

## Unit Overview

### **How do people in our community try to solve river related water problems? ([Birds Eye View](#))**

Using **NGSS Grade 4–ESS3–2**: *Generate and compare multiple solutions to reduce the impacts of natural earth processes on humans*, and **NGSS Grade 4–ESS2–1**: *Make observations and or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind or vegetation*, students will use our local White River and it's tributaries to see how people in our community try and manage or solve (river related) water problems. For example flooding.

Students will have the opportunity to learn about the water cycle (how water moves / is recycled) to how human impact can minimally effect the natural flow of water so that humans can co - exist with the natural world with the least amount of unnatural interruption on the natural flow of water. **Students will have a better understanding about flooding, in our case how Hurricane Irene has caused our community to rebuild river banks differently.** ([Sites of Engagement](#))

This unit will begin with an interactive digital lesson about The Water Cycle and story, [Why Does It Rain](#). Following The Water Cycle lesson using chart paper the class brainstorms how water moves. The students will then have the opportunity to go outside to a small tributary that flows into the White River where the students will find a "sit spot" along the tributary where they will sketch what they are seeing concentrating on the flow of that tributary. We visit their "sit spot" again where they will take their sketch and add in words what is happening with the flow of water. We compare their sketches and write ups with the class brainstorms that took place before we went outside. At this point we are joined by the White River Partnership who led us through a lesson about flowing water and what happens when humans interfere with the natural flow of water due to the construction of roads, buildings, agriculture etc. This leads us into our main focus for this unit – The Culvert! The White River Partnership spends time during this lesson teaching the students about the terminology around culverts as well as the different kinds of culverts. The students have a discussion using Hurricane Irene as prior knowledge to help them explain what happened to our rivers and culverts during that storm. At this point we take a "field trip" to a post Irene built culvert. The students spend the morning measuring for bankfull and determining if the installed culvert was a good choice. Is it fish friendly? Is it appropriately sized? The cost, material etc. This is followed up in the classroom with example scenarios such as the one we did when we were at the rebuilt culvert. This is an assessment activity, are the students able to take away make conclusions with the information learned from the lesson delivered by the White River Partnership and the

work they did at the culvert site. Following next is the visit from the stream table that was provided for classroom use from the Ottaquechee Natural Resources Conservation District. With the stream table the concepts and vocabulary are brought to life as the students have the opportunity participate in activities involving the river / water study we have been doing. This is followed up by a "Stream Table Assessment" where the students discuss what happened during the experiments and conclusions they can draw about flooding, culverts, erosion, riparian buffers to name a few using the vocabulary they have learned. Our culminating activity involves grades three, four and five tree planting with the White River Partnership along a branch of the White River.