



## CLIMATE ACTION DAY 2016 AT PHILLIPS EXETER ACADEMY

### BACKGROUND

This April, Phillips Exeter Academy (PEA) marked Climate Action Day by hosting of a series of hands-on workshops for students, including a Soak Up the Rain NH (SOAKNH) workshop focused on improving water quality through simple stormwater management practices such as green roofs and rain gardens.



Phillips Exeter students celebrate Climate Action Day with a Soak Up the Rain NH workshop including installing a rain garden on Tan Lane.

### SOAK UP THE RAIN NH WORKSHOP

During a brief morning session, students learned about stormwater runoff, its potential negative effects on waterbodies, and how to reduce those impacts through do-it-yourself stormwater solutions. The rest of the day, students rotated through the workshop's three activities: a tour of stormwater management practices already in place at PEA, a lesson on how to design a rain garden, and the installation of two different practices on campus.

### Stormwater Tour

On the stormwater tour, students learned about the stormwater drainage patterns on campus and how the drainage eventually finds its way to the Squamscott River. They toured the green roof on the Lamont Health & Wellness Center. Green roofs are flat roofs covered with vegetation and a growing medium (planted over a waterproofing membrane) that reduce runoff by absorbing rain and melting snow. Students participated in a demonstration of porous pavers – surfaces that allow water to pass through and soak into the



Porous pavers behind the Lamont Health & Wellness Center allow rain and melting snow to pass through to an infiltration basin below.



ground rather than runoff. And finally they viewed an existing rain garden that collects overflow from the green roof, the porous pavement, and other areas of campus.



A soil ribbon test indicates the type of soil – sand, silt, or clay – which helps determine the size of the rain garden.

## Rain Garden Design Lesson

To learn how to design a rain garden, the students were equipped with the tools they needed and guided through the steps. They measured the house to calculate the roof area captured by the garden, got their hands dirty performing a soil ribbon test to determine the soil type, and calculated the slope of the garden area – not with an electronic device, but the “old fashioned” way – with stakes and strings, levels and lines, and, most of all, math.

## Stormwater Practice Installations

Students wielding shovels, rakes, and wheelbarrows built a berm, installed plants, and filled in trenches to construct a rain garden and driveway infiltration trenches at the “Doctor’s House” on Tan Lane. Rain is captured from a portion of the roof by the rain garden and from nearby parking spaces and roadway by the trenches. Before the installation of these practices, rain from these surfaces was causing soil erosion in the yard, running onto the road and into the drainage system, and ultimately into the Squamscott River. Thanks to the students’ effort in building these practices, the rain now soaks into the ground, feeding the groundwater supply while potentially reducing pollution in the river.



Students pour drainage stone into the infiltration trenches along the driveway, then top it off with larger decorative stone. The trenches capture runoff from the road to prevent it from eroding the yard.





PEA students use a line level and shovel lots of soil while learning to build a rain garden.

## POLLUTANT REDUCTION

By installing the rain garden and infiltration trenches, it's estimated that 49,782 gallons (or 6,655 cubic feet) of runoff will be captured each year, potentially preventing 55.5 pounds of sediment, 0.12 pounds of phosphorus, and 0.52 pounds nitrogen from reaching the Squamscott River each year.



The completed rain garden on Tan Lane takes runoff from the “Doctor’s House” roof. The overflow outlet shown in the foreground allows water to safely overflow during larger storms.

On the right side of the photo, the infiltration trenches along two sides of the driveway can be seen. The trenches receive runoff from the road and parking spaces seen in the background. Before the trenches, the runoff flowed across the lawn causing erosion and potentially delivering pollutants to the Squamscott River.