



HEALTH IMPACT ASSESSMENT of the PROPOSED COMPRESSOR STATION, WEYMOUTH, MA

Advisory Committee Meeting #4

September 20, 2018

Agenda

- Welcome and Agenda Overview
- Introductions
- HIA Advisors Updates
- Open House with Demographic Data
- Exploration of Existing Conditions Data for Health and Air Quality
- Meeting Evaluation and Next Steps

Meeting Objectives

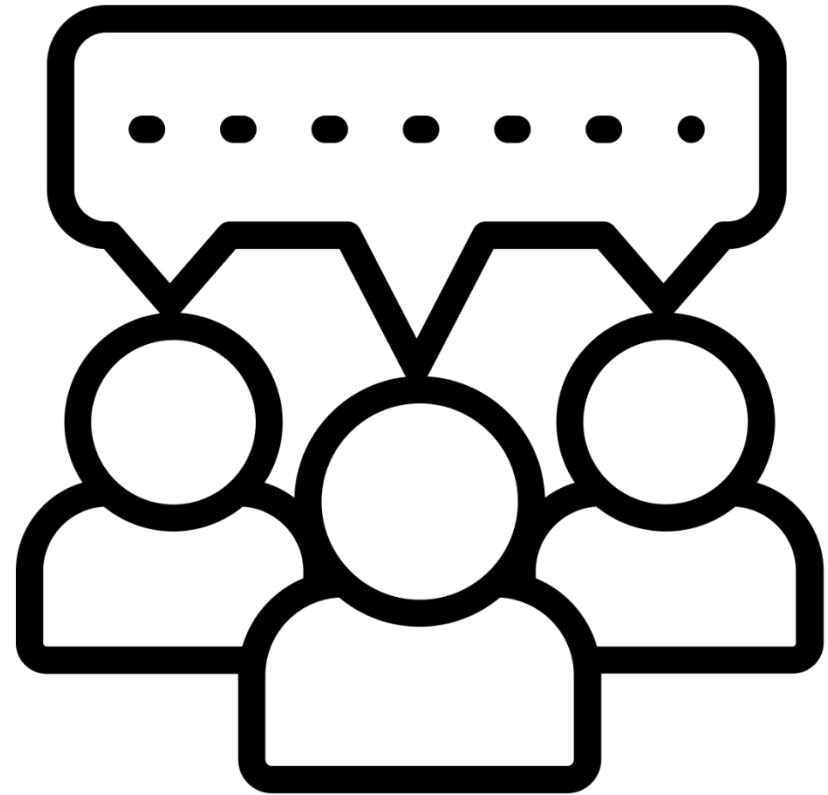
- Awareness of existing conditions data so that advisors can provide feedback on collected data and assist in setting the context for the impact assessment
- List of outstanding questions and parking lot items

HIA Project Team

- Massachusetts Department of Public Health (MDPH)
- Massachusetts Department of Environmental Protection (MassDEP)
- Metropolitan Area Planning Council (MAPC)

Advisory Committee Member Introductions

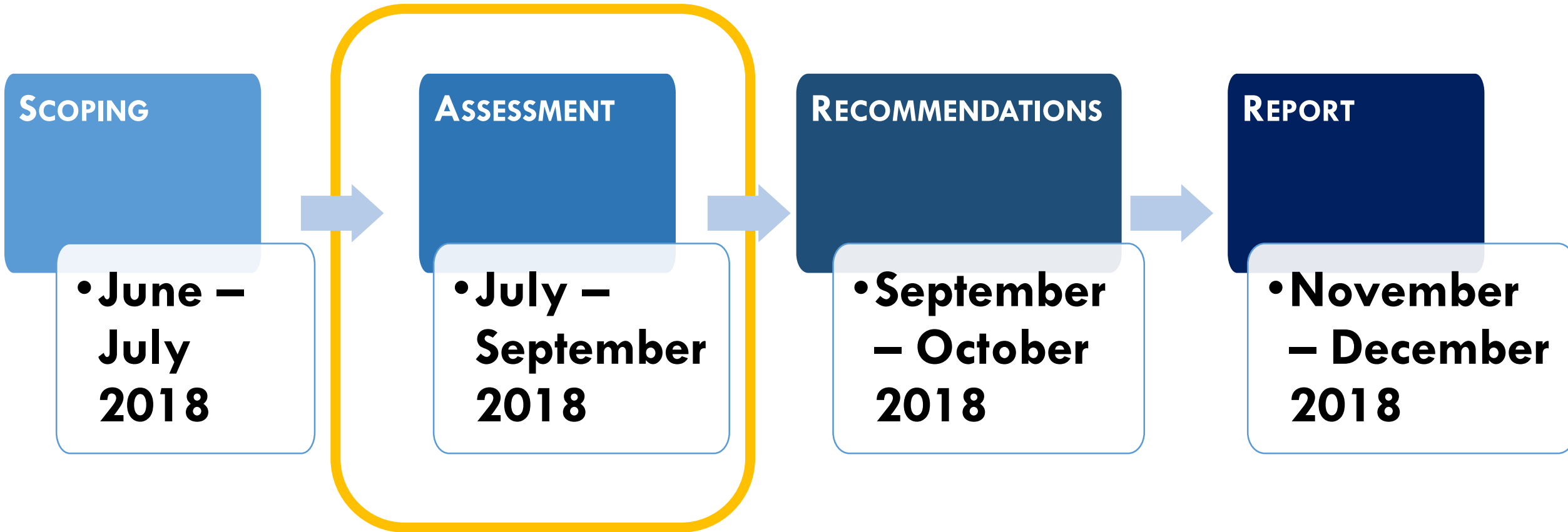
- Name
- Where from/Who Representing
- Icebreaker Question



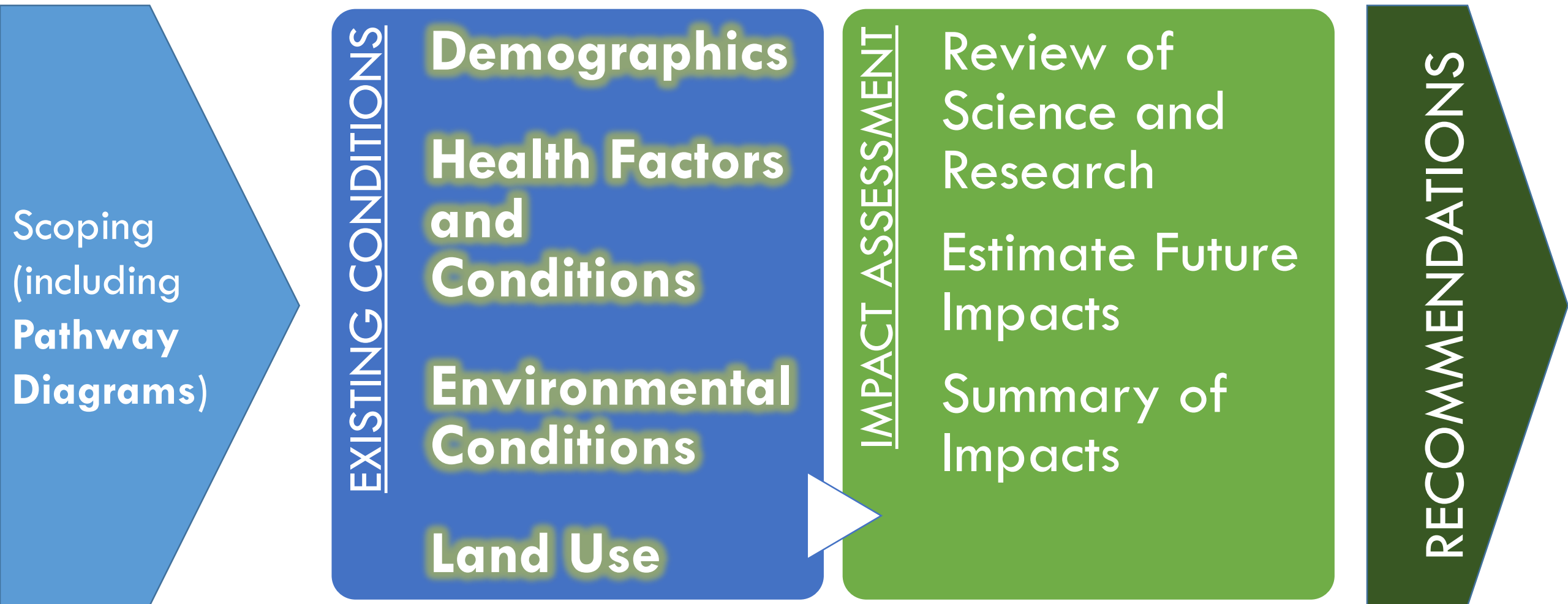
Advisory Committee Roles and Responsibilities

- Advise the project team during all phases of the HIA (e.g., scoping the HIA, assessment of health impacts)
- Share expertise and range of experiences and perspectives related to the HIA
- Consultation by phone and email

HIA Timeline



Assessment Step of HIA



HIA Advisors Update

Participant updates and information sharing



Demographic Data

Existing conditions data related to the people and places surrounding the proposed compressor station

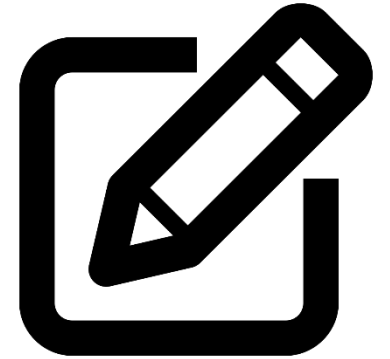
Demographic Data

- Population data for use in describing current characteristics of the people and places that could be affected by the proposed station
- Geographies
 - 2 kilometer (~1.25 miles) area surrounding the proposed station
 - Municipalities: Quincy, Braintree, Weymouth, and Hingham
 - State
- Data includes (and was shared in advance of meeting)
 - *Population count*
 - *Households*
 - *Age*
 - *Income*
 - *Race/ethnicity*
 - *Language*
 - *Education*

Open House Session with Demographic Data

Using markers and post it notes, please:

- a) Circulate around the room to (re)review the data
- b) Provide questions, comments or observations about the data



Input will be considered by the project team to assist in identifying if additional data collection is needed and in presentation of data in the HIA report.

Exploration of Existing Conditions Data for Health and Air Quality

Participatory assessment and discussion of the existing health and air quality data for people and the areas surrounding the proposed compressor station

Participatory Assessment

Process (5 steps):

1. Break into small groups (~4-6 participants)
2. Brief introduction to data (either health or air quality, ~2 mins)
3. Share data to review (~10 mins)
4. HIA Team will present observations on the data (~8 mins)
5. Group discussion of data (~10 mins)

*Health data first (MDPH) and Air Quality data second (MassDEP),
each ~ 30 mins*

Sources of Health Information

- Data available to the public
 - Massachusetts Environmental Public Health Tracking (MA EPHT) – www.mass.gov/dph/matracking
- Data available within MDPH
 - Center for Health Information and Analysis
 - Massachusetts Cancer Registry
 - Registry of Vital Records and Statistics
 - Behavioral Risk Factor Surveillance System (BRFSS)



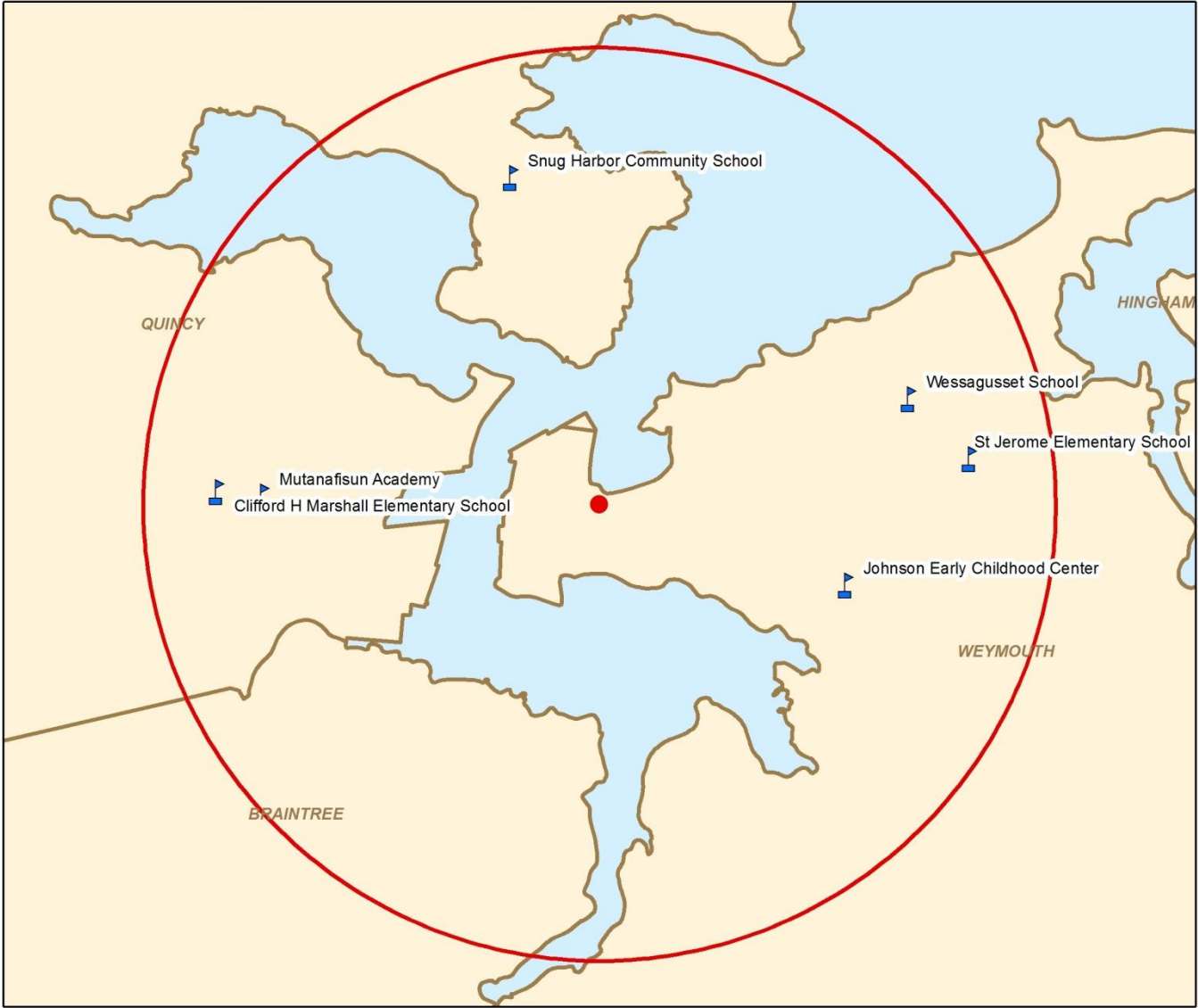
Health Data: Shared today

Health Outcome	Health Measure	Geography	Source
Cancer	Standardized Incidence Ratios (SIRs) for 23 cancer types	Community	Massachusetts Cancer Registry
Cardiovascular Disease	Rates of hospital admissions for myocardial infarction (heart attack)	Community	Center for Health Information and Analysis (CHIA)
Respiratory Conditions	Pediatric asthma prevalence	Community; Schools	MDPH Bureau of Environmental Health
	Rates of hospital admissions for asthma	Community	CHIA
	Rates of ED visits for asthma	Community	CHIA
	Rates of hospital admissions for COPD	Community	CHIA
	Rates of ED visits for COPD	Community	CHIA
Reproductive Outcomes	Percent low birth weight	Community	MA Registry of Vital Records and Statistics

Health Data: Shared today



Health Data: Shared today



Health Data: Still to come

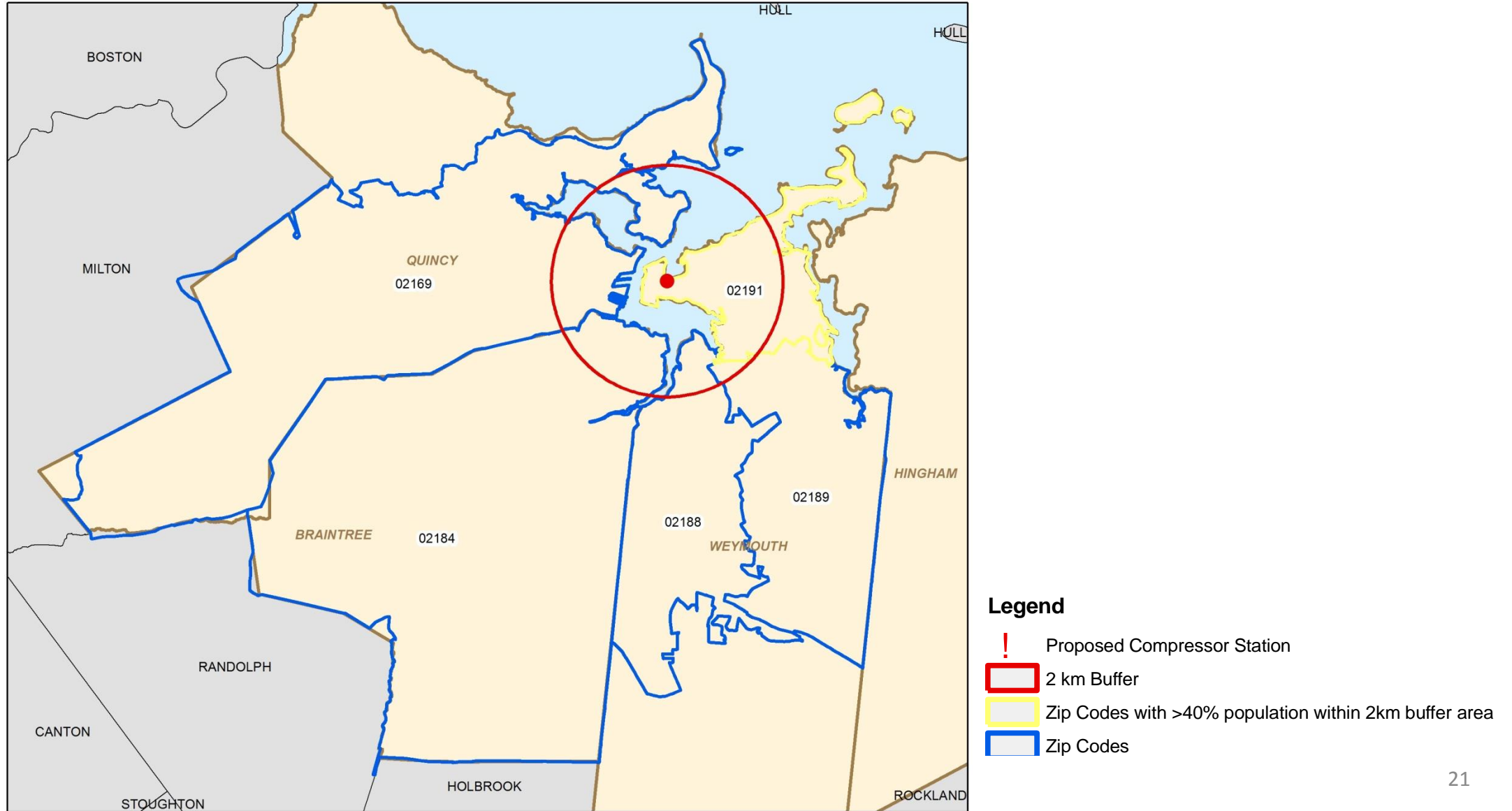
Health Outcome	Health Measure	Geography	Source
Cancer	Standardized Incidence Ratios (SIRs) for lung & bronchus, acute myeloid leukemia (AML), and nasal	CT	Massachusetts Cancer Registry
Cardiovascular Disease	Rates of hospital admissions for myocardial infarction (heart attack)	Zip code	Center for Health Information and Analysis (CHIA)
Respiratory Conditions	Rates of hospital admissions for asthma	Zip code	CHIA
	Rates of ED visits for asthma	Zip code	CHIA
	Rates of hospital admissions for COPD	Zip code	CHIA
	Rates of ED visits for COPD	Zip code	CHIA
Reproductive Outcomes	Percent low birth weight	CT	MA Registry of Vital Records and Statistics

Health Data: Still to come



- Legend**
- ! Proposed Compressor Station
 - 2 km Buffer
 - Census Tracts with >40% population within 2km buffer area
 - Census Tracts
 - Communities

Health Data: Still to come



Small Group Review of Health Data

Explore data and, as a group, record your observations on post-it notes.

Potential questions to ask are:

- What patterns and themes did you notice?
- What surprised you?
- What did you expect to see in the data that isn't there?



Health Data: HIA Team Observations

Statistical Significance of Age-Adjusted Rates of Respiratory Conditions Compared to Statewide				
	Braintree	Hingham	Quincy	Weymouth
Pediatric Asthma Prevalence 2009/2010 – 2016/2017	Lower	Lower	Lower	Higher
Asthma Hospital Admissions 2000-2014	Lower	Lower	Lower	Higher
Asthma Emergency Department Visits 2002-2014	Lower	Lower	Lower	Lower
COPD Hospital Admissions 2000-2014	Higher	Lower	Higher	Higher
COPD Emergency Department Visits 2002-2014	Lower	Lower	Higher	Higher

Health Data: HIA Team Observations

Statistical Significance of Rates of Cardiovascular Conditions Compared to Statewide	
	Heart Attack Hospital Admissions 2000-2014
Braintree	Higher
Hingham	Lower
Quincy	Higher
Weymouth	Higher

Statistically Significantly Elevated Cancer Types		
Community	2006-2010	2011-2015*
Braintree	Lung & Bronchus (females) Melanoma (females) All sites (males & females)	Colon/Rectum (females)
Hingham	Melanoma (males & females) NHL (females)	Esophagus (females) Melanoma (males & females)
Quincy	Colon/Rectum (males) Liver & IBD (males) Lung & Bronchus (females) Oral Cavity & Pharynx (males)	Cervical (females) Colon/Rectum (males) Liver & IBD (males) Lung & Bronchus (males & females) Oral Cavity & Pharynx (males) All sites (males & females)
Weymouth	Lung & Bronchus (females)	Bladder (females) Larynx (males) Lung & Bronchus (males) Melanoma (females)

*** Provisional Data: The 2011-2015 Massachusetts cancer incidence data for cities and towns are provisional and subject to revision until they have been thoroughly reviewed for final approval.**

Health Data: HIA Team Observations

Statistical Significance of Rates of Reproductive Outcomes Compared to Statewide	
	Low Birth Weight 2000-2015
Braintree	No Difference
Hingham	Lower
Quincy	No Difference
Weymouth	No Difference

Group Discussion of Health Data

- Who had similar observations?
- What additional observations did groups have?
- What questions remain?



Sources of Air Quality data



MassDEP sample locations selected:

- Potentially impacted by future emissions from site
- Characterize existing sources
- 1 background location

Air Monitoring by MassDEP

- VOC 24-hour Composite Monitoring (completed)
 - Air samples collected at 5 locations
 - 7 different days over 7 weeks
- Mini-station at Weymouth MWRA Pump Station (ongoing)
 - Continuous monitoring of benzene, toluene, ethylbenzene, xylenes
 - Every sixth day Carbonyl 24-hour composite monitoring (i.e., formaldehyde and acetaldehyde)



Air Quality data

- Geographies
 - Fore River Area (Quincy, Braintree, Weymouth, and Hingham)
 - State (Boston, Lynn, Chicopee VOC monitoring sites)
- Data includes:
 - VOC 24-hour Composite Samples (5 locations, 7 days over 7 weeks)
 - Carbonyl 24-hour Composite Samples (Weymouth MWRA site, 5 days)
 - Benzene and Toluene Daily Means for August (Weymouth MWRA site)
 - Benzene and Formaldehyde 24-hour Composite Samples (3 locations outside study area, 3 years)

Ambient Air Quality Guidelines

Threshold Effects Exposure Limits (TELs)

- Non-cancer health effects
- Decreased by a factor of 5 to account for exposure from other sources
- Compare to 24 hour average concentration

Allowable Ambient Limits (AAL)

- Cancer health effects (or non-cancer effects)
- 1 in 1,000,000 cancer risk
- Compare to annual average concentration

TEL and AAL are intended to protect sensitive members of the population from harmful effects assuming exposure to the same average concentration 24 hours each day for 70 years.

More information <https://www.mass.gov/service-details/massdep-ambient-air-toxics-guidelines>

Small Group Review of Air Quality Data

Explore data and, as group, record what observations your group has on post-its. Potential questions to ask are:

- What patterns and themes do you notice?
- What surprised you?
- What did you expect to see that isn't there?

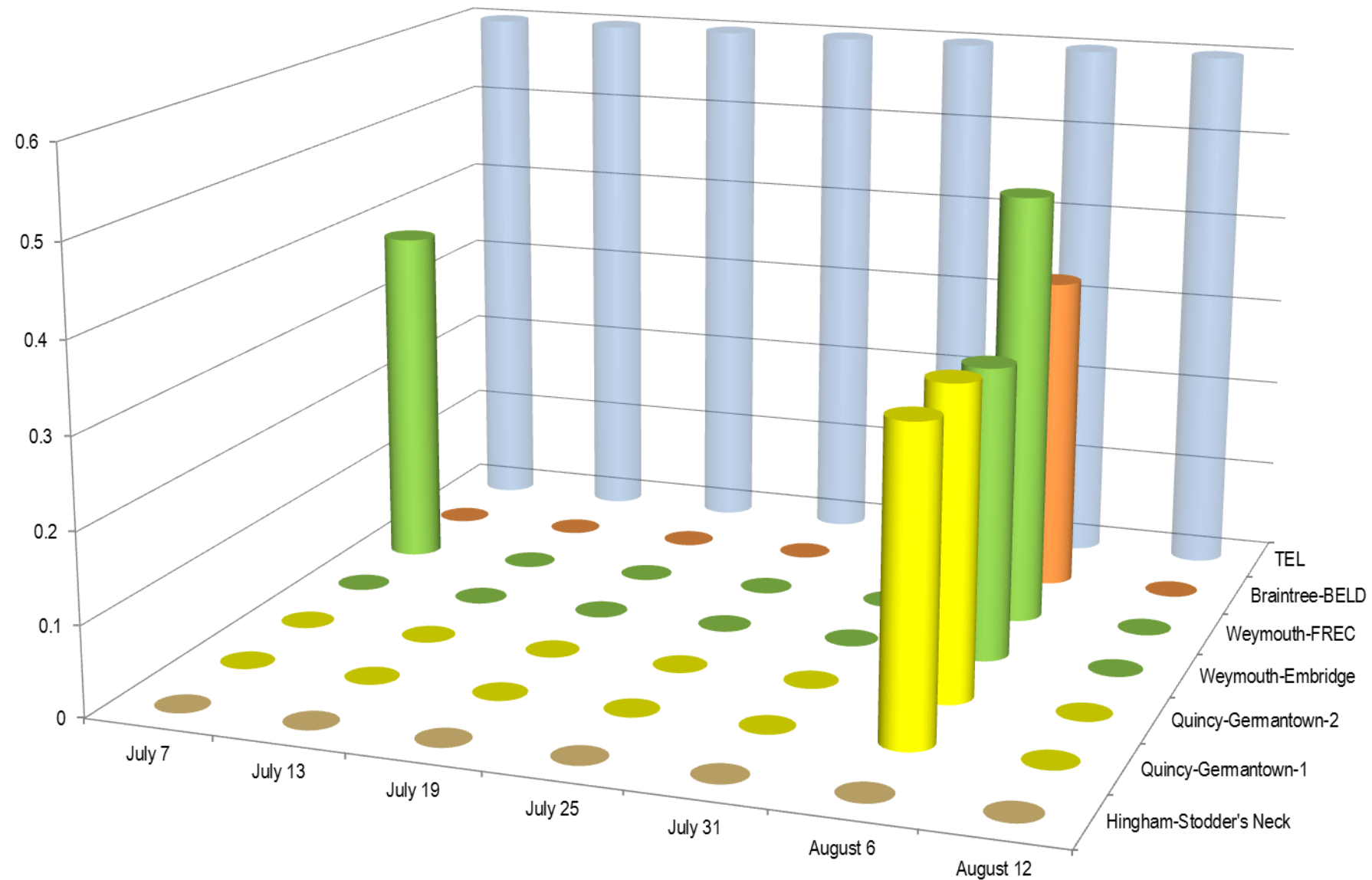


Air Quality Data – HIA Team Observations

- VOC levels in Fore River area are similar to levels in other urban areas (e.g., Boston, Lynn, and Chicopee)
- VOC levels are consistent with urban background levels
- Some formaldehyde levels exceed the TEL; these levels are consistent with urban background levels
- While not directly comparable, some VOC levels exceed the AALs (e.g., formaldehyde, benzene, carbon tetrachloride); these levels are consistent with urban background levels

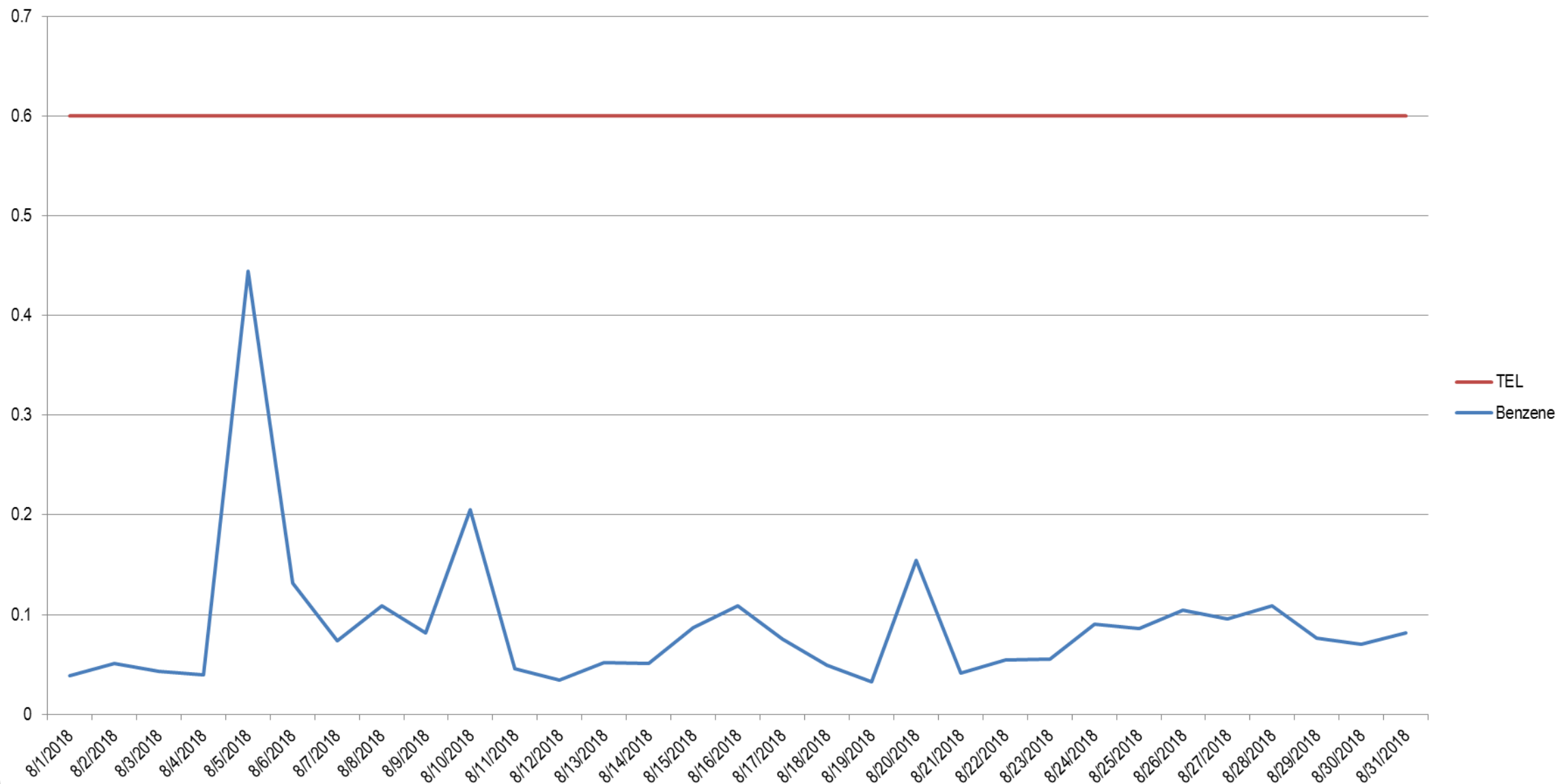
Benzene Concentrations Relative to TEL

24 hour samples (ug/m3)



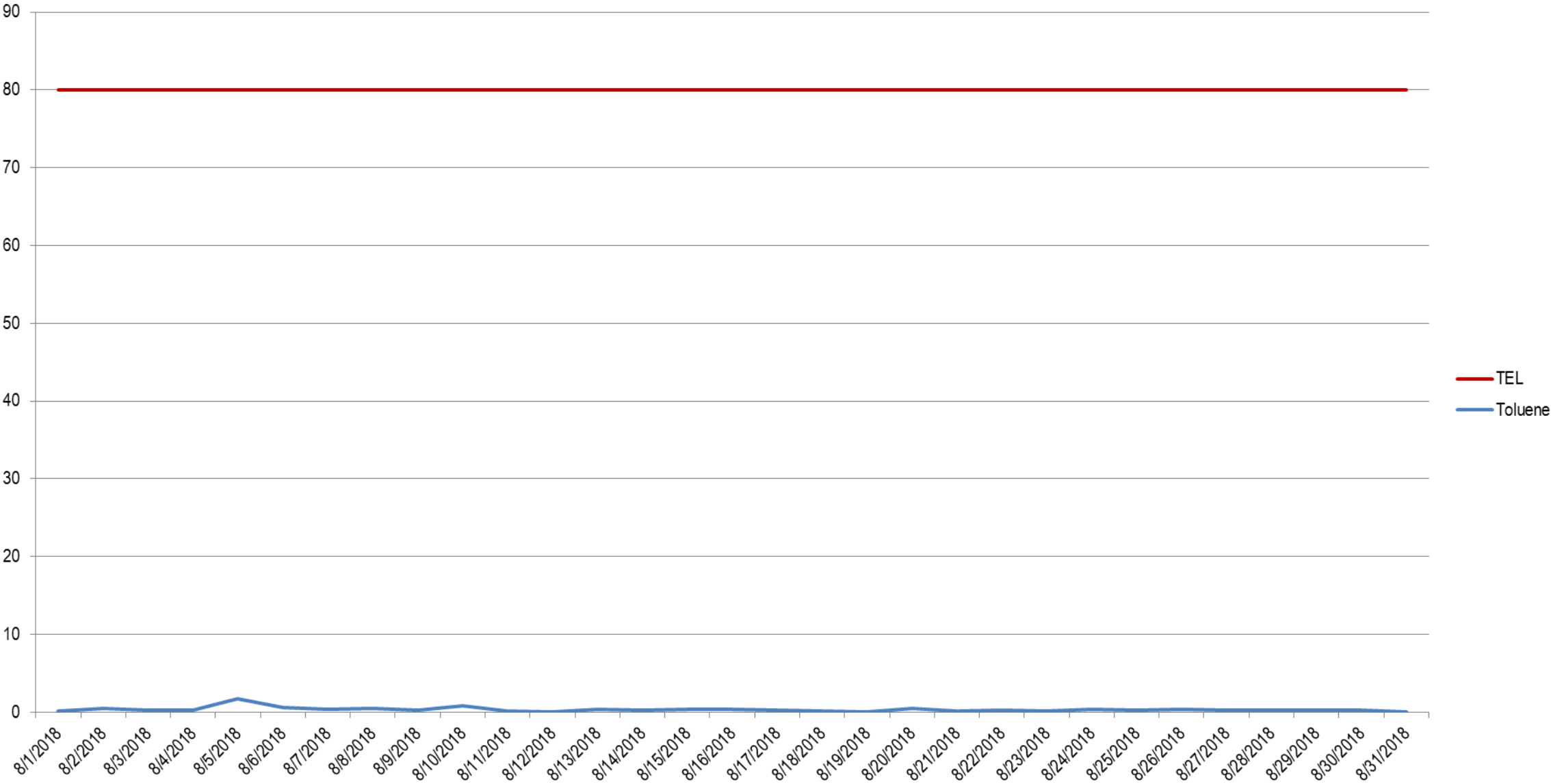
Benzene Concentrations Relative to TEL

Gas Chromatograph Hourly Monitoring Daily Means for August 2018 (ug/m³)
Weymouth MWRA Pump Station



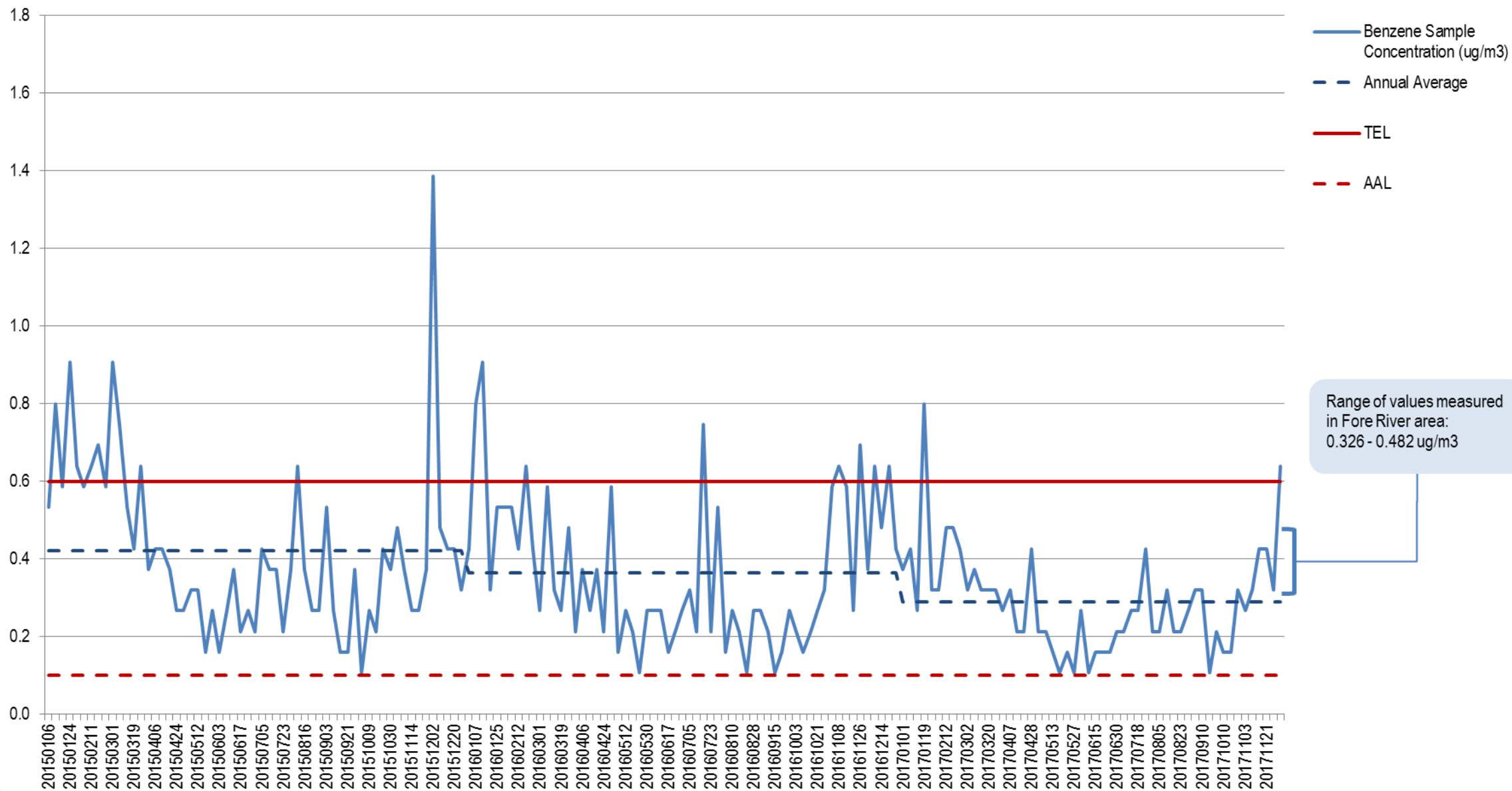
Toluene Concentrations Relative to TEL

Gas Chromatorgraph Hourly Monitoring Daily Means for August 2018 (ug/m3)
Weymouth MWRA Pump Station



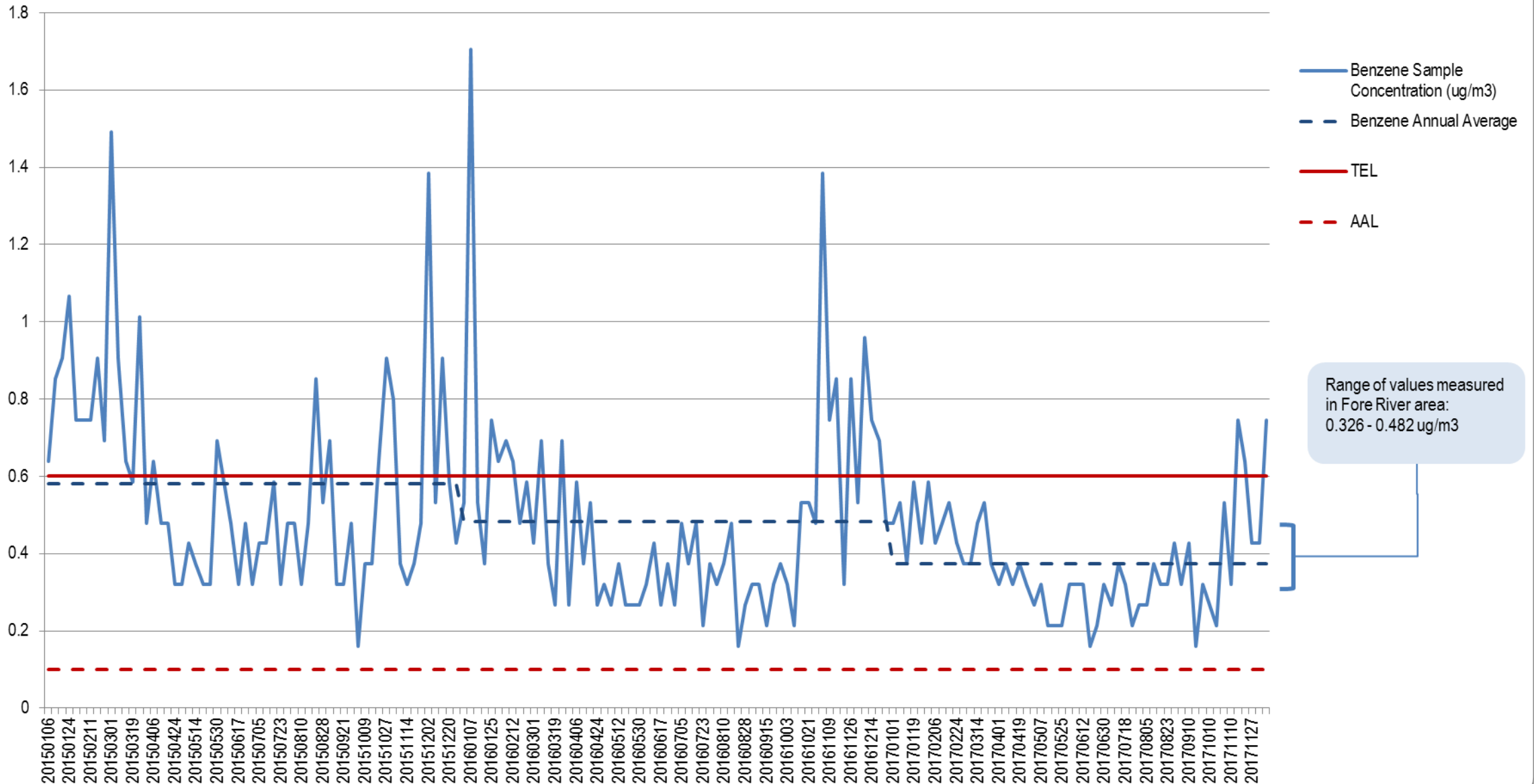
Benzene Concentrations - Lynn

2015-2017 24-hr Samples (ug/m³)



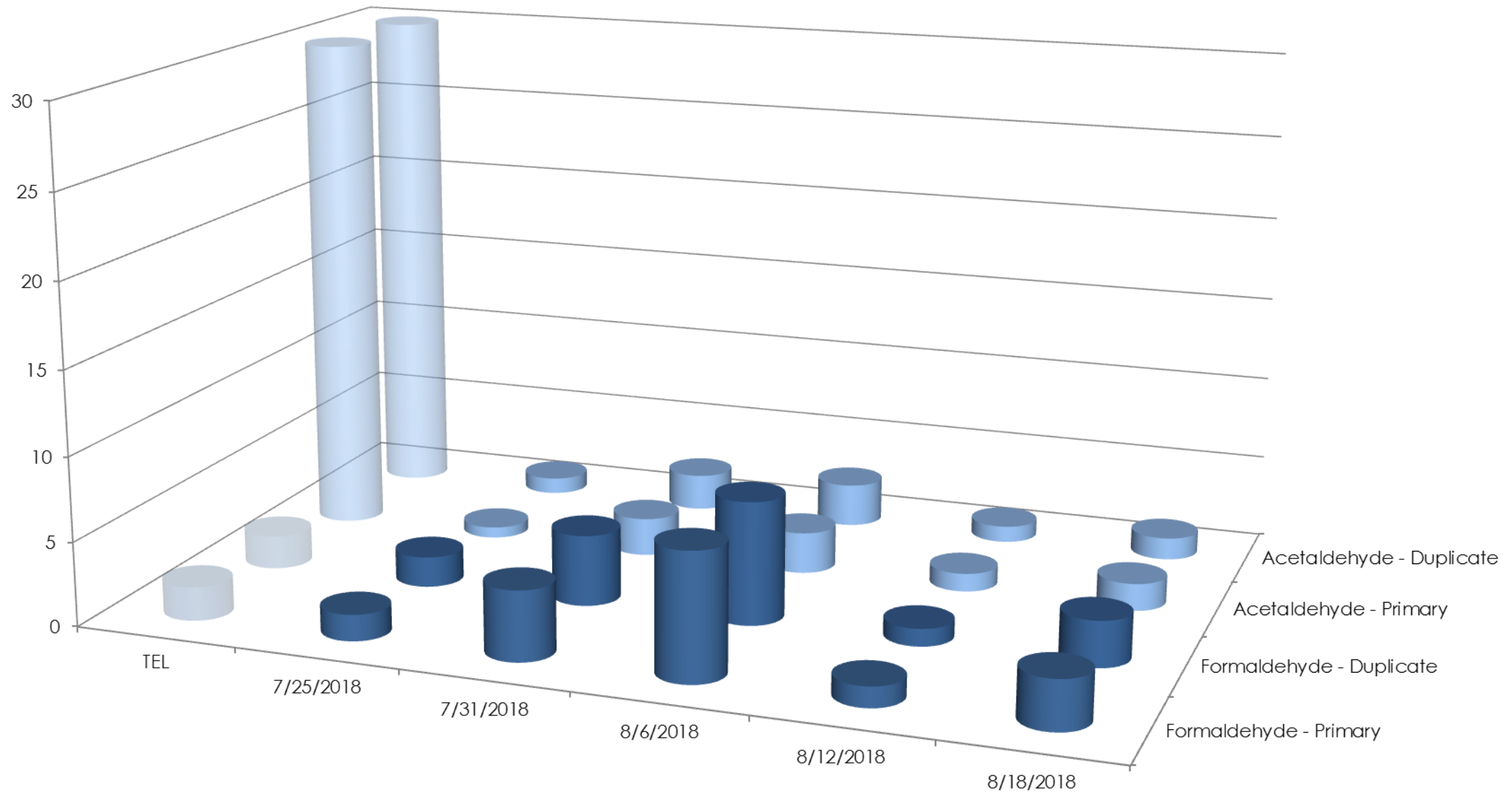
Benzene Concentrations - Boston

2015-2017 24-hr Samples (ug/m³)



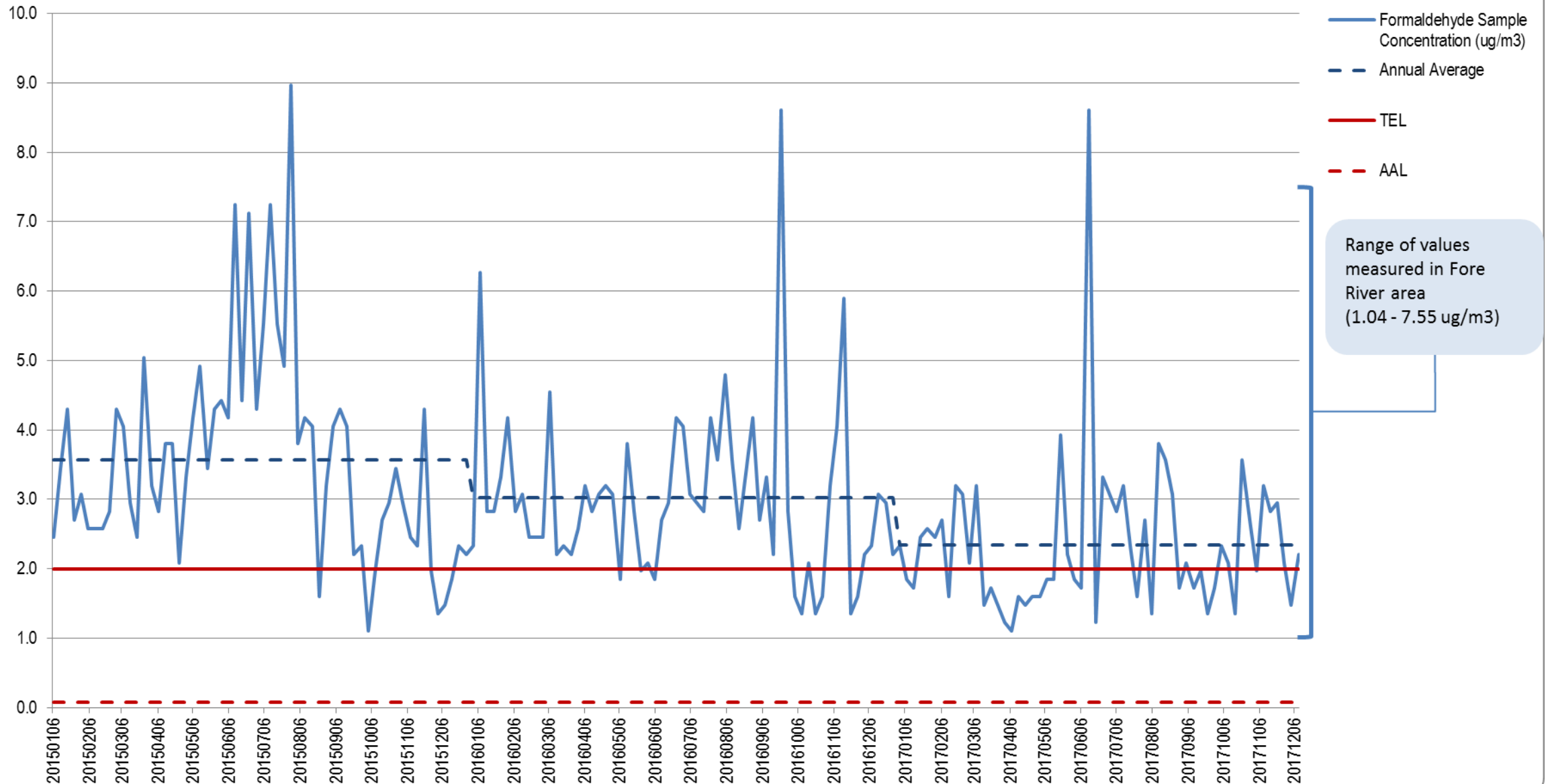
Carbonyl Concentrations Relative to TEL

Weymouth MWRA Pump Station 24 hour samples (ug/m³)



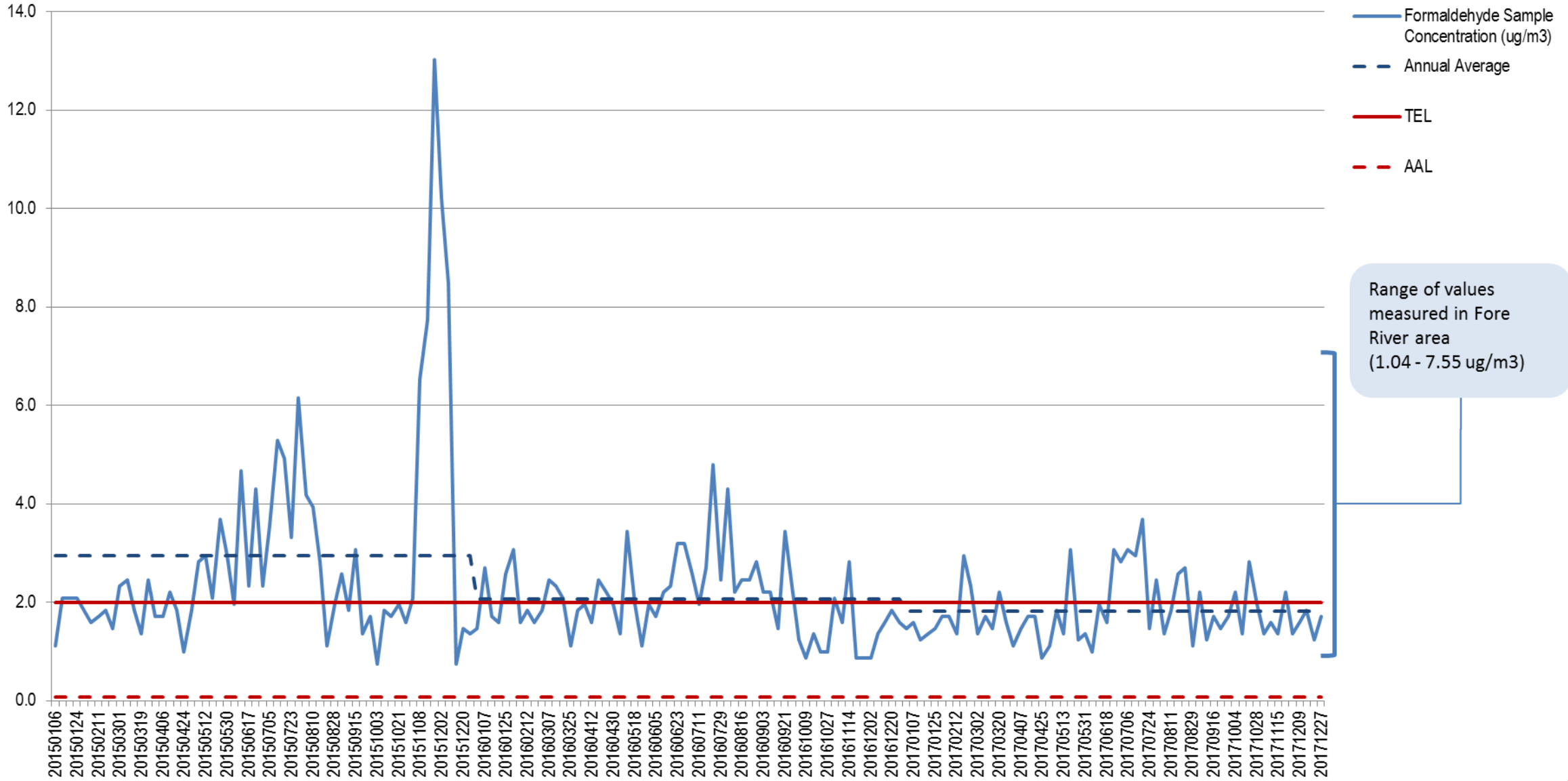
Formaldehyde Concentrations - Boston

2015-2017 24-hr Samples (ug/m³)



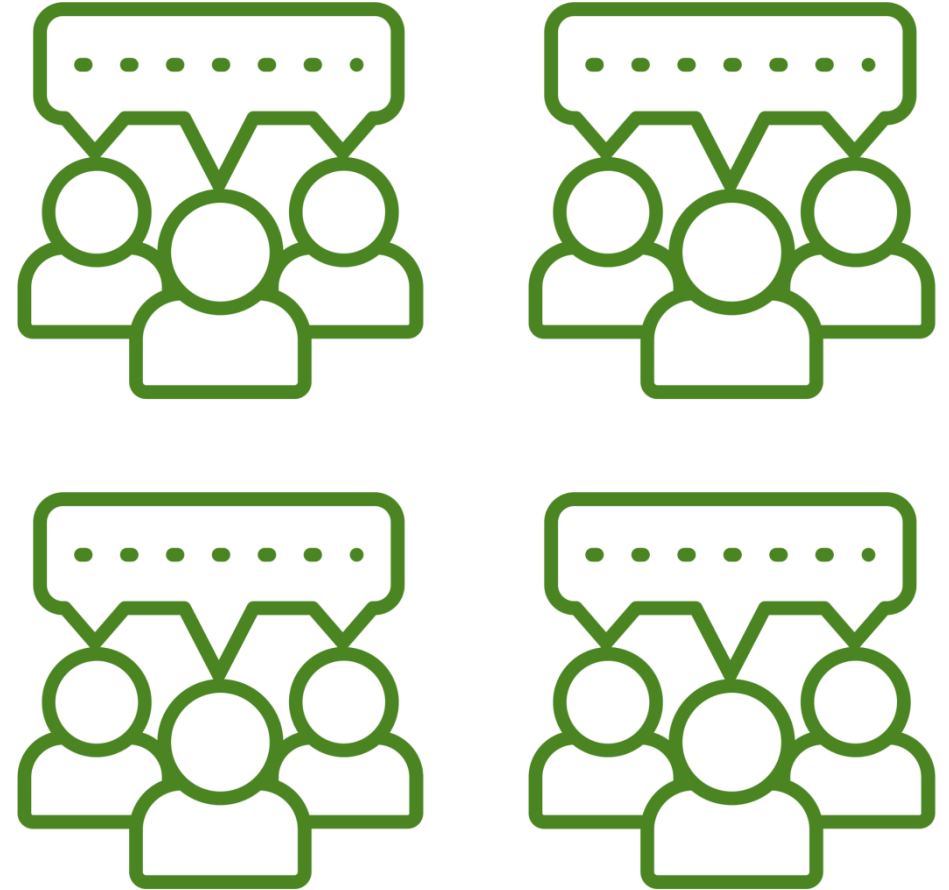
Formaldehyde Concentrations - Lynn

2015-2017 24-hr Samples (ug/m³)



Group Discussion of Air Quality Data

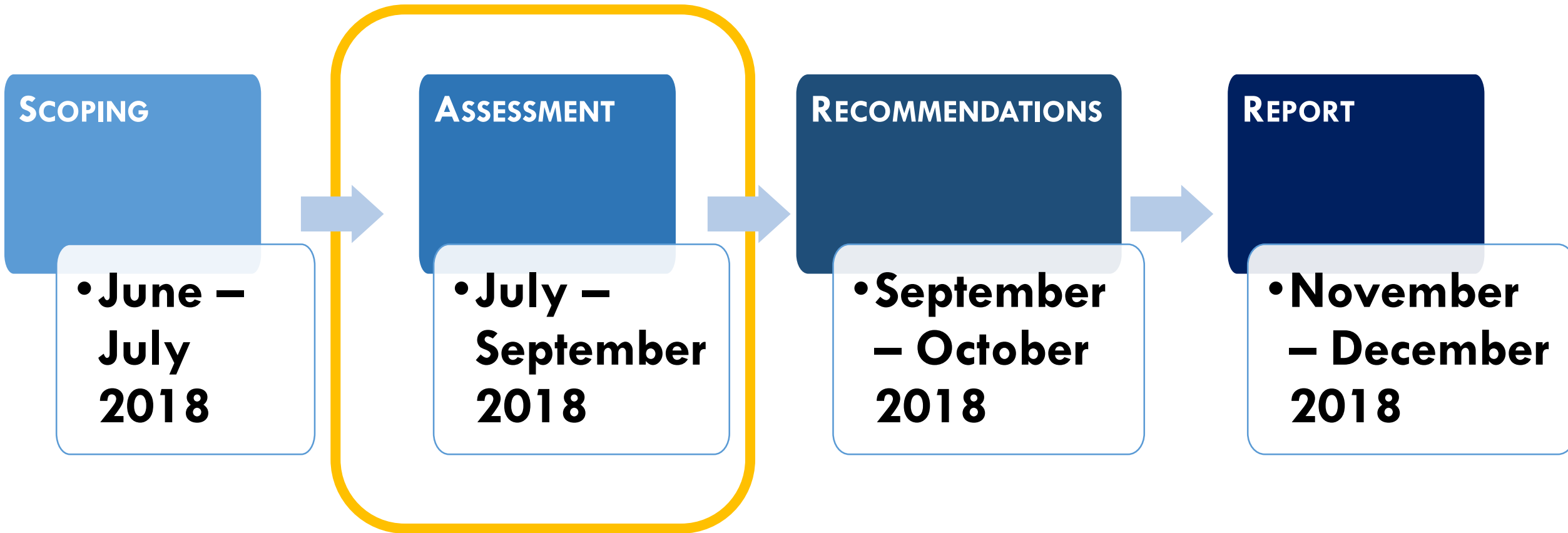
- Who had similar observations?
- What additional observations did groups have?
- What questions remain?



Wrap Up and Next Steps

Upcoming meetings, action items, and meeting evaluation

HIA Timeline



Thank you

Barry Keppard, bkeppard@mapc.org

Project website: www.foreriverhia.com