



# NGSS – WATERSHEDS AT SCHOOL – ALL GRADES

Lesson Name	Grade Level
Watersheds at School	K

NGSS Standard (performance expectation)	Related Lesson Activities
<p><u><a href="#">K-ESS3-3: Communicate solutions that will reduce the impact of humans on land, water, air, and/or other living things in the local environment.</a></u></p>	<ul style="list-style-type: none"> <li>- Enviroscape activity: students spread different types of “pollutants” throughout the city, including toxic, physical, and nutrient pollution.</li> <li>- Students are then encouraged to brainstorm what the people could have done differently. Examples range from litter cleanups, to organic gardening, to implementing more buses and trains for carpooling to limit air pollution.</li> </ul>
<p><u><a href="#">K-2-ETS1-2: Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps in function as needed to solve a given problem.</a></u></p>	<ul style="list-style-type: none"> <li>- The Enviroscape is used as a topographic map to show the movement of water and pollution.</li> <li>- Storm drains prevent flooding by providing rainwater a path back into nature. However, this also increases the risk of pollution in waterways.</li> </ul>
<p><u><a href="#">K-ESS2-1: Use and share observations of local weather conditions to describe patterns over time.</a></u></p>	<ul style="list-style-type: none"> <li>- Students are asked to reflect on the weather in Central California, focusing on drought.</li> <li>- Students observe the amount of water used during different weather events.</li> </ul>
<p><u><a href="#">K-ESS3-1: Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live.</a></u></p>	<ul style="list-style-type: none"> <li>- While discussing water conservation, the cactus is used as an example of a plant that requires little water.</li> <li>- Students discuss why native plants may be more well adapted to live in low-water areas.</li> </ul>

**Lesson Name****Grade Level**

Watersheds at School	1st
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**NGSS Standard (performance expectation)****Related Lesson Activities**

<p><u><a href="#">K-2-ETS1-2: Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps in function as needed to solve a given problem.</a></u></p>	<ul style="list-style-type: none"><li>- The enviroscape is used as a topographic map to show the movement of water and pollution.</li><li>- Storm drains prevent flooding by providing rainwater a path back into nature. However, this also increases the risk of pollution in waterways.</li></ul>
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**Lesson Name**

**Grade Level**

Watersheds at School	2nd
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**NGSS Standard (performance expectation)**

**Related Lesson Activities**

<p><u>K-2-ETS1-2: Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps in function as needed to solve a given problem.</u></p>	<ul style="list-style-type: none"> <li>- The Enviroscape is used as a topographic map to show the movement of water and pollution.</li> <li>- Storm drains prevent flooding by providing rainwater a path back into nature. However, this also increases the risk of pollution in waterways.</li> </ul>
<p><u>2-ESS2-2. Develop a model to represent the shapes and kinds of land and bodies of water in an area.</u></p>	<ul style="list-style-type: none"> <li>- The Enviroscape is used as a topographic map to show how mountains flow into creeks and the ocean.</li> <li>- Different kinds of land and bodies of water are identified as part of a watershed.</li> </ul>
<p><u>2-ESS2-3: Obtain information to identify where water is found on Earth and that it can be solid or liquid.</u></p>	<ul style="list-style-type: none"> <li>- Using containers of various sizes as a visual aid, students observe where water is located on earth, and whether it is solid or liquid.</li> <li>- A large percent of freshwater on the planet is frozen at either pole. Students discuss how freshwater freezes, and in some parts of the Earth remains frozen year round.</li> <li>- Students discuss the different reserves of water on earth and where our potable water supply comes from, including groundwater stores.</li> </ul>



**Lesson Name**

**Grade Level**

Watersheds at School	3rd
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**NGSS Standard (performance expectation)**

**Related Lesson Activities**

<p><u>3-LS4-3: Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.</u></p>	<ul style="list-style-type: none"> <li>- Students are asked to reflect on the amount of rainfall normal for the area.</li> <li>- Students and educator discuss the concept of drought, and how California native flora is accustomed to it.</li> <li>- It is emphasized that non-native species are not drought-resistant, and that exotic plants require excessive watering.</li> <li>- Students learn that native gardens are an important aspect of water conservation.</li> </ul>
<p><u>3-LS4-4. Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.</u></p>	<ul style="list-style-type: none"> <li>- Students learn that humans create significant pollution, which can affect the organisms living in our local watersheds.</li> <li>- In groups, students discuss marine debris, and what can be done to minimize it.</li> </ul>
<p><u>3-ESS3-1. Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.</u></p>	<ul style="list-style-type: none"> <li>- Through the Water Tube demonstration, students learn that there is not much fresh water on earth.</li> <li>- Students discuss ways to conserve fresh water.</li> <li>- Educator leads discussion about drought, and the importance of saving water at all times in California.</li> </ul>

**Lesson Name****Grade Level**

Watersheds at School	4th
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**NGSS Standard (performance expectation)****Related Lesson Activities**

<u>4-LS1-2. Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.</u>	<ul style="list-style-type: none"><li>- Students observe different types of marine debris and determine which are most harmful for marine life.</li><li>- Students feel and play with marine debris and describe how marine life may respond to the debris.</li></ul>
<u>4-ESS3-2. Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.</u>	<ul style="list-style-type: none"><li>- Educator leads discussion about drought, and the importance of saving water at all times in California.</li><li>- After learning about drought, students discuss ways to conserve fresh water.</li></ul>



**Lesson Name**

**Grade Level**

Watersheds at School	5th
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**NGSS Standard (performance expectation)**

**Related Lesson Activities**

<p><u>5-ESS2-2: Describe and graph the amounts of saltwater and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.</u></p>	<ul style="list-style-type: none"> <li>- Water in tubes activity describing the sources of water on Earth, leading to the small fraction that is clean and usable freshwater</li> <li>- Students discuss the different reserves of water on earth and where our potable water supply comes from, including groundwater stores.</li> </ul>
<p><u>5-ESS3-1: Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.</u></p>	<ul style="list-style-type: none"> <li>- Students create their own watershed models to display how pollution moves in a watershed, then brainstorm solutions.</li> <li>- In groups, students compare and contrast solutions to minimize pollution in their communities.</li> </ul>



**Lesson Name**

**Grade Level**

Watersheds at School	6th
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**NGSS Standard (performance expectation)**

**Related Lesson Activities**

<p><u><a href="#">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</a></u></p>	<ul style="list-style-type: none"> <li>- The watershed model activity showcases how water moves downhill across the land and into other bodies of water.</li> </ul>
<p><u><a href="#">MS-ESS3-3: Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment</a></u></p>	<ul style="list-style-type: none"> <li>- Students create their own watershed models to display how pollution moves in a watershed, then brainstorm solutions.</li> <li>- In groups, students compare and contrast solutions to minimize pollution in their communities.</li> </ul>
<p><u><a href="#">MS-LS2-5: Evaluate competing design solutions for maintaining biodiversity and ecosystem services</a></u></p>	<ul style="list-style-type: none"> <li>- Students discuss alternatives for common chemicals used on the land that lead to pollution and water quality issues</li> </ul>
<p><u><a href="#">MS-PS1-3. Gather and make sense of information to describe that synthetic materials come from natural resources and impact society</a></u></p>	<ul style="list-style-type: none"> <li>- Students identify organic vs. inorganic materials that make marine debris and note which natural resources they come from</li> <li>- Synthetic materials made from inorganic natural resources are identified as more harmful to marine life</li> </ul>