



SURFACE WATER QUALITY STEWARDSHIP TOOLBOX

Steps to Establishing a Community Watershed Monitoring Network

Some regions have developed networks for community watershed monitoring involving numerous partners (e.g., water stewardship groups, Indigenous groups, various levels of government, and industry). The lessons learned from existing networks that include a Ministry of Environment and Climate Change Strategy (ENV) partnership are summarized here for consideration by all potential partners in any collaborative monitoring initiative. This way, newly forming partnerships with similar water monitoring goals and partners have some guidance to follow when starting up a new network. Order in which steps are listed is guidance only, and some steps can occur simultaneously.

1. Determine goals for new monitoring network
 - a. why do you need a network?
 - b. what will the data be used for?
 - c. what resources do you need to run a network and process the data it produces?
2. Develop an integrated approach (involving multiple interested parties from the start for coordinated development of programs) to multiparty data gathering and sharing. Outreach, project planning, and implementation should target local/regional populations for best chance at building long-term support in watersheds of interest.
3. Determine potential funding sources (e.g., tax base, grants) and their sustainability (does it require proposals to be written annually or can it be supported by a local government program). Note that support by local government can take time (years) to get; it usually requires strong business cases to be made, voter support, and support by council. Sometimes new projects can be incorporated into existing business plans and sometimes a lengthy process is needed to attempt to secure support of a new project. It may be worthwhile to find an already established network in the area and find out if collaborative work can be done.
4. Determine roles and responsibilities of partners. Get commitments in writing. Make a work plan.
 - a. Roles may include:
 - i. Data collector – volunteers from a stewardship group that do the sampling
 - ii. Project lead – stewardship group lead contact who regularly liaises with outside organizations and organizes volunteers
 - iii. Program coordinator – local government or stewardship group or other organization representative that is coordinating monitoring done by multiple groups; often in charge of equipment inventory, training and data entry
 - iv. Subject matter expert support (ENV) – provides train the trainer knowledge on methodologies, protocol, and quality assurance/quality control (QA/QC); participates in or reviews data analysis and reports; conducts audits, performs database management

5. Review watersheds within specified area (e.g., regional district) currently monitored by various groups (e.g., Indigenous groups, local government, stewardship groups, BC Conservation Foundation, ENV, Environment Canada, local university programs). This should occur the year before monitoring as it can take some time to compile information and discuss.
 - a. List all sites, location and access information, suitability of data, note where sampling at chosen locations might be occurring by more than one organization, note those with data summary reports.
 - b. Choose sites to best monitor for impacted or reference condition (area with least impact from human activities), with consideration of
 - i. safety,
 - ii. meeting the project goals and objectives,
 - iii. priority catchments within watersheds,
 - iv. continuity of data from sites monitored previously,
 - v. accessibility during all seasons,
 - vi. private property access (agreements in place), and
 - vii. logistics of sampling.
 - c. Ground-truthing of sites may need to occur by ENV for determination of suitability.
6. Determine interested stewardship groups / volunteers and obtain contact information.
7. Determine stewardship group watersheds of interest and how many sites they may have capacity to sample (upper realistic limit logistically is about 6 sites per group).
8. Determine eligible expenses for reimbursement (e.g., mileage, food, etc.) based on funding criteria.
9. Obtain appropriate types and numbers of sampling equipment and calibration standard solutions (a large order can take several weeks). Funds for available equipment may determine how many groups can participate.
 - a. Equipment should ideally be consistent with that used by the Ministry for other programs. More information on recommended equipment can be found in the BC Field Sampling Manual (<https://www2.gov.bc.ca/gov/content/environment/research-monitoring-reporting/monitoring/laboratory-standards-quality-assurance/bc-field-sampling-manual>)
 - b. Having extras of some types of equipment is useful if technical difficulties arise and something needs to be sent back for maintenance. Short term equipment loans or contingency funds for rental could also be options.
 - c. Consider costs of buying vs. renting equipment for the timeframe equipment are needed.
10. Organize an information session for interested groups to present on commitments and processes of a water quality sampling program. This should include partnership participation by an ENV representative and should involve demonstration of/training in equipment use and possibly results from other similar programs. To determine interest, a handout outlining the sampling program is useful.
11. Confirm stewardship group commitment to program. Written agreements among collaborators are often a good idea, especially for data sharing. Ensure a clear lead is chosen in each stewardship group to coordinate other participants and communicate to rest of group.
12. Manage liabilities associated with volunteers conducting field work. Volunteer agreements can range from agreements with a lead partner (that may include “save harmless” and or “liability acceptance” clauses in them) to a requirement that groups belong to an umbrella volunteer organization that offers insurance to members.
13. Match sites with stewardship groups, considering the sequence for monitoring a group of sites to minimize travel time.

14. Determine and obtain safety gear and any other supplies the groups will need.
15. Prepare or acquire documents the groups will need for training and monitoring:
 - i. Contact information for technical support (ENV/partners joint effort)
 - ii. Access permissions, protocols on private land (ENV/partners joint effort)
 - iii. Field safety instructions (ENV)
 - iv. Calibration instructions (ENV)
 - v. Sampling procedures (ENV)
 - vi. Field observation procedures (ENV)
 - vii. Site access directions (ENV/partners joint effort)
 - viii. Site map (ENV/partners joint effort)
 - ix. What sample results mean (ENV)
16. Align community monitoring program with existing ENV monitoring programs (if possible). This ensures maximum quality control/quality assurance (QA/QC) can occur via sampling on the same days and maximizes partnership learning potential.
17. Schedule monitoring dates far ahead. These should all occur on the same day each week for consistency between groups (usually a Tues or Wed to ensure that if lab QA/QC does occur, it can happen on the same day and still be analyzed; this also avoids Mon or Fri holidays). The only flexibility should be a possible delay of entire fall schedule if fall rains come late. Exceptions may be made on a given sample day if logistical or safety problems (e.g., vehicle trouble, high winds) prevent sampling on the chosen weekday.
18. Organize a training session for interested groups. This should first be led by ENV water quality specialists but, as partners gain knowledge, “train the trainer” can occur. Ideally annual training will occur 2-3 weeks before sampling begins. As even experienced volunteers are generally not working with water quality sampling throughout the year, annual training is key to reinforce protocols the group needs to follow for good data quality. It is best to go to the groups local area, training them at one of the sites they will be sampling. Keep the size of training sessions manageable (i.e., maximum two stewardship groups per training session if each has 3-4 people attending).
19. Organize an ENV or “train the trainer” representative (fully proficient in the sampling equipment and monitoring protocols) to join each sampling group on the first week of both summer (definitely) and fall (if needed, usually groups will be quite honest as to whether they feel they need it) sampling. An ENV staff or trained representative should always be available for sampling groups via telephone on other sampling weeks, as questions will arise.
20. A complete check-in (phone call or email to the group lead) should be made with all groups after the first and second weeks. This call is to ensure any challenges or questions can be addressed and that groups are confident in their abilities with equipment and protocols. If groups take a photo or use a smartphone scanning app to send an image of their calibration logs to the trainer via email, the trainer can ensure they are calibrating correctly. This check-in can prevent early problems from continuing throughout the entire sampling period.
21. Follow up after summer sampling (brief email) to ensure all summer data are submitted and ensure no equipment or supplies are needed. An update to all groups on how the sampling went with a thank you for their efforts thus far can serve to motivate groups for the next set of sampling, help them feel connected to the project, and help them and see the value of monitoring protocols to the quality of the data.
22. Follow up after fall sampling to ensure all fall data are submitted and, if groups are not keeping equipment for more sampling, that all equipment are returned.
23. Enter data into the B.C.’s Environmental Monitoring System (EMS) or other agreed-upon centralized database. File all calibration logs and field sheets appropriately. Ensure all partners have access to data.

24. If the ENV does not have the capacity to interpret the data, the partnership would likely need to hire someone to interpret / analyze the data. Data summaries could be done annually with more in-depth interpretation after three or more years.
25. Do a full report out to groups with a data summary or analysis, as applicable. Organize a wrap up meeting where all participants are invited to attend to hear about the data results. Request feedback/suggestions for improvement from participating groups.
26. Thank you gifts to participants should be presented at report out or annual training sessions.
27. Provide regular updates and metrics to funders of network.
28. Use results, once trends can be observed, to inform additional programs or decisions (i.e., outreach, restoration, policy advocacy, compliance, additional monitoring).
29. Repeat steps 13 – 27 annually to keep network running over the long-term.