



January 29, 2026

**To:** Universidad Nacional de Colombia  
**From:** Norman L. Jones, Ph.D.  
Professor, Civil and Construction Engineering  
Brigham Young University

**Subject:** Submission of Research Experience

This is to confirm that Sergio Armando Barbosa Casas was a Research Assistant with the Civil Engineering department from Aug 2019 to Aug 2023. I am writing to provide details regarding Sergio's research experience in the project "*Geospatial Information Tools for Sustainable Groundwater Management in West Africa*" supported by the NASA ROSES SERVIR Applied Research Grant 80NSSC20K0155 and from USAID under the SERVIR-WA hub. Please find the information below:

- Conducted analysis of changes in groundwater storage and recharge in significant aquifers in Niger and Ghana utilizing satellite data.
- Developed groundwater model in MODFLOW for significant aquifer in Niger, utilizing field observations, satellite imagery, remote sensing data, calibrated using PEST Method.
- Communicated research findings and recommendations to stakeholders, including government agencies and local communities, to support informed decision-making and sustainable groundwater resource management.
- Published research findings in peer-reviewed journals and presented results at national and international conferences

If further information is needed, please contact our office

Sincerely,

Norm Jones  
Civil and Construction Engineering  
Brigham Young University