CO2 Utilization and Storage Support

Agreement Number: FWP-66799

Performer: Pacific Northwest National Laboratory

Key Technologies:

- **Task 1 - Geochemical Impacts:** Sequestration in Basalt Formations – This task is conducting research to address commercial-scale injection strategies, CO_2 fate and transport, and improved understanding of carbonation processes to provide a path forward for eventual commercial use of basalt formations for CO_2 storage. As indicated in the figure, the research team is characterizing and evaluating carbonate mineralization and precipitation in the presence of H_2O and CO_2. The research team is currently investigating side wall cores and a variety of geophysical and geochemical data from the Wallula Basalt CO_2 Storage Pilot Project (conducted by the Big Sky RCSP) to gain insight on a variety of silicate carbonation, post-CO_2 reaction solid precipitations, and the response of the storage formation to such processes.
- **Task 2 - Geochemical Impacts:** Utilization in Unconventional Reservoirs – This task is enhancing the development of technologies and methodologies that will further advance the understanding of CO_2 interactions in unconventional reservoirs (shales) to achieve additional hydrocarbon recovery via enhanced gas recovery (EGR) along with permanent storage of CO_2. The research team is conducting characterization and modeling studies to develop a sufficient understanding of the interaction of CO_2 with shales to: (1) evaluate injection concepts for secondary production of methane from depleted natural gas reservoirs, (2) refine storage capacity estimates for CO_2 following EGR operations, and (3) assess safety and permanence of CO_2 injected into fractured shales.