Findlay

Lima

lincinnati

Mansfield

Huntington

Charleston

Youn gato wn

State College

Pittsburgh

Altoma

Staunton)

APPALACHIAN STORAGE HUB (ASH) PROJECT Margantowa Fairm cut

Clarksburg

Akron

Reservoir Characterization Studies Pennsylvania Geological Survey (Pittsburgh, PA)

Parkersburg

Harrisonburg Fredericksbu

VID/21XIIX

Washing

Win chester

Chamben

Hagern

Geri

Dale

City/

GEOLOGIC INTERVALS OF INTEREST

Mined-rock caverns

 Greenbrier Limestone (>40 ft thick at depths in excess of 1,800 ft; suitable for mining)

Salt caverns

Salina Group salts (>100-ft thick preferred; suitable for solution mining)

Gas reservoirs

- Keener sandstone to Berea Sandstone
- Upper Devonian sandstones
- Oriskany Sandstone
- Clinton-Medina Group through Tuscarora Sandstone
- Rose Run and Upper Sandy Member of the Gatesburg Formation

EVALUATING OUR PROSPECTS

- Mined-rock cavern
 - > depth, thickness, extent (facies changes)
- Salt cavern
 - > location, thickness, extent
 - > create your storage container
 - > F salt ~100 ft thick in Ohio River Valley corridor
 - Manage produced brine
- Gas reservoirs
 - > multiple sandstone reservoirs at various depths in AOI
 - > porosity/permeability characteristics are important
 - > productivity gives insight into potential storage potential
 - stacked storage opportunities



- Legacy data compilation
- Mapping and petrophysical calculations
- Qualitative thin section analyses







NETL

The R. Battelle

S, GEOLOGY

Subsurface Brine Disposal Framework

- Mapping and petrophysical calculations
 - ✓ Pick tops
 - ✓ Map surfaces
 - Select cutoff criteria (for 'net sand')
 - ✓ Compute reservoir parameters

Oriskany Sandstone



- Mapping and petrophysical calculations
 - ✓ Pick tops (group, formation, member, 'drillers sands')
 - ✓ Map surfaces
 - Select cutoff criteria (for 'net sand')
 - ✓ Compute reservoir parameters

Upper Devonian sandstones



SALINA GROUP – F SALT

- Location
- Thickness
- Extent





Qualitative thin section analyses





LOCATION-SPECIFIC WORK

- Legacy core results
- Existing and new thin section locations for qualitative analysis



ORISKANY SANDSTONE

 Legacy data for Beaver County, PA well with rock core samples







ROSE RUN (OH)/GATESBURG (PA,WV) SANDSTONES

- Measuring and predicting reservoir heterogeneity in complex deposystems: the Late Cambrian Rose Run Sandstone of eastern Ohio and western Pennsylvania (Riley et al., 1993)
- Subsurface facies analysis of the Rose Run Sandstone formation in southeastern Ohio (Chuks, 2008)



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Harrisonburg,

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YYSTILLER.

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Columbus Zanesville

Dayton

THANK YOU!

Clarksburg

Wheeling

Akron

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Athens