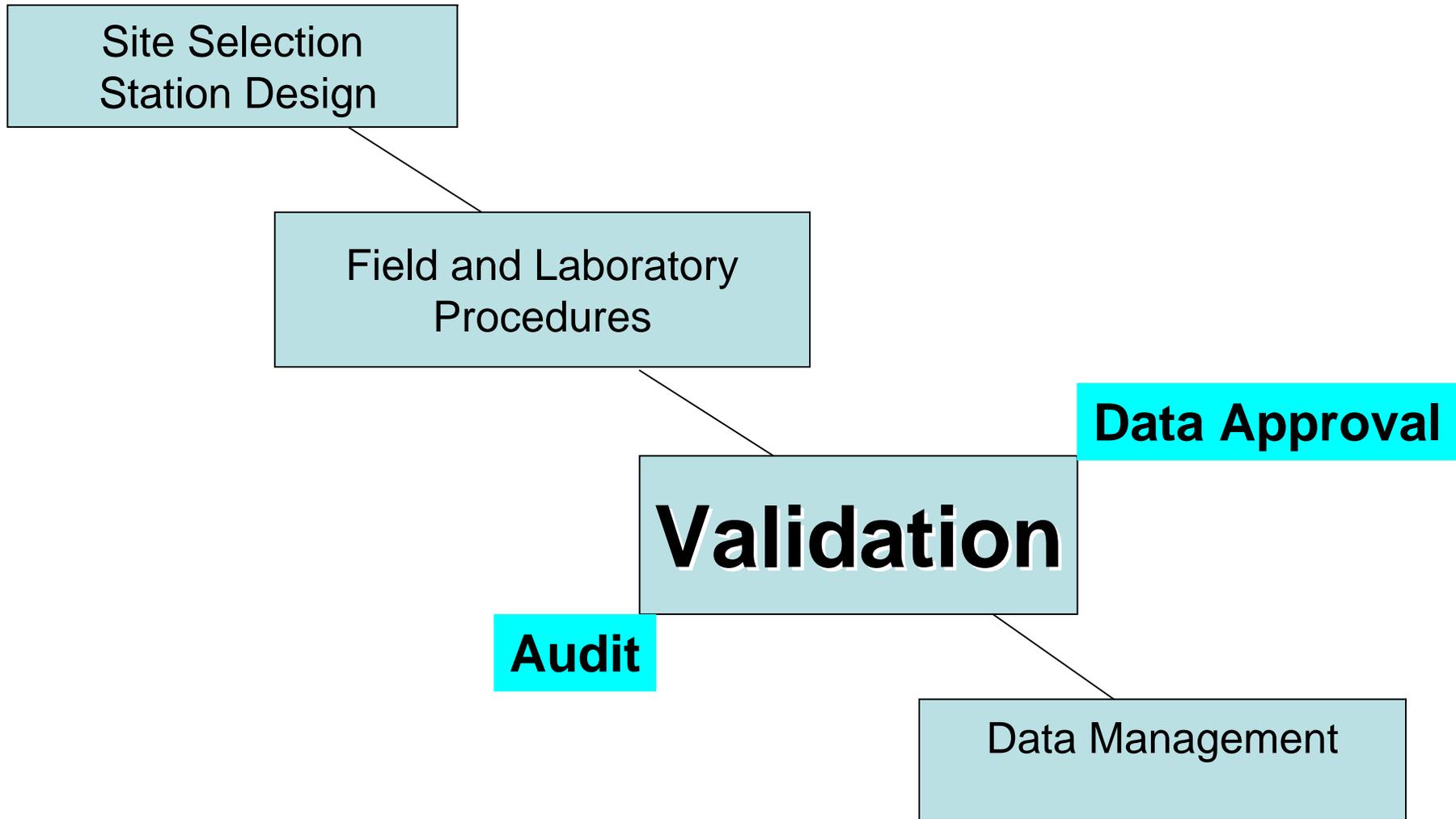# The Province of British Columbia's Approach to CONTINUOUS WATER-QUALITY SAMPLING PROGRAMS

Part 2 – Quality Assessment

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Validation Steps

1. **Forms** – ensure they are complete
    1) Station Design
    2) Station Log & Maintenance
    3) Portable Sensors Specifications
    4) Field & Lab Data

VALIDATION

Validation Steps

2. Determine the Data Grades

(based on:

Sensor Error = Fouling + Calibration Drift)

VALIDATION

Data grades are based on multiples of accuracy

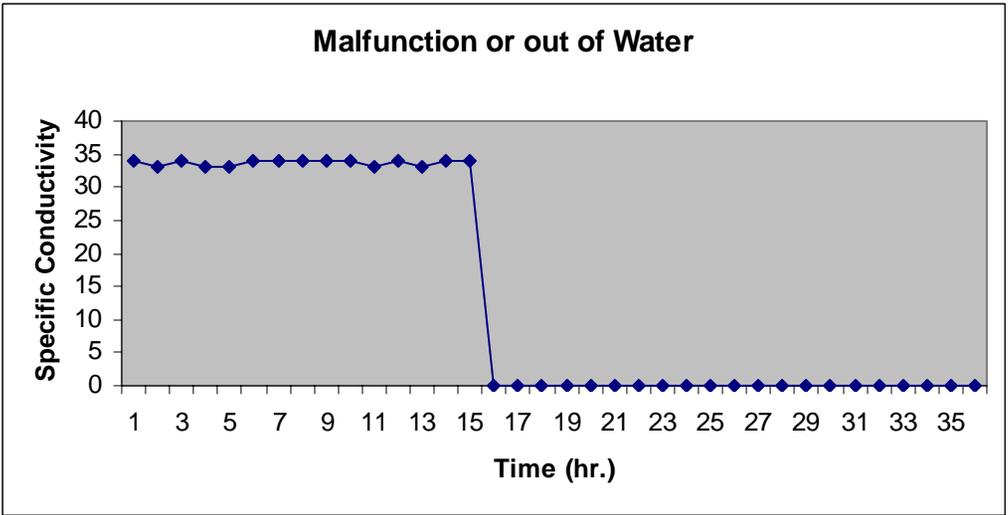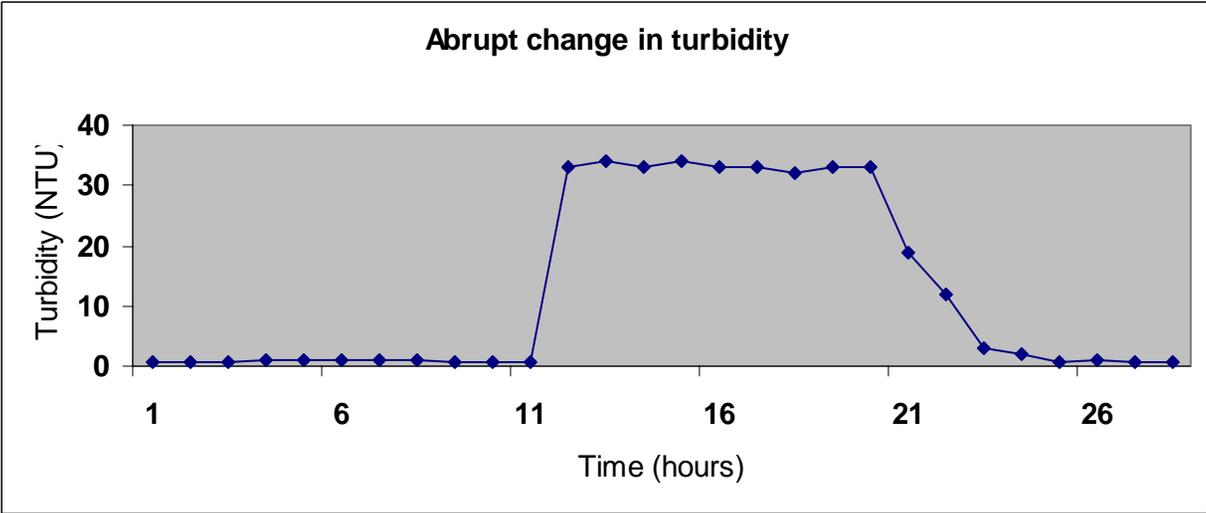| Parameter	Data Grade Criteria				
	Excellent	**Very Good**	**Good**	**Fair**	**Poor**
Temperature	≤ ± 0.2 °C	> ± 0.2 to 0.4 °C	> ± 0.4 to 0.6 °C	> ± 0.6 to 0.8 °C	> ± 0.8 °C
Specific conductance (≤ 100 µS/cm)	≤ ± 3µS/cm	> ± 3 to 6 µS/cm	> ± 6 to 9 µS/cm	> ± 9 to 12 µS/cm	> ± 12 µS/cm
Specific conductance (> 100 µS/cm)	≤ ± 3% of reading	> ± 3 to 6% of reading	> ± 6 to 9 % of reading	> ± 9 to 12 % of reading	> ± 12 % of reading
pH	≤ ± 0.2 pH units	> ± 0.2 to 0.4 pH units	> ± 0.4 to 0.6 pH units	> ± 0.6 to 0.8 pH units	> ± 0.8 pH units
Turbidity (≤ 40 NTU)	≤ ± 2 NTU	> ± 2 to 4 NTU	> ± 4 to 6 NTU	> ± 6 to 8 NTU	> ± 8 NTU
Turbidity (> 40 NTU)	≤ ± 5 % of reading	> ± 5 to 10% of reading	> ± 10 to 15% of reading	> ± 15 to 20% of reading	> ± 20% of reading
Dissolved oxygen (≤ 4 mg/l)	≤ ± 0.2 mg/L	> ± 0.2 to 0.4 mg/L	> ± 0.4 to 0.6 mg/L	> ± 0.6 to 0.8 mg/L	> ± 0.8 mg/L
Dissolved oxygen (> 4 mg/l)*	≤ ± 5 % of reading	> ± 5 to 10% of reading	> ± 10 to 15% of reading	> ± 15 to 20% of reading	> ± 20% of reading

VALIDATION

Validation Steps

3. **Compare Data**

   In situ vs bucket

   Possible reasons for differences

4. **Examine the sampling period data**

Malfunction or out of Water

Specific Conductivity vs. Time (hr.)

Abrupt changes

Abrupt change in turbidity

Turbidity (NTU) vs. Time (hours)

DO calibration drift
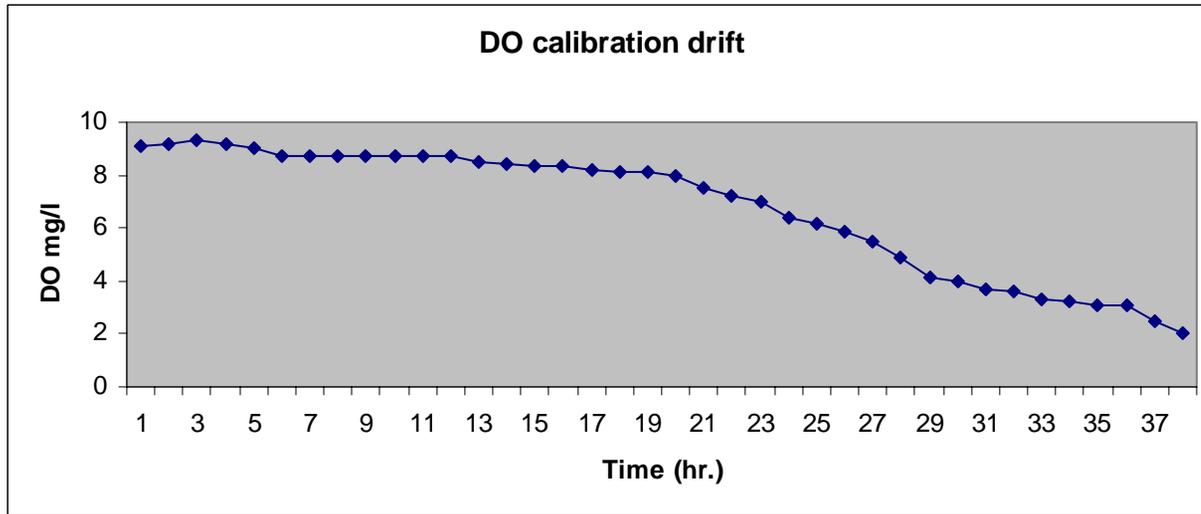
Prolonged gradual change

Prolonged Change in Turbidity

Prolonged constant change

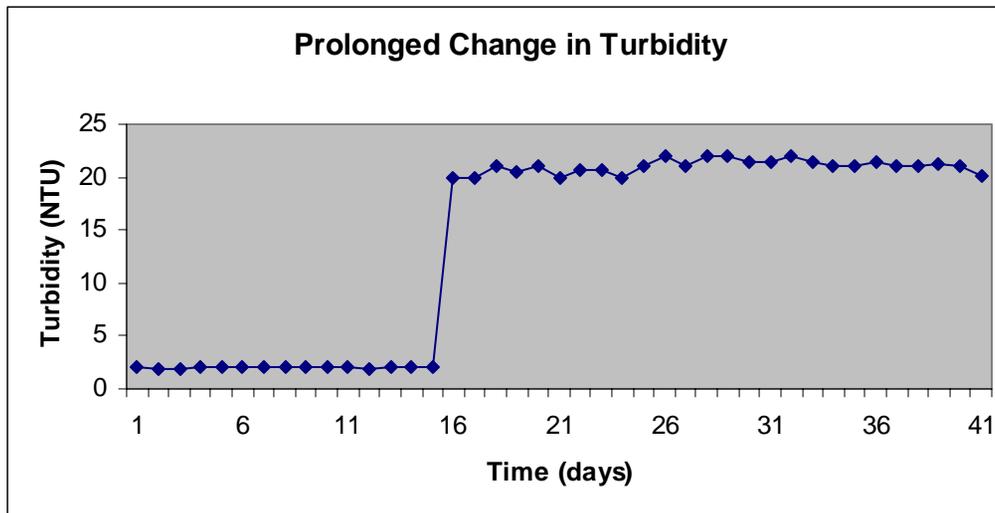VALIDATION

Validation Steps

5. Flag unrealistic data

Determine % Flagged

VALIDATION

Data Grades and Sensor Performance

1. Quality of the sampling period data

2. Accuracy of re-deployed sondes

3. Assess length of sampling period

Data Management

DATA REPOSITORY

General Station Information (RISC Forms)
- Station Design,
- Portable Sonde Specifications
- Station Log & Maintenance Record

Sampling Period Data (Data Logger)

Field & Laboratory Data (RISC Forms)

Flag Unreasonable Data

Determine Data Grade (sensor error)

Data Stored & Released with Data Grade

Post-release Processing & Analyses