“How Big is Big? Marcellus Gas Industry in Pennsylvania” Name:

In this activity you will estimate and calculate the potential size of the Marcellus Gas industry, which has only just begun in Pennsylvania.

Right now, 700,000 acres or 1/3rd of our entire PA State Forest system has been leased for gas drilling. As many as 6,000 wells could be drilled there. This is just the State forest land and does not include private lands. (Linda Steiner writing for the PA Game News August 2010)

The drill pad will range up to about 5 acres (University of Pittsburg Marcellus Gas factsheet 2010)

5.6 million gallons of water are needed to drill and fracture a Marcellus deep shale gas well (source Chesapeake Energy Marcellus fact sheet 2010)

Each well may require 1,000 truck deliveries (Mark W. Smith, Bradford County Commissioner 2009)

Data collection:

1. Use figure 3 from teacher slide show. Count up the number of Counties in Pennsylvania that are known to contain Marcellus Shale. How many are there?

2. Why do you think the study area in Figure 3 did not include the Southeast of the state?

3. What 4 counties are thought to have the richest deposit of Marcellus shale (use figure 3)?

4. Does our County contain Marcellus shale?

Calculations: (Use the facts from the beginning of this worksheet for the following)

1. If the maximum number of wells are drilled on State Forest land, how many total acres will the drill pads add up to?

2. One acre is 43,560 square feet. Convert your previous answer from acres to square feet.

3. There are 48,000 square feet in a football field (not counting end zones). About how many football fields are equal to your previous answer?

4. If the maximum number of wells are drilled on State forest lands, how many gallons of water would be needed for the drilling?

5. There are 7.48 gallons in a cubic foot. Use the hydrograph from the teacher slide show to estimate how many Cubic feet per second of water are currently flowing in the Susquehanna by Lewisburg, then convert that number to gallons. (KCFS means 1,000 CFS)

6. Compare the amount of water needed to drill all these wells (quest #4) to the amount of water in the Susquehanna River (#5).

7. If the maximum number of wells are drilled on State Forest Land, how many truck deliveries would that total?

8. A single 18 wheeler truck is about 60 feet long. If all the trucks needed to drill the maximum number of wells were lined up end to end, how many feet long would that be? Now convert that to miles (there are 5,280 feet in 1 mile)

**Reflection**: There is no Marcellus Shale found in Union County. Do you think people in Lewisburg should be involved in the discussion about Marcellus gas development in Pennsylvania? Why or why not? (write a few sentences)