

Appendix P
Independent Ambient Air Monitoring
Program Presentation

An aerial photograph showing a coastal remediation project. The site features several interconnected ponds of varying sizes, some with white sediment or sand deposits. A network of roads and paths is visible, connecting different areas of the site. The surrounding landscape is a mix of green vegetation and open land. In the background, a large body of water, likely a bay or harbor, is visible under a clear sky.


**Independent Ambient
Air Monitoring Program,
Boat Harbour
Remediation Project**

Presented by:
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Agenda

1. Introduction
2. Air Quality Monitoring Objectives
3. Overview of Monitoring Program
4. Air Quality Monitoring Criteria
5. Air Quality Monitoring Results
6. Questions

Independent Ambient Air Monitoring Program,
Boat Harbour Remediation Project

Introduction

Stantec's Role

Independent Ambient Air
Monitoring and Evaluation
Services Contractor

Boat Harbour Remediation
Project



Independent Ambient Air Monitoring Program,
Boat Harbour Remediation Project

Air Quality Monitoring Objectives

Monitoring Objectives

- Collect baseline air quality data within PLFN
- Monitor the air quality within PLFN during Pilot Scale Remediation
- Collect air quality data during the Pilot Scale Remediation Program to help plan for full scale remediation in 2020



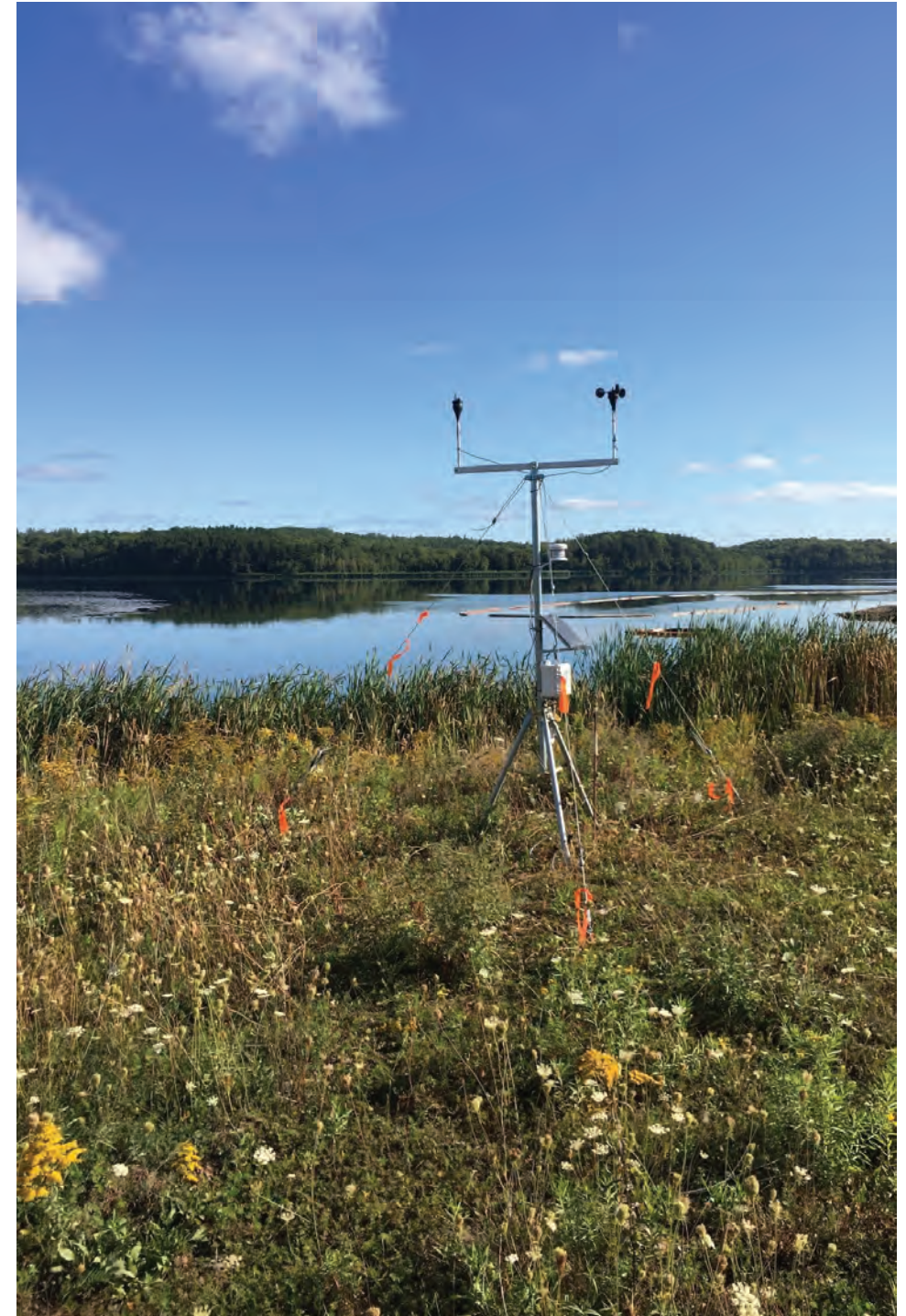
Independent Ambient Air Monitoring Program,
Boat Harbour Remediation Project

Overview of Monitoring Program

Monitoring Program

The Air Quality Monitoring Program consists of:

- Long-Term Monitoring
- Real-Time Monitoring
- Meteorological Monitoring
- Reporting



Long-Term Air Quality Monitoring



Fixed Monitoring Station





Long-Term Monitoring

- Sample and analyze for 188 air contaminants
- Sampling frequency and methods as per approved Work Plan
 - Sampling frequency as per ECCC's Program schedule
 - Sample methods based on ECCC and the United States Environmental Protection Agency
- Non-continuous monitoring (except for Total Reduced Sulphur)
- Delayed results (laboratory analysis of samples required)
- Data is representative of background conditions and pilot scale remediation activity

Real-Time Air Quality Monitoring

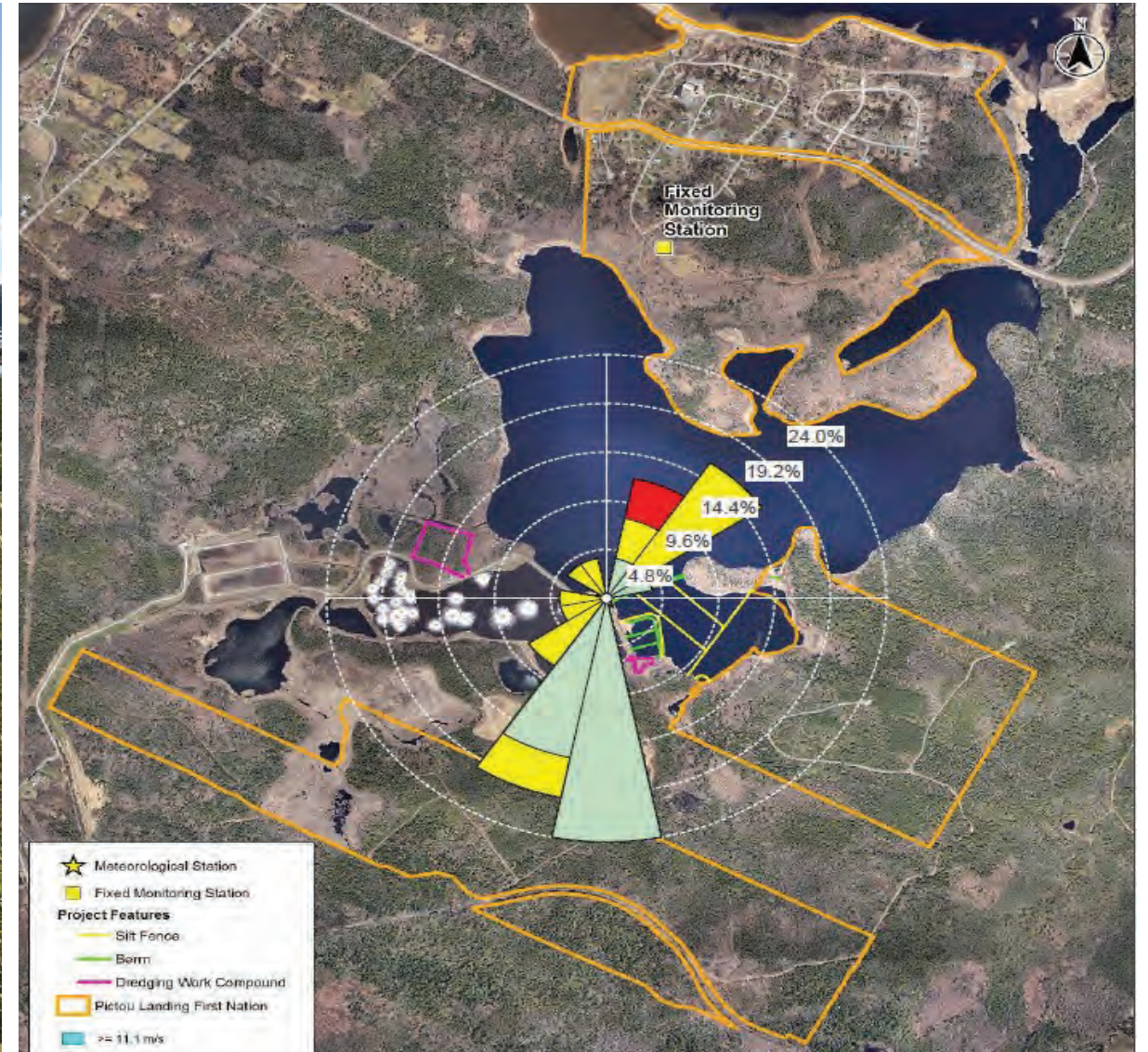


Real-Time Monitoring

- Spot check monitoring for four air contaminants and meteorological data
- Sampling frequency and methods as per the approved Work Plan
- Real-time results
- Monitoring during pilot scale remediation activities



Meteorological Monitoring



Program Reporting

<https://novascotia.ca/boatharbour/monitoring/>

The screenshot shows the top portion of a website. At the top left is the Nova Scotia logo. To its right is a search bar with the text "Search / Recherche" and a magnifying glass icon. Below the logo and search bar is a dark blue navigation menu with white text for "Boat Harbour remediation", "About the project", "History", "Monitoring" (which is highlighted with a yellow underline), "Resources", and "Contact".

Air Monitoring Reports

An independent ambient air monitoring consultant, Stantec Consulting Ltd., is conducting daily real-time ambient air monitoring and fixed station monitoring for the Boat Harbour Remediation Project. Their reports are posted to this web page regularly.

October 2019 reports:

Interim fixed station:

- [October 18 Interim Report \(PDF 1.4 MB\)](#)
- [October 12 Interim Report \(PDF 1.6 MB\)](#)
- [October 6 Interim Report \(PDF 2.2 MB\)](#)

September 2019 reports:

Interim fixed station:

- [September 30 Interim Report \(PDF 1.5 MB\)](#)
- [September 24 Interim Report \(PDF 1.5 MB\)](#)
- [September 18 Interim Report \(PDF 1.6 MB\)](#)
- [September 12 Interim Report \(PDF 1.5 MB\)](#)

August 2019 reports:

Interim fixed station:

- [August 31 Interim Report \(PDF 2.0 MB\)](#)
- [August 25 Interim Report \(PDF 1.5 MB\)](#)
- [August 19 Interim Report \(PDF 1.5 MB\)](#)
- [August 13 Interim Report \(PDF 1.5 MB\)](#)
- [August 7 Interim Report \(PDF 1.5 MB\)](#)
- [August 1 Interim Report \(PDF 1.5 MB\)](#)

Monthly:

- [August Fixed Station Report \(PDF 3.9 MB\)](#)

July 2019 reports:

Interim fixed station:

- [July 26 Interim Report \(PDF 1.5 MB\)](#)

Monthly:

- [July Non-Technical Summary \(PDF 1.2 MB\)](#)

Independent Ambient Air Monitoring Program
Boat Harbour Remediation Project

Air Quality Monitoring Criteria

Air Quality Monitoring Criteria

Long Term Air Quality Monitoring

Ambient Air Quality Criteria

- Nova Scotia Environment (Nova Scotia *Air Quality Regulations*)
- Environment and Climate Change Canada (Canadian Ambient Air Quality Standards (CAAQS))
- Ontario Ministry of Environment and Climate Change (Ambient Air Quality Criteria (AAQC) and Air Contaminant Benchmark List (ACB List))

Real-Time Air Quality Monitoring

Fence Line Action Levels (FLAL)

- Short-term exposure levels (Health Canada, US EPA, New Zealand Ministry of Environment)

Independent Ambient Air Monitoring Program
Boat Harbour Remediation Project

Air Quality Monitoring Results

Unit of Measure

Ambient air quality monitoring data is expressed as a concentration, typically using units of micrograms per cubic meter ($\mu\text{g}/\text{m}^3$)

What does this mean?

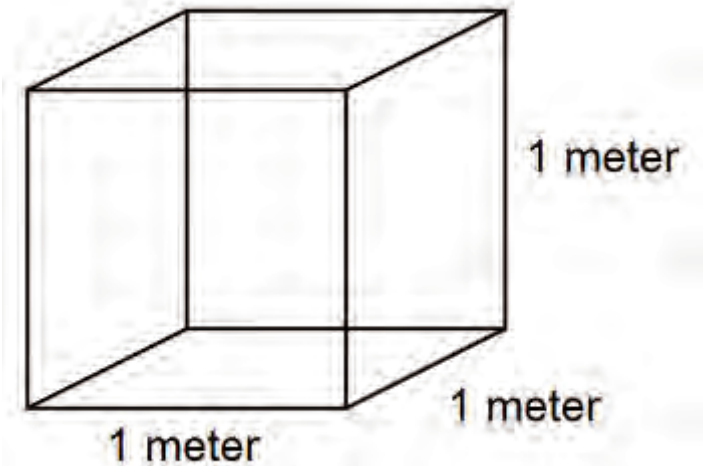
1 gram = 1,000,000 μg

For context 1 gram = 1/4 of a cube of sugar

So 1 μg would not be visible to the human eye

1 cubic meter (m^3) = a three-dimensional cube 1 m by 1 m by 1m

So 1 $\mu\text{g}/\text{m}^3$ = 1 μg of air contaminant per 1 parcel of air the size of a three-dimensional cube 1 m by 1 m by 1m



Air Quality Monitoring Results - Long-Term Monitoring

- Approximately 957 samples were collected and analyzed for 188 air contaminants from August 2018 to August 2019
- Of the air contaminants measured during this time, one contaminant exceeded air quality criteria
- Twenty-two exceedances of Benzo[a]Pyrene (BaP) criteria were measured out of 100 samples collected
- The other 187 air contaminants measured were below ambient air quality criteria



Air Quality Monitoring Results – Long-Term Monitoring

Data Comparison

- Air quality data measured in PLFN from August 2018 to December 2018 was compared to air quality data in Halifax, Hamilton, Montreal, and Saint-Anicet
- Generally data measured in Pictou Landing was lower than in the comparison cities

Toxicology review

- No health concerns were identified based on a review of the data measured in PLFN



Long Term Monitoring Results

Interim Reports and Monthly Reports

Available at:

<https://novascotia.ca/boatharbour/monitoring/>

June 2019 reports:

Daily real-time:

- [June 28 Daily Report \(PDF 1.8 MB\)](#)
- [June 27 Daily Report \(PDF 1.7 MB\)](#)
- [June 26 Daily Report \(PDF 1.8 MB\)](#)
- [June 25 Daily Report \(PDF 1.0 MB\)](#)
- [June 24 Daily Report \(PDF 1.0 MB\)](#)
- [June 22 Daily Report \(PDF 1.9 MB\)](#)
- [June 21 Daily Report \(PDF 1.9 MB\)](#)
- [June 20 Daily Report \(PDF 1.0 MB\)](#)
- [June 19 Daily Report \(PDF 2.0 MB\)](#)
- [June 18 Daily Report \(PDF 1.0 MB\)](#)
- [June 17 Daily Report \(PDF 1.0 MB\)](#)
- [June 15 Daily Report \(PDF 1.0 MB\)](#)
- [June 14 Daily Report \(PDF 1.9 MB\)](#)
- [June 13 Daily Report \(PDF 1.0 MB\)](#)
- [June 12 Daily Report \(PDF 1.0 MB\)](#)
- [June 11 Daily Report \(PDF 1.9 MB\)](#)
- [June 10 Daily Report \(PDF 1.8 MB\)](#)
- [June 7 Daily Report \(PDF 1.9 MB\)](#)
- [June 6 Daily Report \(PDF 1.8 MB\)](#)
- [June 5 Daily Report \(PDF 2.6 MB\)](#)
- [June 4 Daily Report \(PDF 2.7 MB\)](#)
- [June 3 Daily Report \(PDF 1.0 MB\)](#)
- [June 1 Daily Report \(PDF 1.0 MB\)](#)

Interim fixed station:

- [June 26 Interim Report \(PDF 1.5 MB\)](#)
- [June 23 Interim Report \(PDF 1.0 MB\)](#)
- [June 20 Interim Report \(PDF 1.6 MB\)](#)
- [June 17 Interim Report \(PDF 2.1 MB\)](#)
- [June 14 Interim Report \(PDF 1.6 MB\)](#)
- [June 11 Interim Report \(PDF 1.8 MB\)](#)
- [June 8 Interim Report \(PDF 1.7 MB\)](#)
- [June 5 Interim Report \(PDF 1.8 MB\)](#)
- [June 2 Interim Report \(PDF 1.6 MB\)](#)

Monthly:

- [June Fixed Station Report \(PDF 8.6 MB\)](#)
- [June Non-Technical Summary \(PDF 2.4 MB\)](#)

Air Quality Monitoring Results – Real-Time Monitoring

- Monitoring was conducted during both the Fall and Spring Pilot Scale Remediation Programs
- Daily spot-check measurements were collected for four air contaminants
- Occasional exceedances of particulate matter and hydrogen sulphide
- Particulate matter exceedances attributable to road dust and construction activities
- Hydrogen sulphide exceedances not attributable to remediation activities; exceedances were measured while upwind of activity or when no activity was occurring
- Elevated levels quickly dissipated and did not move offsite or require action by site staff to reduce the levels



Air Quality Monitoring Results – Real- Time Monitoring

Real-time monitoring exceedances represent spot-check (< 1-minute) readings exceeding the Project's fence line action levels and do not indicate that longer term averages exceed ambient air quality guidelines or regulations



Real-Time Monitoring Results

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Summary

Long-Term Air Quality Monitoring

- Measured data for 188 air contaminants within the community of Pictou Landing during both background conditions and during remediation activities
- Occasional exceedances of BaP during in the fall of 2018 and winter of 2019; no correlation to remediation activities
- Other air contaminants were measured below ambient air quality criteria
- Data measured in PLFN during 2018 was lower than data measured within other Canadian cities (Hamilton, Montreal and Saint-Anicet)
- No health concerns identified based on 2018 measured data

Summary

Real-Time Air Quality Monitoring

- Occasional, short-term, exceedances of particulate matter and hydrogen sulphide
- Elevated concentrations onsite were not observed off-site at the Fixed Monitoring Station
- Occasional odour immediately adjacent to the geo-tubes, not found to be moving off-site

Questions?