Guided Inquiry

Google doc to work off of:
https://docs.google.com/document/d/1FlYyZMEb5uroqCT1xV1rouMBBvH5IhEQ7tjugeh8Ib8/edit?usp=sharing

http://www.doctordirt.org/teachingresources/soilfilter

YouTube videos/lab exercises related to the grape Kool-Aid activity: Soil is a Filter: https://www.youtube.com/watch?v=Ve2eXis0j9I Soil is a Filter Annotated: https://www.youtube.com/watch?v=ex9WiWdOwaI Water Cycle Experiment: https://www.youtube.com/watch?v=og9cQKxlFnE

Other resources: Soils Overview (Soil Society of America): https://www.soils.org/files/about-soils/soils-overview.pdf Types of Soil: http://www.bbc.co.uk/gardening/htbg/module1/soil_types1.shtml "Test Your Soil": http://www.bbc.co.uk/gardening/htbg/features/soil_test.shtml

Sites to use while fleshing out immersion activities-

GREAT LESSON PLAN – How Dirt Works- NGSS Aligned: https://www.natureworkseverywhere.org/asset/resources/HowDirtWorks_v4_7_22_2015.pdf Perkin' Through the Pores Activity- http://www.soils4kids.org/files/s4k/perkin.pdf

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NGSS Standards that could be addressed by the guided inquiry activities (nutrient holding capacity and water holding capacity):

HS-ESS2-2. Analyze geoscience data to make the claim that one change to Earth's surface can create feedbacks that cause changes to other Earth systems. http://www.nextgenscience.org/pe/hs-ess2-2-earths-systems

HS-ESS2-5. Plan and conduct an investigation of the properties of water and its effects on Earth materials and surface processes. http://www.nextgenscience.org/pe/hs-ess2-5-earths-systems

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PA SAS Standards for "Science and Technology and Engineering Education" that could be addressed by the guided inquiry activities:

S8.D.1.1.2 Describe natural processes that change Earth's surface (e.g., landslides, volcanic eruptions, earthquakes, mountain building, new land being formed, weathering, erosion, sedimentation, soil formation).

S8.D.1.1.3 Identify soil types (i.e., humus, topsoil, subsoil, loam, loess, and parent material) and their characteristics (i.e., particle size, porosity, and permeability) found in different biomes and in Pennsylvania, and explain how they formed.

S8.D.1.2.2 Describe potential impacts of humanmade processes (e.g., manufacturing, agriculture, transportation, mining) on Earth’s resources, both nonliving (i.e., air, water, or earth materials) and living (i.e., plants and animals).

S8.A.3.2.1 Describe how scientists use models to explore relationships in natural systems (e.g., an ecosystem, river system, the solar system).

S8.A.2.1.5 Use evidence from investigations to clearly communicate and support conclusions.