**LEWISBURG AREA SCHOOL DISTRICT**

**LESSON PLAN**

**Teacher Name: \_\_\_\_\_Van Wagner\_\_\_\_\_\_ Class: \_\_\_\_\_\_\_\_\_AP Enviro**

**Topic: \_\_\_copper ore Date of Lesson: \_\_Class #67**

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| **LESSON ESSENTIAL QUESTION**: | **Big Idea:**  Minerals are essential to human and natural processes.  **Essential Question:**  What are the most important minerals and how do we harvest them? |
| **STANDARD / LEARNING TARGET:** | **Core standards addressed with this lesson:**  **7.4.9.A:**  Compare and contrast the effect of the physical systems on people across **regions** of the United States.  **7.4.9.B:**  Compare and contrast the effect of people on the physical region across **regions** of the United States.  **7.4.12.A:** Analyze the global effects of changes in the physical systems.  **7.4.12.B:** Analyze the global effects of human activity on the physical systems.  **S11.D.1.3.3:** Explain factors (e.g., nutrient loading, turbidity, rate of flow, rate of deposition, biological diversity) that affect water quality and flow through a water system.  **4.8.10.C.** Analyze how human activities may cause changes in an ecosystem.  \* Analyze and evaluate changes in the environment that are the result of human activities.  \* Compare and contrast the environmental effects of different industrial strategies (e.g., energy generation, transportation, logging, mining, agriculture). |
| **ACTIVATING STRATEGIES**:  (Anticipatory Set) | Bell Ringer: When a mineral shows some green color, what metal would you expect it to contain?  Example:  Malachite  CuCO3 \* Cu(OH)2  Copper |
| **KEY VOCABULARY**: | Hydrologic, volume, velocity, consumption. |
| **RESOURCES:** | Teacher slide show, demonstration, and lecture. |
| **TEACHING STRATEGIES**: | Notes:  Ore- a material used as a source of metal.  Show malachite sample from Shikellamy State Park mine. Discuss lab.  Safety Goggles is a must today.  \*\*\*Lab safety  Have Mr. Wagner bring the Sulfuric Acid to your lab station, don’t walk with acid!  Students complete lab. |
| **EXTENDED THINKING ACTIVITY / ASSIGNMENT:** | Chapter 15 questions |
| **SUMMARIZATION/ CLOSURE:** | Exit Bell Ringer: What metals are the following rocks ores for?  Malachite Cu2(CO3)  Galena- PbS  Bauxite Al2O3  Obsidian SiO2  Silt |