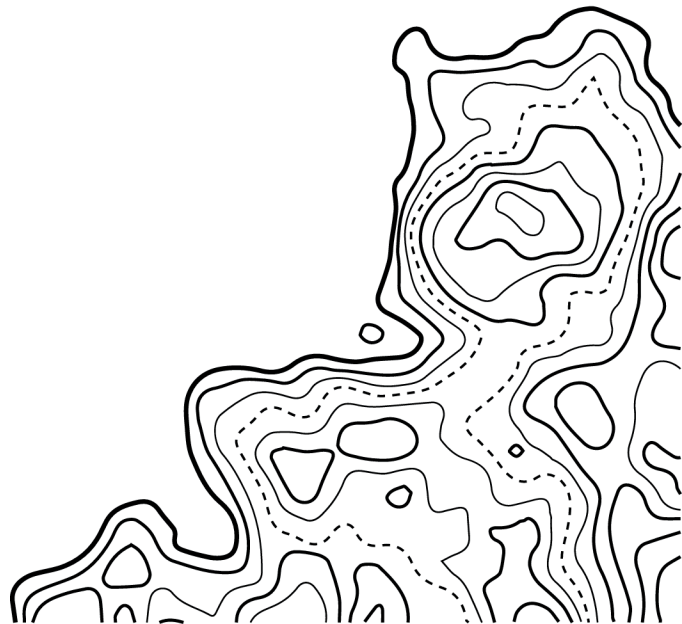
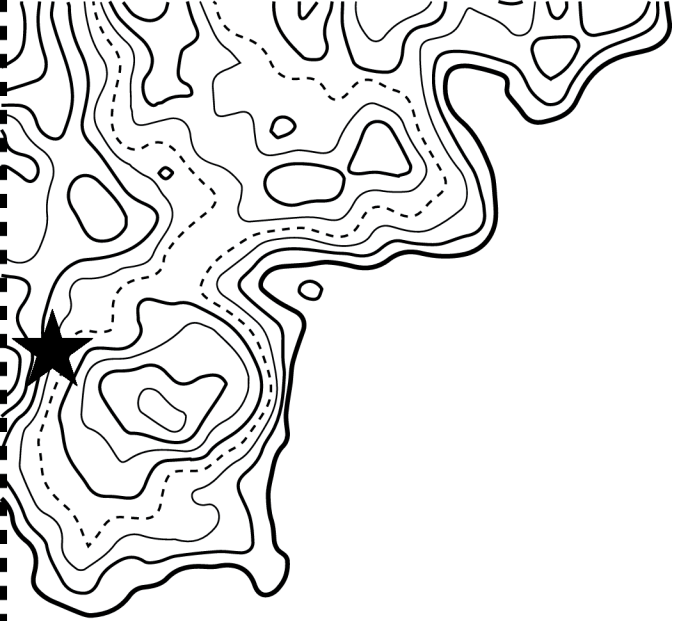




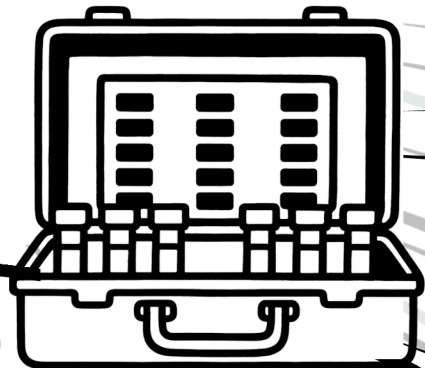
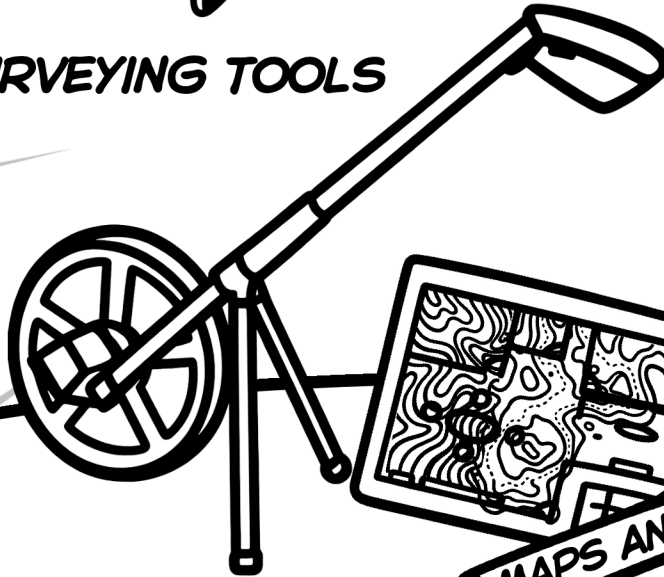
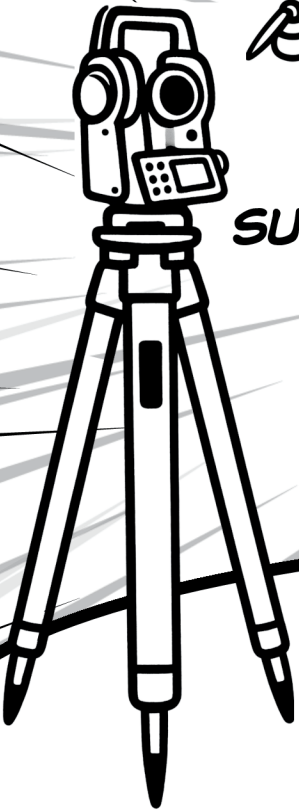


**DRAW YOURSELF
AS A PART OF THE
EROSION PATROL!**

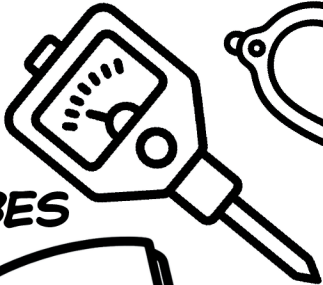
WHAT TOOLS DO THEY USE?



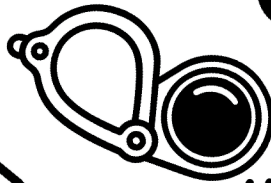
SURVEYING TOOLS



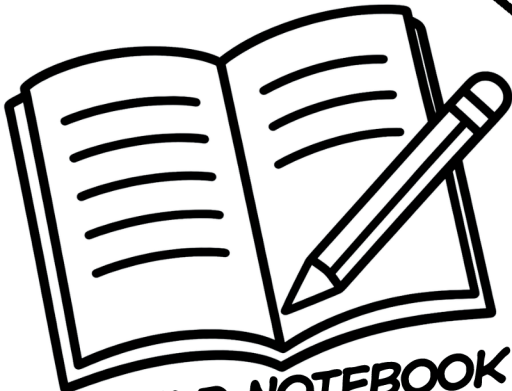
WATER TESTING KITS



SOIL PROBES



HAND LENS



FIELD NOTEBOOK



ROCK HAMMER



SAFETY GEAR

ACTIVITY #1

WHAT ARE DIFFERENT TYPES OF SEDIMENT?

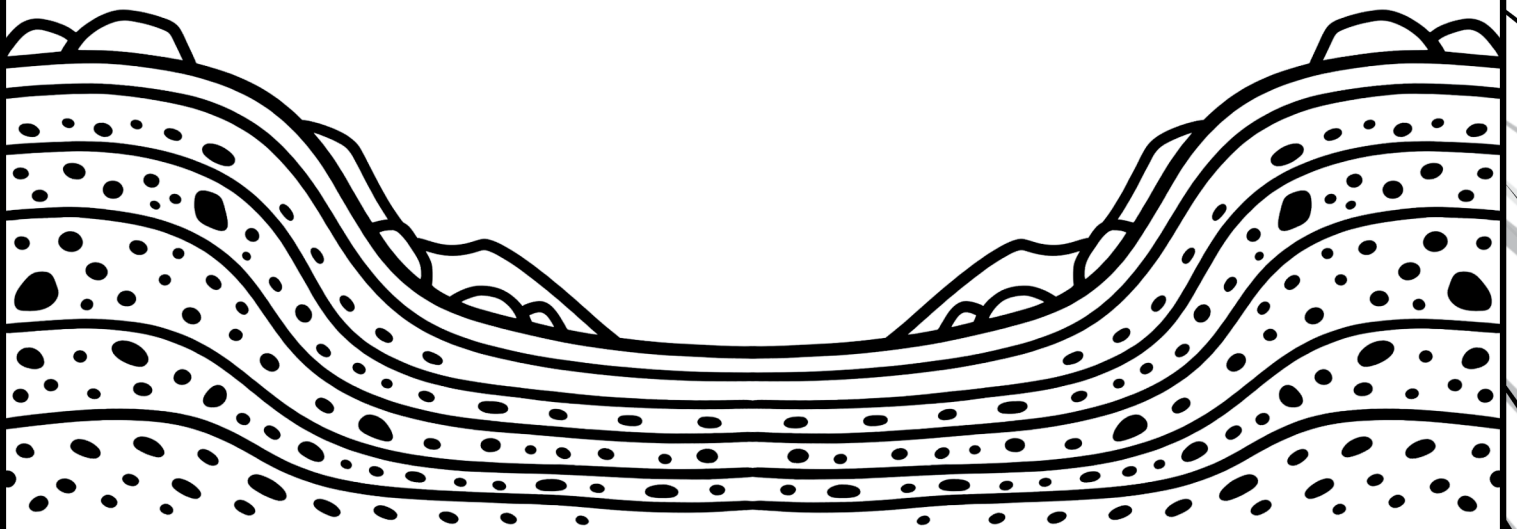
SEDIMENT IS ANY SOLID MATERIAL THAT BREAKS DOWN INTO SMALL PIECES, GETS MOVED AROUND, AND EVENTUALLY **SETTLES** AT THE **BOTTOM** OF A **LIQUID** OR ON THE **GROUND**.

THERE ARE MANY DIFFERENT TYPES OF SEDIMENTS LIKE:

- **CLAY**
- **SILT**
- **SAND**

BUT WHERE CAN YOU FIND THEM?

- **ALL OVER!**



ACTIVITY #1 PART 2

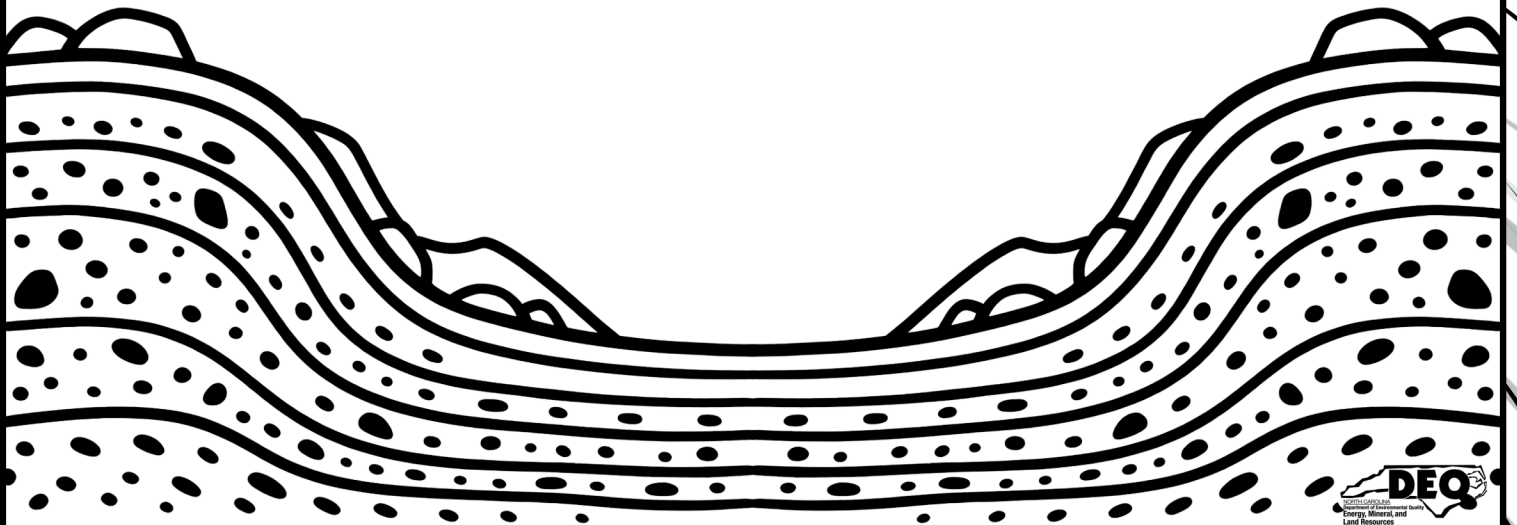
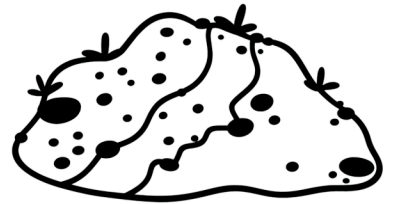
WHAT ARE DIFFERENT TYPES OF SEDIMENT?

- **SAND** IS A LOOSE, GRITTY MATERIAL MADE OF TINY, BROKEN-DOWN PIECES OF ROCK AND MINERALS. YOU CAN EASILY FIND IT COVERING BEACHES AND DESERTS.



- **CLAY** IS A SOFT, STICKY TYPE OF EARTH MADE OF MICROSCOPIC, FLAT PIECES OF WORN-DOWN ROCK AND MINERALS. UNLIKE SAND, WHICH FEELS ROUGH AND SCRATCHY, WET CLAY FEELS SMOOTH AND GLUEY LIKE THICK MUD.

- **SILT** IS A FINE, DUST-LIKE SOIL MADE OF TINY PIECES OF ROCK AND MINERALS. WHEN IT IS COMPLETELY DRY, SILT FEELS SMOOTH AND POWDERY LIKE FLOUR. WHEN IT GETS WET, IT TURNS INTO A SLIPPERY, SOAPY MUD



ACTIVITY #1 PART 3

WHERE CAN YOU FIND DIFFERENT TYPES OF SEDIMENT?

GO OUTSIDE AND SEE IF YOU CAN FIND
SAND, CLAY, OR SILT!

DRAW IT

I FOUND:

WHERE I FOUND IT:

WHAT COLOR IT IS:

I FOUND:

WHERE I FOUND IT:

WHAT COLOR IT IS:

I FOUND:

WHERE I FOUND IT:

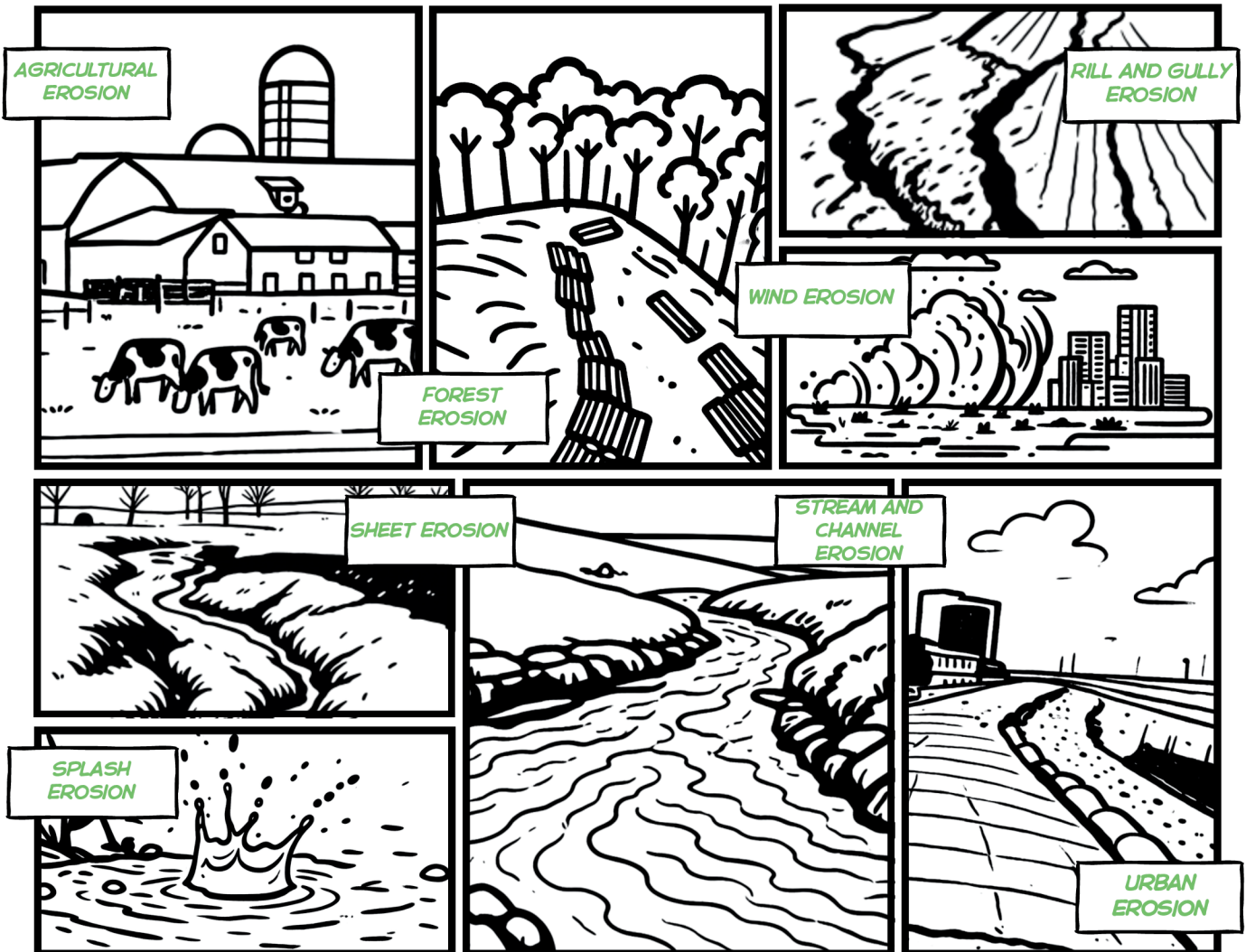
WHAT COLOR IT IS:

ACTIVITY #2

WHAT ARE DIFFERENT TYPES OF EROSION?

EROSION IS WHEN WIND, WATER, OR OTHER NATURAL FORCES LOOSEN UP THE SOIL AND MOVE IT AWAY TO A NEW PLACE.

THERE ARE MANY WAYS SOIL ERODES AWAY



ACTIVITY #2 PART 2

DEFINITIONS OF DIFFERENT TYPES OF EROSION!

**READ THE DIFFERENT DEFINITIONS AND SEE IF YOU
CAN FIGURE OUT WHAT KIND OF EROSION IT IS!**

_____ IS THE LOSS OF HEALTHY SOIL CAUSED BY POOR **FARMING** CHOICES, LIKE LETTING ANIMALS OVEREAT THE GRASS, PLANTING THE SAME CROPS OVER AND OVER, AND FAILING TO PROTECT THE LAND.

_____ IS WHEN WIND, WATER, OR OTHER NATURAL FORCES LOOSEN UP THE SOIL AND **MOVES IT AWAY** TO A NEW PLACE.

_____ IS THE LOSS OF SOIL FROM NOT USING GOOD EROSION CONTROL IN THE **FOREST** WHEN CUTTING DOWN TREES

_____ IS WHEN A THIN, **EVEN LAYER** OF SOIL GETS SWEEPED UP AND CARRIED AWAY BY FLOWING WATER.

_____ IS EROSION CAUSED BY **RAINDROPS** HITTING BARE GROUND AND KNOCKING SOIL PARTICLES APART.

_____ IS WHEN **FAST-MOVING WATER** CUTS DEEP GROOVES AND TRENCHES INTO STEEP HILLS, CAUSING MASSIVE AMOUNTS OF SOIL TO WASH AWAY.

_____ IS WHEN PEOPLE BUILD **HIGHWAYS, HOUSES, MALLS, AND OFFICE BUILDINGS** THAT BLOCK THE GROUND AND INCREASES RUNOFF.

_____ IS WHEN STRONG **WINDS** BLOW ACROSS DRY OR BARE GROUND, LIFTING UP THE LOOSE SOIL AND CARRYING IT AWAY.

ACTIVITY #3

WHICH THINGS DO YOU THINK WOULD
BE **GOOD** OR **BAD** FOR SOIL? PUT
THE WORDS IN THE LIST UNDER THE
CORRECT HEADING.
ADD SOME WORDS OF YOUR OWN!

GOOD

BAD

EXAMPLES:

TREES - HEAVY RAIN - ROADS - VEGETATION
STRONG WINDS - ROCKS - DOG POOP - FERTILIZER
FARMS - TRASH - CARS - CONSTRUCTION ZONES

ACTIVITY #3 PART 2

**SELECT TWO WORDS AND EXPLAIN WHY
YOU SAID THEY ARE GOOD OR BAD:**

ACTIVITY #4

TURBID TANTRUM!

WHAT IS **SEDIMENTATION**? WHAT DOES **TURBIDITY** MEAN?

THESE ARE IMPORTANT TERMS TO UNDERSTAND AS AN EROSION PATROL SCOUT! THIS ACTIVITY WILL TEACH YOU EVERYTHING YOU NEED TO KNOW.

SEDIMENTATION: _____

TURBIDITY: _____

YOU WILL NEED:

- 3 CLEAR PLASTIC BOTTLES WITH LIDS
- 3 DIFFERENT TYPES OF SEDIMENT
- WATER
- A TIMER

DIRECTIONS:

- IN EACH OF YOUR BOTTLES PLACE ONE TYPE OF SEDIMENT. EACH TYPE OF SEDIMENT SHOULD BE IN ITS OWN BOTTLE.
- FILL EACH BOTTLE THE REST OF THE WAY WITH WATER, AND PUT THE LID ON.
- SHAKE! SHAKE EACH BOTTLE FOR ABOUT 30 SECONDS
- PLACE EACH BOTTLE ON A FLAT SURFACE AND SET A TIMER TO TRACK HOW LONG IT TAKES FOR EACH ONE TO SETTLE.

ACTIVITY #4
PART 1

TURBID TANTRUM!

**WHICH BOTTLE DO YOU THINK WILL SETTLE
FIRST? WHY?**

ACTIVITY #4 PART 2

TURBID TANTRUM!

WHAT DID THE WATER LOOK LIKE **BEFORE** YOU SHOOK THE BOTTLE, WHAT ABOUT **AFTER**? HOW LONG DID IT TAKE FOR EACH TYPE OF **SEDIMENT** TO SETTLE?

BEFORE:

AFTER:

HOW LONG DID IT TAKE?:

ACTIVITY #5

THE PROCESS OF EROSION AND SEDIMENTATION

TODAY, YOU WILL OBSERVE HOW EROSION HAPPENS WHEN BARE SOIL IS EXPOSED TO THE ELEMENTS. YOU WILL ALSO LEARN HOW THAT EROSION LEADS TO SEDIMENTATION.

YOUR MISSION:

- **PART 1 : HYPOTHESIS - WRITE YOUR BEST GUESS ABOUT WHAT WILL HAPPEN.**
- **PART 2 : OBSERVATIONS - LOOK CLOSELY AND WRITE DOWN EXACTLY WHAT YOU SEE.**
- **PART 3 : REFLECTION - THINK BACK ON THE EXPERIMENT AND WRITE WHAT YOU LEARNED.**

YOU WILL NEED:

- **2 ALUMINUM PANS**
- **A MARKER TO LABEL YOUR PANS**
- **SOIL**
- **WATER**
- **CLEAR CUP**
- **SPRAY BOTTLE**
- **RULER**

ACTIVITY #5

THE PROCESS OF EROSION AND SEDIMENTATION

DIRECTIONS:

- CUT HOLES (ABOUT THE SIZE OF A DIME) ALONG ONE SIDE OF ONE OF YOUR ALUMINUM PANS (LETS LABEL THIS ONE PAN 1). PLACE THE HOLES AT THE SAME HEIGHT ACROSS THE TOP OF ONE SIDE OF THE PAN.
- GATHER SOIL FROM YOUR YARD OR NEAR YOUR SCHOOL WITH HELP FROM A TRUSTED ADULT. PLACE THE SOIL IN A SMOOTH LAYER AT THE BOTTOM OF PAN 1. MAKE SURE YOUR SOIL FILLS UP TO THE BOTTOM OF THE PAN BY THE HOLES YOU CUT.
- PLACE THE SECOND ALUMINUM PAN (LETS LABEL THIS ONE PAN 2) UNDER PAN 1 SO THAT THE HOLES ARE DIRECTLY IN PAN 2.
- SLIGHTLY ELEVATE THE SIDE OF PAN 1 THAT DOES NOT HAVE HOLES. SPRAY YOUR SPRAY BOTTLE OVER THE ELEVATED PART TO SIMULATE RAIN. MAKE SURE THE HOLES YOU CUT IN PAN 1 ARE DIRECTLY ABOVE PAN 2 SO NO WATER DRIPS OUT!
- AS YOU SIMULATE RAIN ON A BARE SOIL SURFACE. LOOK AT HOW THE WATER MOVES ACROSS THE SOIL. WATCH THE WATER THAT LEAVES THE SOIL IN PAN 1 AS IT DRIPS INTO PAN 2. WHAT DOES THE WATER LOOK LIKE?
- AFTER THE WATER HAS STOPPED MOVING, POUR THE COLLECTED SOIL AND WATER IN PAN 2 INTO A CLEAR GLASS.
- LOOK AT THE QUALITY OF THE WATER LEAVING PAN 1. LET THE SOIL SETTLE TO THE BOTTOM OF YOUR GLASS AND THEN USING YOUR RULER, MEASURE HOW MUCH SOIL ERODED AWAY FROM YOUR HILL.

**MEMBERS OF THE EROSION PATROL
AND OTHER SCIENTISTS MAKE
EDUCATED GUESSES CALLED
HYPOTHESIS DURING EXPERIMENTS.
WHAT IS YOUR HYPOTHESIS FOR THIS
EXPERIMENT?**

WHAT DO YOU **THINK** WILL HAPPEN?

[illegible]

ACTIVITY #5

PART 2

**WATCH WHAT YOU SEE
AND WRITE WHAT
YOU OBSERVED**

WHAT DID YOU SEE? WRITE DOWN YOUR OBSERVATIONS.

[illegible]

ACTIVITY #5

PART 3

**WATCH WHAT YOU SEE
AND WRITE WHAT
YOU OBSERVED**

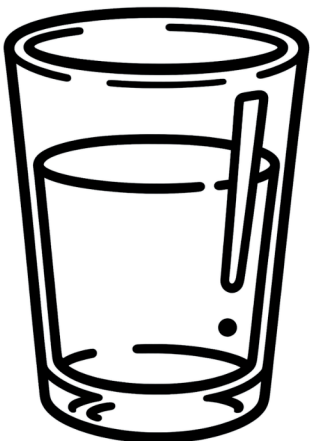
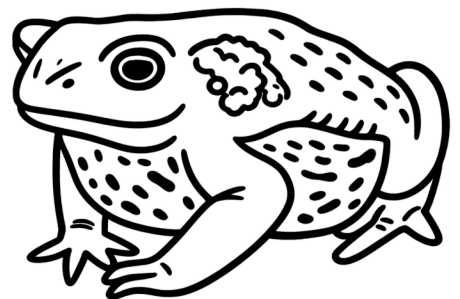
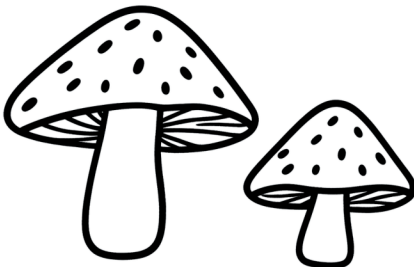
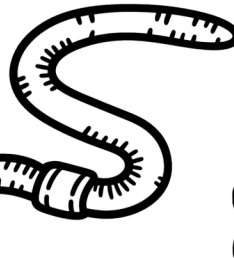
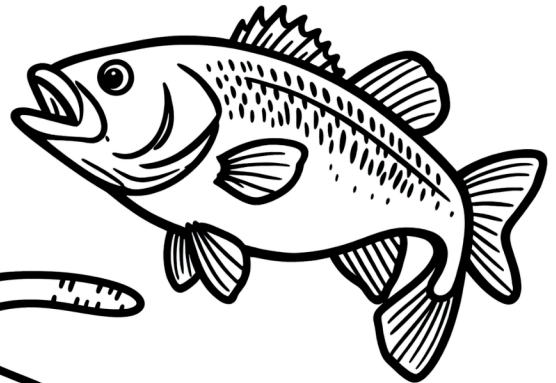
WHAT ACTUALLY HAPPENED, WHAT DID YOU *LEARN*? HOW MUCH *SEDIMENT* WAS IN THE CUP?

[illegible]

ACTIVITY #6

**IF WE LOSE THE SOIL,
THEY LOSE THEIR HOME**

**SOIL IS ONE OF OUR MOST PRECIOUS RESOURCES.
IT IS IMPORTANT FOR EVERY LIVING THING.
DISCUSS: HOW DO THESE THINGS DEPEND ON THE SOIL?**





ACTIVITY #6 PART 2

***SELECT **TWO** THINGS YOU DISCUSSED
AND EXPLAIN HOW THEY DEPEND ON SOIL:***

ACTIVITY #7

3 REASONS WE NEED TO STOP SOIL EROSION

DRAW A PICTURE OF AN **ANIMAL**, A **PERSON**, AN **INSECT** OR A **PLANT** THAT MIGHT GIVE THE REASON LISTED IN EACH BOX.

BECAUSE I LIKE
TO SWIM IN
CLEAN WATER

BECAUSE I EAT
INSECTS THAT LIVE
IN THE SOIL

BECAUSE I NEED SOIL
TO GROW

**ACTIVITY #7
PART 2**

**CAN *YOU* THINK OF MORE REASONS WHY
IT IS IMPORTANT TO PROTECT OUR
ENVIRONMENT AND SAVE OUR SOIL?**

ACTIVITY #8

PERMEABLE VS. IMPERMEABLE

DID YOU KNOW?

- IT TAKES 500 YEARS TO FORM ONE INCH OF TOP SOIL.
- MANY DIFFERENT TYPES OF ANIMALS AND ORGANISMS CAN LIVE IN AN ACRE OF SOIL.
- THAT EARTHWORMS CAN DIGEST TONS OF SOIL IN ONE YEAR.

THE UNITED STATES LOSES **64 BILLION TONS** OF SOIL EACH YEAR DUE TO EROSION...THAT'S ENOUGH SOIL TO LOAD **320 MILLION** DUMP TRUCKS!

IF YOU WERE TO PARK THEM END TO END, THEY WOULD REACH TO THE MOON AND ALMOST ALL THE WAY BACK AGAIN!

THIS ERODED SOIL IS BLOWN INTO OUR AIR, AND IT IS WASHED INTO OUR RIVERS AND LAKES WHERE IT CAUSES POLLUTION.

SO WHAT CAUSES OUR SOIL TO ERODE AWAY?

HERE'S AN EXPERIMENT THAT SHOWS YOU ONE CAUSE OF SOIL EROSION, AND A WAY TO STOP IT.

YOU WILL NEED:

- A SPRAY BOTTLE TO SIMILUATE RAIN
- A PIECE OF CARDBOARD IN A PLASTIC BAG TO SIMULATE AN IMPERMEABLE SURFACE
- A PIECE OF FELT TO SIMULATE A PERMEABLE SURFACE
- 2 ALUMINUM PANS
- SOME SOIL

ACTIVITY #8 PART 2

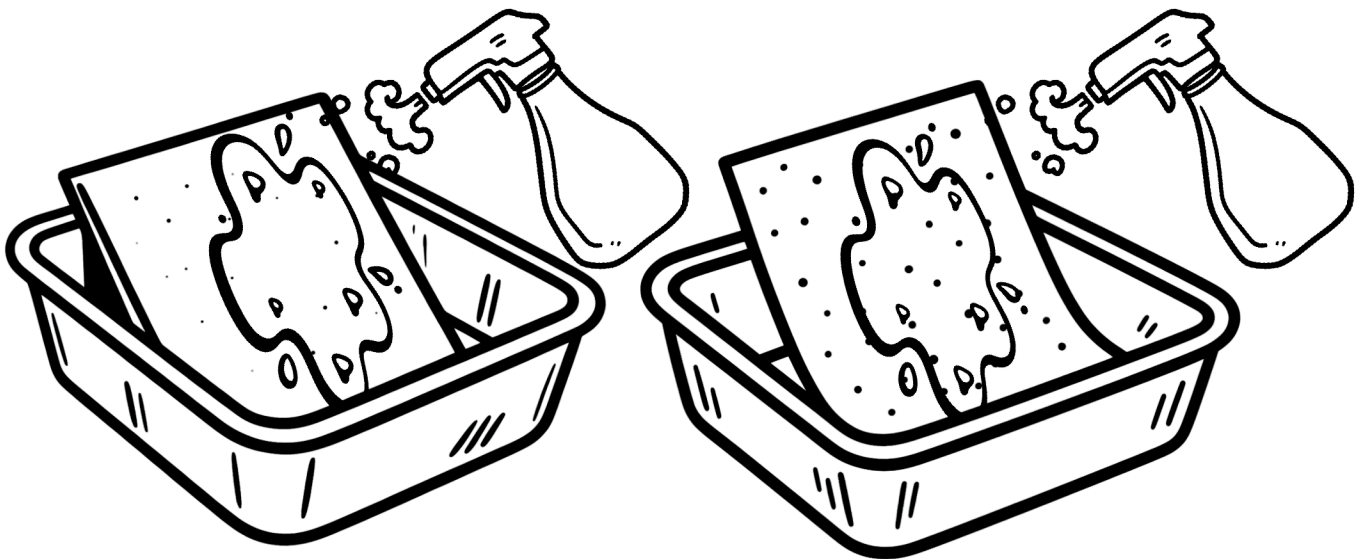
PERMEABLE VS. IMPERMEABLE

PLACE YOUR IMPERMEABLE AND PERMEABLE SURFACES ON AN **ANGLE** IN **EACH** OF YOUR ALUMINUM PANS.

PLACE A THIN LAYER OF SOIL ON BOTH SURFACES.

USING YOUR SPRAY BOTTLE, TAKE TURNS SIMULATING RAIN ON BOTH SURFACES.

AS YOU SPRAY THE WATER WATCH WHAT HAPPENS AT THE BOTTOM OF THE PAN!



ACTIVITY #8
PART 3

PERMEABLE
VS.
IMPERMEABLE

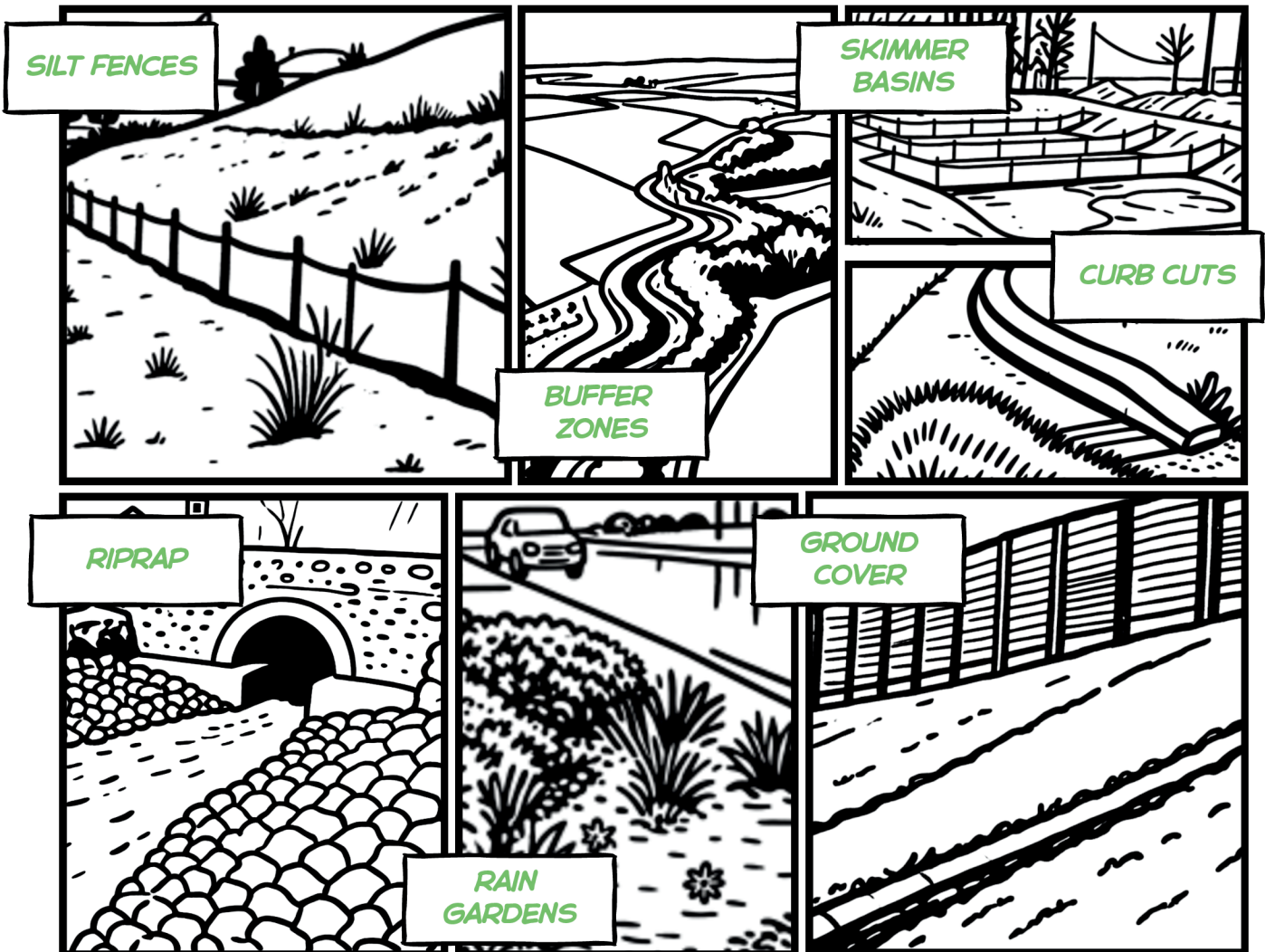
**BASED ON WHAT YOU SAW. WHAT EFFECT DOES
THE TYPE OF SURFACE HAVE ON SOIL EROSION?
CAN YOU THINK OF 2 REASONS WHY?**

ACTIVITY #9

WHAT ARE BEST MANAGEMENT PRACTICES?

BEST MANAGEMENT PRACTICES ARE HOW THE EROSION PATROL STOPS EROSION AND CONTROLS SEDIMENT FROM GETTING INTO OUR WATER.

THERE ARE MANY WAYS THE EROSION PATROL DOES THIS:

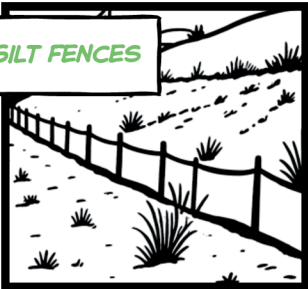


ACTIVITY #9 PART 2

WHAT ARE BEST MANAGEMENT PRACTICES FOR?

NOW THAT WE KNOW WHAT **BEST MANAGEMENT PRACTICES** ARE, **MATCH THEM** TO WHAT EACH ONE DOES!

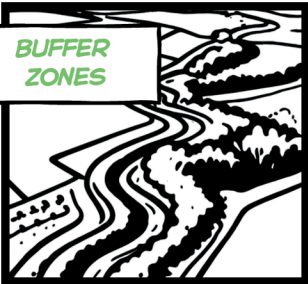
SILT FENCES



FENCES OF PLASTIC, BURLAP AND METAL, USED TO KEEP SOIL FROM WASHING INTO THE WATER.

VEGETATED AREA USED TO PROTECT THE LAND AND WATER AGAINST SEDIMENT POLLUTION.

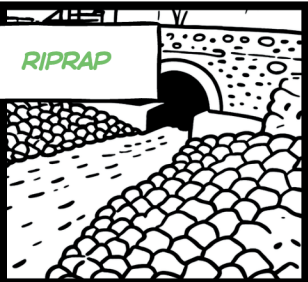
BUFFER ZONES



ANY PLANT OR OTHER MATERIAL THAT PROVIDES A PROTECTIVE MAT (LIKE A BLANKET) TO PREVENT EROSION.

LARGE STONES OF VARIOUS SIZES USED TO CONTROL EROSION.

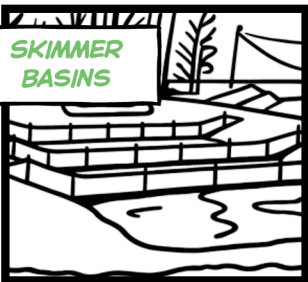
RIPRAP



A TEMPORARY POND WITH A FLOATING PIPE THAT DRAINS CLEAN WATER FROM THE TOP WHILE SOIL SETTLES TO THE BOTTOM.

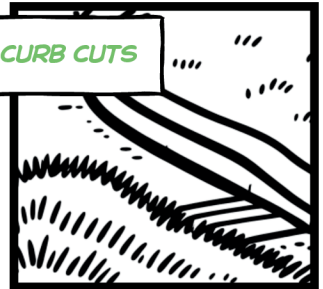
A SHALLOW, BOWL-SHAPED GARDEN WITH DEEP ROOTS THAT CATCHES RAINWATER SO IT CAN SOAK SLOWLY INTO THE GROUND.

SKIMMER BASINS

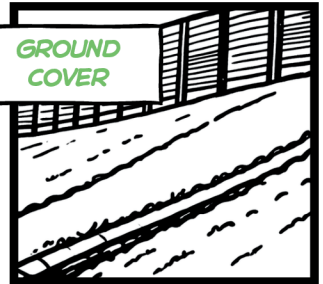


A SMALL OPENING IN A CONCRETE STREET CURB THAT LETS RAINWATER FLOW OUT OF THE ROAD AND INTO A GARDEN OR DIRT AREA.

CURB CUTS



GROUND COVER



RAIN GARDENS



WHICH BEST MANAGEMENT PRACTICES WOULD YOU USE?

NOW THAT WE KNOW WHAT BEST MANAGEMENT PRACTICES DO, AS AN EROSION PATROL SCOUT GO OUTSIDE AND SPOT SOME PLACES OF EROSION NEAR YOU! MAP THE AREA AND DRAW WHAT BEST MANAGEMENT PRACTICES YOU WOULD USE.

[illegible]

USE THESE SYMBOLS FOR EACH TYPE OF BEST MANAGEMENT PRACTICE



ACTIVITY #9 PART 4

WHICH BEST MANAGEMENT
PRACTICES WOULD
YOU USE?

WHAT TYPES OF **EROSION** DID YOU SEE? WHY
DID YOU CHOOSE THE **BEST MANAGEMENT**
PRACTICES THAT YOU CHOSE?

ACTIVITY #10

STOP THAT SEDIMENT!

A NEW ELEMENTARY SCHOOL IS BEING BUILT NEAR A RIVER! BECAUSE OF THE NEW CONSTRUCTION **SEDIMENT** IS LOOSE ALL OVER THE PLACE AND IS AT RISK OF GETTING WASHED AWAY INTO THE RIVER! HELP THE EROSION PATROL BY CALCULATING HOW BIG THEIR **SKIMMER BASIN** NEEDS TO BE!

DIRECTIONS:

USING THE MAP ON THE NEXT PAGE SOLVE THE FOLLOWING PROBLEMS

1.) CALCULATE THE AREA OF THE CONSTRUCTION ZONE.

AREA = _____

2.) HOW BIG DOES THE **SKIMMER BASIN** NEED TO BE? FOR EVERY **4** SQUARE METERS OF THE CONSTRUCTION ZONE AREA, YOU NEED **1** SQUARE METER OF **SKIMMER BASIN** TO CATCH THE **SEDIMENT FILLED RUN OFF**.

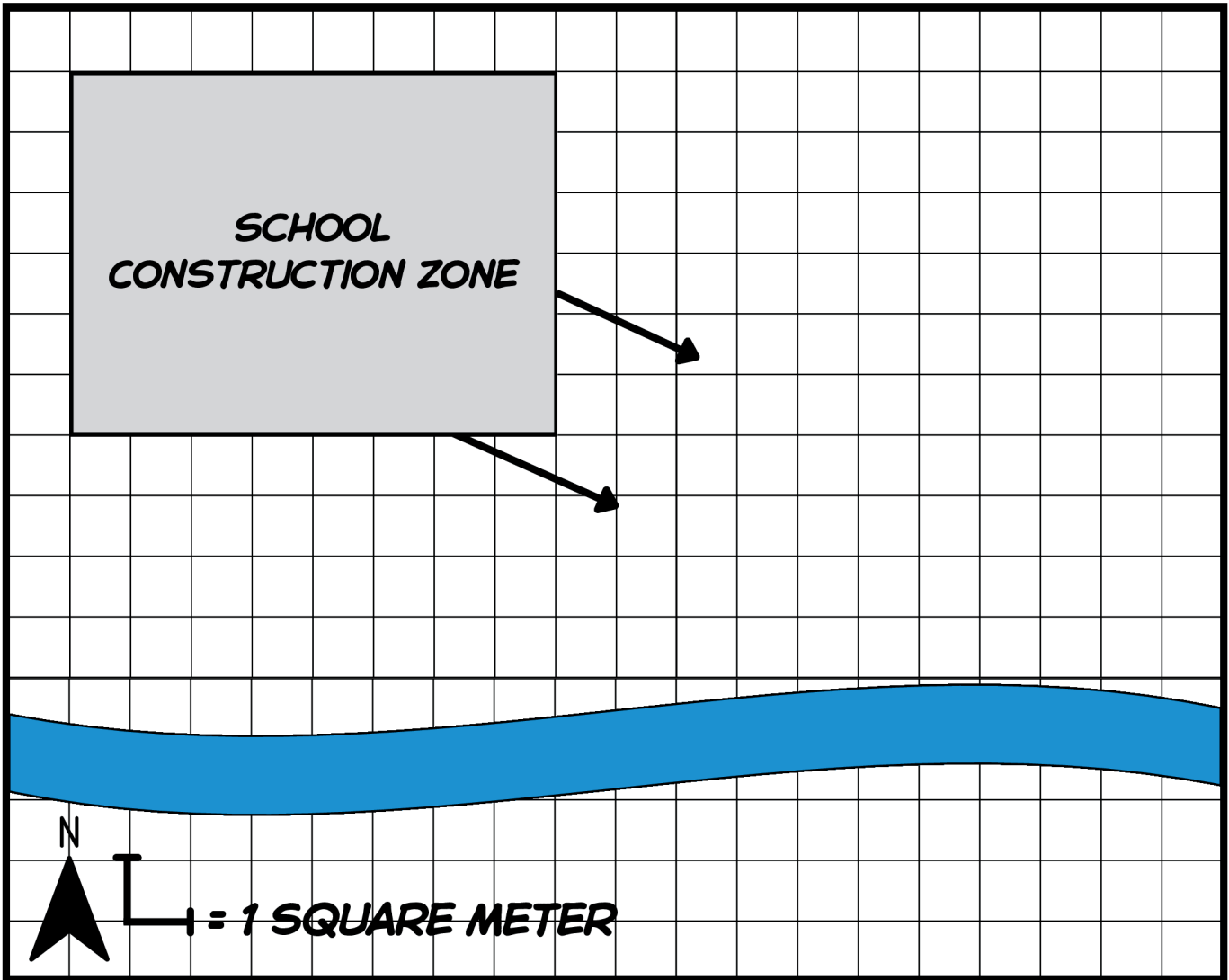
AREA OF SKIMMER BASIN = _____

3.) DESIGN YOUR **SKIMMER BASIN**! MAKE SURE YOU DESIGN YOUR SKIMMER BASIN TO CATCH THE **RUN OFF**!

ACTIVITY #10 PART 2

STOP THAT SEDIMENT!

DRAW YOUR **SKIMMER BASIN**
ON THE MAP



LEGEND

-  - RIVER
-  - RUN OFF DIRECTION

**BE AN EROSION
PATROL SCOUT!**

**HOW CAN
YOU HELP?**

YOU CAN HELP PROTECT THE EARTH BY:

- **STICKING TO THE TRAIL:** ALWAYS STAY ON DESIGNATED PATHS. WALKING OFF-TRAIL CRUSHES PLANTS AND LOOSENS THE SOIL.
- **LEAVE NATURE'S SHIELD:** KEEP PLANTS, GRASS, AND ROCKS WHERE THEY ARE. THEY ACT LIKE A BLANKET THAT PROTECTS THE SOIL UNDERNEATH.
- **PLANT FOR THE FUTURE:** HELP PUT NATIVE PLANTS IN THE GROUND. THEIR DEEP ROOTS WORK LIKE FINGERS TO HOLD SOIL IN PLACE!

REPORTING FOR DUTY:

KEEP YOUR EYES OPEN FOR LOOSE MUD OR WASHED-AWAY SOIL! IF YOU SEE SEVERE EROSION NEAR A CONSTRUCTION SITE, ASK AN ADULT TO REPORT IT IMMEDIATELY TO THE NORTH CAROLINA EROSION PATROL HOTLINE AT: **1-866-STOP-MUD**