

## APPENDIX E—SEISMIC SLINKY EXPLORATIONS: LEARNER WORKSHEET

Name: \_\_\_\_\_

Period # \_\_\_\_\_ Date \_\_\_\_\_

For each of the Seismic Slinky Demonstrations complete the table using the smaller Slinky models in your table group to explore the concept.

### Exploration 1: Seismic Slinky Wave Propagation

**Directions:** One or two people stretch the Slinky out on the table. Another person gathers up about 1" of coils in the center of the stretched Slinky. Release the gathered coils and observe what happens.

|  |  |
|--|--|
| Diagram the Slinky set-up <b>before</b> the coils are released.  |  |
| Diagram the Slinky set-up <b>after</b> coils are released.   |  |
| Describe how the Slinky demonstration shows how waves propagate from the origin point, or hypocenter of an earthquake. |  |
| Where would you see a real-world example of how seismic waves propagate?   |  |

### Exploration 2: Seismic Slinky Wave Travel Time

**Directions:** One or two people stretch the Slinky out on the table. Another person gathers up about 1" of coils about 2/3 the distance of the stretched Slinky. Release the gathered coils and observe what happens.

|   |  |
|---|--|
| Diagram the Slinky set-up <b>before</b> coils are released.                                 |  |
| Diagram the Slinky set-up <b>after</b> coils are released.                                  |  |
| Describe how the Slinky demonstration shows how wave travel times differ.                   |  |
| Where would you see an example of different seismic wave travel times during an earthquake? |  |

### Exploration 3: Elastic Rebound

Directions: One or two people stretch the Slinky out on the table. On one end of the Slinky, slowly gather up at least an inch of coils on the Slinky. Release the gathered coils and observe what happens. Repeat with different amounts of gathered coils. Explore both P and S waves as shown in the large group demonstration.

|   |  |
|---|--|
| Diagram the Slinky set-up <b>before</b> the coils are released.               |  |
| Diagram the Slinky set-up <b>after</b> the coils are released.                |  |
| Describe how the Slinky demonstrates the concept of elastic rebound.          |  |
| Where would you see an example of elastic rebound occur during an earthquake? |  |

### Exploration 4: Constructive and Destructive Wave Interference

**Directions:** Starting on each end of the Slinky at the same time, same direction, and amplitude of force send a quick S wave pulse into the Slinky. Observe what happens to the wave amplitude when the waves meet. Repeat, but this time, start the waves traveling in opposite directions. Observe what happens when the waves meet. What made the wave interactions constructive or destructive?

|   | Same direction | Opposite direction |
|---|----------------|--------------------|
| Diagram the Slinky set-up <b>before</b> the coils are released.                                   |                |                    |
| Diagram the <b>constructive</b> wave interference you observed when the waves meet in the center. |                |                    |
| Diagram the <b>destructive</b> wave interference you observed when the waves meet in the center.  |                |                    |
| With earthquakes, what types of soils increase the seismic wave amplitude?                        |                |                    |
| How do soil characteristics impact construction decisions in seismically active areas?            |                |                    |