

Grid Description

A 49 mi² SEM measuring 7-mi by 7-mi and centered on the Marquis BioCarbon Project site was used to assess potential CO₂ storage and estimate the extent of the CO₂ plume. The grid size was set at 500 ft by 500 ft with an average of 10 ft layers in the injection zone and 12 ft layers in the confining unit. The model grid was centered around the MCI CCS 3 well, extending approximately 3.4 mi away from it in the X and Y directions. The proposed well location at the Marquis BioCarbon Project site is provided in Figure 1.

To fully capture the pressure front to a cut-off of 10 psi for delineation of the Area of Review, the model was expanded to 900 mi² measuring 30-mi by 30-mi. Cell size, layering, and input horizons which define each model zone were kept uniform between the large (30-mi by 30-mi) and small (7-mi by 7-mi) models. The detailed geostatistical properties created in the smaller grid were sampled into the larger grid using Petrel's Property Upscaling tool. With this tool, property values at the edge of the small model area were extrapolated to the edge of the large model grid as shown in Figure 2, ensuring property values were assigned in all cells of the 30-mi by 30-mi model.

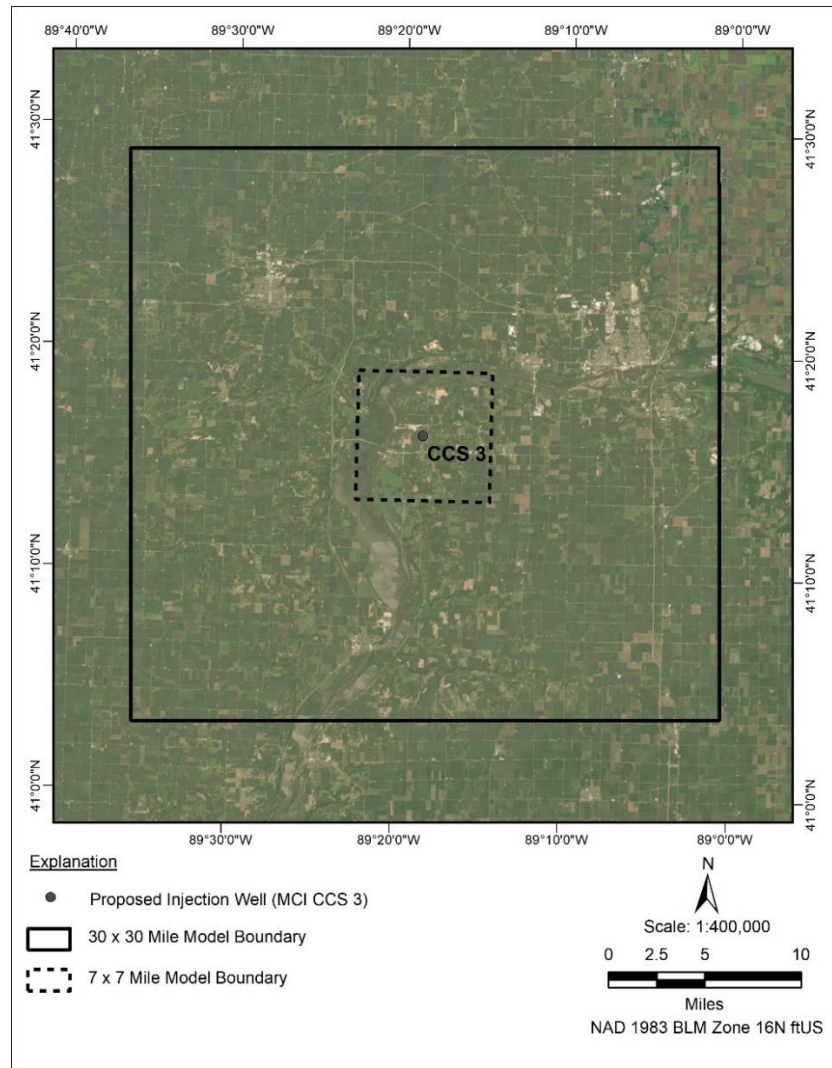


Figure 1. SEM Large (30-mi by 30-mi) and Small (7-mi by 7-mi) grids.

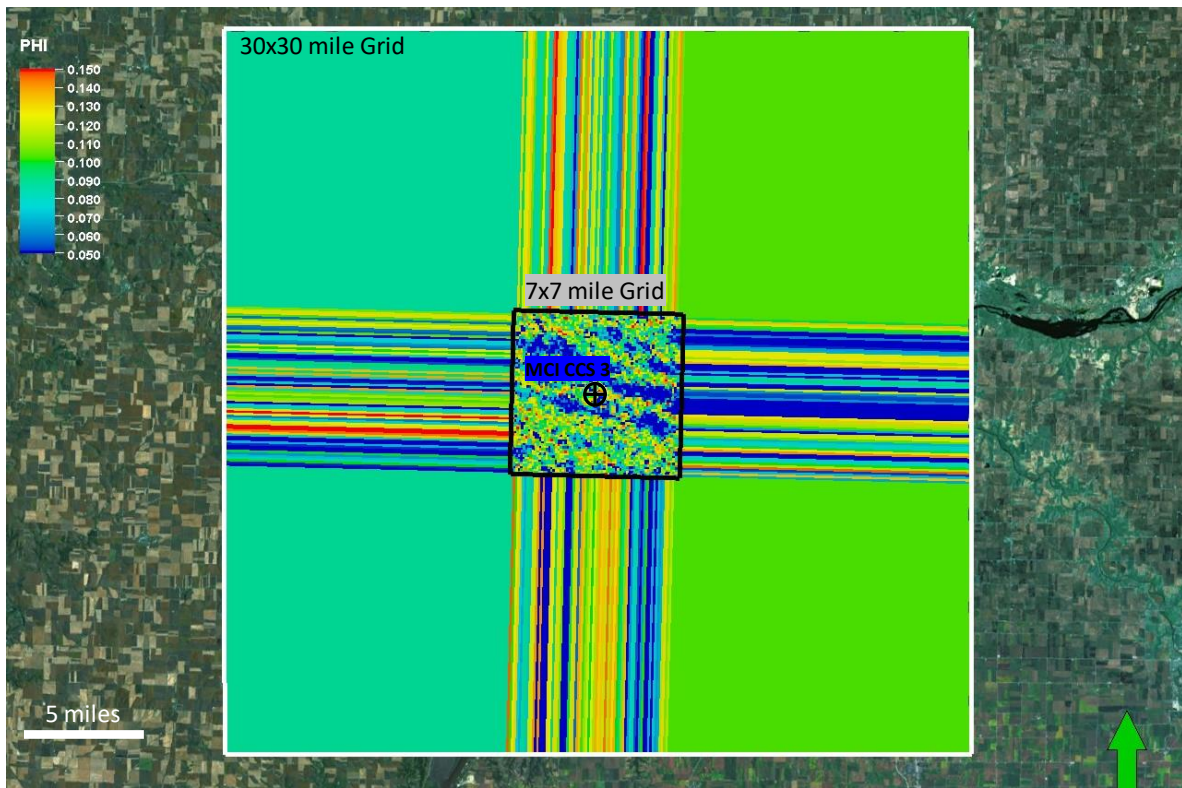


Figure 2. Example property showing detailed geostatistics in the 7 mi by 7 mi model area, with extrapolated values to the edge of the 30 mi by 30 mi model boundary.

The model framework for the Marquis BioCarbon Project includes 10 model zones from the top of the Eau Claire Shale to the Precambrian Basement. Each of the 10 model zones were divided into proportional layers, resulting in an average layer thickness of 12 feet in the Confining units and 10 feet in the Injection interval. Zone divisions and layering methods are listed below:

Zone	Formation	Layer Method	Layers
Confining	Eau Claire Shale	<i>Proportional</i>	16
	Eau Claire Sand I	<i>Proportional</i>	7
	Elmhurst	<i>Proportional</i>	10
Injection	Mt. Simon 1	<i>Proportional</i>	43
	Mt. Simon 2	<i>Proportional</i>	21
	Mt. Simon 3	<i>Proportional</i>	20
	Mt. Simon 4	<i>Proportional</i>	35
	Mt. Simon 5	<i>Proportional</i>	23
	Mt. Simon 6	<i>Proportional</i>	10
	Mt. Simon 7	<i>Proportional</i>	15
Basement	Precambrian Basement		

Table 1. Modeled zones and their corresponding layers.

For the purpose of this submission, the model is being provided as a Generic Simulation Grid (gsg) containing the properties shown below:

