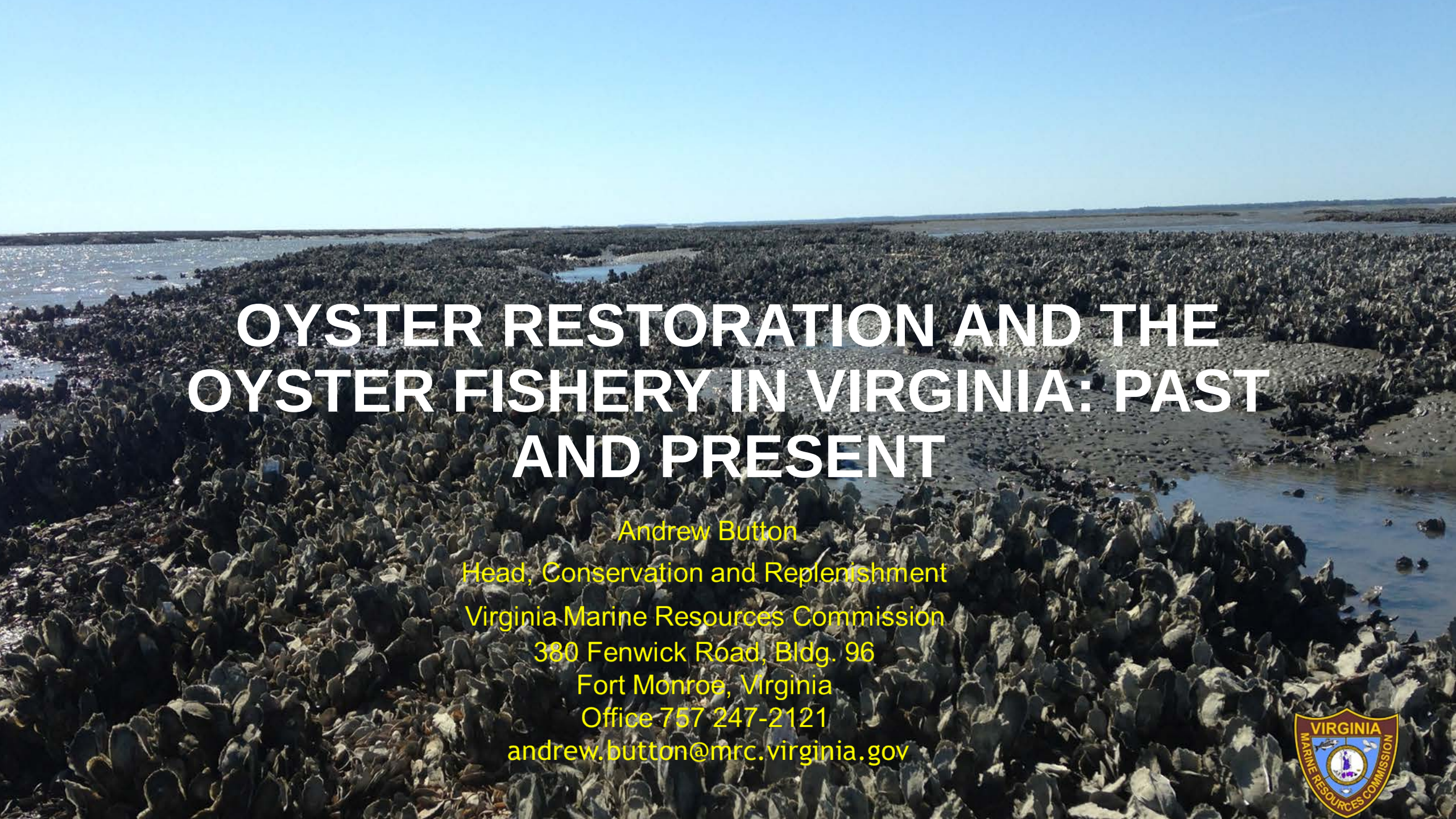

OYSTER RESTORATION AND THE OYSTER FISHERY IN VIRGINIA: PAST AND PRESENT

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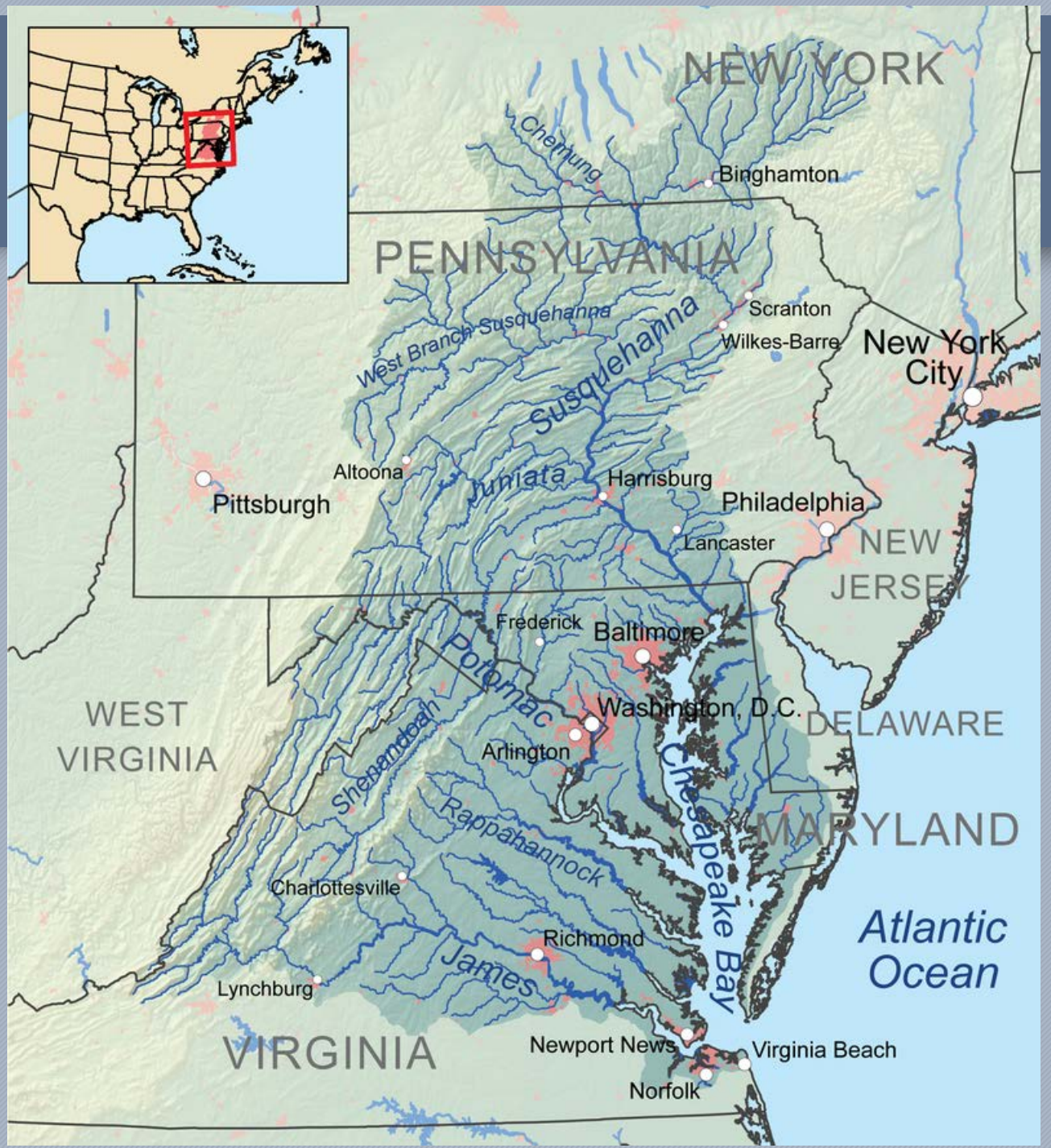
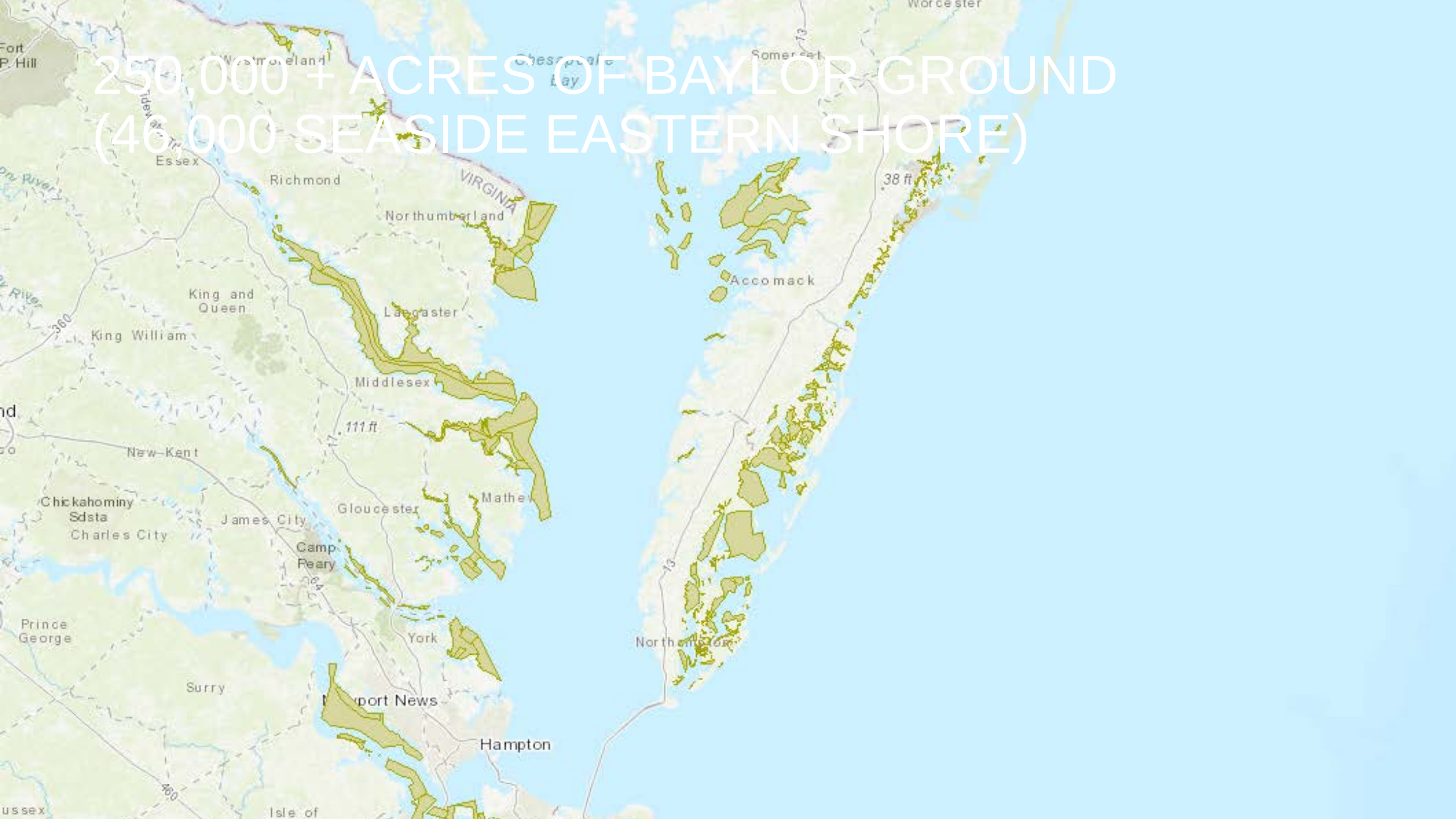
64,299 square mile drainage



250,000 + ACRES OF BAYLOR GROUND
(46,000 SEASIDE EASTERN SHORE)



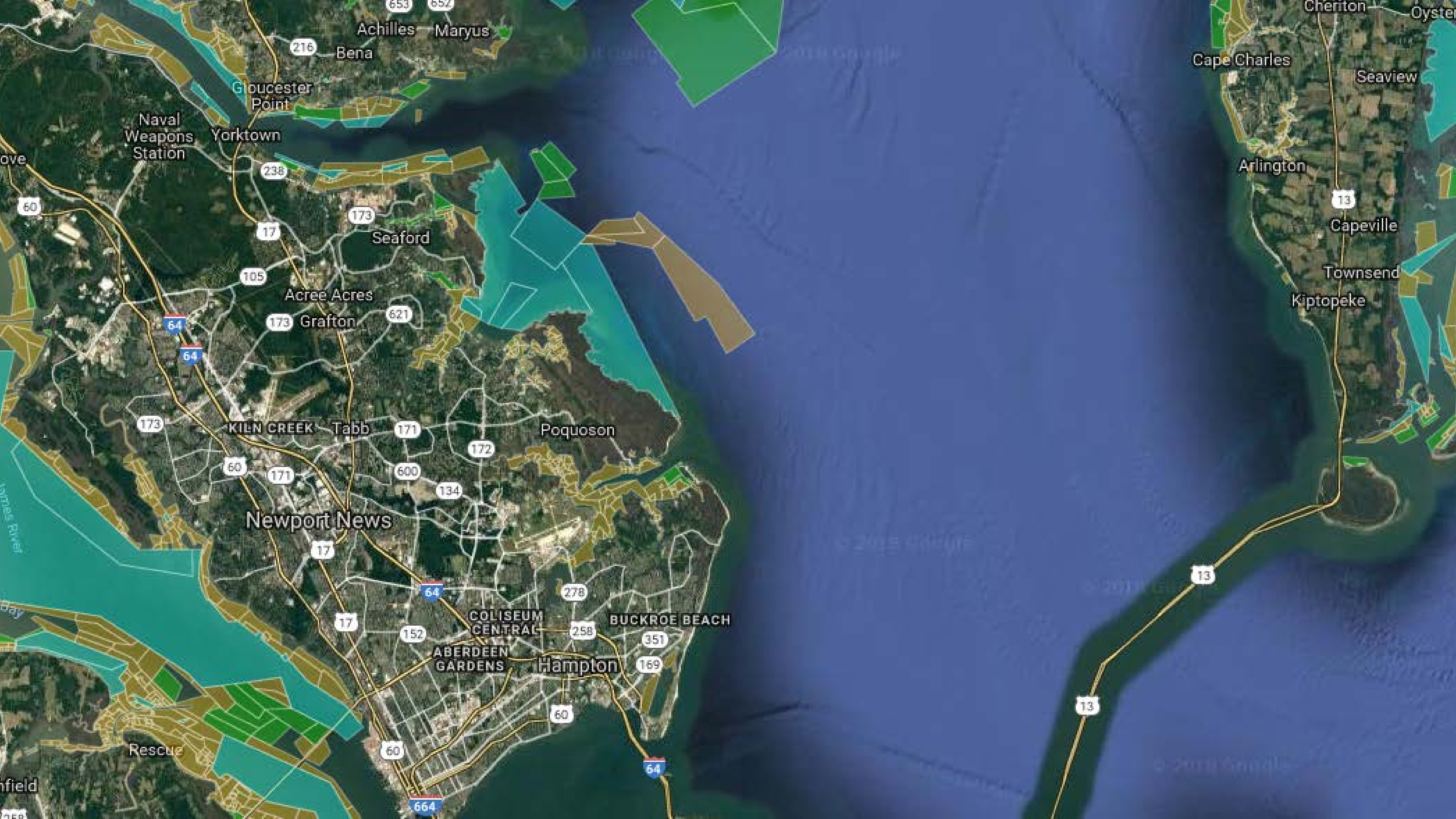
VIRGINIA LEASES STATE-BOTTOM FOR PRIVATE OYSTER AQUACULTURE VENTURES

One of the oldest but most progressive private oyster ground leasing systems in the world

130,000 acres are currently under lease

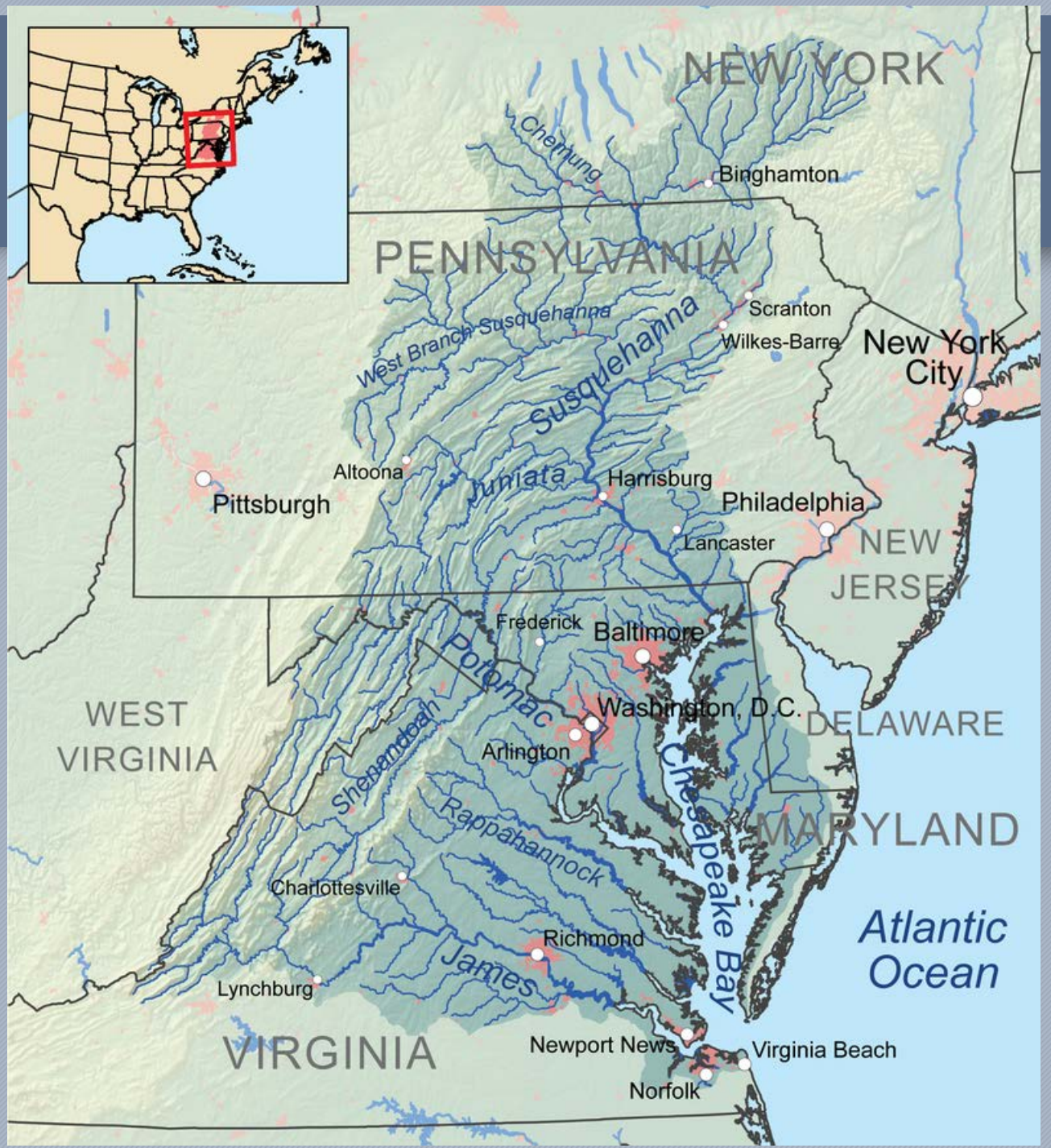
$1.50/acre for rent

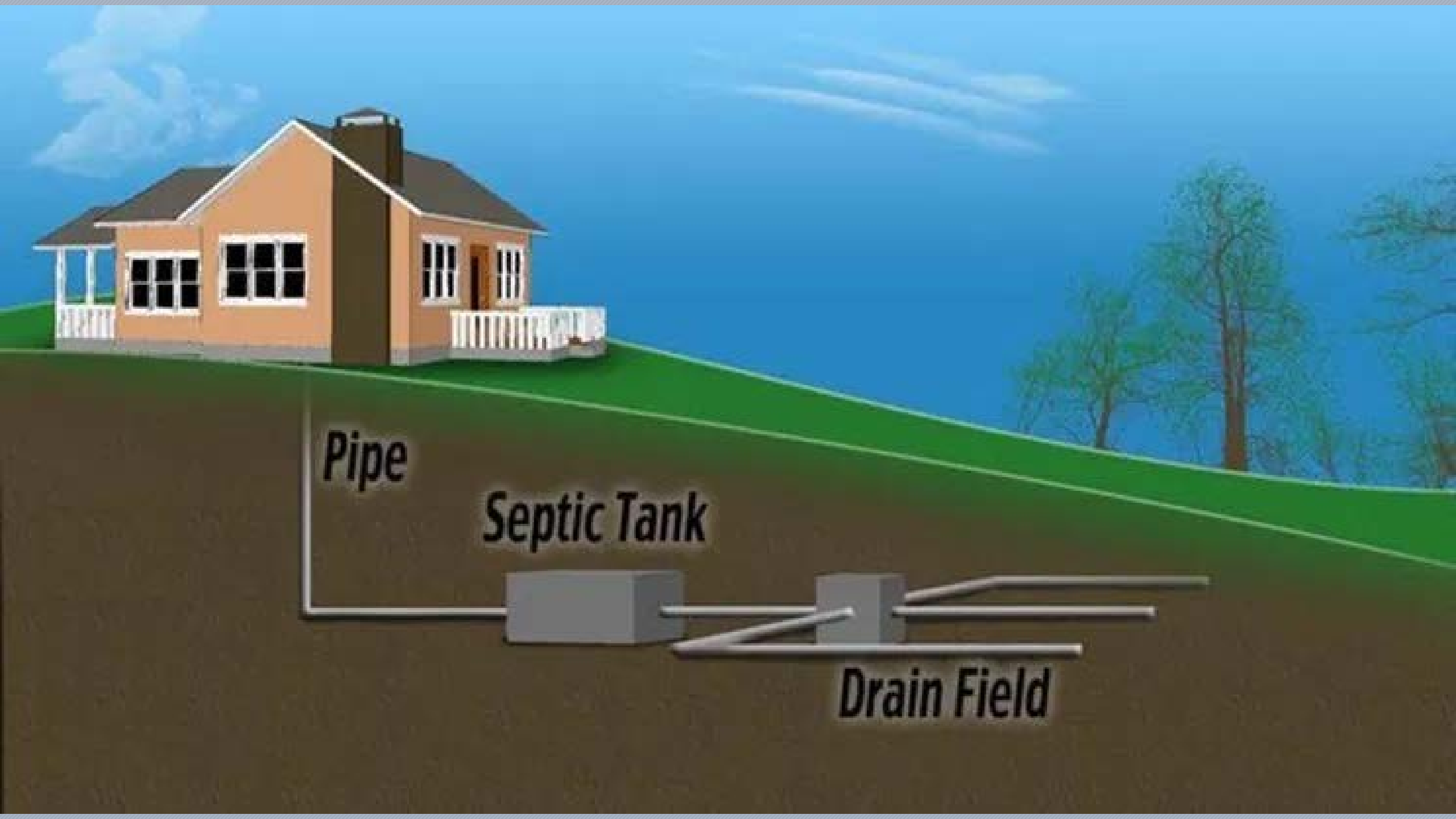
To date, 396 applications pending for an additional 23,572 acres

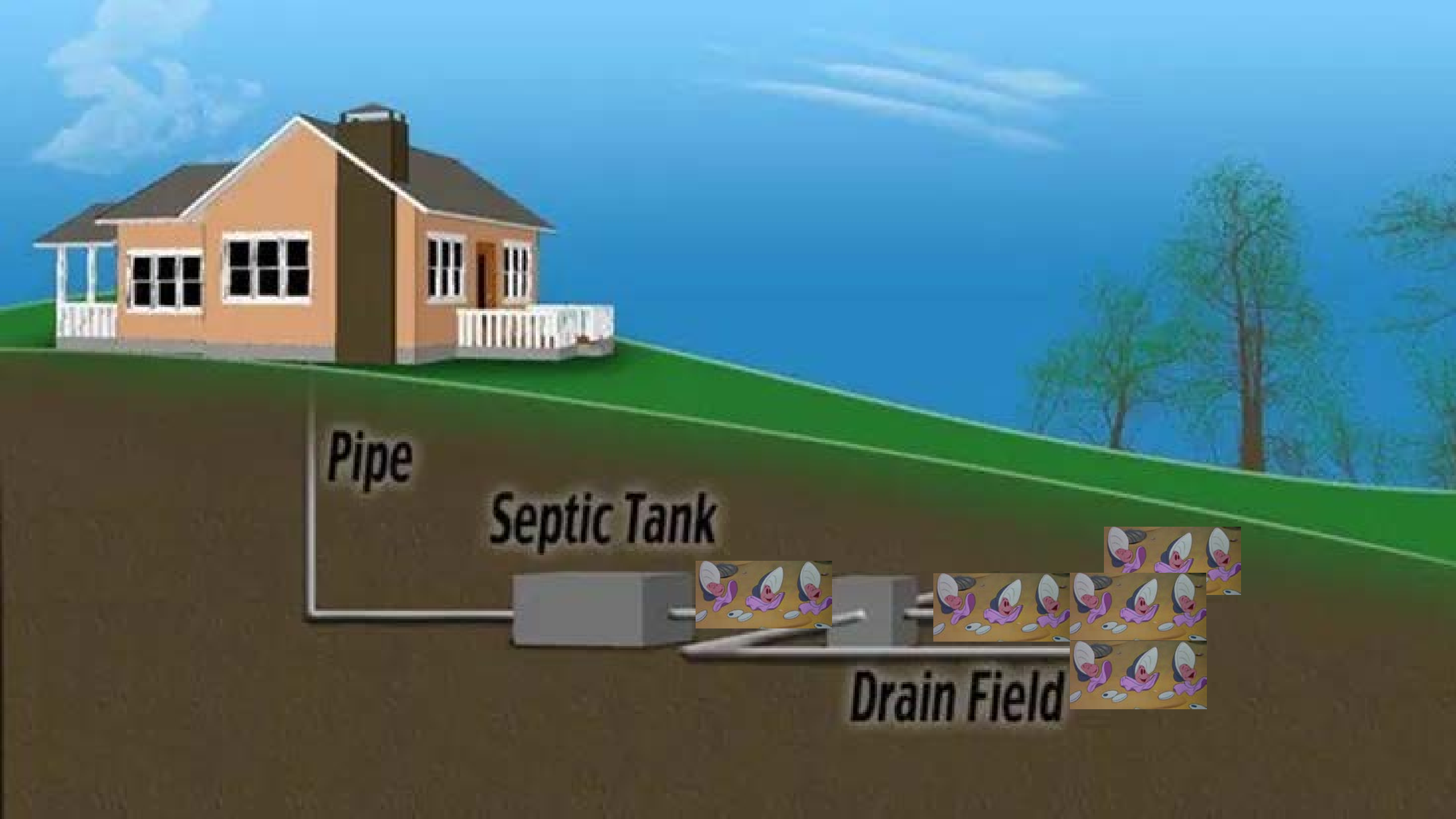


Achilles
Maryus
Bena
Gloucester Point
Naval Weapons Station
Yorktown
Seaford
Acree Acres
Grafton
KILN CREEK
Tabb
Poquoson
Newport News
COLISEUM CENTRAL
BUCKROE BEACH
ABERDEEN GARDENS
Hampton
Rescue
James River
Cheriton
Cape Charles
Seaview
Arlington
Capeville
Townsend
Kiptopeke
216
238
173
17
105
621
64
60
171
172
600
134
278
258
152
351
169
664
13

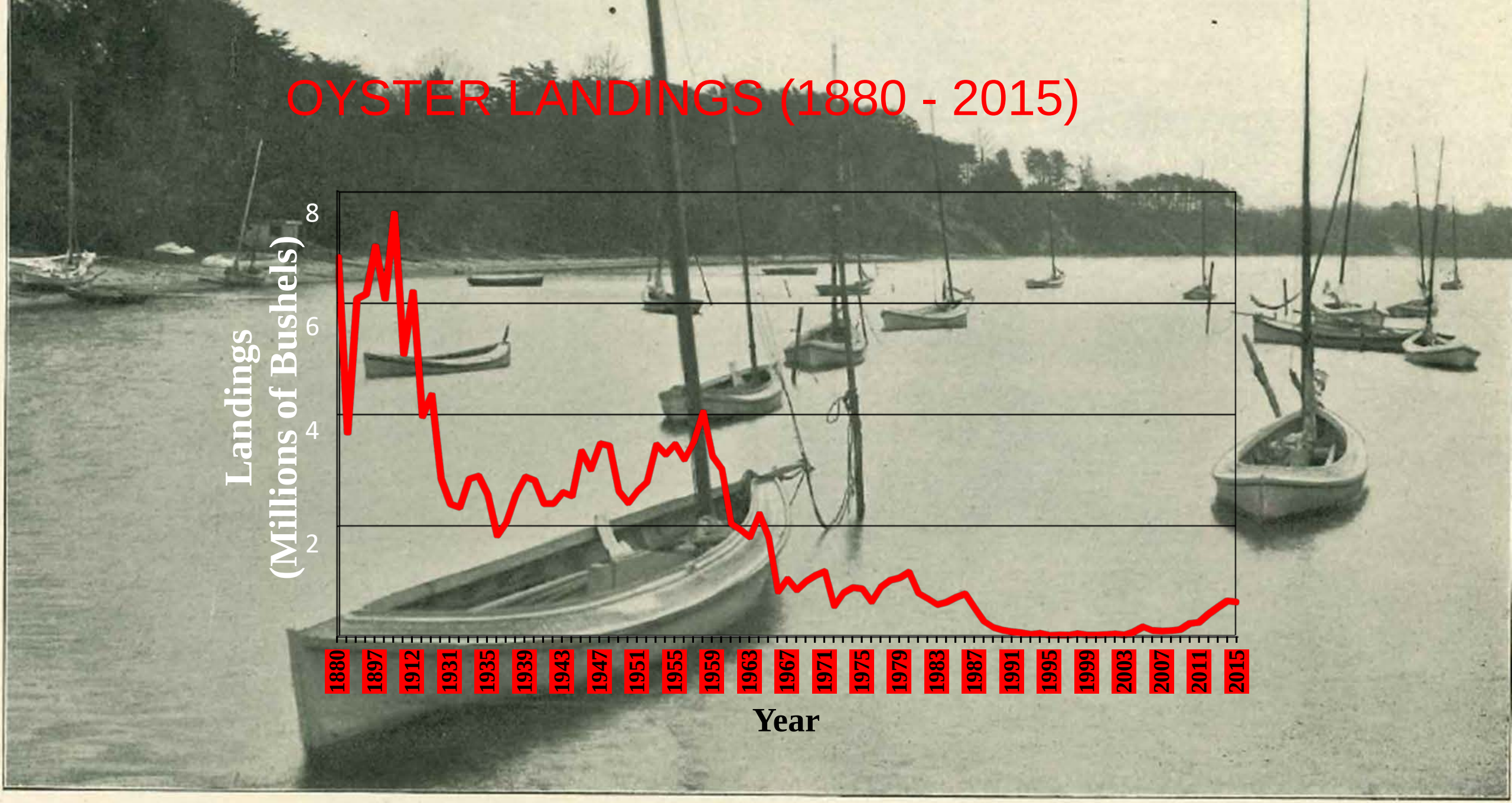
64,299 square mile drainage




Pipe
Septic Tank
Drain Field


Pipe
Septic Tank
Drain Field

OYSTER LANDINGS (1880 - 2015)



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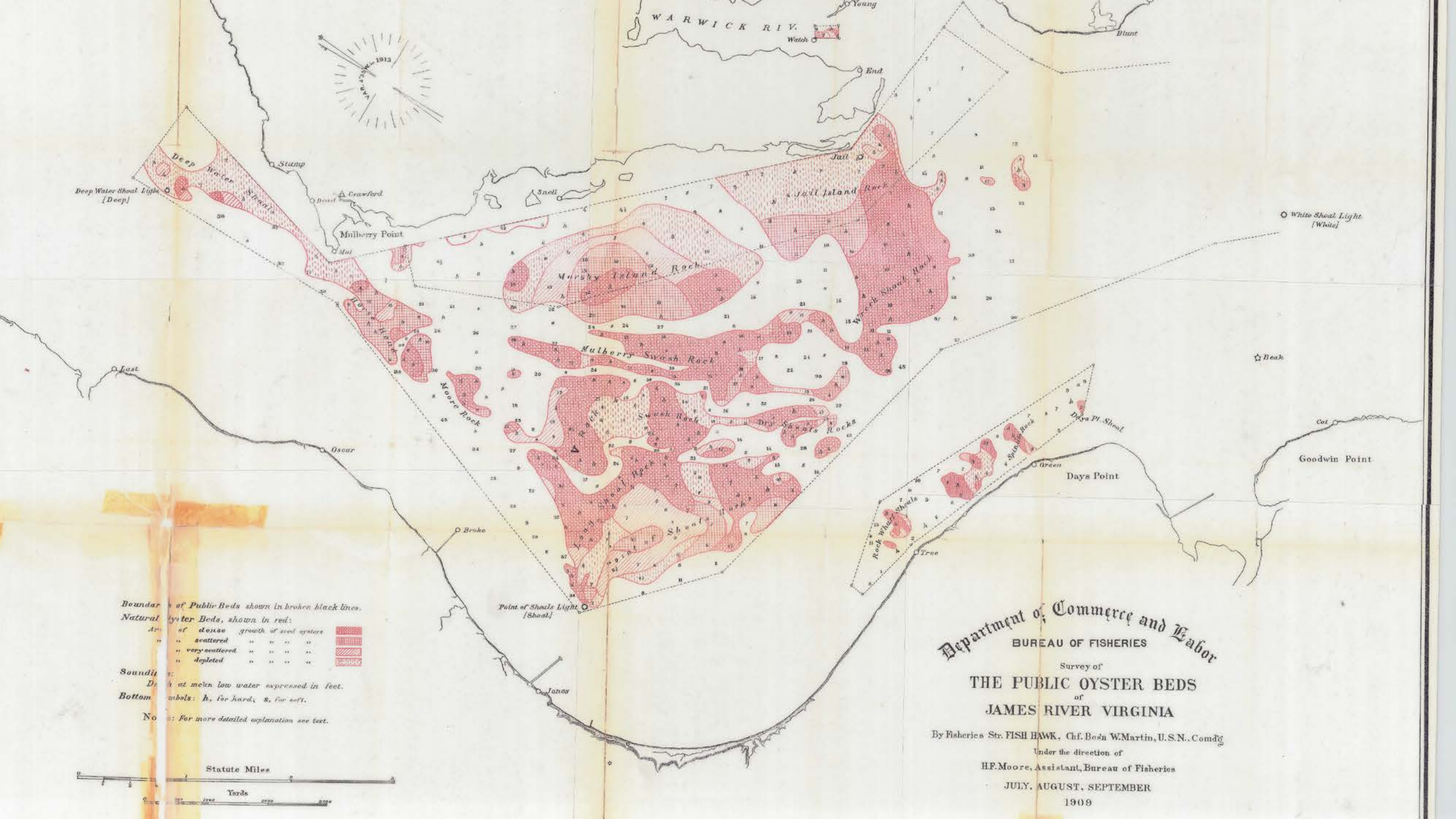


Department of Commerce and Labor

BUREAU OF FISHERIES

Survey of

THE PUBLIC OYSTER BEDS of JAMES RIVER VIRGINIA

By Fisheries Str. FISH HAWK, Chf. Boatn W. Martin, U.S.N., Comdg

Under the direction of

H.F. Moore, Assistant, Bureau of Fisheries

JULY, AUGUST, SEPTEMBER

1909

1928

In October, pursuant to statute, regulations were drawn up which were mutually satisfactory to the United States Public Health Service, the Shellfish Sanitation Department, and the Commission of Fisheries, and proved very successful this fall. During the open season a system was worked out whereby permits could be given to tongers to take clams from restricted territory, while small planters removed oysters from their beds or sold to larger planters under certain conditions of supervision and also after having given bond.

FIRST REPLETION OF PUBLIC ROCKS

The present Commission of Fisheries made the first attempt in the history of the industry to replete or restore impoverished bottoms within the Baylor Survey. This was done under the so-called "Oyster Repletion Act," enacted in 1928, providing for a "Repletion Fund" to be expended under an "Oyster Advisory Commission." Functioning under the provisions of this act during the early summer of 1929, this work was commenced, upon a small scale, with such funds as were available. The Oyster Advisory Commission was composed of Honorable R. O. Norris, of Lancaster; Honorable Albert Sidney Johnson, of Isle of Wight, and Engineer Frederick E. Ruediger, of Accomac. The funds were provided by statute, being the remainder of the bushel tax collected from oysters taken from the public rock at one and one-half (1½) cents per bushel within the State and three (3) cents per bushel going out of the State.

The first ground set apart and planted were 250 acres in James River near the mouth of the Warwick River off Blunt Point. The seed for repletion was dredged nearby from the area through which the United States Government is cutting a channel, which crosses certain oyster rocks at Rocklanding Shoals. This not only saved the oysters from being destroyed by the channel dredge, but saved them for the State, and present indications are that within a year or two this planting will furnish good working ground for the tongers, from an area which heretofore had been barren. This was platted and buoyed as the law requires.

The second reservation for repletion consisted of 162.8 acres, which was set apart near Towles' Point in the Rappahannock. This has also been platted and staked, 29,283 bushels of shells being planted upon this ground and an examination in October indicated a good strike.

The third allocation of funds for reservation was 69.7 acres at New Virginia, Chincoteague Bay, 13,200 bushels of shells being also planted upon this ground. An examination of this reservation shows a good strike and a great deal of natural growth.

It is to be borne in mind that most probably, in many cases, there will be natural restoration upon these reservations by reason of the fact that they are closed to the public and in this period of rest can to a measure replete themselves. This is clearly proven by bottoms adjoining the Naval Mine Depot at Yorktown. Here the bottoms have been closed, more or less since 1918, or certainly a number of years, and a large amount of natural growth of oysters may be observed over the entire area where the bottoms are susceptible of natural growth.

1968

In 1959 the Chesapeake Bay was invaded by MSX and by the end of 1960 the disease had destroyed virtually all of the oysters in the Bay. MSX continued to spread to other areas, particularly to the tributaries of the lower Bay. Vast quantities of oysters were destroyed and production continually declined.

The Virginia Marine Resources Commission, formerly the Commission of Fisheries, began an intensive rehabilitation program in 1963 in an effort to assist the faltering industry. The program consisted of planting large quantities of oyster shells and transplanting seed oysters to public growing areas.

The Virginia Marine Resources Commission submitted a shell planting project to the Bureau of Commercial Fisheries, under Public Law 88-309, in 1966. The project was approved by the Bureau on a 50-50 matching fund basis. We have submitted a similar project each year since that time, and all have been approved on the same basis.

Our matching funds have been taken from our Special Public Oyster Rock Replenishment Fund.

Federal Aid under this project has made a substantial contribution to the expansion of our Rehabilitation Program.

Our largest shell plantings have been concentrated in those areas which have received the largest amount of set; however, we continue to make experimental plantings in areas where we hope to receive enough set to produce market size oysters.

During the 1967 planting season, a total of 2,131,255 bushels of reef and 597,337 bushels of packers shells were planted. In 1968, a total of 499,540 bushels of reef and 1,101,176 bushels of packers shells were planted.

The reason for the decline in reef shells planted and the increase of packers shells is due to the discontinuation of mining reef shells in Virginia. The company which was mining shells was unable to locate reefs in areas where the Virginia Marine Resources Commission would permit the operation.

Our total shell planting program from 1963 through 1968 consisted of 13,000,354 bushels of submerged reef shells and 2,598,553 bushels of shucking house shells planted. All shells have been planted within the bounds of the Baylor Survey. Each area planted has been surveyed and charted by Virginia Marine Resources Commission engineers.

A substantial percentage of these shells were used to establish seed beds in the Great Wicomico and Piankatank Rivers and on the Sea Side of Eastern Shore. Smaller seed beds were also established in the Corrotoman and lower Rappahannock Rivers. Other shell beds have been planted in various rivers in an endeavor to produce market size oysters. Our proposed shell planting for 1969 will consist wholly of packers shells.

Seed beds, which have been established under this program, have made a substantial contribution to the oyster industry in our state. They have made available to Virginia planters and the Potomac River Fisheries Commission a total of 1,230,350 bushels of seed oysters. Virginia tongers have been paid an average of one dollar per bushel for tonging these seed. In addition to this, the Virginia Marine Resources Commission has transplanted 249,220 bushels of seed from the Great Wicomico, Piankatank, Corrotoman

1988

OBJECTIVES:

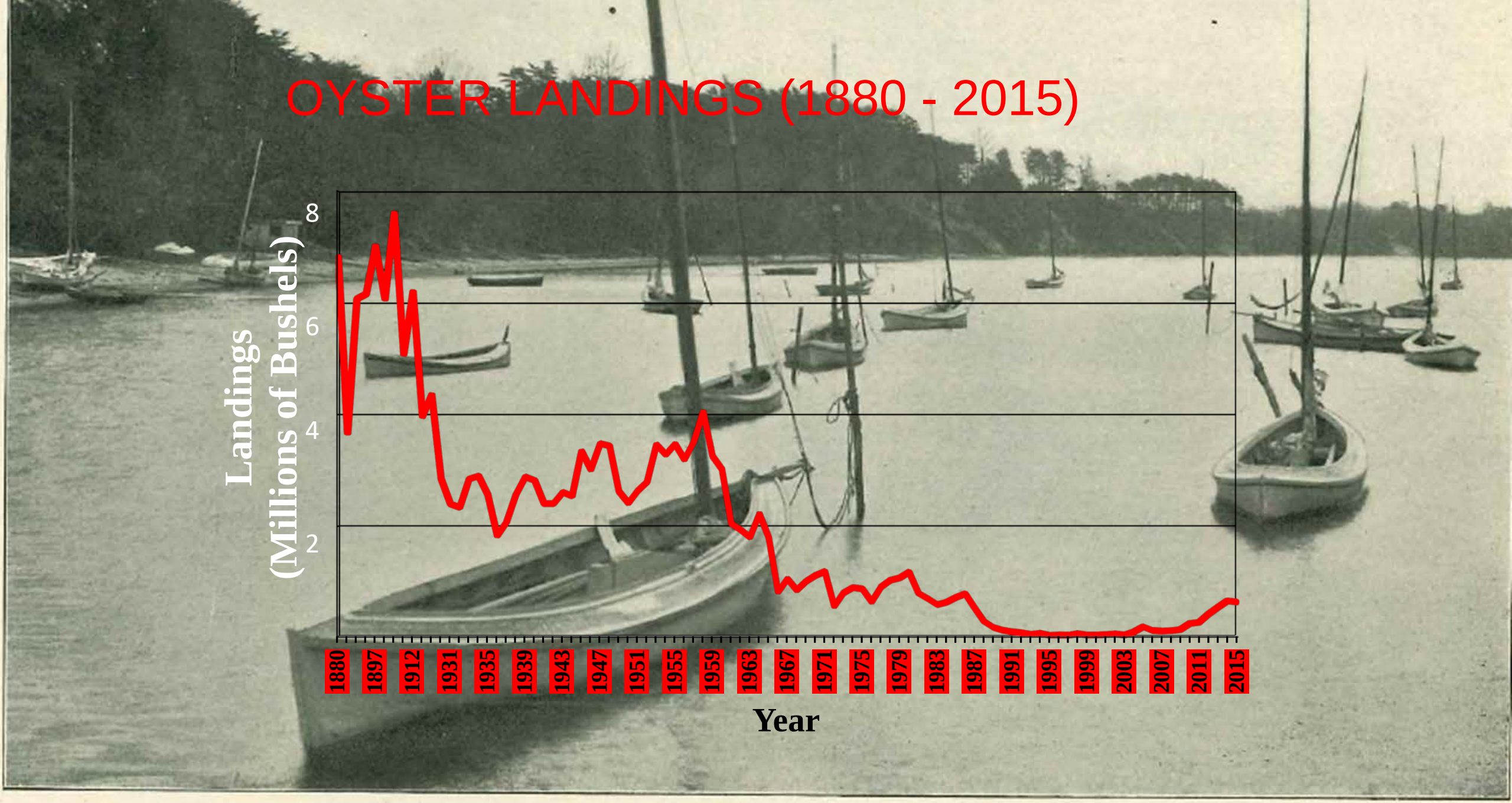
- Restore, enhance, protect and manage submerged aquatic vegetation.
- Protect, enhance and restore wetlands, coastal sand dunes, forest buffers and other shoreline and riverline systems important to water quality and habitat.
- Conserve soil resources and reduce erosion and sedimentation to protect Bay habitat.
- Maintain freshwater flow regimes necessary to sustain estuarine habitats, including, where appropriate, establishing minimum instream flows.
- Develop compatible Bay-wide stock assessment programs.

- Develop Bay-wide fisheries management strategies and develop complementary state programs and plans to protect and restore the finfish and shellfish stocks of the Bay, especially the freshwater and estuarine spawners.
- Provide for the restoration of shellfish stocks in the Bay, especially the abundance of commercially important species.
- Restore, enhance and protect waterfowl and wildlife.

TO ACHIEVE THIS GOAL WE AGREE:

- by *January 1988*, to develop and adopt guidelines for the protection of water quality and habitat conditions necessary to support the living resources found in the Chesapeake Bay system, and to use these guidelines in the implementation of water quality and habitat protection programs.
- by *July 1988*, to develop, adopt and begin to implement a Bay-wide plan for the assessment of commercially, recreationally and selected ecologically valuable species.
- by *July 1988*, to adopt a schedule for the development of Bay-wide resource management strategies for commercially, recreationally and selected ecologically valuable species.
- by *July 1989*, to develop, adopt and begin to implement Bay-wide management plans for oysters, blue crabs and American Shad. Plans for other major commercially, recreationally and ecologically valuable species should be initiated by 1990.
- by *December 1988*, to develop a Bay-wide policy for the protection of tidal and non-tidal wetlands.
- Provide for fish passage at dams, and remove stream blockages wherever necessary to restore natural passage for migratory fish.

OYSTER LANDINGS (1880 - 2015)



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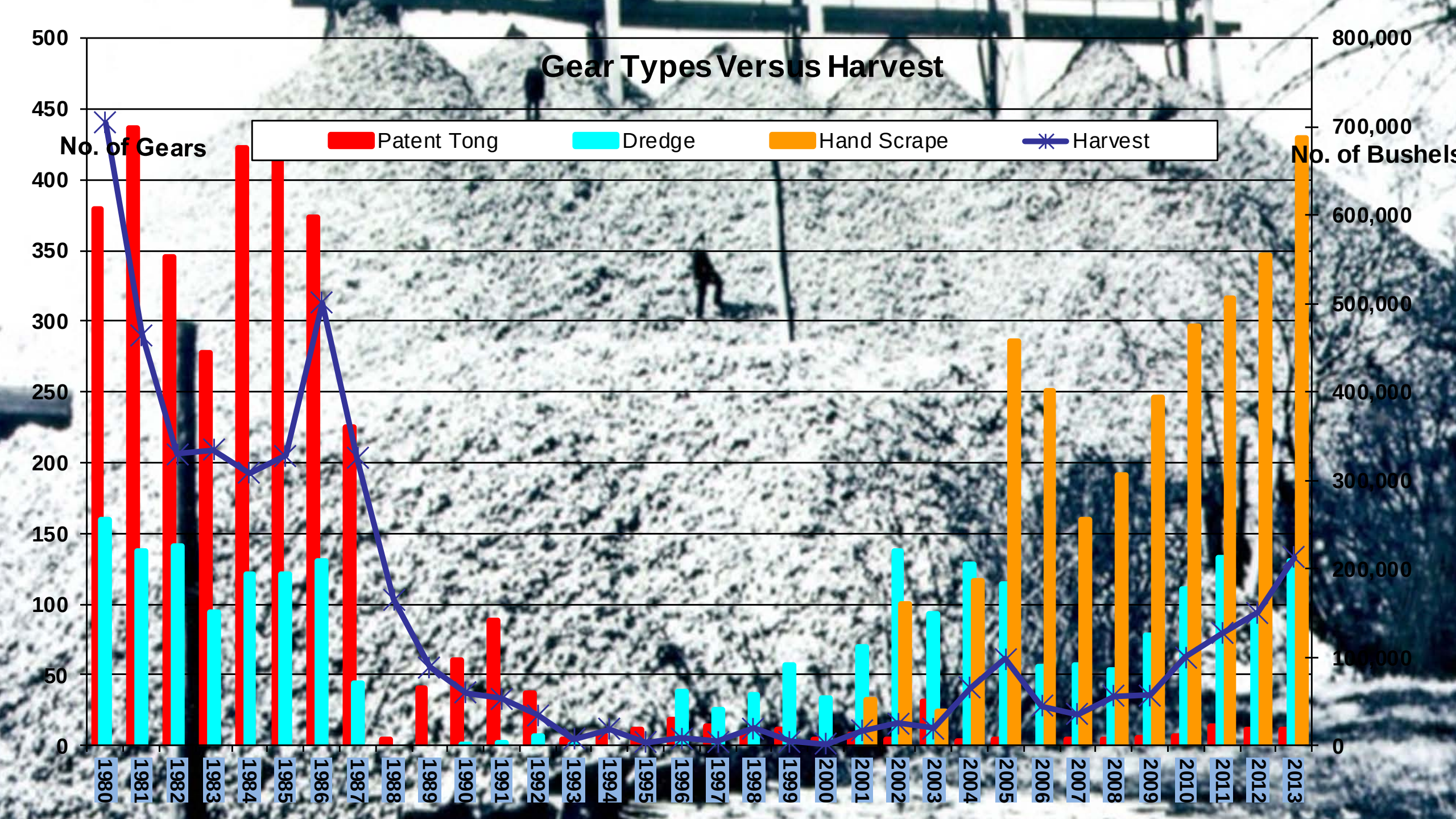
Gear Types Versus Harvest
No. of Gears
No. of Bushels
Patent Tong
Dredge
Hand Scrape
Harvest
500
450
400
350
300
250
200
150
100
50
0
800,000
700,000
600,000
500,000
400,000
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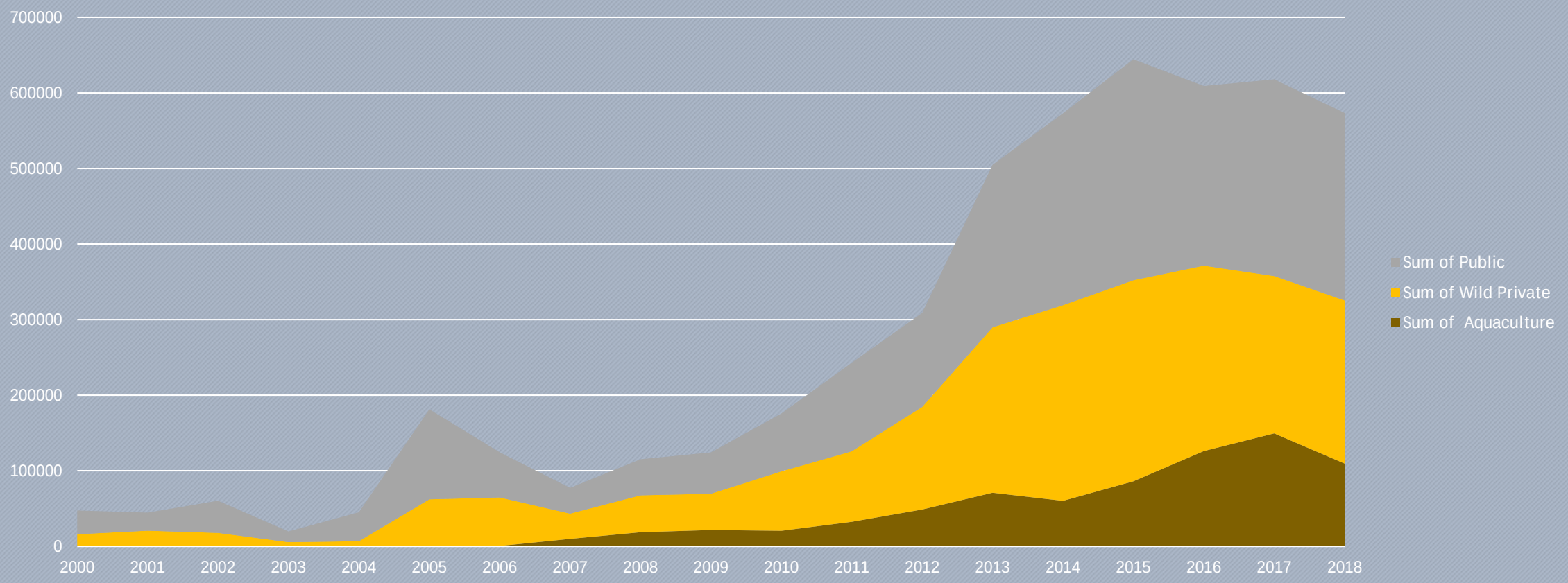
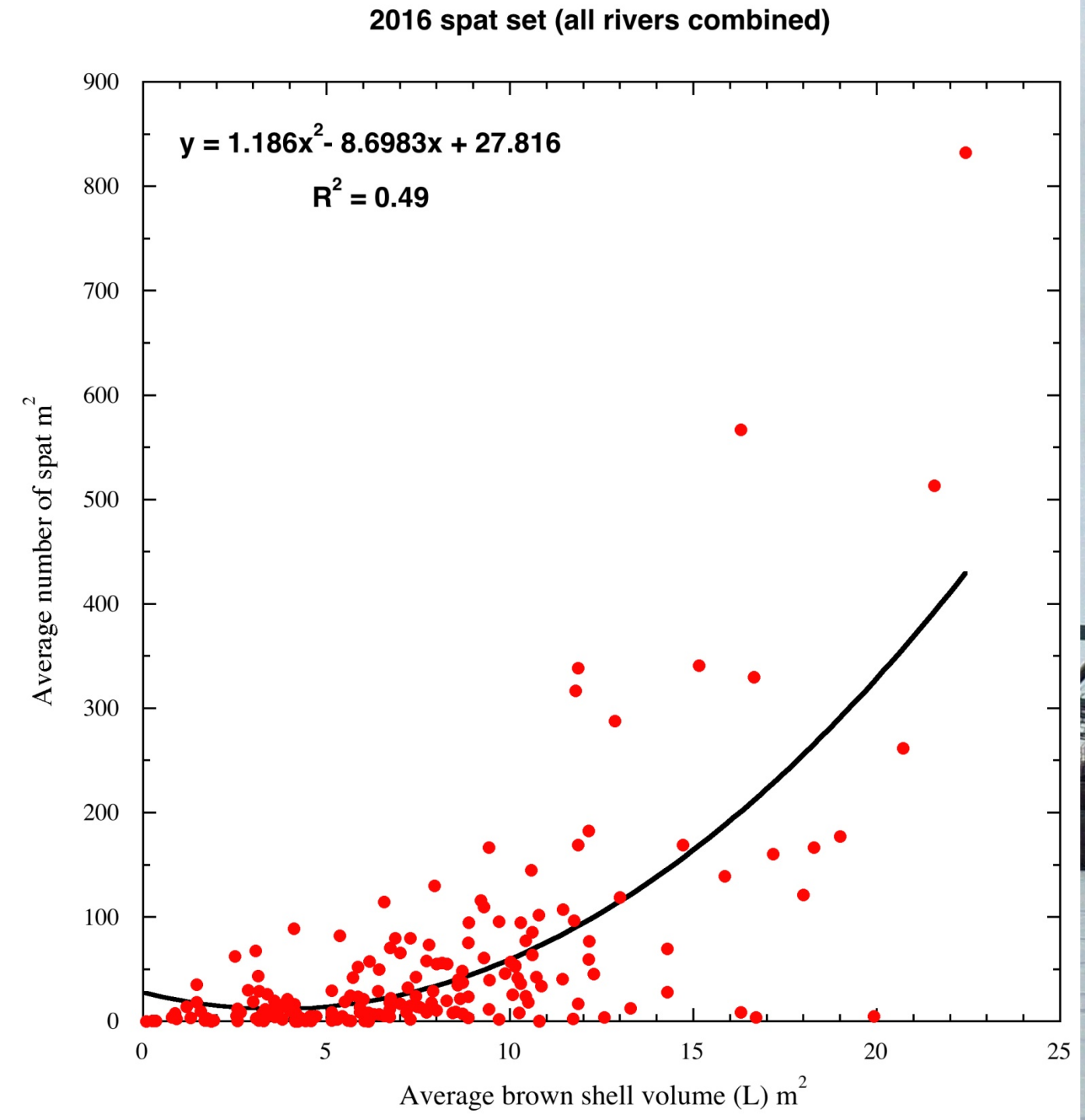
2013

TRADITIONAL VS WILD (CALENDAR YEAR)

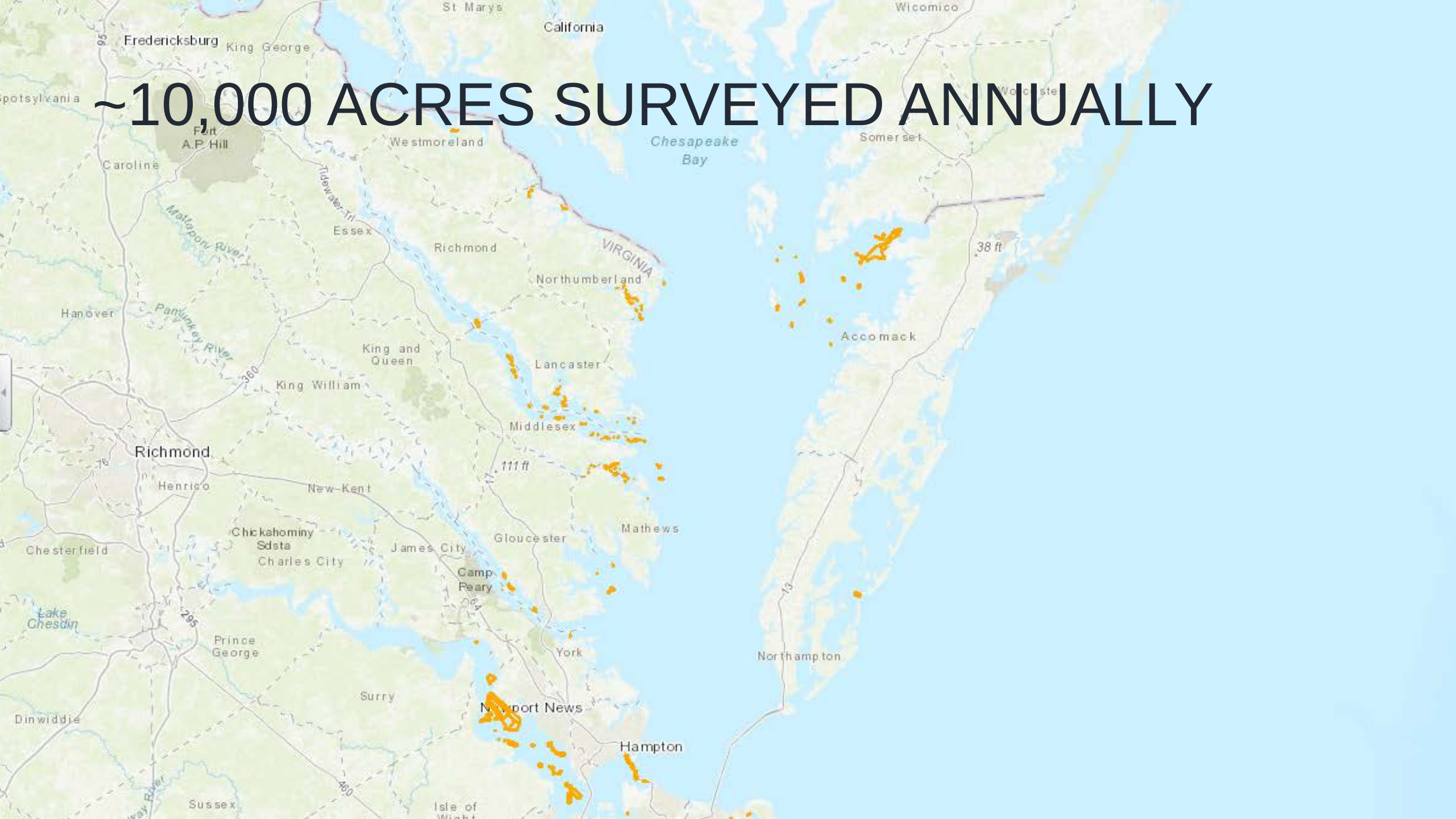


WHERE DO WE PLANT SHELL AND WHY THERE?



WHEN TO REPLENISH?


~75,000 ACRES OPEN TO HARVEST A YEAR
~125,000 ACRES OPEN TO HARVEST OVER A FULL ROTATION CYCLE
Bay
Richmond
Accomack
King and Queen
King William
Middlesex
New Kent
Gloucester
James City
Charles City
Camp Peary
York
Surry
Hampton
Isle of Wight
Norfolk
111 ft
38 ft


~10,000 ACRES SURVEYED ANNUALLY
St Marys
California
Wicomico
Fredericksburg
King George
Spotsylvania
Fort A.P. Hill
Caroline
Westmoreland
Chesapeake Bay
Somerset
Tidewater Trl
Essex
Richmond
VIRGINIA
38 ft
Mattaponi River
Northumberland
Hanover
Pamunkey River
Accomack
King and Queen
Lancaster
King William
Middlesex
Richmond
111 ft
Henrico
New Kent
Chickahominy Sdsta
Charles City
James City
Gloucester
Mathews
Chesterfield
Camp Peary
Lake Chesdin
Prince George
York
Northampton
Surry
Newport News
Dinwiddie
Hampton
Sussex
Isle of

REEF RESTORATION AS OF 2006


SUBMERGED
DANGER
REEF

Restoration Today

Continually increase finfish and shellfish habitat and water quality benefits from restored oyster populations. Restore native oyster habitat and populations in 10 tributaries by 2025 and ensure their protection.

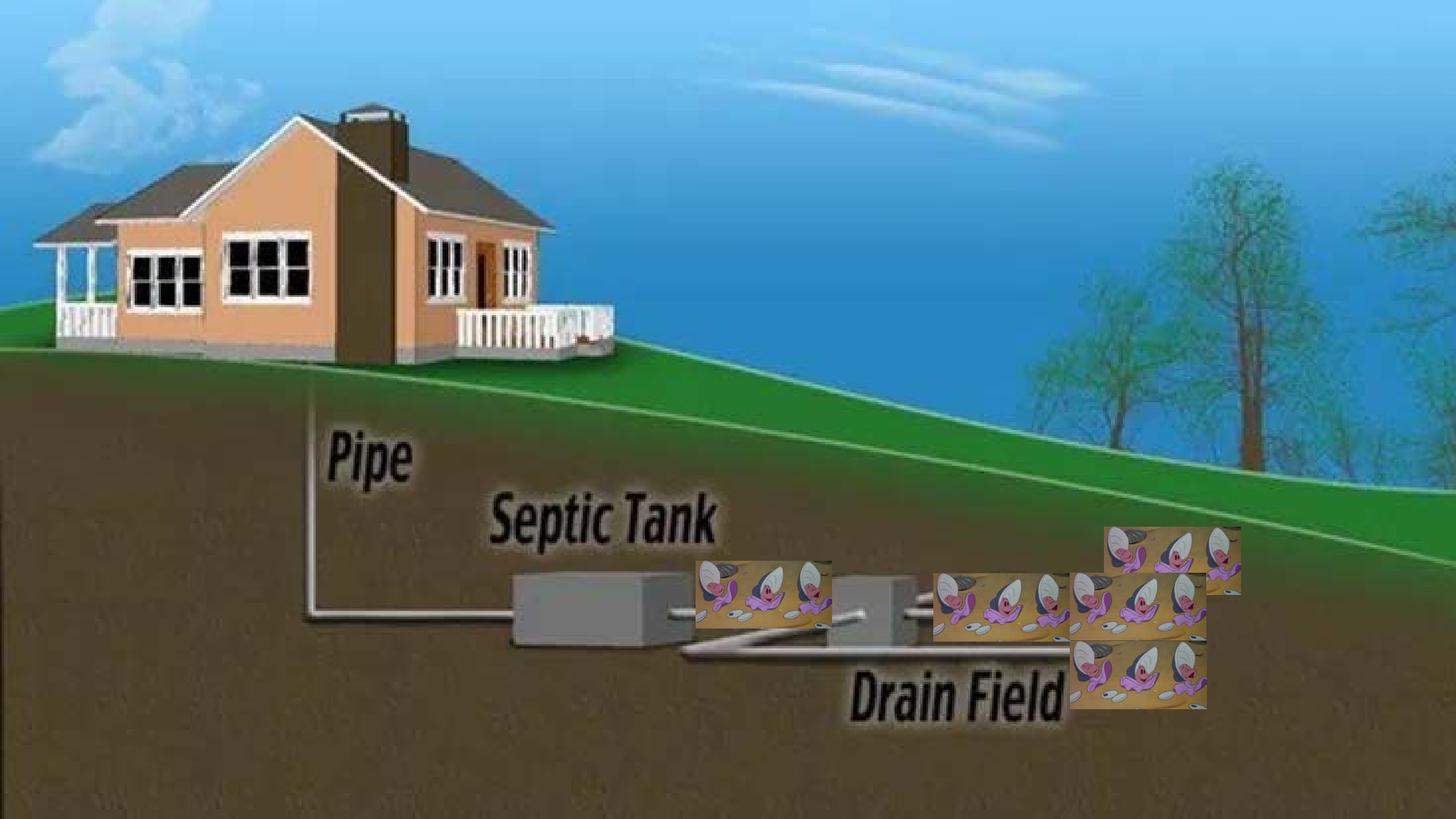
Restore, enhance and protect a network of land and water habitats to support fish and wildlife, and to afford other public benefits, including water quality, recreational uses and scenic value across the watershed.

MERGING DIFFERENT OUTCOMES INTO SHARED GOALS

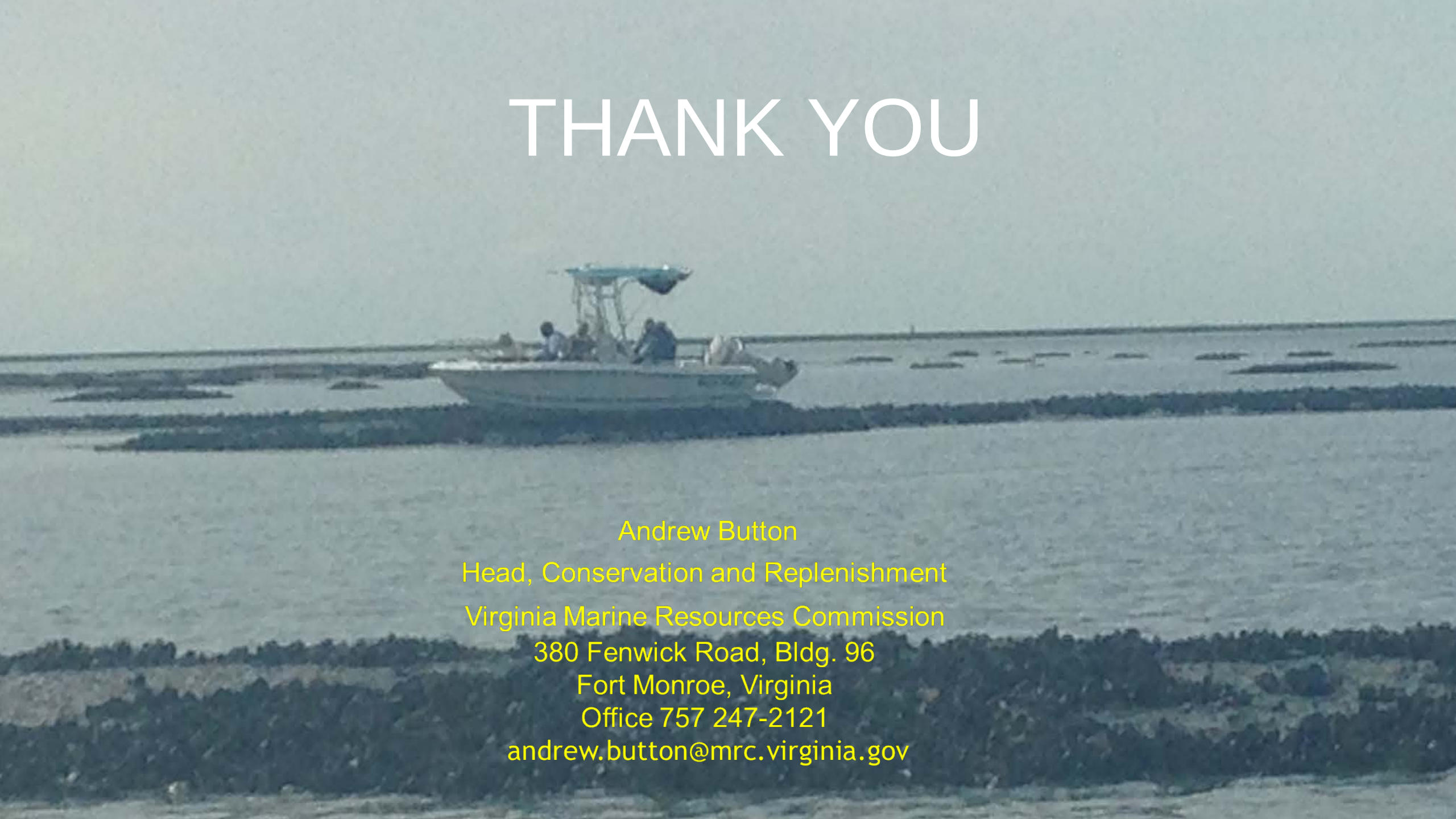
- Restoration for direct support of a fishery
- Restoration for ecological benefits

HOW WILL OYSTER RESTORATION OUTCOMES HELP?

- Oysters are a habitat, a fishery, clean the water AND are delicious
- Oyster restoration is tangible
- Other outcomes will directly benefit oyster restoration
- Build engagement with wider goals
- Oyster can be a component of near shore restoration projects


Pipe
Septic Tank
Drain Field

THANK YOU



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