**Project Description:** This project explores the complex, transformative process of disaster reconstruction. In particular, the research will focus on water and sanitation (henceforth referred to as ‘wat-san’) infrastructure provided for newly constructed houses after the 2004 Indian Ocean tsunami in the coastal district of Nagapattinam, Tamilnadu, and the adjacent district of Karaikal, Pondicherry. Reconstruction comprises several distinct components, yet little attention has been given to the wat-san component. The role of wat-san in reconstruction is of particular significance because clean water and safe sewage and wastewater disposal are not only essential for promoting public health, but are also critical for reducing the impacts of future disasters, building capacity and resiliency, and addressing a wide range of socioeconomic inequities. Thus, this project will both expand the scope of reconstruction literature and speak to issues of disaster recovery, resettlement, and development broadly defined.

A longitudinal study on wat-san reconstruction has not been conducted anywhere in the world, and post-tsunami India is the appropriate place for such a study. Reconstruction commenced in 2005 and most housing settlements were completed 2-3 years ago. This temporality is significant, because it takes several years for short- and long-term issues to surface, for communities to reestablish critical systems and take ownership of/invest in infrastructure, and to identify unexpected environmental outcomes. Moreover, within India, the districts of Nagapattinam and Karaikal provide the perfect context for such research. The tsunami was a turning point in disaster management for India, leading to the formation of the National Disaster Management Authority and the National Institute of Disaster Management, which codified policies that altered the relationship between the National Government, its sub-territories, and civil society. Nagapattinam and Karaikal represent two culturally and geographically similar areas that were acutely impacted by the tsunami. However, reconstruction outcomes differ markedly as the adjacent districts belong to separate administrative territories—the former to a state and the latter to a union territory. Thus, post-tsunami reconstruction not only generated a locus for comparative multi-sited research (i.e., not hypothesis testing), but it is also the product of the new framework for disaster response.

**Methodology, timeline, and feasibility:** During one year of coursework at the Indian Institute of Technology-Madras (IIT-M), I was able to visit newly constructed housing settlements in tsunami affected zones; each settlement was provided with a distinctive wat-san infrastructure. Thus, I have chosen eight sites each in Nagapattinam and Karaikal that comprise a variety of donors, demographies, and technologies. The following methods will be utilized:

- **Map creation:** A digital, interactive map of each study site will be created in ArcGIS software for analytical and planning purposes.

- **Survey:** A questionnaire (in Tamil and English) will be deployed at each site. The questionnaire will be implemented at two of the four extremities of each site (where water access and pressure gradient are most variable), and will utilize random sampling to gather the remaining interviews (Baxter and Eyles 1997).

- **Case studies:** Two representative sites in Nagapattinam (Andana Pettai and Kameswaram) and Karaikal (Paravaipettai and Sellur) have been chosen for extensive examination. The case studies will develop a ‘thick description’ of wat-san use and needs since the tsunami (Geertz 1973), and methods of ‘positionality and praxis’ for human subjects data.
STATEMENT OF GRANT PURPOSE
Luke Juran, India, Geography

collection in geographic research (Chacko 2004).

- **Water Poverty Index (WPI):** WPI determines water needs at a site-specific scale (Sullivan et al. 2005). A WPI will be calculated for each site to identify issues of absolute water scarcity, relative scarcity, and to determine the efficacy of distinct methods of supply.

- **Sewage and drainage:** The survey and case studies will provide insight on how sewage and drainage technologies are utilized and/or subverted, issues of operation, maintenance, and investment, and non-technological hindrances of usage (Geertz 1973, Chacko 2004).

- **Other sources of data:** Primary documents, such as Memoranda of Understanding and transcripts of Neighborhood Management Council Meetings, will be gathered from BEDROC (Annie George- Executive Director) and Development Alternatives (Mohan Doss- Project Coordinator). Furthermore, interviews will be arranged with professors I studied under at IIT-M (Drs. Rajagopalan, Philip, and Matthews), the Tamilnadu Water Supply and Drainage Board, the Public Works Department of Pondicherry, and the Tsunami Relief and Rehabilitation Coordinators in Nagapattinam and Karaikal.

- **Timeline:** 36 weeks are required to complete the project: 32 weeks for data collection (2 weeks at each site), 2 weeks for other interviews, and 2 weeks for unplanned contingencies. I will begin the project in August 2011 and finish in April 2012.

- **Feasibility:** I completed one year of coursework in Tamilnadu; thus, I am familiar with the setting of my research and cognizant of cultural barriers and taboos. The study sites have been identified, research issues have been distinguished, and contacts have been formalized. While data from the Government is generally difficult to extract, the data I seek open to the public. Furthermore, although I only possess medium fluency in speaking Tamil, I am registered for Tamil instruction during the 2010-11 academic year, and my wife—who is fluent in Tamil—will provide additional tutoring. Therefore, I plan to conduct the survey and case studies without assistants, but may require a translator for the initial stages. The project consists primarily of independent research, but I have secured access to workspace and the internet from IIT-M, transportation and translation services from the Rotary Club of Nagapattinam, and primary documents from BEDROC and Development Alternatives. As for degree requirements, I have completed my written comprehensive exams, scheduled my oral exams, and my dissertation proposal is drafted and awaiting approval. Lastly, I have obtained human subjects approval (from the University of Iowa) for the project ______.

**Goals and outcomes:** The project goal is to better understand how geographic, social, and administrative variables coalesce to create unique post-disaster settlements, of which wat-san is a key feature. Taking India as a prototype, questions will be analyzed about the relationship between wat-san and disaster, and whether the short-term goals of wat-san recovery and long-term goals of wat-san development dovetail or conflict with each other. This project promotes cross-cultural interaction and mutual understanding, because the USA and India are both severely impacted by disasters, yet each country operates within different legislative frameworks and with different approaches for reconstruction. The outcomes of such distinct response mechanisms will be documented by engaging tsunami affectees, detailing their experiences, and by organizing a forum at IIT-M and with the Rotary Club of Nagapattinam to discuss the research findings. This project will foster my academic development by enabling me to complete my Ph.D. dissertation and become a proficient geographer of disaster studies.