

## UNIT OVERVIEW

STAGE ONE: Identify Desired Results		
Established Goals/Standards	2.1 p	<b>Long-Term Transfer Goal</b>
	2.1 q	<i>At the end of this unit, students will use what they have learned to independently...</i>
	2.1 r	Apply their understandings to design and carry out an investigation, then create a presentation to the community sharing their findings that either support or debunk scientists' claim that Rochester, NY was once underneath water.
	2.1 s	<b>Meaning</b>
	2.1 t	<b>Enduring Understandings</b> <i>Students will understand that...</i>
	2.1 u	<b>U1. Interactions between the hydrosphere, lithosphere, and atmosphere results in constant change on Earth's surface.</b>
	2.1 v	<b>U2. Rocks and minerals give clues to the past.</b>
	2.1 w	<b>U3. Topographic maps are 2-D representations of Earth's surface</b>
	3.1 c	<b>Acquisition</b>
		<i>What knowledge will students learn as part of this unit?</i>
	<ol style="list-style-type: none"> <li>Landforms are the result of the interaction of tectonic forces and the processes of weathering, erosion, and deposition.</li> <li>Topographic maps represent landforms through the use of contour lines that are isolines connecting points of equal elevation.</li> <li>Gradients and profiles can be determined from changes in elevation over a given distance.</li> <li>Climate variations, structure, and characteristics of bedrock influence the development of landscape features including mountains, plateaus, plains, valleys, ridges, escarpments, and stream drainage patterns.</li> </ol>	<ol style="list-style-type: none"> <li>Scholars will be able to construct a topographic map.</li> <li>Students will be able to draw a cross-section of a landscape based on the information provided on a topographic map.</li> <li>Scholars will be able to use classification charts to identify sedimentary rocks.</li> <li>Scholars will use models to represent and revise their thinking overtime.</li> <li>Scholars will make qualitative and quantitative observations</li> <li>Scholars will make predictions based on evidence</li> <li>Scholars will ask questions based on observations and data</li> <li>Scholars will use deductive and inductive reasoning to determine the relationships among: velocity, slope, sediment size, channel shape, and volume of a stream</li> <li>Scholars will identify patterns of change and use it to support claims</li> </ol>

	<p>5. Weathering is the physical and chemical breakdown of rocks at or near Earth's surface.</p> <p>6. Soils are the result of weathering and biological activity over long periods of time.</p> <p>7. Natural agents of erosion, generally driven by gravity, remove, transport, and deposit weathered rock particles.</p> <p>8. Each agent of erosion produces distinctive changes in the material that it transports and creates characteristic surface features and landscapes.</p> <p>9. In certain erosional situations, loss of property, personal injury, and loss of life can be reduced by effective emergency preparedness.</p> <p>10. The natural agents of erosion include:</p> <ul style="list-style-type: none"> <li>• Streams (running water): Gradient, discharge, and channel shape influence a stream's velocity and the erosion and deposition of sediments. Sediments transported by streams tend to become rounded as a result of abrasion. Stream features include V-shaped valleys, deltas, flood plains, and meanders. A watershed is the area drained by a stream and its tributaries.</li> <li>• Glaciers (moving ice): Glacial erosional processes include the formation of U-shaped valleys, parallel scratches, and grooves in bedrock. Glacial features include moraines, drumlins, kettle lakes, finger lakes, and outwash plains.</li> <li>• Wave Action: Erosion and deposition cause changes in shoreline features, including beaches, sandbars, and barrier islands. Wave action rounds sediments as a result of abrasion. Waves approaching a shoreline move sand parallel to the shore within the zone of breaking waves.</li> <li>• Wind: Erosion of sediments by wind is most common in arid climates and along</li> </ul>	<p>made about Rochester's past and make predictions about future geologic phenomena</p> <p>10. Scholars will be able to use and create models as simplified representations of natural phenomena</p> <p>11. Scholars will use and become proficient with certain tables and diagrams in the Earth Science Reference Tables</p>
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	<p>shorelines. Wind-generated features include dunes and sand-blasted bedrock.</p> <ul style="list-style-type: none"> <li>• Mass Movement: Earth materials move downslope under the influence of gravity.</li> </ul> <ol style="list-style-type: none"> <li>11. Patterns of deposition result from a loss of energy within the transporting system and are influenced by the size, shape, and density of the transported particles.</li> <li>12. Sediment deposits may be sorted or unsorted.</li> <li>13. Sediments of inorganic and organic origin often accumulate in depositional environments.</li> <li>14. Sedimentary rocks form when sediments are compacted and/or cemented after burial or as the result of chemical precipitation from seawater.</li> <li>15. Rocks are classified by their origin, mineral content, and texture.</li> <li>16. Conditions that existed when a rock formed can be inferred from the rock's mineral content and texture</li> <li>17. The properties of rocks determine how they are used and also influence land usage by humans.</li> </ol>	
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### STAGE TWO: Determine Acceptable Evidence

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	Assessment Evidence
<p>Criteria for/to assess understanding: <i>(This is used to build the scoring tool.)</i></p> <ol style="list-style-type: none"> <li><b>1. Understanding of the processes that create</b></li> </ol>	<p>Performance Task focused on Transfer:</p> <p>For this performance task scholars will apply their understandings to design and carry out an investigation, then create a presentation to the community sharing their findings that either support or debunk scientists' claim that Rochester, NY was once underneath water. They will do this by going to the Rochester Gorge off of Seth Green Drive, collect rocks and analyze the different rock strata. They will then make inferences based on the data collected to support or debunk the scientists' claim.</p>

<p><b>sedimentary rocks</b></p> <p><b>2. Ability to sequence rock layers with geologic events that occurred in Rochester NY</b></p> <p><b>3. Ability gather and analyze data</b></p> <p><b>4. Creation of effective science explanation</b> (Claim, Evidence, Analysis of Evidence)</p> <p><b>5. Correct analysis of topographic map</b></p> <p><b>6. Effective Communication</b></p>	<p>Other Assessment Evidence:</p> <ul style="list-style-type: none"><li>• Daily bridge activities</li><li>• Daily summary narratives (Claim/Evidence/Connections Sheet)</li><li>• Ticket out the door, daily closure questions</li><li>• Daily reflective tool</li><li>• Two formal NYS style assessments</li><li>• Bi-weekly NYS style quiz</li><li>• Academic circles held in class (Think, Pair, Share)</li><li>• Gallery Walks</li><li>• BBKs</li></ul>
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T, M, A (Code for Transfer, Meaning Making and Acquisition)	<b>STAGE THREE: Plan Learning Experiences</b>	
	<p>Learning Events:</p> <ol style="list-style-type: none"> <li>1. Intro to weathering and erosion</li> <li>2. Phase change diagram</li> <li>3. Water Cycle Poster</li> <li>4. Porosity and Permeability</li> <li>5. Groundwater</li> <li>6. Karst Topography</li> <li>7. Abrasion and Freeze Thaw – scholars will explore the different types of weathering that breaks down rocks</li> <li>8. Chemical Weathering – scholars will explore how rocks can be chemically broken down</li> <li>9. Climograph</li> <li>10. Climate and Weathering – scholars will look at how climate affects weathering rates</li> <li>11. Depositional Rates – scholars will look at the relationship between stream velocity, particle size, and deposit</li> <li>12. Stream Features – scholars will identify features created on Earth’s surface by running water</li> <li>13. Factors that affect erosion</li> <li>14. Glaciers – scholars will look at how ice help shapes Earth’s surface</li> <li>15. Erosion Poster</li> <li>16. Sedimentary Rock Chart</li> <li>17. Identifying sedimentary rock</li> <li>18. Index Fossils</li> <li>19. Relative Age</li> <li>20. Rock Correlation</li> <li>21. Half-life</li> <li>22.</li> </ol>	<p>Evidence of learning: (<i>formative assessment</i>)</p> <ul style="list-style-type: none"> <li>• Daily bridge activities</li> <li>• Daily summary narratives (Claim/Evidence/Connections Sheet)</li> <li>• Ticket out the door, daily closure questions</li> <li>• Two formal NYS style assessments.</li> <li>• Collaborative conversations held in class</li> <li>• Gallery Walks</li> <li>• Workshop activities</li> <li>• 5 week revisits of EQ</li> <li>• Labs</li> </ul>