



NGSS – WATERSHED STEWARDS #1 – ALL GRADES

Lesson Name	Grade Level
Watershed Stewards #1	4th

NGSS Standard (performance expectation) Related Lesson Activities

<p><u>4-ESS3-2. Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.</u></p>	<ul style="list-style-type: none"> - Students are given a demonstration of how little of the Earth’s naturally occurring water is usable for humans and invited to think about potential solutions and creative ideas to promote water conservation
<p><u>4-ESS2-2. Analyze and interpret data from maps to describe patterns of Earth’s features.</u></p>	<ul style="list-style-type: none"> - Students are asked to look at a globe or a representation of the Earth to make predictions of how much of it is covered in water, where most of this water is, and what type of salinity it contains - Students are also asked to consider mountains and valleys and how these may impact where the freshwater goes during rainfall
<p><u>3-5-ETS1. Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.</u></p>	<ul style="list-style-type: none"> - Students suggest creative ideas for water conservation after seeing a demo representing the amount of fresh usable water on Earth



Lesson Name	Grade Level
Watershed Stewards #1	5th

NGSS Standard (performance expectation)	Related Lesson Activities
<p><u>5-PS2-1. Support an argument that the gravitational force exerted by Earth on objects is directed down.</u></p>	<ul style="list-style-type: none"> - Students are asked to apply the concept of gravity to create an argument for where runoff will travel across different topographies
<p><u>5-ESS2-2. Describe and graph the amounts of salt water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.</u></p>	<ul style="list-style-type: none"> - Students are asked to estimate the amount of salt and freshwater on earth - Students are presented with tangible representations of the fresh, clean, and non-frozen water on the planet and asked to compare these volumes to the original volume of overall water on earth
<p><u>3-5-ETS1-2. Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.</u></p>	<ul style="list-style-type: none"> - Students are invited to suggest creative ideas for water conservation after seeing a demo representing the amount of fresh usable water on Earth



Lesson Name	Grade Level
Watershed Stewards #1	6th

NGSS Standard (performance expectation) Related Lesson Activities

<p><u>MS-PS1-4. Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.</u></p>	<ul style="list-style-type: none"> - Students learn how the addition or subtraction of thermal energy to water in various forms creates the water cycle
<p><u>MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.</u></p>	<ul style="list-style-type: none"> - After observing a demo highlighting how small the amount of usable freshwater on Earth is and creating a list of how humans use water, students are invited to think of ways to conserve water for the future and the environment
<p><u>MS-ESS2-4. Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.</u></p>	<ul style="list-style-type: none"> - Students are taken in detail through the water cycle using visual, auditory, and kinetic learning styles



NGSS – WATERSHED STEWARDS #2 – ALL GRADES

Lesson Name

Grade Level

Watershed Stewards #2	4th
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NGSS Standard (performance expectation)

Related Lesson Activities

<p><u>4-ESS3-2. Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.</u></p>	<ul style="list-style-type: none">- Students learn about how humans conserve and distribute freshwater and how this process is especially crucial locally where there is relatively little precipitation
<p><u>3-5-ETS1-2. Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.</u></p>	<ul style="list-style-type: none">- Students are asked to come up with practical ideas for how to both conserve and preserve water and learn how conserving water helps to preserve it- Different types of pollutants are reviewed and students share their ideas for how to minimize the damage caused by each- Students share ways to use less water by taking shorter showers, turning off the faucet when brushing their teeth, etc.



Lesson Name

Grade Level

Watershed Stewards #2	5th
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NGSS Standard (performance expectation)

Related Lesson Activities

<p><u>5-PS2-1. Support an argument that the gravitational force exerted by Earth on objects is directed down.</u></p>	<ul style="list-style-type: none"> - Students study the movement of water and pollution through observing the absorption of water in watershed models
<p><u>5-ESS2-2. Describe and graph the amounts of salt water and freshwater in various reservoirs to provide evidence about the distribution of water on Earth.</u></p>	<ul style="list-style-type: none"> - Students are reminded about the percentages of water on Earth in its various forms - Students learn about the sources of water in their community and discuss the discrepancy between the supply and demand
<p><u>3-5-ETS1-2. Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.</u></p>	<ul style="list-style-type: none"> - Students are asked to come up with practical ideas for how to both conserve and preserve water - Different types of pollutants are reviewed and students can share their ideas for how to minimize the damage caused by each - Students also share ways to use less water by taking shorter showers, turning off the faucet when brushing their teeth, etc. - Students learn how conserving water is not only a solution to water scarcity, but also helps preserve groundwater quality.



Lesson Name

Grade Level

Watershed Stewards #2	6th
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NGSS Standard (performance expectation)

Related Lesson Activities

<p><u>MS-LS2-1. Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.</u></p>	<ul style="list-style-type: none"> - Students are introduced to the concept of overdraft
<p><u>MS-ESS2-4. Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.</u></p>	<ul style="list-style-type: none"> - Students review the water cycle, and discuss the role gravity plays in the movement of water - Students follow water and pollutants through the "urban water cycle" to demonstrate how water is moved through urban areas.
<p><u>MS-ESS3-1. Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.</u></p>	<ul style="list-style-type: none"> - Students review data on average rainfall in their area - Students experiment with how water moves over a watershed in a model and discuss the human and climate related causes of the local water overdraft - Students compare drinking water sources between coastal communities and their own inland communities and discuss the geologic and geographic reasons behind this uneven distribution
<p><u>MS-ETS1-1. Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.</u></p>	<ul style="list-style-type: none"> - Students review conservation vs. preservation and the different types of pollutants - In groups, students come up with practical and realistic ideas to both conserve and preserve local freshwater supplies