

Changes in Materials for *Land and Water*



Since publication of the *Land and Water* Teacher's Guide Third Edition, changes have been made to the unit's materials. The wet-erase transparency marker set now includes different colors than the previous set. This change in materials requires slight revisions to the instructions in the *Land and Water* Teacher's Guide for Lesson 8. Please replace the pages in your text with the revised pages provided.

This errata set includes the following:

- For *Land and Water* Teacher's Guide Third Edition, Section 3: Materials Management and Safety—revised pages 7 and 11
- For *Land and Water* Teacher's Guide Third Edition, Section 4: Unit Investigations and Blackline Masters—revised pages 92 and 93

Photocopy and distribute these new instruction pages as needed.

If you have questions about these changes or about the module in general, call Carolina's product information staff at 800-227-1150 (8 a.m.–5 p.m. ET, M–F), or email stc@carolina.com.

Item Description in Teacher's Guide	Description on Packing List	Lesson Number (Quantity Used)
Rubber stopper	Pack of 8 rubber stoppers, size 00	2 (8), 3 (8), 4 (8), 7 (8), 8 (8), 9 (8), 10 (8), 11 (8), 12 (8), 13 (8), 14 (8), 15 (8), 16 (8), Additional Assessment 2 (8)
Ryegrass seed	10 oz pack of rye seed	13 (240 mL)
Self-stick label, 2.3 x 8 cm (7/8 x 3 1/4 in)	Pack of 30 self-stick labels	7 (56)
Set of crayons (orange, black, gold, brown, blue, green)	Pack of 6 crayons	4 (8), 6 (8), 10 (8), 12 (8), 15 (8), 16*
Set of water-erase, broad-tip markers (red, blue, green, black)	Pack of 4 wet-erase transparency markers	8 (8), 9 (8), 11 (8)
Sheet of 3-mil, clear plastic sheeting, 45 x 60 cm (18 x 24 in)	Roll of clear plastic sheeting	8 (8), 9 (8), 11 (8), 13 (8)
Small absorbent pad, 58.4 x 61 cm (23 x 24 in)	Small absorbent pads	2 (8), 3 (8), 4 (8), 7 (8), 8 (8), 9 (8), 10 (8), 11 (8), 12 (8), 13 (8), 14 (8), 15 (8), 16 (8), Additional Assessment 2 (8)
Spoon	Pack of 8 plastic spoons	2 (8), 3 (8), 4 (8), 5 (8), 6 (8), 7 (8), 8 (8), 9 (8), 10 (8), 11 (8), 12 (8), 13 (8), 14 (8), 15 (8), 16 (8), Additional Assessment 2 (8)
Sprinkler head	Pack of 8 sprinkler heads	3 (8)
Toothpick	Box of flat toothpicks	7 (56), 12 (160), 15†
Ultra Velcro® hook type, 5 x 30 cm (2 x 12 in)	Ultra Velcro® hook strip	4 (8 in)
Ultra Velcro® loop type, 5 x 75 cm (2 x 30 in)	Ultra Velcro® loop strip	4 (8 in)
White fine-grain sand	3 lb of #70 white sand	4 (4)

* All remaining materials, used and unused.

† As needed.

Aerial Drawing Tips

Students learn to create aerial drawings of their stream tables in Lesson 8. Using a rubber band, they attach plastic sheeting to their stream tables and draw their stream table results on the plastic from a “bird’s-eye view.” This helps students see their entire stream system and identify some of its parts. In Lessons 9 and 11, it is suggested that students create an aerial drawing of their results. When you post the group drawings on newsprint in these two lessons, students can easily compare results. At the close of the unit, each group (or the entire class) will bind its aerial drawings and create a “Big Book of Streams.”

After Lesson 8, the materials needed to complete the aerial drawings are not relisted. Instead, the term “aerial drawing materials” will indicate that students need to use the following items:

Aerial Drawing Materials for Each Group

- 1 large rubber band, 17.5 x 0.3 cm (7 x 1/8 in)
- 1 sheet of 3-mil, clear plastic sheeting, 45 x 60 cm (18 x 24 in)
- 1 set of water-erase broad-tip markers (red, blue, green, black)
- 1 sheet of white drawing paper, about 30 x 45 cm (12 x 18 in)
Scissors
- 1 large paper clip
- 1 sheet of loose-leaf paper, 22 x 28 cm (8 1/2 x 11 in)

Note: The *Land and Water* unit kit contains two types of plastic. Be careful that you do not confuse them. Plastic wrap is used for modeling the water cycle in Lesson 2. Plastic sheeting is used for the aerial drawings in Lessons 8 and 9 and is optional in Lesson 11.

Cleanup

Cleanup and rinse station: Proper cleanup is vital to this unit. You may want to set up a cleanup and rinse station. Here are some suggestions:

- Line a trash can with a plastic bag.
- Set out two of the 3.8-liter (1 gal) buckets. Fill these “rinse buckets” halfway with water. Students will use the buckets to clean their soiled hands or materials.
- Use a bottle brush to clean the graduated cylinders (Lessons 6, 13, 14).
- Set out paper towels.
- Keep a broom, dustpan, and other cleanup materials on hand.

Cleanup Procedures: Establish general cleanup procedures with your students early in the unit. Specific cleanup procedures are listed at the end of each lesson in the teacher’s guide, on the student instructions sheets, and in the Student Investigations book. Decide if you want to have a student or adult volunteer create a large class poster of cleanup procedures. The poster should include, but not be limited to, the following steps:

- Tilt your stream table to drain any extra water into your catch bucket.
- From the inside of the stream table, put the rubber stopper in the hole. Push it in.
- Place your filled catch bucket in the cleanup area until it is time to dump it.
- Remove the cup from your stream table.
- Stack your stream table with the others. Your teacher will tell you how.
- Rinse spoons and other soiled materials in the rinse buckets.
- Use a bottle brush at the rinse bucket to clean the cylinders.
- Return stream table materials to your group’s storage container.
- Return all other materials to the distribution center or permanent stream table station.
- Lay out any wet pads to dry.

Drawing aerial views may be challenging for many students. To help them develop this skill, you will ask students to cover their stream tables with a sheet of plastic and secure it with a large rubber band. As students observe their stream tables from above, they will use colored markers to outline on the plastic sheet itself the shape and features of their stream tables from this bird's-eye view.

Students will compare their group aerial drawings and then create a class aerial drawing to establish the common parts of a stream and become familiar with the vocabulary that identifies these parts. Although students might identify only the head, channel, mouth, and delta of a stream in their class drawing, there are many parts of a stream system. Some of them include

- **Rill:** A narrow channel carved by runoff.
- **Gully:** A rill widened by flowing water.
- **Channel:** The course along which water moves.
- **Stream:** A naturally flowing body of water.
- **Tributary:** A stream that flows into a larger stream (river) or a lake.
- **River:** A flowing body of water of considerable volume that forms when tributaries converge.
- **Head:** The beginning of a stream where runoff has cut a channel.
- **Mouth:** The point at which water from a stream discharges into another body of water, such as a larger stream (river), lake, or ocean.
- **Drainage basin:** All of the land drained by a river and its tributaries.
- **Delta:** A flat plain created by the deposition of sediment at the river's mouth. A delta can be **arcuate**, or bow shaped, like the Nile Delta. It can also be **bird's foot**, or triangular, like the Mississippi Delta.
- **Floodplain:** A relatively flat area paralleling a section of the stream and comprising loose sediment, such as silt. The sediment is deposited when the stream periodically overflows its banks.
- **Valley:** A long, low area carved by a stream or glacier and bounded by higher areas on both sides. Valleys can range from narrow ones bounded by steep cliffs to wide ones bounded by broad, flat plains.
- **Canyon:** A deep, steep-walled gorge carved in rock by the erosive action of a stream or glacier.

Students may discover that adding color, labels, or symbols to their aerial drawing makes identifying the parts of their stream table easier. Students can color code their drawing, using, for example, blue for the stream channel, red for the floodplain, and black for the delta. As the unit progresses and students add vegetation to their stream tables, they may use green to represent these areas. Other students may decide to use **pictographs** (symbols that look somewhat like the objects they represent) and a **legend**, or explanatory list, that identifies these features. All these features make aerial drawings easier to interpret. However, it is best to let students discover these techniques for themselves as they share drawings among groups, discuss drawing techniques, and create new aerial drawings in upcoming lessons.

Key Scientific Terms

aerial drawing	stream head	stream mouth	valley
canyon	tributary	delta	floodplain

Materials

For each student

- 1 science notebook

For each group of four

- Stream table (from Lesson 7)
- 3 photo cards (numbered 5, 6, and 7)
- *Aerial drawing materials for each group
 - *1 large rubber band, 17.5 x 0.3 cm (7 x 1/8 in)
 - *1 sheet of 3-mil, clear plastic sheeting, 45 x 60 cm (18 x 24 in)
 - *1 set of water-erase, broad-tip markers (red, blue, green, black)
 - *2 sheets of white drawing paper, about 30 x 45 cm (12 x 18 in)
 - Scissors
 - *1 large paper clip
 - *1 sheet of loose-leaf paper, 22 x 28 cm (8 1/2 x 11 in)
 - 1 permanent black marker

For the class

- Stream System** (blackline master) (optional)
- 4 sheets of newsprint
- Transparent tape
- Masking tape

*The individual items listed under the heading "Aerial drawing materials" will not be relisted in subsequent lessons. Instead, the words *Aerial drawing materials* will be listed and refer to all items marked with an asterisk. Refer to Materials Management in Section 3 of this guide for more information.

Note: The plastic for the aerial drawings in this lesson is the roll of thick plastic sheeting that is stored in a plastic bag. Do not confuse it with the plastic wrap, which students used to model the water cycle in Lesson 2.