**TRANSPORTATION POOLED FUND PROGRAM**

**QUARTERLY PROGRESS REPORT**

**Lead Agency: Utah Department of Transportation**

**INSTRUCTIONS:**

*Project Managers and/or research project investigators should complete a quarterly progress report for each calendar quarter during which the projects are active. Please provide a project schedule status of the research activities tied to each task that is defined in the proposal; a percentage completion of each task; a concise discussion (2 or 3 sentences) of the current status, including accomplishments and problems encountered, if any. List all tasks, even if no work was done during this period.*

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| **Transportation Pooled Fund Program Project #**  **TPF-5(350)** | | **Transportation Pooled Fund Program - Report Period:**  \_ Quarter 1 (January 1 – March 31, 2016)  \_ Quarter 2 (April 1 – June 30, 2016)  **x Quarter 3 (July 1 – September 30, 2016)**  \_ Quarter 4 (October 1 – December 31, 2016) | |
| **Project Title:**  Development of Next Generation Liquefaction (NGL) Database for Liquefaction-Induced Lateral Spread | | | |
| **Name of Project Manager(s):**  David Stevens | **Phone Number:**  801-589-8340 | | **E-Mail**  davidstevens@utah.gov |
| **Lead Agency Project ID:**  FINET 42080, ePM PIN 15017  UDOT PIC No. PL05.350 | **Other Project ID (i.e., contract #):**  UDOT Contract No. 17-8236 | | **Project Start Date:**  September 8, 2016 |
| **Original Project End Date:**  March 31, 2019 | **Current Project End Date:**  March 31, 2019 | | **Number of Extensions:** |

Project schedule status:

**X** On schedule \_ On revised schedule \_ Ahead of schedule \_ Behind schedule

Overall Project Statistics:

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| **Total Project Budget** | **Total Cost to Date for Project** | **Percentage of Work**  **Completed to Date** |
| $110,354.93 (current contract)  $120,000.00 (total TPF commitments) | $4,100.00 | 4% |

***Quarterly*** Project Statistics:

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| **Total Project Expenses**  **and Percentage This Quarter** | **Total Amount of Funds**  **Expended This Quarter** | **Total Percentage of**  **Time Used to Date** |
| This Quarter = 4%  Total Project = 4% | $4,100.00 | 3% |

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| **Project Description**:  This research will be conducted in conjunction with the Pacific Earthquake Engineering Research (PEER) Center and various state DOTs via a pool-fund study managed by the Utah Department of Transportation (UDOT). The Mountain Plains Consortium (MPC) is also providing funding for certain aspects of this study, under separate contract with the University of Utah. The research topic addresses the need to improve empirical, semi-empirical, analytical and numerical methods to estimate the amount of permanent ground displacement associated with liquefaction-induced lateral spread resulting from several major earthquakes. This scope of work addresses the development of a lateral spread community database as part of the PEER Next Generation Liquefaction Project (http://peer.berkeley.edu/lifelines/projects/ngl/). It does not address predictive model development for lateral spread evaluations, which is future effort planned by PEER, but not included in this work plan.  The primary outcome of this research is a vetted and community database of seismic, topographical, geotechnical and horizontal displacement measurements pertaining to case histories of liquefaction-induced lateral spread for further research and model development by other researchers and investigators under the auspices of the PEER Center (http://peer.berkeley.edu/). Secondary outcomes will be web host and publishing required to house and disseminate this database and its supporting information.  Phase I Tasks include (funded):  (1) Kickoff meeting and procurement of software  (2) Development of data quality indicators/metrics, quality assurance and database population protocols  (3) Defining methods for quantifying uncertainty of key inputs  (4) Development and structuring of database  (5) Selection of case histories  (6) Obtaining and screening of case history information  (7) Population of case history database  (8) Phase I Reporting  (9) Database dissemination  Phase II Tasks include (not yet funded):  (10) Review and Development of Screening Criteria for Lateral Spread Potential  (11) Phase II Reporting  The principal investigators for this study will be Drs. Steven Bartlett (U. of Utah), Steven Kramer (U. of Washington and PEER Research Executive Committee Member), Kevin Franke (Brigham Young University) and Daniel Gillins (Oregon State University). The technical advisory committee (TAC) for the study currently includes representatives from Utah, California, Oregon, and Washington State DOTs. The MPC is providing additional funding for the study. |

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| **Progress this Quarter (includes meetings, work plan status, contract status, significant progress, etc.):**  TAC meetings – A pre-contract web conference was held on August 15 for the TAC and the research team to discuss the project scope together.  Contract – UDOT and the rest of the TAC reviewed the draft contract scope. The scope was finalized, and the research prime contract with UDOT and the University of Utah was executed.  Task 1 – Dr. Bartlett and the research team began working on the initial tasks of the project. They contacted Jonathan Stewart (UCLA) to learn more about the online platform that UCLA has been working on to house earthquake ground failure databases. U. of Utah, BYU and Oregon State have met to coordinate the work and discuss the subcontracts required amongst the various institutions.  Task 4 – U. of Utah has received the UCLA liquefaction triggering database structure and is structuring an MS Access database with this structure. |
| **Anticipated work next quarter**:  Task 1 – The principal investigators of the study will meet for planning purposes for Tasks 2 and 3. Prior to the kickoff meeting, the PIs will also test drive the UCLA platform/database and then make recommendations about implementation at the kickoff meeting.  Task 2 – Database quality indicator system will be established during this quarter.  Task 4 – Database development will continue by adding additional information and the supporting fields to the database structure required for lateral spread evaluations.  TAC meetings – None planned this quarter.  Contract – UDOT will work with the TAC members to transfer their remaining funding commitments to Utah. UDOT will also coordinate with representatives of Questar Gas Company regarding their potential funding contribution to the study. |

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| **Significant Results:**  Database structure has been started.  Initial coordination meetings were held. |
| **Circumstance affecting project or budget. (Please describe any challenges encountered or anticipated that**  **might affect the completion of the project within the time, scope and fiscal constraints set forth in the**  **agreement, along with recommended solutions to those problems).**  None. |

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| **Potential Implementation:** |