Education

MSE Civil Engineering, University of Washington, 2009

BS Environmental Engineering, Montana Tech, 2007

Licenses

Professional Engineer, Washington

Cameron Clark, P.E.

Cameron Clark is an environmental engineer with more than 10 years of experience in wastewater treatment plant evaluation, design, research, and operation. He specializes in wastewater solids treatment, particularly high-performance anaerobic digestion and biogas utilization. He performs a range of engineering services – from high-level studies to detailed design – on thickening, anaerobic digestion, dewatering, drying, and digester gas beneficial use processes. Other specialties include energy and mass balances, greenhouse gas evaluations, and sidestream nutrient recovery technologies. He is experienced in water quality modeling to estimate the fate and transport of wastewater constituents. He is also skilled in sample collection, preparation, and analysis, and has performed method development and analysis of micropollutants in water matrices using solid-phase extraction and liquid chromatography/mass spectrometry.

Relevant Experience

→ Design manager for the City of Bellingham, Washington, Biosolids Process Upgrade project. Mr. Clark will be overseeing the design of new biosolids processing facilities at the City of Bellingham Post Point Resource Recovery Facility. The upgrades include new thickening, dewatering, polymer, and cake loadout facilities to accompany the installation of a new temperature-phased anaerobic digestion process to replace the existing multiple hearth furnace system. The digestion process includes thermophilic batch tanks to produce US EPA Class A biosolids.

→ Project engineer for the King County West Point Digester Capacity Study, Seattle, Washington. Mr. Clark is providing planning and related services to develop, evaluate, and recommend alternatives to address solids treatment capacity constraints at the West Point Treatment Plant. The plant requires additional solids stabilization capacity. Addressing digestion capacity is highly complex and strategic consideration is needed to consider technical, logistical, and political impacts while developing a preferred solution. Due to the various potential alternatives and complexities, the scope of work also requires working with the County to identify the secondary objectives for West Point solids digestion, beyond the primary objective of alleviating the capacity constraint.

→ Project engineer for the Clayton County Biosolids Facility, Casey, Georgi. Mr. Clark performed a preliminary design of a new digester, digester support building, digester gas treatment, waste gas burner, and auxiliary equipment for the Clayton County Biosolids Facility. The digester was designed to digest primary solids only with the intention of improving the quality of the biosolids pellet produced by the accompanying drum dryer facility.

→ Project engineer for the Spokane County Regional Water Reclamation Facility, Spokane, Washington. The Spokane County Regional Water Reclamation Facility struggled with grit accumulation in their digesters as a result of extensive chemically enhanced primary clarification using iron salts. The existing digester mixing system and digester withdrawal configuration was insufficient to transfer grit out of the digester and remove it from the process. Mr. Clark provided troubleshooting for the system, developing a new digester mixing and withdrawal configuration that eased the issues for minimal cost.

→ Project engineer for the City of Gresham WWTP Co-Digestion and Hauled Waste Rate Study, Portland, Oregon. Mr. Clark conducted a study to determine the feasibility of expanding the City of Gresham's FOG and food waste co-digestion program. The Gresham WWTP has operated cogeneration since 2005, accepted and co-digested FOG since 2012, and achieved net zero since startup of the second cogeneration engine in 2015. This study explored payback options for a digestion expansion project that could serve to fulfill Gresham's capacity needs in addition to helping the community by

accepting additional food slurry available from Metro's Food Scraps Program and other potential sources. The study assessed potential cost and non-cost benefits and impacts associated with additional liquid organic waste loading on the WWTP, including digestion capacity and operation, sidestream recycle loading to the liquids treatment, solids dewaterability, biogas production, and biosolids end use. The study included a business case evaluation considering economic, environmental, social, and operational impacts to assess the favorability of pursuing expanded digestion and high-strength waste receiving. The study included a conceptual design for the recommended alternative.

→ Project engineer for the Columbus Jackson Pike Wastewater Treatment Plant Digester Improvements, Columbus, Ohio. Mr. Clark oversaw the design of upgrades to the anaerobic digesters and solids storage tanks at the Jackson Pike Wastewater Treatment Facility. He oversaw a technical design team that evaluated various digester shapes, mixing technologies, digester gas storage, and high-performance digestion technologies.

→ Project Engineer for the King County Food Waste Co-Digestion Formulation Study, Seattle, Washington. Mr. Clark performed an engineering and economic feasibility study for a new food waste co-digestion system at King County's South Treatment Plant. The study involved a comparison of local food waste availabilities against the solids and digester gas capacities of the treatment plant. The project required close coordination between King County's Solid Waste Division and Water Treatment Division.

→ Project engineer for the City of Coos Bay Wastewater Treatment Plant 2, Coos Bay, Oregon. Mr. Clark performed engineering services for the Coos Bay Wastewater Treatment Plant 2 anaerobic digesters. He oversaw the cleaning of one digester and the facultative sludge lagoon, which involved contractor mobilization, solids dewatering, hauling to a landfill, and demobilization. The condition of the cover on Digester 2 was evaluated and determined to be unacceptable for continued operation. Mr. Clark then performed engineering to replace the cover with a new fixed steel cover with annular seal material. Mr. Clark also performed engineering calculations on the agronomic loading rate of plant biosolids to improve the yearly land application process.

→ Project engineer for the City of Omaha Water Resources Recovery Facilities Master Plan, Omaha, Nebraska. Mr. Clark performed a detailed mass balance and capacity assessment for the solids processing systems at both the Missouri River and the Papillion Creek Wastewater Treatment Plants. Insufficient capacities in the digester systems were addressed by evaluating several enhanced digester configurations, including thermophilic digestion, acid-gas digestion, temperature-phased anaerobic digestion, thermal hydrolysis, as well as additional digester mesophilic digester capacity. This project was expanded to a preliminary design of a temperature-phased anaerobic digestion process, including a new thermophilic digester and revisions to the existing facility. Mr. Clark oversaw the digester design and coordinated with the client on the preferred digester features, e.g., mixing, cover, tank geometry, etc.

→ Project engineer for the Salmon Creek Wastewater Treatment Plant Digester Improvements, Clark County, Washington. The Salmon Creek Wastewater Treatment Plant suffered from poor VSR and foaming events. Mr. Clark designed a revision to existing overflow digester overflow boxes to provide a surface withdrawal mechanism. Once implemented, the upgrades showed an immediate improvement to digester VSR, gas production, and stability.

→ Project engineer for the Budd Inlet Wastewater Treatment Plant Digester Process Evaluation, LOTT Clean Water Alliance, Olympia, Washington. Mr. Clark performed a condition assessment of the floating cover of an existing 70-ft digester with gasholder-type floating cover. A large crack was located in the digester cover skirt and rehabilitation measures were developed.