

# Climate Change Considerations for Contaminated Sites – Glace Bay SCH Case Study

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Agenda

- 1. Climate Change Overview**
- 2. Guidance for Federal Sites**
- 3. Case Study – Glace Bay**
- 4. 2023 Changes to data collection**
- 5. Summary**

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# Climate Change Overview



## Climate Change 101

- Climate change refers to long-term shifts in temperatures and weather patterns.
- It's happened before;
- Concerned for increase in extreme weather events:
  - Heat waves
  - Hurricanes
  - Increased precipitation
  - Sea level rise
  - Drought

# Climate Change 101



## 8 homes burn, 1,200 evacuate in Halifax

Bill May 1, 2009 Uncategorized



Photos: CBC

(Update at 1:10 p.m. ET, May 1: CBC news is reporting that the fire is "under control".)

A fire on the outskirts of Halifax, Nova Scotia in Canada has burned 1,000 acres, destroyed 8 homes, damaged 10 others, and required the evacuation of 1,200 residents.

### HURRICANE LEE

Home Public Adv Fcast Adv Discussion Wind Probs Graphics Archive

Wind Speed Probabilities

Arrival Time of Winds

Wind History

Warnings/Cone Interactive Map

Warnings/Cone Static Images

Warnings and Surface Wind

Key Messages

#### Key Messages for Hurricane Lee

**Advisory 32: 5:00 AM AST Wed Sep 13, 2023**

1. Dangerous surf and life-threatening rip currents will affect portions of the northern Leeward Islands, the Virgin Islands, Puerto Rico, Hispaniola, the Turks and Caicos Islands, the Bahamas, Bermuda, and most of the U.S East Coast through much of the week.
2. Tropical storm conditions, heavy rainfall, and high surf are expected to impact Bermuda beginning late tonight or early Thursday, and a Tropical Storm Warning is in effect for the island.
3. There is an increasing risk of wind, coastal flooding, and rain impacts from Lee in portions of New England and Atlantic Canada beginning on Friday and continuing through the weekend. Watches may be required for portions of these areas later today or tonight. Due to Lee's large size, hazards will extend well away from the center, and there will be little to no significance on exactly where the center reaches the coast.

**Most Likely Arrival Time of Tropical Storm Force Winds**

For more information go to [hurricanes.gov](https://hurricanes.gov)

# Climate Change 101



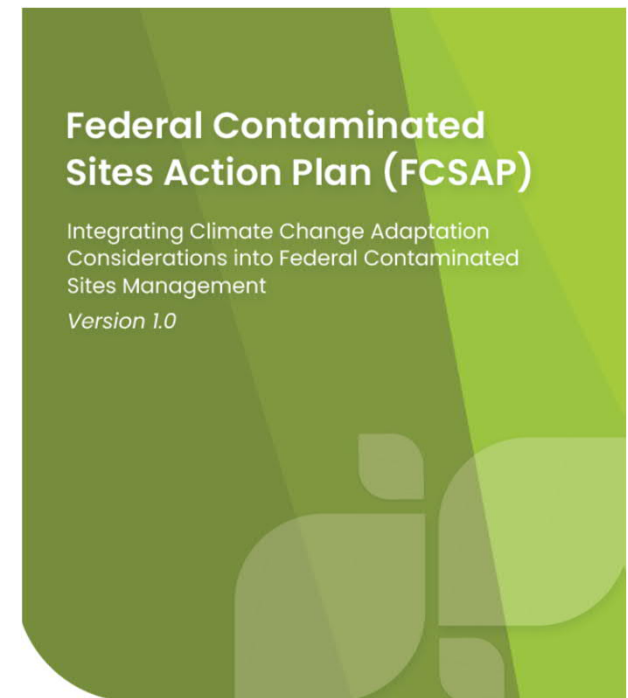
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# Guidance for Contaminated Sites



## FCSAP (2022) – Why?

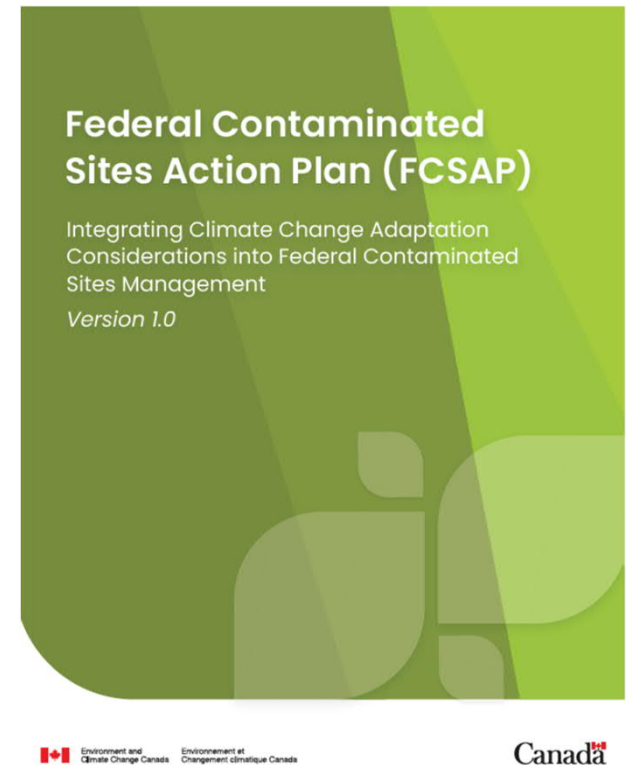
- Identifies how CC should be incorporated in the 10-step process.
- Focuses on climate change adaption;
- Identifies the factors of climate change which may affect the assessment and R/RM strategies.





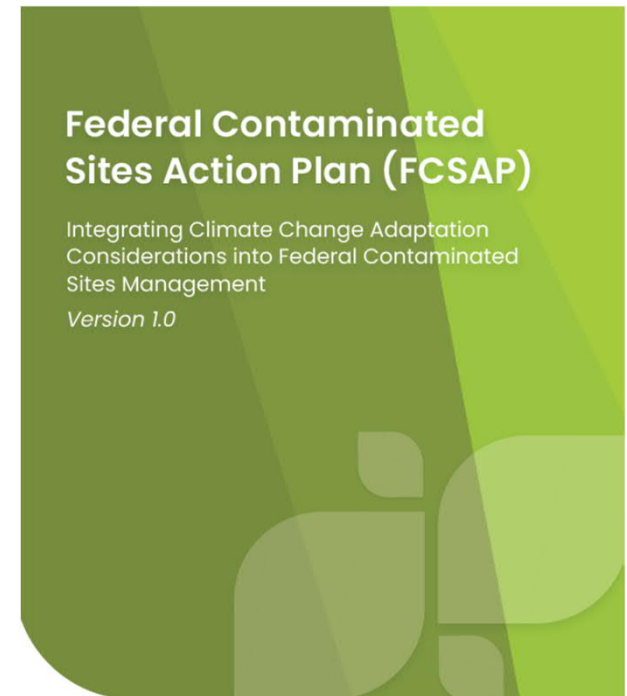
## FCSAP (2022)- How

- Identifies where climate data can be obtained.
- Identifies where the USEPA and ITRC approaches can be found.
- The various emissions scenarios and climate change models.
- Time frames for assessment (i.e. near term, mid term, long term)



## FCSAP (2022) How- Steps 2-6

- What climate hazards are relevant for the site?
- What are the climate projections for the site?
- How might the hazards influence contaminant distribution, exposure pathways and receptors?



## Stantec (2023)

- SCH climate vulnerability screening
- Provides a matrix-based approach to assess the exposure pathways and climate hazards at contaminated sites



DFO SMALL CRAFT HARBOUR  
WATERLOT CLIMATE VULNERABILITY  
SCREENING

GUIDANCE DOCUMENT

February 3, 2023

Prepared for:  
PSPC

Prepared by:  
Stantec Consulting Ltd

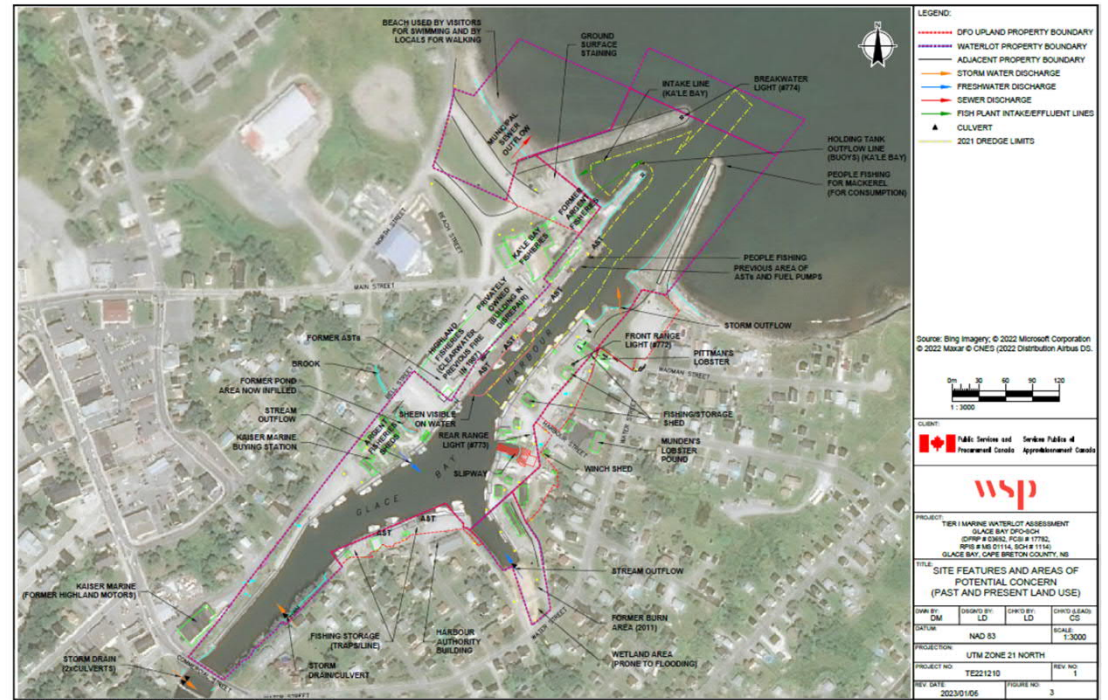
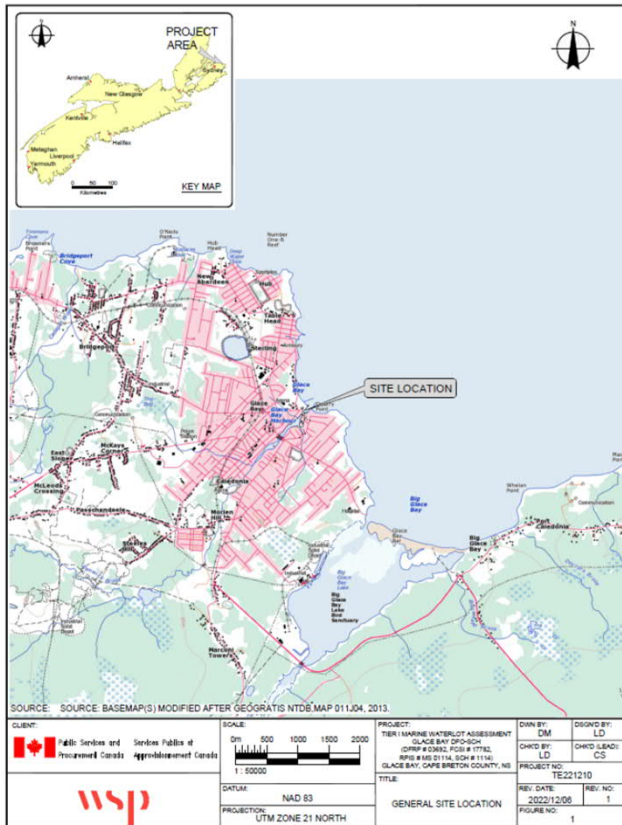
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# Glace Bay SCH



# ESA

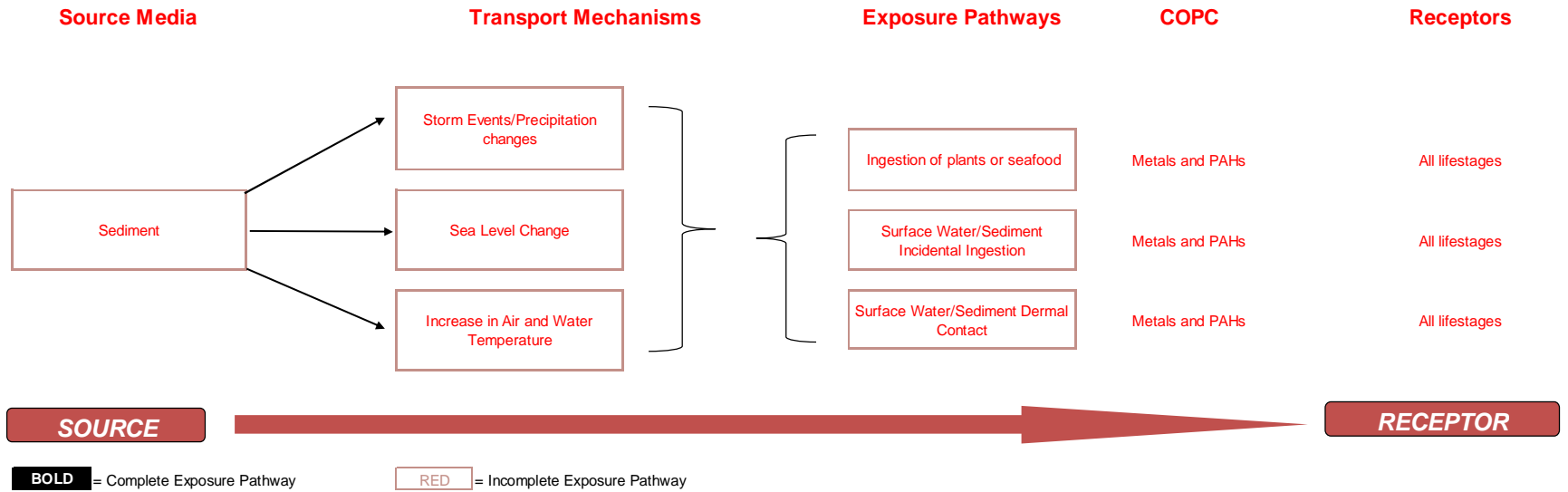


## Climate Change Considerations

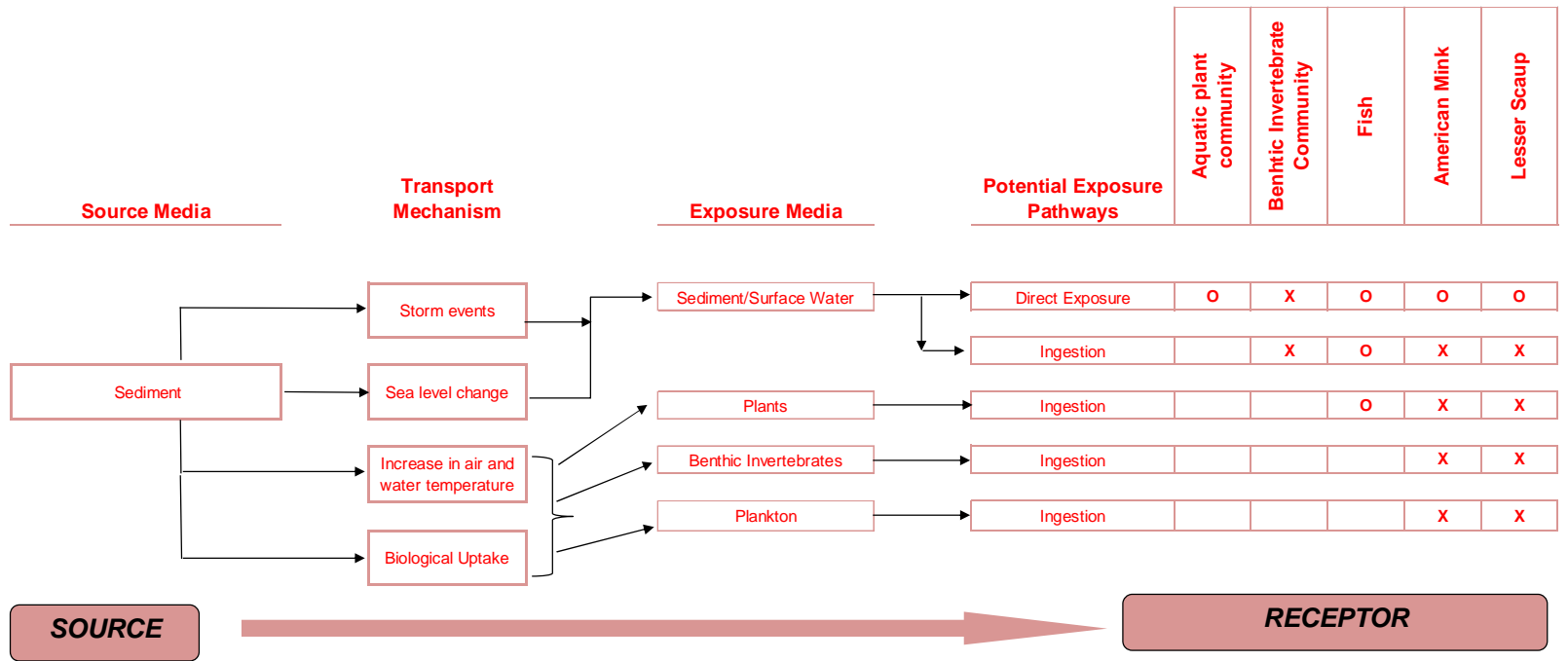
- SCH climate vulnerability screening, 7 inputs into the SCH waterlot!
- Provides a matrix based approach to assess the exposure pathways and climate hazards
- The matrix and identified that:
  - Storm events,
  - Sea level change;
  - Increase in air/water temperature;
  - Could cause an increased exposure from increased bioaccumulation and sediment contact.

CC

# Climate Change Considerations HHRA CSM



# Climate Change Considerations ERA CSM



Notes:

X - Indicates a potentially complete exposure pathway for quantitative analysis.

O - Indicates a potentially complete exposure pathway for qualitative analysis.



## Climate Change Conclusions

- It was recommended that the Harbour authority continue to monitor how the Harbour was used by people.
- Several locations of the DFO waterlot were appropriate for long term monitoring to evaluate the potential effects of climate change.

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# How we are Integrating CC in Steps 2-6



## Climate Change Considerations

- SAR surveys conducted on sites which are candidates for long term risk management.
- Adding questions on climate change to the public interview process.
- Baseline data on habitat for future timeline considerations.

## Summary

- Sites considering R/RM for FCSAP require a CC assessment
- Climate Change hazards require site specific considerations for how they can alter fate, transport and subsequent exposure by receptors.
- Climate data is available from the government of Canada to evaluate the potential changes at the site and magnitude of the hazards.
- In many cases, sites with RM will require some form of LTM.

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Questions?

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