

**Opportunity Title:** Nitrogen Pollution Indicators: The role for stable isotopes of nitrate.

**Opportunity Reference Code:** EPA-ORD-NHEERL-WED-2018-05

**Organization** U.S. Environmental Protection Agency (EPA)

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**How to Apply** A complete application consists of:

- An application
- Transcripts – [Click here for detailed information about acceptable transcripts](#)
- A current resume/CV, including academic history, employment history, relevant experiences, and publication list
- Two educational or professional references

All documents must be in English or include an official English translation.

If you have questions, send an email to [EPArpp@oraui.org](mailto:EPArpp@oraui.org). Please include the reference code for this opportunity in your email.

**Description** The Integrated Stable Isotope Research Facility (ISIRF) located at the Western Ecology Division (WED) is actively involved in isotope research of nitrogen pollution, and conducts nitrate isotope analysis. Our current work has focused on nitrate problems in groundwater, and within the Willamette, Tillamook, Nooksack and Yakima River basins in Oregon and Washington. Additionally, ISIRF has refined isotopic analysis of oxygen isotope of nitrate, greatly improving the accuracy and precision of the analysis.

The scope of this research project is to (1) develop a communication tool to help others understand when and where nitrate isotopes and organic nitrogen isotopes might be an appropriate indicator for pollutant problems. This tool will likely be in the form of an interactive webpage. (2) assist in the isotopic analysis of nitrate samples on the isotope ratio mass spectrometer. (3) evaluate growth characteristics of the denitrifying bacteria and make adjustments to the media, environment and culturing steps to maximize their ultimate efficiency to quantitatively convert Nitrate and Nitrite to Nitrous Oxide, and (4) communicate, via published works, improvements to nitrate isotope analysis.

The research participant will learn about EPA's research program on the impacts of nitrogen on water pollution, various methods for analyzing stable isotopes, and how isotopic analysis are broadly applied to EPA research problems. The research participant will develop expertise in nitrate isotope analysis within ISIRF, a leading stable isotope laboratory, and gain experience utilizing nitrate isotope in ongoing water pollution



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projects at WED. The research participant will be mentored by WED and other EPA scientists as part of a national EPA program on the impacts of nitrogen within EPA's Safe and Sustainable Water Research Program.

This program, administered by ORAU through its contract with the U.S. Department of Energy (DOE) to manage the Oak Ridge Institute for Science and Education (ORISE), was established through an interagency agreement between DOE and EPA. The initial appointment is for one year, but may be renewed upon recommendation of EPA and is contingent on the availability of funds. The participant will receive a monthly stipend commensurate with educational level and experience. Proof of health insurance is required for participation in this program. The appointment is full-time in the Newport, Oregon area. Participants do not become employees of EPA, DOE or the program administrator, and there are no employment-related benefits.



The mentor for this project is J. Renée Brooks (brooks.reneeJ@epa.gov). The anticipated start date for the appointment is September 1, 2018.

**Qualifications** Preferred candidates will have:

- a minimum of a Ph.D. degree with emphasis in Biogeochemistry and/or Microbiology
- experience with nitrate water pollution
- experience growing and evaluating microbial cultures, or experience with the microbial method for stable isotope analysis of nitrate (nitrogen and oxygen).

Additionally, candidates will have demonstrable experience working with nitrate stable isotope analysis and interpretation, or will have demonstrable experience working with bacterial cultures. Preferred candidates will have exceptional laboratory skills, data management skills, and skills at documenting activities. Candidates will have exceptional communication skills including writing and publishing scientific manuscripts, and public speaking experience. Since this is a team effort, candidates will have demonstrated skills working as a part of a group. Preferred candidates must be capable of critically evaluating the quality of published science.





**Eligibility Requirements**

- **Degree:** Doctoral Degree received within the last 60 month(s).
- **Discipline(s):**
  - **Chemistry and Materials Sciences** (5 )
  - **Communications and Graphics Design** (1 )

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- **Earth and Geosciences** (1 )
- **Environmental and Marine Sciences** (3 )
- **Life Health and Medical Sciences** (4 )
- **Mathematics and Statistics** (4 )