



The Province of British Columbia's Approach to CONTINUOUS WATER-QUALITY SAMPLING PROGRAMS

Part 1 – Field and Lab Methods

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Ideal Program

- Coordinated / Centralized
- Integrated
- Consistent
- Quality data
- Web-based, real-time

BC Situation

- Forest Renewal BC / FIA (Forest Investment Account)
 - Community Watersheds
 - “Results Based” / Professional Reliance
- Past Practise

“the water quality probes and data loggers used in these studies failed to generate usable data due to vandalism, as well as lack of maintenance, lack of calibration and general trouble shooting by field staff.

There is no evidence that the equipment installed was not capable of performing as anticipated”

Present sites

Purpose / Applications

- Monitor logging impacts
- Develop Water Quality Objectives
- Aid in development of watershed plan
- Trend monitoring and climate change
- Monitor Mountain Pine Beetle impacts
- Taste & Odour precursor study
- Post wildfire study

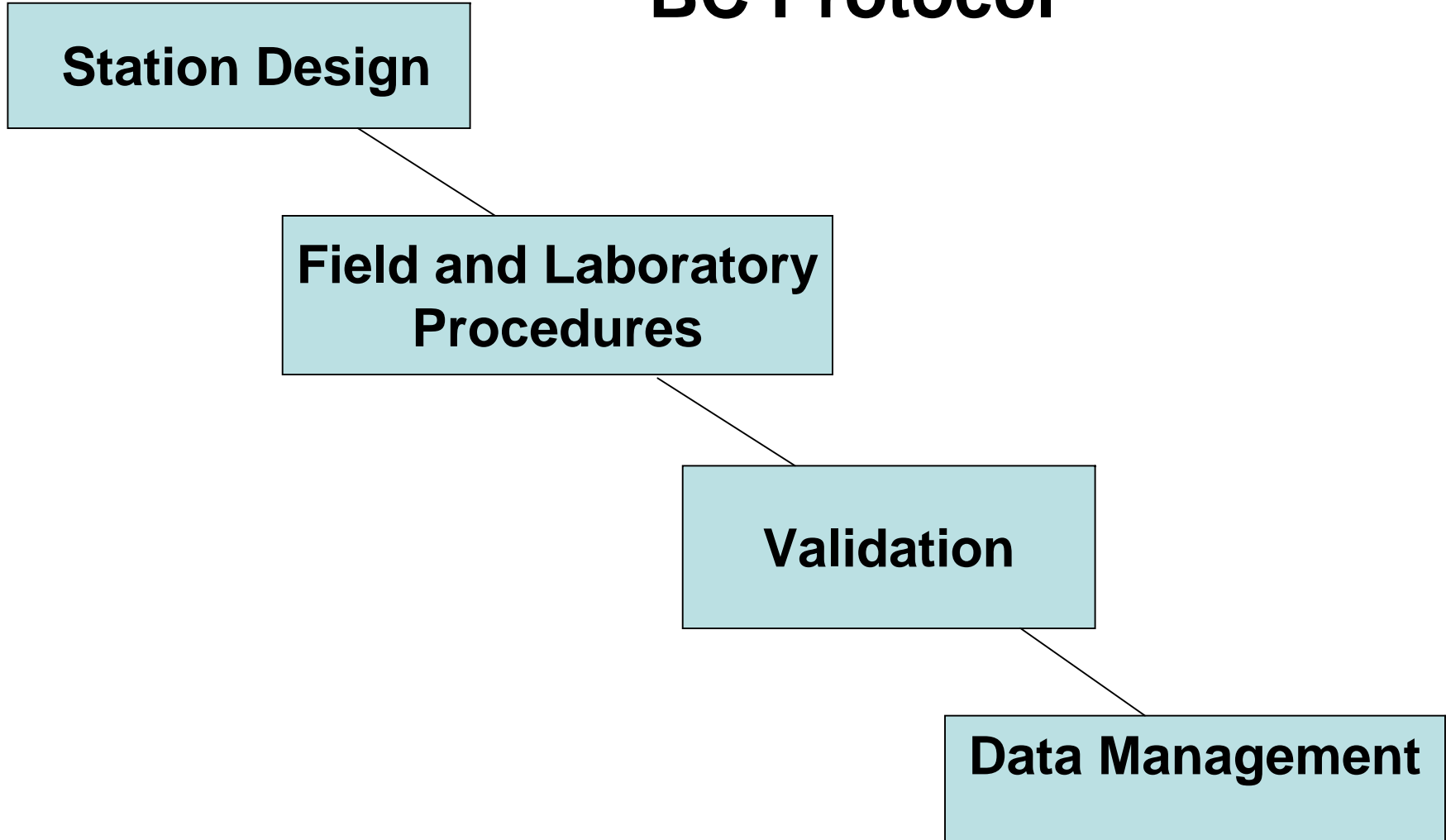
BC Protocol

Station Design

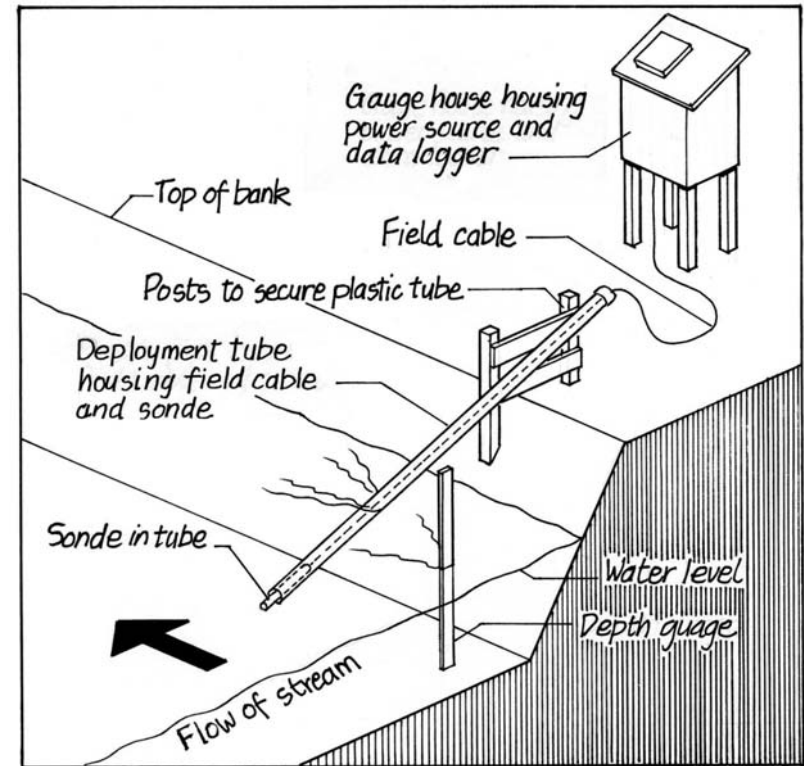
**Field and Laboratory
Procedures**

Validation

Data Management



Station Design



Typical Sensor Lifespans

Temperature	5+ years
Conductivity	5+ years
pH / ORP	1-3 years
Dissolved Oxygen	3-5 years
Turbidity/ Chlorophyll	5+ years
ISE's	months -1yr

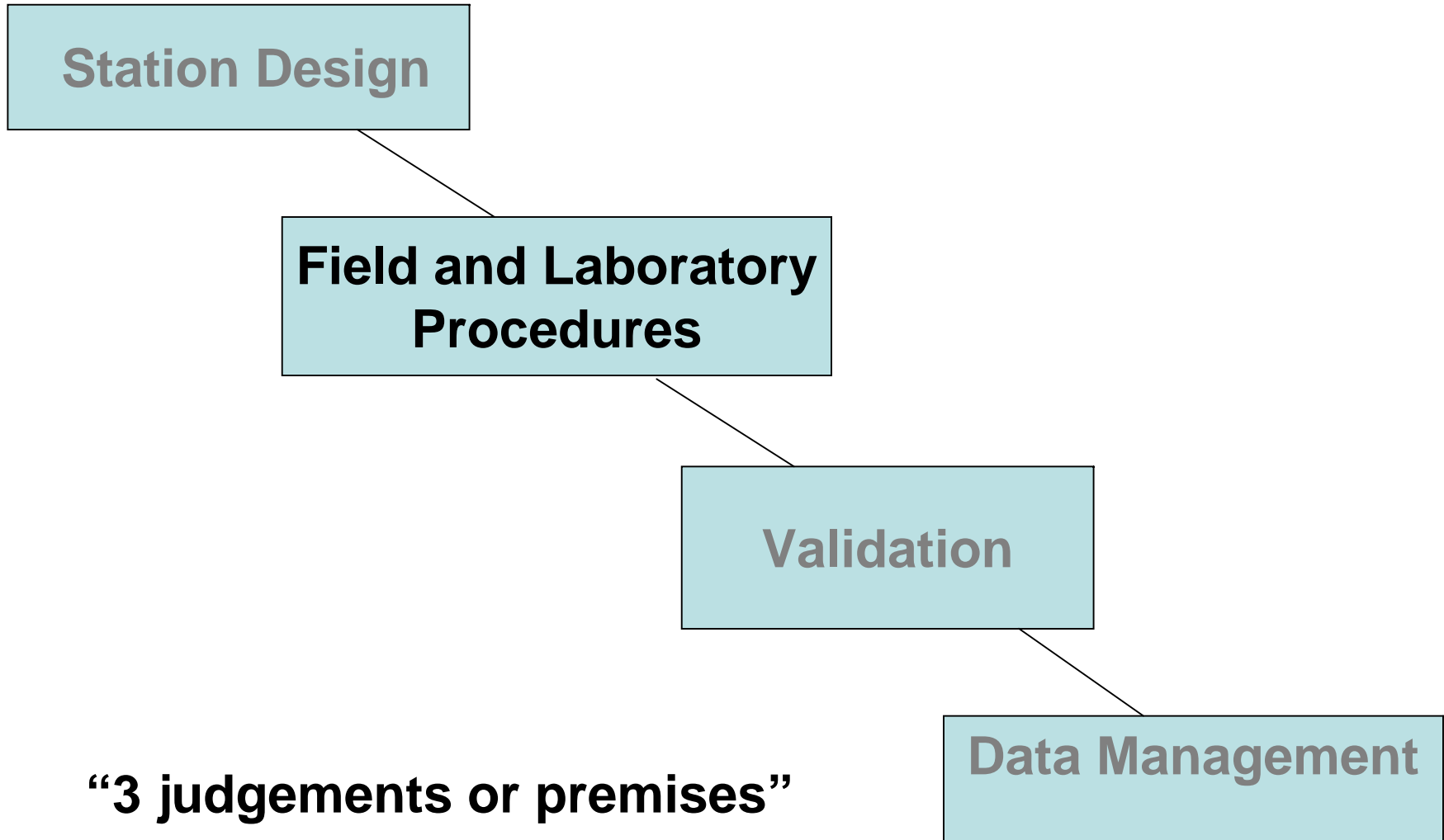
Station Design

**Field and Laboratory
Procedures**

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“3 judgements or premises”



Field and Laboratory Procedures

Field Visit



Priority #1: Ensure that the sensors are properly serviced

Field and Laboratory Procedures

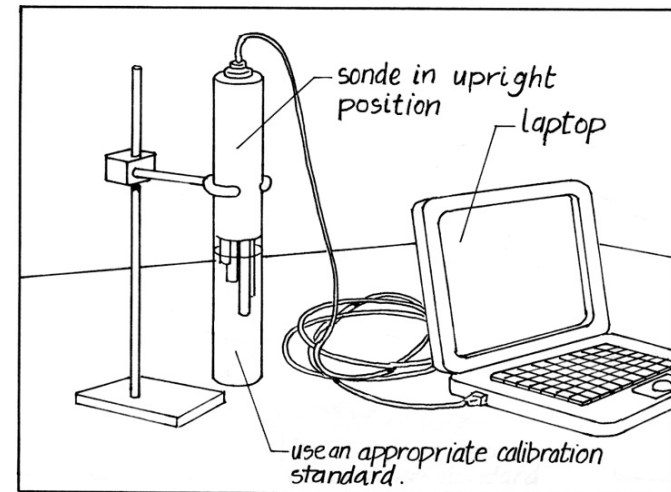
Only One Sonde per site



Inspect



Clean



Calibrate

BC Field Conditions - Need for Stable Environment



BC Field Conditions - Need for Stable Environment



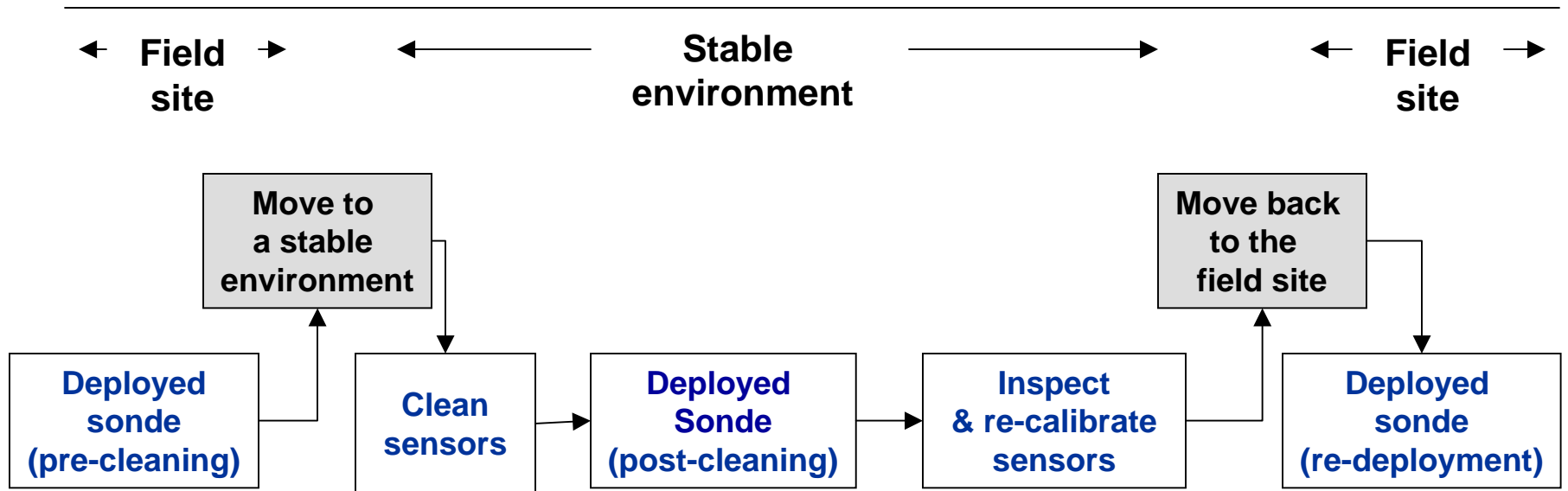
STABLE ENVIRONMENT

- Stable temperature
- Bench or table
- Storage facility for calibration standards and water
- Access to water and cleaning facilities
- Good lighting

Stable Environment

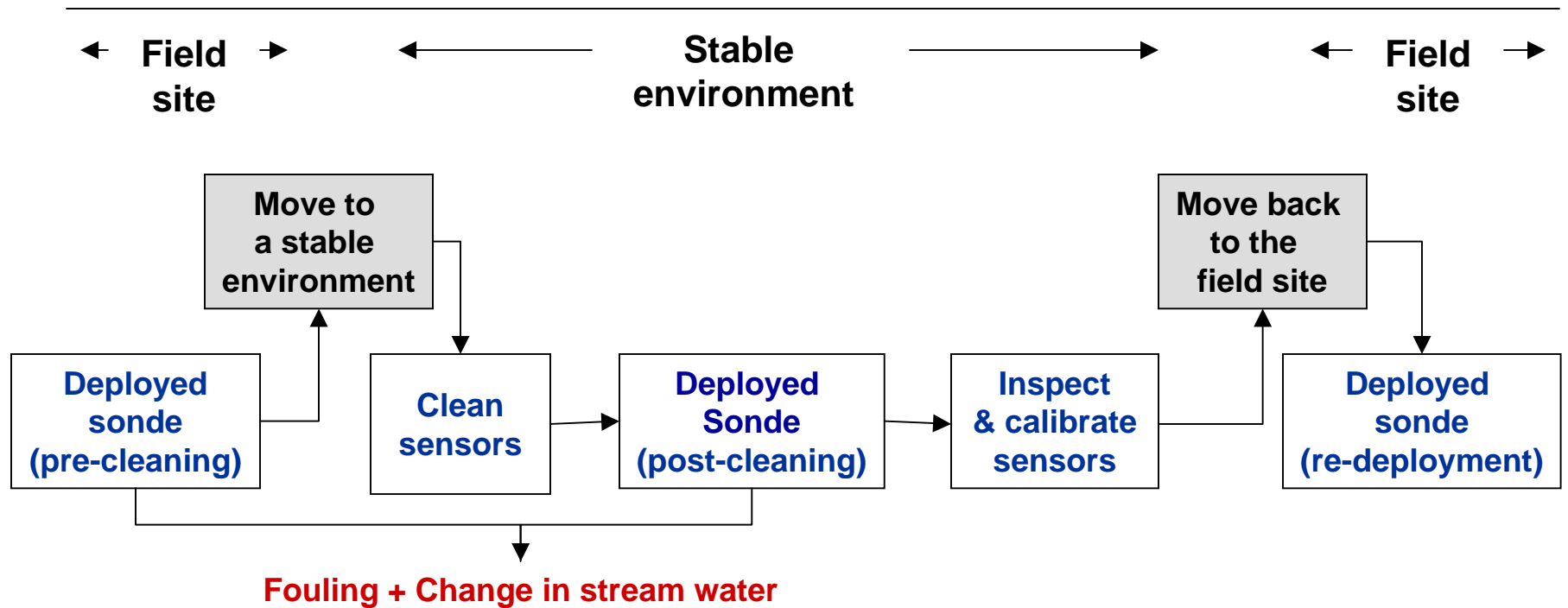


Recommended Protocol in BC - 1

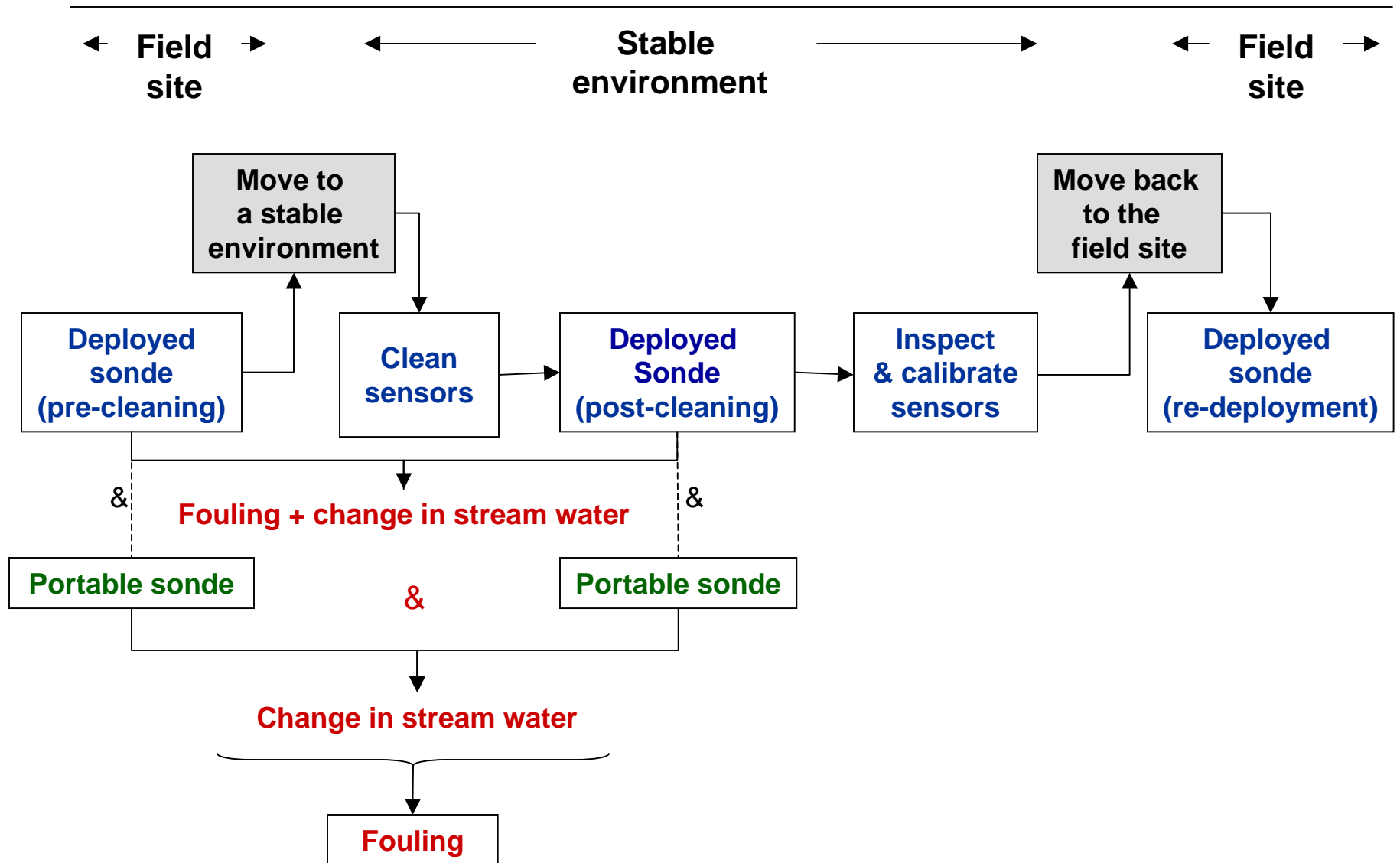


- ✓ a fresh sample of stream water is collected
- ✓ Sonde is transported separately
- ✓ Stream water used for both measurements

Recommended Protocol in BC - 2



Recommended Protocol in BC - 3

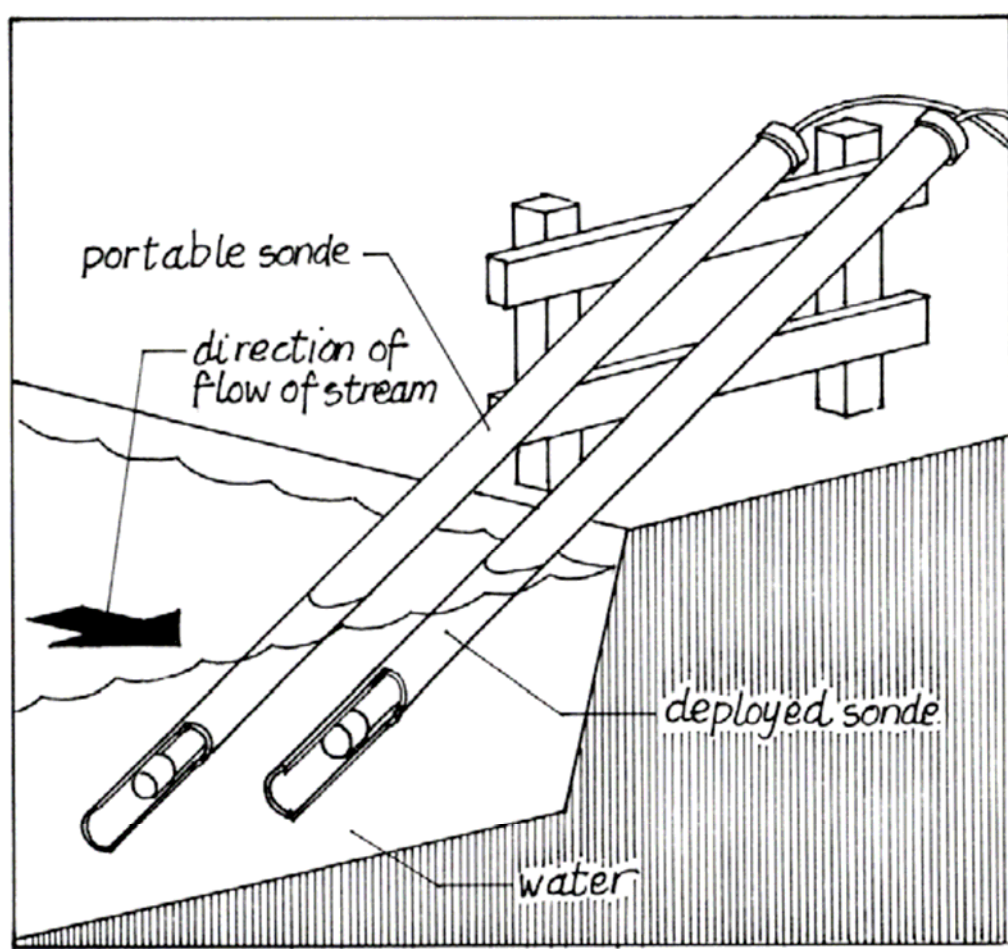


Minimal disturbance of the deployed sonde before cleaning

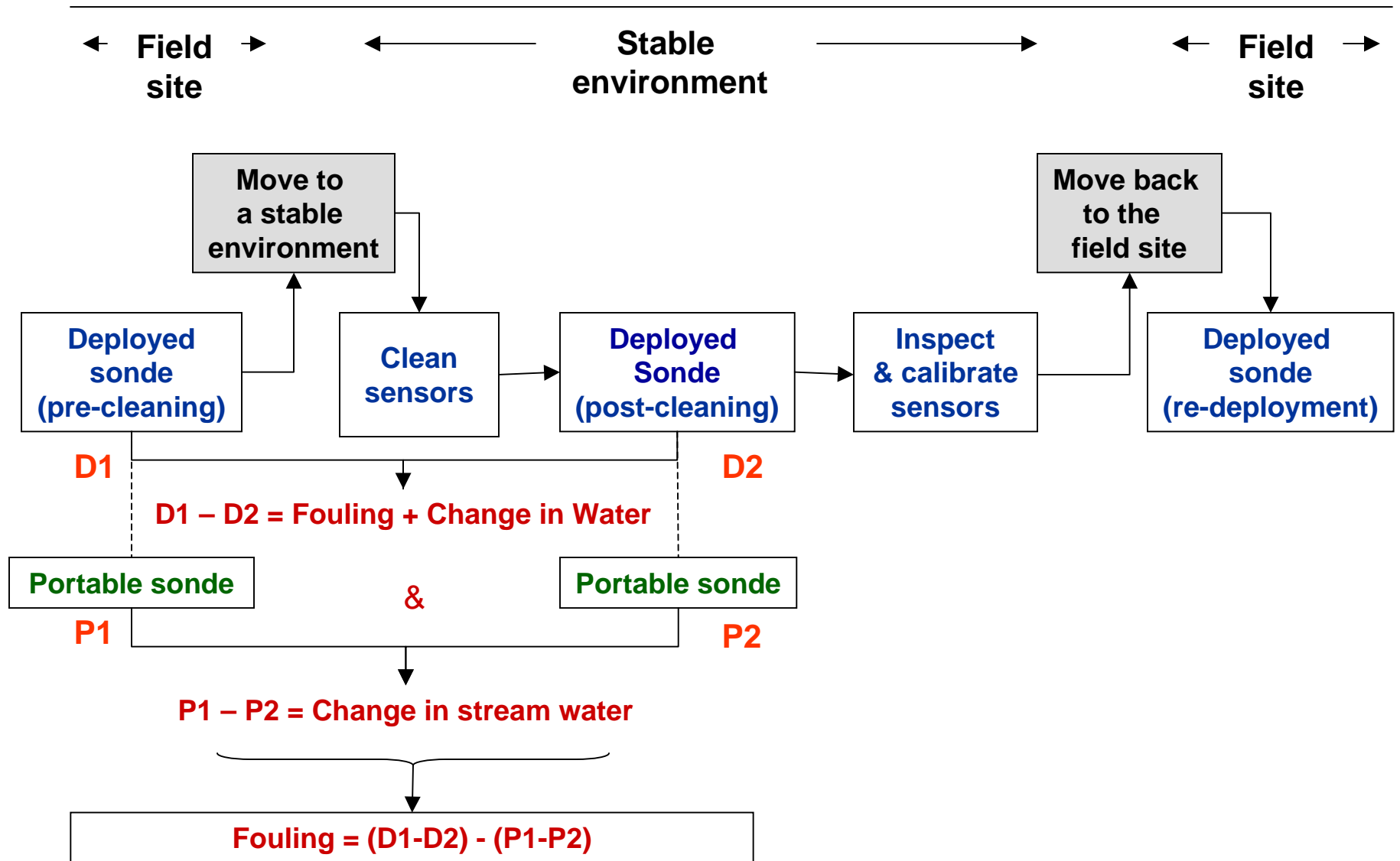


Portable sonde – in 2nd tube

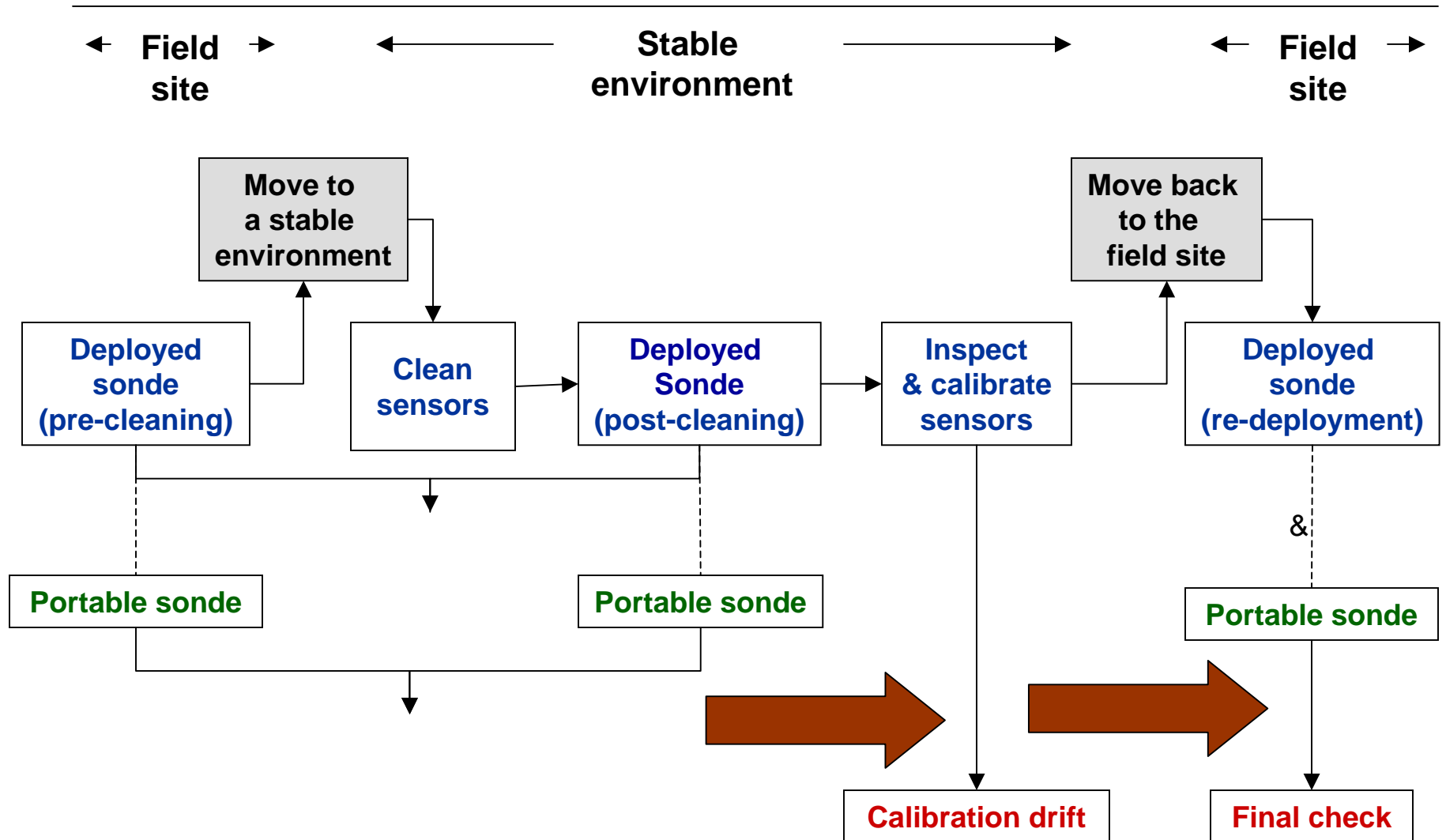
Deployed sonde



Recommended Protocol in BC – 4 Fouling Calculations



Recommended Protocol in BC - 5



Potential Limitations

- One Sonde; No replicates
- Data Gaps - Moving to stable environment

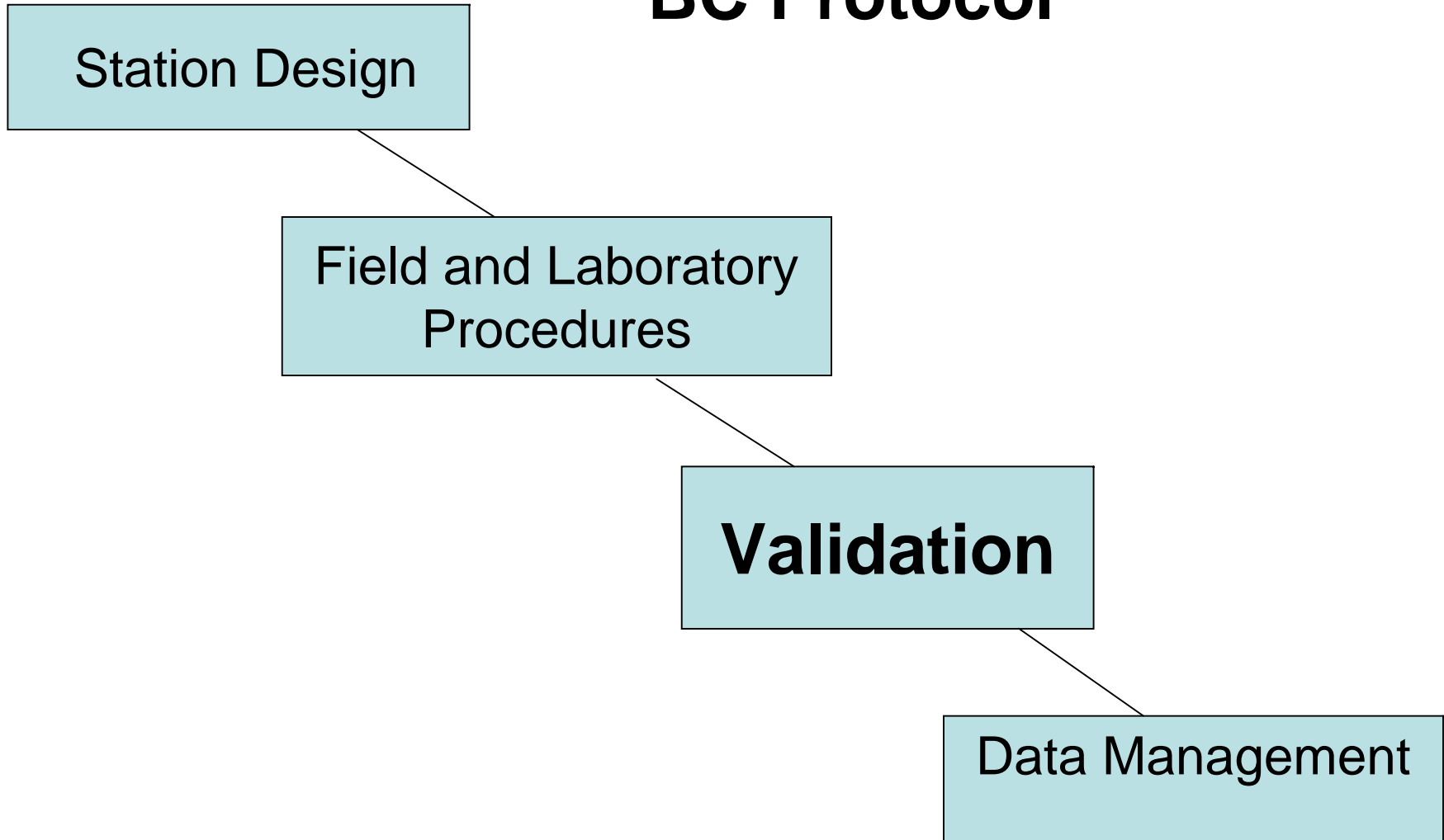
BC Protocol

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**BC Protocol
Website:**

<http://ilmbwww.gov.bc.ca/risc/pubs/aquatic/index.htm>