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Geothermal Project Title
Geological and geophysical characterization of the Neal Hot Springs site and the western Snake River Plain

Approach and Methodology
The Snake River Plain in Idaho and eastern Oregon has been identified as a prominent potential geothermal resource (MIT, 2006). The Snake River Plain can be subdivided into two main components, the western Snake River Plain (WSRP) and the eastern Snake River Plain (ESRP). Both the ESRP and WSRP are characterized by high heat flows of greater than 80 mW/m2 and an average geothermal gradient of greater than 90 C°/km (Blackwell, 1978; MIT, 2006). Fault zones, where significant permeability is possible, are prominent within the WSRP. The WSRP is a late Miocene to Holocene NW trending intercontinental rift basin bounded by normal faulting (Wood and Clemens, 2000). Offsets of 2-3 km across the basin are accounted for by down-warping and tilting toward the center of the basin and evolving normal fault systems (Wood and Clemens, 2000). Mapping these faults on the surface and at depth is critical to understanding the structural setting of the WSRP and to locate areas with potential permeability. In this project we propose to study the structural setting and geothermal potential at Neal Hot Springs by integrating geology, geochemistry, and geophysics within the context of the WSRP. The site lies at the terminus of the WSRP and was the focus of a DOE funded geophysics field camp in 2011. The field camp was successful at obtaining a preliminary model of the hot springs. However, a more detailed understanding of the region is necessary for characterizing this geothermal system. We will investigate if structures at Neal Hot Springs provide the necessary rock dilation and conduit pathways for hydrothermal fluid flow and successful geothermal development. We propose to extend the studies on that area by using existing geological, geochemical, borehole, and geophysical data. This will be combined with a suite of new data acquisition, such as acquiring a deep geophysical survey (e.g. magneto tellurics) and collecting fault surface data surrounding NHS.