

Job Title: Post graduate researcher – Geological and Environmental Sciences - Hydrogeology

Department: Department of Energy

Agency: National Energy Technology Laboratory

SALARY RANGE:

Post-MS \$48,000 – \$58,000

Post-Doc \$57,000 - \$88,000

OPEN PERIOD: February – May, 2012

LEVEL: Post-graduate

POSITION INFORMATION:

Temporary, 1-3 years, Full-Time, (40 hours per week)

DUTY LOCATIONS:

1+ vacancies: Morgantown, WV, Pittsburgh, PA, and/or Albany, OR

WHO MAY BE CONSIDERED:

United States Citizens & Foreign Nationals with appropriate approval

JOB SUMMARY:

Note that this job posting is written broadly. Applicants with an interest in one or more of the activities below are encouraged to apply. Multiple positions will be filled through this opening.

Through the Oak Ridge Institute for Science and Education (ORISE), this posting seeks motivated post-graduates (MS and PhD), interested in working as part of geologic and environmental sciences focus area research team at NETL. NETL is a multi-disciplinary, scientific and technical-oriented national laboratory, primarily focused on fossil energy research. NETL's Office of Research and Development (ORD) is currently conducting research to evaluate potential environmental impacts and engineering risks associated with domestic fossil energy resource development. Current research programs seeking post-graduate support include but are not limited to:

- risk assessment related to geologic storage of CO₂
- environmental risks of hydrocarbon production in deep offshore and frontier environments
- evaluation of engineering risks from using hydraulic fracturing for shale gas development

At present, the team is looking for support from applicants with a strong background in hydrogeology or hydrology, including groundwater mapping and flow modeling, surface water measurement, water quality assessments and aqueous geochemistry including laboratory skills, measurements of

multiphase flow through fractured or porous media, database management, geostatistics, and some familiarity with standard geophysical techniques. A significant component of this work will include field data collection.

KEY REQUIREMENTS:

- Applicants must be U.S. Citizens or approved Foreign Nationals
- Suitable for Federal employment, as determined by background investigation.
- Must hold a masters and/or PhD degree from an accredited institution in geology, hydrology, environmental engineering, civil engineering or another field appropriate for the applicant's area of expertise.

HOW TO APPLY:

Applicants should apply through the Oak Ridge Institute for Science and Education (ORISE) program. The ORISE Program provides opportunities for undergraduate students, recent graduates, graduate students, postdoctoral researchers, and faculty researchers. NETL utilizes the ORISE program to support research and work within NETL's Office of Research & Development.

- Interested applicants should complete the online application at <https://netl.orau.gov/>
- In the online application indicate your preferred NETL location and list Daniel Soeder as your requested mentor. This will associate your application with this job posting.
- If you have additional questions please contact Nancy Andres, Nancy.Andres@NETL.DOE.GOV, who is the NETL ORISE program contact.

ADDITIONAL INFORMATION:

As an ORISE post-graduate researcher with the U.S. Department of Energy's National Energy Technology Laboratory, you are expected to be an active member of a research team. Duties include formulating specific research plans, supporting and performing laboratory experiments and/or numerical simulations, data analysis and interpretation, presenting results to both internal and external audiences, preparing manuscripts for publication in peer-reviewed journals. The specific research topics for which this announcement is seeking support include but are not limited to:

- (1) Utilize existing groundwater level data (USGS and state databases) to develop potentiometric surface maps of shallow and deep aquifers in selected shale gas development areas. Construct similar maps of deeper brine aquifers from available driller data. Develop aquifer flow models from potentiometric gradients for both fresh and brine aquifers.
- (2) Utilize existing shallow and deep aquifer water quality data to determine natural background levels of methane and TDS in groundwater in select potential future shale gas development areas. Use geological data to assess

possible natural sources and migration paths of these compounds prior to shale gas drilling and hydraulic fracturing.

(3) Develop and apply physical and chemical field monitoring techniques to evaluate drilling and hydraulic fracturing impacts on groundwater, and track sources and mobilization of TDS and methane related to shale gas development. The applicant will have the opportunity to work with a multi-disciplinary team of government, industry and university scientists and engineers to design and test aquifer monitoring techniques.

(4) Perform groundwater flow modeling in porous and fractured media using standard models. Determine potential for gas and TDS movement related to shale gas development, assessing differences between fractured aquifers and porous media.