

KINGS BEACH WATER QUALITY OVERVIEW

Metropolitan Beaches Commission
Public Hearing for Lynn, Swampscott & Nahant
May 30, 2017



Executive Office of Energy & Environmental Affairs
Save the Harbor/Save the Bay

KINGS BEACH BEACHES SCIENCE ADVISORY COMMITTEE

Judy Pederson, Chair, MIT Sea Grant
Members: Lynn, Swampscott, EEA, DCR, DPH, EPA, BWSC,
BWSC, MWRA, UMASS, Northeastern, Harvard, MIT



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BOSTON HARBOR BEACH WATER QUALITY

DCR Beach	Average compliance with swimming limits since 2011
City Point/M Street	100%
Nantasket	99%
Carson	99%
Pleasure Bay	97%
Revere	95%
Winthrop	96%
Nahant	94%
Constitution	93%
Wollaston	90%
Kings	82%
Tenean	81%

TYPICAL SOURCES OF CONTAMINATION ON AN URBAN BEACH



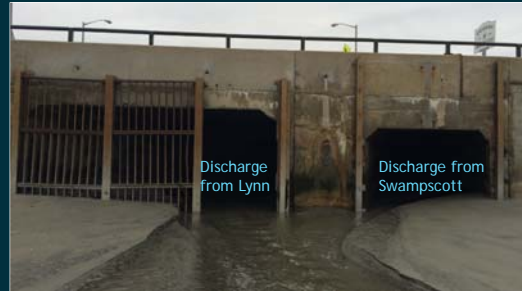
- ☐ Stormwater discharges
- ☐ Wildlife (birds) or domestic pets (dogs)
- ☐ Illicit connections/dry weather discharges to storm systems
- ☐ Leaky residential sewer laterals
- ☐ Bacteria in beach wrack, sand
- ☐ Combined Sewer Overflows (CSOs)

KINGS BEACH SOURCES OF CONTAMINATION



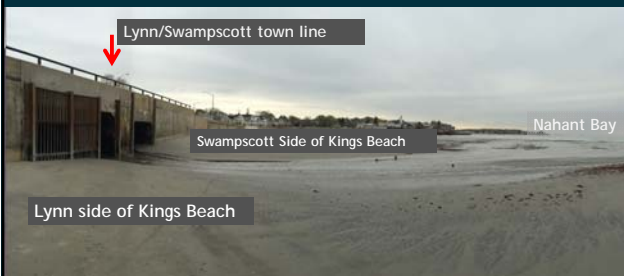
- Lynn discharges stormwater into Eastern Ave. drain to Stacey's Brook outfall, plus one CSO that discharges to this drain
- Swampscott discharges stormwater into Stacey's Brook from neighborhoods upstream, underdrains

STACEY'S BROOK OUTFALL

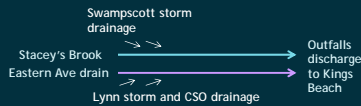


The Stacey Brook outfall consists of two 10' x 10' box culverts that discharge onto Kings Beach at the boundary of Lynn and Swampscott. The southern culvert discharges flow from Lynn's small MS4; northern culvert discharges stormwater from Swampscott's small MS4 as well as Stacey Brook flow.

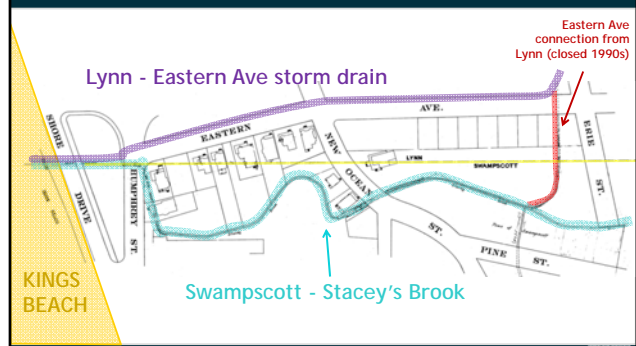
KINGS BEACH AT LOW TIDE

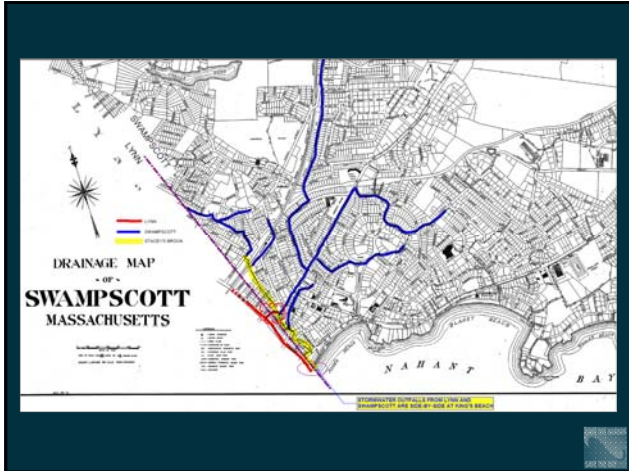


Lynn side of Kings Beach



STACEY'S BROOK DISCHARGE





COMMUNITY EFFORTS TO INVESTIGATE CONTAMINATION SOURCES

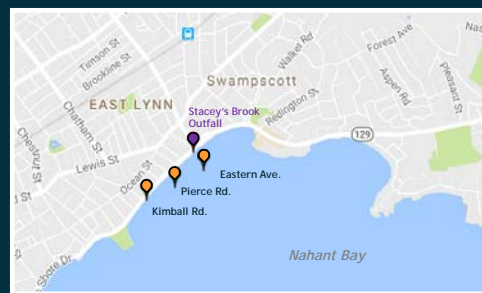
- ▣ As part of administrative actions by DEP and EPA, Swampscott and Lynn initiated illicit discharge detection and elimination efforts in the area of Stacey's Brook.
- ▣ Investigations provide information on upstream sources of contamination in wet and dry weather, and put a priority on identifying and eliminating likely sanitary sources.
- ▣ Areas identified to target for repair and/or rehabilitation.

SWAMPSCOTT SEWER REHABILITATION PHASE I

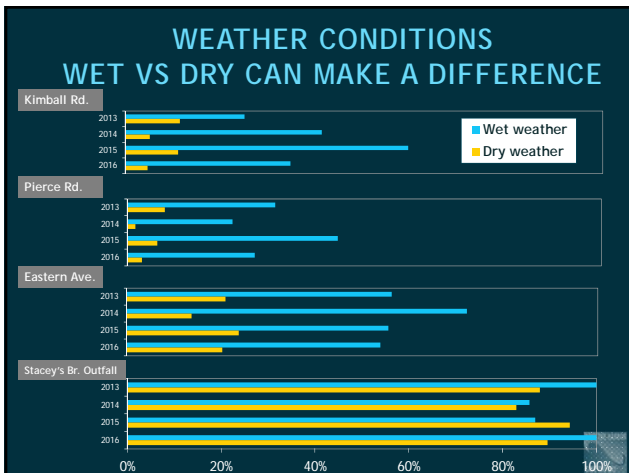
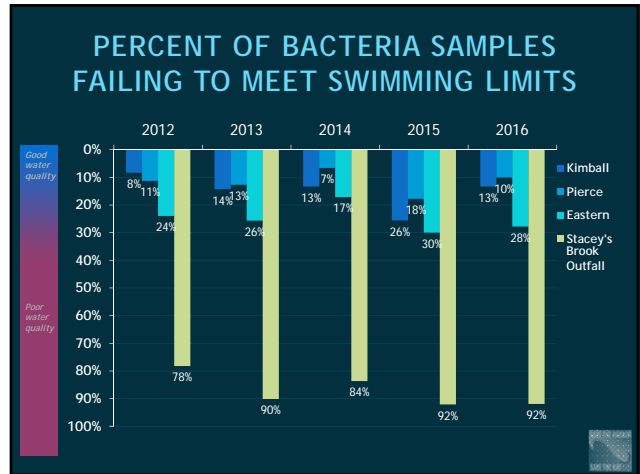
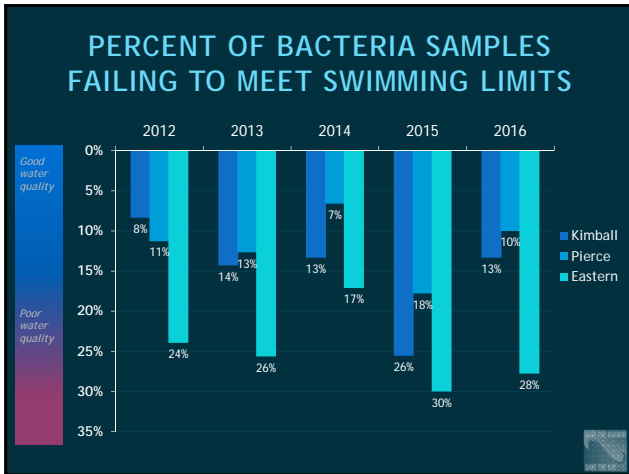


\$11 million sewer rehabilitation including relining pipe, replacing sewer mains and service laterals, manhole rehabilitation and spot repairs, and replacing residential sewer laterals in this area.

KINGS BEACH HISTORICAL WATER QUALITY

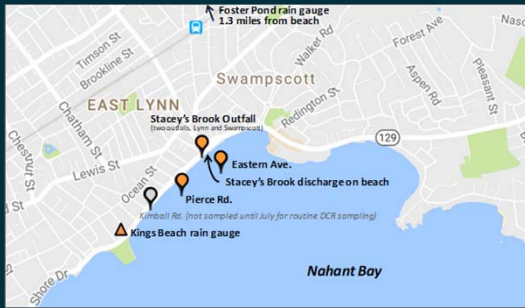


Weekly DCR beach sampling locations



- ### KINGS BEACH EEA/STH WATER QUALITY PROJECT SPRING 2017
- Install rainfall gauges at two locations in proximity of Kings Beach
 - Install flow sensors in Stacey's Brook outfall to measure outfall flow from Swampscott drain and Lynn drain
 - Test water quality at the outfalls and Kings Beach locations to establish relationship of bacteria and rainfall

KINGS BEACH EEA/STH WATER QUALITY PROJECT SPRING 2017

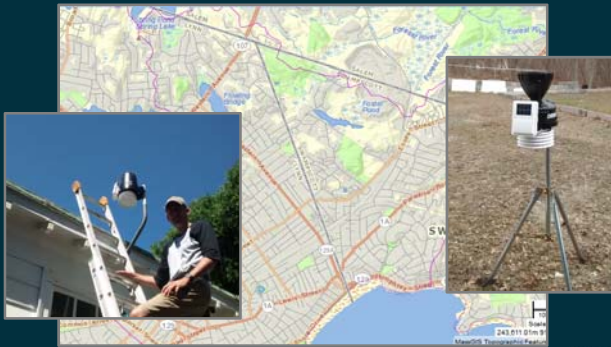


KINGS BEACH EEA/STH WATER QUALITY PROJECT SPRING 2017

- ▣ Installation of rain gauges to evaluate effects of local rainfall
- ▣ Installation of flow and depth sensors in the Stacey's Brook outfall
- ▣ Bacteria testing at the outfall and at the beach, including the routine DCR beach sampling locations

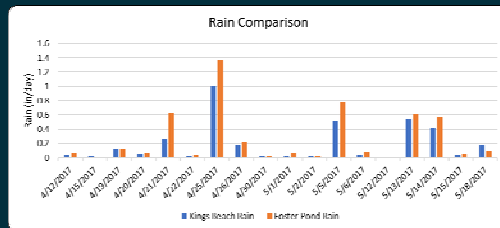
ACASAK Aquatic Monitoring Technologies

RAIN GAUGES

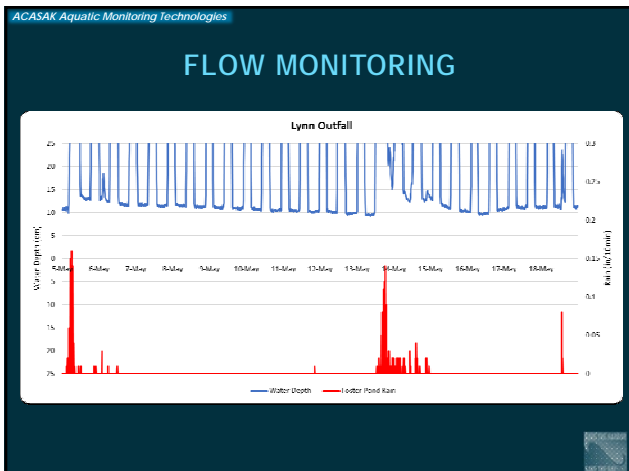
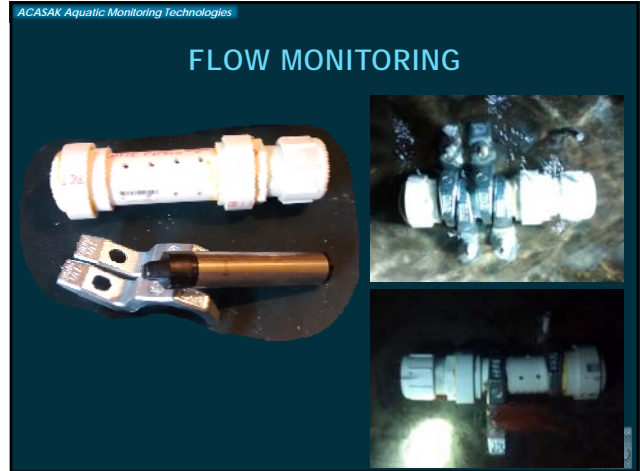


ACASAK Aquatic Monitoring Technologies

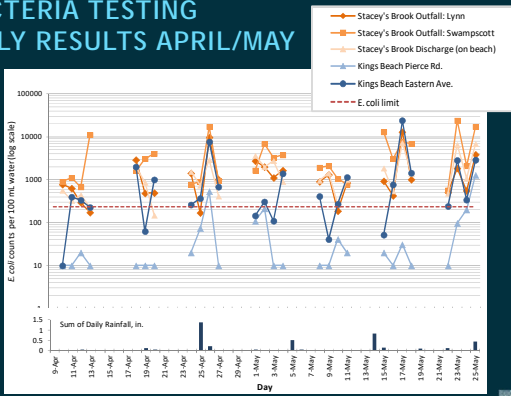
RAIN GAUGES



Gauges exhibit differences in precipitation between upper and lower watershed (1.4 mile distance).



BACTERIA TESTING DAILY RESULTS APRIL/MAY



BACTERIA TESTING APRIL/MAY % MEETING E. COLI LIMIT

Rainfall Conditions	Kings Beach Pierce Rd	Stacey's Brook Outfall			Kings Beach Eastern Ave
		Lynn Outfall	Swampscott Outfall	Combined Discharge (on beach)	
Dry/Damp Weather (<0.1 inches of rain in previous two days)	100%	11%	0%	5%	26%
Wet Weather	78%	11%	0%	11%	22%

PUBLIC HEALTH, AESTHETICS AND BEACH USABILITY

Other water quality considerations beyond bacterial water quality:

- Odors, algae, beach wrack
- Which beach areas are of largest concern



THANK YOU

