# Affordable Frequent Conductivity Monitoring

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# Goal:

## Provide volunteers with a personal meter to allow frequent conductivity readings during winter months


**Not acceptable!  Common ohm-meters will not give accurate water conductivity. AC readings needed.**

**These generic $10-20 conductivity meters are not temperature compensated and are grossly non-linear.**

**Example of an acceptable meter. Several brands are available that are suitable.**

- **SPC temperature compensation**

- **Units µS/cm (microSiemens/cm)**
- **Resolution 1 µS/cm**

- **TDS feature not required**

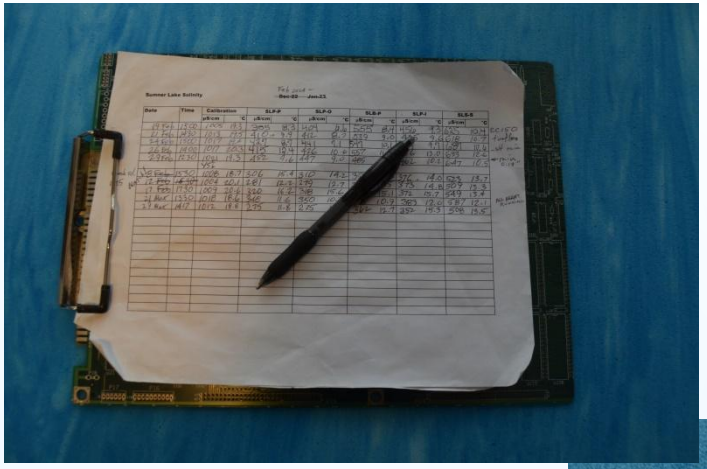
- **Estimated cost < $100**
- **Calibration and battery costs low**
- **Calibrate with a shot glass of fluid**

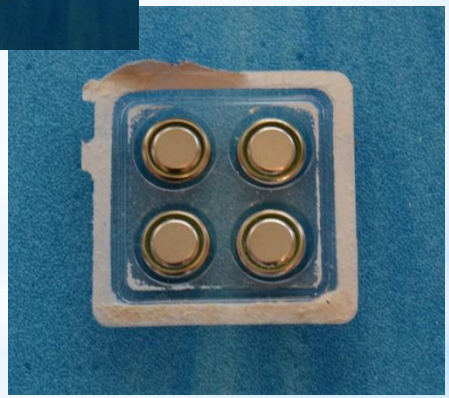
- **High linearity required over expected range. Is the range sufficient for your needs?**


**Acceptance test: verify linearity with multiple calibration solutions for a new meter type.**

**Maintain calibration using accepted standard for your organization. We use 1000 µS/cm.**

**Check calibration frequently.**





**Other Equipment …**

**Weighted sample cup/ice breaking tool (made from scrap)**

**Means to record observations**

**Change batteries annually or as needed**

# Maintenance …

Check calibration. If off:

- Low readings: shake bubbles off contacts, wipe contacts if dirty
- High readings: try fresh calibration fluid
- Keep solution tightly sealed
- Battery OK?
- Alter calibration only if still off after the above

I recalibrate if off by >2.5% at 1000 µS/cm

Rarely need to alter calibration

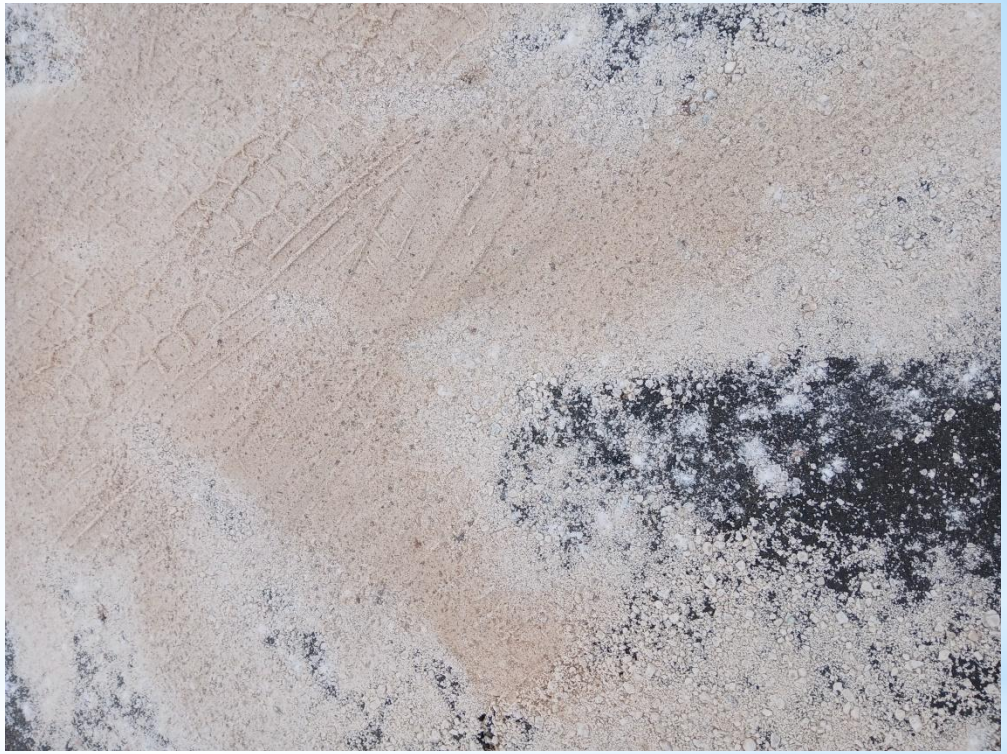
New calibration fluid annually (about $30)

Change batteries annually or as needed (about $5)

**Sampling is straightforward.**

**Breaking ice may be required.**

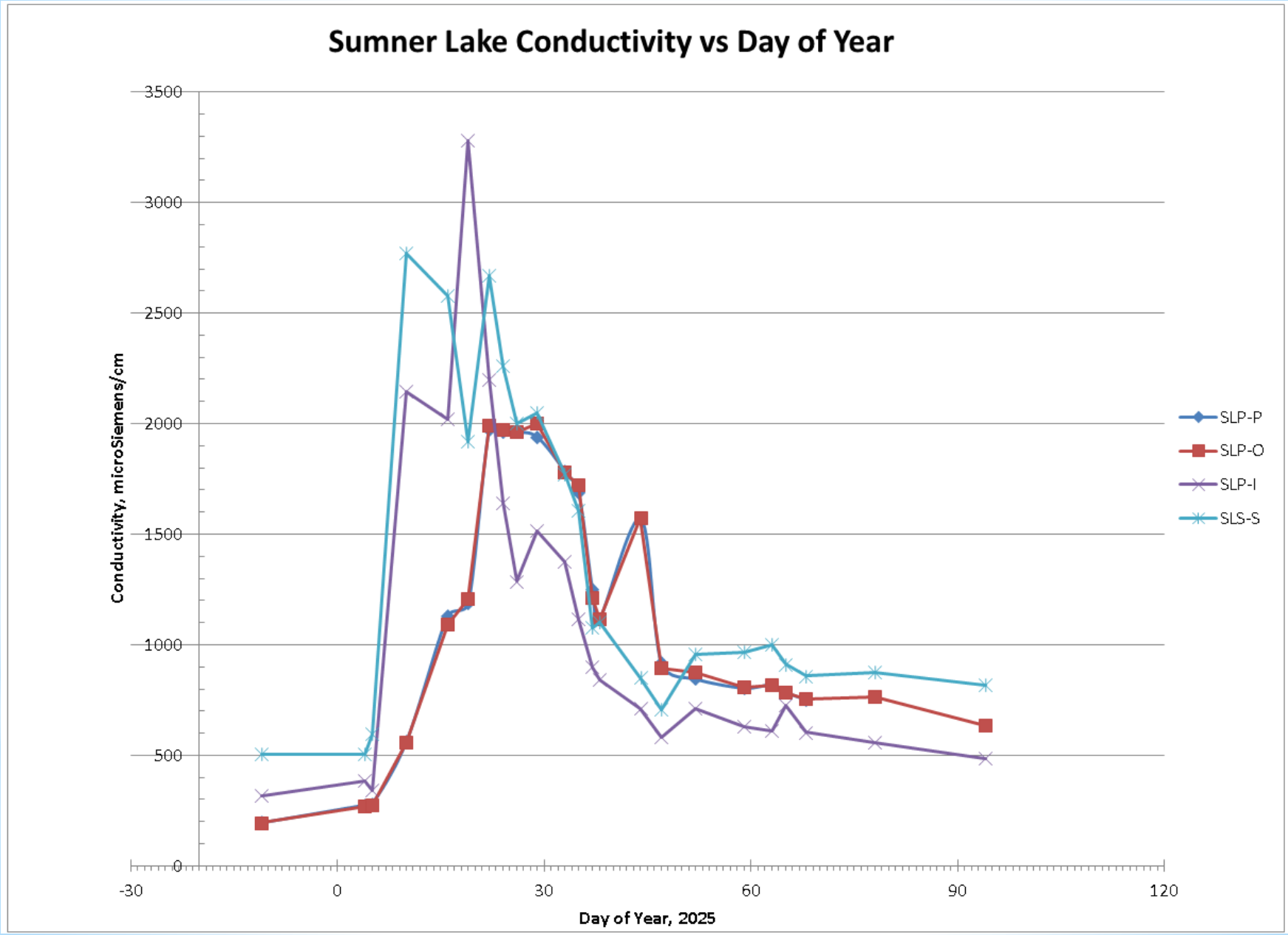
**Allow meter to stabilize. Model shown will flash µS/cm until reading steady. Allow 10 extra seconds.**

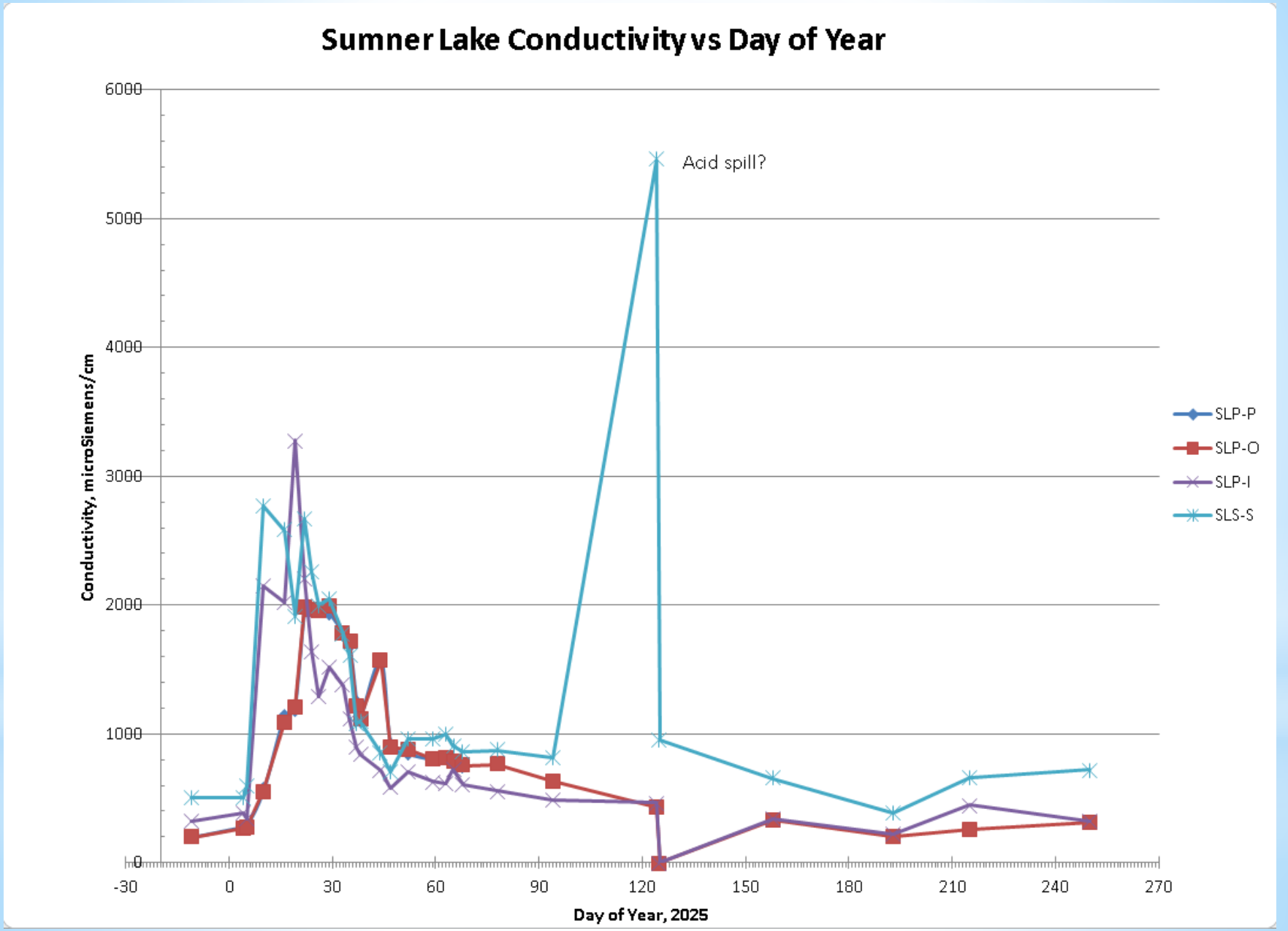


**Establish normal baseline before winter**

**Increase frequency of readings when snow/ice expected**

**Readings frequently as applied road chemicals disperse**


Sumner Lake Conductivity vs Day of Year
Conductivity, microSiemens/cm
3500
3000
2500
2000
1500
1000
500
0
-30
0
30
60
90
120
Day of Year, 2025
SLP-P
SLP-O
SLP-I
SLS-S


Sumner Lake Conductivity vs Day of Year
Acid spill?
Conductivity, microSiemens/cm
Day of Year, 2025
SLP-P
SLP-O
SLP-I
SLS-S
6000
5000
4000
3000
2000
1000
0
-30
0
30
60
90
120
150
180
210
240
270

# Once A Month Is Not Enough!

## Peaks may last less than a week