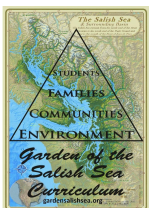


GSSC 6th Grade Student Notebook

Name: _____

Date: _____



gardensalishsea.org 6th Grade

We acknowledge and respect the treaty rights of the Coast Salish Peoples to the lands and waters of the SalishSea, and we recognize their stewardship since time immemorial.



The Human Smoke Stack

Procedure

1. Gently blow bubbles through a straw into the solution in Cup #2 for **one minute**.
2. Record the color of the solution in each cup.

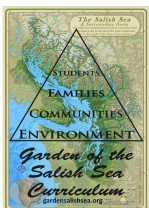
Control variable:
Cup #1: No breath

Manipulated variable:
Cup #2: Added breath

Color		

How did the solution in Cup #2 change when you breathed into it?

Write your hypothesis for why this change occurred:



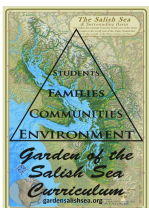
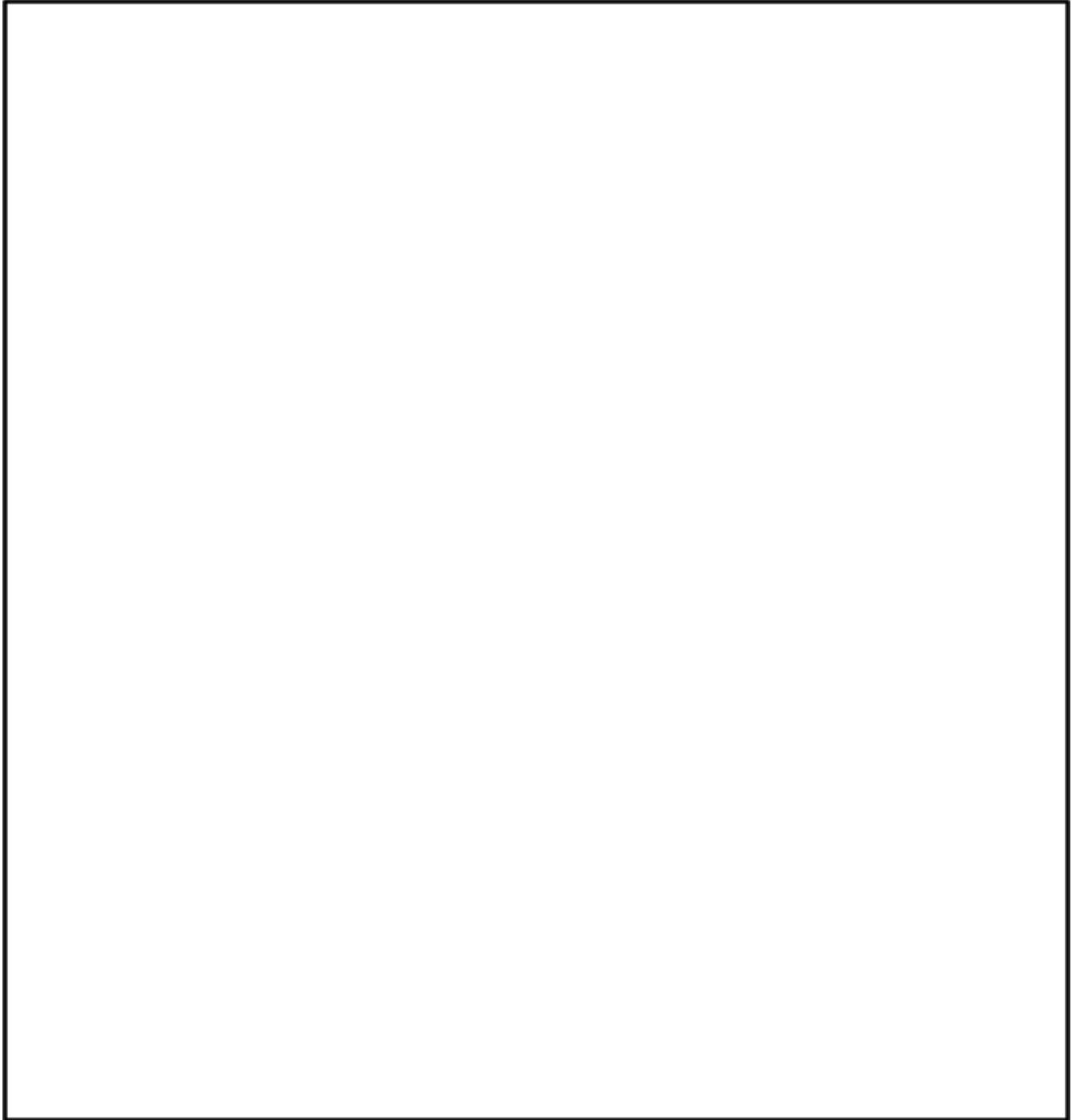
gardensalishsea.org 6th Grade

We acknowledge and respect the treaty rights of the Coast Salish Peoples to the lands and waters of the SalishSea, and we recognize their stewardship since time immemorial.



The Carbon Cycle

In the space below draw a model of the carbon cycle. Use arrows to show the movement of carbon. Include the following processes: decomposition, respiration, and photosynthesis.



gardensalishsea.org 6th Grade
We acknowledge and respect the treaty rights of the Coast Salish Peoples to the lands and waters of the SalishSea, and we recognize their stewardship since time immemorial.



Salish Sea Watersheds Challenge

Scoop the Poop! Rain washes pet and livestock poop down storm drains and into our waters.

Poo-lution can make people and animals sick and cause harmful algal blooms.

- Scoop it, Bag it, Trash it!** I will carry bags to clean up my dog's poop when on walks.
- I will encourage my cat to use a litter box, scoop the poop, bag it, and trash it.
- I will keep livestock away from creeks and ditches, scoop the poop and cover manure piles to keep rain out.

Be Wildlife Smart! Feeding wildlife causes an inflation in their population, which increases the amount of their waste in the area where feeding occurs. It can also make wildlife more aggressive, destructive, and once human food is taken away leads to starvation.

- I will keep wildlife wild by **not** providing easy access to food and shelter. Always secure garbage cans, keep pet food inside, put chickens in the coop at night, and block holes to attics or crawl spaces.

Be Septic Smart! We will maintain our septic system. Failing systems can cause property damage, cost a lot of money to fix, and cause water pollution that can make people sick.

- Evaluate before it's too late!** We will have our septic system evaluated every 1 or 3 years (depending on the system). Evaluations help find small fixes that can prevent large problems. Go to www.whatcomcounty.us/septic or call (360) 778-6000 for more information
- Pump the Tank!** A professional will pump the tank when solids are 1/3 of tank volume.
- Don't Strain Your Drain!** We will avoid system overload by spreading out laundry and dishwasher loads. Solids need to settle in the tank. Too much water too quickly can overload the drain field, causing failure.

Be Yard Smart! Protect your storm drains! Your yard is a place that can be a minefield of pollution. Especially if you use fertilizers, pesticides, or have animals, but you can do more to help prevent pollution from your yard getting into waterways.

- Plant [native species](#) in your yard, especially the base of hills and shorelines! Make sure, if you have a septic field, to [plant species](#) with short root systems.
- Only rain in storm drains! I will not dump toxics in drains or on the ground.
- We will not wash our car in the driveway, where the soap and oil can wash into the storm drain, which goes into the Salish Sea.
- We will position gutters to drain onto grass or garden beds and use porous materials like paving stones, sand or gravel.

Be Boat Smart!

- We will make sure the valve on the boat's holding tank is kept in the closed position.
- We will use the pump outs at the marina and never dump the holding tank into the water.
- Rinse boats and kayaks off if transferring between bodies of water.

Be Seafood Smart!

- I will make sustainable seafood choices by buying [Marine Certified Seafood](#) (MSC).

Reduce My Carbon Footprint & Conserve Energy!

- I will ride a bike, walk, or take public transportation instead of driving.
- Flying produces a ton of greenhouse gasses. Be conscientious and think about reducing how many flights you take a year or check out carbon offset programs.
- I will turn off lights, appliances, and computers when not in use and put high energy-using items like water heaters on timers.
- We will buy local products to support our local farmers and reduce transportation.
- We will plant trees, vegetation, and cover crops.
- We will compost our yard and food waste.
- I will choose a low carbon diet.

Reduce, Reuse, and Recycle!

- Reduce!** Find plastic free and reusable alternatives to plastics you use. Minimize purchase of products with plastic packaging, avoid single use plastics and carry a reusable bottle.



gardensalishsea.org 6th Grade

We acknowledge and respect the treaty rights of the Coast Salish Peoples to the lands and waters of the SalishSea, and we recognize their stewardship since time immemorial.



- Reuse!** Get creative and find ways to give plastic items a second life.
- Recycle!** When you use plastic items make sure to clean and properly recycle them.

Date	Action	Number or tally times completed



gardensalishsea.org 6th Grade
We acknowledge and respect the treaty rights of the Coast Salish Peoples to the lands and waters of the SalishSea, and we recognize their stewardship since time immemorial.



Name _____ Date _____ Core _____

My Carbon Footprint

Go to the following website: <https://depts.washington.edu/i2sea/?page=calculate>

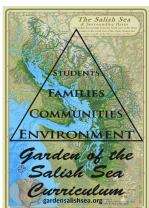
Complete the “Basic Calculator” designed for Middle School

Conclusion

Answer the following questions once you have reached the *red* “Conclusion” page.

1. What is your total footprint of CO₂ per year (in kg)?
2. What is the average footprint of CO₂ per year for one person in Washington (in kg)?
3. What is the average footprint of CO₂ per year worldwide (in kg)?
4. Complete the table with the total CO₂ for YOU for each category below.

Category	CO ₂ produced by YOU (in kg)
HOME (green)	
FOOD (orange)	
PURCHASES (yellow)	
TRANSPORT (blue)	



gardensalishsea.org 6th Grade
We acknowledge and respect the treaty rights of the Coast Salish Peoples to the lands and waters of the SalishSea, and we recognize their stewardship since time immemorial.



5. Use the data in your table and graph paper to make a bar graph that shows the amount of CO₂ (dependent variable) for each category (independent variable). Make sure your graph includes all 5 elements of a quality graph.

Use your graph to answer the following questions.

6. In which category do you produce the most CO₂? Provide evidence from your graph to support your answer.

7. How important do you think it is for you to lower your Carbon Footprint? Why? Explain your reasoning.

8. Name one *realistic* thing that you could do differently that would *significantly* lower the amount of CO₂ you produce.



gardensalishsea.org 6th Grade

We acknowledge and respect the treaty rights of the Coast Salish Peoples to the lands and waters of the SalishSea, and we recognize their stewardship since time immemorial.



pH of Household Solutions

The **pH scale** is used to describe the acidity of a solution. The pH scale changes from **acidic** to **basic** (sometimes called alkaline). Pure water is **neutral**, in the middle. Most plants and animals like to grow in environments where the pH is close to the middle.

1. **Hypothesize** (predict) where on the pH scale each solution will fall (acidic, neutral, or basic). Look at items on the pH scale and find one you think is similar to your solution to help you guess.

2. **Test your hypothesis.** Dip a piece of litmus paper into each solution. Count “one, one thousand”. Lay the litmus paper against the scale provided. Record your result with the number corresponding to the color you see.

3. **Repeat step 2** three times (each test is called a “trial”) to make sure your results are consistent.

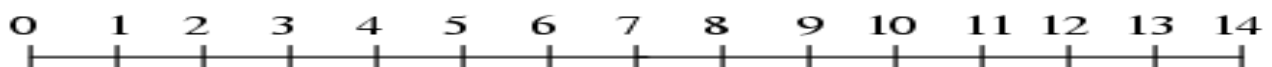
Solution	Hypothesis (A/B/N)	pH Trial 1	pH Trial 2	pH Trial 3	Mean*
Vinegar					
Lemon Juice					
Club Soda					
Pure Water					
Baking Soda					
Tums					
Seawater					

***Instructions for mean:** For each solution, add results from each trial. Divide this sum by the number of trials (3) to find the mean, or average.

Which solution is best suited for shellfish to live in? (circle one)

Highly Acidic Slightly Acidic Neutral Slightly Basic Highly Basic

Label the pH scale below with the solutions that you tested:

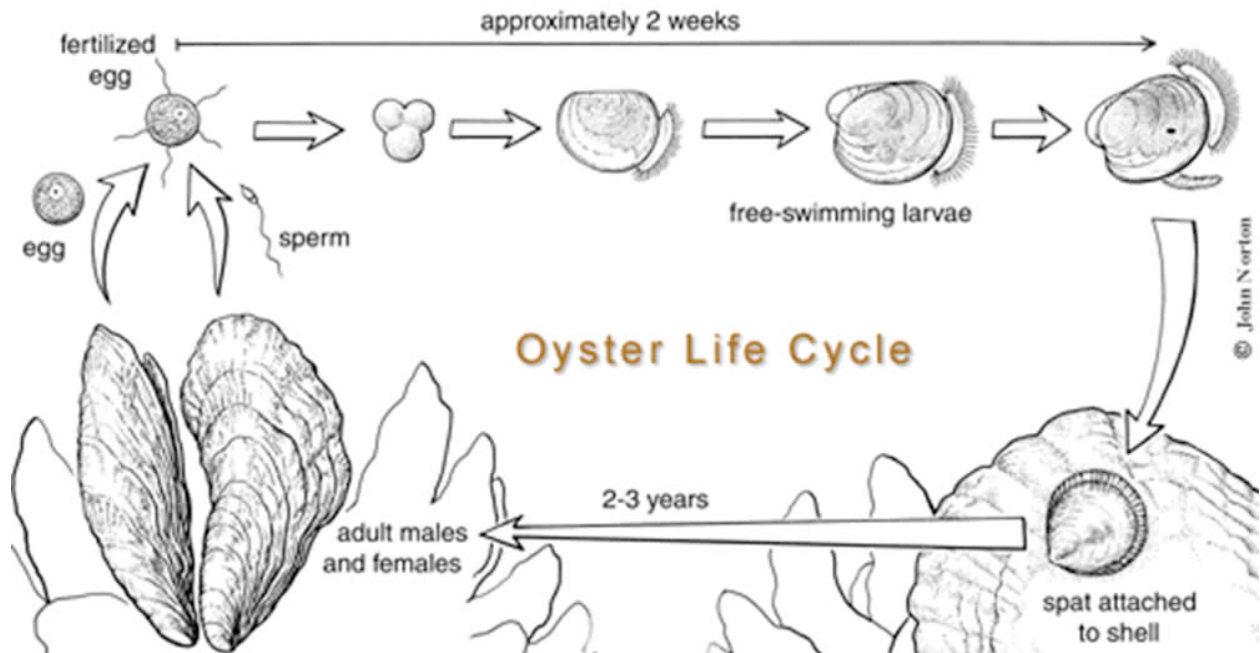


gardensalishsea.org 6th Grade
 We acknowledge and respect the treaty rights of the Coast Salish Peoples to the lands and waters of the SalishSea, and we recognize their stewardship since time immemorial.



Oyster Life Cycle and Ocean Acidification

Draw a circle around the life cycle stage that is most susceptible to ocean acidification.



In a short paragraph, explain why that stage is the most susceptible to ocean acidification.



gardensalishsea.org 6th Grade

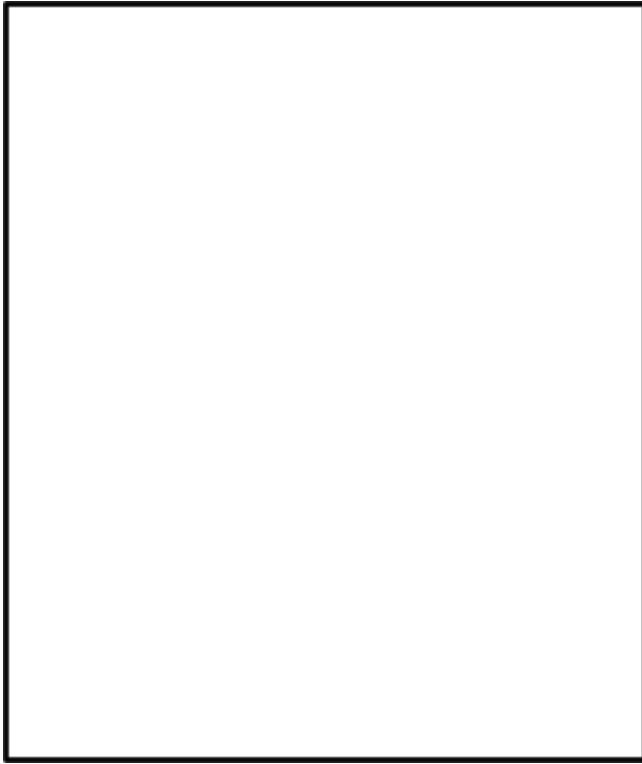
We acknowledge and respect the treaty rights of the Coast Salish Peoples to the lands and waters of the SalishSea, and we recognize their stewardship since time immemorial.



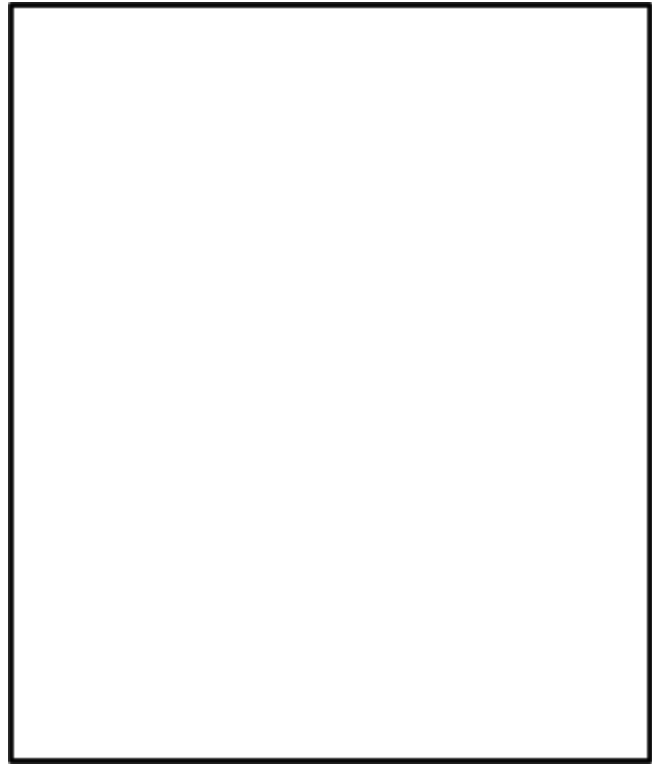
I'm Melting

Compare the shells that were soaked in vinegar to shells soaked in distilled water. Draw a picture of the jars below and use short sentences to answer the questions.

Shells in Vinegar

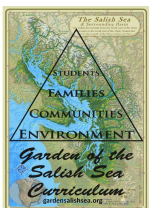


Shells in Water



1. What is happening to the shells in vinegar?

2. Why do you think this is happening?



gardensalishsea.org 6th Grade
We acknowledge and respect the treaty rights of the Coast Salish Peoples to the lands and waters of the SalishSea, and we recognize their stewardship since time immemorial.



Blaine Harbor Data Sheet

Name: _____

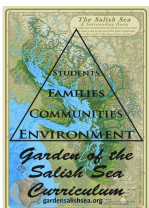
Station 1

Weather observations (clouds, rain, etc.)

	Air temp.	Water temp.	Turbidity	Wind speed	Barometric pressure	Latitude	Longitude
Field data							
Unit							

Station 2

	pH			Dissolved Oxygen	Salinity
	Litmus Paper	Pocket pH Meter	Color Indicator		
Field Data					
Unit					



gardensalishsea.org 6th Grade

We acknowledge and respect the treaty rights of the Coast Salish Peoples to the lands and waters of the SalishSea, and we recognize their stewardship since time immemorial.



Station 3

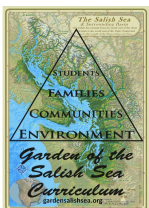
Organism inventory

Above the surface

Below the surface

--	--

Draw a diagram of at least one organism. Include information such as location (above or below surface) and species.



gardensalishsea.org 6th Grade

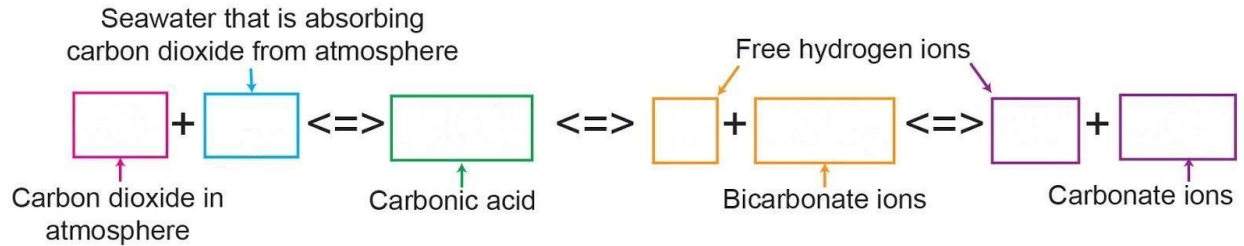
We acknowledge and respect the treaty rights of the Coast Salish Peoples to the lands and waters of the SalishSea, and we recognize their stewardship since time immemorial.



The ABC's of Ocean Acidification

Recall the human smokestack experiment. What was your original hypothesis for why the color in the cup changed?

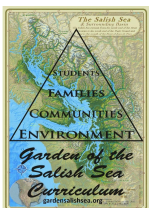
Fill in the reaction of carbon dioxide and water:



Was your hypothesis correct?

If not, why did the color change?

How does this impact shellfish?



gardensalishsea.org 6th Grade
We acknowledge and respect the treaty rights of the Coast Salish Peoples to the lands and waters of the SalishSea, and we recognize their stewardship since time immemorial.



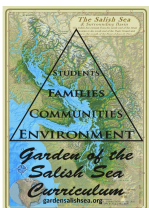
Ocean Acidification Reflection:

1) Describe the negative impacts shellfish experience as a result of ocean acidification. During which life stage is an oyster or clam most vulnerable to these effects?

2) Think about the felt board activity. Describe two things about the watershed that help keep the natural system in balance.

3) Carbon, just like water and many other nutrients in the environment, cycles through many states over time. Name some inputs to the carbon cycle and some items or places that act as carbon 'sinks.'

4) Describe 2 things you can do at home with your family to keep your watershed healthy.



gardensalishsea.org 6th Grade

We acknowledge and respect the treaty rights of the Coast Salish Peoples to the lands and waters of the SalishSea, and we recognize their stewardship since time immemorial.



Watershed Healthy Design

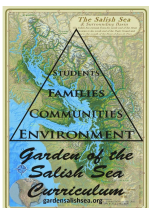
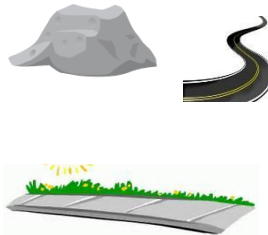
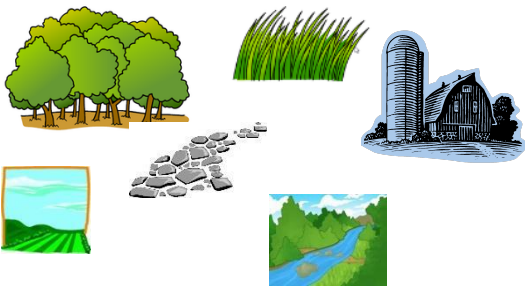
Draw and label a map of a building lot with a house, or a farm next to a stream or the beach using the elements below. Label the surfaces **P** for **pervious** and **I** for **impervious**. Use arrows to draw the path that run-off from rain will take on the site. Explain how your choices minimize impacts to the watershed and minimize carbon dioxide in the air.



Pervious

Impervious

Energy Choices



gardensalishsea.org 6th Grade
 We acknowledge and respect the treaty rights of the Coast Salish Peoples to the lands and waters of the SalishSea, and we recognize their stewardship since time immemorial.



Explain how each of your watershed healthy design element choices will help to minimize water and air pollution. Also explain how people living on the property can use lifestyle habits from your Salish Sea Challenge to minimize their impact. Use the following vocabulary: **run-off, pervious and impervious.**



gardensalishsea.org 6th Grade

We acknowledge and respect the treaty rights of the Coast Salish Peoples to the lands and waters of the SalishSea, and we recognize their stewardship since time immemorial.



During this unit, how many times did you: (circle)

Ride your bike or walk instead of taking a car

0-5 times, 5-10 times, more than 10

Picked up your pet's waste

0-5 times, 5-10 times, more than 10

Recycled, reduced, or reused

0-5 times, 5-10 times, more than 10

Conserved energy by turning off power or other ways

0-5 times, 5-10 times, more than 10

Other (Please explain what you did and the number of times you did it)

During this unit, how many times did you: (circle)

Ride your bike or walk instead of taking a car

0-5 times, 5-10 times, more than 10

Picked up your pet's waste

0-5 times, 5-10 times, more than 10

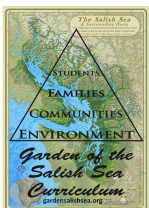
Recycled, reduced, or reused

0-5 times, 5-10 times, more than 10

Conserved energy by turning off power or other ways

0-5 times, 5-10 times, more than 10

Other (Please explain what you did and the number of times you did it)



gardensalishsea.org 6th Grade
We acknowledge and respect the treaty rights of the Coast Salish Peoples to the lands and waters of the SalishSea, and we recognize their stewardship since time immemorial.

