Sample Custody, Preparation Labels and Worksheet Instructions for Bench Biology Samples

1. INTRODUCTION

1.1. This method provides instruction for getting samples into Bench Biology custody using the LIMS Custody module. Prior to analysis, the analyst checks out samples from the Receiving Room, prints appropriate labels for analyses and checks samples into Biology custody. The Bench Biology section handles microbiology, chlorophyll and biochemical oxygen demand (BOD) samples. The LIMS Analysis IDs include CHLSUITE-W, DW-PLATECT, ECOLI-18QT, TCOLI-18QT, ENT-24-QT, FCOLI-MF, TCOLI-MF, EN24-QT-CL, E-MF-CL, EC-18QT-CL, FC-MF-CL, TC-MF-CL.

2. SAMPLE COLLECTION AND PRESERVATION

2.1. The Receiving Room staff is responsible for receiving samples shipped from the field personnel that collect water and soil samples throughout the state (SOP FS-1000). Bench Biology samples are logged into LIMS and stored at the correct temperatures (SOP LB-016). Analysts have access to the storage areas to obtain the samples for analysis.

3. SAMPLE CUSTODY AND LABELS

3.1. Samples approaching the end of holding times should be picked up by an analyst as soon as possible for immediate processing. These samples can be signed out of the Receiving Room if they have not been logged into the LIMS.

3.1.1. To sign out samples, match field IDs to the custody sheets and sign the bottom of each individual custody sheet with analyst name, date/time, sample type, and number of samples picked up.

3.2. SAMPLE CHECK OUT

3.2.1. Collect samples in the Receiving Room that have been logged in by the Receiving Room staff. Samples will have a large label indicating the sample ID number, field information and barcode. Check out samples by scanning each individual barcode at a computer in the Receiving Room before bringing them back to the lab. Log into LIMS. Select **Laboratory → Receiving → Custody → CheckOut**.

3.2.2. Scan the barcode of each sample. Be sure that the number of samples corresponds to total number scanned, shown at the bottom of the screen.

3.2.3. Click **OK** after scanning the barcodes. When prompted, the analyst will either scan his/her ID badge or type the five-digit ID number located on the badge. Repeat and click **OK**. Analyst must be a custodian in LIMS to be able to check out/in samples. Return to the Microbiology Lab with the samples and arrange them by analysis.

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3.3. PREP WORKSHEETS

3.3.1. Log in to LIMS on the Microbiology Lab computer. Select **Laboratory → Technical → Prep Worksheet Manager**. Select the first shortcut button to **Create a prep worksheet**.

3.3.1.1. *Microbiological samples:*

3.3.1.1.1. In the first column labeled "Preparation ID…", select **MICRO-MF** or **MICRO-QT** as appropriate. Select the analyst's name from the column labeled "Assign to...". Ensure "BENCHBIO" is selected in the drop-down list box. Highlight all the micro samples that were just checked out of custody.

Note: As a shortcut, click on the **Samples Checked Out** icon to automatically highlight samples and the analyst's name. This must be done before checking samples back in. See Figure 1.

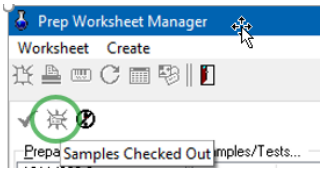


Figure 1

3.3.1.1.2. Click on the check mark icon to **Create the new worksheet** highlighted in Figure 2. Press [Escape], or click on the Abort (ESC) icon. Next, click on the **Open a prep worksheet logbook** icon to view the worksheet. See Figure 3.

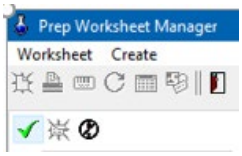


Figure 2

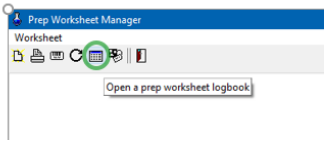


Figure 3

3.3.1.2. *Chlorophyll samples:*

3.3.1.2.1. In the first column labeled "Preparation ID…", select **SOP-BB29**. Select the analyst's name from the column labeled "Assign to...". Ensure "BENCHBIO" is selected in the drop-down list box. Highlight all the chlorophyll samples that were just checked out of custody.

Note: As a shortcut, click on the **Samples Checked Out** icon to automatically highlight samples and the analyst's name. This must be done before checking samples back in. See Figure 1.

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3.3.1.2.2. Click on the check mark icon **Create the new worksheet** highlighted in Figure 2. Press [Escape], or click on the Abort (ESC) icon. Next, click on the **Open a prep worksheet logbook** icon to view the worksheet. See Figure 3.

3.4. PRINT LABELS

3.4.1. Go back to the "Prep Worksheet Manager" window and select the icon "Print Prep Labels". Deselect the "Micro Petri Dish" and "Chlorophylls" tabs that are already highlighted in **Figure 4** by double-clicking on each of the shortcut label buttons (text appears when mouse hovers over selection). To print the appropriate labels for each type of analysis, follow steps below. If there are samples of several different analyses, print labels for bacterial samples first due to short holding times, then chlorophyll and BOD samples.

Note: Alternatively, go to the top of the screen and select **Laboratory → Receiving → Print Preparation Labels** to access the "Print Prep Labels" window,

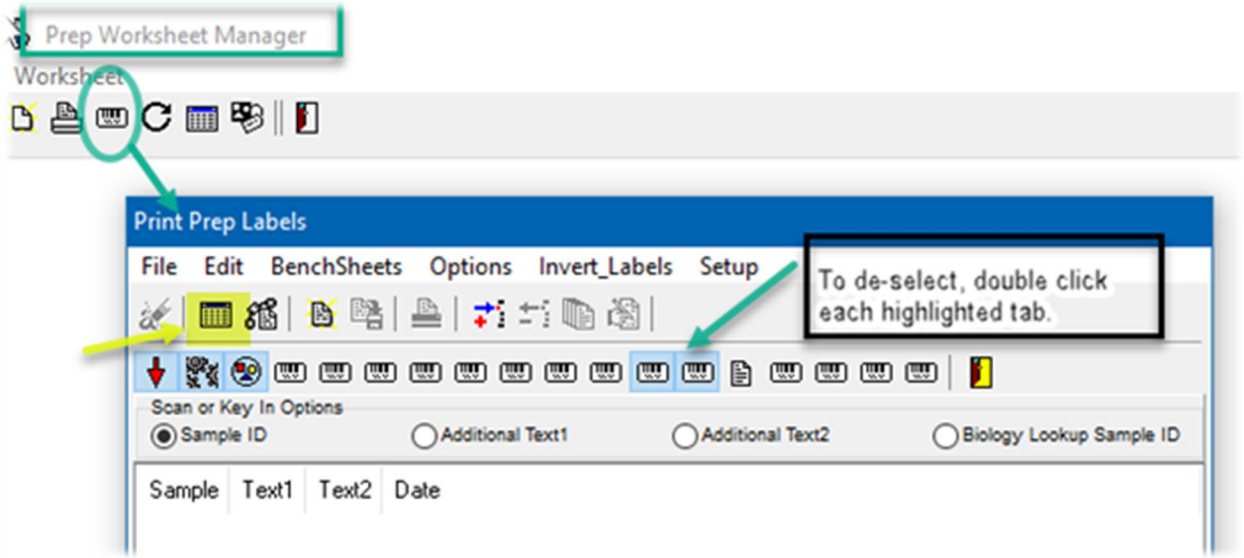


Figure 4

3.4.2. *Microbiological samples*:

3.4.2.1. Click on the icon **Micro Petri Dish**.

3.4.2.2. Click on the icon **Load Sample IDs from prep worksheet.** Select Worksheet that was just created from the drop-down list box and click **OK**. Verify that the samples shown correspond to the samples that you checked out. There will be one line for each analysis that has been scheduled for each sample.

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3.4.2.3. Click on the **Print List icon** . Select Generic/Text printer. The number of copies to print varies depending on the number of dilutions per analysis. For example, print three copies for analyses with three dilutions. For Quanti-Tray samples print one label per test ID. Click **OK** to print. Print an extra label for lab duplicates for one out of every ten samples per test ID. (There should always be at least one duplicate per analysis received per day.)

3.4.2.4. Each test uses a unique marker color to help identify the test. *E.coli* is red, *E.coli*/T.coli is green, and Enterococci is purple. On each test that has a duplicate, write "DUP" on the label in the appropriate color. If a sample requires a dilution, write the dilution factor in the appropriate color. Refer to SOP MB-01.15 for more information.

3.4.2.5. Leave labels on microbiology lab bench to be used for sample prep.

3.4.3. *Chlorophyll samples*:

3.4.3.1. Click on the icon marked **Chlorophylls**.

3.4.3.2. Click on the icon **Load Sample IDs from prep worksheet**. Select the Worksheet that was just created from the drop-down list box and click **OK**. Verify that the samples shown correspond to the samples that you checked out.

3.4.3.3. Highlight the list of chlorophyll samples. Select the radio button for "**Additional Text 1"** and Type "A 500" in the text box at the bottom of the window labeled "**Enter Additional Text (A/B)",** press [Enter]. A column should appear with an "A 500" for each sample.

3.4.3.4. Click on the **Print List icon**. Select Generic/Text printer. Click **OK** to print two copies of each label.

3.4.3.5. Highlight the list of all chlorophyll samples. Next, deselect one sample listed out of every 10 for lab duplicates. Select the radio button for "**Additional Text 1"** and Type "B 500" in the text box at the bottom of the window labeled "**Enter Additional Text (A/B)",** press [Enter]. A column should appear with a "B 500" for each sample. (There should always be at least one duplicate per day.)

3.4.3.6. Click on the **Print List icon**. Select Generic/Text printer. Click **OK** to print one copy of each.

3.4.3.7. Stick each label to the top of the matching chlorophyll bottle and save the second copy of labels for the Chlorophyll Run Log.

3.4.4. *BOD samples*:

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Note: All samples scheduled for analyses other than BOD must be checked in prior to printing labels for the BOD samples. See Section 3.5 to check in samples. The labels for these samples are not printed from a prep worksheet and therefore must be loaded into the Print Prep Labels window by selecting all the samples that an operator has checked out.

3.4.4.1. Click on the button marked **Chlorophylls** (uses same template as chlorophylls).

3.4.4.2. Click on the third icon circled in Figure 5 to **Load Sample IDs checked out by operator**. Select Operator ID and click **OK**. Verify that the samples shown correspond to the samples that you checked out.

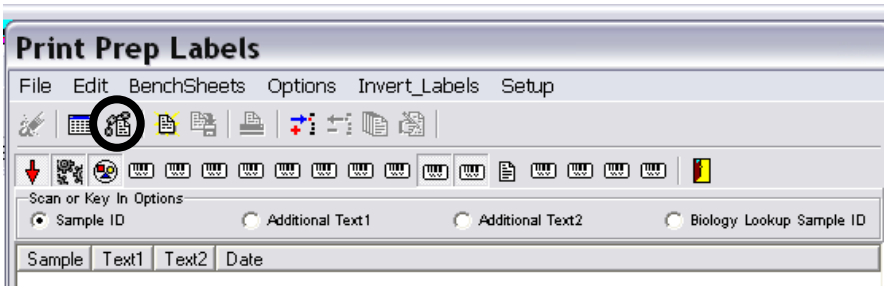


Figure 5

3.4.4.3. Click on the **Print List icon**. Select Generic/Text printer. Click **OK** to print one copy of each label.

3.4.5. Click on the door icon  **Exit label printing** and see Section 3.5 to check in samples.

3.5. SAMPLE CHECK IN

3.5.1. Go to **Laboratory → Receiving → Custody→ CheckIn**. Scan the barcode of each sample and be sure that the total number checked in corresponds to the original number of samples.

3.5.2. Click **OK** after scanning the barcodes. When prompted, the analyst will scan his/her ID badge, or type the five-digit ID number located on the badge. Repeat and click **OK**.

3.6. PREP WORKSHEET DATA

3.6.1. Log into LIMS on workstation computer. Select **Laboratory → Technical → Prep Worksheet Manager**. Click the spreadsheet icon **Open a prep worksheet logbook** (See Figure 3.)

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3.6.2. Click the radio button **Active** in the **Worksheet Status** menu located on the right side of the screen. Next, open the worksheet for the samples being analyzed by double clicking on the corresponding worksheet from the list populated on the left.

3.6.2.1. *Chlorophyll samples*: Fill out the sections **Prepared By, Prep Start Date/Time** and the serial number for the **Reagent** in the header. Select and right click the duplicate samples to add a **Duplicate Row** and then type "dup" to the selected **Sample IDs**. The right click function can also be used to add extra lines or delete lines. BLK_1 is a default line on the worksheet. Using the up/down arrows at the bottom, move this blank below the sample ID after which it is filtered. Re-name the BLK_1 following the format: BLK_XXXX-1; where the four X's are the worksheet ID four numbers and the -1 symbolizes the first blank. Any more blanks filtered will be added to the worksheet in its filtered position using the right click function. Additional blanks are consecutively labeled as -2, -3… and so on. To add samples to a worksheet, click the **Add Sample(s)** button at the bottom of the page, highlight the samples to be added and click **OK.** After filtering, enter the **Filtration Volume (mL)** for each sample and the **Date/Time Frozen** in the header. Click **Complete** at the bottom to complete the prep worksheet. The worksheet can now be viewed in the **Completed** worksheet menu.

3.6.2.2. *Microbiological samples*: Fill out the sections **Prepared By** and **Prep Start Date/Time** in the header. In the **Prep Comments** box, enter the rinse water serial number for **MICRO-MF** samples as "Sterile DI H2O mmddyy-M1" where mmddyy is the date the water was made. In the **Media** boxes, enter the prep serial number for the media used. In the **Reagent** boxes, enter the serial number of the reagent used. Right click the duplicate samples to add **Duplicate Row** and then type "_dup" to the **Sample ID**. The right click function can also be used to add extra lines or delete lines. For **MICRO-MF** samples, Blk_A and Blk_B will appear as default lines in the worksheet. A blank set needs to be added for every Test ID. For **MICRO-QT** samples, BLK will appear as a default line in the worksheet.. Duplicate the blank for combination *E.coli*/T.coli samples as each test will require a duplicate. Be sure to assign a Test ID for each blank. To add samples to a worksheet, click the **Add Sample(s)** button at the bottom of the page, highlight the samples to be added and click **OK.** Fill out the **Date/Time Incubated** and **Incubator ID** in the worksheet column. Enter conductivity values for each **MICRO-QT** sample, except blanks, in the "Lab Salinity" column. Enter the **RECORD_NUMBER** from the **Lab Logbook/LAB_SUPPLIES_QC** and/or **PIPET-FUN_CAL_LOG** for the QC associated with each consumable used during analysis in the appropriate field (**Filter QC ID**, **Petri Dish QC ID**, **Mixing Vessel QC ID**, etc). If a sample has been diluted, write "XmL Dilution" in **Sample Comments 2** column where X = the dilution factor.

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Click **Save.** When the plates/trays have been read, add **Date/Time Plates Read** and **Plates Read By** to the worksheet column. Verify the data is correct then proceed to enter the **Date/Time Reviewed** and select the analyst's name from the drop-down list box labeled "**Reviewed By**". If samples are suspected of having chlorine (analysis ID with -CL suffix), enter information on the chlorine check (including chlorine strip lot number and result) in the **Chlorine Residual** column. Click **Complete.** The worksheet can now be viewed in the **Completed** worksheet menu.

3.6.2.3.*Micro Quality Control:* Fill out the sections **Prepared By** and **Prep Start Date/Time** in the header. In the **Prep Comments** box, enter the item or reagent being tested: glassware, type of media and serial number of supplies, etc. In the **Media** boxes, enter the prep serial number for the media used. In the **Reagent** boxes, enter the serial number of any cultures or buffered water used. For **Sample ID's**, enter each piece of equipment being tested or different inoculation combination or dilution used. Fill out the **Date/Time Incubated** and **Incubator ID** in the worksheet column. Enter the **RECORD_NUMBER** from the **Lab Logbook/LAB_SUPPLIES_QC** and/or **PIPET-FUN_CAL_LOG** for the QC associated with each consumable used during analysis in the appropriate field (**Filter QC ID**, **Petri Dish QC ID**, **Mixing Vessel QC ID**, etc). For new media, enter the pH in the **Lab pH** column. Click **Save.** When the tests have been read, add **Date/Time Read** and **Read By** to the worksheet column. Add the results for each Sample ID entry in the **Sample Comments**. Verify the data is correct then proceed to enter the **Date/Time Reviewed** and select the analyst's name from the drop-down list box labeled "**Reviewed By**".

4. REFERENCES

4.1. DEP SOP, *FS 1000 General Sampling Procedures*

4.2. DEP SOP, *LB-016 Chemistry Section Receiving Room: Standard Operating Procedure for the Receipt and Log-in of Samples by the DEP Central Laboratory*

Appendix of Changes

06/11/2009	SOP reviewed and edited to update according to current procedures. Changes were made regarding the creation of prep worksheets for microbiological samples in Section 3.5
07/13/2010	Changed Prep Worksheet template to updated version for new report style.
06/13/2011	Added instruction to print labels for lab duplicates for microbiological samples.
06/02/2012	Added directions to check out samples in the Receiving Room prior to returning to the Microbiology Lab. Moved instructions to print prep worksheets to occur before printing prep labels.

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04/11/2013 Added comments to label instructions to make sure there is at least one duplicate made per day per analysis received.

12/12/2013 Added instructions for Quanti-Tray tests.

01/14/2015 Added information about the electronic prep worksheets.

11/17/2015 Added information to 3.6.2.2

09/21/2017 Changes made to the Introduction in section 1 and Sample Custody and Labels in section 3.

05/07/2019 Changes made to section 3.3 regarding the creation of prep worksheets for microbiology and chlorophyll samples including the addition on Figures 1, 2 and 3. Edited wording on sections 3.2, 3.4 and 3.6 to expand on current procedures. Changed SOP Reference in sections 2 and 4.

04/23/2020 Added instructions for the creation of prep worksheets for micro quality control (section 6.2.3).

05/05/2021 Removed instructions and test ID's regarding Sediment samples. Revised section 3.4.3.7 to specify correct amount of chlorophyll labels to print. Added instructions to section 3.6.2.1 to specify the correct way to label chlorophyll blanks in the worksheets. Additional guidance regarding blanks was included in section 3.6.2.2. Grammar and sentence edits were done throughout the SOP to improve the clarity of instructions.

02/16/2022 Added T.coli to SOP. Added color-coding to label making. Noted that E.coli/T.coli tests require two Blanks (one for each test ype). Noted that sample dilutions need to be added to worksheet.

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