

CANADA - BRITISH COLUMBIA  
WATER QUALITY MONITORING AGREEMENT



WATER SAMPLING PROCEDURES, SAFETY AND QUALITY ASSURANCE

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## **PREFACE**

This manual is a joint document generated by Environment Canada and the B.C. Ministry of Water, Land and Air Protection under the Canada-British Columbia Water Quality Monitoring Agreement. It summarizes standard water quality sampling procedures, to be used in training and auditing and as a reference for sample collectors. This manual outlines the measure used to assure that all samples collected best represent water conditions at the time and location of sampling. The procedures in this manual have been summarized from operational protocols of the Water and Air Monitoring Section of the Ministry of Water, Land and Air Protection and the Aquatic Sciences Section of Environment Canada. These protocols are updated as changes in procedures occur, and are the ultimate reference.

Safety procedures are also an integral part of the water sampling process. The safety protocols included in this manual are specific to the water sampling operations of the Agreement, and must be strictly adhered to. Some regulations that promote public safety such as TDG (Transportation of Dangerous Goods Act) and WHMIS (Workplace Hazardous Material Information System) are noted where applicable.

This combined manual has been approved by Dr. M.J.R. Clark; Chair and members of the Quality Assurance Working Group (QAWG) as part of the Canada - British Columbia Water Quality Monitoring Agreement.



## 1 FIELD OPERATIONS

### 1.1 CLEANLINESS AND STORAGE OF SAMPLING EQUIPMENT

Some analyses are accurate to the parts per billion or trillion range; even a small amount of dust can be enough to contaminate a sample. Every effort must be made to maintain a high degree of cleanliness for all equipment including bottles, multi-sampler and rope, multi-sampler container and filtering equipment to assure that the analytical data are truly representative of the quality of the water at the time of sampling. Keep your equipment clean by rinsing under a tap on occasion and remove traces of sediment that may have settled. This includes both parts of the sampler and the rope if one is being used. Do not use household soaps or detergent to clean equipment. These could cause contamination of future samples being analyzed for nutrients. A clean sponge or cloth in conjunction with tap water may be used for cleaning purposes.

KEEP  
EQUIPMENT  
CLEAN, BUT DO  
NOT USE  
HOUSEHOLD  
SOAPS OR  
DETERGENTS

After each sample collection, the multi-sampler must be dried and stored in its container. A clean cloth may be placed over the opening of the container to keep out dust while drying. Replace the lid after all moisture is out of the container. It may be necessary to replace the sampler and/or rope on occasion, if they become excessively dirty or worn. If this occurs, contact Ministry of Water, Land and Air Protection (WLAP) or Environment Canada staff (see Appendix I).

Sampling kits must be stored before use in an upright position as indicated by the "UP ARROW" on the outside of each kit. Store them in a location where the preservatives will not freeze or overheat, and where they cannot be accessed by animals or children. Store both the sampling kits and the multi-sampler in a clean, dry environment.

### 1.2 SAMPLE KIT INSPECTION

Inspect all sampling kits (regular and quality assurance) **immediately** upon receipt from the laboratory and prior to the next sampling date, for missing or damaged material - including leaking blank bottles or preservative containers. If a kit cannot be used due to missing or damaged materials (e.g. missing or leaking bottle(s), leaking preservatives, etc.), set it aside and request replacement supplies from either Environment Canada or WLAP regional staff (Appendix 1). The water quality variables being sampled for are temperature-sensitive, and water samples must be kept cool (ideally 4 °C) in transit. It is essential that you use an ice pack with each sample you ship to the laboratory. Immediately upon receipt, remove the ice packs from the kits and store them in the freezer for future use.

WATER QUALITY  
SAMPLES ARE  
TEMPERATURE  
SENSITIVE, USE  
ICE PACKS WHEN  
SHIPPING

## **1.3 PREPARING FOR SAMPLE COLLECTION**

### **1.3.1 Sampling Schedule**

Sample collections must be done early in the week (i.e., Monday, Tuesday or Wednesday) to ensure that samples reach the laboratory before the upcoming weekend to avoid delays in analyses of time-sensitive variables. Never sample on a Thursday or Friday without prior authorization or arrangements with Environment Canada staff.

SHIP YOUR  
SAMPLES ON  
THE SAME DAY  
AS THEY ARE  
COLLECTED

Adhere to the established schedule - i.e., samples should be collected on the same day at about the same time every sampling trip. If on occasion, sampling is delayed because of special circumstances, return to the original schedule for the next sample.

### **1.3.2 Field Preparation**

Prior to leaving for sample collection, complete the Field Safety Card and leave it with a contact. A sample of the Field Safety Card is in Appendix 6.

Ensure that you have all of the necessary sampling and safety equipment including ice packs that you require before leaving for the site. Refer to Appendix 6 for a generalized Equipment Form and Field Preparation Checklist to assist with this. If you have been supplied with specific safety equipment identified as necessary for your site, check the equipment each time you sample. The nut on the bottom of the sampler for the central shaft should be checked periodically to make sure it is tight against the base of the sampler. After continued use in the water, the nuts and screws on the multi-sampler may become loose.

## **1.4 OPEN WATER SAMPLING**

### **1.4.1 Thermometer Preparation**

Remove the cover from the field thermometer and place the thermometer in the shade, out of the wind, preferably about 1 metre above the ground to minimize the heat influence from anything other than ambient air temperature. Leave the thermometer for 5 - 10 minutes or for the time it takes to collect the water samples. Record the air temperature to the nearest 0.5 degrees Celsius. (See Appendix 2 for a sample Data Card). Use only thermometers that have been supplied by Environment Canada.

### **1.4.2 Sampler Loading and Assembly**

Remove the bottles from the shipping container and position them in the multi-sampler; loosen the caps on the bottles while placing them in the sampler. Each bottle has a designated location in the sampler which



allows it to be secured by the sampler top and for its opening to be above the top surface.



Photo 1 - THE ASSEMBLED MULTI-SAMPLER

Assemble the sampler (including the lid, handle and rope, as necessary) and remove the caps from the bottles just before sampling. Place them in the plastic bag provided to keep them clean. If a plastic bag has not been provided, remove the field data sheet from its plastic bag and put the caps inside the bag.

The lid from the multi-sampler is to prevent dirt or water from the rope from entering the sample after collection. Please note that during high flow, the lid may cause substantial drag.



Photo 2 - STORING CAPS IN A SEALED BAG

DO NOT PUT THE LOOSE CAPS IN YOUR POCKET NOR LAY THEM ON THE GROUND. DO NOT TOUCH OR ALLOW ANYTHING TO COME IN CONTACT WITH THE INSIDES OF THE CAPS OR BOTTLES.

Make sure that the sampler Plexiglas top fits well over the bottles, and that the holes in the top are aligned with the upright posts of the sampler. Also see that the handle is securely tightened so that it will not twist off in a fast current.

### 1.4.3 Sampling Location

Collect water samples only from the location designated by WLAP or Environment Canada staff. Samples should only be collected from alternate locations if there are immediate safety concerns or access problems at the designated site. If this situation occurs, please call WLAP or Environment Canada staff for advice. If a sample is collected at an alternate location, then ***this must be recorded in the “REMARKS” section of the data card.*** It is preferable to collect water samples mid-stream or in the main flow of the river and away from slumping and scouring effects found near the banks. If it is not possible to sample mid-stream, attempt to collect in moving water as far away from the bank as possible.

NEVER COLLECT  
WATER FROM  
AN EDDY, OR  
DIRECTLY  
BELOW THE  
CONFLUENCE OF  
A TRIBUTARY  
OR AN  
OUTFLOW

### 1.4.4 Collecting Samples

#### (A) Bridge Sampling

Tie the free end of the rope to the bridge railing to secure the sampler. To allow sample bottles to fill with fewer casts, swing sampler as far upstream as possible before releasing it. Try to avoid sampling near bridge supports, or any other objects that may interfere. It is always preferable to sample from the upstream side of a bridge, however safety is paramount. The bridge walkway must always be used regardless of which side it is on. Additionally, in very fast currents it may be necessary to sample on the downstream side on occasion, to prevent the multi-sampler from being swept too far under the bridge.

Refer to Section 2.1 for bridge-based sampling safety.

#### (B) Sampling from Shore or by Wading

If a safety concern at the site exists, water quality samplers must attend the required Swiftwater Safety and Awareness training course and have the recommended safety equipment prior to collecting water samples from shore or by wading. Safety requirements outlined in Rescue Canada's station safety assessment will be given to the sampler and must be followed.

When sampling from shore always collect samples while facing upstream. The multi-sampler should be submerged to the length of the handle below the surface. If bottom sediment is stirred up when wading, allow it to flow away from the sampling spot before collecting the samples.

If sampling from a rocky outcrop on the shore, submerge the sampler to the length of the handle, and allow the bottles to fill.

If it is not practical to use the multi-sampler (i.e., if the water is too shallow), then fill the bottles one at a time. Uncap the bottle immediately before sampling. Stand perpendicular to the flow facing upstream. While holding the cap in one hand, plunge the opening of the bottle into the river with the opening facing upstream into the current until it is filled. If sampling from a stationary water body, with the bottle cap removed, lean out and plunge the bottle below the surface and force the bottle through the current away from you until it is filled.

Lift bottle out of water, decant a small amount if required, and re-cap immediately. Ensure that your hands do not come into contact with the insides of the bottles or caps.

Refer to Section 2.2 for Wading from Shore Safety Precautions.

### **(C) Sampling by Boat**

Always collect samples upstream from the boat and as far away from the motor as possible, to minimize the chance of gas or oil contamination. Turn off the engine before collecting samples.

DO NOT EXPOSE  
SAMPLES TO  
CIGARETTE SMOKE,  
VEHICLE EXHAUST,  
OR DUST.

### **1.4.5 General Considerations**

The multi-sampler should be rinsed at least once in river water to remove loose dust and debris before loading of the sample bottles and sample collection. When collecting samples avoid floating debris, and hitting the river bottom with the sampler. If sampling from a bridge, be careful not to hit the bridge structure when raising and lowering the sampler.

If a bottle or cap is suspected of having been contaminated, rinse it thoroughly with river water and make a note on the data card.

DOCUMENT ANY  
SOURCE OR  
CONTAMINATION  
OR DEVIATION  
FROM STANDARD  
PROCEDURE ON  
THE DATA CARD

#### 1.4.6 Water Temperature

If you are using the multi-sampler, place the thermometer into the water collected in the bottle labelled **"FIELD"**. If you are placing the thermometer directly into the river, immerse approximately half the thermometer under the water surface. Allow the thermometer to adjust to the water temperature. This will take approximately 1 to 2 minutes. Read the water temperature by holding the bottle and the thermometer at eye level and keeping the bulb of the thermometer submerged in the sample. Record the water temperature, to the nearest 0.5 degrees Celsius, in its designated location on the data card.

DO NOT IMMERSE  
THERMOMETER IN  
ANY BOTTLE  
OTHER THAN THE  
ONE LABELLED  
"FIELD"

#### 1.4.7 Air Space in Water Samples

Pour some water out of the 120-mL square clear glass bottle, the 250-mL square plastic bottle used for fecal coliforms and any bottle requiring preservative to allow about 2.5 cm (1 inch) of air space. Shake each bottle prior to pouring off to ensure that the sample remains well mixed.

#### 1.4.8 Sample Preservation

Prior to sample preservation, put on protective disposable gloves supplied in the sampling kit. Also wear supplied chemical safety glasses, unless you are already wearing eyeglasses.

Do not use a preservative if it is leaking, or appears discoloured or contaminated; indicate on the data card that the corresponding sample was not preserved.

Certain water samples require preservation and are identified by a green label located on the sample bottle. The preservative is located in the outer vial container with the green lid. The content of each preservative vial is also identified on its label so that sample collectors are aware of what is being handled.

Pour the preservative into its designated sample bottle and re-cap the bottle. Invert the water sample bottle several times to mix preservative with sample water. Reseal the preservative vial, return it to the outer vial container, and replace it in the sampling kit.

USE CAUTION  
WHEN HANDLING  
PRESERVATIVES  
IN CASE OF A  
SPILL, RINSE  
WITH PLENTY OF  
WATER

#### 1.4.9 Re-packing Sample Kit for Transport

Tightly cap all the bottles and place them upright in the shipping container. Return the 250-mL Nalgene bottle for trace metals to the Ziploc bag. Be sure that any glass bottles are not in contact with each other by

placing plastic bottles between them.

Place the ice pack(s) in the sampling kit immediately as well. Bottles that are most temperature-sensitive (i.e., 1-L plastic, 120-mL clear glass, 500-mL amber glass and 250-mL square plastic) should be arranged at the bottom of the shipping container, as close as possible to the ice pack(s). During the warmer summer months, shipping coolers must be kept out of the sun and away from any other heat sources. Loose or bagged ice should never be used in the shipping containers, because of the possibility of contamination. As a general guideline, sealed ice in a volume equivalent to the volume of sample water collected and shipped should be included in each cooler sent to the analyzing lab. Ice packs must be included in every kit because of short-term storage of the shipped coolers in heated buildings, courier trucks etc. If necessary, use two ice packs during the summer months. Samples must arrive at the lab cold and as close as possible to the 4°C ideal temperature, never warm or frozen and within the 48-hour time limit.



ALWAYS REPLACE THE  
STYROFOAM LID AND PACK  
THE SAMPLE KIT WITH A  
FROZEN ICE PACK TO  
PREVENT THE SAMPLES  
FROM FREEZING OR  
GETTING HOT

Photo 3 - RE-PACKING THE SAMPLE KIT

#### 1.4.10 Data Card Sampling Information

Remove sample data card from sampling kit, and record the following information on the card:

- 1) STATION - The sampling station name as designated by Environment Canada or WLAP staff.
- 2) STATION NUMBER [Prov. Basin...] - The station number as designated by Environment Canada or WLAP staff for that water quality sampling station (e.g., BC08MH0001).
- 3) LABORATORY USE ONLY - Leave entire section blank for laboratory use.
- 4) NUMBER - Always record the number "0331" in the designated space after "PY" (i.e., **PY0331**)

unless otherwise instructed by Environment Canada or WLAP staff, or unless you are collecting quality assurance samples. (See Section 1.6).

- 5) DATE OF SAMPLING - In the designated spaces provided on the front of the sample data card record the last digit of the year (e.g., 2001), numeric month (1-12), numeric day (1-31), the time of sampling (hour and minute using the 24 hour clock), and the current time zone (e.g., PST or PDT). See Appendix 5 for Time Reference Table.
- 6) AIR TEMPERATURE (°C) – Under “FIELD ANALYTICAL RESULTS” record the air temperature to the nearest 0.5 degrees Celsius (e.g., 10.5).
- 7) WATER TEMPERATURE (°C) - Record the water temperature to the nearest 0.5 degrees Celsius. If other field measurements are made (i.e., dissolved oxygen, pH or specific conductance), record those values in the appropriate spaces provided.
- 8) COLLECTOR - **Neatly print** your name.
- 9) DATE - **Neatly print** the date (e.g., February 01, 2001). (This serves as a double check for the date as sometimes the month and day can become transposed.)
- 10) SAMPLING - Indicate by placing a check mark in the appropriate box if the sample was taken from a bridge, from the shore, by wading, from a boat, or by other means. If the sample was taken by “other” means, describe the procedure in the “SAMPLER REMARKS” section.
- 11) SAMPLER - Indicate by placing a check mark in the appropriate box if the sample was collected using the regular multi-sampler or the through-ice sampler. If the sample was collected in some other way, check the “OTHER” box, and describe the device or method used in the “SAMPLER REMARKS” section.
- 12) LOCATION - Place a check mark in the designated box if the sample was collected at the regular designated location. If the sample was collected at the designated winter location check the winter box. If the sample was taken at some other location (in summer or winter), check the “OTHER” box, and describe the location and the reason for change of location in the “SAMPLER REMARKS” section.

- 13) DEVIATION FROM PROTOCOLS - When a sample or samples are collected in a way that is different than the method(s) described in this field manual, check the "YES" box and explain the changes in the "SAMPLER REMARKS" section.
- 14) WEATHER - Briefly describe the weather conditions at the time of sampling (e.g., heavy rain, snowing, sunny, hot, etc.)
- 15) WIND - Describe the wind conditions at the time of sampling (e.g., strong, NE, or light, from upstream, etc.).
- 16) SAMPLER REMARKS - Describe the water conditions at the time of sampling (e.g. high water, low water, muddy water, floating ice, etc.). Explain any deviations from regular sampling procedures and protocols, which were noted in the previous sections. Also describe anything else which may be of interest, or could possibly have an impact on the sample collected.
- 17) SAFETY CONCERNS OR EQUIPMENT REQUIRED - Enter any notes or comments about safety concerns, equipment problems or requirements, or any other issues that you feel need to be addressed.
- 18) LAB NOTES -Leave blank; for laboratory use only.
- 19) PRESERVATIVE BATCH CONTROL -Leave blank; for laboratory use only.
- 20) OFFICE NOTES - Leave blank for Environment Canada or WLAP (office) staff use only.

An example of a completed sample data card is included in Appendix 2.

Replace the data card in the plastic bag provided and place into the shipping container with the samples. Also ensure that preservative vials and disposable gloves are returned.

Insert the required number of ice packs (See Section 1.4.9) and the absorbent sponge packing material and secure the Styrofoam lid with the inner Velcro strap. Close the lid of the cardboard container and secure with the outer Velcro strap.

#### 1.4.11 Time-Sensitive Shipments

Some variables being sampled must be analyzed within 48 or 72 hours of sampling, depending on the parameter or else the results are rendered invalid. It is essential that samples be shipped to the laboratory as soon as possible after collection to avoid a lengthy time delay before analysis. Samples must be taken to the courier on the same day as sampling. If on occasion this is not possible then collect the sample the next day and send it off the same day.

DO NOT  
STORE  
SAMPLES  
OVERNIGHT



## 1.5 WINTER SAMPLING

Water quality samplers must have the required ice safety training and recommended equipment prior to collecting water samples through ice. Safety requirements outlined in Rescue Canada's safety station assessment must be followed.

### 1.5.1 Ice Safety

**Be familiar with the Field Safety Ice Conditions Section 2.3 in this manual.**  
Should you have any questions or problems, call us.

### 1.5.2 Ice Drill Bit Sharpness

When using an ice drill, for best performance **KEEP THE BIT SHARPENED**. This will save time and effort.

### 1.5.3 Sampling Location

The winter sampling location should be as close as possible to the location as selected and shown to you. Where ice safety concerns exist, samples should be collected from the sampling location recommended by Rescue Canada. If sampling near a bridge, the site should be far enough upstream to avoid contamination from road salt and sand. Record the sampling location used in the "Remarks" section of the sample data card.

### 1.5.4 Sample Collection

Clear loose ice and snow away from the sampling location, and drill through the ice with the auger. Keep the area around drill hole clean and free of potential contamination (gas, dirt from drill and boots, snowmobile exhaust, etc.).

Remove all ice chips and slush from the drill hole, using a plastic sieve. Wait several minutes for the water to flow freely under the ice, allowing potential contaminants to clear.

Put on the plastic gloves provided in the sampling kit.

Place a clean 2-litre bottle marked "AW" (acid washed) into the through-ice sampler (if the bottle is being re-used, rinse once with river water prior to collecting sample).

COLLECT WATER  
SAMPLES  
THROUGH ICE  
ONLY IF YOU  
HAVE HAD ICE  
SAFETY  
TRAINING  
AND/OR ARE  
CURRENTLY  
CERTIFIED

VEHICLE,  
SNOWMOBILE, ICE  
AUGER EXHAUST  
AND CIGARETTE  
SMOKE WILL  
CONTAMINATE  
WATER SAMPLES –  
AVOID THESE  
CONTAMINANTS  
WHEN THE  
BOTTLES ARE  
OPEN

Ensure that the bottle is securely held to the sampler by rotating the plastic locking device through the bottle handle. Rinse the attached stopper in river water; remove the bottle cap, and insert rinsed stopper into bottle opening. Lower the sampler with the bottle through the hole until it is clear of the bottom of the ice, and into freely moving water. Remove the stopper by pulling the cord, and allow the bottle to fill. For the bottle to fill in fast flowing water the sampler may have to be held at different angles. Bring bottle back up and replace the cap.

Using the 2-litre bottle marked "AW", fill metals bottles from the sampling kit (two 125-mL plastic bottle marked with blue tape in separate plastic bags).

Repeat the procedure outlined above, this time using the clean 2-litre bottle marked "REG". With this bottle, fill the rest of the bottles from the regular sampling kit.

**DO NOT ALLOW  
THE SAMPLE TO  
FREEZE IN THE  
2L BOTTLE**

Swirl the bottles periodically during this procedure to ensure that the sample remains well mixed.

Complete sample data card as outlined previously in the manual. In the "SAMPLER" section of the sample data card, check off the "THROUGH ICE" box. If the winter sampling site is different than at other times of the year, check the "WINTER" box in the "LOCATION" section of the data card. Make a note in the "SAMPLER REMARKS" section that the sample was collected through the ice.

#### **1.5.5 Storing 2-Litre Bottles**

Empty any remaining water from the 2-litre bottles, cap and store for the next sampling. After the spring thaw, return all 2-litre bottles to the laboratory for cleaning. Before freeze-up, request to have some 2-litre bottles sent to you.

## 1.6 QUALITY ASSURANCE SAMPLES

Quality assurance kits (i.e., field blank and replicate kits) should arrive 3 times per year, and be clearly marked as “QA SAMPLES” on the outside of the shipping box. They should be used when you collect your next regular sample. The QA kit contains a field blank, and one or more replicate samples.

### 1.6.1 Open Water Field Blanks

The bottles in the field blank kit have been filled with de-ionized (i.e., very pure) water in the laboratory. The treatment and handling of these samples provides us with a check on sources of contamination and error. Please treat these bottles in the same manner as you would normally treat the sampling kits that you receive from us. In other words, follow all normal procedures with the exception of actually placing the bottles into the water.

To process a Field Blank, take this kit along with a regular kit and the QA (replicate) kit to the sampling location. Process the field blank **before** you collect your regular and QA samples, as follows:

- 1) Remove bottles containing water from kit, and place in sampler in the same manner as you would normally. For example, if you normally load bottles on the bridge, then load the field blanks on the bridge as well.
- 2) When ready to process the blanks, remove the caps from the bottles and store them in the plastic bag provided. Lower sampler to water's surface (approximately 1 metre above the water's surface if sampling from a bridge).
- 3) Bring up the sampler, and replace the caps. Preserve the blanks as you would regular samples if required. Complete the data card as you normally would. The station name should already have been recorded on the top of the card, along with the words “Field Blank”. Additionally, under “Number”, PY0337 should already have been recorded for you. If any of these things have not been done, then please record them yourself. A water temperature measurement is not needed.
- 4) Re-pack the sampling kit in the normal fashion, and ship it to the Laboratory along with the regular and replicate samples.

DO NOT ALLOW  
THE  
MULTISAMPLER  
TO COME IN  
CONTACT WITH  
THE WATER

### **1.6.2 Through-Ice Field Blanks**

Winter field blanks for stations that are sampled through ice consist of 2-litre sampling bottles (one marked “AW” for metals and one marked “REG” for all other samples) filled with de-ionized water. A separate field blank sampling kit, including all regular sampling bottles, is also included. These field blanks are processed as follows:

- 1) Remove cap from the acid-washed 2-Litre field blank bottle marked “AW” (blue label) containing de-ionized water, and expose the de-ionized water in the bottle to the air for approximately the same amount of time it takes to collect a regular water sample. Using this bottle, fill the metals bottle from field blank sampling kit (two 125-mL plastic bottles marked with blue tape in separate plastic bags) with the de-ionized water.
- 2) Remove cap from the regularly washed 2-litre field blank bottle marked “REG” (yellow label) containing de-ionized water and expose de-ionized water to air as in above. Fill all remaining bottles from the field blank sampling kit using the de-ionized water from this bottle.
- 3) Complete the data card as you normally would. The station name should already have been recorded on the top of the card, along with the words “FIELD BLANK”. Additionally, under “NUMBER,” PY0337 should already have been recorded for you. If any of these things have not been done, then please record them yourself. Measurements of air temperature should be included; measurements of water temperature are not required.

### **1.6.3 Replicate Samples**

#### **(A) Using the Multi-Sampler**

After the field blank has been processed, collect your regular sample as you normally would. Add preservatives to those bottles requiring preservation, and fill in sample data card as usual. Then using the bottles from the replicate kit collect another sample in exactly the same manner and location as you did for your regular sample being careful to watch for floating debris. Again add preservatives to those bottles requiring preservation and fill in the replicate sample data card.

#### **(B) Shore Based Sampling**

Again if sediment is stirred up by wading allow it to flow away before you collect the samples. If you do not use the multi-sampler, collect the regular sample and the replicate at the same point in time and location so that they are considered identical. Uncap two bottles at once, one bottle from the replicate kit and the corresponding bottle from the regular kit and have your safety observer hold the caps. Standing perpendicular to the flow plunge both the bottles next to each below the water surface at the same time facing upstream of the current until the bottles are filled. Re-cap the bottles and repeat with the next set of

bottles until all the bottles are filled.

### **(C) Through Ice Sampling**

After the field blank has been processed, fill the 2L bottle marked “AW” as you would for a regular sample and fill the metals bottles from the replicate kit and the regular sampling kit at the same time. Next fill the 2L bottle marked “reg” and fill each of the bottles from the replicate and regular sample kits simultaneously. For example, fill the 1L plastic bottle from the replicate and regular sample kit together. Repeat until all the bottles from the replicate and regular sample kits are filled.

Once the replicate sample has been collected, complete the data card as you normally would. The station name should already have been recorded on the top of the card, along with the words “REPLICATE”. Additionally, under “NUMBER”, record number PY0334. If any of these things have not been done, then please record them yourself. Measurements of water temperature, air temperature and dissolved oxygen should again be taken and recorded.

Re-pack both the regular and QA sampling kits in the normal fashion, and ship them to the laboratory.

## **1.7 SHIPPING**

### **1.7.1 Courier Service**

Kits or coolers being sent to either the Pacific Environmental Science Centre (PESC) or to Maxxam Analytics Incorporated are to have a correctly filled in waybill as indicated in Appendix 3. Pre-addressed waybills can be requested from Environment Canada or WLAP staff. Attach the waybill to the outside of the shipping container. Retain the third copy for your records in case of enquiry.

ENSURE THAT  
EACH KIT HAS  
THE CORRECT  
LABORATORY  
ADDRESS LABEL  
AFFIXED TO IT

## 2 FIELD SAFETY

If for any reason you believe that collecting a sample will be unsafe - e.g., due to higher or swifter water than usual, weather conditions, heavy traffic or work on the bridge, ice conditions, etc. - do not collect a sample.

Should this occur, please advise Environment Canada or WLAP staff. You will still be compensated for this sample, as its collection was not carried out due to safety concerns. Please indicate on your invoice the samples that were not collected due to unsafe conditions.

**IF YOU HAVE  
ANY SAFETY  
CONCERNS, DO  
NOT COLLECT A  
SAMPLE.**

### 2.1 SAMPLING FROM BRIDGES

#### 2.1.1 Traffic Concerns

Traffic may present serious problems when your vehicle is parked either on the road shoulder or encroaching onto the roadway. Interference with traffic should be avoided if possible and sampling times adjusted to avoid times of busy traffic. The Ministry of Transport requires a permit if a person is working or parking on the side of a highway or street for greater than 30 minutes. A permit is not required for a person working or parking on the road or highway for less than 30 minutes. It takes most lay collectors under 30 minutes to collect and preserve samples, so permits will not be required in most circumstances.

If you park on the shoulder, hazard lights and traffic cones must be used to alert oncoming traffic of your presence. If your car encroaches onto the road, 2 crew working signs, hazard lights, a circular light and three pylons must be used to alert oncoming traffic of your presence. Whenever possible park your vehicle so as not to obstruct traffic. Wear a reflective vest and use a pedestrian walkway if it is available. If you are encroaching into bridge traffic, a minimum of three traffic pylons must be used to mark out your work area on the bridge. Two crew working signs must also be used at either end of the bridge to signal to oncoming traffic that you are working on the bridge.

Be aware that some large trucks travel very fast over bridges, especially if the bridge is located at the bottom of a steep hill. The wind from these vehicles can make you lose your footing and also blow bottles and caps over the edge of the bridge. Dust stirred up by any vehicle can also contaminate water samples when they are uncapped. If your sampling station poses a traffic or safety hazard, contact Environment Canada or the appropriate regional WLAP office.



Photo 4 - TRAFFIC CONTROL AND BRIDGE SAFETY



Photo 5 - VEHICLE PARKING ON THE SHOULDER AND TRAFFIC CONTROL

### **2.1.2 Sampling Over Navigable Water**

Special care must be taken when sampling from bridges over navigable water, as boat operators and water skiers may not be able to see the sampler ropes. It may be necessary to flag equipment so that it is easily visible. Should a boat approach the bridge at the time of sampling, raise the multiple-sampler and temporarily suspend your sampling until it passes.

### **2.1.3 Sampling Near Power Lines**

Power lines strung along or close to bridges should also be respected and avoided. At no time should the rope attached to the multi-sampler be draped over a power or telephone line.

### 2.1.4 Equipment Safety

Secure the free end of the rope attached to the multi-sampler to the bridge rail to prevent accidental loss of the equipment. Keep equipment out of the traffic lane where it may be struck by a vehicle.

## 2.2 WADING AND SHORE SAMPLING SAFETY PRECAUTIONS

Wading is one of the easiest methods for collecting samples, but it can also be one of the most dangerous. Wading permits the collector to examine stream flow and to decide where to sample. Rubber boots or hip-waders are standard equipment. Chest waders should not be used due to safety concerns. A wading rod or similar probing instrument is often useful to estimate the current and to locate holes and unsafe footing.

If sampling from shore or by wading, a life jacket (personal flotation device, or PFD) must be worn. If swift water safety issues have been identified at the site, then the sample collector must participate in the Swiftwater Safety Awareness training course provided by Rescue Canada. If the river is too high and/or swift for wading, then the samples should be collected from a nearby safe shore location. If sampling from shore, ensure a safe footing, and make sure you are well balanced, keeping in mind that the current may pull the multi-sampler sharply downstream. Note that water levels for some rivers can change height within seconds.

Follow all procedures and use all of the equipment recommended by Rescue Canada in the Site Safety Assessment Report for your station. Note that a second safety person may be required at certain times at your site.

If you are not certain that river conditions are safe or feel that it is unsafe, do not take a sample. Never take unnecessary risks. You will still be compensated for this sample, due to the fact that safety concerns prevented sample collection.



Photo 6 - WADING AND SAMPLING

IF YOU ARE UNCERTAIN THAT  
RIVER CONDITIONS ARE SAFE, DO  
NOT TAKE A SAMPLE. COLLECTORS  
SHOULD NEVER JEOPARDIZE THEIR  
PERSONAL SAFETY BY TAKING  
UNNECESSARY RISKS



## 2.3 ICE SAMPLING SAFETY PRECAUTIONS

Water quality samplers must have the required ice safety training and recommended equipment, prior to collecting water samples through ice. Safety requirements outlined in Rescue Canada's ice safety station assessment must be followed. This may require that some sites sampled at certain times of the year be attended by at least two people.

Always proceed with caution over ice and do not jeopardize your safety. Wear the supplied PFD and safety harness. Tether yourself to ice anchors or to something solid on shore and test the ice thickness with a rod or ice chisel every few steps.

Ice thickness over moving water can vary, and the strength of the ice cannot be estimated from the apparent thickness near the shore. Be aware that ice downstream from bridge supports and other structures may be thin as a result of modified flow patterns and de-icing agents. Honeycombed ice, areas over rapids, and confluences with other rivers and streams should be avoided, as ice thickness in these areas will vary.

If the ice is unsafe, do not take a sample. You will still be compensated for this sample, due to the fact that safety concerns prevented sample collection.



Photo 7 - ICE SAMPLING

IF THE ICE IS UNSAFE, DO NOT  
TAKE A SAMPLE. COLLECTORS  
SHOULD NEVER JEOPARDIZE THEIR  
PERSONAL SAFETY BY TAKING  
UNNECESSARY RISKS

## 2.4 HANDLING PRESERVATIVES

### 2.4.1 Preservative Storage

Strong acids or bases used for the preservation of water samples should be stored and handled with care. Always store sample kits in an upright position before use as indicated by the “up arrow” on the outside of each kit. Store in a location where the preservatives will not freeze or overheat.

PRESERVATIVES  
ARE TOXIC AND  
CAN BE HARMFUL  
TO CHILDREN AND  
ANIMALS – STORE  
KITS IN A SECURE  
LOCATION

### 2.4.2 Preservative Application

Gloves and safety glasses must be worn when preservatives are being used. If you already wear eyeglasses, then safety glasses are not necessary.

Disposable gloves for your use and protection are provided in each sampling kit, and should be sent back to the laboratory after use.

Avoid the inhalation of preservative vapours or direct contact with the skin, eyes and clothing. The Sodium Hydroxide used for cyanide preservation is dangerous if it comes into contact with your skin or eyes. Sodium Hydroxide has a soapy feel when rubbed between the fingers. If this sensation is noticed, immediately rinse your hands with plenty of water. Like other preservatives, it will cause damage to skin and clothing.



GLOVES AND SAFETY GLASSES  
MUST BE WORN WHEN  
PRESERVATIVES ARE BEING  
USED

Photo 8 - HANDLING AND DISPENSING OF PRESERVATIVES WITH SAFETY GLOVES

### 2.4.3 Preservative Spills

Preservative spills should be tended to immediately by dilution with a large amount of water, followed by mopping up.

### 2.4.4 First Aid for Preservative Burns

If a preservative does come into contact with your skin, the affected area should **immediately** be flushed with large amounts of water. The area may have to be flushed for as long as fifteen minutes.

### 2.4.5 First Aid For Preservative - Eye Contact

If a preservative gets into your eyes, flush them immediately with plenty of water this includes the outside of the eyes. It may be necessary to hold the eyelids open during the washing procedure. Continue the rinsing for at least 15 minutes. After first aid, all eye injuries must be professionally treated as soon as possible.

### 2.4.6 WHMIS Information

WHMIS (Workplace Hazardous Materials Information System) legislation requires that all workers be provided with information concerning the storage, handling and use of controlled products. This includes materials such as chemical preservatives.

Key requirements of WHMIS include:

#### i) Controlled Product Labelling

This alerts workers to the identity and dangers of products and to basic safety precautions.

#### ii) Material Safety Data Sheets (MSDS)

These are technical bulletins that provide detailed hazard-precautionary and first aid treatment information for controlled substances.

#### iii) Worker Education and Training Programs

IF PRESERVATIVE  
COMES IN  
CONTACT WITH  
YOUR SKIN,  
FLUSH THE  
AFFECTED AREA  
WITH PLENTY OF  
WATER

IF PRESERVATIVE  
GETS INTO YOUR  
EYES, FLUSH  
THEM WITH  
PLENTY OF  
WATER

All sample collectors will be provided with copies of a current MSDS for each preservative that they are expected to use. These data sheets provide detailed information concerning the product - hazardous ingredients, physical data, fire and explosion hazard, reactivity data, health effects, preventative measures, first aid measures and preparation information.

Please familiarize yourself with the MSD Sheets supplied to you. Should you have any questions or concerns about handling preservatives or about WHMIS, contact your Environment Canada or WLAP water quality program co-ordinator.

### **3 REQUESTING SUPPLIES**

Sampling kits are sent out on a routine basis to all sample collectors. For more sampling kits or other supplies such as invoices, sampling equipment etc. please call Environment Canada or WLAP staff at the numbers indicated in Appendix 1.

### **4 CONTRACT INVOICES**

#### **4.1 INVOICE SUBMISSIONS**

An invoice is to be filled out and submitted quarterly from the beginning of the fiscal year, April 1. A sample of the invoice is included as Appendix 4. Send invoices on or about June 30th, Sept. 30th, Dec. 31st and March 15th. Federal and Provincial monitoring costs are inclusive in each contract and therefore only one invoice needs to be submitted.

#### **4.2 YEAR-END INVOICE**

The final invoice for each fiscal year and the final payment under each contract should be received 14 days before the end of March to allow it to be processed and a cheque issued before March 31st. Any sampling to be done between March 15 - 31 should be included on the year-end invoice.

#### **4.3 INVOICE MAILING ADDRESS**

Mail your invoice to:

ENVIRONMENT CANADA  
ENVIRONMENTAL CONSERVATION BRANCH  
SUITE 201-401 BURRARD STREET  
VANCOUVER, B.C.  
V6C 3S5

DO NOT SEND  
YOUR INVOICE  
TO THE  
LABORATORY

**Attn:** Andrea Ryan.

Also, indicate (Contract Invoice) on the outside of your envelope.



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## Head Offices

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Environment Canada 201-401 Burrard Street Vancouver, BC V6C 3S5	Ayisha Yeow	(604) 666-2291	ayisha.yeow@ec.gc.ca
	Andrea Ryan	(604) 664-4001	andrea.ryan@ec.gc.ca

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Ministry of Water Land and Air Protection 3 <sup>rd</sup> Floor 2975 Jutland Road Victoria, BC V8T 5J9	Les Swain	(250) 387-4227	Les.Swain@gov.bc.ca
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## Ministry of Water Land and Air Protection Regional Offices

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Lower Mainland Region 2 <sup>nd</sup> Floor 10470 152 <sup>nd</sup> Street Surrey, BC V3R 0Y3	Dennis Barlow	(604) 582-5277	Dennis.Barlow@gov.bc.ca
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Vancouver Island Region 2080 Labieux Road Nanaimo, BC V9T 6J9	John Deniseger	(250) 751-3184	John.Deniseger@gov.bc.ca
	Deb Epps	(250) 751-3146	Deb.Epps@gov.bc.ca

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Okanagan Region 201-3547 Skaha Lake Road Penticton, BC V2A 7K2	Vic Jensen	(250) 490-8258	Vic.Jensen@gov.bc.ca
	Virginia Stanford	(250) 490-8275	Virginia.Stanford@gov.bc.ca

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Thompson Region 970 A Comosun Crescent Kamloops, BC V2C 6G2	Bob Grace	(250) 571-5255	Bob.Grace@gov.bc.ca
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Kootenay Region 401-333 Victoria Street Nelson, BC V1L 4K3	Jolene Raggett	(250) 354-6389	Jolene.Raggett@gov.bc.ca
	Tamara Mickel	(250) 354-6106	Tamara.Mickel@gov.bc.ca

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Omineca and Peace Regions 3 <sup>rd</sup> Floor 1011 4 <sup>th</sup> Avenue Prince George, BC V2L 3H9	Bruce Carmichael	(250) 565-6455	Bruce.Carmichael@gov.bc.ca
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Caribou Region 400 – 640 Borland Street Williams Lake, BC V2G 4T1	Chris Swan	(250) 398-4567	Chris.Swan@gov.bc.ca
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OFFICE NOTES



Environment Canada  
Pacific and Yukon Region



Station:

SUNAS @ HUNTINGDON

Prov. Basin S.Bas Sequential

BC 08 NH 0027

LABORATORY USE ONLY

ALIQUEOTE:

FOLDER:

- ☐ 0201 General ☐ 3001 Coliform  
☐ 0502 Total Metals ☐ 1201 LL Unfilt.  
☐ 0501 As/Se Metals ☐ 0902 AOX  
☐ 5301 TP ☐ 0424 CN  
☐ Other

Date Received

NWQL Project No.

4 -

- ☐ S33 Total ☐ S31 Extractable  
☐ S34 Dissolved As  
☐ S35 Total As

DATE OF SAMPLING

Number Year Month Day Hour Minute Zone  
 P Y 0331 2 0 02 1115 1105PDT

FIELD ANALYTICAL RESULTS

97060S 10301S

pH

02061S 02041S

SPECIFIC CONDUCTANCE

100510 10.2

DISSOLVED OXYGEN (mg/l)

Collector:

Dennis Duro

Date:

Nov 15/02

(Please Print)

**SAMPLING:**

☒ Bridge    ☐ Shore  
☐ Boat    ☐ Other\*

**SAMPLER:**

☒ Regular    ☐ Through Ice    ☐ Other\*

**LOCATION:**

☒ Designated    ☐ Winter    ☐ Others

**DEVIATION FROM PROTOCOLS:**

☒ No    ☐ Yes\*

\* Explain in Remarks section

**WEATHER:**

RAIN    WIND: none

**SAMPLER REMARKS**

- TRUCK DROVE BY WHILE  
 PUTTING CAPS ON BOTTLES

**SAFETY CONCERNS, EQUIPMENT REQUIRED OR ISSUES**

- LOST THERMOMETER → NEED  
 REPLACEMENT

**LAB NOTES**


**PRESERVATIVE BATCH CONTROL**

Metals	Cyanide	AOX





# INVOICE

## WATER QUALITY SAMPLE COLLECTIONS

Payment request for the collection of water quality samples  
for the period July 1 2003 to Sept 30 2003.

<u>Station Name</u>	<u>Sampling Dates</u>	<u>No. of Collections</u>
ABC River @ Mouth	July 1	1 + DO
	15	1 + DO
	29	1 + DO
objective	Aug 5	1 + DO
	12	1 + DO
objective	19	1 + DO
	26	1 + DO
	Sept 9	1 + rep + blank + 2 DO
	23	1 + DO

Total Collections 9 Cost / Collection \$40 TOTAL CLAIM \$360 + 30 + 150  
 + Rep/Blank @ \$15 = \$30  
 + 10 DO @ \$15 = \$150  
= \$540

### COLLECTOR

Name Joe River  
 Address 8888 River Road  
River, BC  
 Postal Code V5R 4S8

### Submit To:

Andrea Ryan  
 Environment Canada  
 Environmental Conservation Branch  
 201-401 Burrard Street  
 Vancouver, BC  
 V6C 3S5

FOR OFFICE USE ONLY	
Doc. No.	Type
Commit. No.	R/C
Vendor Code	
Cost code	Activity Element
Cost Element	Authority Code
Line Object	Amount
Certified Pursuant To F.A.A. Section 27	
Pre-Audited by	

Signature Joe River Date Sept 15, 2003





## 12 and 24 Hour Time Reference Table

<u>12 hour clock time:</u>	<u>24 hour clock time:</u> <u>(Hours)</u>
1201 (1 minute after midnight)	0001
1:00 AM	0100
2:00 AM	0200
3:00 AM	0300
4:00 AM	0400
5:00 AM	0500
6:00 AM	0600
7:00 AM	0700
8:00 AM	0800
9:00 AM	0900
10:00 AM	1000
11:00 AM	1100
12:00 PM	1200
1:00 PM	1300
2:00 PM	1400
3:00 PM	1500
4:00 PM	1600
5:00 PM	1700
6:00 PM	1800
7:00 PM	1900
8:00 PM	2000
9:00 PM	2100
10:00 PM	2200
11:00 PM	2300
12:00 AM	2400

### Notes:

PST – Pacific Standard Time

PDT – Pacific Daylight Time

MST – Mountain Standard Time

MDT – Mountain Daylight Time





# EQUIPMENT FORM

Environment Canada, Pacific and Yukon Region  
BC Ministry of Water, Land and Air Protection

*Federal-Provincial Water Quality Monitoring Network*

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Water Quality Station and Number: \_\_\_\_\_

Employees/Contractors Name (please print): \_\_\_\_\_

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## MONITORING EQUIPMENT

- ☐ 1999 water quality sampler & splash plate
- ☐ under ice sampler
- ☐ new rope with swivel
- ☐ 1 red equipment bag
- ☐ 1 field thermometer with case
- ☐ 1 air thermometer
- ☐ 1 ice auger & container
- ☐ 1 gas can
- ☐ 1 dissolved oxygen kit

## SAFETY EQUIPMENT

- ☐ 1 Water Sampling Field Operations and Safety Manual
- ☐ 1 pair of safety glasses
- ☐ 1 Personal Flotation Device (PFD) - check type ☐ *NorthWater Rescue* ☐ *America's Cup*  
Does PFD have extraction leash? ☐ yes ☐ no
- ☐ 1 throw bag (\_\_\_\_\_ feet of rope)
- ☐ \_\_\_\_\_ carabiner(s)
- ☐ 1 quick release belt
- ☐ 1 hand line (length: \_\_\_\_\_ feet)
- ☐ 1 microline
- ☐ 2 reflective safety cones
- ☐ 1 reflective safety vest
- ☐ 1 portable traffic control sign
- ☐ 1 pair footwear (felt bottom boots etc.)
- ☐ 1 canister of bear spray with holder

## ICE SAFETY EQUIPMENT

- ☐ \_\_\_\_\_ ice screw(s) (type: \_\_\_\_\_)
- ☐ \_\_\_\_\_ pulley(s)
- ☐ 1 ice chisel
- ☐ 1" Tublar webbing (length: \_\_\_\_\_ )

## SAFETY TRAINING

- ☐ Swift Water Rescue
- ☐ Boating Safety
- ☐ Ice Safety

**Please note:** Contractors are responsible for using all safety equipment during the sampling period. All safety and monitoring equipment (or replacement costs) must be returned at the end of their sampling contract.

## INSTRUCTIONS

- ☐ Verbal instructions on the care and use of a Personal Flotation Devices (lifejacket), safety cone, safety vest, safety glasses and safety gloves.
- ☐ Copies of the Manufacturers Safety Data Sheet (MSDS) for the water quality sample preservatives: nitric acid and sodium hydroxide and verbal instructions on their safe use, storage, and disposal (or return of). This includes any other relevant chemicals.
- ☐ Copy of the site assessment from Rescue Canada (if applicable).
- ☐ Verbal instructions on the safe use of the water quality sampler, thermometer, ice auger and ice chisel.
- ☐ Verbal and written instructions on the procedures to follow in the event of the following emergencies: severe weather, overdue in the field.
- ☐ A written list of emergency contact numbers and additional safety equipment, not supplied by Environment Canada, but recommended.

***The undersigned has received the above equipment and instructions  
for water quality sampling:***

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Employee' s/Contractor' s Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Auditor' s Signature: \_\_\_\_\_ Date: \_\_\_\_\_

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*Revision update Jan 2001*

## FIELD SAFETY INSPECTION CHECKLIST

**Station Name:**

**Collector's Name:**

**Paper copy signed**

**Inspection Date:**

**Inspected By:**

**File/Forward Report To:**

**Name of person knowing collector's whereabouts:**

**Date of last safety training session for this sampler at this site:**

**A. VEHICLE SAFETY:**

N/A

*COMMENTS*

1. Vehicle Parked in a Safe Location
2. Vehicle Hazard Lights On
3. Reflective Vest On
4. Appropriate Traffic Safety Equipment  
for that specific station

**B. BRIDGE SAFETY:**

N/A

*COMMENTS*

1. Walk on Sidewalk or Bridge  
Facing Traffic
2. Attach Sampler Rope to Railing
3. Check for Boats & Floating Debris
5. Warning Signs/Pylons Erected  
Safety Vest (if necessary)

**C. SHORE & WADING SAFETY:** N/A *COMMENTS*

1. Second Person Present
2. Personal Flotation Device (PFD) On
3. Life-Line On and Secured

**D. BOAT SAFETY:** N/A *COMMENTS*

1. Second Person Present
2. Boat Safety Certificates
3. PFD's for all Boat Occupants
4. Minimum Equipment Requirements<sup>1,2</sup>  
(see Safe Boating Guide, Canada Coast Guard)
5. First Aid Kit

**5. ICE SAFETY:** N/A *COMMENTS*

1. Second Person Present
2. Appropriate SWR Safety Equipment  
specific for that station
3. Safe Use and Storage of Ice Auger

<sup>1</sup> Minimum requirement for vessels (Canadian Coast Guard, Safe Boating Guide and WCB regulations).

<sup>2</sup> A fire extinguisher is required if the vessel has an inboard motor or fixed fuel tank or heating/cooking appliance that uses a liquid or gaseous fuel.

## **FIELD SAMPLING QUALITY ASSURANCE INSPECTION CHECKLIST**

**Station Name:**

**Collector's Name:**

**Paper Copy Signed**

**Inspection Date:**

**Inspected By:**

**File/Forward Report To:**

**Date of sampling training session for this sampler at this site:**

**A) GENERAL:**

*COMMENTS:*

1. Samples early in week to avoid transit delays
2. Bottles clearly labeled and dated before wetting
3. Sampler and rope are clean before use
4. Caps removed just prior to sampling and protected from contamination.
5. Samples only at designated site; location deviations are always recorded.
6. Samples in deep, well-mixed flowing water
7. Samples upstream when wading, avoids collecting stirred-up water.
8. Avoids causing debris to fall from bridge into water or sampler.
9. Bottles are filled to correct level and securely capped immediately after filling.
10. Does **NOT** come into contact with sampled water or inside of bottles and/or caps.
11. Allows thermometer to equilibrate 3 - 4 minutes in "field" bottle before reading; never inserts thermometer into any other bottle.

*COMMENTS:*

12. Records sample time as hh/mm (2400 hour clock) and sample date as yy/mm/dd on all requisitions.
13. Packs sample bottles carefully with enough ice or cold packs to cool temperature-sensitive samples. Ensures that glass bottles receive extra packing.
14. Records field data and observations & possible contamination sources where appropriate.
15. Reusable sampling and safety equipment are kept clean and securely stored for future use.
16. Shipping coolers are securely taped with a destination label on each.

**B) PRESERVATIVES HANDLING:**

N/A

*COMMENTS:*

1. Handles preservatives carefully using appropriate safety equipment.<sup>1</sup>
2. Demonstrates technique that minimizes spilling and preservative contamination.
3. Ensures no contact between preservative vial or dispenser with samples bottle or sample water.
4. Re-caps empty preservative vial, places it in the secondary container and returns it with the cooler.

**C) OTHER CONCERNS or COMMENTS:**

## FIELD PREPARATION CHECKLIST

Environment Canada, Pacific and Yukon Region

BC Ministry of Water, Land and Air Protection

*Federal-Provincial Water Quality Monitoring Network*

### **SAMPLING EQUIPMENT**

- 1. 1999 Multi-Sampler and Splash Plate ☐
  - Are the rope and multi-sampler clean? ☐
- 2. Dissolved Oxygen Sampler and Kit (if required) ☐
- 3. Water Sample Kit ☐
  - Is there a frozen ice pack in the kit? ☐
- 4. Preprinted Waybill ☐
- 5. Thermometer ☐

### **BRIDGE AND SHORE FIELD SAFETY EQUIPMENT**

- 1. Goggles ☐
- 2. Personal Floatation Device (if shore sampling of wading) ☐
- 3. Hand line and Throwbag (if required) ☐
- 4. Bear Spray (if required) ☐

### **ICE SAFETY AND SAMPLING EQUIPMENT (if required)**

- 1. Ice screws and carabiners ☐
- 2. Pulley ☐
- 3. Tether ☐
- 4. 1" Tublar Webbing ☐
- 5. Ice chisel ☐
- 6. Ice auger ☐
- 7. Through-ice sampler ☐
- 8. 2 – 2L bottles (1 blue label, 1 yellow label) ☐

### **VEHICLE SAFETY EQUIPMENT**

- 1. Traffic cones ☐
- 2. Reflective vest ☐

### **FIELD SAFETY CHECK IN/CHECK OUT PROCEDURES**

- 1. Check Out
  - Field Safety Card
  - Has the card been given to a contact or friend? ☐
  - Does a contact or friend know where you are? ☐
- 2. Check In
  - Does your contact know you are back? ☐

# Field Safety Card

Sampler's Name: \_\_\_\_\_

Departure Time: \_\_\_\_\_

Estimated Arrival Time: \_\_\_\_\_

Vehicle Type and Licence: \_\_\_\_\_

Location and Route Taken: \_\_\_\_\_

\_\_\_\_\_

For emergencies or if I miss the arrival time, call:

Police: 911

Federal Government Contact:      Ayisha (604) 619 4337  
Andrea (604) 616 0327

Nearest Hospital Address and Phone:

\_\_\_\_\_

\_\_\_\_\_