



REPETITIVE NOURISHMENTS: CAN WE DO FEWER PROJECTS IN THE FUTURE?

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FEBRUARY 6, 2025

PREPARED FOR



PRESENTATION OVERVIEW

- ☑ THE IDEA
- ☑ BASIS FOR IDEA
- ☑ CASE STUDIES
- ☑ CONCLUSION



THE IDEA

- EXPANDING
RENOURISHMENT INTERVAL
 - DETTE, ET AL., AND DEAN
 - SUBSEQUENT EVENTS
LAST LONGER
- HAS THIS BEEN OBSERVED?

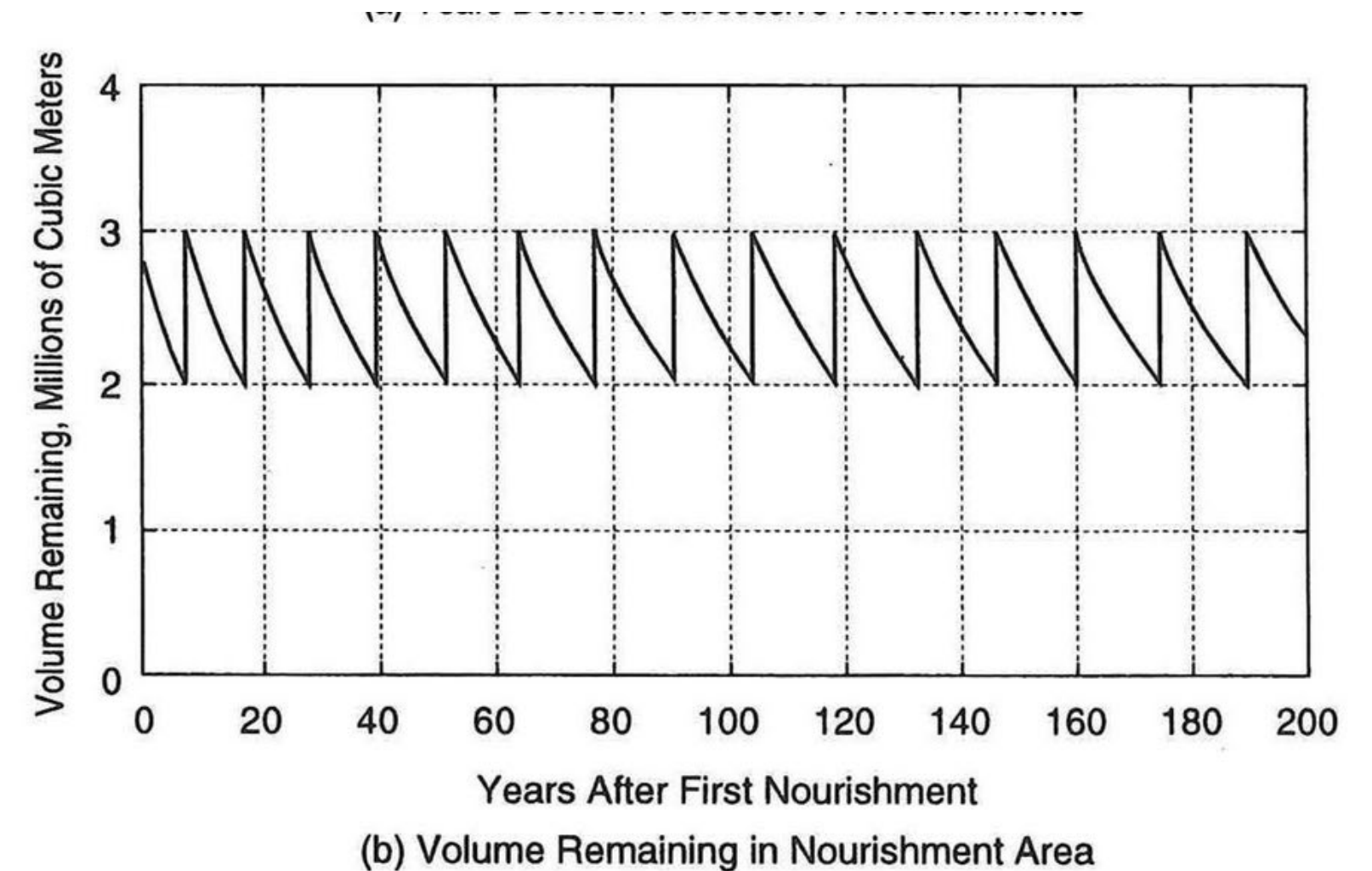


Fig. 6.19. Renourishment characteristics. Background erosion only in nourishment area and equal to 1 m/yr.

BASIS OF THE IDEA

- REMAINING PROJECT VOLUME
 - DETTE, ET AL. (HALF-LIFE MODEL)
- DEAN (PELNARD-CONSIDERE MODEL)

$$M(t) = 2^{-t/T_{50}}$$

$$M(t) = \frac{\sqrt{4Gt}}{\ell\sqrt{\pi}} \left(e^{-(\ell/\sqrt{4Gt})^2} - 1 \right) + \operatorname{erf}(\ell/\sqrt{4Gt}) - \frac{\partial R}{\partial t} \frac{t}{\Delta y_0}$$

Alongshore Spreading
ala Heat Conduction

Background
Erosion

CASE STUDIES

- MULTIPLE NOURISHMENT EVENTS
- OPEN COAST CASES
- MINIMAL CHANGES TO DESIGN
 - TEMPLATE
 - PROJECT LENGTH



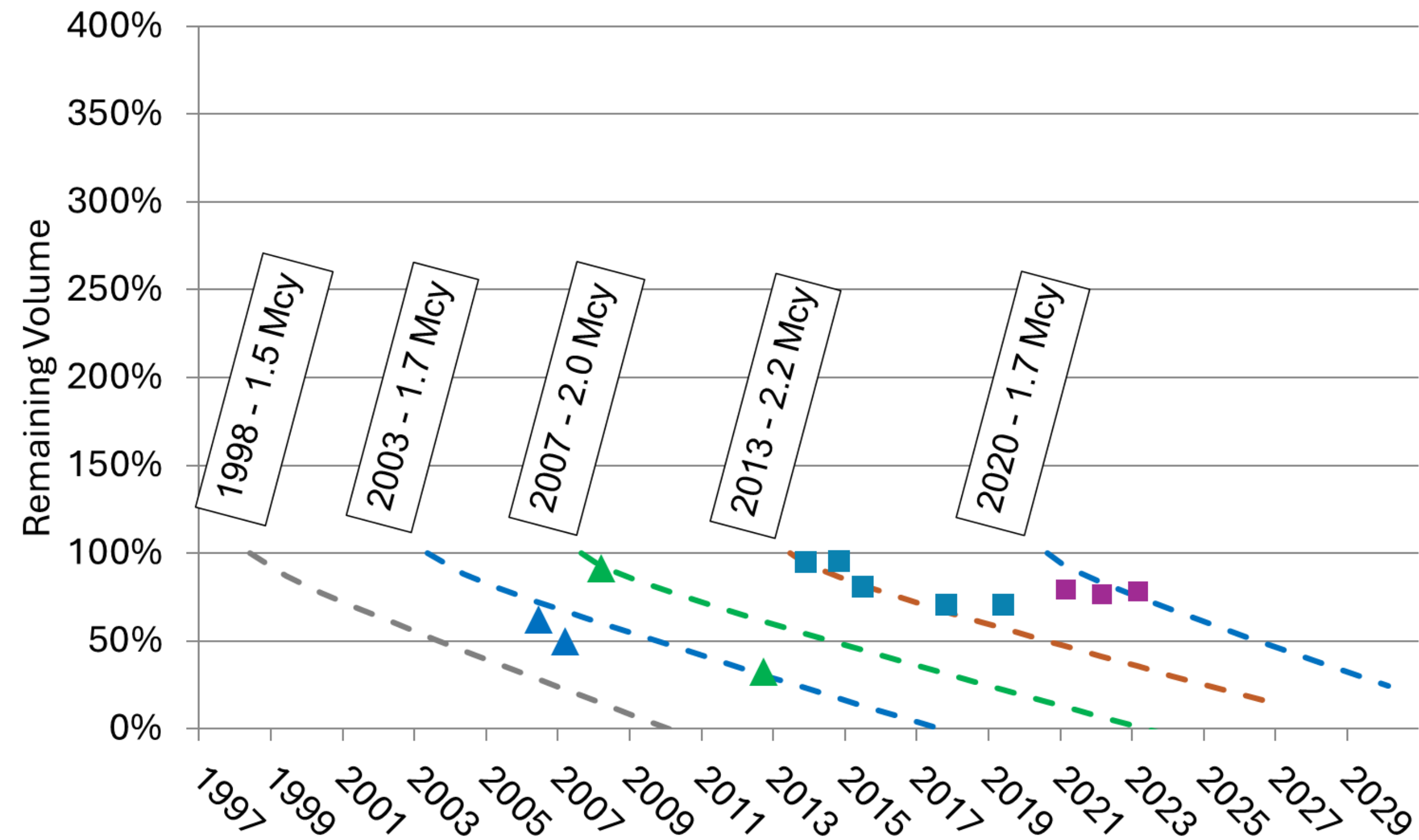
PHOTO CREDIT: WATERWAY AND CPE

CASE STUDIES

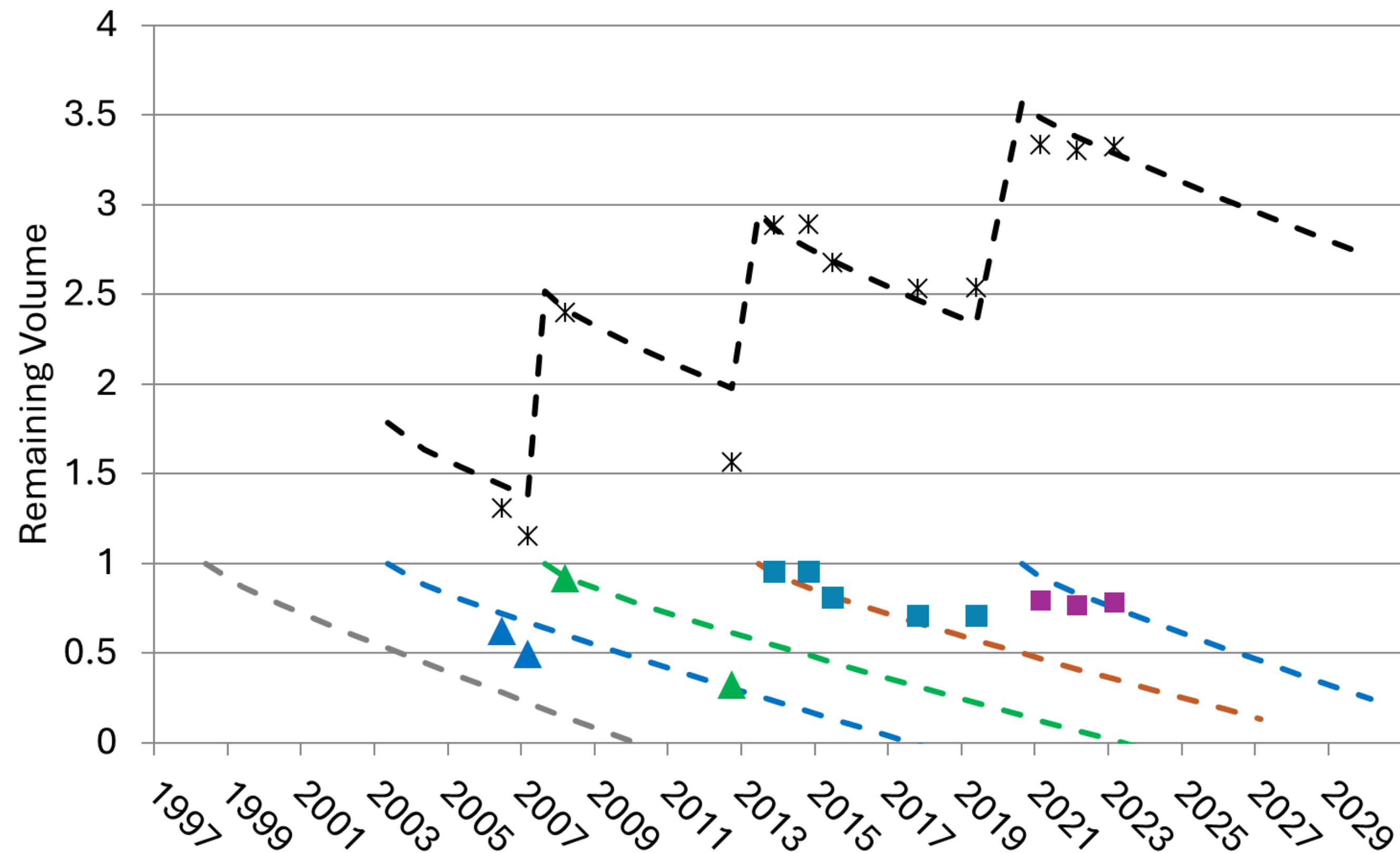
- SANDBRIDGE BEACH, VA
 - ~5.3 MILES
- BREVARD CO., FL
 - ~3.8 MILES
- BOCA RATON, FL
 - ~1.5 MILES



SANDBRIDGE BEACH, VA



SANDBRIDGE BEACH, VA



THE IDEA

DEAN OBSERVED SIMILAR
"ADDED" VOLUMES FOR
DELRAY BEACH

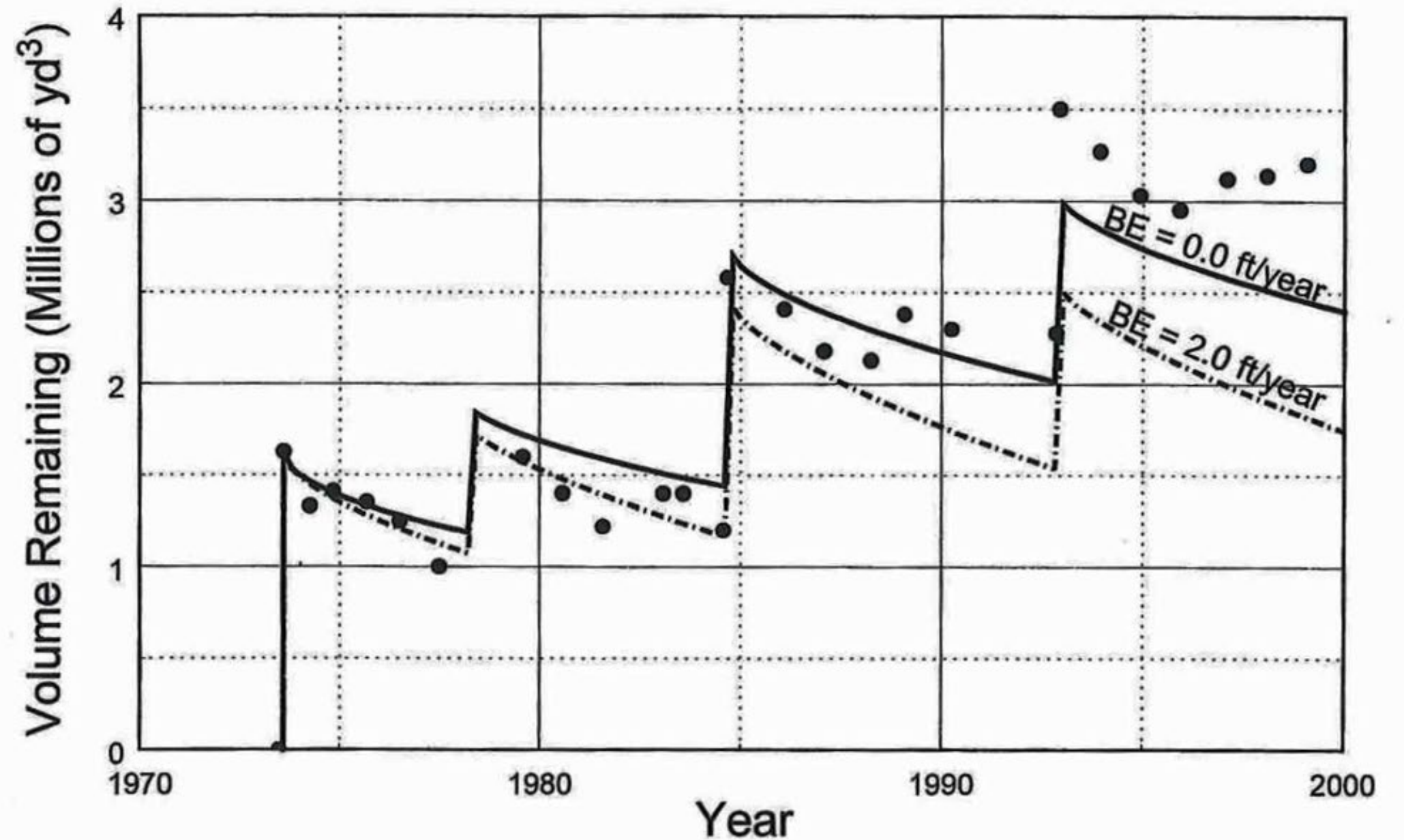
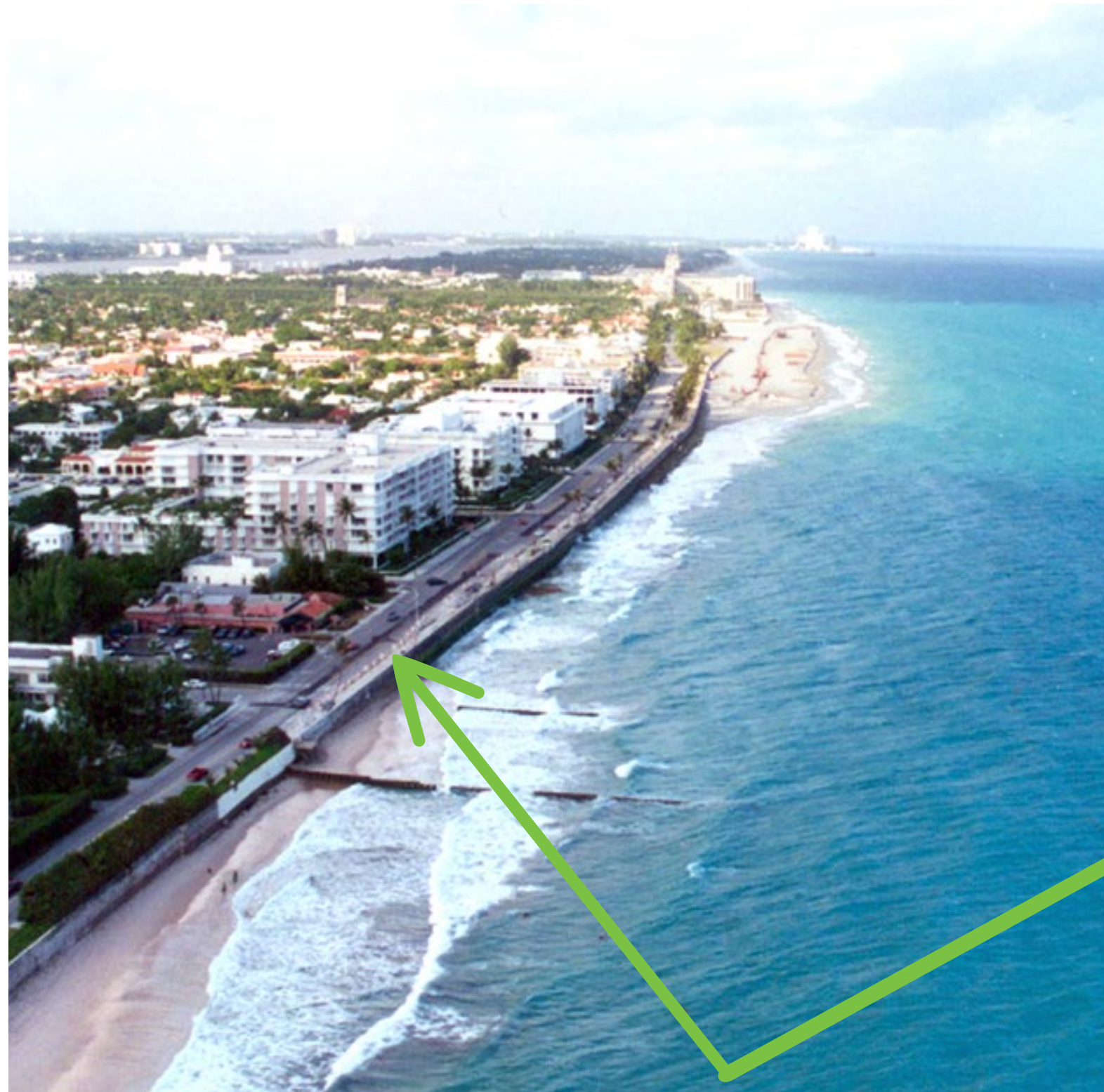


Fig. 11.29. Evolution of Delray Beach nourishment project, prediction and monitoring results.

THE IDEA - TOWN OF PALM BEACH, FL



SEAWALL



DUNE

SANDBRIDGE BEACH, VA

PRE-PROJECT

3668 SANDFIDDLER RD

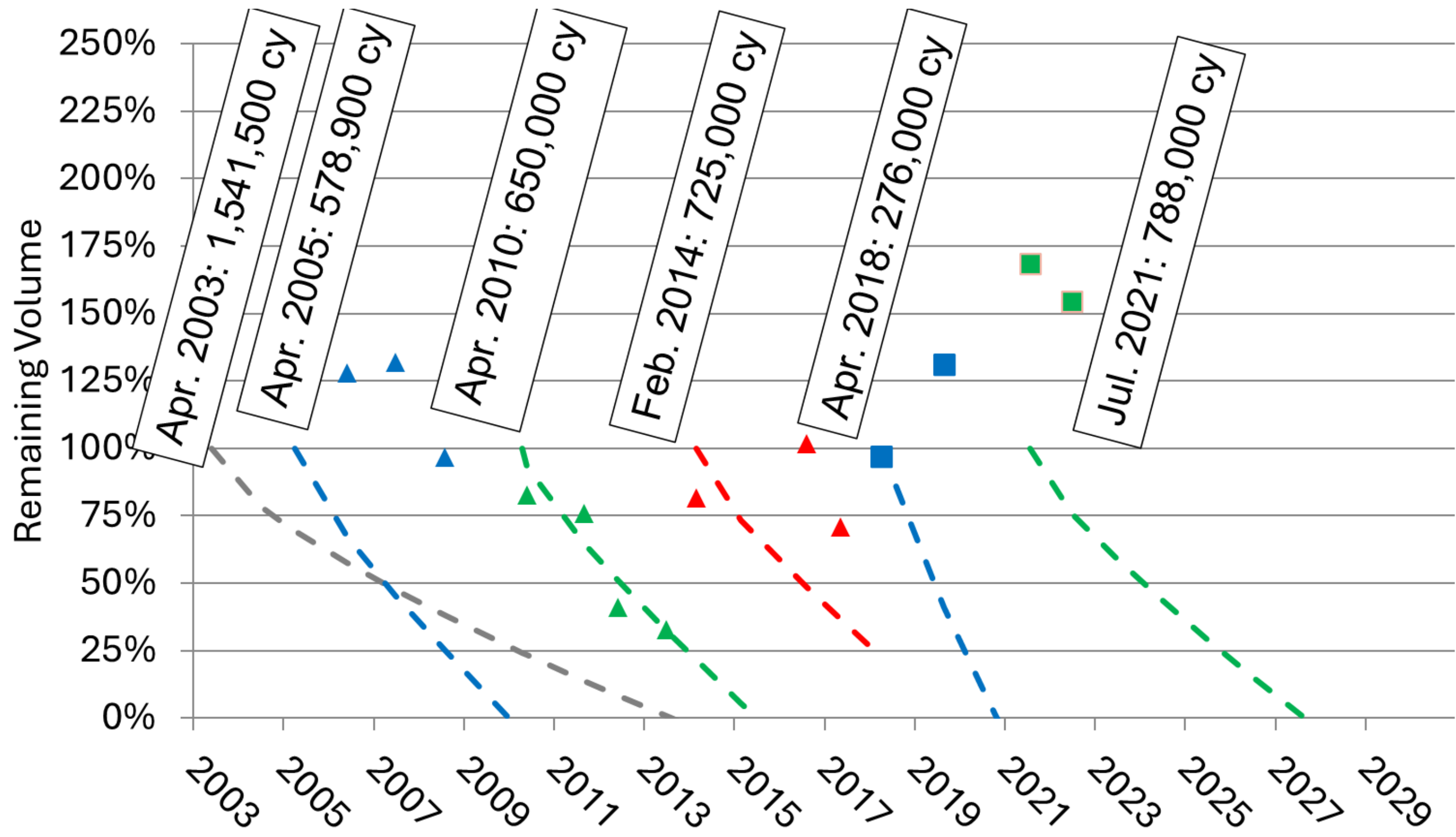
3668 SANDFIDDLER RD

May
2024

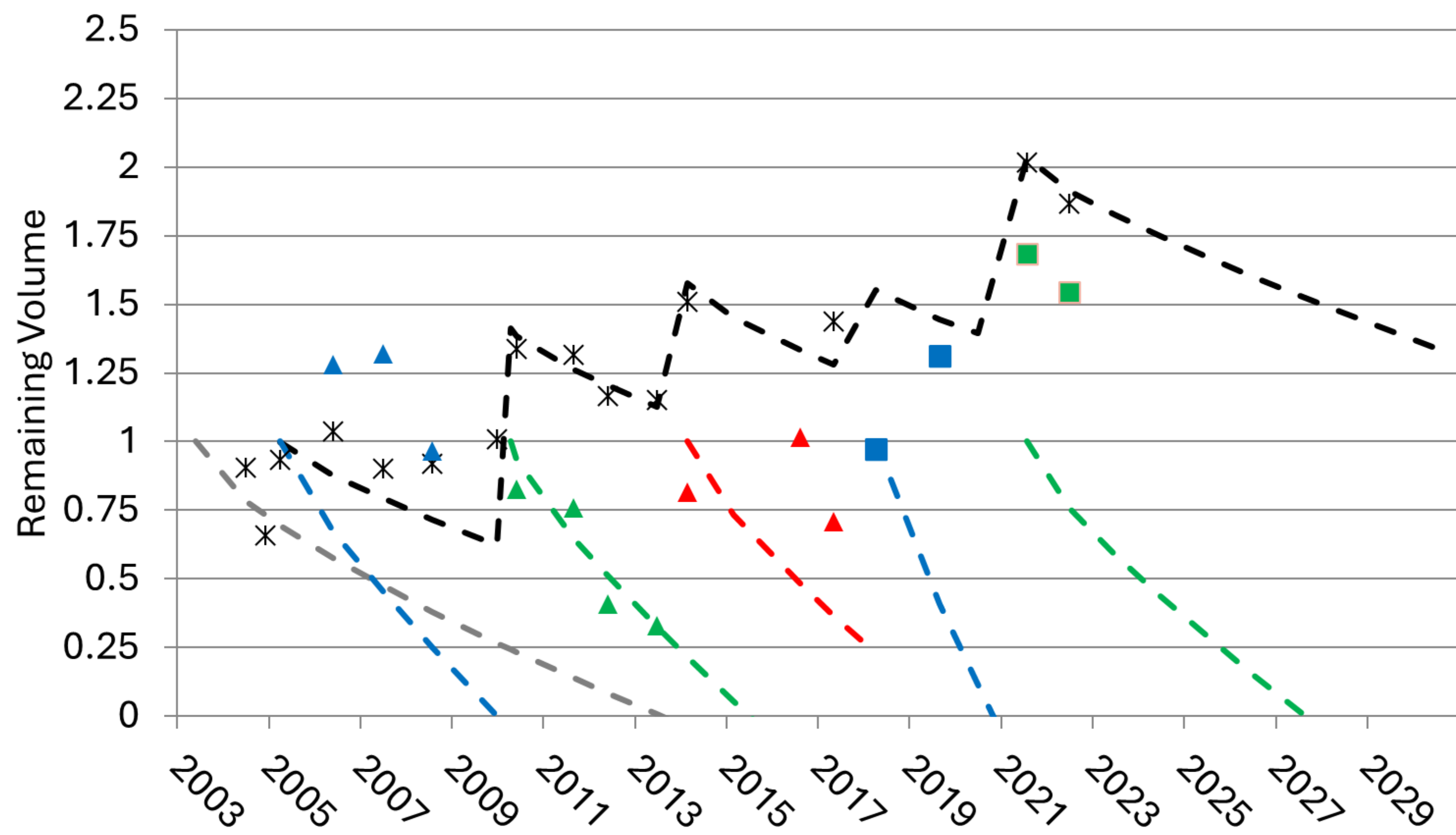
09/15/2017

PHOTO CREDIT:
CITY OF VIRGINIA BEACH

BREVARD CO., FL - SOUTH REACH (INDIALANTIC BCH. / MELBOURNE BCH.)



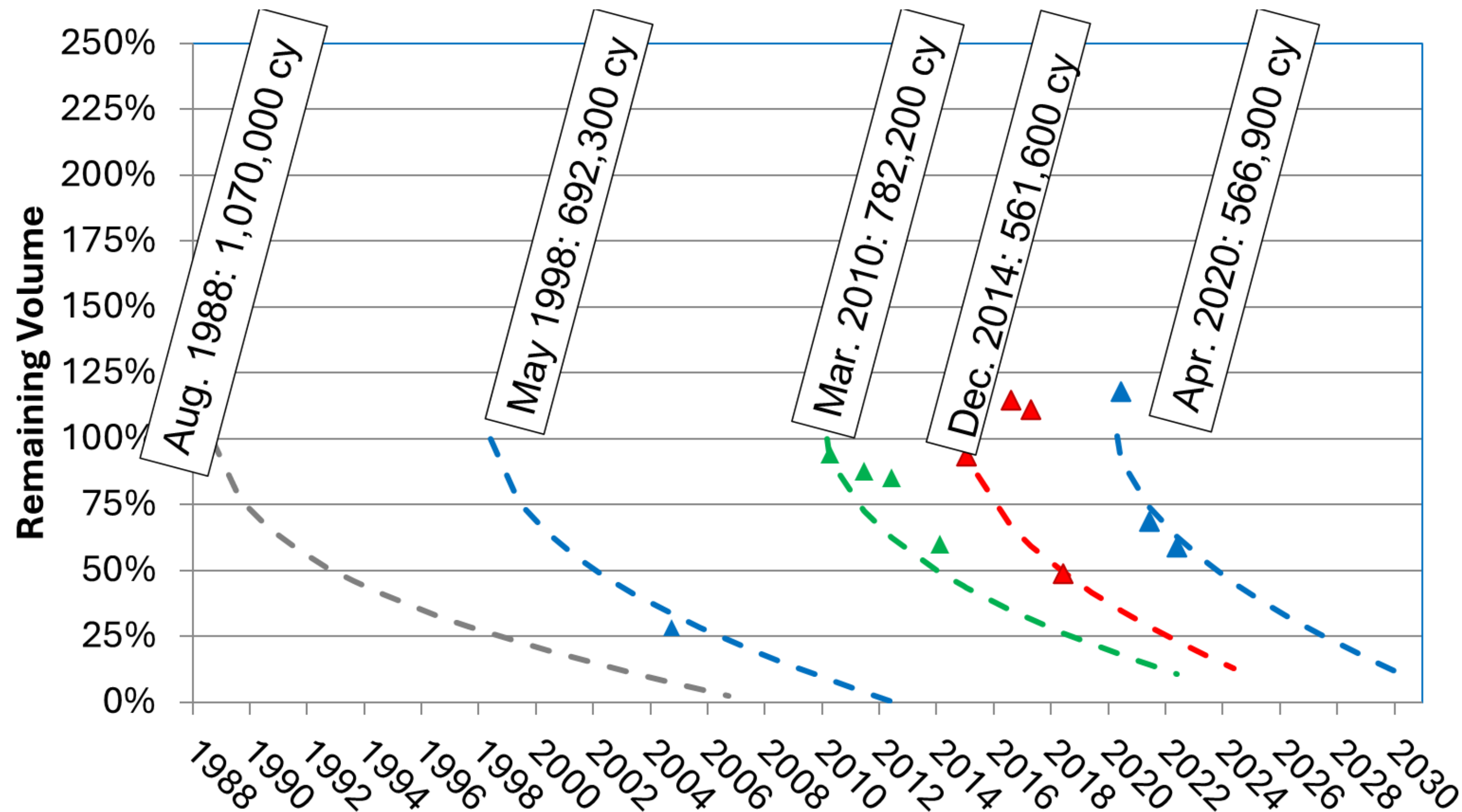
BREVARD CO., FL - SOUTH REACH (INDIALANTIC BCH. / MELBOURNE BCH.)



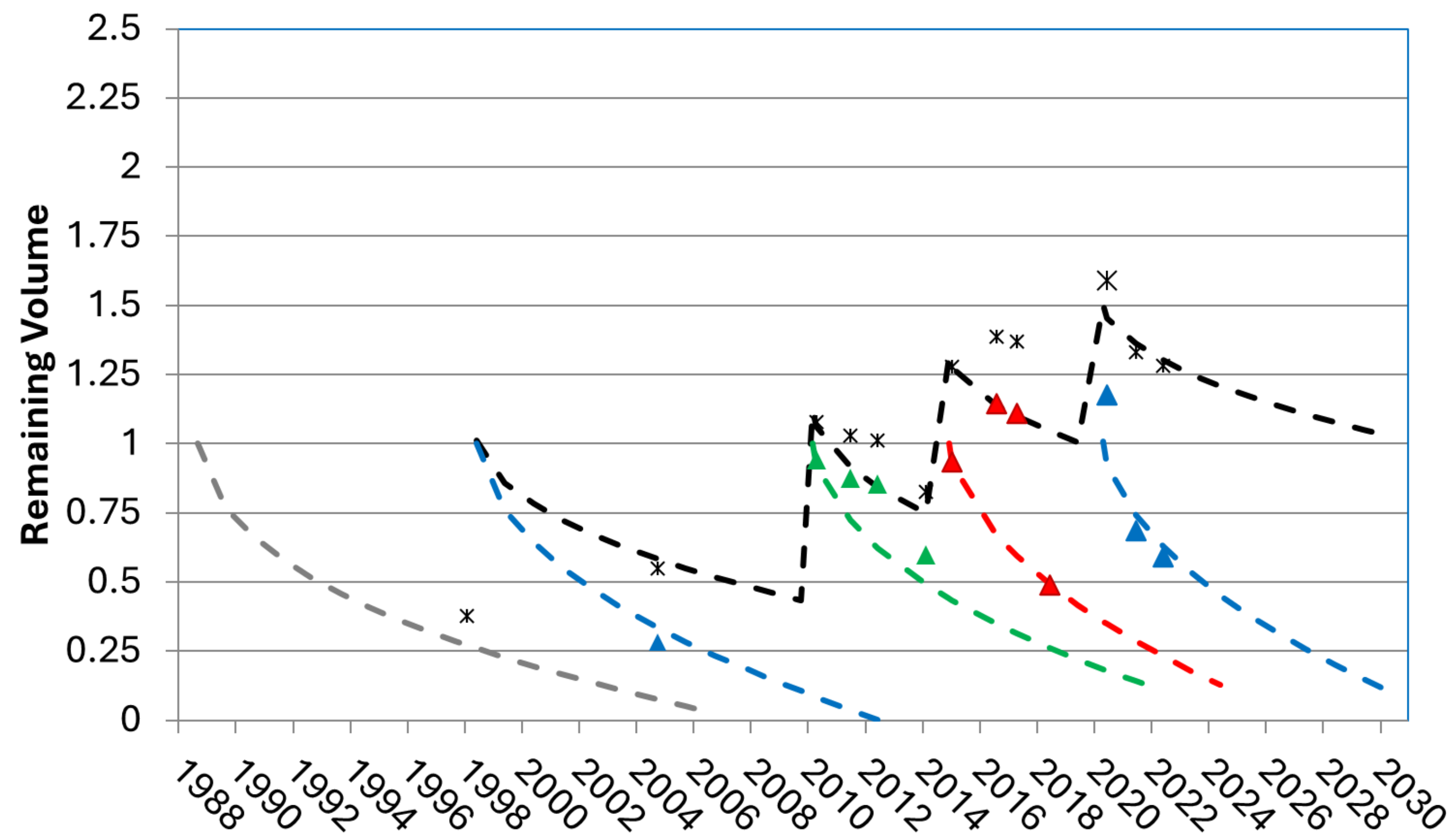
BREVARD CO., FL - SOUTH REACH (INDIALANTIC BCH. / MELBOURNE BCH.)



BOCA RATON, FL – NORTH SEGMENT



BOCA RATON, FL – NORTH SEGMENT



CONCLUSION

01 OBSERVATIONS VS. LONG -TERM ANALYTICAL PREDICTIONS

- STORM RESPONSE PROJECTS SKEW “THE IDEA” OF EXPANDING DESIGN LIFE
- SHOULD BE APPLIED TO OVERALL PROGRAM

02 OBSERVED VOLUMES INCREASE OVER TIME

- RECREATIONAL BEACH
- DUNE EVOLUTION
- SANDBAR EVOLUTION

TAKE AWAYS

01 THIS VOLUME-BASED ANALYSIS CAN BE APPLIED TO LONG-TERM PLANNING/BUDGETING

02 ANALYSES CAN BE FURTHER DEVELOPED FOR MORE COMPLEX SITUATIONS

ACKNOWLEDGEMENTS: CITY OF VIRGINIA BEACH WITH WATERWAY AND CPE, BREVARD COUNTY AND FOTH/OLSEN ASSOC., FDEP DATABASE

PHOTO CREDIT: City of Virginia Beach

STAY CONNECTED



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