QUARTERLY PROGRESS REPORT
July 1, 2017 - September 30, 2017

PROJECT TITLE: Characterization of Florida Landfills with Elevated Temperatures

PRINCIPAL INVESTIGATOR: Debra R. Reinhart, PhD, PE, BCEE

AFFILIATION: University of Central Florida

COMPLETION DATE: December 31, 2017 **PHONE NUMBER:** 407-823-2315

PROJECT WEB SITE: http://www.cece.ucf.edu/people/reinhart/research/Elevated-Temperature/index.html

Work accomplished during this reporting period:

Task 1: Historical Gas Temperature Data Analysis

- Total of 19 landfills using gas collection systems have been characterized for temperature variation over time.
- In addition to temperature data analysis, gas quality and composition of the associated landfills have been analyzed. However, the landfills that their data are provided is still limited for any conclusive analysis.
- Temperature propagation maps have been developed for a few landfills reporting elevated temperatures to examine progression through the landfill over time.
- Temperature and gas quality continues to be updated for all landfills to monitor for any uncharacteristic changes.

Task 2: Characterization of Florida Landfills with Elevated Temperatures

- Volusia County Landfill as an elevated temperature landfill has been studied for temperature and gas quality prior and during the elevated temperature issue. In addition, progression of elevated temperature through landfill over time was investigated.
- Historical waste receipts have been examined at each landfill to determine if ash was accepted and used as a daily soil cover. Connections between ash disposal from Florida's waste-to-energy facilities (incinerators) and landfills is being completed.

Work to be completed next quarter

- Additional temperature and gas quality propagation maps will be completed for elevated temperature landfills (Task 1 and 2).
- Thorough analysis of total ash versus waste disposal will be completed to determine a connection between ash disposal and temperature change. (Tasks 1 and 2).
- Site geometry, landfill depth, liquids management, and gas control systems will be analyzed for all landfills (Task 2).
- An energy calculation model will be implemented for heat generation modeling during aerobic and anaerobic exothermic reactions to better understand the heat sources and dissipation in the landfills (Task 3).

Metrics:

1. List graduate or postdoctoral researchers who were funded by this Hinkley Center project.

Name	Rank	Department	Professor	Institution
Amir Motlagh	Post Doc	Civil, Environmental, and Construction Engineering	Debra Reinhart	University of Central Florida

Name	Rank	Department	Professor	Institution
Ryan Joslyn	Graduate Student	Civil, Environmental, and Construction Engineering	Debra Reinhart	University of Central Florida

2. List undergraduate students who worked on this Hinkley Center project.
3. List research publications resulting from this Hinkley Center project.
   - Abstract submitted to Global Waste Management Symposium 2018.
4. List research presentations resulting from this Hinkley Center project.
   - Proposal presentation in Hinkley Center research selection committee, May 31, 2017.
5. List who has referenced or cited your publications from this project?
   N/A
6. How have the research results from this Hinkley Center project been leveraged to secure additional research funding?
   N/A
7. What new collaborations were initiated based on this Hinkley Center project?
   N/A
8. How have the results from this Hinkley Center funded project been used (not will be used) by the FDEP or other stakeholders?
   - None to date