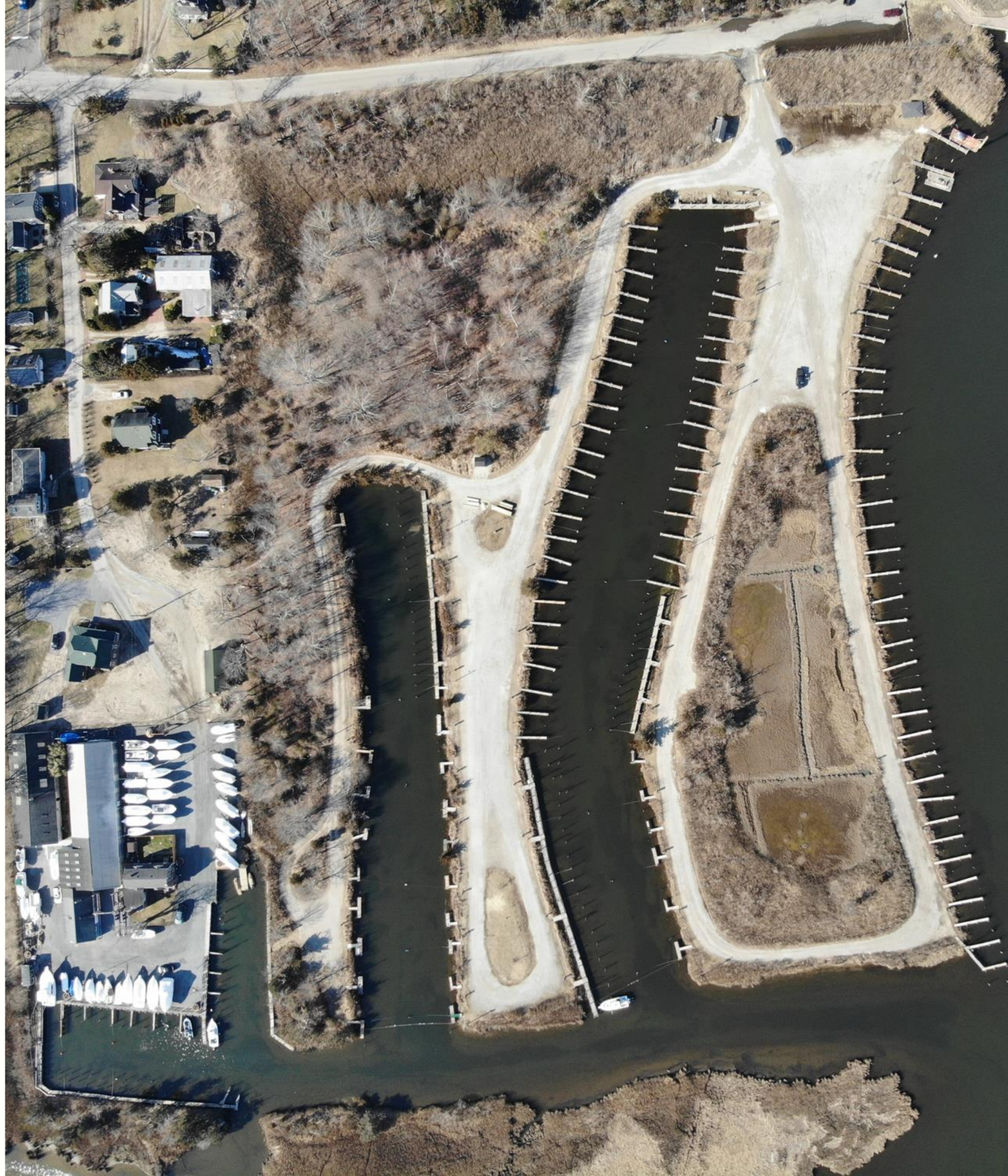
BROOKHAVEN VILLAGE MARINA

EROSION AND RESLIENCY PROJECT



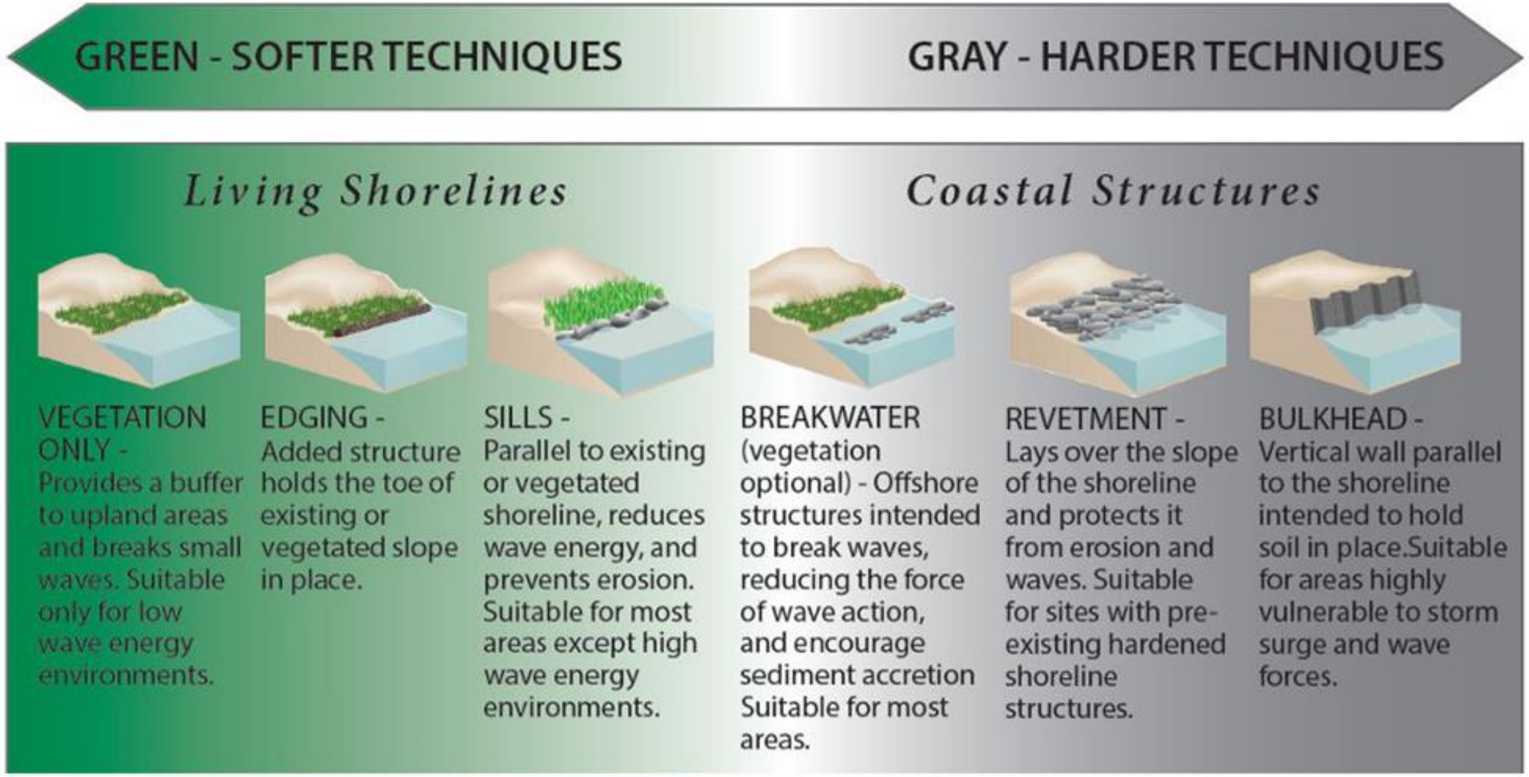
1947

1962

1978

SHORELINE STABILIZATION TECHNIQUES

GREEN VS GRAY SOLUTIONS



A continuum of green (soft) to gray (hard) shoreline stablization techniques.
(Adapted from SAGE 2015 Natural and Structural Measures for Shoreline Stablization brochure).

SHORELINE STABILIZATION OPTIONS

- LOW SILL BULKHEAD
  - NO NEW FULL-SIZED BULKHEADS

- ROCK SILL

- COIR LOGS

FULL SIZED (TRADITIONAL) BULKHEADS

- OUTDATED SOLUTION FOR SHORELINE STABILIZATION

- NEW BULKHEADS ARE GENERALLY NOT APPROVED

- PROTECT UPLAND, BUT TO THE DETRIMENT OF WETLANDS
  - WAVE ACTION IS REFLECTED INTO NATURAL SHORELINES CREATING A LOSS OF WETLANDS OVER TIME

- INCREASED EROSION WHERE THE BULKHEAD ENDS

- CREATES A BATHTUB EFFECT, PASSING THE BUCK DOWN THE LINE

- CAN FAIL ‘ALL AT ONCE’

LOW SILL BULKHEAD

- BULKHEAD TOPPED EVERY TIDE CYCLE

- STABILIZES TOE OF SLOPE TO PREVENT EROSION

- WETLANDS CREATED LANDWARD OF BULKHEAD
  - SALTWATER FEED PLANTS EVERY TIDE CYCLE
  - PLANTS HOLD ON TO LAND, HELPING PREVENT EROSION

- WELL SUITED FOR:
  - RELATIVELY STRAIGHT SHORELINES
  - PROPERTIES IN BETWEEN FULL SIZED BULKHEADS

LOW SILL BULKHEAD

BEFORE
DURING
AFTER

LOW SILL BULKHEAD

CUTCHOGUE

FEB 2020

LOW SILL BULKHEAD

CUTCHOGUE

JULY 2020

LOW SILL BULKHEAD

CUTCHOGUE

SEPT 2023

LOW SILL BULKHEAD

CUTCHOGUE

JUNE 2020

ROCK SILL

- TOPPED WITH EVERY TIDE CYCLE

- STABILIZES TOE OF SLOPE TO PREVENT EROSION

- WETLANDS CREATED LANDWARD OF ROCK SILL
  - SALTWATER FEED PLANTS EVERY TIDE CYCLE
  - PLANTS HOLD ON TO LAND, HELPING PREVENT EROSION

- CAN FOLLOW CURVATURE OF NATURAL SHORELINE

ROCK SILL

COIR LOGS

- MOST ‘GREEN’ OPTION

- WETLANDS CREATED LANDWARD OF COIR LOGS
  - SALTWATER FEED PLANTS EVERY TIDE CYCLE
  - PLANTS HOLD ON TO LAND, HELPING PREVENT EROSION

- MADE WITH NATURAL MATERIALS WHICH BREAK DOWN OVER TIME LEAVING A VEGETATED SHORELINE

- MOST EFFECTIVE IN NON-TIDAL EVNIRONMENTS

COIR LOGS

STORMWATER CONTROL

- RAINS ARE HEAVIER THAN THE PAST AND THEY ARE EXPECTED TO BECOME HEAVIER IN THE FUTURE

- SHORELINE ERODES AS STORMWATER RUNS OFF
  - AMOUNT AND SPEED OF WATER ADD TO EROSION

- CAPTURE STORMWATER UPLAND TO PREVENT EROSION
  - RAIN GARDENS AND SWALES


Lower area and plant
Lower area and plant
Lower area and plant
Connect lowered areas and plant
Lower area and plant

OTHER OPTIONS FOR RESLIENCY

- RAISE THE ROAD 6-8 INCHES, SLOPE AWAY FROM SHORELINE INTO PLANTED AREAS

- STABILIZE TOE AND INSTALL RETAINING WALL LANDWARD

- RAISE THE HEIGHT OF THE FINGER PIERS

FUTURE PROJECTIONS

(FROM 2017)

Long Island Region -The marine coast of Nassau and Suffolk counties.

Time Interval	Low Projection	Low-Medium Projection	Medium Projection	High-Medium Projection	High Projection
2020s	2 inches	4 inches	6 inches	8 inches	10 inches
2050s	8 inches	11 inches	16 inches	21 inches	30 inches
2080s	13 inches	18 inches	29 inches	39 inches	58 inches
2100	15 inches	21 inches	34 inches	47 inches	72 inches

CURRENT ESTIMATES FOR SEA LEVEL RISE BY 2040

APPROX 6-8 INCH RISE IN AVERAGE HIGH TIDE BY 2040

PROJECT PLANNING

- ARMY CORP OF ENGINEERS
- DEPT OF STATE
- DEC
  - TIDAL WETLANDS
  - WILD, SCENIC & RECREATIONAL RIVERS (CARMEN’S RIVER)
- TOWN OF BROOKHAVEN WETLANDS
- TOWN OF BROOKHAVEN BUILDING DEPT

PROJECT PLANNING

-TYPICAL RESIDENTAL PROJECTS GENERALLY RANGE FROM 9-18 MONTHS

- INCREASED SCOPE COMES INCREASED REVIEW

- SOME PIECES OF THE PROJECT HAVE ALREADY BEEN COMPLETED

- NOT URGENT – MORE MEDIUM TO LONG TERM PLANNING

PROJECT PLANNING

- WORK CAN BE COMPLETED OVER TIME
  - DEC PERMIT VALID FOR 5 YEARS
    - CAN BE RENEWED FOR ANOTHER 5 YEARS FOR TOTAL OF 10 YRS
  - TOWN WETLAND PERMITS VALID FOR ABOUT 2 YEARS AND CAN BE RENEWED
    - IF BUILDING PERMIT REQUIRED, WETLANDS PERMIT STAYS VALID AS LONG AS BUILDING PERMIT IS ACTIVE

RESOURCES

- DEC LIVING SHORELINE DOCUMENT
- NOAA SEA LEVEL RISE MAPPER

QUESTIONS?

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