

Creative Engineering for Onsite Coastal Properties

NOWRA 2022 Onsite Wastewater
Mega Conference By
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THE BACKGROUND-WHY?

- ▶ Vacation Rentals
- ▶ Wide fluctuation in flow
- ▶ Limited land availability
- ▶ Challenging soils
- ▶ Seasonal high-water table



SOLUTIONS

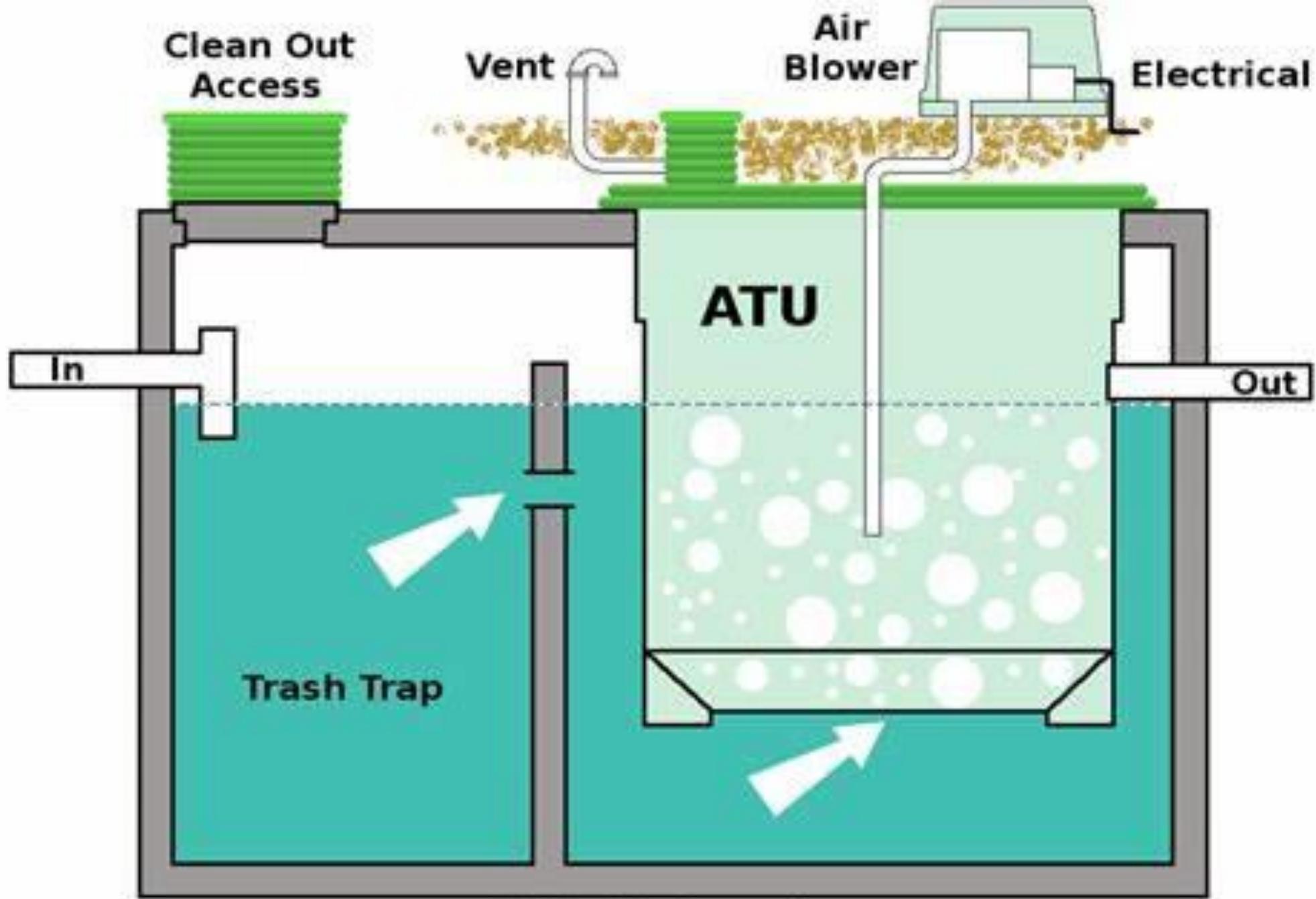
- ▶ Leveraging regulations
- ▶ Utilizing different types of technology
- ▶ Treatment products
- ▶ Disposal products
- ▶ Good engineering practice

USEFUL TREATMENT TECHNOLOGIES

- ▶ ATU -- Aerobic Treatment Unit
- ▶ Recirculating Media Filter
- ▶ Other treatment technologies



RECIRCULATING MEDIA FILTER



ATU with built-in Trash Trap



USEFUL DISPOSAL TECHNOLOGIES

- ▶ Prefabricated, Permeable, Block Panel System
- ▶ Inground Sand Filter
- ▶ Geosynthetic Aggregate Technology
- ▶ Chambers
- ▶ LPP in Bed System
- ▶ Sand Lined Trench
- ▶ Subsurface Drip System

PREFABRICATED, PERMEABLE, BLOCK PANEL SYSTEM





SAND-LINED TRENCH

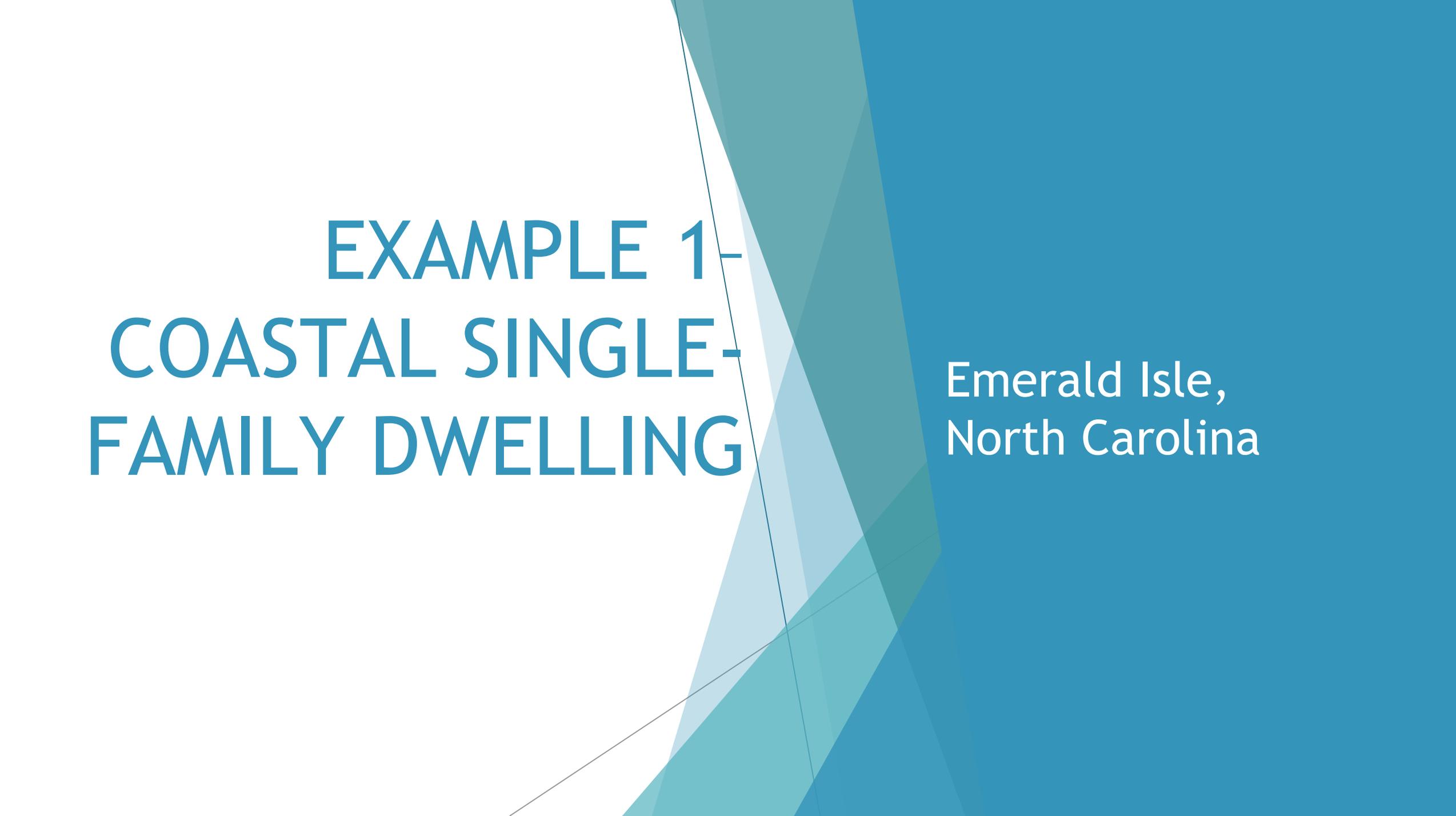
BED SYSTEM



GOOD ENGINEERING PRACTICE

- ▶ Good engineering practice can help overcome the challenges presented at the coast
- ▶ Examples include stacking treatment pods on top of tanks and creating structures to hide wastewater construction
- ▶ Incorporate an Engineered Flow Reduction into design





EXAMPLE 1- COASTAL SINGLE- FAMILY DWELLING

Emerald Isle,
North Carolina



WHY WAS IT DIFFICULT?

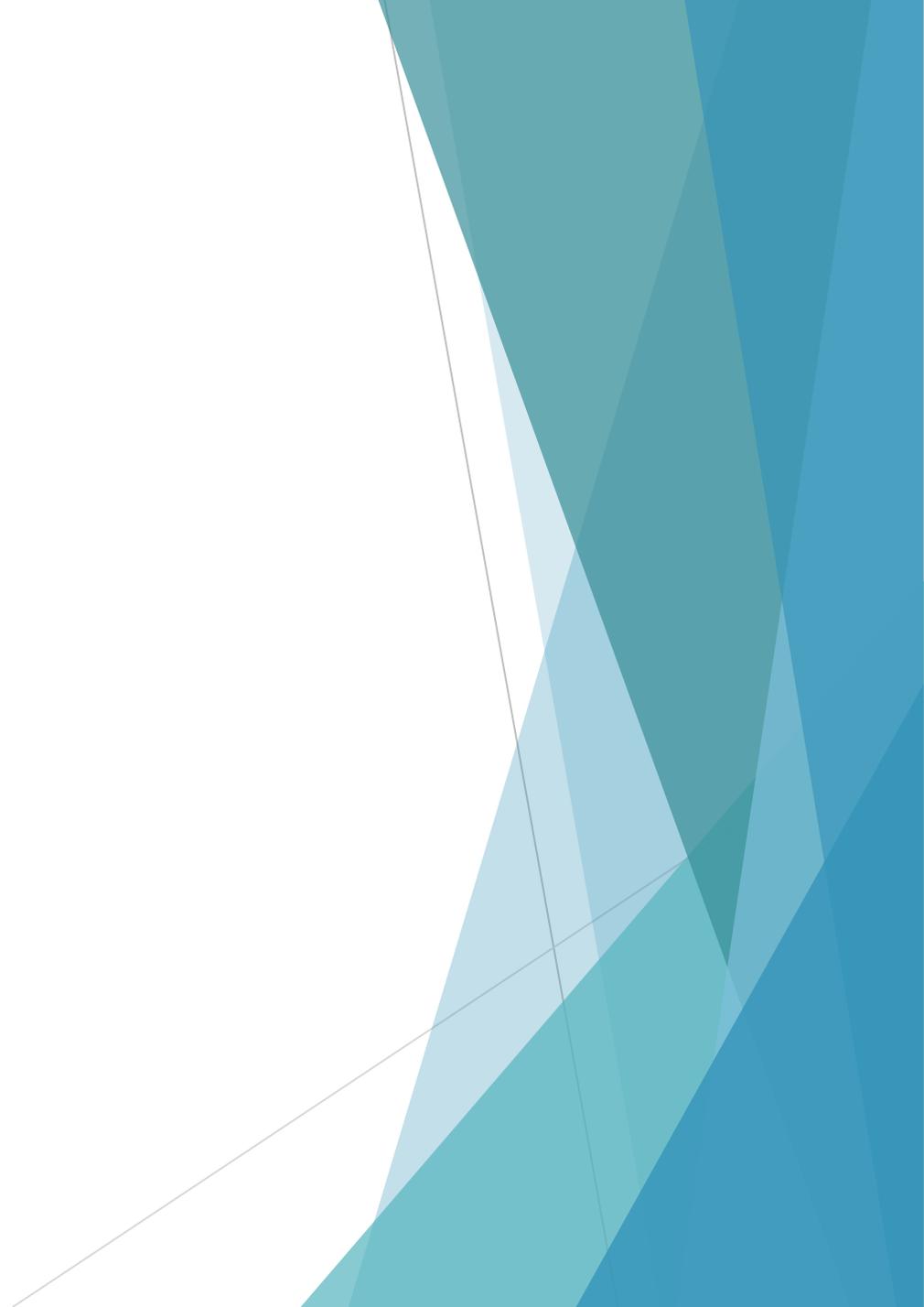
- ▶ Existing dwelling
- ▶ 6-bedroom house
- ▶ Limited space
- ▶ Existing pool

WHAT DID WE DO?

- ▶ Used the limited land available with prefabricated, permeable, block panel system to reduce drain field area by half
- ▶ Utilized regulations that “grandfathered” the site to be repair exempt



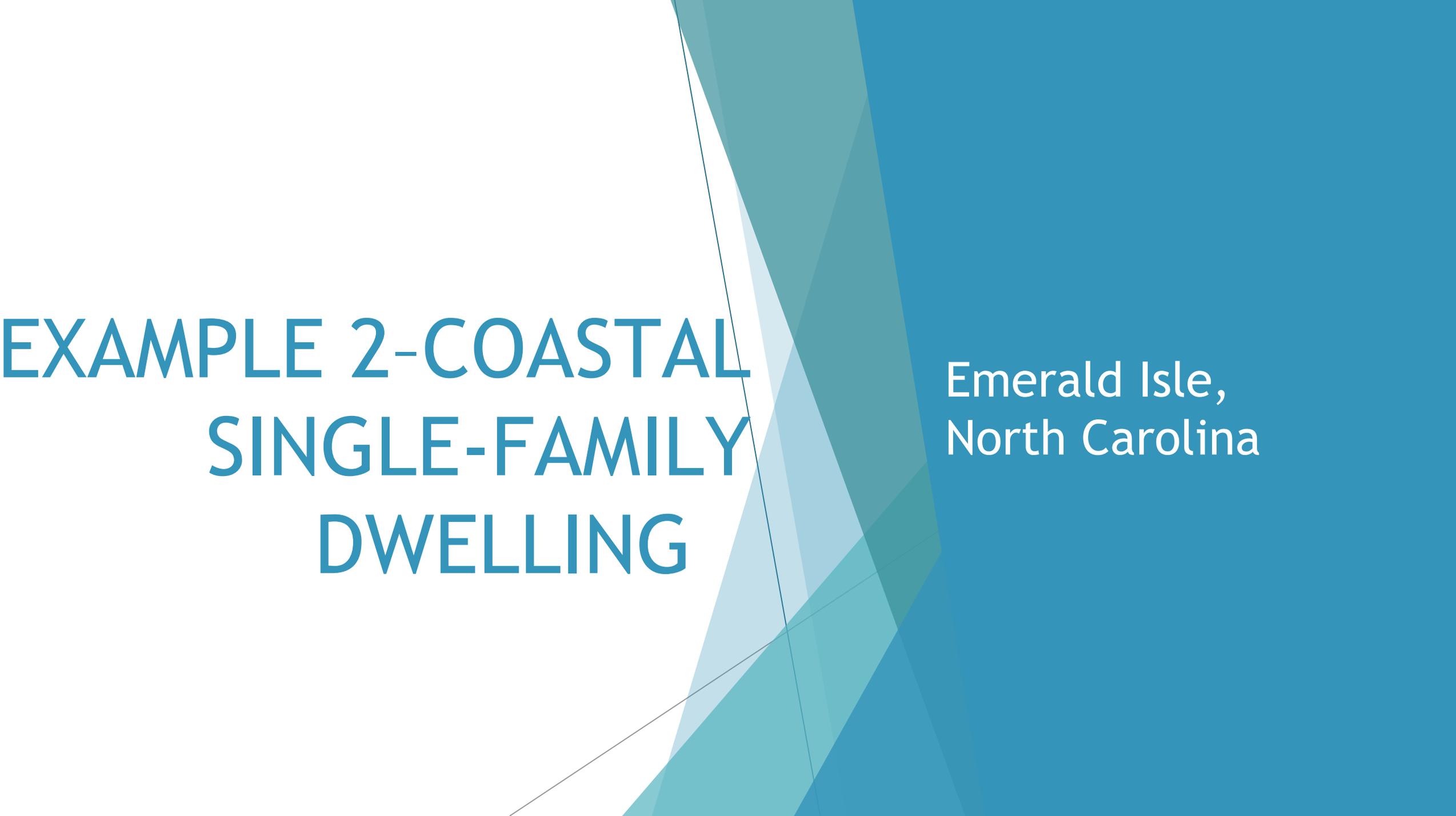






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Vacation Rentals
918-753-5761



EXAMPLE 2-COASTAL SINGLE-FAMILY DWELLING

Emerald Isle,
North Carolina



WHY WAS IT DIFFICULT?

- ▶ Proposed 8-bedroom dwelling
- ▶ Limited space
- ▶ Existing pool

WHAT DID WE DO?

- ▶ Leveraged regulations
- ▶ Stacked pods,
- ▶ Used TS-II pretreatment





COASTAL GROCERY STORE

Topsail Beach,
North Carolina





WHY WAS IT DIFFICULT?

- ▶ Retail Convenience Store & Apartments
- ▶ Large Total Flow

WHAT DID WE DO?

- ▶ Incorporated a flow reduction into design
- ▶ Used LPP in a bed system to maximize area









ON-GOING COASTAL RESORT PROJECT

Kill Devil Hills,
North Carolina



WHAT IS THE GOAL?

- ▶ Repair an existing system
- ▶ Reduce drain field area required







QUESTIONS?



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