Lead Information Packet

Module 1: Soil Water Retention
2nd Grade

This document is not intended to give you all of the information you need to lead the module. You can find the complete instructions at [http://www.chem.ucsb.edu/scitrek/](http://www.chem.ucsb.edu/scitrek/). This document is intended to be used as a reference during the module.

Important Things to Remember During the Module

1. You are responsible for keeping track of time in the classroom and making sure that ALL activities run smoothly. There will be a time card in the lead box with the suggested times to start/stop each activity.
2. You are responsible for keeping volunteers and students on track.
3. Walk around during times volunteers are working with students and help struggling groups.

Day 1: Observation Assessment/Technique/Observation Activity/Observations

**Schedule:** You are responsible for **BOLD** sections

- **Introduction (SciTrek Lead) – 2 minutes**
- **Observation Assessment (SciTrek Lead) – 5 minutes**
- **Module Introduction (SciTrek Lead) – 5 minutes**
- **Technique (SciTrek Lead) – 10 minutes**
- **Observation Activity (SciTrek Lead) – 13 minutes**
- **Observations (SciTrek Volunteers) – 20 minutes**
- **Wrap-Up (SciTrek Lead) – 5 minutes**

**Preparation:**

1. If the classroom has a document camera, ask the teacher to use it for the introduction (page 1 picture packet), technique discussion (page 2, student notebook) and the observation activity (page 2, picture packet and page 3, student notebook).
2. Write the four group colors on the board (purple, orange, blue, and green) and the name(s) of the volunteer(s) name that will be working with each group.
3. Make sure the volunteers are setting up for the initial observation. Details of how to do this are in a picture in the volunteer boxes.
SciTrek Notebook Pages, Notepad Pages, and Picture Packet Pages Used With Students:

Observations
Description of things using:
- Sight
- Touch
- Hearing
- Smell
- Taste

Not Observations
- Inferences
- Opinions
- Incorrect Observations

Observation: A description using your **5 Senses**

1. The object is lighter than a bowling ball.
2. The object is only one color.
3. The object is thicker than a brown handle.
4. The object is silly.
5. The object has lines.
6. The object can be bent so both ends touch.
7. The object came from the grocery store.

**Technique**

Graduated cylinders are used to measure volumes of liquids.

*How to read a graduated cylinder:*
1. Look at the value at the bottom of the dip also known as the meniscus.
2. Record the value.
3. Repeat.

*How much water is in each graduated cylinder?*

<table>
<thead>
<tr>
<th>Cylinder</th>
<th>Volume (ml)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>10</td>
</tr>
<tr>
<td>B</td>
<td>50</td>
</tr>
<tr>
<td>C</td>
<td>74</td>
</tr>
<tr>
<td>D</td>
<td>29</td>
</tr>
</tbody>
</table>

**Scientific Practices**

Observations

Circle **Observation** if the statement is an observation you can make about the object. Circle **Not an Observation** if the statement is not an observation you can make about the object.
Introduction: (2 minutes – Full Class – SciTrek Lead)

- Introduce the module/SciTrek volunteers.

Observation Assessment: (5 minutes – Full Class – SciTrek Lead)

- Pass out assessments and scented orange cards.
- Read each statement and have students circle if the statement is an observation/not an observation.
- Collect assessments and scented orange cards.

Module Introduction: (5 minutes – Full Class – SciTrek Lead)

- Have volunteers pass out the notebooks.
- Have students fill out the front of their notebook.
- Tell students we will be working to answer the question, “What variables affect how much liquid a soil can absorb?”
- Show students the picture of the landslide (page 1, picture packet) and ask them what happened.
- Ask students what are things (variables) that might affect if a landslide happens?
- Tell students that most of the variables that cause a landslide involve water and soil.

Technique: (10 minutes – Full Class – SciTrek Lead)

- Show students the 500 mL graduated cylinder and explain what they are and how to use them.
- Read the directions on page 2 of the student notebook and answer the first question as a class.
- Have students complete the other three questions individually
- Review each question.

Observation Activity: (13 minutes – Full Class – SciTrek Lead)

- Put page 2 of the picture packet under the document camera.
- Have students help you fill in the table with what they use to make observations along with things that are not observations.
• Have students generate an observation about something in the classroom using each of their senses other than taste.
• Have students generate one statement in each of not observation categories.
• Have volunteers pass out bendy straws.
• Fill in the definition for observation with the students at the top of page 3 of their notebooks.
• Read the directions (page 3, student notebook).
• Read each statement and ask students whether the statement is an observation or not an observation and circle the correct answer.
  o For statements that are observations have students identify which sense they used. Write the sense in the margins of the class notebook (students do not have to write this in their notebook).
  o For statements that are not observation have students identify why. Write why the statement is not an observation in the margins of the class notebook (students do not have to write this in their notebook).
  ▪ **Number 1:** The object is lighter than a bowling ball.
    *Observation – With sense (Comparison)*
    Sense: Touch
  ▪ **Number 2:** The object is only one color.
    *Not an Observation – False with Sight*
    Incorrect observation
  ▪ **Number 3:** The object is thicker than a broom handle.
    *Not an Observation – False with Sight (Comparison)*
    Incorrect observation
  ▪ **Number 4:** The object is silly.
    *Not an Observation – Opinion*
    Opinion
  ▪ **Number 5:** The object has lines.
    *Observation – With Sight*
    Sense: Sight
  ▪ **Number 6:** The object can be bent so both ends touch.
    *Observation – With Sense (Need to Test)*
    Sense: Touch and sight
  ▪ **Number 7:** The object came from the grocery store.
    *Not an Observation – Inference*
    Inference
• Have volunteers collect bendy straws
• Have students move to their groups.
  o If students do not have a nametag, identify the group with the least number of students in it and write the student’s name on one of the extra nametags that are in the lead box using that color of marker.

**Observations:** (20 minutes – Small Groups – SciTrek Volunteers)

• As groups are making observations, walk around and help groups/volunteers that are struggling.
• Make sure groups are moving along and only spending ~6 minutes on the observations of the experimental set-up and then compressing the soil in cup B and pouring the water through the soil.

**Wrap-Up:** (5 minutes – Full Class – SciTrek Lead)

• Have each group share one of their observations with the class.
• Review what was in each cup and what happened when water was poured over the soil.
• Lead the class in a discussion that connects soil compactness and soil absorption to landslides.
Day 2: Question/Materials Page/Experimental Set-Up/Procedure/Results Table

Schedule: You are responsible for BOLD sections

**Introduction (SciTrek Lead)** – 7 minutes
Question (SciTrek Volunteers) – 10 minutes
Materials Page (SciTrek Volunteers) – 5 minutes
Experimental Set-Up (SciTrek Volunteers) – 5 minutes
Procedure (SciTrek Volunteers) – 20 minutes
Results Table (SciTrek Volunteers) – 5 minutes
Wrap-Up (SciTrek Lead) – 8 minutes

Preparation:

1. If the classroom has a document camera, ask the teacher to use it for the wrap-up (page 3, picture packet).
2. Have the 250 mL graduated cylinder, scale, and the vermiculite available to show students during the introduction.
3. Have volunteers set out the notebooks.
   a. If students are not in the classroom before SciTrek starts have volunteers set out the notebooks where students should sit as they come into the classroom.
   b. If students are in the classroom before SciTrek starts have volunteers set out the notebooks where they want students to sit and students will move to these spots after the introduction.

**SciTrek Notepad Pages, Notebook Pages, and Picture Packet Page Used With Students:**

![Image](image-url)
**EXPERIMENTAL SET-UP**

**Changing Variable:** liquid amount

**Controls (variables you will hold constant):**
- Cup Material: Plastic
- Soil Type: Potting soil
- Soil Amount: 2 small cups
- Liquid Thickness: Thin level

**PROCEDURE**

1. Fill each cup with 2 small cups of potting soil.
2. Pour 450 mL, 600 mL, 750 mL, 900 mL, 1050 mL of thin liquid through cups.
3. Use a graduated cylinder to measure the amount of water that passes out.
4. Subtract to find the water absorbed.

**RESULTS**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Trial A</th>
<th>Trial B</th>
<th>Trial C</th>
<th>Trial D</th>
<th>Trial E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cup Material</td>
<td>Plastic</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soil Type</td>
<td>Potting</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soil Amount</td>
<td>2 small</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liquid Thickness</td>
<td>Thin</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liquid Amount</td>
<td>50 mL, 180 mL, 200 mL, 150 mL, 100 mL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data</th>
<th>Trial A</th>
<th>Trial B</th>
<th>Trial C</th>
<th>Trial D</th>
<th>Trial E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Observation/ Measurements</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*The independent variable is the changing variable and the dependent variables are the final observation/measurements.*
**Introduction:** (7 minutes – Full Class – SciTrek Lead)

- If needed have SciTrek volunteers set out notebooks where students will sit.
  - Tell students not to move the notebooks.
- Review with students the class question and what they learned the last SciTrek visit.
- Tell students they will now get to pick a variable to explore.
- Go over the options for variables that students can change: liquid thickness (only variable that does not get to choose soil type), liquid amount (they will use special larger graduated cylinder), soil amount (they will use scale to measure amount), soil type (show vermiculite they get to pick from soils that no other groups can use).
  - Make sure to down play liquid thickness.
  - Explain that thick liquids can be snow, hail, mud, etc.
- If needed tell students to move to their notebook.

**Question:** (10 minutes – Small Groups – SciTrek Volunteers)

- Walk around and help groups decide on their changing variable and question.
- Try to encourage groups to pick different changing variables.
- After students pick their changing variable they should explain to their volunteer how they think changing that variable will affect the amount of liquid that the soil will absorb.

**Materials Page:** (5 minutes – Small Groups – SciTrek Volunteers)

- Give groups doing liquid amount a large graduated cylinder to help them pick the liquid amounts
- Walk around and help groups fill out their materials page.
- Make sure groups are filling out the materials page correctly and completely.
**Experimental Set-Up:** (5 minutes – Small Groups – SciTrek Volunteers)

- Walk around and help groups with their experimental set-up.
- Make sure that all control blanks are filled out.

**Procedure:** (20 minutes – Small Groups – SciTrek Volunteers)

- Walk around and help groups with their procedure.
- Make sure procedures are not too long but indicate all values of the changing variable, controls, and what data will be collected.
- Volunteers should be writing one step and having students copy that step before moving onto the next step.

**Results Table:** (5 minutes – Small Groups – SciTrek Volunteers)

- Walk around and help groups with their results table.
- Make sure that control values are written in trial A with a line through the rest of the trials and that changing variable values are written in each trials box.
- Have groups that finish early work on the extra practice on page 13 of their notebook.

**Wrap-Up:** (8 minutes – Full Class – SciTrek Lead)

- Have one student from each group share the question that they will investigate.
- Go over page 3 of the picture packet having students identify which soil absorbed more liquid.
- Then pick a number to show them how to calculate the amount of liquid absorbed.
- If there is extra time do the extra practice on page 13 of the student notebook as a class.
- Tell students what they will do next time.

**Day 3: Experiment/Graph/Results Summary**

**Schedule:** You are responsible for **BOLD** sections

- **Introduction (SciTrek Lead) – 5 minutes**
- **Experiment (SciTrek Volunteers) – 27 minutes**
- **Graph (SciTrek Volunteers) – 10 minutes**
- **Results Summary (SciTrek Volunteers) – 16 minutes**
- **Wrap-Up (SciTrek Lead) – 2 minutes**

**Preparation:**

1. If the classroom has a document camera, ask the teacher to use it for the introduction (page 4, picture packet).
2. Have volunteers set out the notebooks.
   a. If students are not in the classroom before SciTrek starts have volunteers set out the notebooks where students should sit as they come into the class.
   b. If students are in the classroom before SciTrek starts have volunteers set out the notebooks where they want students to sit and students will move to these spots after the introduction.
SciTrek Notepad Pages, Notepad Pages, and Picture Packet Page Used With Students:
**Introduction:** (5 minutes – Full Class – SciTrek Lead)

- If needed have SciTrek volunteers set out notebooks where students will sit.
  - Tell students not to move the notebooks.
- Review class question and what they did last time.
- Explain how to use a graduated cylinder.
- Use the example cup (page 4, picture packet) and have students explain what they will do in their experiment while you draw each step.
- Use subtraction to determine how much water the soil absorbed.
- If needed have students move to their notebooks.

**Experiment:** (27 minutes – Small Groups – SciTrek Volunteers)

- Walk around and help groups with their experiment.
- All measurements will be recorded in the group notepad and subtraction will be done on the notepad. Students only need to record the amount in the large cup and the amount absorbed in their notebooks.

**Graph:** (10 min – Small Groups – SciTrek Volunteers)

- Walk around and help groups with their graphs.
- Make sure that students are graphing their trial on the individual graph piece with the value of the changing variable written underneath.
  - If a group was changing soil type under their individual graph piece might be written “sand.”
- Make sure volunteers are having student arrange the individual graph pieces in increasing order by amount of liquid absorbed and then tape them onto the group notepad.
- Make sure students copy the graph into their notebooks correctly.
  - Labels on the axes.
  - Amount of liquid absorbed written above each trial.
Results Summary: (16 minutes – Small Groups – SciTrek Volunteers)

- Walk around and help groups with their results summary.
- Make sure that groups are generating a claim (two cups of potting soil absorbs 75 mL of water despite the amount of water poured through) and using data to back it up (when 100 mL of water was poured through the soil absorbed 75 mL and when 180 mL was poured through the soil absorbed 75 mL).
- Volunteers struggle with results summaries, therefore, try to check each groups summary.
- If there is time left, have students fill out the sentence frame on page 8, “I acted like a scientist when____”

Wrap-Up: (2 minutes – Full Class – SciTrek Lead)

- Tell the students what they will be doing next time.

Day 4: Poster Making

Schedule: You are responsible for BOLD sections

Introduction (SciTrek Lead) – 2 minutes
Experimental Discussion (SciTrek Volunteers) – 17 minutes
Poster Making (SciTrek Volunteers) – 36 minutes
Wrap-Up (SciTrek Lead) – 5 minutes

Preparation:

1. Ask the classroom teacher for a place to leave the student posters in the classroom.
2. Have volunteers set out the notebooks.
   a. If students are not in the classroom before SciTrek starts have volunteers set out the notebooks where students should sit as they come into the classroom.
   b. If students are in the classroom before SciTrek starts have volunteers set out the notebooks where they want students to sit and students will move to these spots after the introduction.

Example Poster and Highlighted Notebooks:
Introduction: (2 minutes – Full Class – SciTrek Lead)

- If needed have SciTrek volunteers set out notebooks where students will sit.
  - Tell students not to move the notebooks.
- Review class question and what they did last time.
- Tell the students that they will be review their experiment with their volunteer and then and making a poster.
- If needed have students move to their notebook.

Experimental Discussion: (17 minutes – Small Groups – SciTrek Volunteers)

- Make sure each groups is explaining their experiment and their findings to their volunteer.
- Make sure volunteers are asking students questions that make them have to make predictions based on their data.

Poster Making: (36 minutes – Small Groups – SciTrek Volunteers)

- Help volunteers glue poster pieces onto the poster. When gluing, make sure that the volunteers are gluing the poster in the exact order that is shown in the diagram and that the poster has a landscape orientation.
- Make sure that the student in each group who is presenting the results graph has the appropriate sentence frame sticker in their notebook and that the volunteer has gone over how to present the five sentences with the student several times.
- Each student should have the part(s) that they are presenting highlighted and numbered in their notebook. (1) scientists’ names, 2) question, 3) experimental set-up, 4) procedure, 5) results graph, and 6) results summary.) (see pictures above)

Wrap-Up: (5 minutes – Full Class – SciTrek Lead)

- Ask students the following questions:
  - How did you act like a scientist during this project?
  - What did you do that scientists do?
Day 5: Poster Presentations

**Schedule:** You are responsible for **BOLD** sections

- **Introduction (SciTrek Lead) – 2 minutes**
- **Practice Posters (SciTrek Volunteers) – 15 minutes**
- **Poster Presentations (SciTrek Volunteers/SciTrek Lead) – 41 minutes**
- **Wrap-Up (SciTrek Lead) – 2 minutes**

**Preparation:**

1. If the classroom has a document camera, ask the teacher to use it for the notes on presentations (page 3, picture packet). If there is no document camera write the class question on the board.
2. Organize the posters so that experiments about the same changing variable will be presented back to back.
3. Have volunteers pass out student notebooks.

**SciTrek Picture Packet Page Used with Students:**

**Introduction: (2 minutes – Full Class – Sci Trek Lead)**

- Tell students that they will have 15 minutes to discuss their experiment and practice their posters.
**Practice Posters:** (15 minutes – Small Groups – SciTrek Volunteers)

- Organize posters so that experiments about the same changing variable are presented back to back.
- Make sure that volunteers are having students explain their experiment and asking them questions that make them make predictions from their data.
- Make sure students are reading from their notebook and practicing the poster in the following order: 1) scientists’ names, 2) question, 3) experimental set-up, 4) procedure, 5) results graph, and 6) results summary. They will NOT read the “I acted like a scientist when ______,” or results table from their poster.

**Poster Presentations:** (41 minutes – Full Class – SciTrek Volunteers/SciTrek Lead)

- Tell students that if they ask a scientific question they will get a SciTrek pencil after the presentations are done.
- Have students present their posters.
- While posters are being presented record each group’s data on page 3 of the picture packet.
  - Make sure to record the changing variable values and data in the same order as the graph.
- After each presentation ask students
  - What was this group’s changing variable?
  - What questions do you have for this group?
  - What did we learn about the amount of liquid soil can absorb from this group?
- Record what they learned under the summary on page 3 of the picture packet.
- After all presentations are over have students summarize what they learned about how much liquid a soil can absorb.

**Wrap-Up:** (2 minutes – Full Class – SciTrek Lead)

- Tell the students that the volunteers that have been working with them are undergraduate and graduate students that volunteer their time so that they can do experiments. Have the students say thank you to the volunteers. This is the last day with their SciTrek volunteers, therefore, they should say goodbye to them.
- Have volunteers give students SciTrek pencils.
- Tell students to remove the paper part of their nametag from the plastic holder and that they can keep the paper nametag but need to give the plastic holder back to their SciTrek volunteer.

**Day 6: Observation Assessment/Tie to Standards**

**Schedule:** You are responsible for **BOLD** sections

- Observation Assessment (SciTrek Lead) – 5 minutes
- Tie to Standards (SciTrek Lead) – 55 minutes
Preparation:

1. If the classroom has a document camera, ask the teacher to use it to fill out the tie to standards activity with students (pages 8-12, student notebook) and tie to standards pictures (pages 6-10, picture packet).
2. Fill 4 graduated cylinders with 100 mL of water each.
3. Place a pre cut coffee filter inside each of the four small (9 oz) cups with holes.
4. Place the (9 oz) cups inside the large (20 oz) cups.
5. Pour three 1 oz cups (completely full and level) of each of the following soil types into the four cups with coffee filters: small rocks, large rocks, sand, and vermiculite.
6. Pass out the observation assessments and student notebooks.
7. Remind the teacher to give you their lab coat at the end of the day.

SciTrek Notebook Pages, Picture Packet Pages, and Findings Page Used With Students:
Possible Factor 1: Liquid Absorption

4. Is there a limit to the amount of water that soil can absorb?
   - [ ] Yes
   - [ ] No

5. 1 small cup of potting soil can hold ______ mL of water.

6. How much water can 2 cups of soil absorb? ______ mL

7. Adding water to soil makes the soil ______.

8. The ______ water in the soil the more likely a landslide.

Possible Factor 2: Soil Type

9. Label the following soil types from least to most absorbent. Label the least absorbent soil as 1 and the most absorbent soil as 3.
   - 2. Small Rocks
   - 1. Large Rocks
   - 3. Sand

10. ______ piece size______ affects how much water a soil type can absorb.

11. Sand holds ______ water than large rocks making wet sand ______ than wet large rocks.
    - less
    - more

    Large rocks which results in wet sand having ______ than wet large rocks.
    - less
    - more

12. ______ material absorbency______ affects how much water a soil type can absorb.

13. Vermiculite holds ______ water than sand making wet vermiculite ______ than wet sand which results in wet vermiculite having ______ than wet sand.
    - less
    - more
    - lighter
    - heavier

Last updated 3/2/2017
Other Possible Factors:

14. Another factor that affects landslides is the slope of the soil.

15. Draw a picture where a landslide is more and less likely to happen.

16. The steeper the slope, the more likely a landslide.

17. Draw a picture of why plants help prevent landslides.

18. Another factor that affects landslides is the ability of soil to stick to itself (consistency).

19. The more plants the soil sticks to itself, the more consistent and less likely a landslide.

Possible Ways to Prevent Landslides

What factor does this address?

**Slope**

What factor does this address?

**Soil type/consistency**
*All findings should be covered so that they can be revealed one by one.

**Observation Assessment:** (5 minutes – Full Class – SciTrek Lead)

- Pass out assessments and rubber bands.
- Read each statement and have students circle if the statement is an observation/not an observation.
- Collect assessments and rubber bands.

**Tie to the Standards:** (55 minutes – Full Class – SciTrek Lead)

**Review:** (7 minutes)

- Have students fill in the definition of absorb, question 1.
- Have students circle the soil that absorbed the most liquid.
- Discuss why this has to do with landslides and help student understand that the heavier the soil the more likely a landslide.
- Have students fill in question 3 and reveal finding 1.
Possible Factor 1: Liquid Amount (15 minutes)

- Have students look at graph on page 9 of the notebooks and tell them that the amount of water poured over the potting soil is shown on the x-axis and point to it.
- Ask students how much water was poured over trial 1 and draw the amount on the corresponding cup (page 6, picture packet).
- Tell students that the amount of water absorbed by the soil is shown on the y-axis and point to it.
- Ask students how much water was absorbed in trial 1 and draw the amount on the corresponding cup.
- Repeat for each trial doing necessary subtraction to find amount that would be at the bottom of the big cup.
- Have students answer question 4 and 5.
- As a class discuss and fill out question 6 predicting how much liquid 2 cups of soil could absorb.
- Have students look at the picture on page 9 and show them the corresponding picture on page 7 of the picture packet and discuss what it is showing.
- Relate how there is a maximum amount of liquid that a soil can absorb pertains to landslides.
- Have students fill in question 7 and 8.
- Show them Finding 2.

Possible Factor 2: Soil Type (13 minutes)

- If a group tested soil type ask the students to predict which of the soil types will be the least absorbent, which will be the most absorbent, and why. (If no group tested soil type do not have students make a prediction.)
- Have a volunteer help you pour 100 mL of water through each of the three soil types at the same time.
  - If needed show student picture packet page 8 showing the amounts of water that when through each of the three soils.
- Have students observe what happens and identify the trend that they see.
- Have students answer question 10.
- Discuss how this applies to landslides and answer question 11
- Have students look at the picture on page 10 of their notebook and show them the colored picture, page 9 picture packet.
- Have the students look at the two pictures on page 10 and show students the corresponding pictures on page 9 of the picture packet and have them compare the objects.
  - Students should notice that the objects are the same size.
  - Students should realize that if water was poured over the object they would absorb different amounts.
- Tell students that this shows us that the other factor that affects the amount of water that a soil can absorb, material absorbency.
- Record material absorbency for question 12.
- Help students see that sand and all sizes of rocks have low material absorbance and vermiculite has a high material absorbance.
  - To prove this to students show students the sand and the vermiculite and ask them to compare the size of the particles.
  - Pour 100 mL of water over the vermiculite and have students compare the amount of water absorbed to the amount that sand absorbed.
- Showing finding 3.
Other Possible Factors (14 minutes)

- Tell students that there is one other major variable that can lead to landslides that they did not test in their experiments. Ask the students if they know this variable.
  - They should be able to come up with the slope of the hillside. If students have trouble coming up with this, ask them why they would not be worried about landslides occurring on the field at their school.
- Have students fill in slope for question 14.
- Have students draw a picture of a hill behind a house where it is likely for a landslide to happen and unlikely for a landslide to happen.
- Show the students the picture of the hill with and without plants (page 10, picture packet).
- Ask the students which picture they think would be more likely to have a landslide and why. (The hill with no plants because the plants have roots that help the soil stuck together.)
- Have students draw in why plants help prevent landslides for question 17.
- Tell student that scientist call the ability of a soil to stick to itself soil consistency. The higher the soil consistency the more the soil sticks together.
- Fill in “stick to itself (consistency)” for question 18.
- Have students fill in question 19.
- Show finding 5.

Possible Ways to Prevent Landslides (6 minutes)

- Review with students that they have taught you water amount, particle size, material absorbency, slope and soil consistency are all factors that affect landslides.
- Tell students that engineers try to find way to prevent landslide, two ways are shown on the picture on page 12 of their notebook also in color on page 10 of the picture packet.
- Have students look at the first picture on the bottom of page 10 and discuss.
- Ask student which factor this solution addressed and fill it in under the picture.
- Have students look at the second picture on the bottom of page 10 and discuss.
- Ask student which factor this solution addresses and fill it in under the picture.
Extra Practice Solutions:

EXTRA PRACTICE
Observations

Observation: A description using your 5 senses.

Circle OBSERVATION if the statement is an observation you can make about the picture. Circle NOT AN OBSERVATION if the statement is not an observation you can make about the picture.

1. The person is wearing a diving mask. Observation
2. The fish only have one fin each. Observation
3. The person is smaller than a fish. Observation
4. Something is funny. Observation
5. There are more fish than people. Observation
6. The person’s shorts are black. Observation
7. The person and fish are in the ocean. Observation

3/2/2017