

Emily Dong, P.E.



Emily applies her experience working for the City and County of Honolulu Wastewater Engineering and Construction Division to deliver high quality consulting services to her clients.

Emily has been involved with projects relating to the planning, design, and management of wastewater treatment facility and pump station projects. She is knowledgeable in facilitating large programs in SCADA systems, automation, controls, and wastewater process optimization. She has developed and prepared condition assessment reports, engineering studies, permitting documents, operation and maintenance manuals, human machine interface (HMI) graphics, process control troubleshooting, and cost estimates. Her experience also includes developing scope of work, working closely with operations, performing field investigations, storm characterization, and public relations.

SCADA Computing Infrastructure Software Programming Engineering Services, City and County of Honolulu, Dept. of Environmental Services, Oahu, HI

Program Manager. City and County of Honolulu (CCH) Division of Wastewater Treatment and Disposal (WTD) contracted BC to support CCH in Supervisory Control and Data Acquisition (SCADA) infrastructure, programming and control related facility improvements for wastewater treatment plants and wastewater pump stations. BC is performing PLC and HMI screen programming, testing, startup, training, and design-related services for the maintenance of existing and new control systems. BC is also working on wireless tablet installations, controller replacements, standards development, and automation improvements at wastewater treatment plants/wastewater pump stations throughout Oahu.

Emily oversees the program.

Process Control Consulting Services for Improved Operations for CCH Wastewater Facilities, City and County of Honolulu, Oahu, HI

Program Manager. City and County of Honolulu (CCH) Division of Wastewater Treatment and Disposal (WTD) contracted BC to support the delivery of wastewater process control related work orders for wastewater treatment and disposal facilities. The process control work orders range from identification and analysis of wastewater treatment issues to planning and design work relating to process control optimization and providing third party technical reviews for design and construction documents. BC is working alongside CCH to actively address identified system deficiencies or required improvements and establish best practices to be leveraged across the facilities. This contract has required BC to provide both urgent and ongoing technical support to facilitate resolution of WTD's most pressing wastewater process items.

EDUCATION
MS, Civil Engineering -
Environmental Engineering
Program, University of Hawaii,
2015

BS, Civil Engineering -
Environmental Engineering
Program, University of
Washington, 2009

REGISTRATION
Engineer (Civil), No. PE-16287,
Hawaii (USA)

YEARS OF EXPERIENCE
13

JOINED FIRM
2016

RELEVANT EXPERIENCE

- Project Development
- Contract Administration and Procurement
- Wastewater System Planning
- Wastewater Pump Station and Force Main Evaluation
- Condition Assessments
- Hydraulic Analysis
- Public Relations

Ala Moana Wastewater Pump Station Upgrade, City and County of Honolulu, Honolulu, HI

Project Manager. BC is responsible for preparation of a design alternatives report for the pump station rehabilitation. Assessed the condition of existing mechanical, electrical, and structural components and evaluated design and construction alternatives, assessed system hydraulics, identified permit requirements, and provided cost estimates. Duties include preparing schedules, coordination of staff and preparation of the Basis of Design.

Waianae Wastewater Facilities Plan, City and County of Honolulu, Waianae, HI

Project Engineer (Planning). BC developed a wastewater facility plan for the Waianae basin. This included evaluating the system's current condition and future needs, developing rehabilitation and expansion recommendations, identifying effluent reuse and energy recovery opportunities, and evaluating potential climate change and sea level rise impacts. Tasks included a collection system evaluation of unsewered areas and future development impacts, condition assessment of the WWTP equipment and facilities, hydraulic and treatment capacity modeling, followed by the development of future projects and prioritization. BC also evaluated projected climate change impacts and potential mitigation strategies to address sea level rise, coastal erosion, annual high wave flooding, and storm surge impacts.

Wastewater Pump Station Operation and Maintenance Manual Update, City and County of Honolulu, Dept. of Environmental Services, Oahu, HI

Technical Reviewer. BC is contracted to update the O&M manuals for 69 wastewater pump stations (WWPS) and 2 storm drain pump stations (SDPS) for the City and County of Honolulu. The WWPS operators and supervisors rely on the WWPS operations and maintenance (O&M) manuals for information about the flows and capacity of the pump station, critical equipment, and operation of the pump station under normal and alternative conditions.

Pearl City Wastewater Pump Station, Force Main, and Sewer System Alternatives, City and County of Honolulu, Honolulu, HI

Project Manager/Lead Project Engineer. Lead project engineer for the upgrade of a 45-million-gallon per day (mgd) wastewater pump station located within the flood zone. BC is designing upgrades to a 45-mgd wastewater pump station. Includes pump replacement, flood protection, surge mitigation, and electrical and instrumentation improvements. To reduce construction costs, the surge mitigation approach is using uninterruptible power supply flywheel system, an innovative approach that is first of its kind in the industry at a wastewater pump station. Included a condition assessment of existing mechanical, electrical, and structural components; evaluation of design and construction alternatives; assessment of system hydraulics; permit and regulatory approvals, and cost estimating. Completed site improvements, drainage management and pavement restoration, as well as a Hydrologic Engineering Center River Analysis System analysis of Waiawa Stream and surrounding project site areas. Confirmed a No-Rise Certification for the project improvements, and accessibility review coordination by the State Department of Health, Disability and Communication Access Board.

KRWWTP, Facility Plan, TIPS, Headworks Design, and Services During Construction, City and County of Honolulu, Dept. of Environmental Services, Kailua, HI

Project Engineer (Project Delivery). BC prepared a Facilities Plan for the Kailua Regional Wastewater Treatment Plant (KRWWTP), Kaneohe Wastewater Pretreatment Facility, and five pumping stations using a 20-year plan horizon. Plan compared two alternatives to convey wastewater. Designed a 45-mgd pump station, headworks facility, and supporting facilities. The 4-level, below-grade pump station was designed with drywells and wetwells for redundancy. The headworks facility included screening and grit removal processes in an enclosed, acoustically treated building to minimize noise and odor. BC also designed flow diversion structures for a three-mile-long, 10-foot-diameter wastewater tunnel. Included standby generator facilities, medium-voltage electrical distribution system, and multiple odor control systems. Innovation included tunnel junction structure with vortex drops, complex tunnel ventilation and odor control system, tunnel access crane bay, unique shallow pump station built into the shaft wall, and screenings/grit conveyance system.

Waipio Wastewater Pump Station Engineering Planning, Design Services, and Upgrade, City and County of Honolulu, Dept. of Environmental Services, Waipio, HI

Lead Engineer (Civil). BC evaluated the Waipio Wastewater Pump Station to correct hydraulic deficiencies and recommend mechanical, electrical, and structural improvements. BC prepared a design alternatives report and

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supplemental design report for pump station rehabilitation. Effort included assessing condition of existing mechanical, structural, and electrical equipment, evaluating construction alternatives, analyzing system hydraulics, identifying permit requirements, and providing cost estimates. Detailed design for the recommended upgrades included a new generator and generator building; heating, ventilation, and air conditioning upgrades; civil/site improvements; a wet well condition assessment; a transient analysis to evaluate existing surge mitigation measures; and other miscellaneous upgrades.

Wastewater Capacity Management and Monitoring, City and County of Honolulu, Dept. of Environmental Services, Honolulu, HI

Project Engineer (Mechanical). This is a multi-year, island-wide program which includes three main components: the first is long-term wastewater flow and rain data collection, the second assists the City with ongoing updates and calibration to the hydraulic model (InfoWorks ICM) of their wastewater collection system, and the third provides on-call modeling support using the City's updated hydraulic model. The overall program objectives are to confirm and more accurately quantify long-term wastewater flow trends in the wastewater collection system and to further refine and improve the tools that will enable the City to resolve current capacity limitations and to support future growth.

Construction Management & Engineering Services for the DB of WWPS Electrical and SCADA Improvements, City and County of Honolulu, Honolulu, HI

Deputy Project Manager. Assist with the coordination and project oversight for the City of Honolulu's wastewater pumping electrical and control systems upgrade. The project provides engineering services, serving as owner's advisor for construction management, and performing inspection services to support the Design-Build Contract for 18 wastewater pump stations located on the island of Oahu. BC is operating as an extension of the City's staff and represents the interests of the City, so the intent of the City's Electrical and Supervisory Control and Data Acquisition improvements projects is followed by the Design-Build contractor.

Wahiawa Tributary WWPSs Assessment and Design, Various Sites, City and County of Honolulu, Honolulu, HI

Lead Engineer (Civil/Mechanical). Project includes performing a detailed condition assessment of eight wastewater facilities using City and County of Honolulu standard asset assessment procedures. BC's field condition assessment team employed visual observation and non-destructive testing techniques to evaluate asset conditions at each facility. Responsible for preparation of a detailed condition assessment report for each facility, which includes developing recommendations for rehabilitation for each asset, prioritizing assets within each facility using EPA-approved techniques to determine rehabilitation order, and developing cost estimates. BC received an amendment to develop basis-of-design reports for each facility. The basis-of-design reports recommend a preferred design direction and criteria to address the deficiencies summarized in the condition assessment reports.

Emily's duties include developing schedule and preparation of the Basis of Design reports including fuel consumption, HVAC and flow analysis.

Waipio Wastewater Pump Station Engineering Planning, Design Services, and Upgrade, City and County of Honolulu, Waipio, HI

Lead Engineer (Civil). Responsible for the evaluation of the Waipio Wastewater Pump Station to primarily correct hydraulic deficiencies, and also recommend mechanical, electrical, and structural improvements. Developed a design alternatives report prepared to document the pump station assessment, alternatives evaluation, and recommendations. Design documents including specifications and drawings are ongoing.

Duties include coordination of staff and permitting.

Program Management Office, Guam Waterworks Authority, Mangilao, Guam

Deputy Project Manager. BC was program manager on a seven-year, \$450M wastewater and water program, comprising development of a capital improvement plan; design development and procurement for water and wastewater projects; and project financing, asset management, and staff development. Included developing major improvements to two existing wastewater treatment plants as well as facility planning for three others; developing system-wide water and sewer hydraulic models; rehabilitation and repair of major wastewater collection systems; rehabilitation, repair, and development of groundwater well systems for potable water; operational improvements to a

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water treatment plant; backflow prevention; and advising on a Master Plan. Complied Federal Court mandates and addressed National Enforcement Investigations Center Findings of Significant Deficiencies in water and wastewater utility. Delivered conventional and design-build delivery packages for 15 wastewater and 30 water projects in the five-year Capital Improvement Plan.

PM/CM for Water and Wastewater Infrastructure Improvements and Northern District WWTP Design, Guam Waterworks Authority, Dededo, Guam

Deputy Project Manager. BC is providing project management and construction management services for more than \$188 million worth of water and wastewater infrastructure improvement projects. The scope includes expanding the existing Northern District's wastewater treatment plant (NDWWTP), implementing secondary treatment (Bio-Treatment), and adding an Auto Thermal Aerobic Digestion system to handle fats, oils, and grease. It also includes rehabilitating more than nine miles of an existing sewer line by Cured-In-Place Pipe methods; extending an existing deep ocean outfall diffuser pipe that is located more than 2,000 linear feet offshore by 400 linear feet in an effort to improve NDWWTP effluent dilution as it discharges into the ocean; and installing seven new observation wells and rehabilitating 12 existing observation wells to support monitoring the northern Guam aquifer lens.

Kealakehe Wastewater Treatment Plant Upgrades and Photovoltaic Study, County of Hawaii, Dept. of Environmental Management, Kailua-Kona, HI

Project Engineer (O&M). The Kealakehe Wastewater Treatment Plant is an aerated lagoon treatment system located near Kailua on Hawaii Island. This project consists of three major elements: conducting sludge removal in concurrence with the aeration upgrade to increase capacity and efficiency; developing a master plan to guide long-term capacity expansion efforts and with low operations and maintenance costs to protect the local environment; and performing a photovoltaic study to evaluate existing and future electricity demands at the facility. BC also designed structural modifications to the existing blower room to accommodate two 700-horsepower single stage centrifugal blowers, including equipment foundations, major structural modifications to concrete masonry unit walls for new louvers and equipment installation access openings.

Wastewater Treatment Collection and Disposal System for the Pahala Wastewater Treatment Plant, County of Hawaii, Dept. of Environmental Management, Wastewater Division, Pahala, HI

Project Engineer (Mechanical). BC is providing engineering services for the closure of large capacity cesspools and construction of new wastewater infrastructure in Pahala, to meet updated effluent discharge requirements dictated by the USEPA. BC completed the planning phase, which included a preliminary engineering report, environmental assessment, regulatory and permit identification, site alternatives evaluation and land acquisition, community outreach, and conceptual alternatives for the design, construction, and commissioning of the system. While the infrastructure was originally designed around a natural treatment system to minimize environmental impacts, simplify maintenance requirements, and achieve reliability, alternative treatment technologies are being evaluated to address additional constraints related to affordability and unique geology of the area.

Electrical Engineering Services for SCADA Project, City and County of Honolulu, Dept. of Environmental Services, Waianae, HI

Project Engineer (O&M). This project at the Waianae Wastewater Treatment Plant incorporates design improvements identified during the island-wide electrical and instrumentation and controls condition assessment performed for the City. Work included the development of electrical and control system standards for the City to use on this and future electrical and control system improvement projects, development of an electrical systems master plan, and preparation of bid-ready design documents for electrical and control system improvements at the Plant. BC provided engineering, construction observation, and programming services through construction.

KRWWTP, Facilities Plan, TIPS, Headworks Design, and Services During Construction, City and County of Honolulu, Dept. of Environmental Services, Kailua, HI

Project Engineer (Project Delivery). Assist with the coordination and project management for the new tunnel influent facilities at Kaneohe Pretreatment Facility for Kailua RWWTP. Tasks include reviewing contract documents for bid and construction services. BC prepared a Facilities Plan for the Kailua Regional Wastewater Treatment Plant, Kaneohe Wastewater Pretreatment Facility, and 5 pumping stations using a 20-year plan horizon. Plan compared 2 alternatives

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to convey wastewater. Designed a 45-mgd pump station, headworks facility, and supporting facilities. The 4-level, below-grade pump station was designed with drywells and wetwells for redundancy. The headworks facility included screening and grit removal processes in an enclosed, acoustically treated building to minimize noise and odor. BC also designed flow diversion structures for a 3-mile-long, 10-foot-diameter wastewater tunnel. Included standby generator facilities, medium-voltage electrical distribution system, and multiple odor control systems. Innovation included tunnel junction structure with vortex drops, complex tunnel ventilation and odor control system, tunnel access crane bay, unique shallow pump station built into the shaft wall, and screenings/grit conveyance system.

Noise and Odor Abatement Systems, Phase I, II, III, IV (ROSE), City and County of Honolulu, Dept. of Environmental Services, Kailua, HI

Project Engineer (O&M). For Phase I, preparation of the Operations and Maintenance manual for the of foul air collection and odor treatment improvements at the Kailua RWWTP including installation of new fans and ductwork, DAFT overflow pipe reroute to direct high sulfide wastewater to the existing biotowers, and chemical addition facilities at the Kailua RWWTP, Ahuimanu PTF, Kaneohe PTF, and Kailua Road Wastewater Pump Station. For Phase II, preparation of the Operations and Maintenance manual for the new odor monitoring system, dewatering building enclosure and odor improvements (ventilation, odor containment, and odor treatment), DAFT improvements, primary sludge line reroute, and extensive SCADA improvements at the Kailua RWWTP.

Island-Wide Force Main Program, City and County of Honolulu, Oahu, HI*

Project Manager. Responsible for the development, initial implementation and review of an Island-Wide Force Main Condition Assessment Program. The overall goal of the program is to develop a broad understanding of the condition and useful life of buried pipeline assets. The study focuses on non-destructive testing techniques, broad corrosion prevention, and long range planning.

Pacific Palisades Wastewater Pump Station Improvements, City and County of Honolulu, Pearl City, HI*

Project Manager. Responsible for contract administration, procurement, review, and coordination of City departments regarding the planning and design of improvements. Effort includes assessing condition of existing mechanical, structural, and electrical equipment, evaluating construction alternatives, analyzing system hydraulics, working with site developers and providing cost estimates. Detailed design for the recommended upgrades is currently ongoing. The design includes a new generator and generator building, flood protection, HVAC upgrades, civil/site improvements, bypass piping and other miscellaneous upgrades.

Fort DeRussy Wastewater Pump Station Emergency Force Main Repair, City and County of Honolulu, Waikiki, HI*

Project Manager. Rehabilitation by Cast-In-Place-Pipe of approximately 100 linear feet of existing 48-inch diameter ductile iron force main and addition of combination air release valves for surge protection under emergency procurement. Responsible for contract administration, procurement, overseeing of condition assessment, design and construction.

West Beach #1 Wastewater Pump Station, City and County of Honolulu, Kapolei, HI*

Project Engineer. Field investigations and analysis for ragging issues and increased maintenance and servicing for the pumps. Responsible for performing the majority of field investigations, coordination with operations, calculations and report preparation.

Alii Bluffs, Kukanono, Aala Wastewater Pump Stations Projects, City and County of Honolulu, Windward Area, HI*

Project Manager. Responsible for contract administration, procurement, review, and coordination of City departments regarding the planning and design of improvements. Primary contact and responsible for public relations including presentations, handouts, and one-on-one meetings for a 700-linear-foot Horizontal Directional Drilling project on a one-way street in Lanikai, Hawaii. Effort includes reviewing plans, specifications, identifying permit requirements, and providing cost estimates. The design includes civil/site improvements including settlement markers, geotechnical design in sandy soil conditions, force main replacement and miscellaneous force main improvements.

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Heeia Wastewater Pump Station Upgrade, City and County of Honolulu, Waipio, HI*

Project Manager. Responsible for contract administration, procurement, review, and coordination of City departments regarding a condition assessment and design alternatives report for pump station upgrade. Effort includes assessing condition of existing mechanical, structural, and electrical equipment, evaluating construction alternatives, analyzing system hydraulics, and providing cost estimates. Includes detailed design for the recommended upgrades.

Windward Wastewater Facilities Condition Assessment, City and County of Honolulu, Oahu, HI*

Project Manager. Project includes a detailed condition assessment of six wastewater facilities using City and County of Honolulu standard asset assessment procedures. Responsible for contract administration, procurement, review, and coordination of City departments regarding each wastewater pump station's condition assessment. Developed scope of work from recommendations for rehabilitation for each asset, prioritizing assets within each facility and developed separate cost estimates. Development of basis-of-design reports and detailed design documents are anticipated in future phases.

Capital Projects Division Program Management, City and County of Honolulu, Board of Water Supply, Honolulu, HI

Project Engineer (O&M). Providing program management services to assist the City & County of Honolulu Board of Water Supply Capital Projects Division over a five-year period. The goal is to optimize business performance, expedite Capital Improvement Program execution, and implement future CIP projects identified from the City's Water Master Plan. Duties include assisting in the development of a Basis of Design for the Capital Improvement Program. The project includes the replacement and upgrade of an activated carbon filter water treatment facility including the chemical addition.

Wahiawa Tributary WWPSs Assessment and Design, Various Sites, City and County of Honolulu, Honolulu, HI*

Project Manager. Performed a detailed condition assessment of eight wastewater facilities using City and County of Honolulu standard asset assessment procedures. Responsible for contract administration, procurement, review, and coordination of City departments regarding each wastewater pump station's condition assessment. Developed scope of work from recommendations for rehabilitation for each asset, prioritizing assets within each facility and developed separate cost estimates. Developed basis-of-design reports and detailed design documents are anticipated in future phases.

Waipio Wastewater Pump Station Engineering Planning, Design Services, and Upgrade, City and County of Honolulu, Honolulu, HI*

Project Manager. Responsible for contract administration, procurement, review, and coordination of City departments regarding a design alternatives report and supplemental design report for pump station rehabilitation. Effort includes assessing condition of existing mechanical, structural, and electrical equipment, evaluating construction alternatives, analyzing system hydraulics, and providing cost estimates. Detailed design for the recommended upgrades is currently ongoing. The design includes a new generator and generator building, HVAC upgrades, civil/site improvements, a wet well condition assessment, a transient analysis to evaluate existing surge mitigation measures, and other miscellaneous upgrades.

Memberships

Hawaii Water Environment Association/Water Environment Federation, President, 2015. WEF Delegate, 2026.

American Society of Civil Engineers, Social Chair

Publications

E. Dong, (R. Babcock Jr) *Development of a Wastewater Operator Training Program for the State of Hawaii*, 2016

*Project prior to BC