

QAM-Q-112

Sample Compositing

Revision 16

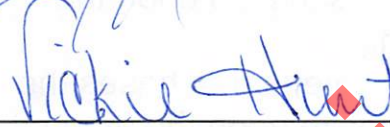
Approval:



Laboratory Manager

7-30-19

Date



Concurrence

7-30-19

Date

Effective Date 7-31-19

Renewal Date 7-28-20

Initials SP4

4-12-27

jn

QAM-Q-112
Sample Compositing

1. Applicability

This procedure applies to all water quality samples to be composited for analysis by the Texas Institute for Applied Environmental Research (TIAER) laboratory, Tarleton State University, Stephenville, Texas. Compositing criteria may be based on stream flow or other representative methods deemed appropriate by the Program/Project Manager.

2. Purpose

The purpose of this procedure is to provide a method for the mixing of two or more water samples to obtain a new sample representative of the composited samples. Compositing is performed to reduce sample load to the laboratory, reduce redundant data generation, reduce holding time violations, ensure sufficient sample volume or for a variety of other reasons.

3. Definitions

- 3.1 Compositing: the mixing of two or more samples to obtain a new sample representative of the composited samples upon the selection criteria guiding the compositing
- 3.2 Flow weighted: a compositing selection criteria that bases the amount of each sample used in a composite upon the amount of stream flow associated with the time of sample collection compared to the total amount of flow during the compositing period
- 3.3 FLOW8: a combination of SAS programs developed by TIAER for use in flow-weight compositing of sample aliquots. The program uses level data and sample collection time data from the flow meter and site-specific rating curves to determine how many milliliters of sample should be used from each aliquot in producing a composited sample.
- 3.4 Chain of Custody/Sample Information Form - a form that accompanies a sample or set of samples from the time samples leave custody of those who collected them through the login procedure and sample disposal to data entry into the laboratory database (see Attachment 1, QAM-Q-110 for example COC). Sample identification information is recorded on the COC. The COC may be attached to shipping documents, field data sheets, flow data sheets, Samlink printouts, and/or flow-weighting printouts for the sample(s), as appropriate. The data on the COC

QAM-Q-112
Sample Compositing

and attached sheets represent the sample(s) in the database entry process, data review and validation and data storage. Refer to QAM-Q-104, "Laboratory Data Entry and Review" for further data entry information. Each TIAER COC has space for data on numerous samples. COCs may also be provided from other organizations, provided all necessary information is contained on them.

- 3.5 DPC: desktop personal computer- located at the TIAER facility and used to receive data from the field PC
- 3.6 Previous run: the next-to-last time that a FLOW8 program was run; most of the programs used for compositing samples keep date/time data from both the last run and from the next to last or previous run.
- 3.7 Sample collection: creation of a sample or sample aliquot when the automatic sampler fills a sample bottle

4. Equipment, Reagents and Standards

4.1 Equipment

- 4.1.1 Computer and network printer
- 4.1.2 Various sizes of calibrated graduated cylinders

4.2 Reagents and Standards

None

5. Procedure

5.1 Sample Login

5.1.1 Sample sites for compositing are selected by the Program/Project Manager with direction to the Laboratory Manager and Field Operations Supervisor.

5.1.2 The sample login person logs in samples in accordance with QAM-Q-110, "Sample Receipt and Login" and confirms the following:

5.1.2.1 The appropriate section of the COC states the numbers of the bottles, the end time, and, if applicable, the start time to be used in the composite.

5.1.2.2 The bottles to be composited are labeled with the same site name.

5.1.2.3 The correct bottles are present and correspond to the COC designations.

5.1.2.4 A sample partition report for each site is attached to the COC, if applicable.

QAM-Q-112
Sample Compositing

- 5.1.2.5 If information, samples, or labels are missing or incorrect, the sample login person initiates corrective action by contacting the person who submitted the samples, then others who may be able to supply correct information or samples. If correct information is not available, the laboratory manager is informed immediately so that further corrective action can be initiated. A correction action report (CAR) is completed to document the lack of information and corrective actions if the problem is not readily and easily resolved.
- 5.1.2.6 If everything necessary to successfully run the FLOW8 compositing program is not available and holding time exceedances may occur, the Laboratory Manager will either have the samples run sequentially or consult the Project Manager to determine the appropriate actions. A CAR is written to document the occurrence.
- 5.2 Flowlink Program. The compositing person takes the COC to the designated DPC to operate the Flowlink program. In special situations, a beginning time is written in the appropriate section of the COC. The beginning time should be noted because the program is run somewhat differently when the beginning time is specified, rather than automatically chosen by the program. Some characters, which are highlighted or of a different color/shade than the others, work in conjunction with the "Alt" key to select the indicated screen option. Option selections may be made by either clicking the mouse or pressing "Alt" and the highlighted character keys together.
- 5.2.1 Computer Startup If the computer is turned off or needs to be rebooted, the following steps are followed for login.
- 5.2.1.1 If necessary, turn the computer on. As directed, press Ctrl, Alt, and Delete to initiate login. When the "Tarleton State University" screen appears, press Enter or click on "OK". The login window should pop up.
- 5.2.1.2 Type in the password to login or select "Switch User" to change users.
- 5.2.2 Start the Flowlink program by double clicking on the "1st Flowlink" icon within the "Lab" group folder.

QAM-Q-112
Sample Compositing

- 5.2.2.1 The Flowlink banner appears. It will go away in about five seconds, but the enter key may be pressed to clear it from the screen. The main “Flowlink 3.23” screen should be seen.
 - 5.2.2.2 Click “File” (or F3 key) to bring up the “Open File” screen. If the directory is not C:\DATAMGR\FLOWDATA, select the “Change Directory” box. On the “Change Directory” screen, click on the directory entry that is displayed, and type “C:\DATAMGR\FLOWDATA” then select the “OK” box.
- 5.2.3 Select site and check date/time of sample
- 5.2.3.1 A list of sampling sites will be displayed on the screen. Find the desired site by either scrolling with the “slide panel” on the right of the files list box or using the up and down arrow keys. Select the site file by clicking on it so that it shows in reverse video, and click on “OK.” (Double-clicking on the site name will also select it.) The “Site File” screen will be displayed. Select the “Report” box to bring up the Report screen.
 - 5.2.3.2 Inspect the partition box in the upper portion of the Report screen. It should contain a line labeled Level. A begin date/time stamp and an end date/time stamp are displayed on the line, which indicate the time frame for which water level data are available. Another line labeled Sample Event may be shown in the partition box, also containing beginning and ending date/time stamps which encompass the time frame for which sample data are available.
 - 5.2.3.2.1 If both partitions are not displayed, add the missing partition(s). If additional partitions are displayed, such as a Rainfall partition, delete them.
 - 5.2.3.2.2 Compare the beginning and ending date/time stamps on both the Level partition and the Sample Event partition with the date/time for the first sample indicated on the sample partition report (or as a start time in the comments section of the COC) and the ending date/time indicated in the Comments section of the COC. The partition date/times should

QAM-Q-112
Sample Compositing

encompass the sample start and end times as indicated in the Comments section of the COC and/or the attached sample partition report.

5.2.3.2.3 If the date/time stamps are not appropriate for the sample, do the following:

5.2.3.2.3.1 If there is not enough data showing for the endtime, click Cancel (or Alt c), Close (or Alt s) and F3 to get back to the "Open File" screen. Reopen the file. If there is still not enough data, notify field personnel.

5.2.3.2.3.2 Check for additional site files with the same site identification.

5.2.3.2.3.3 Review documentation for transcription errors,

5.2.3.2.3.4 Contact the sample collector, Field Operations Supervisor, Data Manager, Data Supervisor, or Project Manager for further guidance and problem solving.

5.2.3.3 More than one file for the same site may be displayed in the "Open File" screen if data from a previous day have not been deleted. If duplicate site files exist, the program cannot determine the correct file to use. You must review the site files until you find one with the appropriate beginning and ending date/time stamps.

5.2.3.3.1 Double click on one of the site files, then select the "Report" box. If both the Level and the Sample Event partitions are not displayed, add them. Review the beginning and ending date/time stamps to determine whether the selected file contains sample and level data that encompass the beginning and ending date/times on the COC and/or the Samplink sheet for the sample.

5.2.3.3.2 If the selected site file does not contain the appropriate date, cancel then close the file (or Alt-C, then Alt-S) and click F3 to take you back to the "Open File" screen, and select another site file with the same site ID.

QAM-Q-112
Sample Compositing

5.2.3.4 If none of the site files match the correct date or if a file indicates “No data to report,” first check to be sure you have reviewed all available files for the site, then initiate corrective action by contacting the person who submitted the samples and files. If that person is not available, contact the Automated Sampling Supervisor, Data Supervisor, Data Manager, or Project Manager.

5.2.4 Add/Delete Partitions to site files

5.2.4.1 The Partition box of site files should have one partition line for “Level” and another for “Sample Event”. If both lines are not present, select the “Add Partition” box. This will bring up the “Change Partition” window. Highlight a partition line to add, then select “OK” or double-click the desired line.

5.2.4.2 When adding a “Level” partition line, a smaller window will appear and ask if level to flow conversion is wanted; respond by selecting “NO”. If “YES” is chosen, an incorrect file type will be generated and all aliquots will show as zero mL after the Flow8 program is run.

5.2.4.3 If there are more than those two partition lines, highlight a line to remove and select the “Remove Partition” box; do this for each line to be removed.

5.2.5 Export File (Build the csv file)

5.2.5.1 In the “Report Type” box, select “Detail Export” (NOT Report).

5.2.5.2 In the “Send To” box, select “File” then enter the file name to assign to this site’s data. Normally, the site identification (ex. bo040) will be used to name the files.

5.2.5.3 Set the “Interval” at 5 minutes, if not defaulted to this value.

5.2.5.4 Input the “Beginning Time and Date.”

5.2.5.4.1 At the start of a rain event, “Beginning” time should be at least 35 minutes before the first sample as noted on the sample partition report attached to the COC.

QAM-Q-112
Sample Compositing

- 5.2.5.4.2 In a continuing event, the “Beginning” time should be at least six hours prior to the first sample collection time as noted on the sample partition report attached to the COC. Bottles not used can be deleted at a later point.
- 5.2.5.4.3 If a start date and time are input in the Comments section of the COC, which is not typical, enter the specified time/date as the beginning time/date.
- 5.2.5.4.4 If there are successive rain events close together, going back too far may pick up bottles from the previous rain event. During the bottle selection process later, be sure to check the dates associated with the bottles. Some bottles may be numbered the same, but have different dates in this case.
- 5.2.5.5 Set the “End Time and Date.” Enter the end time and date specified in the Comments section of the COC. If an end time is not specified, contact the field person who submitted the samples or other appropriate personnel, which may include the Field Supervisor, Data Supervisor, Data Manager or other authorized field staff, to determine the appropriate end time and date.
- 5.2.5.6 After entering the beginning and ending times and dates, check the COC to ensure that entered times and dates completely include the beginning and ending times and dates for the sample as indicated on the sample partition report and in the Comments column of the COC.
- 5.2.5.6.1 If the times and dates do not include the beginning and ending times and dates for the sample within 5 minutes, as noted on the COC, then cancel the report window, close the site file, and then re-open the site file. Recheck the beginning and endings times. If they still do not encompass the beginning and/or ending times and dates on the COC within 5 minutes, contact the field person who submitted the samples or other appropriate personnel as noted in below to determine the appropriate action.
- 5.2.5.6.2 In some circumstances, USGS flow data are used for compositing. The Data Supervisor or designee will

QAM-Q-112
Sample Compositing

handle the compositing program, as appropriate for the circumstances.

5.2.6 When all the “Report” screen parameters are correctly set, select “OK”. A smaller “Writing” window will briefly appear and the partition and times/dates will be displayed as they are written to the file. When the “Report Complete” window appears, select “OK”. If the “Report” screen is still seen, select “Cancel” which will return to the “Site File” screen. Select “Close” to return to the main screen.

5.2.7 If there are more sites to download, repeat steps. If reports for all the samples have been exported, type Alt-x to end the Flowlink program.

5.2.8 If wrong time entry or other error is recognized while building the csv file, press ALT-TAB to minimize the FLOWLINK window. Open the FLOWDATA directory, then delete the incorrect CSV file. If all files are incorrect, or it is not known which file is incorrect, delete all the CSV files and begin again. Do not delete the other information in the folder. Click ALT-TAB again to maximize the FLOWLINK window and proceed.

5.3 FLOW8 Program

5.3.1 At the main Windows screen, double click on the “2nd Flow8” icon within the “Lab” group folder. The Command Prompt window opens and an alphabetical list of the sites for which csv files were created in Flowlink appears.

5.3.2 The program prompts you to enter y (for yes) or n (for no) for each bottle from each site. The COC lists which bottles are to be composited from that particular site that day. Check the times and dates shown on the screen to see if they are reasonable (encompass the time frame) for that sample group. The sample partition report that is stapled to the COC lists the time of each bottle to be used and may be referenced if needed. If times and dates on the screen do not encompass the time frame of the sample group, the wrong file may have been chosen during “FLOWLINK” or transferred from the field PC (before “FLOWLINK”).

5.3.2.1 If running the program for more than one site, note the site(s) with the problem(s) and continue by entering “no”

QAM-Q-112
Sample Compositing

for the remainder of the bottles for the problem site(s). Continue answering the y/n questions for the other sites.

5.3.2.2 When the FLOW8 program finishes and prints the compositing report, throw away any pages that pertain to site(s) with problems or that were inappropriately selected.

5.3.2.3 Run RESTORE for the site(s) in error

5.3.2.3.1 Click on the command prompt icon. Type “**restore xxnnn**” at the prompt (c:\), where **xxnnn** is the name of the site to be reset. This resets the history file of date/time stamps used by the FLOW8 program to the previous (next-to-last) FLOW8 run. Start over only for the site(s) in error.

5.3.2.4 The SETIT command can be used to set a site to a particular date/time and bottle #. If RESTORE is run more than once without the flow8 being run, setit can be used to set the site to the proper date/time.

5.3.3 After the appropriate bottles have been selected, the SAS prompt and some gray message boxes will flash across the screen. When the program is finished a gray message box prompting you for start times will appear. Follow the directions in the message box, they say to press the TAB key and then enter a start time if necessary (from the COC or other source if indicated by proper authorities) or a period and then ENTER.

5.3.4 When prompted, collect printouts from network printer and review them for reasonableness (i.e., all bottles are listed with volumes for each).

5.3.4.1 Write the sample number, which is shown on the COC, on each composite printout sheet.

5.3.4.2 Circle the first “Time of First Stage Reading” and last “Time of Last Stage Reading” on the composite printout sheet. These are the start and end date(s) and the start and end times for the sample. Circle the first and last bottles actually used in physically compositing the sample.

QAM-Q-112
Sample Compositing

- 5.3.4.3 Bottles not used in the composite, due to zero volume indicated by the FLOW8 program, should be marked through on the FLOW8 printout and COC with the initials and date of the person running the compositing program. Correct the COC, if necessary, to match the revised date and time.
- 5.3.4.4 Check the ending date and time on the Flow8 printout against the end time written in the Comments column of the COC. If they differ by more than five minutes (or 15 minutes for USGS data), check for errors and correct them. The program may need to be rerun to get the correct end time. If no errors are found, contact the Data Manager or the Data Supervisor for advice and/or assistance.
- 5.3.4.5 Check the start date and time on the Flow8 printout for appropriateness. If the time looks suspicious the sample partition report may be referenced. Suspicious times include the following:
- 5.3.4.5.1 a time of 00:00, which is the default time in Flowlink, meaning that the program may not have used an appropriate start time,
 - 5.3.4.5.2 a time of 22:22 in the middle of a storm indicates that the sampler has been reset, which should not happen in the middle of a storm,
 - 5.3.4.5.3 any time that causes the "Elapsed Hours -- First to Last Stage" value to be greater than the following "Elapsed Hours -- First to Last Stage" value, and
 - 5.3.4.5.4 any "Elapsed Hours -- First to Last Stage" values that are greater than eight hours since typically the largest time interval used is eight hours.
- 5.3.4.6 Review beginning time with respect to the sample's sequence in the storm or for special circumstances

QAM-Q-112
Sample Compositing

- 5.3.4.6.1 If it is the first bottle of an event, the start time should be thirty minutes prior to the actual time sample taken.
- 5.3.4.6.2 If it is not the first bottle of an event, the beginning time should be halfway between this bottle and the bottle prior to it.
- 5.3.4.6.3 If a beginning/start time was given on the COC, it should match the time on the Flow8 printout within five minutes. A beginning time is given if a storm grab was collected during the storm, for problems with the flow meters or automated samplers, or other unusual situations.
- 5.3.4.7 After the sample has been physically composited, if the COC indicates RESET SAMPLER, click on the command prompt icon and type "resetsampler xxnnn" at the prompt "c:\>", where there is no space between "reset" and "sampler" and xxnnn is the site name. Then press enter and repeat for all sites to be reset, when finished exit the screen. Indicate that the site has been reset by initialing next to "RESET SAMPLER" on the COC. Typing the reset sampler command runs a program necessary to properly run subsequent FLOW8 programs for that site.
- 5.3.4.8 If the compositing report is not correct, the person running the compositing program may either trouble-shoot, or call the Data Manager or Data Supervisor for assistance.
- 5.3.4.9 If the bottles and the ending and beginning times are correct, make sure the correct sample number is indicated. Initial the sheet in the upper right hand corner (there is a line for this).

QAM-Q-112
Sample Compositing

5.4 Rerunning the FLOW8 compositing program by Laboratory Personnel.

5.4.1 If a compositing report needs to be re-run for any reason, the ending date/time stamp from the previous run needs to be restored so it can be used in the program. This is done by running RESTORE, which copies the previous ending date/time stamp over the current ending date/time stamp. If this is not done, when the program reruns, it will have no data prior to the current ending date time/stamp and will not produce a report. It will give an error message that no data are available.

5.4.2 If, while running the FLOW8 program, a data entry mistake is noticed, the program can be aborted using CTRL C. The history file will not be updated and the RESTORE program should not be run for any of the sites involved in that running of the FLOW8 program.

5.4.3 If the RESTORE program is run when it is not needed, such as after pressing CTRL C in the middle of a run, the last date/time stamp will be set to a much earlier time. The next time the FLOW8 program is run, it will probably define the first bottle in the current set as the first bottle of a storm event and will take only one-half hour's worth of stage readings before the time of the first bottle. If RESTORE is run when it is not needed, manually set the last date/time stamp or call the Data Manager or Data Supervisor to help with this step.

5.4.4 Run SETIT at the command prompt "c:\>" by typing "**setit.bat xxnnn ddmmyyyy:hh:mm #**" where *xxnnn* is the site name, *ddmmyyyy:hh:mm* is the day, month, year, hour, and minute of the last stage reading from the previous day's report which is 5 min prior to the start time that should be used (or if setting a start date and time indicated on a COC, enter the start date on the COC and a time five minutes earlier than the start time on the COC), and **#** is the bottle number of the last bottle from the previous day's report. The FLOW8 program, step 2, (and Flowlink, step1, that creates the csv file if necessary) can

QAM-Q-112
Sample Compositing

then be rerun, producing the correct compositing percentages.

5.5 Viewing the History File by Laboratory Personnel

5.5.1 If the Flowlink program was run correctly but the final FLOW8 report is still incorrect, then the problem may be with the history file of ending sample times. In order to ascertain the date/time used by the FLOW8 program as the ending date/time for a sample, run SHOW.BAT.

5.5.1.1 Click on the command prompt icon and at the (c:\) prompt type **show.bat**.

5.5.1.2 Then type **grep xxnnn show.lst**, where *xxnnn* is the site name, typed in lower case.

5.5.2 The output from will be a line of information containing the following (in this order):

5.5.2.1 Line number from SHOW.LST (this is of no importance)

5.5.2.2 Site

5.5.2.3 The ending date/time-stamp used the last time FLOW8 was run for the site.

5.5.2.4 The ending date/time used for the previous (next-to-last) time FLOW8 was run for the site or the SETIT.BAT date/time stamp if SETIT.BAT was run prior to the last FLOW8 run. (Note: If RESET SAMPLER was run after the previous FLOW8 run, the date/time stamp will read 22FEB2012:22:22:22 to make sure the difference in date/time stamps is greater than four hours.)

5.5.2.5 Final bottle number used the last time FLOW8 was run.

5.5.2.6 Final bottle number used the previous time FLOW8 was run or, if SETIT.BAT was run prior to the last FLOW8 run, the final bottle number indicated by SETIT.BAT.

5.5.3 Example of output from SHOW.BAT (the SHOW.LST file):

al020 25JUN2014:10:16:00 24JUN2014:06:05:00 18 12

Pertinent information is shown for the last FLOW8 run for AL020 includes the 10:16 end time on 25Jun2014 and the last bottle number used in the composite, which was 18. Compare the end date/time and final bottle listed on the COC to the end

QAM-Q-112 Sample Compositing

date/time and final bottle number in the SHOW.BAT output. If they are not the same, then a wrong end time may have been input. If the second date/time on the SHOW.BAT output line is to be used as the first date/time for the sample, run RESTORE.BAT for the site, If the second date/time on the SHOW.BAT output line is not the correct time to be used as the first date/time FOR THE SAMPLE, run SETIT.BAT for the site, THEN START OVER.

5.5.3.1 The output from SHOW.BAT can BE USED TO determine whether RESETSAMPLER was run after the previous FLOW8 run. The output from SHOW.BAT can be used to determine whether a begin date/time written on the COC was correctly set with SETIT.BAT. The date/time stamp from the COC will be shown as the end date/time of the previous sample in the history file. If the previous date/time stamp is not the one written on the COC, run SETIT.BAT to set the appropriate begin time (see step 5.6.4) or call the Data Manager or Data Supervisor for assistance. The FLOW8 program then can be run for this particular site with the appropriate begin time.

5.5.3.2 The output from SHOW.BAT can be used to deduce the begin time used by FLOW8 for the last sample. The FLOW8 program compares the date/time stamp of the first bottle in a set of samples to the end date/time stamp of the previous run. If the difference in date/time stamps is greater than four hours, FLOW8 interprets this as a new storm and sets the begin time for the flow-weighting run at one-half hour prior to the first bottle. If the difference is less than four hours, it is considered an ongoing storm and the begin time is set at five minutes after the end time of the previous sample at that site.

5.5.3.3 For an intermediate sample during a continuing storm, the program uses the mid-point between the collection time of the last bottle in the previous run and the first bottle in the last run as the begin time for the last FLOW8 run. (Time of bottle collection is noted on the Samplink sheet attached to the COC.) This is done automatically by the program.

QAM-Q-112
Sample Compositing

5.5.3.4 If the end date/time stamp for the last FLOW8 run is the same as the end date/time stamp for the previous FLOW8 run, the FLOW8 program was probably run twice in a row using the same data without restoring the history file. Run SETIT.BAT to get appropriate data for running the program or call the Data Manager or Data Supervisor for assistance. Be sure to set the beginning time correctly by locating the previous day's report for the site and using the end time from the previous run as the begin time for the current run. Run FLOW8 again.

5.5.4 If problems exist with the compositing program that cannot be resolved, the Data Manager or the Data Supervisor should be contacted for advice and/or assistance.

5.6 File Cleanup by Laboratory Personnel

5.6.1 File cleanup is an important part of the compositing procedure, which should be done after all processing for the day is complete, including physically compositing the sample.

5.6.1.1 At the main Windows screen, double-click on "FLOWDATA DIRECTORY" icon.

5.6.1.2 Delete all files from the FLOWDATA directory by single clicking on the first entry, then holding the shift key down while single clicking the last entry, and pressing the delete key. Select All in the window menu will also highlight all the files

5.6.1.3 Close the FLOWDATA DIRECTORY window by clicking the X box in the upper right corner.

5.6.2 If file cleanup is not performed, more than one file will exist for sites the next time the compositing program is run. This will increase the amount of time, effort, and potentially the number of mistakes made in running the program.

QAM-Q-112
Sample Compositing

5.7 Prepare Composite Sample

5.7.1 Shake each bottle to mix well prior to pouring. Using the mL for each bottle listed on the composite printout, measure the appropriate amounts from each bottle using graduated cylinders, and pour into a single container. Note the graduated cylinder ID(s) used on the composite printout sheet. Graduated cylinders are "TD" (To Deliver), calibrated according to the appropriate SOP.

5.7.2 If the sample aliquots all appear very clean and clear, double the amount of all volumes listed on the composite printout for a final volume of 2 liters. Composite accordingly and pour the homogeneous sample into two 1-liter bottles just prior to filtering aliquots needing dissolved constituents.

5.7.3 Label the new composite bottle with correct sample number, date, and time, if not already labeled.

5.7.4 Initial and date the composite printout sheet and affix it to the COC and accompanying sample partition report.

5.7.5 If less volume exists in any of the bottles than is required by the FLOW8 compositing program, proportionally reduce volumes in all other bottles to match the lowest available volume. Example: Bottles 1, 2, 3, and 4 all contain only 600 mL, and the composite printout requires 800 mL from bottle 1, 100 mL from bottle 2, and 50 mL each of bottles 3 and 4. Reduce all bottles to $600/800$ ($3/4$) of the stated volume, so that 600 mL comes from Bottle 1, 75 mL from Bottle 2, 37.5 mL from Bottle 3, and 37.5 from Bottle 4. Write the new volumes on the composite printout for documentation. Complete a CAR and send to the Field Operations Supervisor or designee.

5.7.5.1 If the volume in one or more bottles is so low that it precludes making a proportionate composite large enough to be analyzed appropriately, laboratory staff contacts the Laboratory Manager or designee for guidance. A CAR is filled out, explaining the situation and the resolution in handling the sample and data. The Project Manager may decide what analyses should be

QAM-Q-112
Sample Compositing

removed from the test group due to low volume of sample.

- 5.7.6 Filter and preserve aliquots of the sample within 15 minutes of preparing the composited sample and document times for dissolved analyses.
- 5.7.7 Never pour excess from sample down the drain if the sample is radioactive or hazardous.

5.8 Problems with the FLOW8 compositing program

5.8.1 If problems preclude the successful production of a FLOW8 printout listing volume of each aliquot to be used in the composite and for the correct times, the individual bottles may be analyzed separately if laboratory load and project allows for the extra samples. If the extra samples will overload laboratory capacity, the Laboratory Manager contacts the Project Manager for determination of course of action. A CAR may be written to document the situation and subsequent corrective actions.

5.9 **Other Compositing Methods.** Various other program-specific compositing schemes may be used under the supervision of the Laboratory Manager or TIAER Field Supervisor as directed by the Program/Project Manager. These methods include compositing in the field due to limited sample volume and compositing based on profile depth. Each compositing scheme should be delineated in the specific Quality Assurance Project Plan for the sample site.

5.10 If, before holding times are exceeded, it is discovered that samples have been composited incorrectly, the Laboratory Manager initiates corrective action to salvage as much data as possible from remaining aliquots. Priority analytes of the project for which the sample was collected are analyzed from individual aliquots if sufficient sample remains. The Project Manager is contacted for determination of priorities. The situation and corrective actions are documented in a CAR.

QAM-Q-112
Sample Compositing

6. Quality Control and Safety Aspects

- 6.1 All aspects of this procedure are performed in accordance with the guidelines established in QAM-Q-101, "Laboratory Quality Control", QAM-W-101, "Disposal of Laboratory Waste" and QAM-S-101, "Laboratory Safety".
- 6.2 Special precautions are taken for waste and safety when compositing radioactive samples.

7. References

- 7.1 Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, Washington, D.C., latest online version (EPA approved)
- 7.2 Model 3230 Flow Meter with Plotter Instruction Manual. Isco, Inc; Lincoln, Nebraska. Copyright 1990.
- 7.3 Model 4230 Flow Meter Instruction Manual. Isco, Inc.; Lincoln, Nebraska. Copyright 1995.
- 7.4 Flowlink 3 Instruction Manual. Isco, Inc.; Lincoln, Nebraska. Copyright 1995.

8. Attachments

None