Sediment Contamination Study of Casco Bay part 2, Ramboll Environ PowerPoint 2016

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DATA ANALYSIS

- Integrate data, calculate sums
- Calculate summary statistics (baywide and by region)
  - Focusing on detects
- Plot data (box and whiskers and maps)
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- Comparison to screening values

Adverse effects in aquatic organisms (invertebrates and fish)

**Effects Range Low (ERL):** Concentration at which effects rarely observed

**Effects Range Median (ERM):** Concentration above which effects are frequently observed
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- Statistical analysis (by region and time)
- Geospatial analysis to illustrate notable trends
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• Comparison to rest of Gulf of Maine
RESULTS: 2010-2011 DATA
BOX PLOTS

Whiskers show the full range of the data, w/o outliers

Median (half the data below and half above)

“Outliers” or extreme values

75th percentile (3/4ths of data fall below this line)

Half of the data fall within this range

25th percentile (1/4ths of data fall below this line)
RESULTS: 2010-2011 DATA
SEDIMENT GRAIN SIZE

![Box plot showing percent sand in different areas of Casco Bay]

Legend:
- Inner Bay
- Outer Bay
- West Bay
- East Bay
- Cape Small
RESULTS: 2010-2011 DATA
EXAMPLE METALS

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- **Arsenic**: statistically significant differences between regions
- **Copper**: statistically significant differences between regions
- **Mercury**: statistically significant differences between regions
- **Selenium**: statistically significant differences between regions
- **Lead**: statistically significant differences between regions
- **Zinc**: statistically significant differences between regions
RESULTS: 2010-2011 DATA
PAHS

*: statistically significant differences between regions

SEDIMENT ASSESSMENT OF CASCO BAY (1991-2011)
SEPTEMBER 14, 2016
RESULTS: 1991-2011 CASCO BAY

1991/1994

2000-2002

2010-2011

Inner Bay  Outer Bay  West Bay  East Bay  Cape Small
RESULTS: 1991-2011 CASCO BAY METALS

*: statistically significant trend in concentration by time

SEDIMENT ASSESSMENT OF CASCO BAY (1991-2011)
SEPTEMBER 14, 2016
LEAD IN CASCO BAY, 1991-2011
LEAD IN CASCO BAY, 1991-2011

Legend
- Sample Locations
- Bay Subdivisions

Lead (μg/g dry)
- < 21.0
- 21 - 24.5
- 24.6 - 27.6
- 27.7 - 30.9
- 31 - 35
- 35.1 - 40.4
- 40.5 - 46.6
- 46.7 - 52.8
- 52.9 - 59.4
- > 59.4

ERL: 46.7 μg/g
ERM: 218 μg/g