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| **Course/Class: Science 7** | **Name: Meduxnekeag River Valley Association** | **Date:** |
| **Topic: Soil Sampling** | **Unit: Interactions Within Ecosystems** | **Grade: 7** |
| 1. ***Intents/Objectives/Purpose*** *(from Aoki's IDAE Model)*   A hands-on, experiential learning opportunity for students to experience soil science in its nature environment. Students will use a variety of equipment to determine: soil temperature, moisture content, pH, organic matter, light exposure and soil texture. Students will conduct experiments demonstrating proper safety techniques and environmentally friendly practices, while gaining a better understanding of weathering and soil creation in a local ecosystem. Students will have an opportunity to observe the effect of erosion and sink holes on the surrounding landscape.  Knowledge Outcomes  310-3 classify various types of soils according to their characteristics, and investigate ways to enrich soil  Attitude Outcome:  431-Work collaboratively in carrying out investigations as well as in generating and evaluating ideas  Skills Outcome:  209-3: use instruments effectively and accurately for collecting data  *For complete list of connected outcome please see Meduxnekeag Outdoor Environmental Education Program FAQ.* | | |

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| ***B. Activities (Time Required 2 Hours)*** |
| **Helpful Prior Knowledge**  A basic understanding of rock weathering  A basic understanding of the importance of soil to an ecosystem |
| **Introduction and Set-up**  Brief welcome and introduction to the Meduxnekeag Nature Preserve (5 min)  Hike to the soil sampling site, Bell Flats (10 minutes) |
| **Clarifying/Creating-Understanding/Concept-Development**  Explanation and demo of proper sampling techniques, equipment use and safety (5 min) Soil plot sampling demo for the whole group(10 minutes)  How to accurately read the soil thermometer, pH meter, light meter and moisture meter  How to dig a soil pit with an awareness for the different soil layers  How to fill in the Data Sheet and follow the soil texture follow sheet  Equipment list and uses  -Thermometer/Temperature  -Container and water/Organic Content  -pH, light and moisture meter/ soil pH, moisture content and light exposure  -Chemistry Kit/pH |
| **Experiment**  Students will follow the procedure and record their data in the appropriate section of their chart. (40 minutes) Discussion about the results and how soil composition effects plants ability to grow.(5 minutes)  **Part 2-Nature Walk**  This walk will be interactive with the guide focusing on rock formation, erosion, weathering and sink holes, with a secondary focus on how producer, consumers, and decomposers work together and live harmoniously. Students may take pictures of: to illustrate how different areas have been effected by weathering and/or erosion; how producer, consumers and decomposers work together and with soils to create a healthy ecosystem. (25 min) |
| **Closure/Summary**  Discussion: How does soil quality/type effect plant growth? How could soil composition change over time? (5 minutes) |
| **Follow-Up Classroom Activities (optional)**  Language Arts/Science activity: Research/Presentation/Poster Topics  a) The functions of macronutrients and micronutrients and what symptoms a plant would have if it wasn’t getting enough.  b) Farming practices used to improve soil content and possible effects on the ecosystem  c)Sink holes  Science  -Make a web with the pictures of different consumers, producers, and decomposers. Use string and labels to show how they interact and depend on one another.  -Make a diagram to describe how soils is created  Math  -Plot the different soil textures found in each soil pit. |
| **Extra Resources**  Soil School Activity PDF: Activity 4: Soil Erosion  Soil School Activity PDF: Activity 5: Six Ecosystem Functions of Soil  Producers, Consumers, Decomposers PDF-Game  Soil Science Resource: <http://www.soils4teachers.org/lessons-and-activities>  Magic School Bus Episode 6 Season 1 -Meet the Rot Squad (Decomposers)- YouTube  Magic School Bus Episode 12 Season 3-Rocks and Rolls (Water Erosion)-YouTube  Magic School Bus Episode 5 Season 4 –Get Swamped (Wetlands)- YouTube |

