

Facies and Rock Properties for Reservoir and Caprock Intervals in the Midwest Regional Carbon Sequestration Partnership (MRCSP) State-Charlton #4-30 Test Well, Otsego County, Michigan, William B. Harrison III, David A. Barnes, and G. Michael Grammer, Michigan Geological Repository for Research and Education, Department of Geosciences, Western Michigan University, Kalamazoo, MI 49008, harrison@wmich.edu; and Phil Jagucki, Battelle Memorial Institute, 505 King Ave., Columbus, OH 43201

A CO₂ pilot injection test well, the State-Charlton #4-30, was drilled by Core Energy LLC in Otsego County, Mich., in conjunction with the Midwest Region Carbon Sequestration Partnership (MRCSP) as part of ongoing Phase II investigation to evaluate saline reservoir and caprock intervals in the Upper Silurian Bass Islands Group and Middle Devonian Amherstburg and Bois Blanc Formations. One hundred eighty feet of conventional core, eight sidewall cores, and a suite of modern wireline logs were collected through the zones of interest. Upper Bass Islands strata consists of nodular anhydrite overlain by 75 feet of shoaling upward, dolomitized, subtidal to peritidal strata present in meter-scale sedimentary cycles. Porosity and permeability averages 12.7 percent and 22.6 md in the Upper Bass Islands, although maximum measured core porosity and permeability is 37.3 percent and 684 md. Initial investigations suggested that the overlying Bois Blanc Formation was also a potential saline reservoir injection target, but core analysis revealed that bioturbated, cherty limestone to dolostone in the Bois Blanc are poor quality reservoirs with average porosity of 11.9 percent, but only a maximum of 0.01 md permeability. Highly fossiliferous, open marine, lime-wackestone to mud-rich lime-packstone of the Amherstburg Formation is the major caprock interval in the well. The Amherstburg has average porosity of 2.5 percent with all measured permeability below detection limits.