

Chester Tester Water Testing Procedures For SMART 3 Colorimeter

Water Testing Procedures

A.) At the testing site use the **PLASTIC** test kit to:

1. Collect & “fix” **2 samples** for Dissolved Oxygen testing (March – November).
2. **Fill plastic bottle** with sample for meter tests.
3. Temperature readings
 - Air
 - Water
4. Complete **field observations**

B.) Use the meter & sample collected above to test:

1. Nitrate-Nitrogen
2. pH
3. Ammonia-Nitrogen
4. Phosphate
5. Turbidity

NOTE - Meter has been pre-programmed to complete tests in a specific order. The meter can run on battery or AC adaptor.

NOTE – If test result is **OVERRANGE**. Dilute a new sample and repeat test (Except pH).

SMART 3 Colorimeter Testing Procedures

1.) Prepare the Blank

- a.) Select a clean **test tube (0290)**. Fill the test tube to the **10 mL line** with the water sample collected in the plastic bottle (above).
- b.) Cap tube with the **YELLOW** cap. This will be your **BLANK** sample for all tests, except **TURBIDITY**.

2.) Start the Nitrate-Nitrogen Test

- a.) Select the **Nitrate-N** (3649-SC) test cube
- b.) Fill **test tube (0898)** to the **5 mL** line with sample water.
- c.) Add ***Mixed Acid Reagent** (V-6278) to **10 mL** line.
- d.) Cap with blue plastic plug & **invert 5 times**. Wait **2 minutes**.
- e.) After waiting, pour solution from above into a clean colorimeter **tube (0290)**. Using 0.1 gram spoon (0699), add **2 spoons** of ***Nitrate Reducing Reagent** (V-6279).
- f.) Cap. Mix by inverting tube **60 times** a minute for **4 minutes**.
- g.) After mixing for 4 minutes, **Wait 10 minutes** for color to develop.

NOTE – At the end of the waiting period an undissolved portion of Nitrate Reducing reagent may remain without affecting test results.

Prepare Meter for testing while waiting for color to develop.

- a.) Press **ON** button (LOWER RIGHT CORNER) to turn meter on.
- b.) Press the **ENTER** button to select TESTING MENU. Use the up or down arrows to select **Sequence 1** from test menu Press the **ENTER** button to go to Sequence 1.

3.) Continue the Nitrate-Nitrogen Test

- a.) The display will show **064 Nitrate-N LR**. Press **ENTER** button to begin Nitrate-N test.
- b.) Select the BLANK sample tube with the **YELLOW** cap from Colorimeter Testing Procedures step 1. Wipe tube with a Kimwipe.
- c.) **Insert** cleaned **BLANK tube** into meter chamber and close lid. PRESS the **ENTER** button to scan the blank.
- d.) Display will quickly read BLANK DONE and SCAN SAMPLE will be highlighted. **Remove BLANK tube** with **YELLOW** cap and set aside.
- e.) Wipe reacted sample tube from **Step 2, Section g** with Kimwipe. **Insert** cleaned tube into meter chamber and close lid.
- f.) PRESS the **ENTER** button and record concentration value as ppm **Nitrate-Nitrogen**.
- h.) The display will have NEXT TEST highlighted. Press the **ENTER** button. The display will show **074 pH PR**.

NOTE – Reacted Nitrate-Nitrogen sample contains Cadmium. Empty reacted tube into container marked **CADMIUM WASTE**. Fill tube half way with tap water and rinse measuring spoon in tube. Empty into **CADMIUM WASTE** bottle. Tube & spoon should be washed completely with other items at end of testing session.

4.) pH Test

- a.) After selecting the pH test, SCAN BLANK will be highlighted.
- b.) Wipe BLANK tube with **YELLOW** cap with Kimwipe. **INSERT** cleaned vial in the meter chamber and close lid. **PRESS** the **ENTER** button to SCAN BLANK.
- c.) Display will read BLANK DONE. **Remove BLANK** vial with **YELLOW** cap and set aside. The display will have SCAN SAMPLE highlighted.
- d.) **Rinse** a clean **test tube (0290)** with sample water.
- e.) Fill the rinsed tube to the **10 mL** line with sample.
- f.) Select **pH** test cube (3700-01-SC).
- g.) Using pipet (0369), add **0.5 mL** of **Phenol Red Indicator (V-2304)**. Cap and mix.
- h.) Wipe reacted tube with Kimwipe. **Insert** the cleaned tube into meter chamber and close lid.
- i.) Press the **ENTER** button to SCAN SAMPLE. Record **pH** result.
- j.) The display will have NEXT TEST highlighted. Press the **ENTER** button. The display will show **005 AMMONIA-N HR**.

5.) Ammonia-N Test

- a.) The display will have SCAN BLANK highlighted.
- b.) Wipe BLANK tube with **YELLOW** cap with Kimwipe and **INSERT** cleaned tube in meter chamber and close lid. PRESS the **ENTER** button.
- c.) Display will read BLANK DONE and SCAN SAMPLE will be highlighted. **Remove BLANK tube** with **YELLOW** cap and set aside.
- d.) **Rinse** a clean **test tube (0290)** with sample water.
- e.) **Fill** rinsed tube to the **10 mL** line with sample.
- f.) Select **Ammonia-N (3642-SC)** test cube.
- g.) Add **8 drops** of **Ammonia Nitrogen Reagent # 1 (V-4797)** to tube. Make sure to hold upside down bottle vertically when adding drops.
- h.) Cap and mix. **Wait 1 minute.**
- i.) Use 1.0 mL pipet (0354) and add **1.0 mL of *Ammonia Nitrogen Reagent # 2 (V-4798)** to tube.

NOTE – Reagent should be clear to light yellow. If the reagent is golden or brown colored it will need to be replaced. Also, avoid sucking up any black specks if they are present.

- j.) Cap and mix. **Wait 5 minutes** for color to develop.
- k.) After waiting 5 minutes, clean outside of reacted tube with a Kimwipe. **Insert** the cleaned tube into meter chamber and close lid.
- l.) Press the **ENTER** button to SCAN SAMPLE.
- m.) Record result as **Ammonia-N** ppm.
- n.) The display will have NEXT TEST highlighted. Press the **ENTER** button. The display will show **078 Phosphate LR.**

NOTE – Reacted Ammonia-Nitrogen sample contains Mercury. Empty reacted tube into container marked **MERCURY IN BASE WASTE**. Fill tube half way with tap water and rinse measuring spoon in tube. Empty into **MERCURY IN BASE WASTE** bottle. Tube & spoon should be washed completely with other items at end of testing session.

6.) Phosphate Test

- a.) The display will have SCAN BLANK highlighted.
- b.) Wipe BLANK tube with **YELLOW** cap with a Kimwipe and **insert** cleaned tube in the meter chamber and close lid. PRESS the **ENTER** button.
- c.) Display will read BLANK DONE and SCAN SAMPLE will be highlighted. **Remove BLANK tube** with **YELLOW** cap and set aside.
- d.) **Rinse** a clean **test tube (0290)** with sample water.
- e.) **Fill** rinsed tube to the **10 mL line** with sample.
- f.) Select **Phosphate** (3653-SC) test cube.
- g.) Using 1.0 mL pipet (0354), add **1.0 mL of *Phosphate Acid Reagent** (V-6282). Cap & mix.
- h.) Using 0.1 gram spoon, add **1 measure of * Phosphate Reducing Reagent** (V-6283). Cap and shake until powder dissolves.
- i.) **Wait 5 minutes** for color to develop. If Phosphate is present, solution will turn blue.
- j.) At the end of the waiting time, wipe the reacted tube with Kimwipe. **Insert** the cleaned tube into meter chamber and close lid.
- k.) Press the **ENTER** button to SCAN SAMPLE.
- l.) Record result as **Phosphate** ppm.
- m.) The display will have NEXT TEST highlighted. Press the **ENTER** button. The display will show **098 TURBIDITY**.

7.) Turbidity Test

- a.) The display will have SCAN BLANK highlighted.
- b.) Wipe sealed tube with **BLUE** cap using a Kimwipe. This tube contains distilled water and will be the TURBIDITY blank.
- c.) **Insert tube** with **BLUE** cap into meter chamber and close lid. **PRESS** the **ENTER** button.
- d.) Display will read BLANK DONE and SCAN SAMPLE will be highlighted. **Remove tube** with **BLUE** cap and set aside.
- e.) **Rinse** a clean **test tube (0290)** with sample water.
- f.) Fill rinsed tube to the **10 mL** line with sample water. Cap tube.
- g.) Wipe tube with a Kimwipe. **Insert** the cleaned tube with sample water into meter chamber and close lid.
- h.) Press the **ENTER** button to SCAN SAMPLE.
- i.) Record result as **TURBIDITY** in **FTU**.
- j.) The display will show NEXT TEST. Press ON/OFF button on the lower right corner to turn meter off.

TESTING with the meter is now complete.

DISSOLVED OXYGEN will be tested from **March to Nov**. Please follow separate instructions for testing **DISSOLVED OXYGEN**. Test each bottle and record values as Oxygen in ppm.

WARNING – Reagents marked with an * are considered to be potential health hazards. To view or print a Material Safety Data Sheet (MSDS) for these reagents go to www.lamotte.com. To obtain a printed copy, contact LaMotte by email, phone, or fax.

Thoroughly clean all testing equipment with diluted dish detergent that is phosphate free. Rinse tubes thoroughly. Allow components to air dry before returning them to the case.

For additional supplies, please contact Charlie Gloyd @ LaMotte Company

Phone: 410 778 – 3100 x 7028

E-mail: cgloyd@lamotte.com

Thank you for your assistance with monitoring the Chester River.