

FIELD INVESTIGATION GUIDE: WHEN RAIN FALLS



INVESTIGATE HOW WATER MOVES ACROSS THE LANDSCAPE—
AND HOW SIMPLE CHOICES HELP KEEP IT CLEAN

Why does one
field soak up rain
while another
turns into muddy
runoff?



INVESTIGATING QUESTION



BIG IDEA

- Healthy soil acts like a sponge.
- When rain falls on healthy soil filled with roots and living organisms, much of the water soaks into the ground.
- When soil is compacted, bare, or disturbed, more water runs across the surface, carrying valuable soil & nutrients with it.
- Healthy soil protects both farms and our lakes, rivers, and streams.

Same rain.

Different soil
management.

What happens
next?



QUICK FACTS:



Investigation Time | Reset Time

• 10–15 MINUTES

• 5 MINUTES



Audience

GRADES 3–ADULT
SCHOOL GROUPS/FAMILIES
COMMUNITY EVENTS
PROFESSIONAL DEVELOPMENT

Group Size

4–8 PARTICIPANTS
LARGER GROUPS SHOULD
ROTATE THROUGH ADDITIONAL
INVESTIGATIONS.

PARTICIPANTS WILL:



Learning Goals

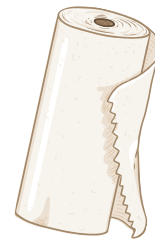
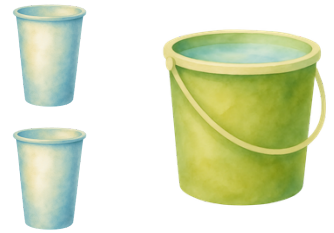
- Compare infiltration in different land management systems.
- Observe runoff and erosion.
- Discover how living roots improve soil health.
- Recognize the connection between soil health and water quality.
- Understand why conservation practices reduce flooding and erosion.

rainfall simulator

EQUIPMENT CHECKLIST



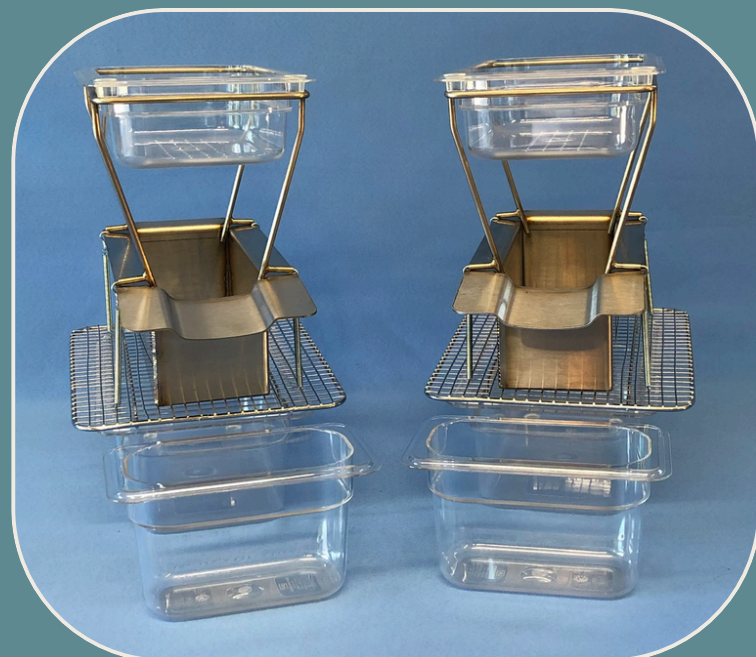
- ☐ Rainfall simulator tray
- ☐ Metal Risers
- ☐ Perennial Cover soil tray
- ☐ Conventional soil tray
- ☐ Cups and extra water bucket
- ☐ Collection containers
- ☐ Paper towels
- ☐ Brooke QR sign
- ☐ Laminated comparison photos



QUICK SETUP

Estimated Time: 5 minutes

1. Place rainfall simulator on stable table.
2. Verify soil trays are secure.
3. Position runoff containers.
4. Prefill water cups
5. Place towels nearby.
6. Display Brooke QR sign.
7. Test water flow.



You're ready to investigate.

<https://rainfallsimulator.com/wp-content/uploads/2019/08/Rainfall-Simulator-Instructor-Guide-1.pdf>

rainfall simulator

HOSTING GUIDE



OPENING CONVERSATION

"If the same amount of rain falls on two fields... why doesn't the same thing happen?"

Let visitors make predictions.

Avoid telling them which tray is which.

DURING THE ACTIVITY



Invite visitors to:

Observe both soil trays.

Predict what will happen.

Watch rainfall begin.

Compare runoff.

Compare infiltration.

Compare water clarity.

Discuss what they noticed.

QUESTIONS TO ASK



Which tray absorbed more water?

Which tray produced muddy runoff?

Where did more water go?

Why do you think that happened?

How might this affect nearby streams?

What could farmers—or homeowners—do differently?

BROOKE'S NOTES:



Have you ever
wondered
where a raindrop
goes after
it lands?



Ask
Brooke!
SCAN TO
LISTEN

BROOKE'S NOTES

"Rain doesn't just fall.

It begins a journey.

Some rain soaks into the soil where plants can use it later.

Some races across the land, carrying tiny pieces of soil along the way.

Healthy soil slows that journey.

Let's investigate what happens when the exact same rain falls on two very different landscapes."

LOOKING CLOSER

The next time it rains...

Can you find...

- Water soaking into a garden?
- Muddy water flowing into a storm drain?
- A grassed waterway?
- Water pooling in a parking lot?
- Earthworms after a rain?

Healthy soil leaves clues everywhere.



RESET CHECKLIST



Empty runoff containers

- ☒ Drain rainfall infiltration and runoff collection bins
- ☒ Wipe table
- ☒ Return towels
- ☒ Swap soil trays every 1.5 hours or as needed
- ☒ Dry table
- ☒ Refill water if needed
- ☒ Straighten signage



TROUBLE SHOOTING



WATER NOT FLOWING EVENLY

Check rainfall holes.
Remove debris.
Verify tank has a slight slope.



RUNOFF CONTAINERS OVERFLOWING

Reduce rainfall amount.
Empty collection cups



PARTICIPANTS FINISH QUICKLY

Repeat using different rainfall amounts.
Discuss local examples.
Compare photographs of real fields after storms.

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These materials were developed with support from:



rainfall simulator

FIELD INVESTIGATION: WHEN RAIN FALLS

Date: _____

Host: _____

Location: _____

Approximate Attendance: _____

Questions visitors asked:

What worked especially well?

Ideas for improving this investigation

Supplies needing replacement

**LESSONS
LEARNED**



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**LESSONS
LEARNED**



FIELD INVESTIGATION GUIDE WE'RE ALL DOWNSTREAM



INVESTIGATE HOW WATER MOVES ACROSS THE LANDSCAPE—
AND HOW SIMPLE CHOICES HELP KEEP IT CLEAN

Where does a
raindrop go
after it lands?



INVESTIGATING QUESTION

- Every drop of rain has a destination.
- As rain moves across the landscape, it carries whatever it encounters—soil, fertilizer, pet waste, leaves, litter, and other pollutants—into streams, rivers, lakes, wetlands, and groundwater.
- Healthy landscapes help slow, filter, and absorb that water before it reaches our waterways.
- Everyone lives in a watershed.
- Everyone is downstream from someone.



BIG IDEA

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QUICK FACTS:



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Learning Goals

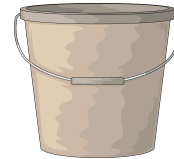
- Discover what a watershed is.
- Observe how stormwater moves across a landscape.
- Identify common sources of runoff pollution.
- Compare runoff before and after conservation practices are added.
- Recognize that individual actions affect downstream water quality.

watershed model

EQUIPMENT CHECKLIST



- ☐ Watershed model
- ☐ Model stand (if applicable)
- ☐ Spray bottles (filled)
- ☐ Pollution materials
- ☐ Sponge conservation practices
- ☐ Towels
- ☐ Drain bucket
- ☐ Printed instruction sheet
- ☐ Brooke QR sign
- ☐ Laminated watershed map



QUICK SETUP

Estimated Time: 5 minutes

1. Place watershed model on a stable table.
2. Fill spray bottles.
3. Place pollution materials beside the model.
4. Place sponge conservation practices nearby.
5. Position towels and drain bucket.
6. Test spray bottles.
7. Display Brooke QR sign.

You're ready to investigate.

HOSTING GUIDE



OPENING CONVERSATION

"When rain falls here...where do you think it goes?"

Allow visitors to share ideas.

Avoid defining "watershed" immediately.

Encourage curiosity first.

DURING THE ACTIVITY



Invite visitors to:

Place pollution materials around the community.

Predict what will happen when it rains.

Use the spray bottles to create rainfall.

Observe where the water travels.

Add sponge conservation practices.

Make it rain again.

Compare the results.

QUESTIONS TO ASK



What surprised you?

Where did most of the water travel?

Which areas absorbed water?

Where did pollution end up?

Which conservation practices made the biggest difference?

How is this similar to places you've seen after a heavy rain?



BROOKE'S NOTES:



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SCAN TO
LISTEN

BROOKE'S NOTES

"Every drop of rain begins a journey. Some soaks into the ground. Some travels across streets, sidewalks, farm fields, and neighborhoods. As it moves, it carries little pieces of the landscape with it. Let's investigate where this water goes—and how the choices we make along the way can help keep it clean."



LOOKING CLOSER

Encourage visitors to observe after their next rainfall. Can they find:

- Water flowing into a storm drain?
- A puddle disappearing into the soil?
- A grassed waterway?
- Native plants slowing runoff?
- Water entering a nearby creek?

Every community tells the same story if you know where to look.



RESEST CHECKLIST



- ☐ Empty excess water.
- ☐ Refill spray bottles.
- ☐ Return sponge conservation practices.
- ☐ Return pollution materials.
- ☐ Wipe model dry.
- ☐ Return towels.
- ☐ Empty drain bucket.
- ☐ Straighten signage.



TROUBLE SHOOTING



SPRAY BOTTLES NOT WORKING
Check nozzle adjustment.
Refill water.
Inspect for clogged nozzle.



WATER OVERFLOWING
Reduce spray amount.
Empty drain bucket.
Dry surrounding table.



PARTICIPANTS FINISH QUICKLY
Ask additional observation questions.
Encourage another round using different conservation practices.
Discuss examples from their own neighborhood or farm.

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watershed model

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