to settle the business of the late firm.
ANDREW M. GRAUEL,
JOHN J. FRY.
Philadelphia, April 19th, 1854. ap22-3t*5

COPARTNERSHIP.—The subscribers have this day formed a Copartnership for the transaction of a general LUMBER business, under the firm of J. M. & C. MATHER, and have purchased the stock of Amor Walker, at the Southwest corner of ARCH and TWENTY-SECOND Street, where they will be pleased to see their friends and the former customers of the Yard.
JOSEPH M. MATHER,
CHARLES MATHER.
April 3, 1854.
The subscriber having disposed of his stock of Lumber to J. M. & C. Mather, would recommend them to his friends and former customers, and solicit for them a continuation of the patronage they have bestowed upon him. ap22-3t*58 AMOR WALKER.

NOTICE IS HEREBY GIVEN—That the copartnership heretofore existing between ARCHEY CAMPBELL and JOHN TADALDIS, is dissolved. The business will be conducted by the undersigned, at the old stand, N. E. corner of ELEVENTH and CASTLE Streets, above Race.
ap21-3t*55 ARCHEY CAMPBEL.

COAL.

JOHN J. FRY.
Philadelphia, April 19th, 1854. ap22-3t*5

COPARTNERSHIP.—The subscribers have this day formed a Copartnership for the transaction of a general LUMBER business, under the firm of J. M. & C. MATHER, and have purchased the stock of Amor Walker, at the Southwest corner of ARCH and TWENTY-SECOND Street, where they will be pleased to see their friends and the former customers of the Yard.
JOSEPH M. MATHER,
CHARLES MATHER.
April 3, 1854.
The subscriber having disposed of his stock of Lumber to J. M. & C. Mather, would recommend them to his friends and former customers, and solicit for them a continuation of the patronage they have bestowed upon him. ap22-3t*58 AMOR WALKER.

NOTICE IS HEREBY GIVEN—That the copartnership heretofore existing between ARCHEY

Timbuctoo

Grubbs Run Outlet

What is the connection between Stephen Smith, timber broker, ship builder and (Mather) lumber business ?

After purchasing his freedom, Smith planned and opened his Lumber business in the River Port of Columbia, Pennsylvania. Smith would be very successful and looking for partners to grow his business even bigger. In the early 1830s, Smith formed a partnership with William Whipper. Smith and Whipper would have huge success in lumber, coal, Philadelphia real estate, railroad cars, and investments in the stock market.

The two made a fortune , becoming true leaders of the black community in their fight against slavery. In 1830, Smith was the chairman of the African American Abolitionist Organization in Columbia, Pennsylvania. Smith was also ordained in the Mt. Zion A.M.E. Church on South Fifth Street, Columbia, in 1831.

Precursor to Dun and Bradstreet
Financing Report, Note "language"

Stephen Smith, Pennsylvania. Lumber. "Sept 16 53. Smith was formerly a slave to old 'Ben Boude'.... Good as the best, worth $100m. July 18 57. King of the Darkies—w[orth] $100m.... Apr 1 65. Smith wor[th] $500m."

—R. G. Dun & Company Mercantile Agency Credit Reports

Partial list of vsls launched Cape May

1705	Adventure
1706	Necessity
1708	Dolphin
1816	Baker
1834	Trimmer
1836	Brandywine
1836	Texas
1838	W. E. Bird
1840	Vesta
1841	Log Cabin
1845	Boston
1846	Bascom
1846	Thos. B. C
1846	Jabez L. W
1848	Isabelle Tho
1849	Allen H. Bro
1850	Eva
1850	George H. Brown
1850	North Pacific
1851	Henry P. Simmons
1852	Emily and Rebecca
1853	Adelaide
1854	Revenue
1855	James S. Hewitt
1857	William L. Dayton
1859	Belle
1859	L. F. Peterson
1862	Lydia Budd

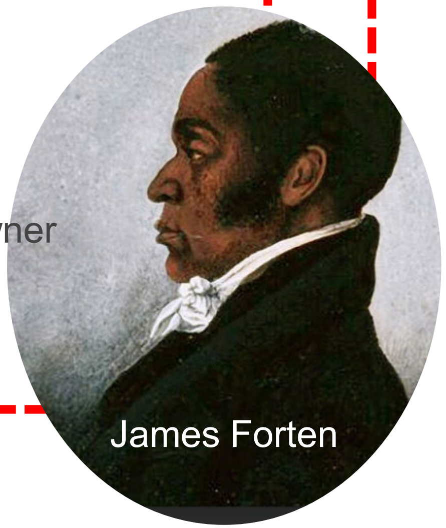
Stephen Smith Founder of the Pennsylvania Anti-Slavery Society. Banneker House a first-class hotel summer resort for free Black people in the country. Developed by James Harding, a friend of Stephen Smith. At the white Babtist Church Joseph Leach frequently preached there.

Smith, Whipper & Co.

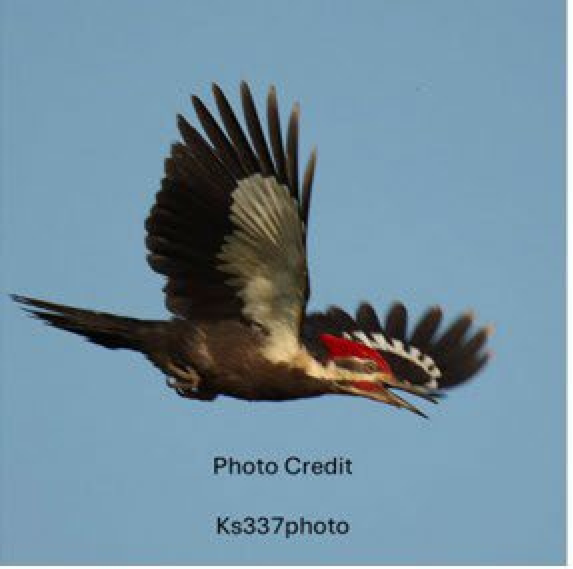
CONNECTIONS ?

1840

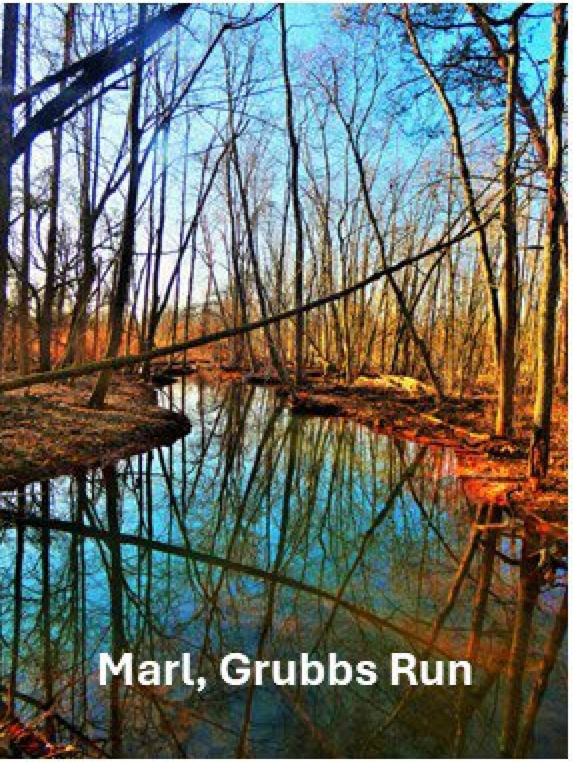
Sail Loft Owner
Mariner



James Forten



Sentinels of Heritage, naturally



28 Feb 1929 <u>Bucto Ghost</u> "It's rigging rotten, its water butts foul, bottom overgrown w parasites, crew of yelling demons lifted the Captains chest , heavy w loot", a Spanish playing card was fixed to a tree… **(Walter Treichler, Timbuctoo 27/Feb/1929. United Press International)**

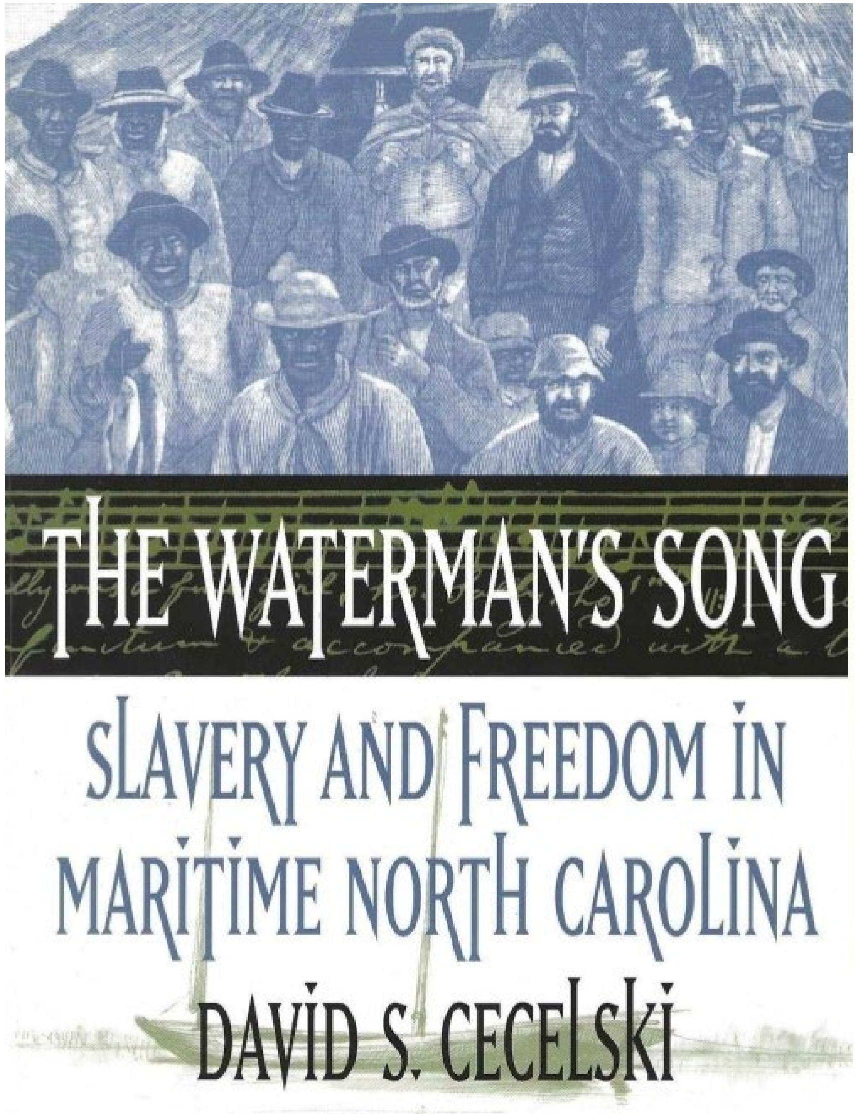
Grubbs Run

Timbuctoo & Underground Railroad
1823

William Still
1875

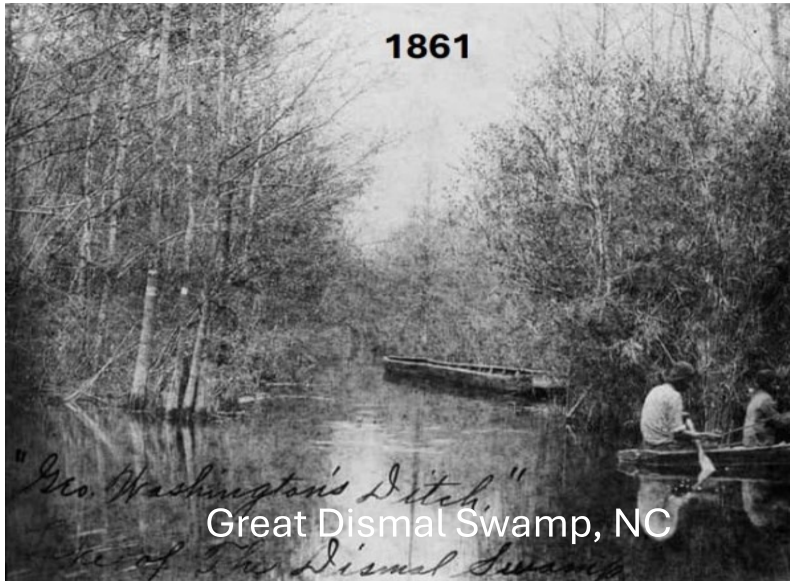
We are fortunate to know anything at all about the maritime passage to freedom.

Ref: Cecelski



Timbuctoo, NJ

Timbuctoo, NJ



Great Dismal Swamp, NC

Timbuctoo, NJ

Bivens Timbuctoo

Figure 10 Four images of the dig site at Timbuctoo. Indicating potential evidence of clay and brick mining and features associated with pilings and dock or piers. Images from top left to bottom right: wood support pile, meter stick describing height of creek bank cut by currents and evidence of clay throughout, early concrete support (high rock particle content) and grey brick of apparent hand-struck formation. All items left in-situ on-site. The area today sits between housing developments.

Timbuctoo

Indicating potential evidence of clay and brick mining and features associated with pilings and docks and piers (April/2019)

STOCKTON UNIVERSITY

Written and documented records are sparse on Rancocas Creek Baltimore connections

Frederick Street Wharf, Baltimore Harbor

The Frederick Douglass-Isaac Myers Maritime Park is a Baltimore national heritage site that honors the contributions of African Americans to the city's maritime industry. The park is home to the Living Classrooms Foundation and preserves one of the oldest industrial waterfront buildings in the city. Visitors can access the museum, which is open to the public and provides information about Frederick Douglass' life as a child born into slavery in Baltimore, and Isaac Myers' life, a national leader who was born a free African American. Additionally, visitors can learn about the establishment of Baltimore's African American community in the 1800s, as well as the founding of the Chesapeake Marine Railway and Dry Dock Company.

Orchard Street A.M.E. Church

Began in 1825 by Truman LaPlatt, Fromer slave.

1837 Building constructed

Oral Tradition Church Served as stop on the Underground Rail Road

Port of Philadelphia April 1853

ARRIVAL FROM BALTIMORE.

Jefferson Pipkins alias David Jones, Louisa Pipkins, Elizabeth Brit, Harriet Brown, alias Jane Wooten, Gracy Murry alias Sophia Sims, Edward Williams alias Henry Johnson, Charles Lee alias Thomas Bushier..........

Ref: William Still, Underground Railroad (1870)

Pre Civil War Mt. Holly had numerous water powered saw mills and other mills
Mt. Holly - N Branch - Mill Dam - Saw Mill
Timber and Logs floated down from the Pine Barrens.
Lumber sailed down Rancocas to markets in Delaware River Port of Philadelphia

Tip of Hat to Heidi for use

1903 -1904

I-53 RANCOCAS RIVER, N. J.

APPROPRIATIONS.

1881,	$10,000, **81**, 795.
1882,	10,000, **82**, 778.
1890,	[1] 10,000, **91**, 1085.
1892,	5,000, **92**, 936.
1894,	3,000, **95**, 1068.
1896,	[2] 2,000, **96**, 927.
1899,	[2] 2,000, **99**, 1356.
1902,	3,000, **02**, 1047.
Total,	45,000

COMMERCE.

Description of, **95**, 1084, 1087.
1901, 321,135 t., **02**, 1048.

CONTRACTS.

1881. American Dredging Co., dr., 55¢ c. y., **81**, 796.
1882. American Dredging Co., dr., 32¢ c. y., **83**, 635.
1891. F. C. Somers, dr., 22¢ c. y., and removal of 3 wrecks, at a total of $800, **91**, 1085.
1892. F. C. Somers, dr., 14¾¢ c. y., **92**, 935. J. P. Randerson, dr., 20¢ c. y. ($4,000), **93**, 1175.
1894. F. L. Somers, dr., 17¢ c. y. ($2,125), **95**, 1068.
1897. F. C. Somers, dr., $1,767.59, **98**, 1097.
1899. J. L. Mills, dr., 25¢ c. y. ($1,700), **99**, 1357.
1903. F. K. Wills Construction Co., contraction works (wing dams) on Lumberton Branch, **03**, 984.

ENGINEERS.

Chief of Engineers. **R., 80**, 98; **81**, 126; **82**, 123; **83**, 124; **84**, 133; **85**, 123; **86**, 120; **87**, 82; **88**, 82; **91**, 116; **92**, 117; **93**, 126; **94**, 115; **95**, 129, 132; **96**, 118; **97**, 150; **98**, 153; **99**, 174; **00**, 198; **01**, 238; **02**, 179; **03**, 166; **04**, 157; **05**, 164; **06**, 177; **07**, 185; **08**, 194; **10**, 256.

In charge:
Col. J. N. Macomb, 1880–82. **R., 81**, 795.
Capt. W. Ludlow, 1882–83. **R., 82**, 777.
Lt. Col. G. Weitzel, 1883–84. **R., 83**, 635.
Maj. W. H. Heuer, 1884–85. **R., 84**, 833.
Lt. Col. H. M. Robert, 1885–91. **R., 85**, 849; **86**, 841; **87**, 807; **88**, 708.
Maj. C. W. Raymond, 1891–1901. **R., 91**, 1084; **92**, 935; **93**, 1174; **94**, 854; **95**, 1066, 83, 86; **96**, 925; **97**, 1219; (Lt. Col.) **98**, 1097; **99**, 1356; **00**, 1578; **01**, 1327.
Col. Jared A. Smith, 1902. **R., 02**, 1040.
Capt. J. C. Sanford, 1903. **R., 03**, 984.
Capt. C. A. F. Flagler, 1904–08. **R., 04**, 1228; **05**, 1097; (Maj.) **06**, 1051; **07**, 1107; **08**, 1149.

Assistant: A. Stierle. **R., 83**, 635; **84**, 834.

OPERATIONS.

1881–82. 723 l. f. dike built from n. bank to upper end of Hamills Isld.; 17,000 c. y. dr. from the chan., **82**, 778.
1882–83. 25,983 c. y. dr. from the chan., **83**, 636.
1883–84. Removal of "Coates Bar" completed, **84**, 834.
1890–91. 3 wrecks and 32,749 c. y. removed from chan. between the mouth and Centerton, **91**, 1085.
1891–92. 7,330 c. y. dr., **92**, 935.
1892–93. 19,936 c. y. dr., **93**, 1174.
1894–95. 12,044 c. y. dr., **95**, 1067.
1897–98. 5,026 c. y. dr., **98**, 1097.
1899–00. 5,879 c. y., p. m., dr., **00**, 1579.
1902–03. 5 wing dams completed; about 60% of entire work completed, **03**, 984.
1903–04. 18 wing dams in all built; work completed, **04**, 1228.

PHYSICAL CHARACTERISTICS.

Description of R. and obstr. therein, **81**, 796; **95**, 1064, 1086.

PROJECTS.

By Col. Macomb, 1881, chan. from 150′–200′ w., l.-w. d. of 6′ from mouth to Centerton, 7½ m., and 5′ l.-w. chan. thence to Mount Holly; est., $81,236, **81**, 798; **91**, 1084.
By Maj. Raymond, 1894, chan. 5′ x 50′ in continuation of chan. dr. in 1893. Extension found to be impracticable, **95**, 1067.
By Maj. Raymond, 1897, 6′ chan. 30′ w. at Pattersons Landing and Paxsons Landing in Lumberton Branch as far as the $2,000 app. in 1896 would permit, **98**, 1097.
By Lt. Col. Raymond, 1899, 6′ chan. m. l. w., 30′ w., through the shoals below Moores Landing and below Hainesport as far as available funds would permit, **99**, 1356.
Act 1902 au. $3,000 for continuing imp., **02**, 1007.

SURVEYS.

Au. act June 14, 1880; made, 1881, by Col. Macomb, **81**, 796.
Ex. au. act Aug. 17, 1894; made by Maj. Raymond, 1894 (**R.** unfav.), **95**, 1083.
Ex. of Lumberton Branch au. act Aug. 17, 1894; made by Maj. Raymond, 1894 (**R.** unfav.), **95**, 1086.
Sur. of Lumberton Branch made by Maj. Raymond, 1897, **97**, 1219.
Pre. ex. and sur., mouth to Mount Holly; **R.** by Capt. L. H. Rand [3] (**R.** unfav.), **10**, 256.
Maps.[3]

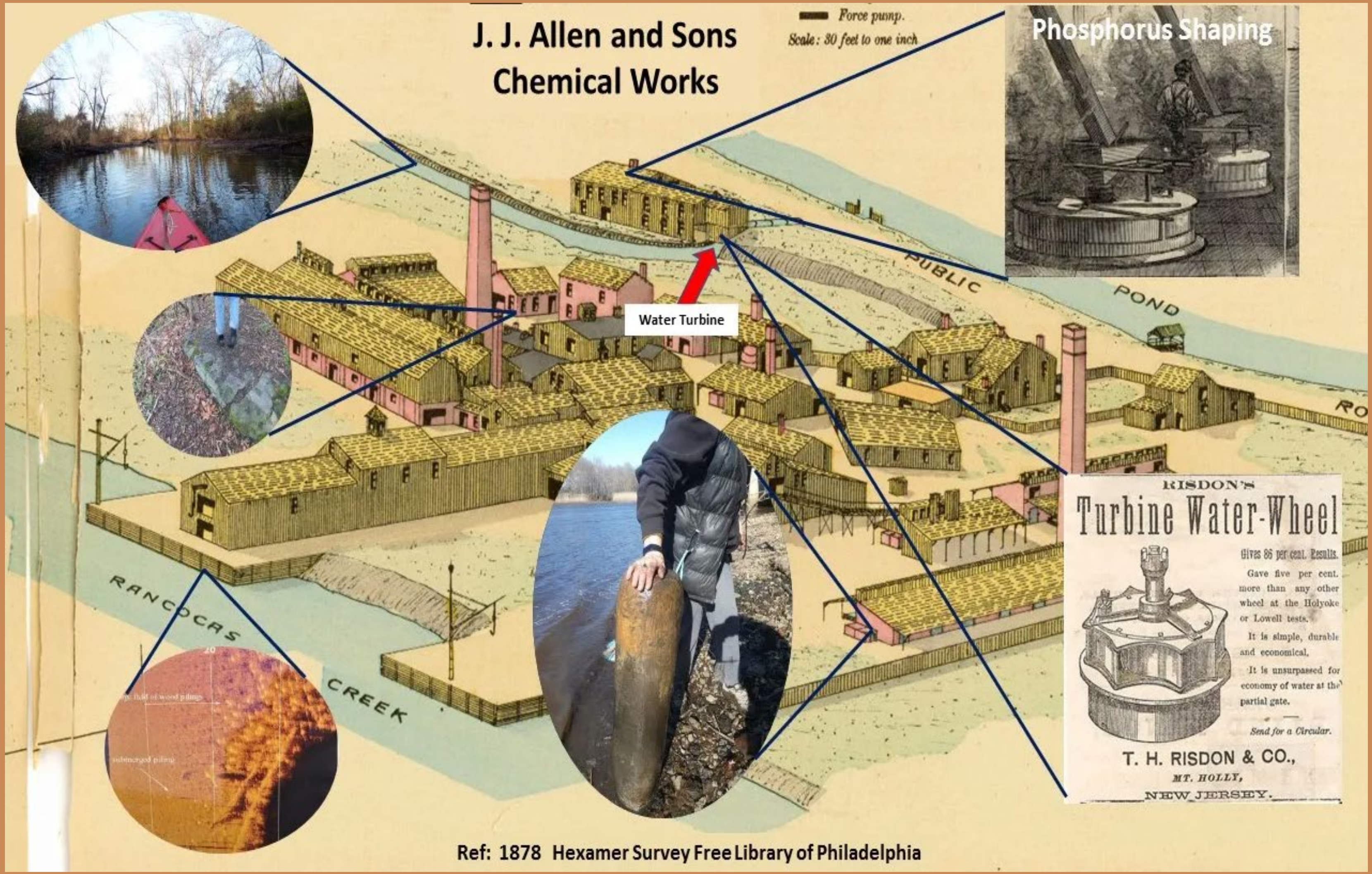
Improvements and enhancements to the North Branch Rancocas Creek Navigation.

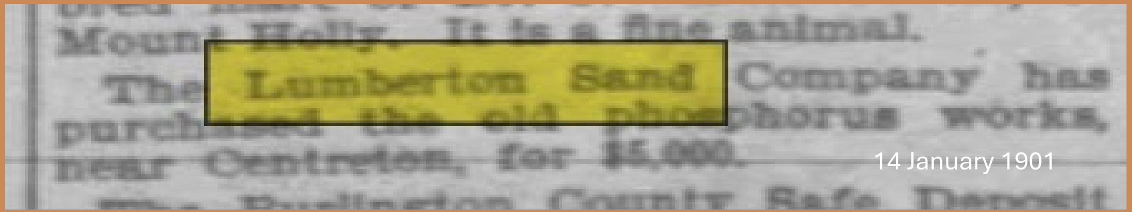
Dredging, Wing Dams, Landings

Rancocas Creek Steamer 1890's

Lumberton Sand Company

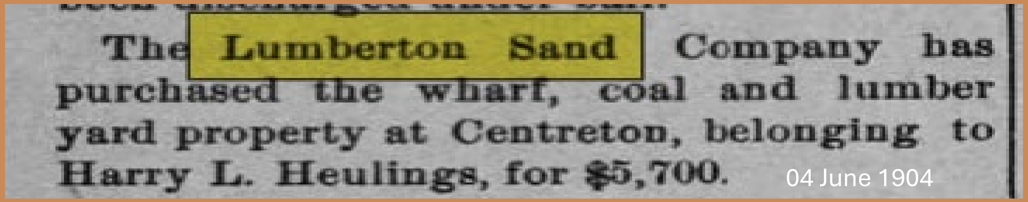
Rancocas Creek Phosphorus Works





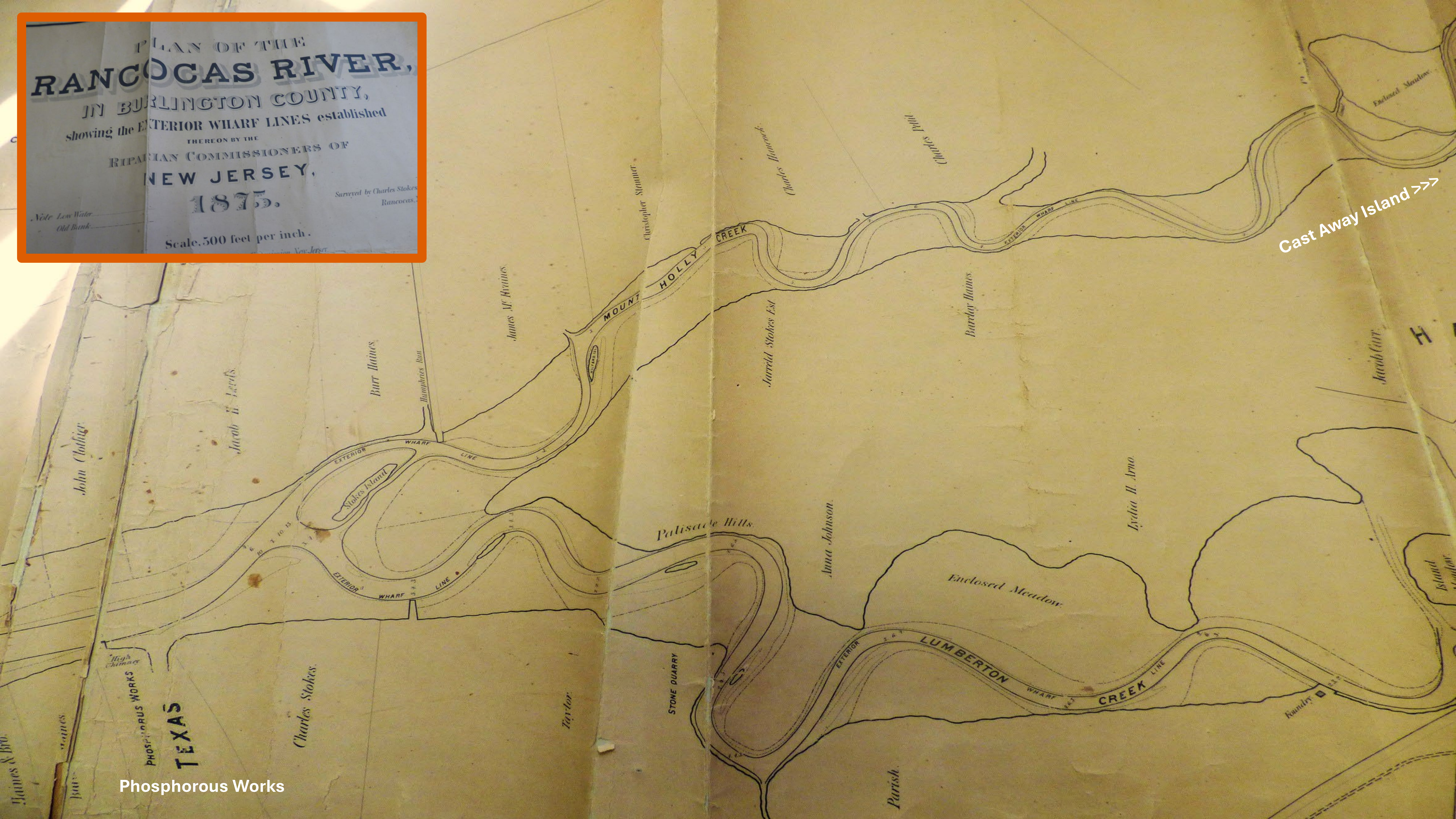
Mount Holly. It is a fine animal.
The Lumberton Sand Company has purchased the old phosphorus works, near Centreton, for $5,000.
The Burlington County Safe Deposit

14 January 1901



The Lumberton Sand Company has purchased the wharf, coal and lumber yard property at Centreton, belonging to Harry L. Heulings, for $5,700.

04 June 1904


PLAN OF THE
RANCOCAS RIVER,
IN BURLINGTON COUNTY,
showing the EXTERIOR WHARF LINES established
THEREON BY THE
RIPARIAN COMMISSIONERS OF
NEW JERSEY,
1875.
Surveyed by Charles Stokes
Scale, 500 feet per inch.
Cast Away Island >>>
Phosphorous Works
MOUNT HOLLY CREEK
EXTERIOR WHARF LINE
Stokes Island
Palisade Hills
LUMBERTON CREEK
Enclosed Meadow
STONE QUARRY
TEXAS
Foundry
Burr Haines
Charles Hancock
Jarrett Stokes Est
Barclay Haines
Anna Johnson
Charles Stokes
Taylor
Parish

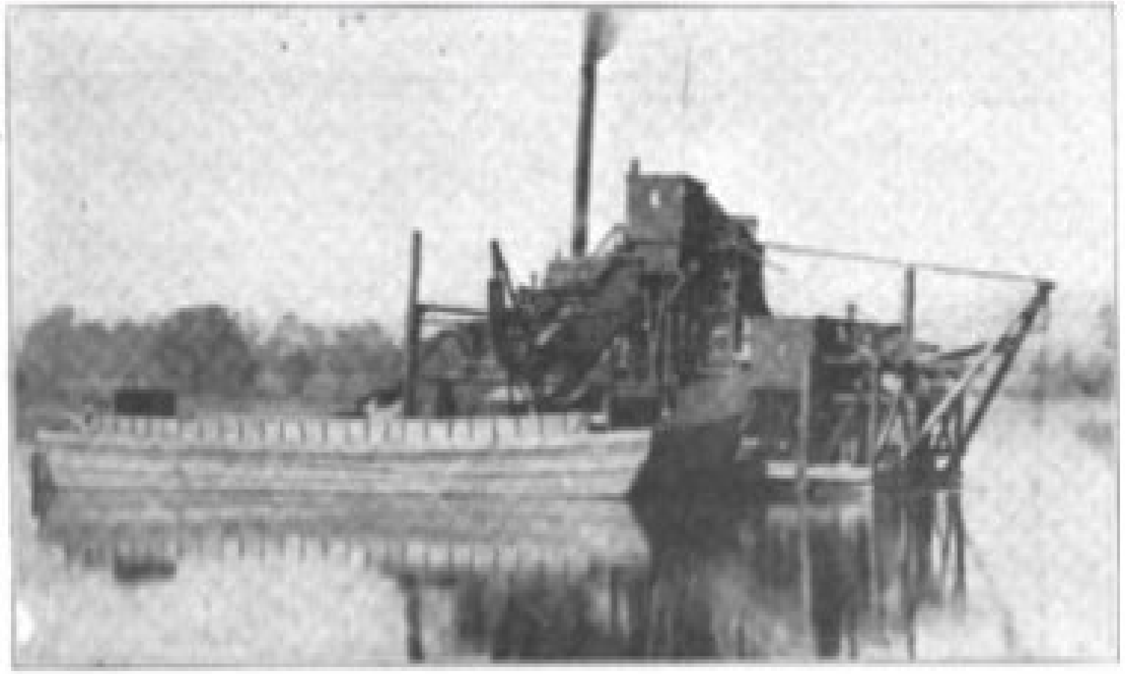
1898
Channel Stabilization Piling and Wing Dam
N Branch Rancocas State Park

PROTECT HERITAGE

Rancocas Creek (1915)

Hainesport Mining and Transport Co.

75 foot radius, 5 cubic yard grab bucket w manganese lip. 4,000 cy in a 10 hr day. Hoisting speed of 150 p/m. Cars loaded beneath receiving hopper than dumped into scows for delivery Phila and Camden Ports

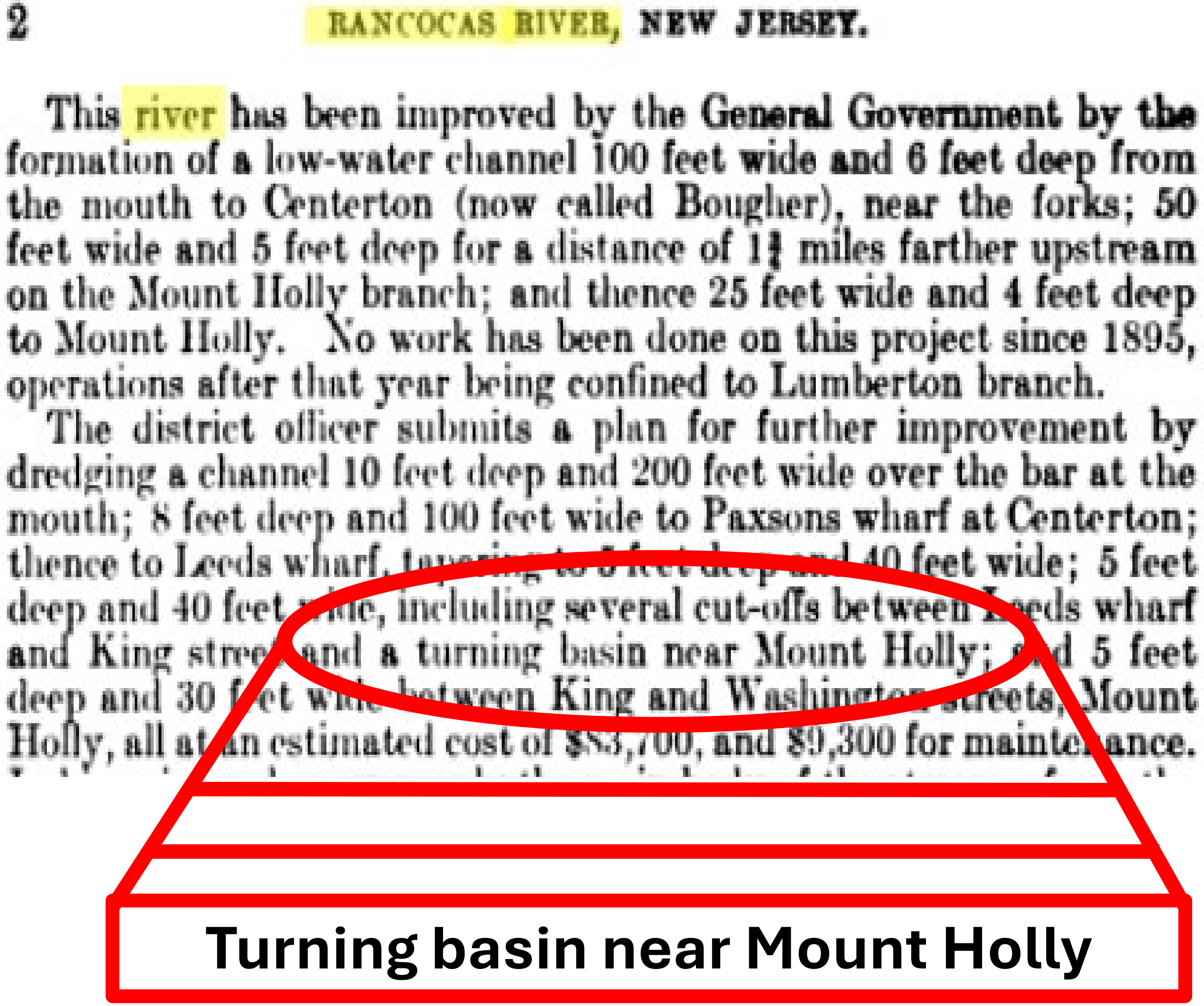


Sand Dredge "Independence" Hainesport Mining Co. (1915)

Delaware Bay and River

Maritime Heritage Digital Incubator

A Report to the Secretary of War 1909


2 RANCOCAS RIVER, NEW JERSEY.

This river has been improved by the General Government by the formation of a low-water channel 100 feet wide and 6 feet deep from the mouth to Centerton (now called Bougher), near the forks; 50 feet wide and 5 feet deep for a distance of 1¾ miles farther upstream on the Mount Holly branch; and thence 25 feet wide and 4 feet deep to Mount Holly. No work has been done on this project since 1895, operations after that year being confined to Lumberton branch.

The district officer submits a plan for further improvement by dredging a channel 10 feet deep and 200 feet wide over the bar at the mouth; 8 feet deep and 100 feet wide to Paxsons wharf at Centerton; thence to Leeds wharf, tapering to 5 feet deep and 40 feet wide; 5 feet deep and 40 feet wide, including several cut-offs between Leeds wharf and King street, and a turning basin near Mount Holly; and 5 feet deep and 30 feet wide between King and Washington streets, Mount Holly, all at an estimated cost of $83,700, and $9,300 for maintenance.

Risdon Alcott Landing

Mount Holly, Head of Tide.

148 miles from Delaware Capes

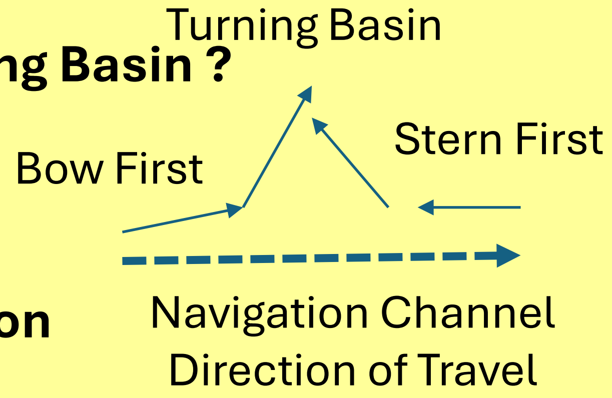
N Branch, Rancocas

Maritime Turning Basin ?

Think K-Turn

Position vessel

Avoid Congestion

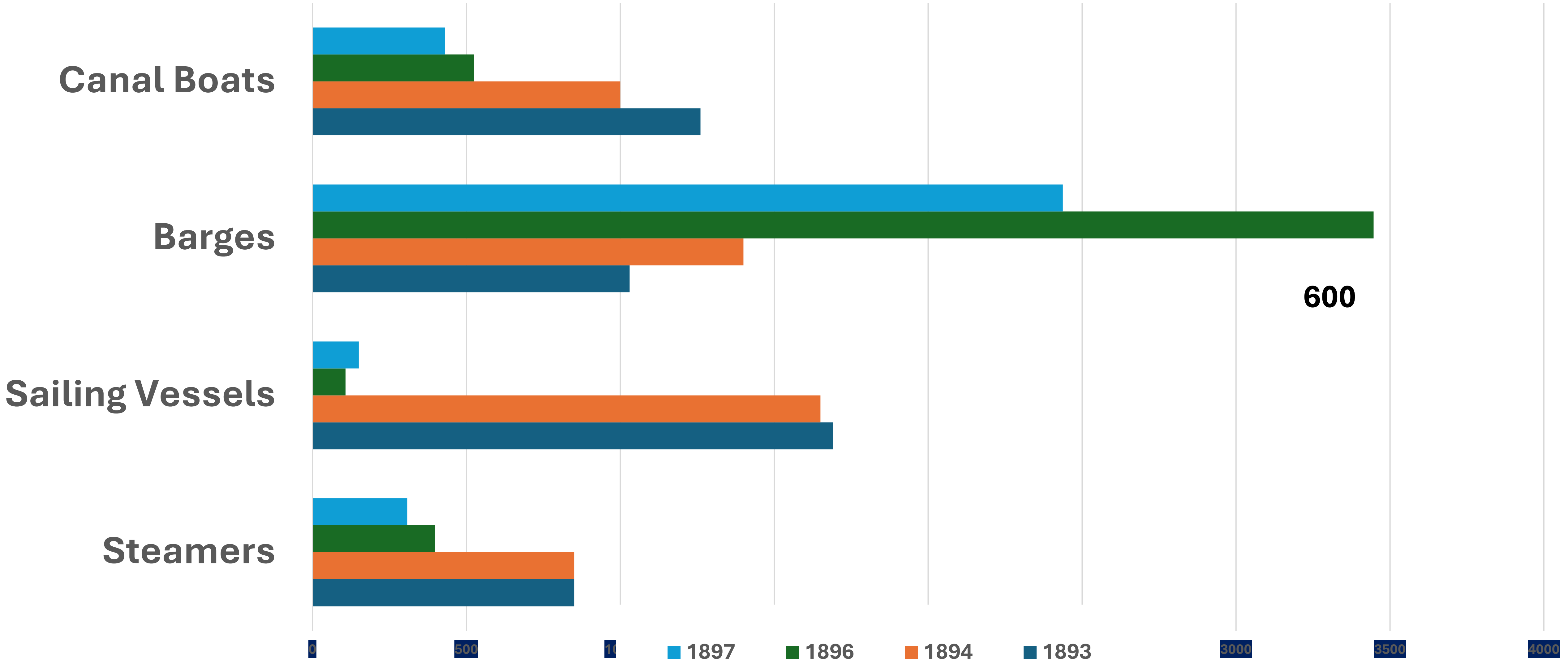


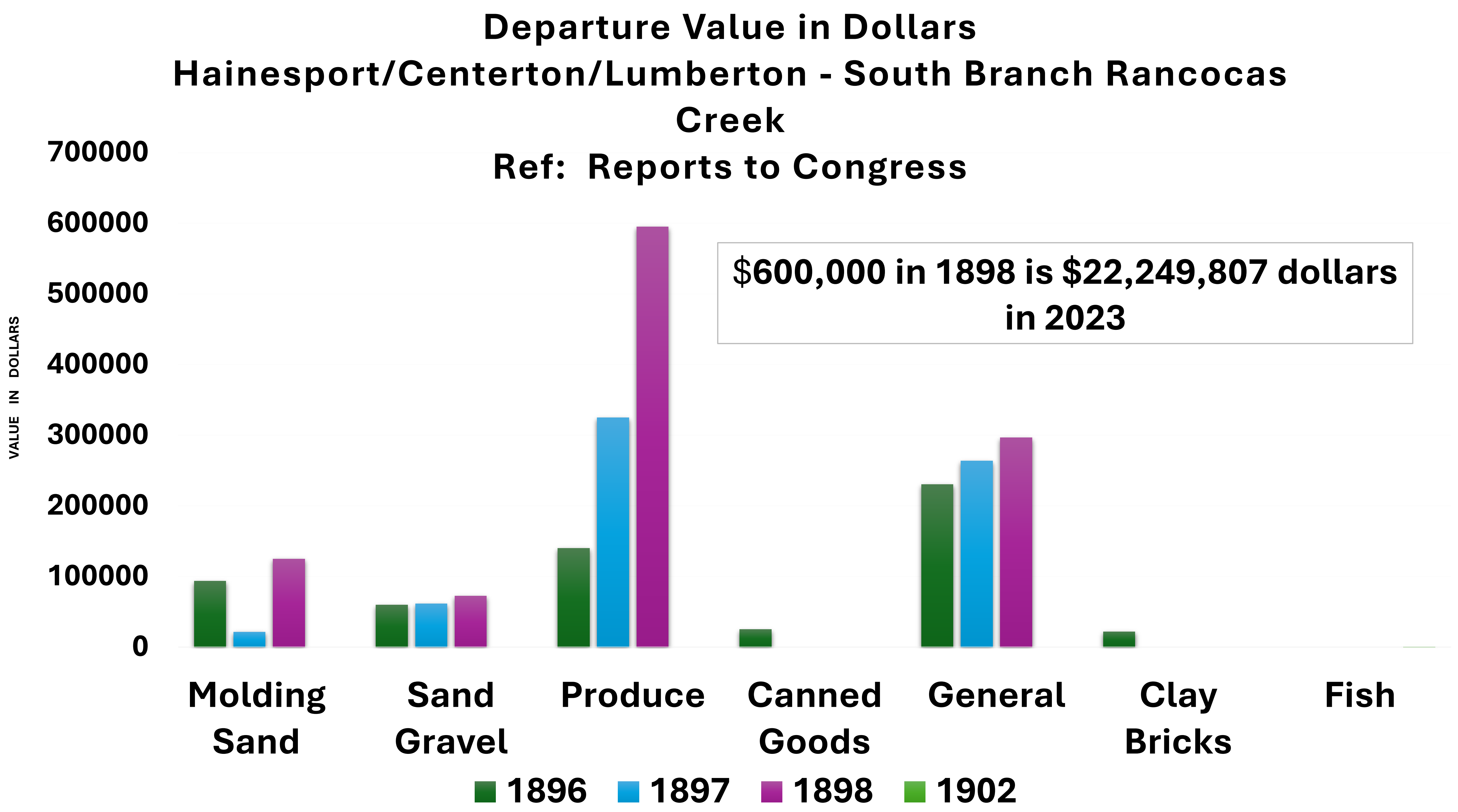
Turning Basin, High Tide

Centerton Landing - Rancocas Creek - Main Stem

Courtesy Mt. Laurel Historical Society

Hainesport/Centerton/Lumberton - South Branch Rancocas Creek
Vessel Type & Number of Voyages per Year
Ref: Reports to Congress





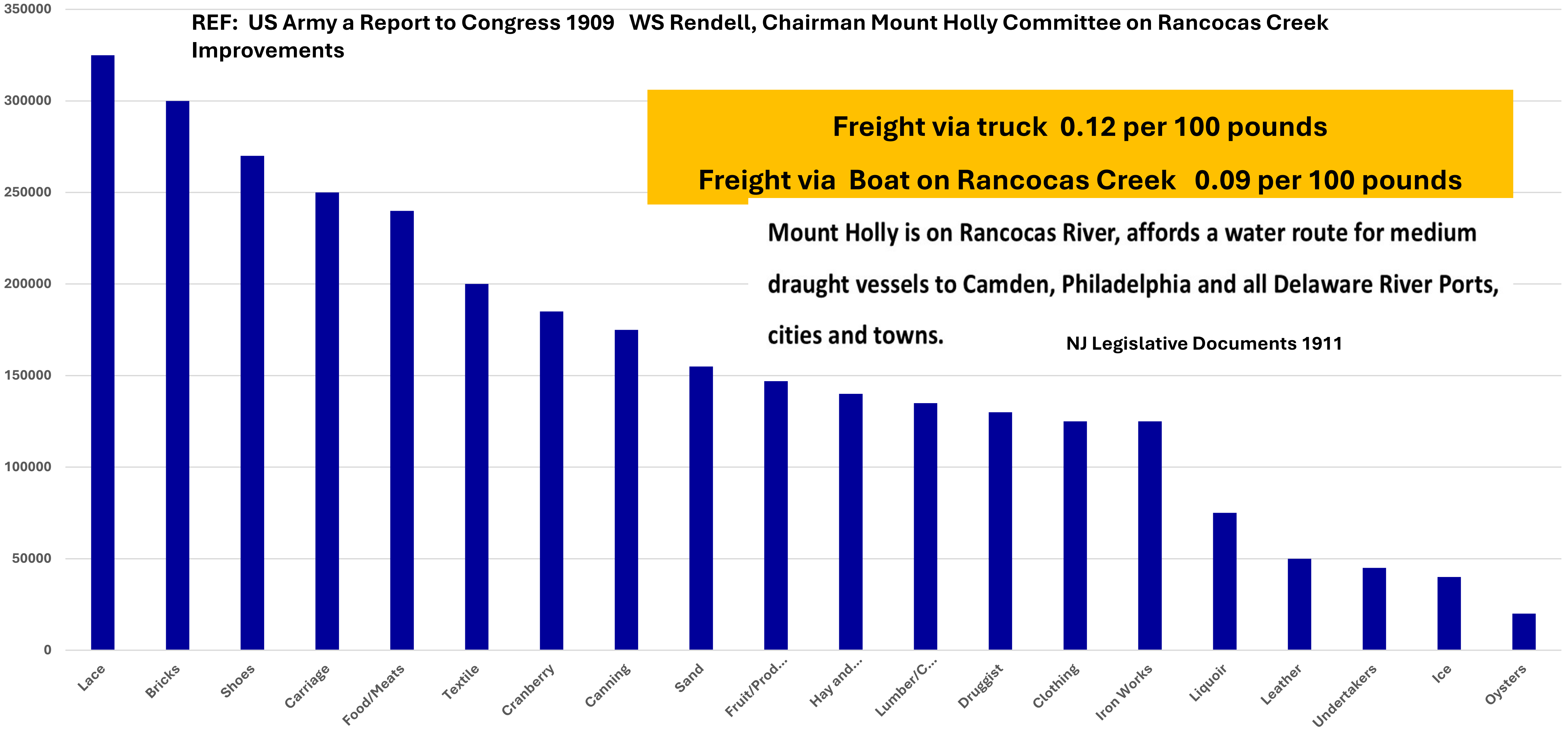
Departure Value in Dollars
Hainesport/Centerton/Lumberton - South Branch Rancocas Creek
Ref: Reports to Congress
VALUE IN DOLLARS
700000
600000
500000
400000
300000
200000
100000
0
$600,000 in 1898 is $22,249,807 dollars in 2023
Molding Sand
Sand Gravel
Produce
Canned Goods
General
Clay Bricks
Fish
1896
1897
1898
1902

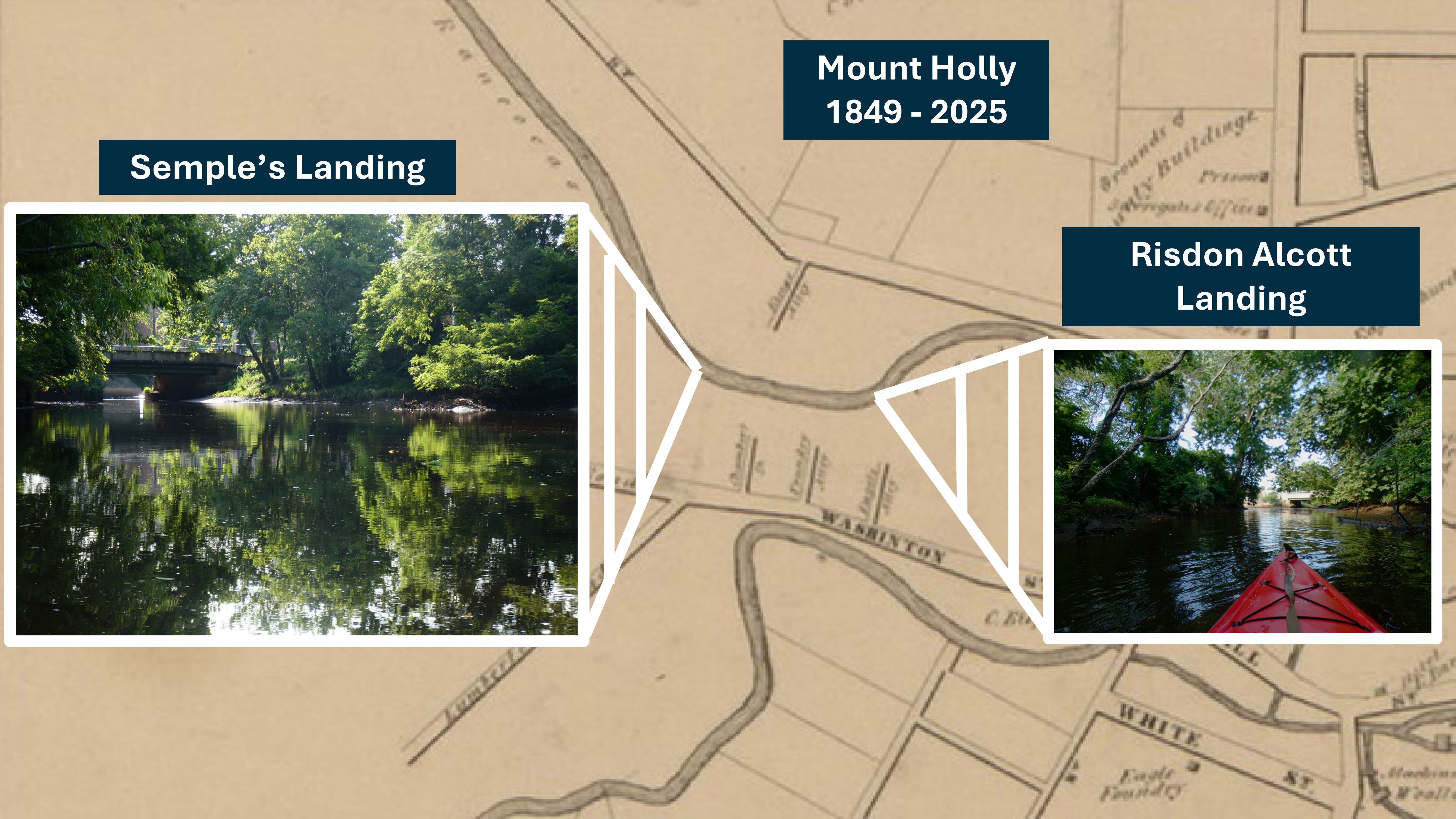
Passing Cast Away Island, Creek Right

In the Portal

June 1909

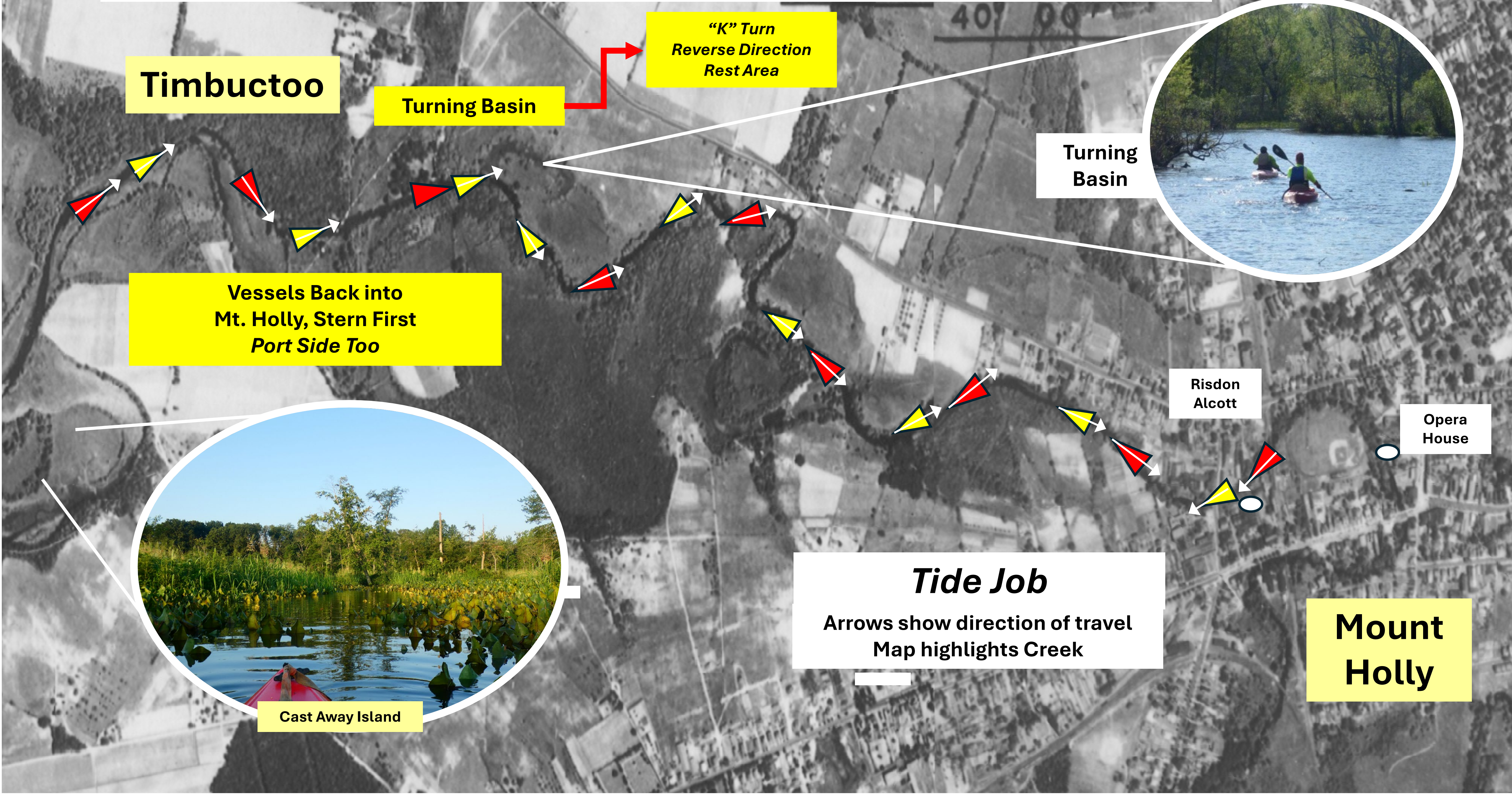
Value of Exports/Imports from Mount Holly Via Freight Rancocas Creek



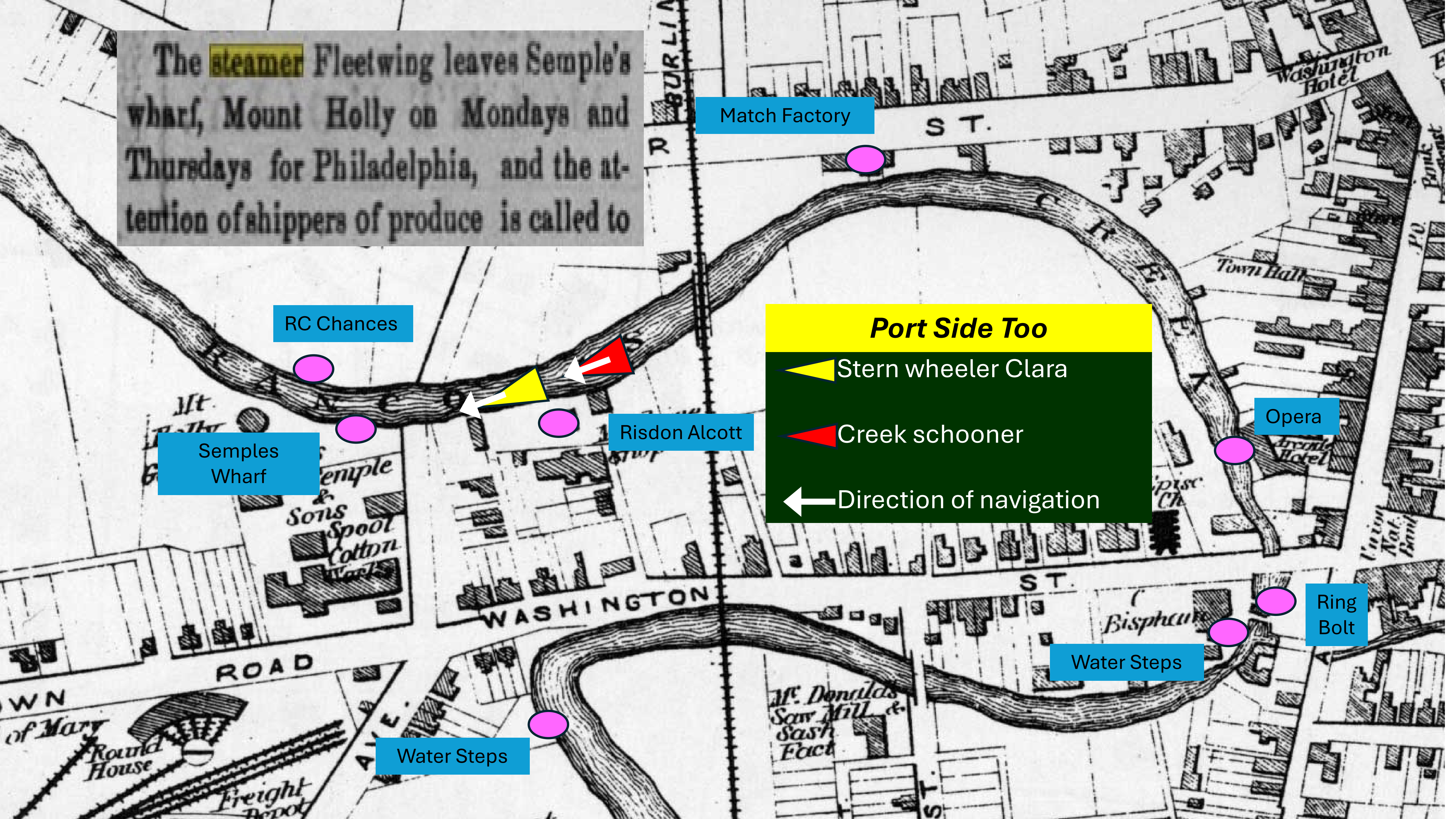


Mount Holly
1849 - 2025
Semple's Landing
Risdon Alcott
Landing
WASHINGTON
WHITE
Eagle
Foundry

N Branch - Narrow Tidal Waterway – Vessel Precedence



Cast Away Island

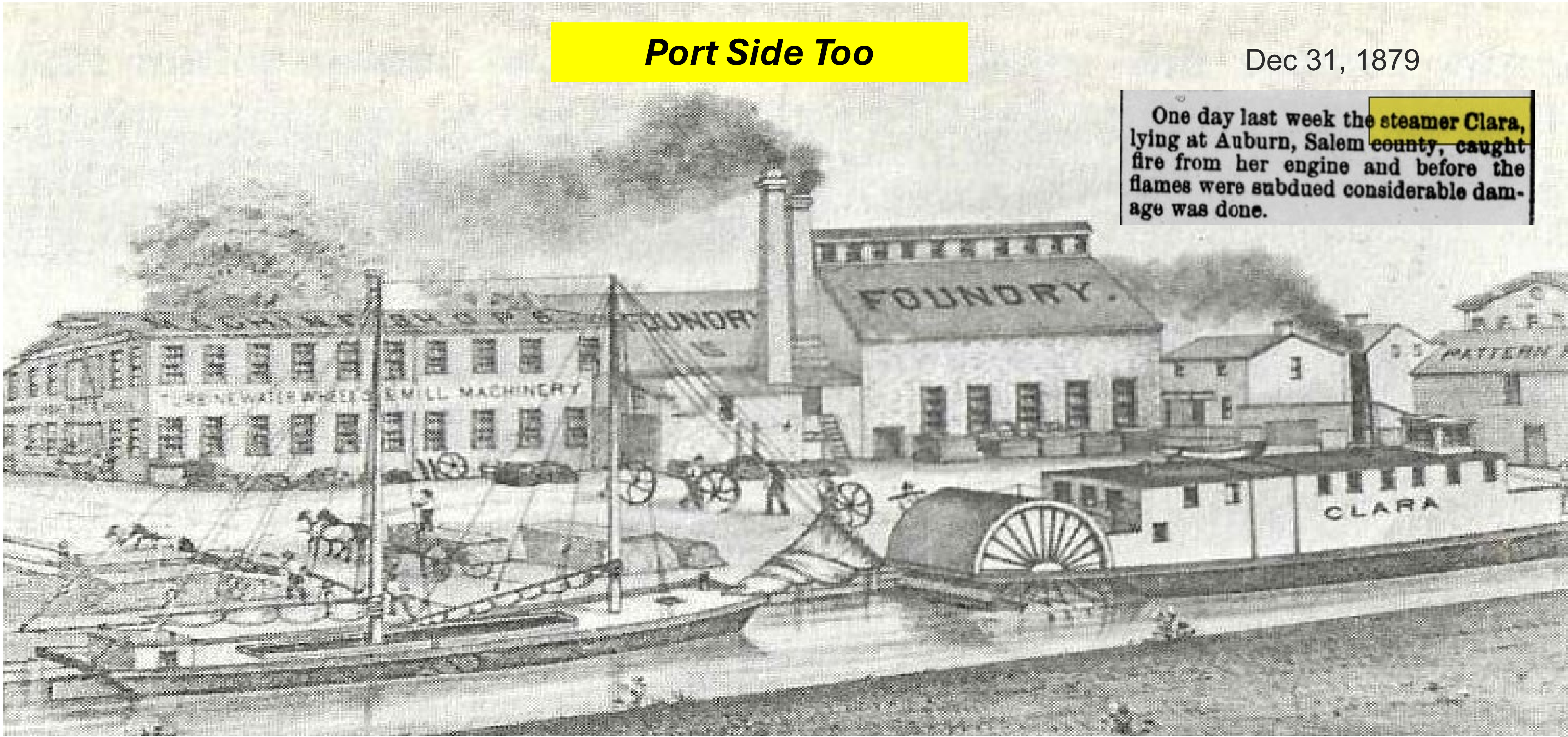

The steamer Fleetwing leaves Semple's wharf, Mount Holly on Mondays and Thursdays for Philadelphia, and the attention of shippers of produce is called to
Match Factory
RC Chances
Semples Wharf
Risdon Alcott
Port Side Too
Stern wheeler Clara
Creek schooner
Direction of navigation
Opera
Ring Bolt
Water Steps
Water Steps
ST.
WASHINGTON
ST.
ROAD
Washington Hotel
Town Hall
Semple & Sons Spool Cotton Works
Round House
Freight Depot
AVE.
Bispham
McDonalds Saw Mill & Sash Fact
P.O.

Risdon Alcott Landing - Vessel Precedence - Tide Job

Port Side Too

Dec 31, 1879

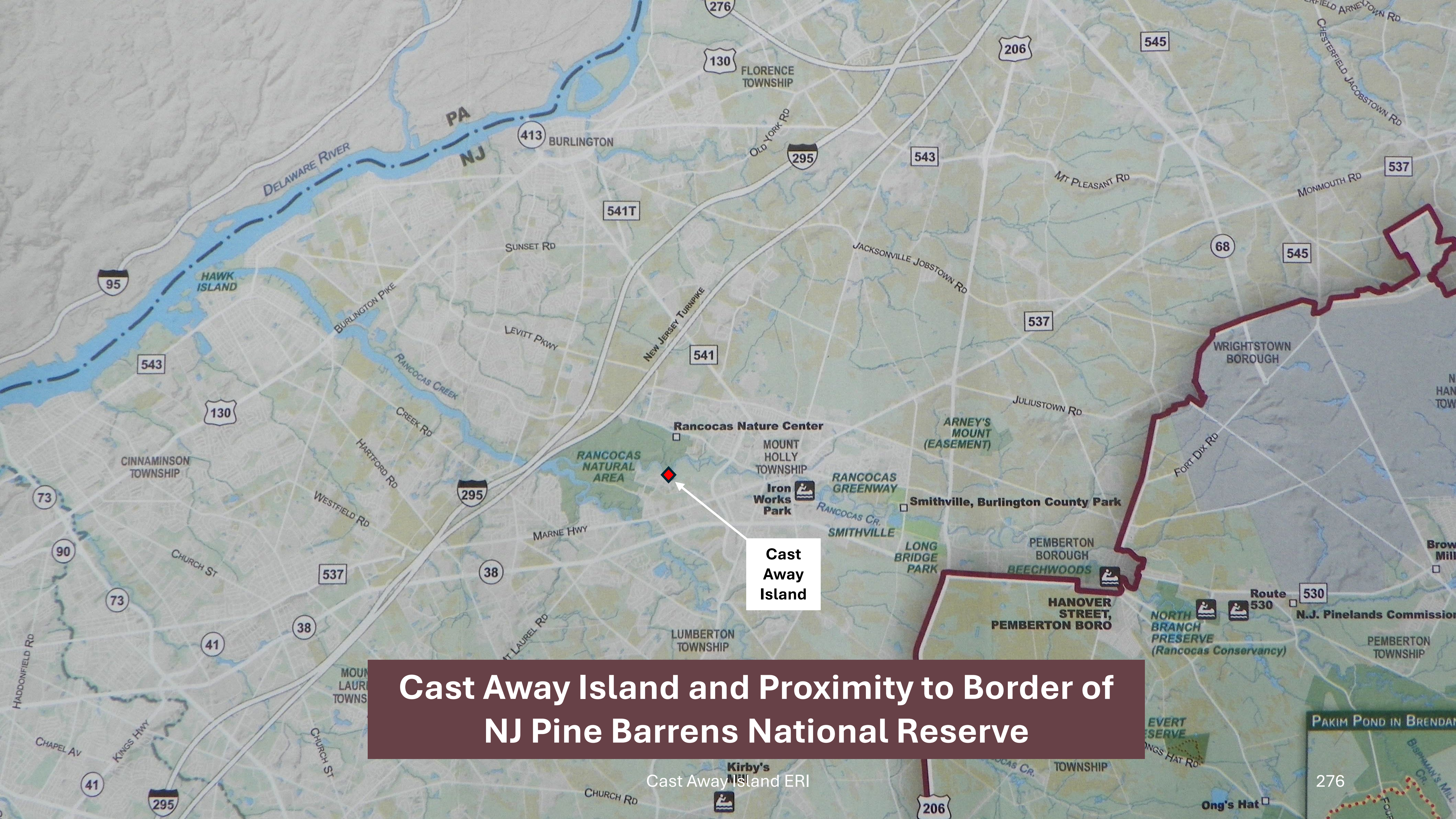
One day last week the steamer Clara, lying at Auburn, Salem county, caught fire from her engine and before the flames were subdued considerable damage was done.

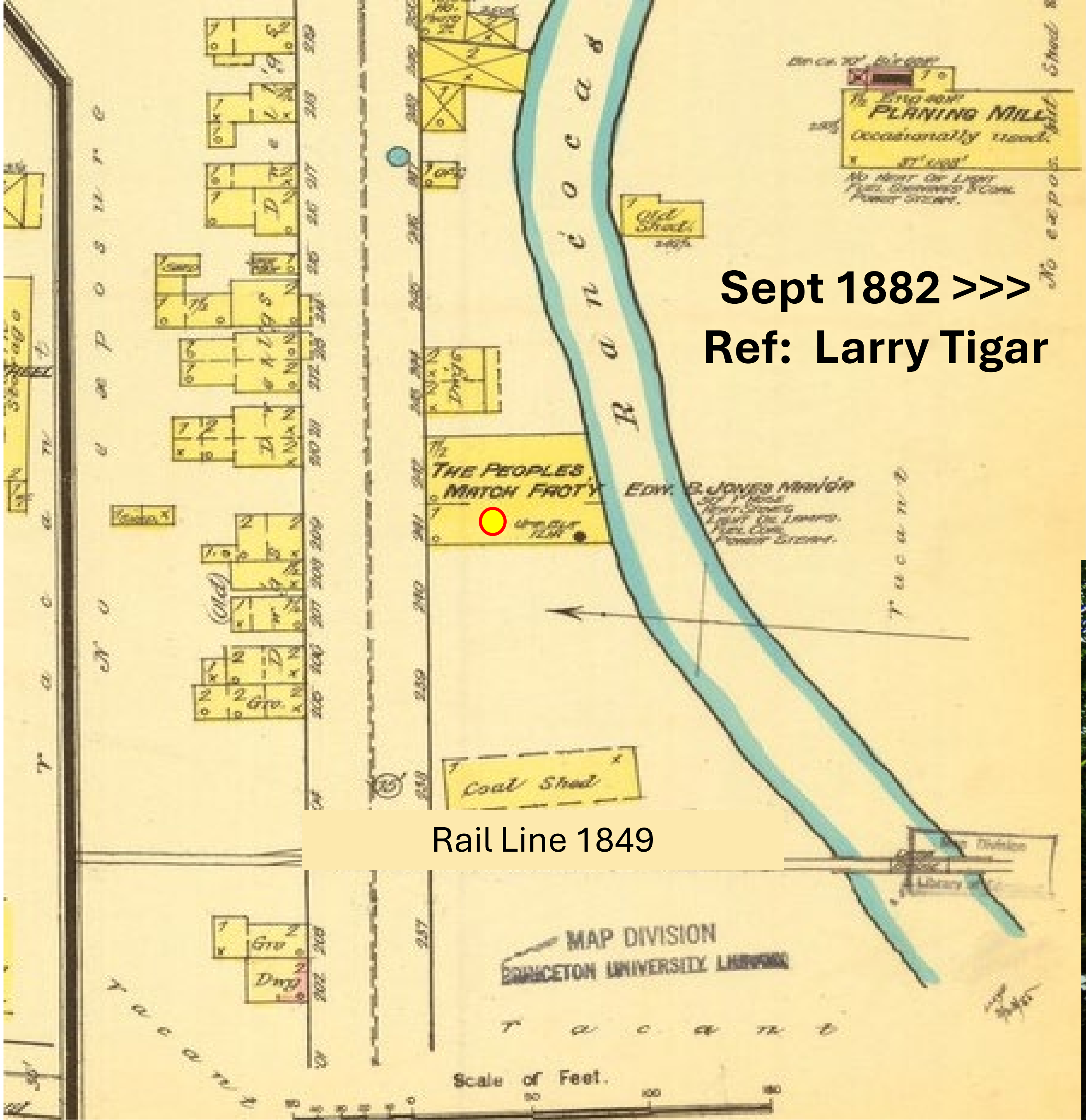


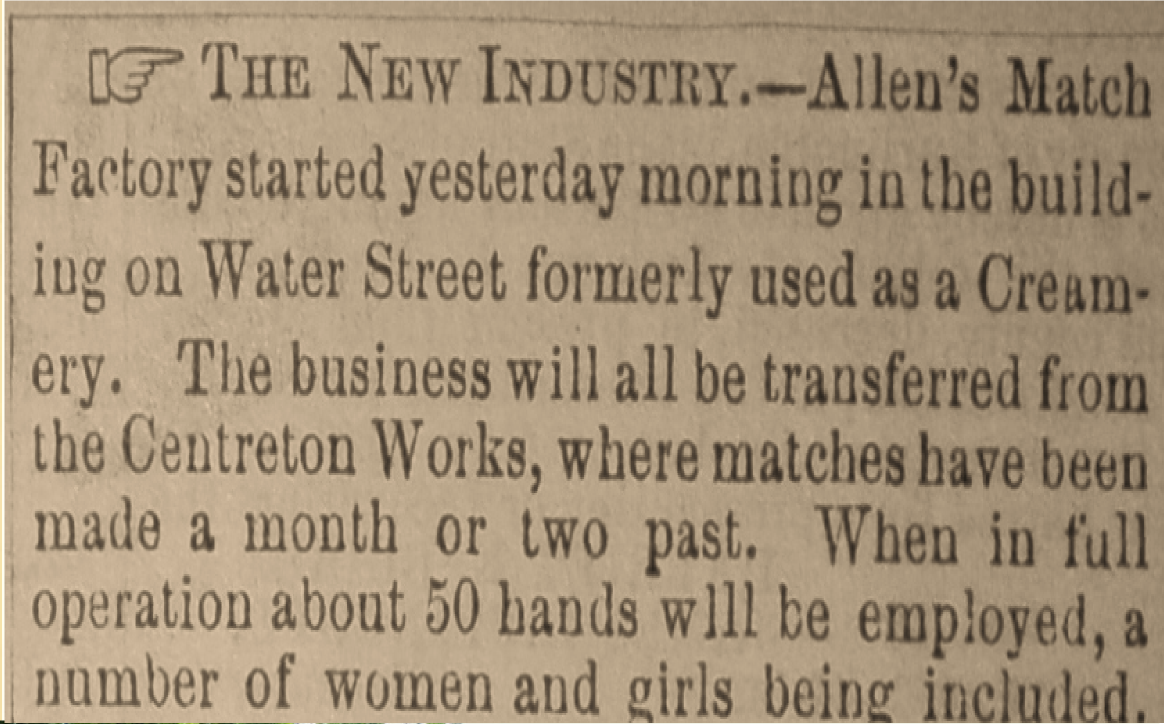
Sternwheeler Clara arrives second, sails first

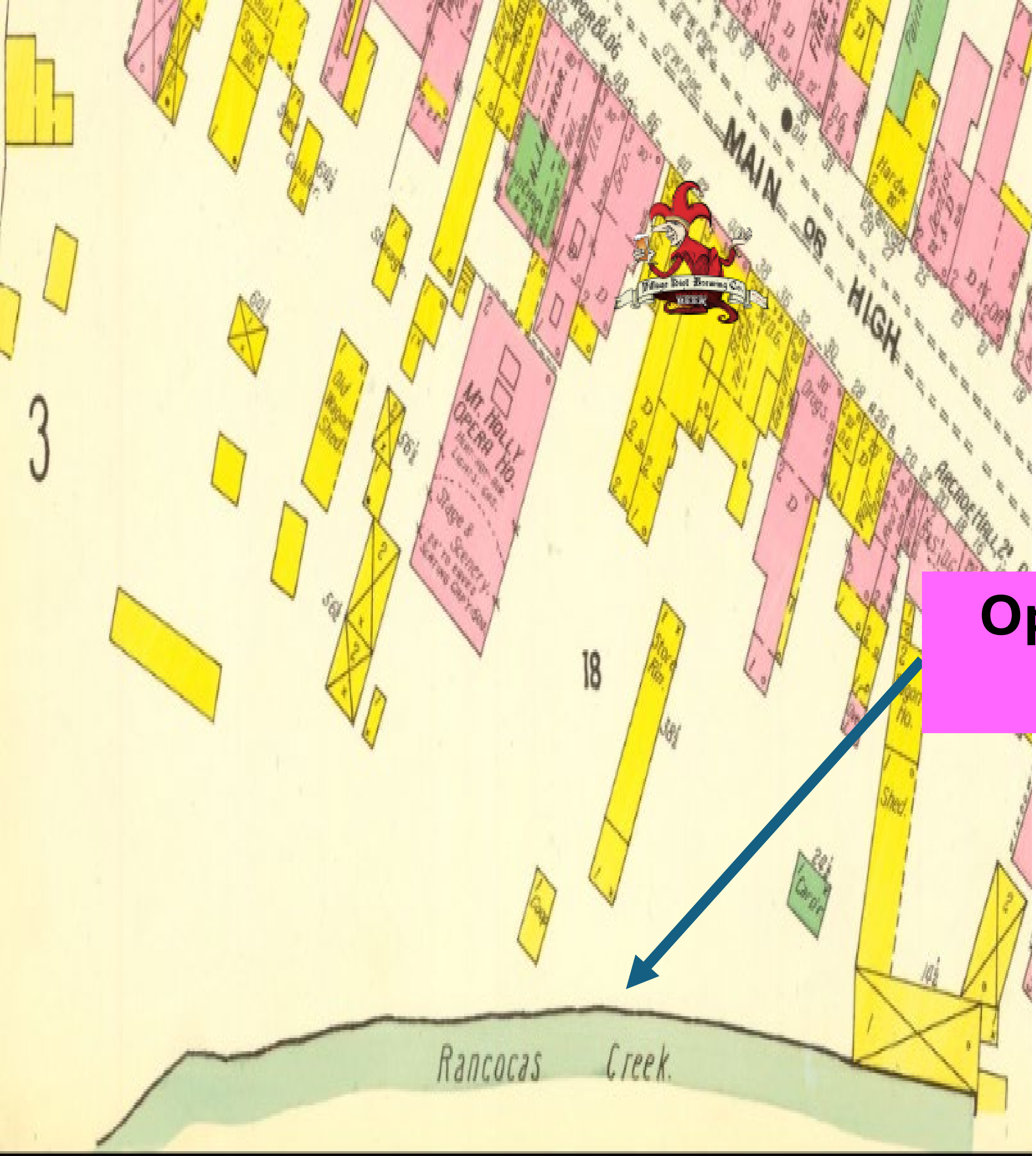
Schooner arrives first, sails second

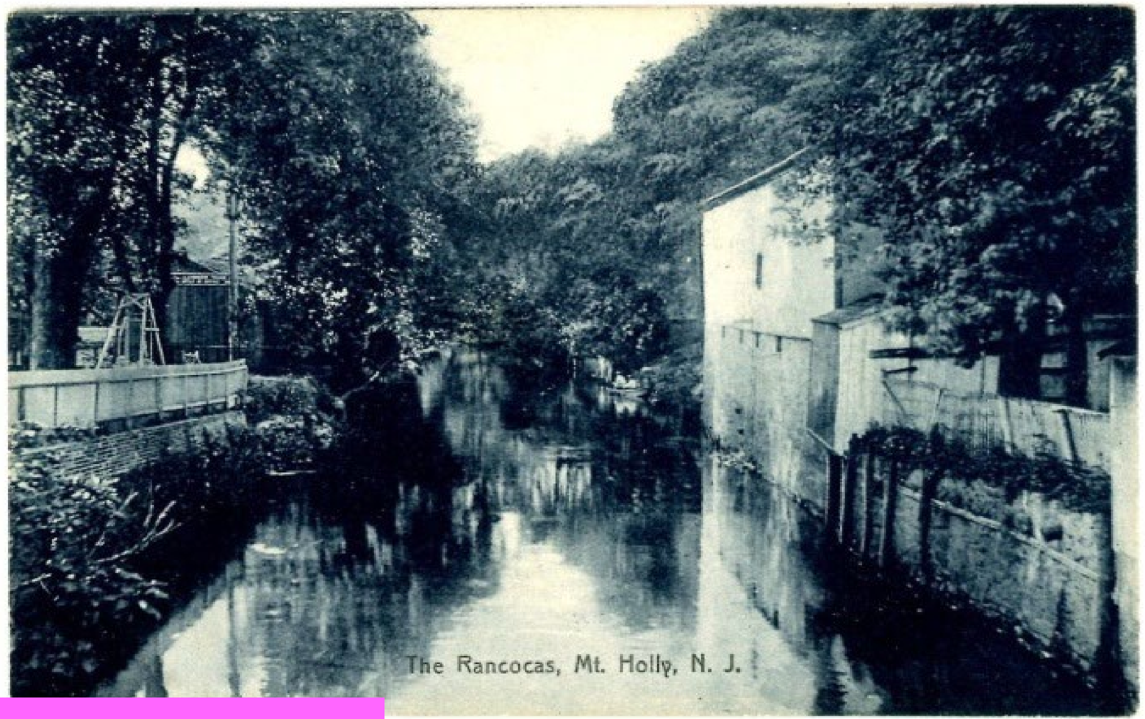
Cast Away Island and Proximity to Border of NJ Pine Barrens National Reserve



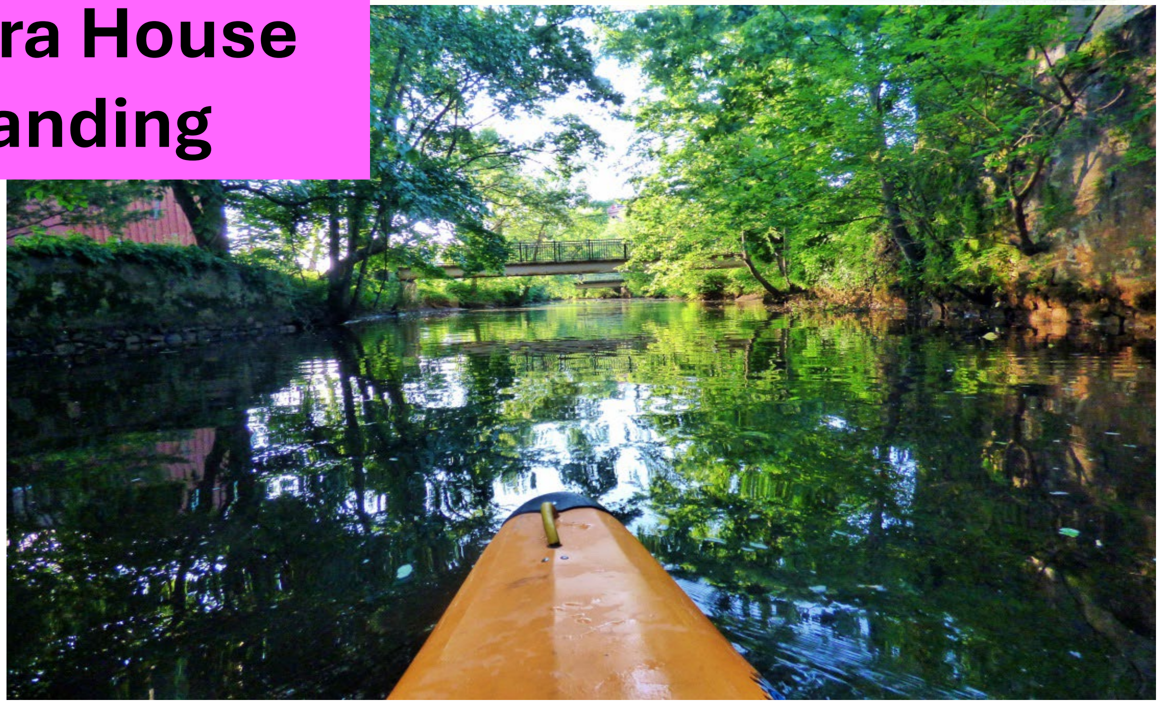



☞ THE NEW INDUSTRY.—Allen's Match Factory started yesterday morning in the building on Water Street formerly used as a Creamery. The business will all be transferred from the Centreton Works, where matches have been made a month or two past. When in full operation about 50 hands will be employed, a number of women and girls being included.





Opera House Landing

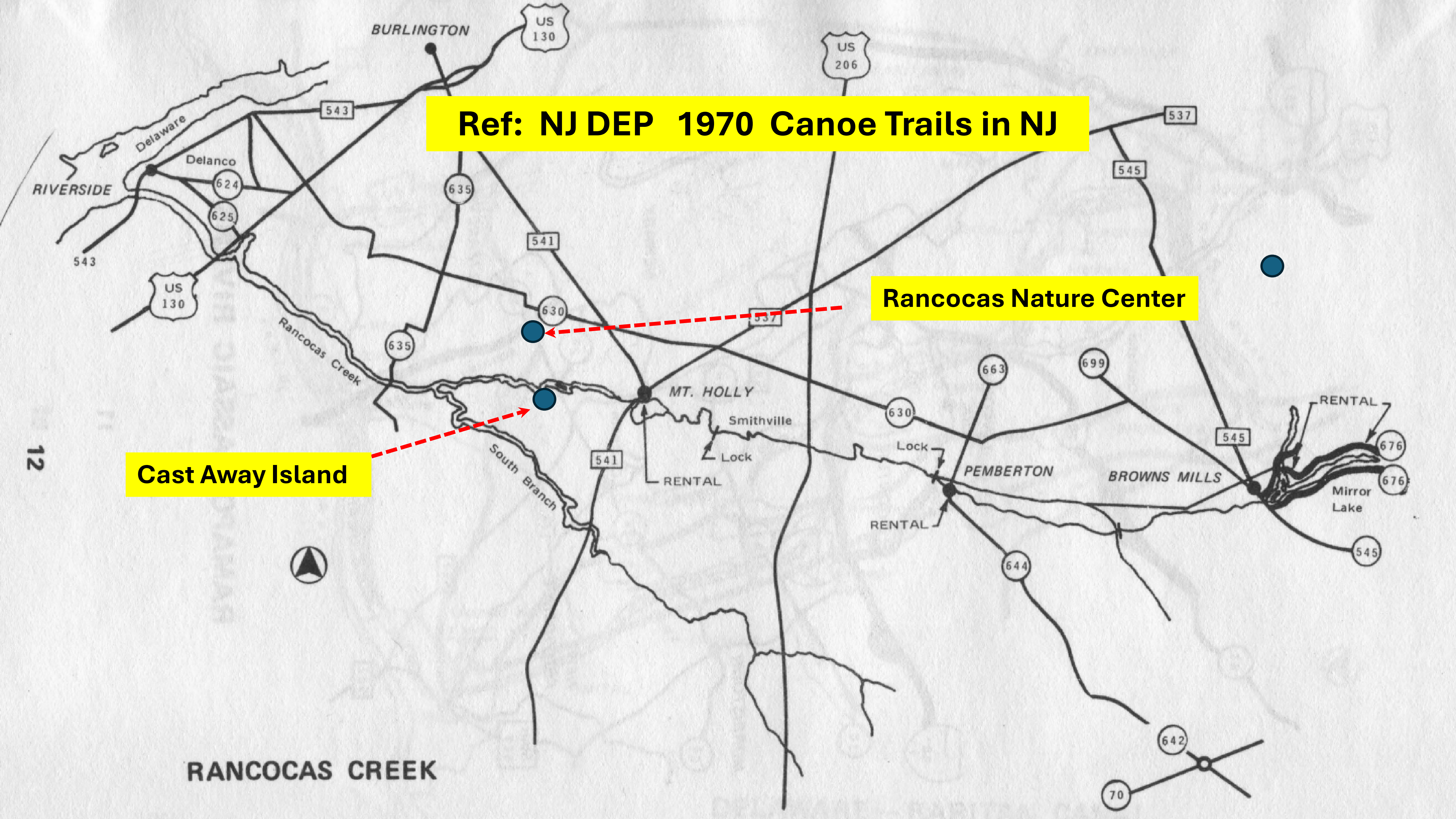


Section Five:

NJDEP Listing Rancocas Creek

Canoe Trail

Rancocas Nature Center



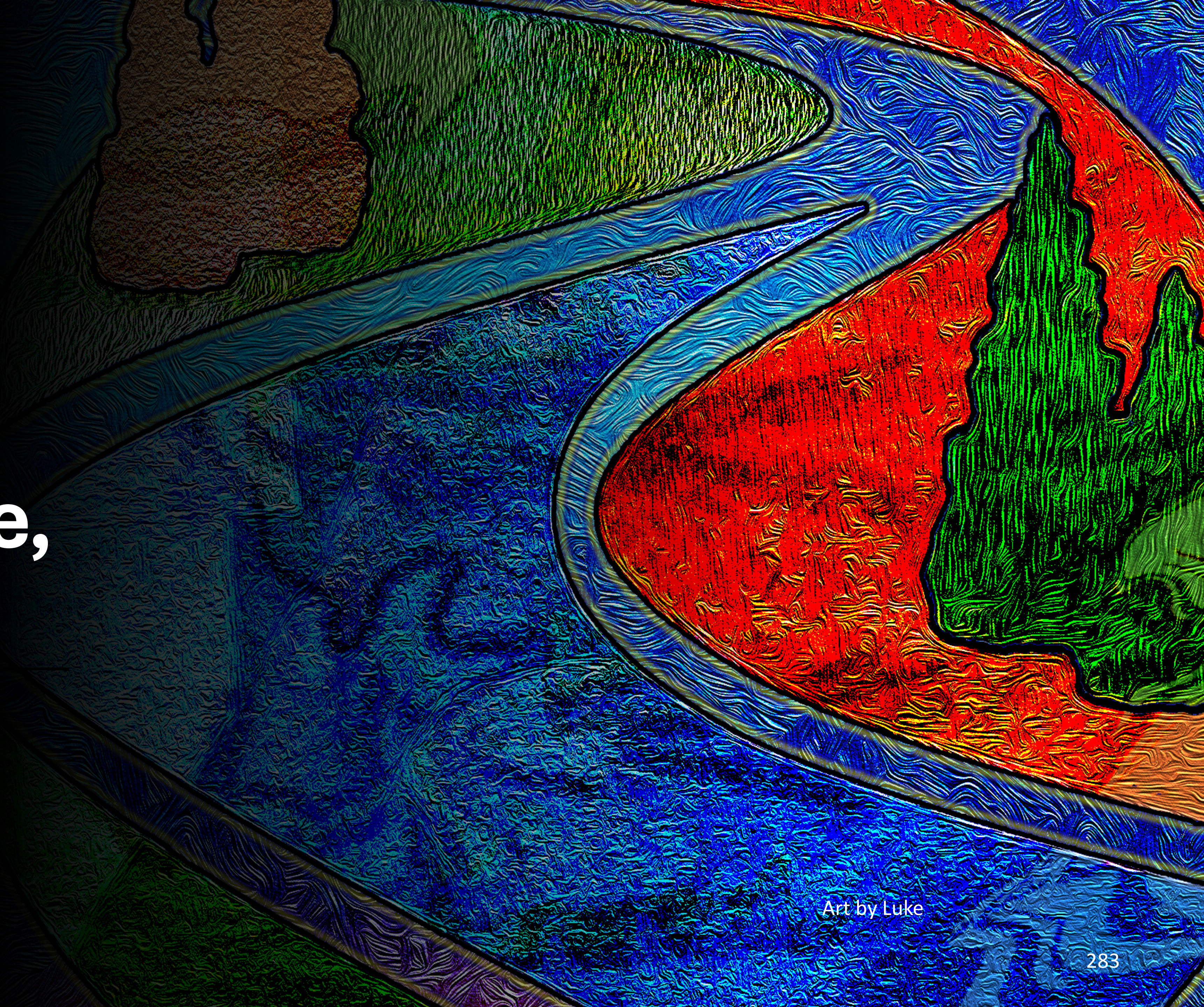
Ref: NJ DEP 1970 Canoe Trails in NJ
Rancocas Nature Center
Cast Away Island
BURLINGTON
US 130
US 206
543
537
545
Delaware
Delanco
RIVERSIDE
624
625
635
541
630
537
Rancocas Creek
South Branch
MT. HOLLY
Smithville
Lock
RENTAL
663
699
PEMBERTON
BROWNS MILLS
Mirror Lake
676
644
642
70
12
RANCOCAS CREEK


Passing down creek

Mather Farm, Today's Rancocas Nature Center
Artist - Hugh Cambell

Section Six:

People, Place, Community



Art by Luke

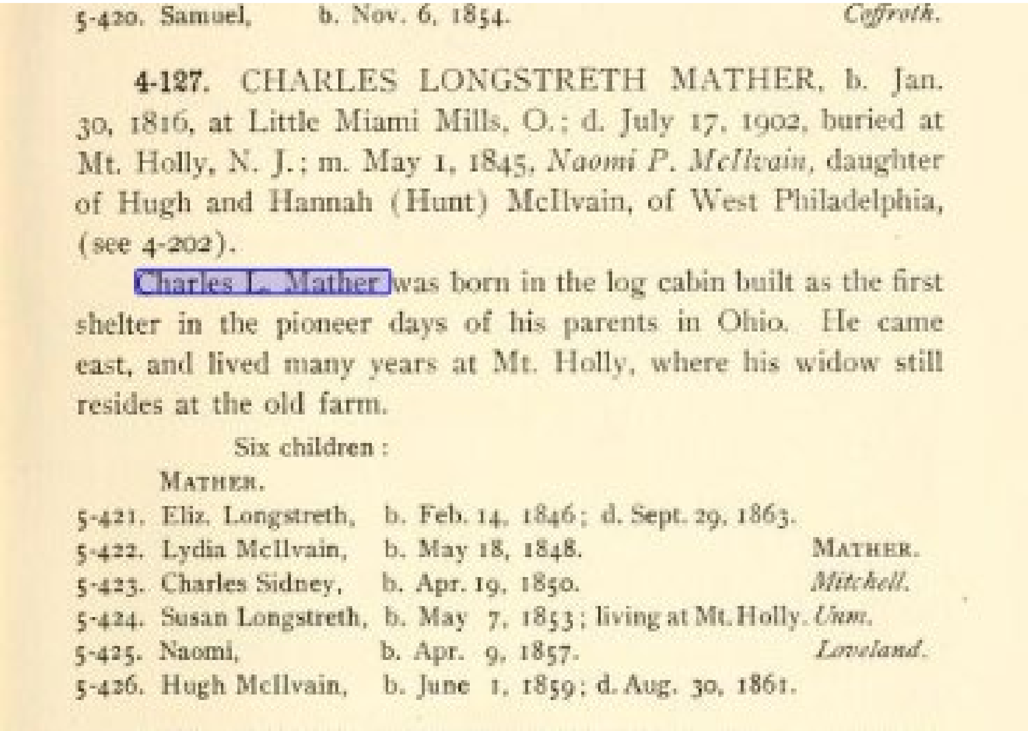
Sears 1911/1912 Moto buggy

Mount Holly

American Canoe Association, Wilmington Canoe Club and other groups paddles passed by Cast Away Island from the late 1800’s to the 1970’s.

Charles Longstreth Mather

1816 - 1902



5-420. Samuel, b. Nov. 6, 1854. *Coffroth.*

4-127. CHARLES LONGSTRETH MATHER, b. Jan. 30, 1816, at Little Miami Mills, O.; d. July 17, 1902, buried at Mt. Holly, N. J.; m. May 1, 1845, *Naomi P. McIlvain*, daughter of Hugh and Hannah (Hunt) McIlvain, of West Philadelphia, (see 4-202).

Charles L. Mather was born in the log cabin built as the first shelter in the pioneer days of his parents in Ohio. He came east, and lived many years at Mt. Holly, where his widow still resides at the old farm.

Six children:

MATHER.

5-421.	Eliz. Longstreth,	b. Feb. 14, 1846; d. Sept. 29, 1863.	
5-422.	Lydia McIlvain,	b. May 18, 1848.	MATHER.
5-423.	Charles Sidney,	b. Apr. 19, 1850.	*Mitchell.*
5-424.	Susan Longstreth,	b. May 7, 1853; living at Mt. Holly.	*Unm.*
5-425.	Naomi,	b. Apr. 9, 1857.	*Loveland.*
5-426.	Hugh McIlvain,	b. June 1, 1859; d. Aug. 30, 1861.	

Constructed and resided in what is today's Rancocas Nature Center in 1846/1856.

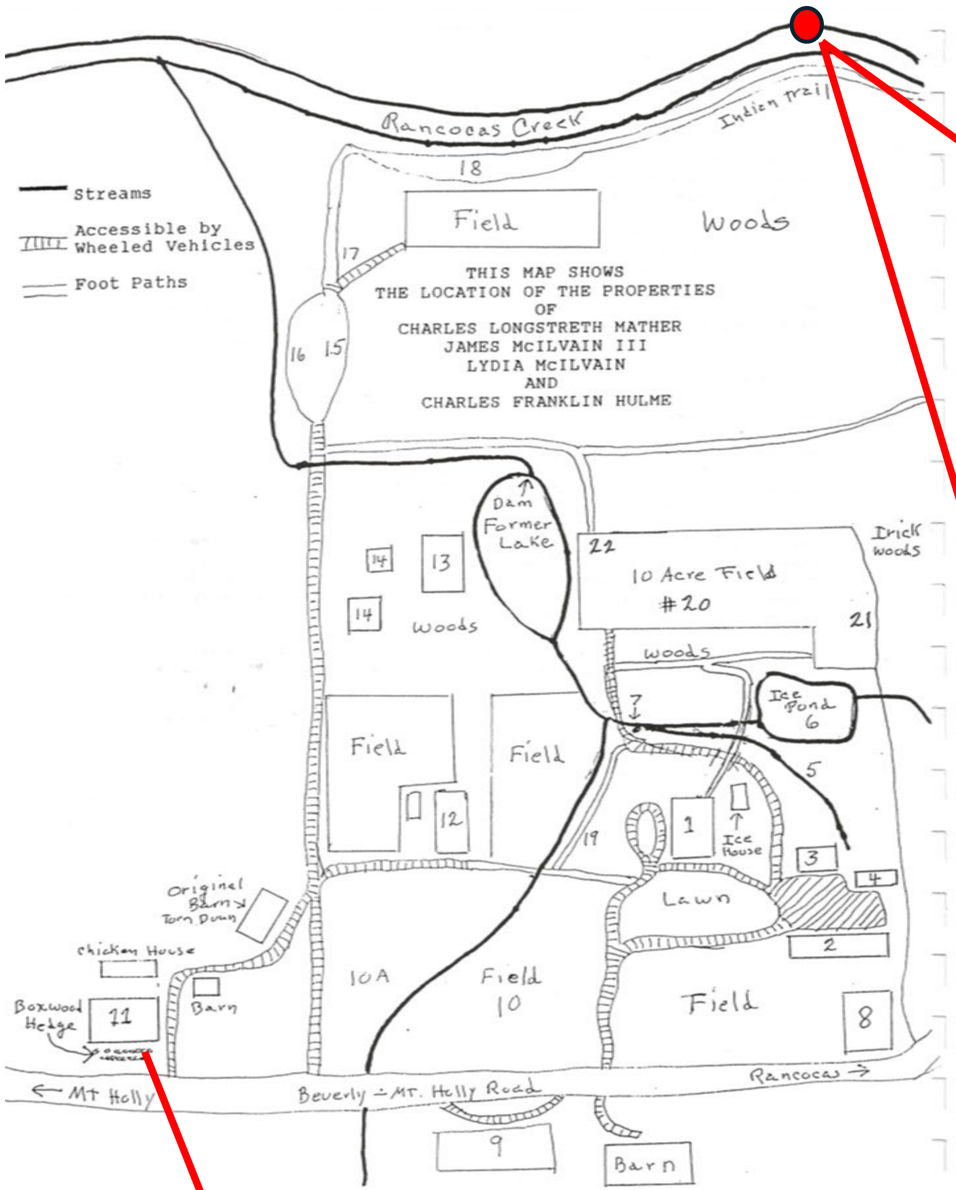
He farmed the tidewater meadows of Rancocas Creek with tide gates.

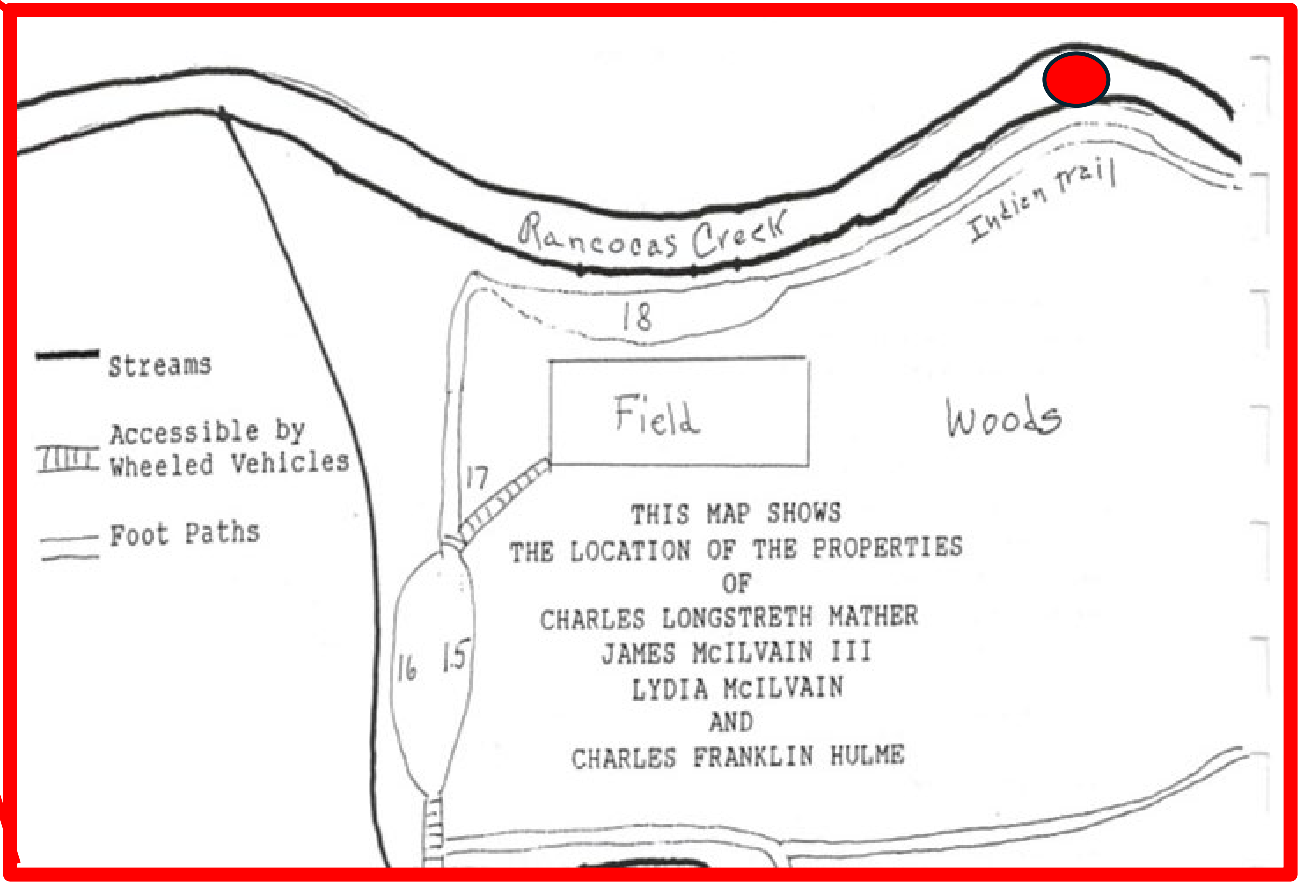
These tide gates are visible at low tide, looking North from Cast Away Island.

Note: McIlvain Daughter Marriage

Charles Longstreth Mather
Hudson River Chapter 1871
Athens Shipyard, Albany

Cast Away Island





Rancocas Nature Center

Ref: McIlvaine Dairy (son-in-law Mather Farm Site) 03 Jan 1894

Food Source for fairy shrimp and microbes

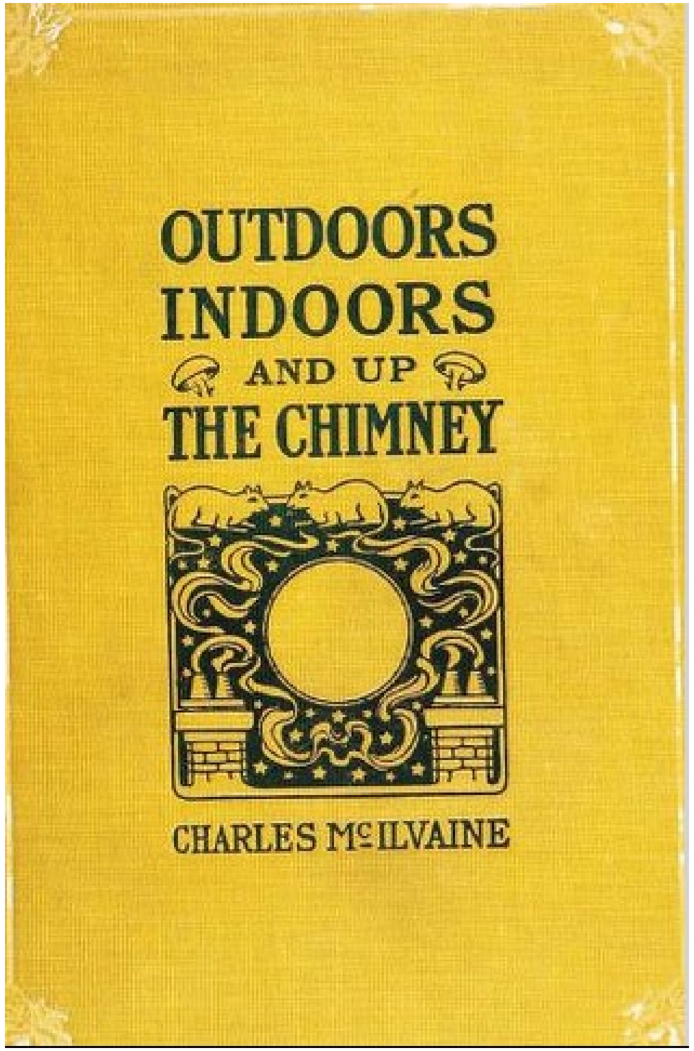
Tide Gates Cast Away Island

Old Pier - Timbuctoo

Vsl Remains Cast Away Island

Charles McIlvaine Author

Ref: Captain Charles McIlvaine Dairy (?)



CONTENTS

v

AMERICAN FUNGI

HOW TO SELECT AND COOK THE EDIBLE; HOW TO DISTINGUISH AND AVOID THE POISONOUS

WITH FULL BOTANIC DESCRIPTIONS

By CHARLES McILVAINE

PRESIDENT PHILADELPHIA MYCOLOGICAL CENTER, HONORARY MEMBER SALEM COUNTY AND GLOUCESTER COUNTY, N. J., MEDICAL SOCIETIES

AND

ROBERT K. MACADAM

New Edition

Revised Throughout by CHARLES FREDERIC MILLSPAUGH, Curator of Botany, Field Museum of Natural History, Chicago, with Supplementary Chapter and Many New Illustrations

INDIANAPOLIS
THE BOBBS-MERRILL COMPANY
PUBLISHERS

Rancocas Crick

By the way, you will hear a great many persons say "crick" instead of "creek." But you will remember that creek should no more be called crick than Greek should be called Grick or cheek be called chick.

Water-Boatman.

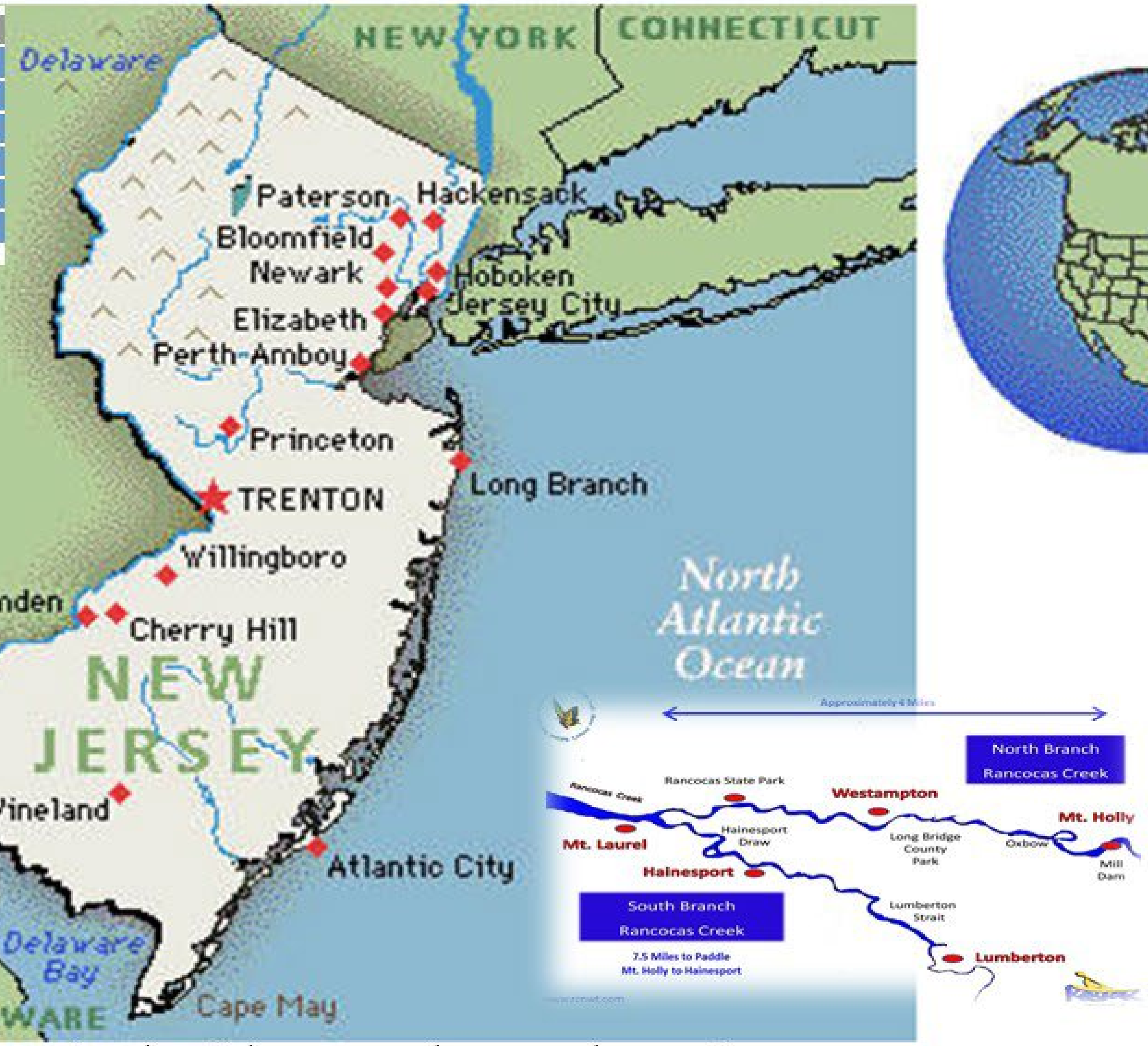
Crawfish can be caught with a small dip net or with the fingers. When catching them with the fingers it is best to get the first hold. They have ten legs, four small ones on each side, for walking, and two large ones forward, having immense powerful claws for holding their prey. When a crawfish catches a finger it does not let go when asked.

Ref: McIlvaine p 89

State of New Jersey - Crayfish Species Checklist.

www.rcnwt.com

Species
1. *Cambarus bartonii bartonii*
2. *Cambarus diogenes* ¤
3. *Orconectes limosus*
4. *Orconectes rusticus*
5. *Orconectes virilis*
6. *Procambarus acutus acutus* ¤



Fall - N Branch Crawfish

Ref: http://iz.carnegiemnh.org/crayfish/country_pages/state_pages/newjersey.htm

Great Blue Heron

Cast Away Island

Charles Mather Takes on Philadelphia Coal Monopoly
Rancocas Creek Coal Wars

Myth, Reality, Rancocas Creek Coal War

1866 . - the **"coal ring"** at that time, was so strong in Mt. Holly and vicinity that the most extortionate prices were demanded and obtained. Mather was determined to break this.

About the year 1866, thinking there might be a profit in the coal business he entered into it quite extensively, buying in large quantities from the mines and shipping the coal in canal boats from Port Richmond, Pa. to Mt. Holly, N.J. by way of the Rancocas River. The coal ring, at that time, was so strong in Mt Holly and vicinity that most extortionate prices were demanded and obtained. This he determined to break, if possible, and commenced work to that effect. He secured large orders for coal from the residents of the town at much reduced rates and promised to deliver at certain times. The coal ring was up in arms at once and combined in its efforts to defeat his good aims and plans. Coal at once dropped in price, the dealers even putting coal in cellars and giving long periods of credit to those, who before they would not trust. They did all in their power to shut him out. Still he steadily and boldly pushed his plans to completion, and boat load after boat load was pushed by poles up the narrow and winding Rancocas which was filled with sunken logs, sand bars, and other obstructions. Some boats got to their destination in safety and delivered cargo. Others were snagged and sunk with their cargo on board being a complete loss. Although everything seemed to conspire against him and thwart his plans, he still was not discouraged. Securing more boats and more coal he boldly started out again in his undertaking but luck seemed to be against him. More boats were sunk, more coal lost and, at last despairing of ever accomplishing his desire, he abandoned the enterprise and lent all his energies to the raising of crops and tilling the soil for many years until his health was permanently shattered. He also tried the business of shipping moulding sand from his farm to Philadelphia, but finding there was no profit in it soon discontinued it.

Ref: McIlvaine Dairy 03 Jan 1894

atches

The Philadelphia Inquirer
Tue, Jun 23, 1868 ·Page 8

GEORGE W. WOOD, Grand Marshal.

END OF THE STRIKE—Last night a large meeting of the laborers employed at the Port Richmond coal wharves, who have been on a strike for higher wages, was held at the Carroll School House, Salmon street, near Somerset, Twenty-fifth Ward, relative to hearing the report of a committee of respectable citizens, appointed with a view of healing the differences existing.

The men have, up to the period of the strike, been paid at the rate of eighteen cents an hour, which they contend is not sufficient to support their families, even if engaged ten hours a day. They are not employed an entire day, however, but only for a few hours at a time, which, they argued, at the price named, has not even afforded the necessaries of life.

Portland Press Herald
Wed, Dec 15, 1869 ·Page 1

[For the Argus.]

Social Science—The Coal Monopoly.

There is nothing in the history of commerce, or social economy, *in any other land*, to be compared with the swindling of our coal operators. *Here*, indeed, we have in the combination of our miners our salt-producers and our iron-masters other examples of the same spirit. Are we to continue at the mercy of these heartless, unprincipled scoundrels? If so, the sooner we know it, the better.

In other days when our southern planters burned their tobacco, lest they should overload the market; when the Dutch closed their spice-islands; and the British, what they called their "plumbago mines" for the same reason, people bore with it, because, though tobacco, and spice, and black lead, are luxuries and conveniences, they are not *necessities*. We cannot live without such things; but how are we to live without bread, fuel, salt and iron?

Portland Press Herald
Wed, Dec 15, 1869 ·Page 1

supply was always equal to the demand, and generally overrun it.

Next, that it was owing to a combination among the miners, who demanded unreasonable, or extravagant ways. This was another lie; for, though the laborers, or miners did insist on *nominally* higher wages, because they were swindled in all the supplies that were furnished them. And work as they would, were not able to lay up anything for their families, nor even for sickness and old age, while their employers were piling up their gold by millions, yet they were undoubtedly encouraged to persist in the "*strike*" as it was called, that the market might not be overstocked; just as the Virginians burned their tobacco, and the Dutch closed their spice islands.

And then we were told that the cost of railway transportation was the chief cause, if not the only cause. Here was a third lie—and the most abominable and shameless of the whole. *For who owned the railways?* The scoundrels that owned the mines!

Portland Press Herald
Wed, Dec 15, 1869 ·Page 1

$2.58 as now charged.

And yet these coal-barons—these highway men rather, who cry "stand and deliver!" to the population of New England, New York and New Jersey, had the impudence not long ago, to propose a *further advance of one dollar a ton*, to the Baltimore and Ohio Railway, whereby the income of their road would have been augmented $150,000 a month!

The proposition was rejected—it is hoped with indignation; and the earnings of the B. & O. Railway *were soon doubled!* But the New Jersey Central, taking advantage of the disturbances which their own wicked and shameless oppression had provoked, advanced the rate from $2.18 to $3.00 per ton from Mauch Chunk!

And how long are we to bear this—with the remedy in our hands? Complaint and remonstrance would soon remove the duty and bring these peoble to their senses.

One word more. That we may understand the subject, and not wrong even these brigands and bucaneers, let us see what has been the price of coal heretofore; and what it can be afforded for.

Miners in the Schuylkill and Lehigh who supply Port Richmond with coal from where Mt. Holly coal dealers get there coal.

ches

Daily National Intelligencer and Washington Express
Sat, May 29, 1869 ·Page 1

1

this is, the miners in the Schuylkill and Lehigh regions suffer for the greater advantage of the Wyoming miners, operators, and carrying companies. Should the suspension not become general, as was expected, it will of course not last, and must necessarily be ineffectual in producing the scarcity of coal and higher prices of fuel expected. Of course, consumers and carrying companies profit by the failure of this conspiracy. If the want of unity, as thus far demonstrated, is maintained by some of the workmen in the Wyoming region continuing at work, there will probably be another good result; the "Benevolent Association," with its chief and auxiliaries, that aims to control the trade, being powerless, may, in disgust, throw up its mission, leaving the trade for the future under fair and legitimate competition to take care of itself. The total coal tonnage of the Schuylkill region for last week was but 10 205 tons, against 106,488 tons in corresponding week last year. The falling off in the Lehigh and Shamokin regions was large, but not quite so universal as at the Schuylkill mines. The whole production for the week of all the regions, as shown by the tonnage of the several carrying companies, was but 180,957 tons, against 330 500 tons in corresponding week last year.

The tonnage for the year is 4,608,615 tons, against 4,048,679 tons to corresponding time last year—an increase of 559,966 tons. This is less than 200,000 tons from the [illegible]

Consumers and carrying companies profit by the failure of this conspiracy.

Aims to control the trade, leave the trade for the future under fair and legitimate competition.

when those about Scranton declared against a suspension of work by a decided majority; but on Monday, it is reported, a general desire to return to work there was frustrated by a poster threatening death to any one who should enter a mine, and, as a consequence, the men at all mines but four refused to work. Still there are enough employed to make an entire suspension of coal mining very doubtful. The effect of this is, the miners in the Schuylkill and Lehigh regions suffer for the greater advantage of the Wyoming miners, operators.

Carpets of Begger Ticks, Cast Away Island ERI

The Freehold Transcript and The Monmouth Inquirer
Fri, Jan 27, 1893 ·Page 3

of indictment.

The recent severe weather has caused much suffering among the poor of Mt. Holly. The coal supply was almost exhausted and the gas mains frozen up.

Thomas Mahoney who recently

Evening Courier
Fri, Jan 30, 1903 ·Page 7

held in the M. E. Church this week. The pastor, Rev. D. Everett Van Dright, is being assisted by Rev. James Rogers, a well known evangelist.

Ten or more carloads of anthracite coal have been received in Mt. Holly this week, which has greatly relieved the situation. It is now in order for the price to come down.

The Mount Holly News
Tue, Oct 11, 1910 ·Page 2

NEW COAL YARD

Best Lehigh Coal
and
Kindling Wood

Coal kept under cover, always ready for prompt delivery, and well screened.

T. LACEY AKINS

CORNER MONROE and REED STREETS
Both Phones

The Times
Wed, Mar 04, 1903 ·Page 6

lation here, who have been insulted because they refused to have their fortunes told.

MT. HOLLY—Coal dealers are soliciting orders here like so many book agents, trying to regain their former customers who became somewhat scattered during the coal famine the past winter.

Reading Railroad Leases Schuylkill Navigation Company for 999 years

of only about 50 percent of the total anthracite acreage.

The railroad to exert the greatest influence was the Reading which dominated the southern field west of Tamaqua because no other railroad competed with it in that region. In 1870 it leased the Schuylkill Navigation Company for a period of 999 years which ended any rivalry with waterways in this area.[27] The Reading also picked up sizeable estates in the middle western field, giving it control of the Schuylkill coal trade. But the Lehigh Valley Railroad secured

THE PENNSYLVANIA ANTHRACITE INDUSTRY, 1769–1976*

H. Benjamin Powell
BLOOMSBURG STATE COLLEGE

Evening Courier
Wed, Feb 21, 1923 ·Page 14

RAILROADS ASKED TO TRACE MT. HOLLY COAL

Washington, Feb. 21.—The assistance of the railroads has been asked in tracing orders of coal which were shipped several weeks ago to dealers in Mt. Holly, N. J., by Pennsylvania distributors.

Representative Isaac Bacharach, learning of the complete lack of anthracite coal in Mt. Holly, wired for particulars of orders placed by local retailers. Being advised by the three local dealers of their orders, he requested of the distributors from whom the coal had been ordered particulars as to the shipments which they had made. All informed him that the orders, amounting to several carloads, had been shipped several weeks ago, and gave the car numbers and routing.

Representative Bacharach is now waiting to hear from the railroads, who have instituted search through their records for the missing cars.

The Mount Holly News
Tue, Jul 25, 1893 ·Page 1

GASKILL'S COAL OFFICE

NOTHING BUT LEHIGH

well screened and picked of slate; also

Land Lime, Building Lime, Rosendale and Portland Cement, Plaster Hair, Calcined Plaster, Marble Dust Finishing Sand, Drain Tile, Terra Cotta Pipe.

WASHINGTON STREET

MOUNT HOLLY.

1 of 2 matches

Evening star
Thu, Jun 24, 1915 ·Page 24

WALT MASON.

ALONG THE RIVER FRONT.

Arrivals.

Consolidated Coal Company's barge No. 15, light, at Georgetown from Boston, to load Cumberland coal for a New England point; barge Currituck, with coal for King, and barge Rancocas, with coal for the gaslight company, at Georgetown from Philadelphia; barge Quantico, at Alexandria with fertilizer material from Baltimore; steamer Northland, from Norfolk and Old Point to the Norfolk and Washington Steamboat Company; steamer Frederick de Bary, from Mattox creek, Colonial Beach and river points to the Potomac and Chesapeake Steamship Company; power boat Daisy, at Alexandria after merchandise for Farmington, Md.

Corresponding Market - Pentucket Company
Ship-yard of Colby & Lunt (Newbury Port)

Side Wheel Tug "*Charles L. Mather*" built in Athens, NY. Hudson River November, 1876

Excursion parties to the seashore, Cape Cod

98 feet long, two locomotive boilers (Baldwin?). 16 by 30 cylinder engine, 120 HP

***Startled Fawn*, launched Philadelphia 1875 (1875 Centennial ferry)**

Ref: Progress of Navigation on the Merrimack. **Lowell Mass Historical Society**

Steamer *E.P Shaw* built at Petty's Island (Black Rock's steamer service)

***Evangeline* 42 feet by 8 feet carry 100 passengers (Vox Populi, 10/31/1877)**

Steamer 85 feet long, 19 wide, draw 18 inches light 3 feet with 500 passengers.

Water powered windless. 4 fully loaded coal barges and other vessels and tugs against Lowell (Hunt Falls) rapids.

(Boyton carry trade above the tide/Merrimac (River Navigation Company) . Scow *Columbia* carrying 25 tons of coal. (125 HP Twin steamer)

Lowell Coal From: Philadelphia Reading Coal Company Terminals on the Delaware River, without breaking bulk.

Ref: Essex Deed Books /Lowell Historical Society

The Standard-Times
Thu, Mar 05, 1903 · Page 6

NO COAL CLUB IN LOWELL.

Dealers Testify They Formerly Had a Sort of a Social Organization.

Mr. Moore thought a profit of 25 per cent. should be made. Mr. Moore denied the existence of a Lowell coal club. He said that since July 9, 1902, no recommendation relative to prices had been made to the Lowell Coal company by other dealers. The company made its own prices. Mr. Moore admitted that there had been a club formed in 1897 in Lowell, but that it was more of a social organization than anything else. He did not remember the names of any of the committees of this club, nor did he remember when the club had its last meeting. The club is now disbanded, he said. He thought that there had been no meeting since July, 1902.

Other coal dealers who testified denied the existence of a coal club in Lowell.

The United States Gazette
Sat, Feb 13, 1836 · Page 4

The Anthracite Coal Trade of Pennsylvania.

Written by the Hon. Caleb Cushing, *Member of Congress from Massachusetts, for the North American Review, for January,* 1836.

We visited recently the ...

... for his active and intelligent usefulness, it is Mr. John White, the founder and controlling spirit of the Delaware Coal Company. The consequence of all this has been the rapid growth of a flourishing population, of which Pottsville is the centre, strongly reminding the beholder of the similar results of well applied and well combined capital and industry, as exhibited in the correspondent case of Lowell in Massachusetts.

The immense business of the Schuylkill Valley, it is also interesting to observe, has been growing up simultaneously with that of Lowell, in about the ...

Corresponding Market - Pentucket Company
Ship-yard of Colby & Lunt (Newbury Port)


Cast Away Island Western Viewshed
Rancocas State Park
North Branch Rancocas Creek Water Trail

Pentucket Company

Ship-yard of Colby & Lunt (Newbury Port)

the exact facts of the trial as follows :—

"Trial of speed of the Steamer "Bangor" on the Delaware, from the Navy Yard, Philadelphia, to Fort Mifflin, and back to the Navy Yard. During the trial the tide was against the boat when going from Philadelphia to the Fort and in her favor returning.

	H.	M.	Sec.	M.	Sec.
"Left Navy Yard Shears,	5	27	30		
"Arrived at Fort Mifflin,	6	22	15	54	45
"Left Fort Mifflin,	6	28	15		
"Arrived at Navy Yard,	7	2	22	34	7

"Distance run, 16 miles per government survey. Average speed per hour, 10.61 miles. The first five miles run with low steam, making 44 revolutions. Pressure of steam was under 46 pounds during the whole trip. Trip up, the speed per hour was 14.07 miles. Deduct 2 1-2

Merrimack River Towing Company

Luke Hoyt 1880		(Philadelphia)
Farnsworth 1877		(Bordentown)
Clara E. Uhler 1881		(Philadelphia)

Bangor. Harlan, Wilmington 1843
231 tons burden, 120 feet long, 23 feet wide, 9 foot depth, 11

Corresponding Market - Pentucket Company
Ship-yard of Colby & Lunt (Newbury Port)

The Philadelphia Inquirer
Thu, Mar 09, 1876 · Page 4

049 55 100 acres, at an average price of $3·66 per acre. The total amount of land sold since the organization of the department was 1,082,893 36-100 acres, at an average price of $4·47 per acre, amounting to $5,336,044·02. The total amount of land grant bonds issued and sold by the company was $10,400,000; amount retired and canceled to date, $2,763,000; remaining outstanding, $7,637,000.

Strike of Workmen.

BOSTON, March 8.—Owing to a reduction from twenty to fifteen cents per ton, the coal shovelers employed on the wharves of the Lowell Railroad Company, at Chelsea, refused to work, and their places were supplied by other men. This noon about four hundred strikers visited the wharf, and for a time a riot was imminent. The police were called and the rioters dispersed. The men at work will be protected by the police. It is claimed that the men can make at the reduced rate $5 and $6 per diem.

Corresponding Market - Pentucket Company
Ship-yard of Colby & Lunt (Newbury Port)

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362, Bass Harbor,

AT COMPETITION
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Commentary

MERRIMAC RIVER STEAM TUGS

I am writing a biography of one Eben Moody Boynton of West Newbury, Massachusetts, who, amongst other of his enterprises, lost a fortune on the Merrimac River shipping between Newburyport and Lowell. I am in need of old photos (copy photos are okay) of the 1880 vintage steam tugs "Startled Fawn", "Kitty Boynton" and "Charles L. Mather" and the coal barges "City of Lawrence", City of Lowell", Success", and "Defeat". Any leads to any of these would be very helpful.

Richard Albert, 554 Lafayette Ave., W. Trenton, NJ 08628.

SUMMER IDYLL

I was away for three months paddling my inflatable kayak 600 miles along the Canadian and Alaskan coasts from Port Hardy on Vancouver Island to Ketchikan and then to Dall Island. My copies of "Boats" piled up here while I was away. I always enjoy "Boats", as I learn more and experience more, I go back to old copies and find "new" items.

Audrey Sutherland, Haleiwa, HI.

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The Star-Ledger
Thu, Jan 22, 1874 ·Page 2

attached to it by way of amendment.

The Coal Strikes.

The coal strike is assuming more formidable dimensions daily. Yesterday an immense mass-meeting was held in Wilkesbarre with representatives from all the adjacent districts. At the conclusion of the meeting a large number of men entered their names upon the roll of the new union amid considerable excitement. A Plymouth miner presented a resolution to the effect that if the wages due the miners employed by the Wilkesbarre Coal and Iron Company for the past month's work, were not paid by Saturday, the men proceed to the company's office and make a determined request for it, which resolution was carried unanimously. It is rumored that by the end of the week there will be an uprising of 25,000 men who have been and are now employed in the collieries in the entire Wyoming and Lackawanna Valleys.

The coal companies were nearly all represented at a meeting held in New York yesterday. Among those present were the Lehigh and Wilkesbarre, the Philadelphia and Reading, the Delaware and Lackawanna, and the Delaware and Hudson. After an informal discussion it was decided to conduct the business on the same general plan as in 1873, making the average increase in price of 10 cents per ton per month. A schedule of prices substantially the same as last year's was adopted for the month of March, considered the opening month of the year in the trade. The Philadelphia Coal Company had no representative present at the meeting. According to the views of prominent dealers no immediate advance in the price of coal need be expected on account of the price, though the April price will probably be high than last year. The dealers predict a compromise wi

Bridgeton Pioneer
Thu, Feb 27, 1879 ·Page 2

bration of Washington's birthday. The general results are that eight of the most prominent leaders in the affair have been suspended and required to leave the town, and the others have absented themselves from all college exercises. The dispute will be submitted to Bishop Williams, Dean of the Faculty.

The United States steamer "Samuel Dexter," Baker, reports that schooner "John S. Detwiler," of Philadelphia, coal laden, went ashore at Robinson's Hole on the evening of February 22d, during a snow squall, having mistaken it for Tarpaulin Cove. The "Dexter made an unsuccessful attempt to haul her off.

The Ocean Grove Record
Sat, Mar 02, 1878 ·Page 2

add the following list:

WRECK NO. 1.

The schooner *J. B. Clement*, Captain Pearce, came ashore on Deal Beach at 1 o'clock on Friday morning. The vessel was loaded with oysters from Chesapeake Bay, bound for Fairhaven, Conn. She was driven so far on shore that the crew saved themselves by jumping overboard and wading to *terra firma*.

WRECK NO. 2.

The schooner *G. L. Bradley*, from Philadelphia, with coal for Norwich, Conn., grounded at Ocean Beach about 2 o'clock the same morning. It being high water, the vessel came so near the beach, all on board landed unaided and without getting wet. The crew was composed of Captain Chipman and four men.

WRECK NO. 3.

The three-masted schooner *Maggie McDonald*, from Virginia, with coal, powder and staves, was driven ashore at Spring Lake at half-past 1 o'clock the same morning. The sea was very rough and rolled furiously over the vessel—every wave making havoc on her deck. She soon yielded to the severe pounding, and was strewn along the shore. The crew including the captain, L. S. Steelman, had to take refuge in the rigging, from which they were rescued by the crew of Station No. 9.

This makes a list of one brig and four schooners wrecked since Jan. 31st, between Deal Beach and Sea Girt, without any loss of life in either case.

Corresponding Market - Pentucket Company
Ship-yard of Colby & Lunt (Newbury Port)

1934 Aerial View North and South Branch Rancocas Creek

Official No.	Signal letters.	Rig.	Name of vessel.	Gross tonnage.	Net tonnage.	Length.	Breadth.	Depth.	Service.	Crew.	Indicated horsepower.	When built.	Where built.	Home port (where permanent document issues).
						Feet.	Feet.	Feet.						
111109		St. s.	Radnor	122	83	80.2	22.7	10.8	I. t.	5	400	1896	South Amboy, N. J	New York, N. Y.
111286		St. s.	Ragnhild	73	49	81.3	18.2	8.6	I. t.	6		1900	Ballard, Wash	Sitka, Alaska.
111064		St. s.	Rainbow	15	7	46.9	12.5	4.6	Fsh.	8		1894	Erie, Pa	Erie, Pa.
110748		St. s.	Rainier	179	109	81.4	20.9	9.7	Fsh.	7		1887	Seattle, Wash	Pt. Townsend, Wash.
111268	K. P. R. S.	St. s.	Rainier	800	519	204.9	38.0	13.6	O. p.	28	1,000	1900	Hoquiam, Wash	San Francisco, Cal.
110081		St. s.	Raleigh	260	205	119.1	23.2	8.2	I. f.	10	335	1872	Portsmouth, Va	New York, N. Y.
110154		St. s.	Raleigh	1,205	1,104	227.3	34.0	15.0	I. f.	16	750	1871	Cleveland, Ohio	Detroit, Mich.
135075		St. s.	[1] Ralph	42	21	60.0	15.2	7.6	I. t.	1		1874	East Saginaw, Mich	Port Huron, Mich.
111265		*St. p.	RALPH BARKER	229	114	85.6	20.6	4.0	Msc.	6		1900	Port Inglis, Fla	Cedar Keys, Fla.
21971		St. s.	Ralph Ross	93	82	97.0	24.0	8.5	I. t.	6		1870	Philadelphia, Pa	Bangor, Me.
111085		Na. s.	Ralph W	9	8	36.9	8.9	3.8	I. f.	2		1895	Millville, N. J	Bridgeton, N. J.
111038		St. s.	Ralph M. Cooper	27	17	58.8	14.9	6.2	Fsh.	7		1893	Manitowoc, Wis	Milwaukee, Wis.
110514		St. s.	Ramapo	69	34	80.0	18.5	9.0	I. t.	5		1882	Brooklyn, N. Y	New York, N. Y.
111123		St. s.	RAMAPO	3,314	2,490	319.5	44.0	27.8	I. f.	21	1,500	1896	Buffalo, N. Y	Buffalo, N. Y.
110508		St. s.	Rambler	53	26	75.3	17.7	6.4	I. t.	4		1882	Tottenville, N. Y	New Haven, Conn.
110568		St. s.	Rambler	15	7	40.0	12.9	5.5	I. t.	2		1883	Baltimore, Md	Philadelphia, Pa.
110946		St. s.	Rambler	34	17	53.0	16.0	7.5	I. t.	4		1891	Tottenville, N. Y	New York, N. Y.
110692		Ga. s.	Rambler	13	9	37.0	12.6	2.6	I. t.	1		1886	Chinook, Wash	Astoria, Oreg.
111324		Ga. p.	Rambler	10	10	52.3	10.6	2.3	I. p.			1900	Grayville, Ill	Evansville, Ind.
111473		*Ga. p.	Rambler	10	10	35.0	10.0	3.0				1905	Moline, Ill	Rock Island, Ill.
157557	K. P. M. R.	St. y.	[2] RAMBLER	288	196	155.3	23.5	12.5	Yct.	25	1,100	1899	Elizabeth, N. J	New York, N. Y.
110738		St. s.	RAMONA	57	28	95.0	13.5	7.4	I. p.	6	382	1886	Newburgh, N. Y	Cape Vincent, N. Y.
111425	K. R. W. P.	St. s.	Ramona	1,061	671	195.0	32.0	15.7		46	900	1902	Alameda, Cal	New York, N. Y.
111427		*St. p.	Ramona	12	12	62.5	15.9	2.3	I. p.			1902	Higginsport, Ohio	Cincinnati, Ohio.
111474	K. S. N. L.	St. p.	Ramona	575	362	118.0	29.0	12.2	Fer.		700	1903	Alameda, Cal	San Diego, Cal.
111461		Ga. y.	Rampant	38	36	65.0	13.6	6.0	Yct.			1903	Bridgeport, Conn	Bridgeport, Conn.
111326		Ga. s.	Ramsden	13	11	39.5	14.0	4.0	Oys.	2		1901	Ocean Side, N. Y	Patchogue, N. Y.
110718		St. bge.	Rancocas	150	122	95.8	22.5	8.3	O. f.	5		1886	Wilmington, Del	New York, N. Y.
111369		Na. y.	Rancocas	151	132	116.8	17.7	4.9	Yct.	8	150	1901	Nyack, N. Y	Philadelphia, Pa.
110693		St. s.	Rand	191	147	119.1	25.7	9.4	I. f.	9	460	1886	Manitowoc, Wis	Port Huron, Mich.
111338		St. s.	RANDOLPH S. WARNER	3,062	2,128	332.0	42.0	22.7	I. p.	21	1,220	1901	West Superior, Wis	Cleveland, Ohio.
77077		*St. p.	[1] Ranger	107	107	135.0	25.0	4.5	I. t.	15		1892	Pittsburg, Pa	Pittsburg, Pa.
110534		St. s.	Ranger	160	88	121.0	20.2	10.2	Fsh.	26		1882	Mystic, Conn	Greenport, N. Y.
110746		St. s.	Ranger	144	72	106.4	22.9	11.2	I. p.	3	338	1887	North Bend, Oreg	Eureka, Cal.

1890's Tug Boat
Clara E. Uhler
Tied off

files, as well as to compartment ships and railways. In 1867 he purchased the side-wheel, 120-horse power steam tug, the "Charles L. Mather," of New York, and ran it to Newburyport, and began experimenting to open the Merrimack River for navigation to Lawrence, Mass. He sent to Lowell the first scow-load of coal ever received by water at the harbor of Newburyport, from the Philadelphia & Reading coal steamers; towed it to Lawrence, and passed it through the canal, to Gen. B. F. Butler, at Lowell, Mass. Mr. Boynton has since expended over $50,000 from the revenues of his saw business in opening up the navigation of the Merrimack, with a view to giving cheaper coal and lumber freights and water transportation to the large manufacturing cities on its banks, where about 500,000 tons of coal are used annually, and manufactures aggregating $100,000,000 annually are produced. The improvements of the channel, and the delivery of $80,000 worth of coal by water, caused the railways to reduce their freights in carrying coal to one-half the former charge, on the plea of competition. An opposition so formidable has thus far prevented sufficient capital being embarked to complete an enterprise fraught with so much benefit to the 300,000 people engaged in manufacturing near the summer home of Mr. Boynton; thoughtful men predict that the measure must ultimately prove a great success. The transportation of coal by steam upon the Merrimack, as far as Haverhill, Mass., was first begun by Mr. Boynton and associates in 1864, and has been a constant success ever since, all the coal to Haverhill and the lower towns being now received by water, an indication of the result which enlarged channels and facilities will give to the great manufacturing cities above Haverhill in the near future. In order to admit the deeper draft coal steamers, and open the port for foreign commerce, Mr. Boynton first pro-

observations, undaunted by the prospect that on account of these objections the work would be delayed for years, and the refusal of the War Department to accept his offer to pay for preliminary surveys, Mr. Boynton next procured copies of the surveys of the United States Navy of 1851 and of 1878, and on February 16th, 1879, he forwarded copies of the same, showing the changes of sand at the harbor bar, and giving the data necessary for appropriations. Ten days later the Secretary of War forwarded to Mr. Boynton the approval of General Thom and of the War Department, of his project for constructing jetties at Newburyport, at the mouth of the Merrimack, estimating the cost of granite work as not to exceed $600,000, and an appropriation was secured, after one rejection, by the committee, of $50,000 to begin the work. The adoption of Mr. Boynton's plan was complete, and over $100,000 has since been expended, and granite jetties extend respectively five hundred feet from the southern shore and fourteen hundred feet from the northern shore, and are to be extended four thousand and twenty-five hundred feet respectively, thus compressing the immense waters of the Merrimack and tidal currents by a harbor in the ocean, with an entrance one thousand feet wide. This is the first work of the kind in the section, and its completion will be a monument of granite, as enduring as the continent, to Mr. Boynton's labors in behalf of the Merrimack valley and the ancient historic city of Newburyport.

In 1877, Mr. Boynton was selected by Messrs. George Opdyke, William Orton, Peter Cooper, Wallace P. Groom, John Williams, and other members of the Executive Committee of the New York Board of Trade, to represent the city of New York, at the meeting of the Association of Chambers of Commerce of Great Britain, at Westminster

"Office of E. M. Boynton,
New York, Nov. 18th, 1879.

"Hon. George W. McCrary, *Secretary of War,*
Washington, D. C.

"Dear sir:—I want a preliminary survey of the mouth of the Merrimack River, near Newburyport. It is desired to extend the narrow channel between Plum Island and Salisbury, continuing it in the same width out to twenty-five feet depth in the sea. By driving double rows of piles and forming jetties, the shifting sands that obstruct the harbor will be prevented, and the confined channel instead of spreading like a fan as it now does, and changing in every storm, will be rendered as deep as it is between Plum Island and Salisbury, where for half a mile it averages thirty-five feet in depth.

Coal steamers of one thousand tons arrive and depart twice each week at great peril, bringing about one hundred thousand tons of anthracite coal this year. About five hundred thousand tons are used in the valley, the population of which is nearly half a million people. About one hundred millions of dollars' worth of products are sent away annually, and it is desirable that the coal and lumber, corn and cotton, in which the entire country is interested, shall have free access. The government has already accomplished much in river improvements, which goes for naught unless the harbor be rendered accessible. I will furnish steamers and men, and pay all the expense, if you will request General Thom to meet me and make the preliminary survey. The coast survey furnishes the principal data needed. I have consulted General Thom, who is alive to the vast importance of the interests involved and the pressing need of immediate action. With great respect, I remain

"Yours, very truly,

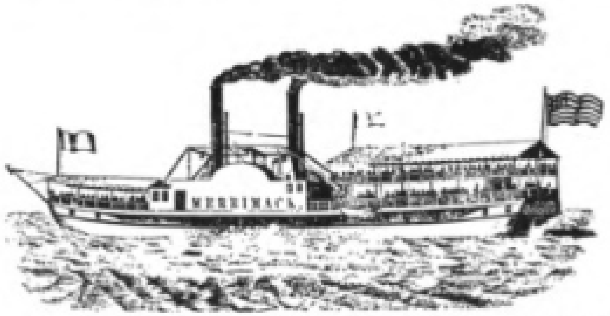
(Signed) "E. M. Boynton."

Although this plan was at first objected to on behalf of the government by General George Thom, Colonel of Engineers U. S. A., on the ground of the magnitude of the cost of the necessary boring, sounding, surveys and current

Corresponding Market - Pentucket Company
Ship-yard of Colby & Lunt (Newbury Port)


Cast Away Island
Green Heron

Lowell Island.



On and after FRIDAY, the 15th day of August, the Steamer

MERRIMACK

Will leave Phillips Wharf for Lowell Island at 7½, 9, A.M., 2½, 4½, P.M.
Will leave Lowell Island for Phillips Wharf at 8, A.M., 1½, 3½, 7, P.M.

During the intervals between the above-named hours, the Steamer will make excursions in the Bay, and to adjoining ports, as may be specially contracted for.

Passage between Phillips Wharf and Lowell Island, [each way] 15 cents.
Tickets for sale on board the boat, or to be bought during the passage.

Meals are furnished at the Island at 25 cents. Sailboats, fishing lines at a reasonable charge.

angeme may be made for the transportation of Parties over the several Railroads, upon application to

I. D. SHEPARD,
34 FRONT STREET, SALEM, MASS.

August 14. 1851.

The Philadelphia Inquirer
Wed, Aug 23, 1871 ·Page 4

throughout the rural district nothing else is talked of by the people.

LATEST MARINE INTELLIGENCE.

MEMORANDA.

Steamships China (Br), Macauley, and Wyoming (Br), Whineray, cleared at New York 22d inst for Liverpool.

Ship Webster, Norris, from Guanape Islands May 30, at New York 22d inst.

Ship Akbar, Lamson, from Calcutta, at Boston 22d inst.

Ship Astronom (Ger), Klopper, 42 days from Bremen, at New York 22d inst.

Barque Western Sea, Harding, cleared at New York 22d inst for Alexandria (Egypt).

Barque Chattanooga, Freeman, cleared at New York 22d inst for Melbourne.

Brigs Susie J. Strout, and J. W. Drisko, hence at Boston 22d inst.

Brig Mary E. Leighton, Bray, cleared at New York 22d inst for Konigsberg.

[BY TELEGRAPH.]

LEWES, August 22—P. M.—Two barques from above came in the harbor this morning; also, two brigs and several schooners. The barque Cuba remains. Wind E. N. E.; stiff breeze. Thermometer 76. The following schooners are in the harbor:—John Ponder, Jr., Charles Mather, A. Heaton, Sarah, Native Queen, Golden Eagle, Jno. A. Perry, Ida L., and Lottie.

FORTRESS MONROE, August 22.—The schooner ashore on Body Island is said to be the Marion, from Boston for Liverpool.

All Art by Luke

Section Seven:

Year-Round Multi-Use Public Access

naturally, quintessential

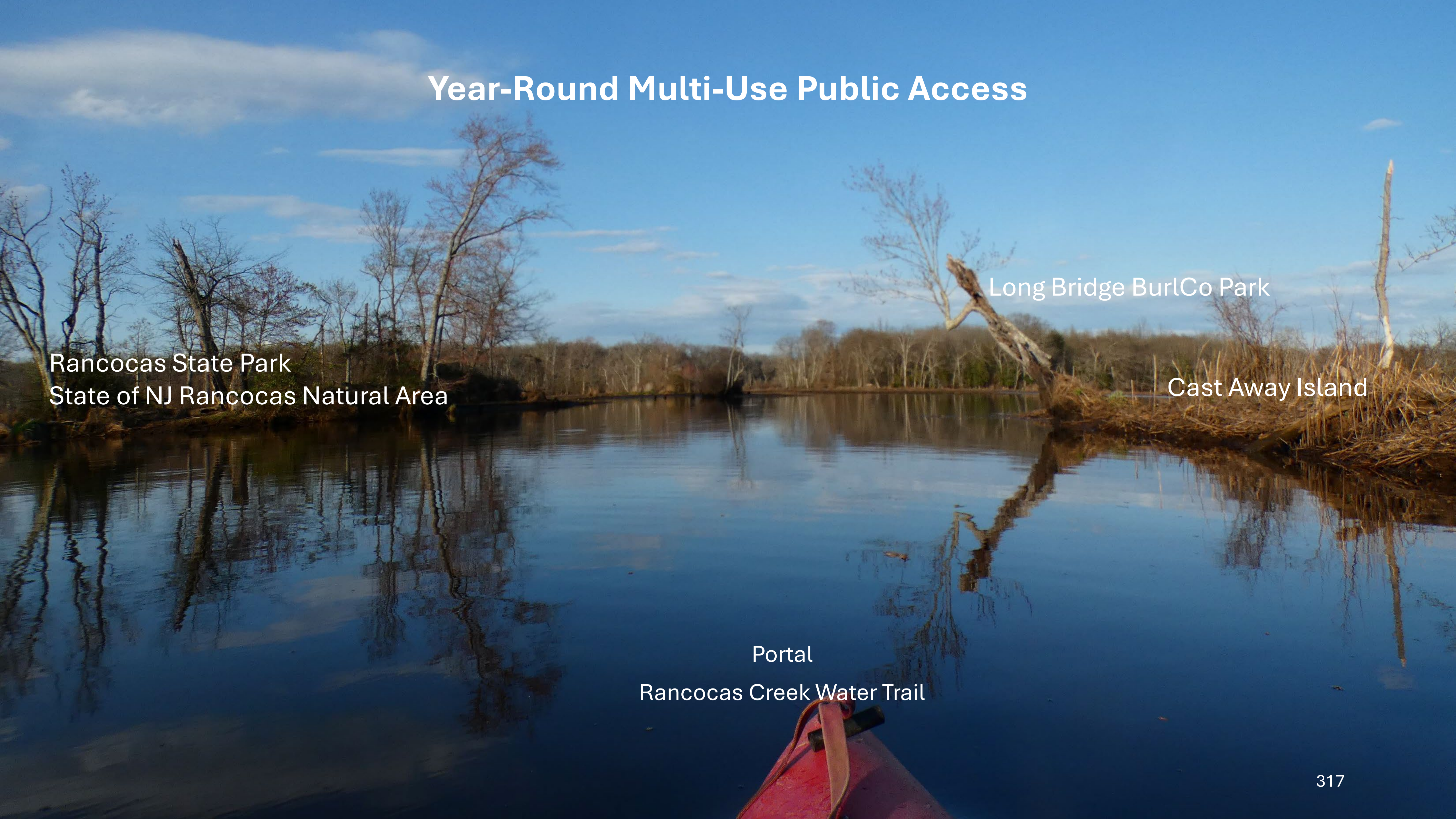
New Jersey Natural Resource

Cast Away Island

Leave No Trace

Wood Duck get the jump, Cast Away Island

Cast Away Island


Year-Round Multi-Use Public Access
Long Bridge BurlCo Park
Rancocas State Park
State of NJ Rancocas Natural Area
Cast Away Island
Portal
Rancocas Creek Water Trail

Multi-Use
Each unto their own, Ride the Tide

Leave No Trace

At the Portal


Multi-Use at the Portal
Each unto their own, Ride the Tide
Leave No Trace

Penultimate synopsis

Greater awareness fosters a spirit of conservation and activity, naturally. Cast Away Island ERI promotes the fragility of nature and our place in it.

Cast Away Island ERI serves many purposes that enhances multi-use public access. The ERI does nor smother the reader with details. We talk about Cast Away Island, we write about Cast Away Island and the ERI shows through maps, charts and pictures: Rancocas Creek's North Branch Cast Away Island.

We encourage questions and involvement. The contents of the ERI puts a face to a unique spot here on NJ's exemplary, quintessential natural resource, the Rancocas Creek tidewaters, naturally.

Conclusion

Thank-you. Here in New Jersey's "open-space-race" actions speak louder than words. Cast Away Island is an outstanding New Jersey natural, scenic, and heritage natural resource.

Free-market conservation's approach to Cast Away Island is sensitive to fiscal, environmental, bureaucratic and community interests, naturally.

Cast Away Island cultivates an ethos of year-round, multi-use access here in a quiet, tucked away corner of New Jersey's 360 square mile Rancocas Creek Watershed.

We welcome others to explore South Jersey's Rancocas Cree Water Trail. We invite others to visit tidewater natural areas, parks and the Rancocas Creek greenway here in Burlington County.

Appendix

Cast Away Island

Statistics on Rancocas Creek Sand Mines and Clay Pits. Hainesport, 1926

Examples of Rancocas Creek Tidewater, Hainesport, Sand Dredges and Industry

ref: NJ Geologic Survey, 1926

Bivalve Center, sketches from a life on the Delaware Bay and River tidewater.

References and elementary school reading/activity lists, reading list on the Underground Railroad and the maritime, the ANJEC Handbook and a reading list om the conservation and heritage of tidewater natural areas.

Statement of Articles ascending the Schuylkill Navigation, 1827.

	Tons.	Cwt.	qrs.
Merchandise, - - - - - -	2545	9	3
Salt Fish, - - - - - -	595	6	3
Salt, - - - - - - - -	481	3	0
Plaster, - - - - - - -	2182	19	1
Bricks, - - - - - - -	291	5	0
Oysters, - - - - - -	220	13	0
Stones and Sand, - - - -	65	6	2
Fruit, - - - - - - -	70	17	0
Lumber, - - - - - - -	1176	10	0
Mules, - - - - - - -	2	10	0
Iron, - - - - - - -	487	14	2
Hides, - - - - - -	11	19	0
Virginia Coal, - - - - - -	1302	13	0
Lead, - - - - - - -	31	9	0
Litherage, - - - - - -	31	10	0
Grain, 926 bushels, - - - -	23	00	0
Potatoes and Straw, - - - - -	5	14	0
Limestone, - - - - - -	1697	15	0
Iron ore, - - - - - - -	494	00	0
Whiskey, - - - - - -	2	00	0
Total,	11,719	14	3

Ref: SN, 1827 Annual Report

Statement of Articles descending the Schuylkill Navigation, 1827.

	Tons.	Cwt.	qrs.
Coal, - - - - - - - -	31360	10	0
Flour, 31,436½ barrels, - - - -	2994	00	0
Wheat, 24,244½ bushels, - - - -	606	00	0
Corn, 12,951 do. - - - -	323	15	0
Rye, 1643, do. - - - - -	41	1	0
Flaxseed, 6151 do. - - - -	153	15	0
Oats, 434, do. - - - - -	5	9	0
Whiskey, - - - - - - -	483	4	0
Iron, - - - - - - - -	1533	3	1
Oil, - - - - - - - -	61	5	0
Butter, - - - - - - -	62	16	2
Tallow, - - - - - - -	13	1	3
Pork and Lard, - - - - - -	9	1	2
Flax, - - - - - - - -	18	12	2
Leather, - - - - - - -	36	5	0
Paper, - - - - - - - -	35	0	1
Bark, - - - - - - - -	96	0	0
Lumber, - - - - - - -	2006	2	0
Rags, - - - - - - - -	4	10	1
Potash, - - - - - - -	4	15	2
Hides, - - - - - - - -	2	00	0
Dried apples, - - - - - -	5	1	2
Soap, - - - - - - - -	3	5	0
Nuts, - - - - - - - -		18	0
Sundries, - - - - - - -	171	3	3
Hats, - - - - - - - -	18	15	0
Live hogs, 245, - - - - - -	22	00	0
Glue, - - - - - - - -	2	00	0
Cake Meal, - - - - - - -	98	5	0
Eggs, 745 dozen,			
Apples, 71 barrels, - - - - -	5	00	0
Ship stuff and shorts, - - - -	50	6	0
Limestone, - - - - - - -	3521	00	0
Iron ore, - - - - - - -	1472	10	0
Nails, - - - - - - - -	526	5	0
Sawed Marble, - - - - - -	679	00	0
Cord wood, - - - - - - -	1279	00	0
Stone, - - - - - - - -	6078	00	0
Total,	53,782	16	3

Ref: NJ Geological Survey , 1926

LIST OF ACTIVE SAND AND GRAVEL PRODUCERS

Operator	Products reported in 1926	Office address	Location of pits
Acme Silica Co.	1	Flanders	Flanders, Morris Co.
R. S. Beatty Clay and Sand Co.[a]	1, 2, 7, 9,	Toms River	Whitings, Ocean Co.
Bethlehem Mines Corporation[b]	1	Bethlehem, Pa.	Harmony and Delaware, Warren Co.
Bloomfield Clay Co.	7	Metuchen	Bonhampton, Middlesex Co.
Brennan Sand Co.	1	Tullytown, Pa.	Atlantic County; Lumberton, Burlington Co.; Muskee, Cape May County.
Bridgeton Sand Co.	1, 2, 11	Bridgeton	Williamstown Junction, Camden Co.
William Brimfield	1	Waterford Works	Winslow, Camden Co.
Cape May Sand Co.	1, 3, 6, 8, 9, 12, 13	Cape May	Cape May Point, Cape May Co.
Cedar Grove Sand and Gravel Co.	3, 12	Paterson	Cedar Grove, Essex Co.
Champion Sand and Gravel Co.	13, 14	Ocean City	Palermo, Cape May Co.
Conard and Buzby	3	Burlington	Burlington
Crossman Company	1, 3, 4, 7, 8 & filler	South Amboy	Sayreville, Middlesex Co.
Crystal Sand Co.	1,2	Bridgeton	Millville, Cedarville and South Vineland, Cumberland Co.
Joe Cugliotta	1, 3	Burlington	Burlington
Henry D. Culin	1	Mount Holly	Hainesport, Burlington Co.
Dallenbach Sand Co.[a]	3, 4	Milltown	Milltown, Middlesex Co.
Delaware River Sand Dredging Co.	3	Bordentown	Bordentown, Burlington Co.
S. W. Downer	1, 3, 7	Downer	Downer, Gloucester Co.
J. B. Drinker & Co.	1, 3, 5, 7	Philadelphia, Pa.	Sea Isle Jct., Cape May Co., and South Vineland, Cumberland Co.
Robert R. Erato	1, 3, 12	Margate City	Delair, Camden Co.
Edward Galiers, Jr.	11, 12	Swedesboro	Swedesboro, Gloucester Co.
Glacial Sand and Gravel Co.	3, 12	Hackettstown	East of Hackettown, Warren Co.
Edward Goehler[a]	3, 4	Pleasantville	Port Republic, Atlantic Co.
Daniel Goff Co.	1, 15	Philadelphia, Pa.	Mays Landing, Atlantic Co. and Millville, Cumberland Co.
Charles Hahn	3	West Easton, Pa.	Lower Harmony, Warren Co.
Hainesport Mining and Transportation Co.	3, 4, 12, 13	Philadelphia, Pa.	Bridgeboro, Burlington Co.

Operator	*Products reported in 1926*	*Office address*	*Location of pits*
F. A. Hillman	1, 7		Lumberton, Burlington Co. and South Amboy, Middlesex Co.
George F. Hillman	1, 3	Lakewood	Lakewood, Monmouth Co.
Hodgson Sand and Gravel Co.	3, 4, 8, 12, 13	Stanhope	Netcong, Morris Co.
Lakewood Sand Co.	3	Somerville	South Lakewood, Ocean Co.
Lemuel Leach	3, 4	Sussex	Sussex
Lehigh and Hudson River R'y Co.	12, 13, 14	Warwick, N. Y.	Woodruff's Gap, Sussex Co.
Little Falls Sand and Gravel Co.	3, 4, 12	Upper Montclair	Cedar Grove, Essex Co.
Menantico Sand and Gravel Co.	1,3,4,6,8,9,12,13,14	Millville	Clark's Mill, Cumberland Co.
A. C. Million [a]	3, 4, 12	Cedar Grove	Cedar Grove, Essex Co.
William G. Moore	13	Philadelphia, Pa.	Tuckahoe, Atlantic Co.
Morris County Crushed Stone Co.	4, 13	Morristown	Morristown
Mount Pleasant Silica Sand Co. [a]	1, 4, 6, 9	Cape May	Woodbine, Cape May Co.
L. H. McHose, Inc.	1 and fire brick	Perth Amboy	Perth Amboy
Natural Products Co. [c]	1	Reading, Pa.	Blenheim, Camden Co.
New Jersey Sand and Gravel Co. [d]	3, 4, 6, 12, 13	Spring Lake	Farmingdale and Wayside, Monmouth Co.
New York, Susquehanna and Western R. R.	10	New York City	Sussex County
Norcross and Edmunds	3, 4, 8, 11	Philadelphia, Pa.	Birmingham & S. Pemberton, Burlington Co.
Ostrander Fire Brick Co.	7	Keasbey	Fords, Middlesex Co.
Paxson-Taggart, Inc.	1, 4, 15	Philadelphia, Pa.	Hayville, Camden Co.; Cedar Lake, Atlantic Co.; Masonville and Lumberton, Burlington Co.; Millville, Cumberland Co.
Charles E. Pettinos	1, 4	New York City	Folsom, Atlantic Co.; Ewansville, Burlington Co.; Dorchester, Cumberland Co.
George F. Pettinos	1, 4	Philadelphia, Pa.	Mt. Holly and Hainesport, Burlington Co.; Albion, Camden Co.; Cedarville, Millville and Manumuskin, Cumberland Co.
Pinehurst Development Co.	3, 4, 12, 13	Williamstown, Jct.	Williamstown Jct., Camden Co.
Pompton Sand and Gravel Co.	3, 4, 13	Passaic	Pompton Plains, Morris Co.
Progressive Sand and Gravel Co. [a]	3, 12	Woodbridge	Fairtown, Bergen Co.
Raritan River Sand Co.	3, 6, 7, 12	New Brunswick	Nixon, Middlesex Co.

Ref: NJ Geological Survey , 1926

	2	Bridgeton	Penbryn, Camden Co.
Reading Sand Co.	3	Succasunna	Kenvil, Morris Co.
Ridner Bros.	1, 3, 7	Sayreville	Sayreville, Middlesex Co.
Sayre & Fisher Co.	3, 4, 13	Kenvil	Kenvil and Succasunna, Morris Co.
Seguine-Bogert Co.	3	Burlington	Burlington
Harold R. Sherman	2, 3, 4	Newport Sta.	Dividing Creek, Cumberland Co.
South Jersey Sand Co.	Asphalt sand	South River	Old Bridge, Middlesex Co.
South River Sand Co.	3 and golf	Bridgeton	South Seaville, Cape May Co.
South Seaville Sand and Gravel Co.	13	West Creek	Staffordville, Ocean Co.
Staffordville Gravel Co.	3, 5, 12	Easton, Pa.	Phillipsburg and Harmony, Warren Co.; Holland, Hunterdon Co.
Steckel Sand Co.			
J. M. Stokes	4 and asphalt	Rancocas	Rancocas, Burlington Co.
Such Clay Co.	7	Perth Amboy	South Amboy, Middlesex Co.
Tavern Rock Sand Co.	1, 2	St. Louis, Mo.	Millville, Cumberland Co.
Charles Trensch	4, 13	North Hackensack	North Hackensack, Bergen Co.
Trimmer Sand and Gravel Co.	3, 12	Middle Valley	Springtown, Warren Co.
M. D. Valentine & Bro. Co.	1, 3, 12	Woodbridge	Woodbridge and Perth Amboy, Middlesex Co.
The Van Brunt Co.	3	Philadelphia, Pa.	Beverly, Burlington Co.
William Van Kruiningen	3	Wallington	Hackensack, Bergen Co.
Wall Road Gravel Co.	3, 4, 12, 13	Avon-by-the-Sea	Belmar, Monmouth Co
Warren Sand and Gravel Co., Inc.	4, 13	Easton, Pa.	Carpenterville, Warren Co.
Whitall-Tatum Company	2	Millville	South Vineland, Cumberland Co.
Whitehead Bros. Co.	1	New York City	Mount Holly, Masonville and Smithville, Burlington Co.; Clayville, Cumberland Co.; South River and Old Bridge, Middlesex Co.
Samuel Wortheim [e]	3		Hackettstown, Warren Co.
Marcus S. Wright	1, 3, 4, 6, 7, 12	South River	South River, Middlesex Co.
Young Sand and Gravel Corp.	3, 4, 8, 12, 13	Ocean City	Tuckahoe, Cape May Co.

1—Molding sand
2—Glass sand
3—Building sand
4—Paving sand
5—Cutting and grinding sand
6—Blast sand
7—Fire or furance sand
8—Engine sand
9—Filter sand
10—Railroad ballast sand
11—Unspecified sand
12—Building gravel
13—Paving gravel
14—Railroad ballast gravel
15—Unspecified gravel

[a] No production reported prior to 1927.
[b] Successor to Delaware Sand Co.
[c] Successor to Cumming Bros.
[d] Consolidation of Bennett Sand and Gravel Co. and Hause Washed Sand and Gravel Corporation.
[e] Successor to James Mount.

Ref: NJ Geological Survey , 1926

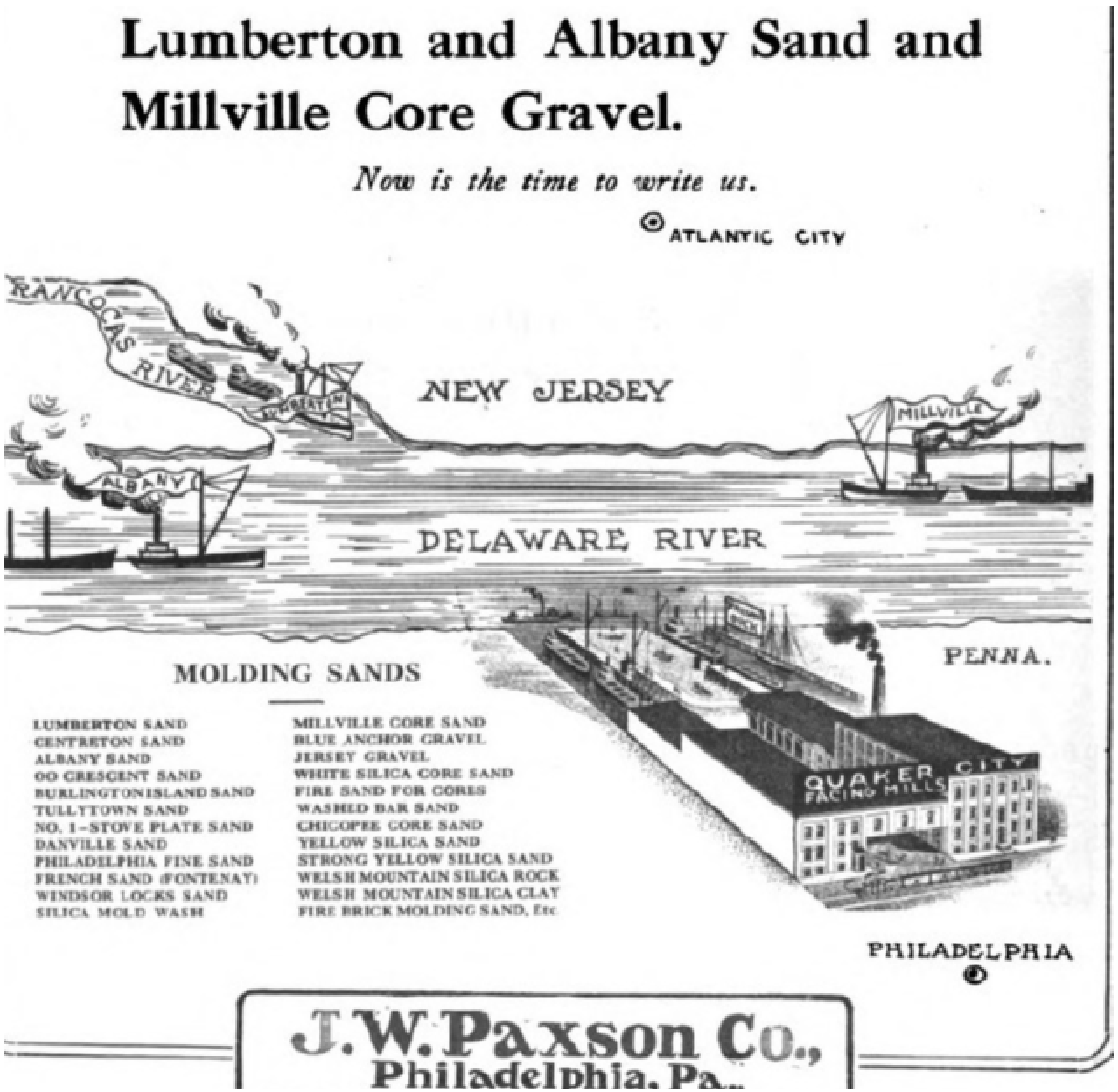
LIST OF OPERATORS REPORTING SALES OF RAW CLAY IN 1926, OR LATER, BY COUNTIES

Operator	*Kind of clay*	*Office address*	*Location of pits*
Julius Einseidel & Son[a]	4	Egg Harbor City	Atlantic County.
William G. Moore	4	Philadelphia, Pa.	" "
Charles H. Bliss	1	Chatsworth	Burlington Co., southeast of Chatsworth.
Enterprise White Clay Co.	4	Philadelphia, Pa.	" " near Woodmansie.
Hampshire Clays, Inc.	1, 4	Bridgeboro	" " " Bridgeboro.
J. M. Stokes	4	Rancocas	" " " Rancocas.
Robert E. Erato	1	Margate City	Camden Co., near Delair.
Hatch Land Improvement Co.	4	Camden	" " near Delair.
Hydraulic-Press Brick Co.	1	Philadelphia, Pa.	" " near Winslow Jct..
Daniel Goff Co.	1	Philadelphia, Pa.	Cumberland, near Millville & Clayville.
Moon Clay and Kaolin Co.	1	Trenton	Mercer Co., near Trenton.
Anness Hollow Tile Corp	1	Woodbridge	Middlesex Co., near Woodbridge.
Atlantic Terra Cotta Co.	4	New York City	" " " Woodbridge.
Bloomfield Clay Co.	1	Woodbridge	" " " Metuchen.
S. G. Brinkman	1, 2, 3, 4	Fords	" " " Fords.
The Crossman Co.	1, 4	South Amboy	" " " Sayreville.
Hampton Cutter	1, 3	Woodbridge	" " " Woodbridge.
W. G. Demarest	1	New York City	" " " Keasbey.
William Dinwiddie	4	Metuchen	" " " Metuchen.
Edgar Bros. Co.	1, 2	Metuchen	" " " Milltown.
F. A. Hillman	....	South Amboy	" " " South Amboy.
Henry Maurer & Son	1	New York City	" " " Maurer.
Mutton Hollow Fire Brick Co.	1	Woodbridge	" " " Woodbridge.
L. H. McHose, Inc.,	1, 3	Perth Amboy	" " " Perth Amboy.
National Fire Proofing Co.	1	Pittsburgh, Pa.	" " " Keasbey.
New Jersey Ceramic Products Corp.	1	Old Bridge	" " " Old Bridge.
Ostrander Fire Brick Co.	1	Woodbridge	" " " Fords.
H. C. Perrine & Son	3	South Amboy	" " " Old Bridge.
Raritan River Sand Co.	1	New Brunswick	" " " Nixon.
R. U. Rue Co.,	1	South Amboy	" " " Sayreville.
P. L. Ryan, Estate of	1, 2, 3, 4	Woodbridge	" " " Woodbridge.
Sayre and Fisher Co.	1, 4	Sayreville	" "

Ref: NJ Geological Survey , 1926

Ref: NJ Geological Survey , 1926

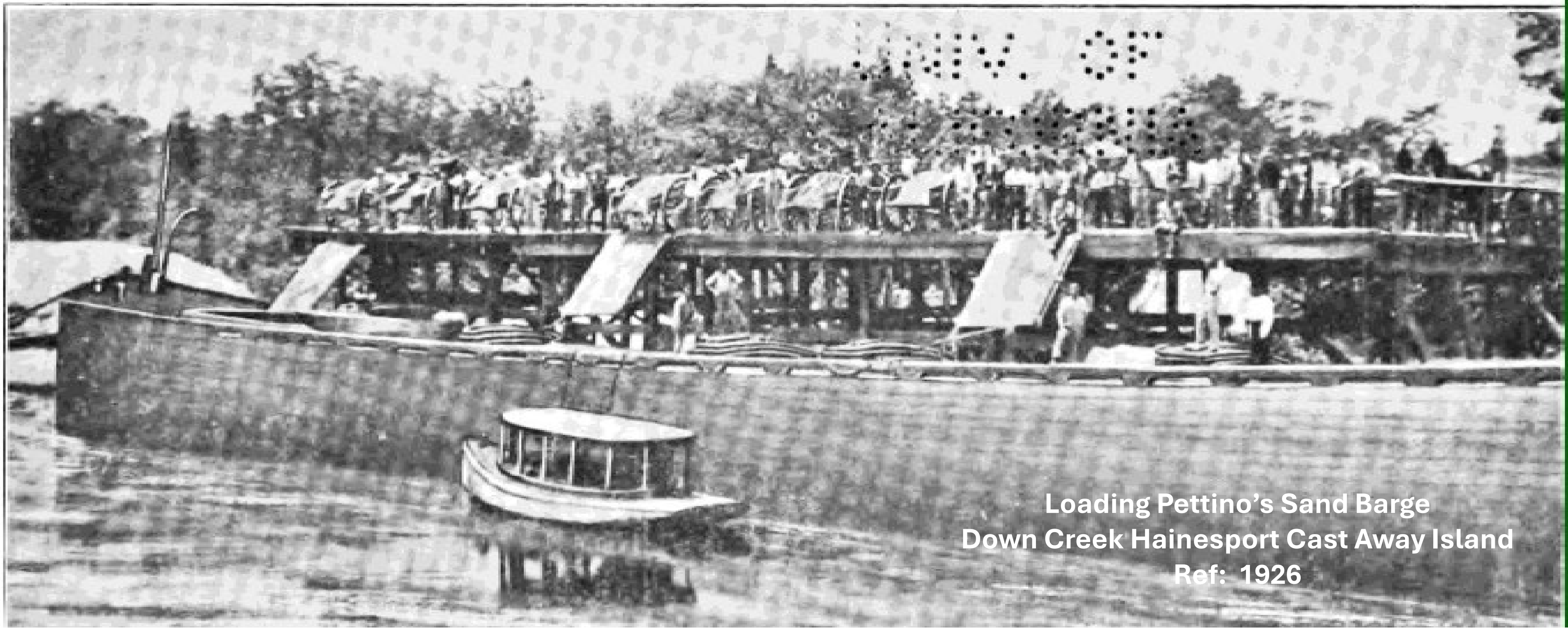
Sand pit near Manumuskin, Cumberland County. Well-bonded molding sand is dug from above the steep bank and carried in the cars shown to a railroad loading station. "Sharp" sand for foundry use is dug from the lower bank by a dredge operating in the pond shown.



STONE AND SAND DREDGE "NEPTUNE" OF THE HAINESPORT MINING & TRANSPORTATION CO., RECENTLY DESTROYED BY FIRE.

ALBANY SAND
NORTH RIVER SAND
FIRE SAND
JERSEY MOLDING SAND

LUMBERTON SAND
MILLVILLE SILICA SAND
MILLVILLE GRAVEL
SAND BLAST SAND

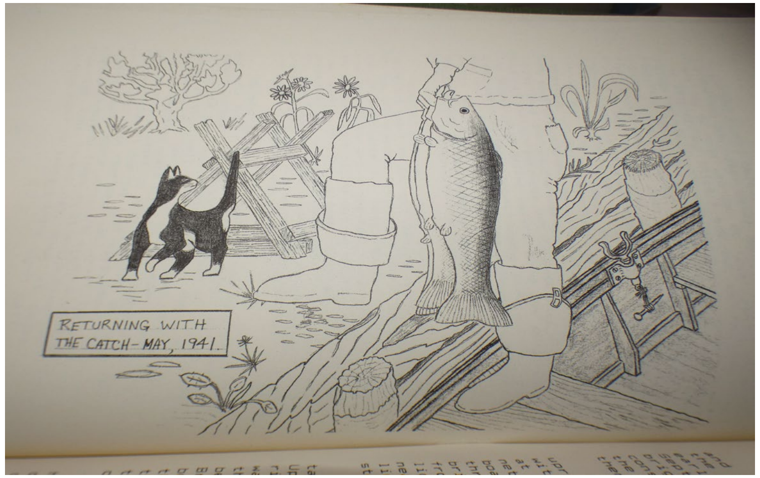


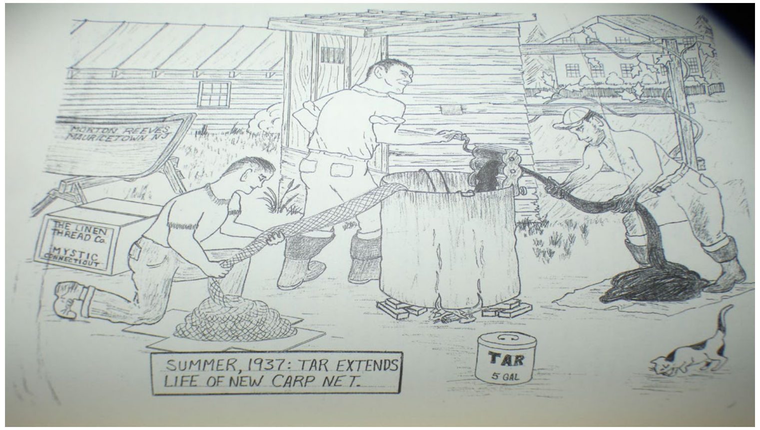
Loading Pettino's Sand Barge
Down Creek Hainesport Cast Away Island
Ref: 1926

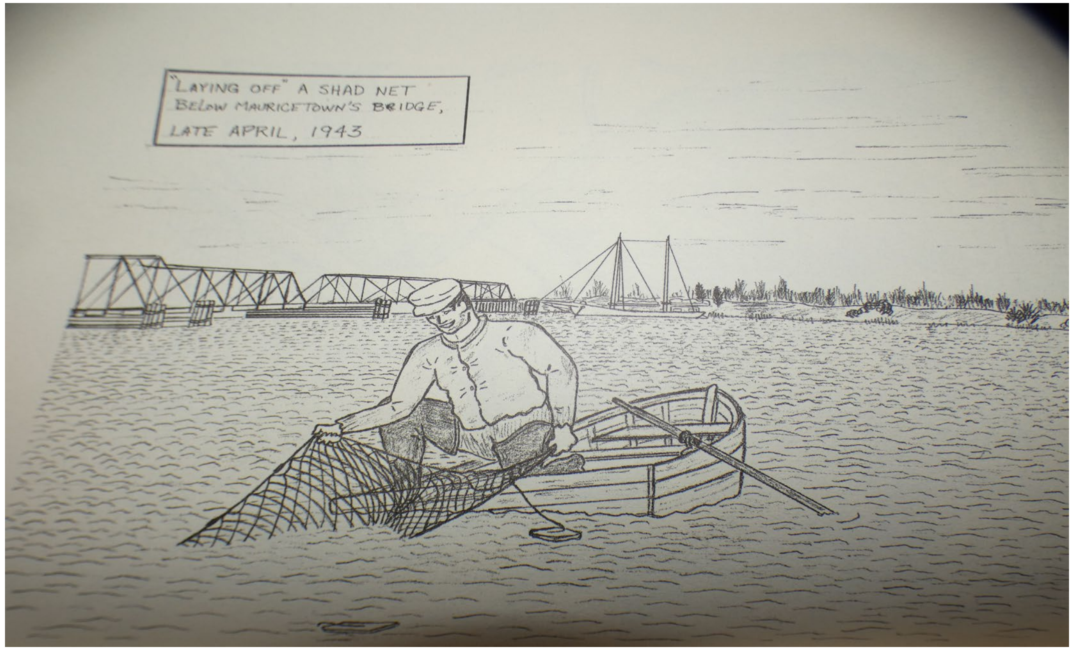
(b) *River dredge operated by the Warner Company in Delaware River below Riverside, Burlington County.*

supplies. Unquestionably the factor of greatest importance in boosting production was the operation of the large river dredge, Independence No. 2, by the Warner Company of Philadelphia, at a point on the east bank of Delaware River about a mile and a quarter south of the mouth of Rancocas Creek. By means of a long boom and an endless chain of steel buckets this dredge can dig material from a depth of 40 feet below the surface of the river. As the bank of the river is 5 to 10 feet above water level, that means that for every square yard of property the company has bought, the dredge can dig 45 to 50 cubic yards of sand and gravel—unquestionably an important consideration in the economical operation of the dredge. Moreover, operating on the edge of the river, it has an inexhaustible supply of clean water with which to wash the dredged material—another tremendous asset. A third advantage enjoyed by this operation is that the washed material can be loaded directly into barges and transported to unloading terminals in Philadelphia at very low cost. In view of these advantages and the fact that the material produced is of excellent quality, the continued operation of the dredge seems assured.

Ref: NJ Geological Survey , 1926







As example of South Jersey tidewaters resource.

Carp and Shad Fishing

Delaware Bay & River

Tidewater

River/Creek Fishery

Artwork Courtesy

Bivalve Center

Maurice River Memories

1937-1945

Reading lists for individuals, organizations, agencies and other citizen-science communities, projects, activities and other conservation themed initiatives.

Different sections of these reading lists are separated by photos in and around Cast Away Island

Riparian Ecosystems: References and reading lists to grow your own library

Anderson, P. L., & Miller, J. R. (2019). *Riparian ecosystems of the Mid-Atlantic: Biodiversity, conservation, and restoration*. University of Pennsylvania Press. Examines the plant and animal life along Mid-Atlantic waterways, including tributaries like Rancocas Creek. It provides detailed species accounts, habitat descriptions, and restoration strategies relevant to riparian zones.

Benson, R. A. (2021). *Bald eagles in New Jersey: Recovery, nesting, and conservation*. New Jersey Audubon Society. A comprehensive overview of bald eagle population recovery in New Jersey, with specific references to nesting sites along Rancocas Creek and the Delaware River watershed.

Brown, S. M. (2018). Tidal patterns and estuarine dynamics in Delaware River tributaries. *Journal of Coastal Research,* This peer-reviewed article analyzes tidal influences on smaller tributaries like Rancocas Creek, exploring how salinity, sediment transport, and tidal cycles affect both wildlife and human use.

Carter, L. J. (2020). *Maritime heritage of the Delaware Valley*. Rutgers University Press.
Explores the cultural and economic history of waterways in the Delaware Valley, including shipbuilding, fishing, and trade along Rancocas Creek.

Delaware Riverkeeper Network. (2022). *Rancocas Creek watershed report*. https://www.delawareriverkeeper.org
An environmental assessment of the Rancocas Creek watershed, including water quality data, habitat mapping, and community-led conservation initiatives.

Riparian Ecosystems : References and reading lists to grow your own library

Foster, H. K. (2017). *Flora of the New Jersey Pinelands and adjacent waterways*. Pinelands Preservation Alliance. A detailed field guide to plant species found in and around the Pinelands and Rancocas Creek, with emphasis on native wetland vegetation.

Harris, M. E., & Lopez, D. R. (2019). Community connections: Waterways as cultural landscapes. *Environmental History, 24*(3), 512–534. Discusses how communities form cultural identities around local waterways, with case studies relevant to towns along Rancocas Creek.

New Jersey Department of Environmental Protection. (2023). *Wildlife action plan: region*. https://www.nj.gov/dep*Rancocas Creek*. *C*onservation strategies for species in the Rancocas Creek watershed, including bald eagles, herons, and migratory fish

.

Williams, C. J. (2016). *Estuarine birds of the Mid-Atlantic coast*. Cornell Lab of Ornithology. Field guide to bird species found in estuarine environments, including bald eagles, osprey, and herons that inhabit the Rancocas Creek area.

Robert Parnes, *Paddling the Jersey Pine Barrens,* ***Crawly,*** *Little River of NJ,* **American Canoe Association** *early 1900's trip reports (Red Dragon Club), etc….*

Community Personal narratives with conservation, daily, year-round ecological observations of flora, fauna, and tidal changes along the creek, offering personal, recreational and scientific insights.


Coming up onto Cast Away Island

References and reading lists to grow your own library

Suggested Reading List: Exploring Rancocas Creek for Elementary Students

Discover the wonders of Rancocas Creek, a beautiful tidal waterway full of nature, history, and exciting stories. This reading list is designed especially for elementary school students who want to learn more about this unique creek and the environment around it. Each book or resource offers fun facts, engaging stories, and fascinating insights to spark curiosity about rivers, wildlife, and the natural world.

The Magic School Bus on the Ocean Floor by Joanna Cole

This book is part of the popular Magic School Bus series and takes kids on an underwater adventure that connects perfectly with the creek's ecosystem. Although it focuses on ocean life, it introduces important concepts about water habitats and the creatures that live in them, helping young readers understand how creeks like Rancocas support diverse life. Filled with colorful illustrations and fun facts, it's a great start for children interested in exploring aquatic environments and the science of water.

These and other resources can easy-peasy transform into activities for students

References and reading lists to grow your own library

Follow the Water from Brook to Ocean **by Arthur Dorros**
Arthur Dorros's book beautifully explains the journey of water from small streams to the vast ocean. It's a simple, poetic story that helps children understand how Rancocas Creek fits into a larger water system.
The clear language and charming pictures make it easy for young readers to grasp the natural cycle of water, inspiring them to appreciate their local waterways and the importance of protecting them.

One Small Square: Pond **by Donald M. Silver and Patricia J. Wynne**
This book zooms in on a small pond ecosystem, similar to parts of Rancocas Creek. It explores the plants, animals, and insects living in and around the water, offering a close-up look at nature's details.
Perfect for nature lovers, it encourages observation and curiosity, showing kids how much life can thrive in even the smallest natural places.

These and other resources can easy-peasy transform into activities for students

References and reading lists to grow your own library

***Swamp Angel* by Anne Isaacs**
While not about Rancocas Creek directly, this tall tale set in a swampy area nearby captures the spirit of adventure and the natural environment of the region. It’s a lively story with humor and charm, perfect for sparking imagination about the kinds of creatures and challenges found in wetlands and creeks.
The rich storytelling helps children connect emotionally to wild places like Rancocas Creek.

***Where the River Begins* by Paul Kropp**
This book tells the story of a river’s source and its path through different landscapes. It’s a wonderful way to introduce kids to the life of a river or creek, including the Rancocas, from its beginning to where it meets larger bodies of water. The narrative encourages respect for nature’s power and beauty, making it a meaningful read for young explorers.
apply.

These and other resources can easy-peasy transform into activities for students

References and reading lists to grow your own library

Rivers of the United States **by Seymour Simon**

Seymour Simon's books are known for their clear explanations and stunning photographs. This one covers many important rivers, including creeks that feed larger rivers, helping children understand geography and ecology. It's educational and visually captivating, perfect for curious minds eager to learn about waterways like Rancocas Creek and beyond.

Each of these books invites young readers to dive into the world of water, wildlife, and natural history with excitement and wonder. By exploring these stories and facts, children can better appreciate the beauty and importance of Rancocas Creek and become inspired to protect and enjoy their local environment.

These and other resources can easy-peasy transform into activities for students


Timbuctoo North Branch

This reading list focuses on the Underground Railroad in America's maritime regions—covering key books, articles, and resources that explore the role of maritime routes, coastal communities, and sea-based escapes in the Underground Railroad in the United States.

Maritime Routes and Coastal Communities

"The Underground Railroad: Ships, Sea, and Freedom" by Peter H. Wood explores the crucial role of maritime routes in the Underground Railroad, highlighting how enslaved people used ships, boats, and ports to escape bondage along the Atlantic coast.

"Bound for the Promised Land: Harriet Tubman, Portrait of an American Hero" by Kate Clifford Larson Larson's biography covers Tubman's entire life, including her use of waterways and coastal routes in the mid-Atlantic region to aid freedom seekers.

"Slave Ship Sailors and the Maritime Underground Railroad" by Marcus Rediker examines the complex relations between sailors, ships, and enslaved people, shedding light on how the maritime industry intersected with escape efforts along the American coastline.

"Freedom's Coast: African Americans and the Struggle for the Eastern Shore" by T.J. Jackson Lears
Eastern Shore's coastal communities and their roles as both points of escape and refuge in the Underground Railroad network.

Articles and Essays on Coastal Escape Networks

"Maritime Routes and the Underground Railroad: An Analysis of Coastal Escape Patterns" — Journal of American History article examines how rivers, bays, and coastal waterways served as vital conduits for freedom seekers moving through states like Maryland, Delaware, and Virginia.

"Ports of Freedom: The Role of Northern Harbors in the Maritime Underground Railroad" by Catherine Clinton explores how northern port cities such as Boston and New York functioned as critical points of arrival and transit for escaped slaves utilizing maritime routes.

"The Chesapeake Bay and the Underground Railroad" — Maryland Historical Review investigates the Chesapeake Bay region's unique geography and how enslaved people exploited its waterways to escape to freedom.

"The Role of African American Mariners in the Underground Railroad" — Journal of Maritime Studies highlights the participation of Black sailors and fishermen who helped guide and protect escapees along the coastlines.

Multimedia Resources, Local Histories, and Archives

National Park Service: The Underground Railroad Maritime Routes, the NPS website offers interactive maps, detailed histories, and educational resources about maritime paths used during escape efforts along the Atlantic coast.

"Freedom on the Water: The Maritime Underground Railroad" — Documentary by PBS
This documentary covers stories of maritime escapes, featuring historical reenactments and expert interviews about the use of boats and ships in the quest for freedom.

The Gullah Geechee Cultural Heritage Corridor: Maritime Connections to Freedom
This resource focuses on the coastal communities of the southeastern U.S. and their role in providing safe havens and escape routes for enslaved people via waterways.

Maryland Maritime Museum Archives: Underground Railroad Collections Archival materials, personal letters, and ship logs that document the maritime aspects of the Underground Railroad in Maryland and surrounding states.

The Underground Railroad from slavery to freedom /
by Wilbur H. Siebert ; with an introduction by Albert Bushnell Hart.

This station is vividly described as having been made up of a circle of Quaker residences enclosing a swampy place that swarmed with blacks. One may surmise that it made a model station. Slaves were transported at night across the Delaware River from the vicinity of Dover, in boats marked by a yellow light hung below a blue one, and were met some distance out from the Jersey shore by boats showing the same lights. Landed at Greenwich, the fugitives were conducted north twenty-five miles to Swedesboro, and thence about the same distance to Evesham Mount. From this point they were taken to Mount Holly, and so into the northern or Philadelphia route. Still another branch of this Philadelphia line is known. It constitutes the fourth road, and is described by Mr. Robert Purvis [1] as an extension of a route through Bucks County, Pennsylvania, that entered Trenton, New Jersey, from Newtown, and ran directly to New Brunswick and so on to New York.

Mr. Eber M. Pettit, for many years a conductor of the Underground Railroad in western New York,[2] asserts that the Road had four main lines across his state, and scores of laterals,[3] but he nowhere attempts to identify these lines for

Tidewater Marsh Flora Field Guides

***Field Guide to Coastal Wetland Plants of the Southeastern United States* — Ralph W. Tiner**
A foundational reference covering salt marsh, brackish marsh, and tidal freshwater vegetation. Strong species descriptions, line drawings, and habitat notes.

***Wetland Plants of the Eastern United States* — William A. Niering & Nancy C. Olmstead**
A classic guide with clear keys and ecological context. Especially useful for Mid-Atlantic tidal marsh identification.

***Grasses: An Identification Guide* — Lauren Brown & Ted Elliman**
Indispensable for Spartina, Juncus, and other marsh grasses. Excellent illustrations and habitat cues.

***Newcomb's Wildflower Guide* — Lawrence Newcomb**
Not marsh-specific but extremely helpful for tidal freshwater and adjacent upland flora using a unique keying system.

***The Sedge Guide: A Field Guide to the Sedges of the Mid-Atlantic and Northeastern United States* — Tony Reznicek et al.** Critical for distinguishing *Carex*, *Cyperus*, and *Scirpus* species common in tidal wetlands.

References and reading lists to grow your own library

Marsh Fauna & Invertebrates + Birds of Coastal/Tidewater Ecosystems

***Life in the Salt Marsh: A Coastal Ecology Handbook* — Karen Morgan & Rachel Carson NWR**
A readable overview of marsh food webs, invertebrates, and ecological processes.

***A Field Guide to the Atlantic Seashore* — Kenneth L. Gosner**
Covers invertebrates, crustaceans, mollusks, and near-shore species frequently found in tidal flats and marsh edges.

***Marine Invertebrates of the Northeastern Coast* — Eugene H. Kaplan**
A detailed, photo-rich guide to crabs, worms, tunicates, and other marsh-adjacent invertebrates

References and reading lists to grow your own library

***The Crustaceans: An Introduction* — Janet Leonard**
A concise primer on crab and shrimp biology, helpful for understanding marsh keystone species like fiddler crabs.

Birds of Coastal & Tidewater Ecosystems

***The Sibley Guide to Birds* — David Allen Sibley**
The gold standard for identification, with excellent plates for marsh specialists like rails, bitterns, and saltmarsh sparrows.

***Peterson Field Guide to Birds of Eastern & Central North America* — Roger Tory Peterson**
A classic, highly portable guide ideal for field use in tidal marshes.

***Shorebirds of North America* — Dennis Paulson**
Deep coverage of sandpipers, plovers, and other species using tidal flats and estuarine edges.

***Waterfowl of Eastern North America* — Chris G. Earley**
Useful for wintering and migratory species that rely on tidal marshes and estuaries.

***Birds of the Atlantic Flyway* — John H. Rappole**
Explains migration ecology and habitat use along the coastal corridor.

References and reading lists to grow your own library

Broader Wetland & Estuary Wildlife References

Tidal Marshes: Ecology, History, and Restoration **— Charles T. Roman & David Burdick**
A comprehensive scientific overview of marsh formation, species interactions, and conservation strategies.

Wetlands **(5th ed.) — William J. Mitsch & James G. Gosselink**
The definitive textbook on wetland ecology, hydrology, and management — essential for conservation planning.

Estuaries of the World Series **(various volumes)**
A set of region-specific scientific monographs covering estuarine biodiversity, threats, and restoration.

The Ecology of Estuaries: Anthropogenic Effects **— Donald S. McLusky**
A clear look at human impacts on estuarine systems, including pollution, dredging, and sea-level rise.

Salt Marshes: A Natural and Unnatural History **— John Teal & Mildred Teal**
A classic narrative blending natural history, ecology, and early conservation advocacy.

The Living Shore: Rediscovering a Lost World **— Rowan Jacobsen**

References and reading lists to grow your own library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Reading List on Conservation

Conservation is connects science, ethics, and public access to protect the natural world. The following curated reading list offers a rich exploration of conservation from diverse perspectives—ecological, social, historical, and practical. These books are thoughtfully chosen to inspire, inform, and deepen your understanding of the challenges and triumphs in conserving our planet’s biodiversity and ecosystems.

A Sand County Almanac

by Aldo Leopold

A timeless classic, this collection of essays by Aldo Leopold is often regarded as the foundation of modern environmental ethics. Leopold’s intimate observations of the natural world and his visionary "land ethic" philosophy invite readers to reconsider humanity’s relationship with the land. The book’s poetic prose and profound insights make it a compelling read for anyone who cares about conservation and environmental stewardship.

Silent Spring

by Rachel Carson

This groundbreaking book published in 1962 exposed the environmental hazards of pesticide use and is credited with launching the global environmental movement. Rachel Carson’s eloquent and meticulously researched writing reveals the interconnectedness of all life and the unintended consequences of human actions. Reading *Silent Spring* offers both a historical perspective and a sobering reminder of the delicate balance needed to sustain ecosystems.

Half-Earth: Our Planet's Fight for Life

by Edward O. Wilson

In this visionary work, renowned biologist E.O. Wilson argues for an ambitious conservation strategy: dedicating half the Earth's surface to nature to safeguard biodiversity. The book blends scientific data with compelling storytelling, making a persuasive case for why protecting vast natural habitats is not only necessary but achievable. Wilson's passion and expertise shine through, making it essential reading for those interested in large-scale conservation solutions.

Conservation Refugees: The Hundred-Year Conflict between Global Conservation and Native Peoples

by Mark Dowie

This critical examination reveals the often overlooked human cost of conservation efforts. Dowie sheds light on how indigenous communities have been displaced and marginalized in the name of protecting wilderness areas. The book challenges readers to think about conservation not only in ecological terms but also through the lens of social justice and human rights, broadening the conversation about ethical conservation practices.

The Song of the Dodo: Island Biogeography in an Age of Extinctions

by David Quammen

David Quammen's narrative combines science with adventure, exploring how island biogeography theory helps explain species extinction and survival. The book offers a gripping look at how fragmentation of habitats threatens biodiversity worldwide. With vivid storytelling and deep scientific insight, it is a captivating introduction to the complexities of conservation biology and the urgency of protecting fragmented ecosystems.

Conservation Science: Balancing the Needs of People and Nature

by Peter Kareiva and Michelle Marvier

This book provides a contemporary overview of conservation science, blending ecological principles with real-world applications. The authors argue for pragmatic, people-inclusive strategies to achieve effective conservation. It is particularly valuable for readers interested in the science-policy interface and how conservation can be integrated with human development goals.

Environmental Ethics: An Anthology **edited by Andrew Light and Holmes Rolston III**

This comprehensive anthology gathers seminal essays from leading philosophers and environmental thinkers, presenting diverse views on the ethical relationship between humans and nature. The collection covers key themes such as intrinsic value of nature, animal rights, sustainability, and environmental justice, offering a rich foundation for understanding the moral dimensions of conservation.


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Tidewater navigation focus is on the unique opportunities of navigating tidal waters including estuaries, tidal rivers, bays, and coastal areas. The following reading list comprises foundational texts, practical guides, and scientific resources that cover the principles, techniques, and real-world applications of navigating tide-influenced waterways.

The American Practical Navigator by Nathaniel Bowditch

Known as Bowditch, this classic maritime reference covers a wide range of navigation topics including tides and currents. It offers detailed explanations of tidal theory, practical guidance on using tide tables, and methods to account for tidal currents during navigation. Its thoroughness makes it indispensable for professional and recreational mariners alike

Tidal Current Tables and Charts (Published by National Oceanic and Atmospheric Administration - NOAA)

Although technically a reference, NOAA's tidal current tables and charts are essential tools for anyone navigating tidewater areas in the United States. These publications provide accurate predictions of tidal currents and are used extensively for route planning and timing movements in tide-sensitive waters.

Tide and Current Manual by the United States Coast Guard

This manual provides detailed operational guidance on tides and currents from a regulatory and safety perspective. It explains the calculation and use of tidal information in navigation, focusing on safe vessel operation in tidal areas. The manual is a valuable resource for professional mariners and trainees.

Introduction to Tidal Hydrodynamics by David Pugh and Philip Woodworth

This textbook offers an in-depth scientific exploration of tidal hydrodynamics, from basic tidal theory to advanced numerical modeling. While technical, it is invaluable for readers seeking to understand the physical processes that shape tidal currents and water levels, underpinning effective tidewater navigation

Estuarine Ecology and Navigation edited by John W. Day Jr., et al.

This academic resource explores the ecology of estuaries and the implications for navigation and coastal management. It provides insight into sediment transport, tidal mixing, and habitat considerations that affect navigable waterways, blending environmental science with navigation challenges.

***Understanding Tides and Tidal Currents* by Richard D. Norris**

Richard Norris presents an accessible explanation of tidal phenomena and their practical effects on navigation. The book includes case studies and examples illustrating how tides influence vessel movement and harbor access, bridging theory with practical application

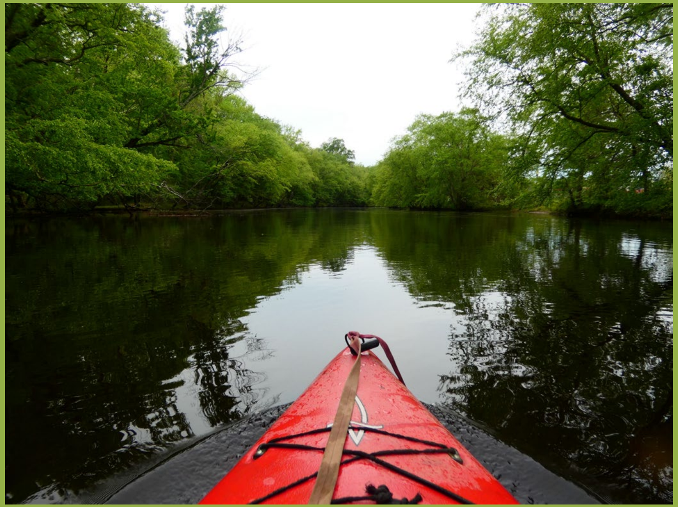
***Environmental Considerations in Tidewater Barge Operations* (Journal Articles and Case Studies)**

Various academic and industry publications address the environmental impacts of barge traffic in tidewater regions, such as habitat disturbance, sediment resuspension, and pollution risks. These works emphasize sustainable practices and regulatory compliance

***Fundamentals of Marine Navigation and Piloting* by William R. J. Rollason**

This book covers the essential navigation and piloting skills for all vessels, with valuable sections on handling barges in tidal waters. It emphasizes understanding tidal dynamics, currents, and local conditions critical to safe tidewater barge navigation.

Historic
Mount Holly



Launch Point
4
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Head of Tide

Stewardship

Support
Local
Business

Additional Written Resources:

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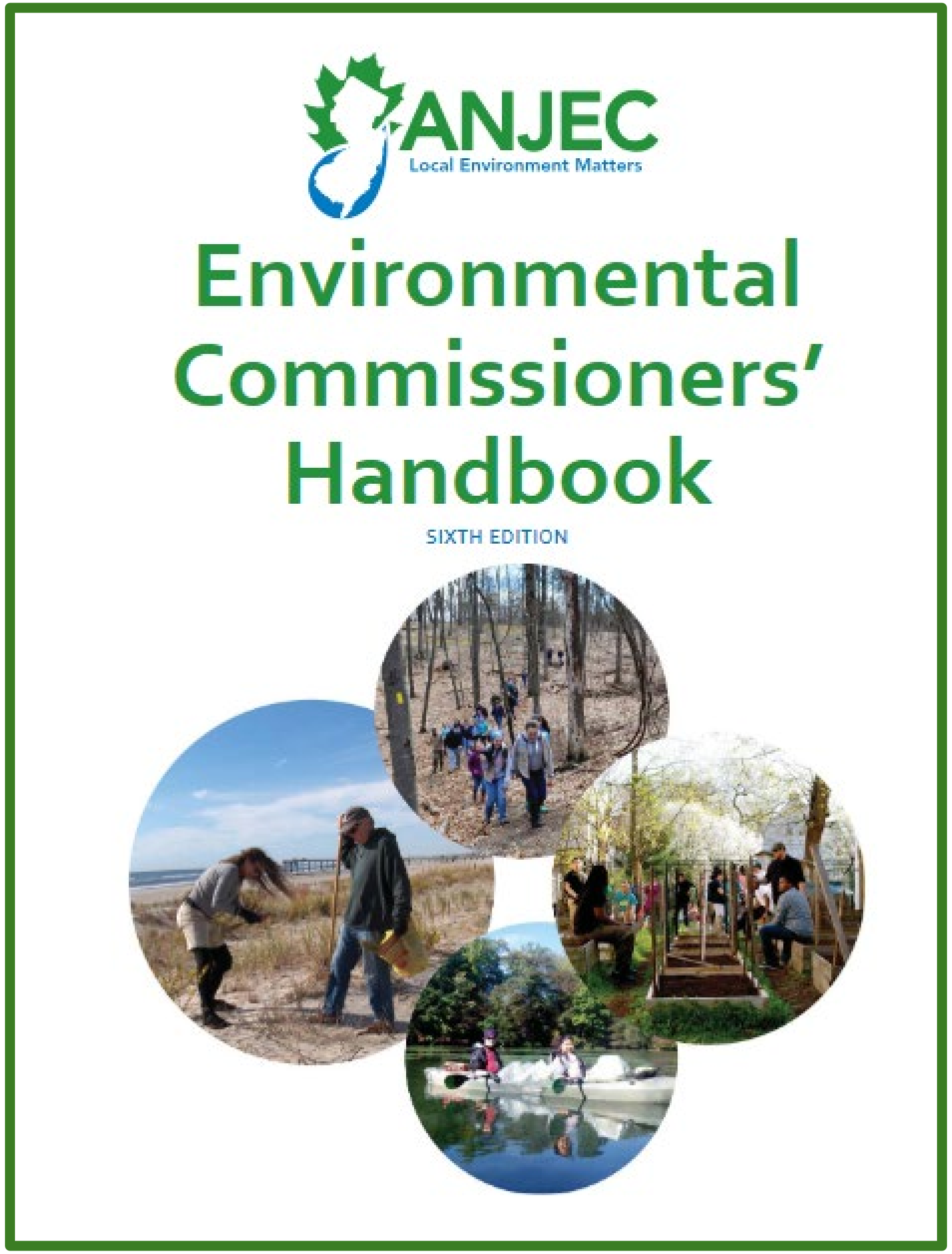

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