integral

Statement of Qualifications
County of Hawaii

NOTICE TO PROVIDERS OF PROFESSIONAL SERVICES (HRS 103D-304)

Integral Consulting Inc.

June 30, 2025

INTEGRAL-CORP.COM

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June 30, 2025

Reference No. P585

Mr. Benson Medina
Director of Research & Development
County of Hawai'i
25 Aupuni Street, Suite 1301
Hilo, HI 96720

Subject: **Statement of Qualifications and Letter of Interest**

Dear Mr. Medina:

Integral Consulting Inc. (Integral) is pleased to provide this statement of qualifications to provide services in support of the County of Hawaii Notice to Providers of Professional Services. The categories of service to be considered include:

- **RD.1 Community Planning (Community and Economic Development, Community Engagement, Culture and Indigenous Data Science, Strategic Planning, Sustainability Systems)**
- **RD.4 Community Planning (Marketing and Social Media)**
- **RD.13 General Engineering (Energy)**

This statement of interest contains the following components:

1. Attachment 1: Office Locations
2. Attachment 2: Key Staff Resumes
3. Attachment 3: Integral Statement of Qualifications, References, and Additional Promotional Literature
4. Attachment 4: Form DPW 120, Certificate of Insurance, P.E. Licenses

Integral's professional engineers, scientists, and permitting specialists understand the natural processes affecting our coastlines and design projects that sustainably utilize nature instead of working against it. Our multi-disciplinary team of professionals specializes in developing sustainable alternatives to challenges impacting coastal ecosystems and the built environment

along shorelines. We provide integrated services through all phases of coastal and waterfront projects, from initial planning and permitting to full design, bid support, and construction management.

Our team includes the best and brightest minds in the industry to tackle our client's most challenging issues and implement value-based environmental and engineering solutions. Our team of engineers (civil, environmental, coastal), permitting and planning specialists, and other subject matter experts bring decades of experience implementing similar projects throughout Hawaii.

We thank you for your consideration and look forward to the opportunity to serve you under this contract. If you should need additional information, please feel free to contact us.

Sincerely,

Robert Walker, P.E.
Principal, Coastal Engineering
808.202.1920
rwalker@integral-corp.com

Silvia Barber
Senior Consultant, Environmental Science
808.232.5218
sbarber@integral-corp.com

Attachment 1

Office Locations

Office Locations and Contact

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Office Locations and Contact

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Colonia Polanco Chapultepec
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+52 (552) 282-1031
Craig Jones
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Attachment 2

Key Staff Resumes

Education & Credentials

M.S., Geoscience, Coastal Geology, University of Hawai'i at Manoa, Honolulu, Hawai'i, 2017

M.S., Civil (Coastal) Engineering, Old Dominion University, Norfolk, Virginia, 2010

Graduate Certificate in Coastal Engineering, Old Dominion University, Norfolk, Virginia, 2008

B.A., Spanish, North Carolina State University, Raleigh, North Carolina, 2004

B.S., Environmental Engineering, North Carolina State University, Raleigh, Virginia, 2003

Professional Engineer (Civil), Hawai'i, (License No.14549)

Professional Engineer (Civil), California, (License No. 79483)

Professional Engineer (Civil), North Carolina, (License No. 36186)

Leadership in Environment and Energy Design Accredited Professional (LEED AP) (2008)

Robert A. Walker, P.E.

Principal, Coastal Engineering

(808) 202-1920

Haleiwa, HI

rwalker@integral-corp.com

Mr. Robert Walker is a highly experienced coastal engineer with more than 20 years of expertise in coastal and marine projects. He specializes in dredging and dredged material management, coastal analyses and studies, shoreline protection, the design of waterfront facilities, and nature-based coastal hazard mitigation. Mr. Walker's proficiency goes beyond planning, design, and field investigations—he also excels in guiding clients through the complex regulatory permitting process, successfully securing local, state, and federal permits for numerous complex coastal projects. In addition, Mr. Walker brings valuable expertise in hydrographic surveying, sediment sampling and analysis, construction management, and environmental compliance services for dredging and coastal and waterfront construction projects.

Relevant Experience

COASTAL ENGINEERING

Hawai'i Kai Marina and Entrance Channel Maintenance Dredging, Honolulu, Hawai'i — Provided coastal engineering, environmental planning, and regulatory permitting services to the Hawai'i Kai Marina. Professional engineering services have included dredging design, soil and sediment investigations, coastal structure design, beach nourishment, and dredged material placement design documents for three upland sites within the marina. Served as the engineer of record for numerous initiatives within the marina, and led all regulatory permitting efforts with agencies such as U.S. Army Corps of Engineers (USACE), Hawai'i Office of Planning, and City and County of Honolulu, and successfully obtained multiple 401 water quality certifications from the Hawai'i Department of Health. Additional services have included the management of all environmental compliance aspects for the marina's in-water projects, construction management for coastal and marine construction, and hydrographic surveying.

Wave Analysis and Hydraulic Loading Study, Nags Head, North Carolina — Provided extensive wave and water level analysis in support of a new oceanfront pier in the Outer Banks of North Carolina. Upon determination of desired design conditions, hydraulic loadings on pier components were provided to the structural engineer of record. Additional services included an evaluation for potential pile scour due to waves and currents.

South River Boat Basin Waterfront Improvement, North Carolina — Provided marine engineering services for needed improvements to the North Carolina Division of Marine Fisheries' South River Boat Basin. Facility improvements consisted of approximately 4,000 cubic yards of maintenance dredging in the basin, approximately 1,720 linear ft of roadway improvements to

Professional Affiliations

American Shore & Beach Preservation Association

Coasts, Oceans, Ports and Rivers Institute (COPRI)

American Society of Civil Engineers

the facility, a new 15-ft-wide boat launch ramp, new mooring dolphin pile clusters, and a new 113 linear ft by 5-ft-wide timber access pier.

Coastal Engineering Study for Liquid Natural Gas Facility, Mozambique, Africa — Served as the coastal engineer for a front-end planning study for a proposed liquid natural gas facility. Analyzed various considered alternatives to evaluate their impact on sediment transport and shoreline response at the site. Mitigation measures such as beach nourishment, coastal armoring, and site layout design were considered based on the potential for increase or decrease in erosion or accretion and associated mitigation in the form of shoreline protection or stabilization and dredging requirements.

Beach Nourishment Using Upland Borrow Source, Holden Beach, North Carolina — Provided planning and permitting of a shoreline protection project using sand from an upland borrow source. Responsibilities included an evaluation of the suitability of the sediments for beach nourishment, volume calculations for the most suitable material, and regulatory permitting for these activities.

Dredging of Wharves A1–A7, B1–B3, and Drydocks 1–3, Pearl Harbor, Hawai'i — Served as design engineer for this maintenance dredging project, which provided maintenance dredging of critical berthing and vessel drydock areas. Due to elevated concentrations of contaminants of concern within the dredge footprint, careful design considerations were necessary to achieve the project requirements while avoiding cost-prohibitive environmental remediation.

Morro Bay State Park Marina Maintenance Dredging, Morro Bay, California — Served as engineer-of-record responsible for developing a cost-effective dredging program to remove shoaled material from within the navigation channel and recreational marina. Led the development of design drawings and technical specifications, and then led the bid advertisement and contractor selection process. As the project moved into construction, provided limited construction management services, including providing technical expertise related to contract specifications, and regulatory compliance monitoring and reporting.

Middle Harbor Redevelopment Program, Port of Long Beach, California — Served as onsite construction management support for a demolition and dredging project at the Port of Long Beach. Worked alongside Port staff providing technical expertise on dredging and marine construction issues for this project. Served as a liaison between the designer, contractor, and Port to solve problems expeditiously and minimize cost increases related to changed conditions. Responsible for coordinating requests for information, contractor submittals, acceptance and payment surveys, and change order negotiation, among other duties.

Brisbane Marina and Entrance Channel Maintenance Dredging, Brisbane, California — Served as engineer of record for this project, which involved dredging of 140,000 cubic yards of material from the entrance channel and marina. Dredged material was disposed of at the SF-11 disposal site within San Francisco Bay.

Rainbow Harbor Entrance Channel Dredging, Long Beach, California — Provided engineering design and limited construction oversight for the removal of approximately 25,000 cubic yards of material from the entrance the harbor. The intent of this project was to improve navigation

conditions in support of the TransPac sailing competition that departs from Rainbow Harbor each year.

Keauhou and Honokohou Small Boat Harbors, Keauhou, Hawai'i — Provided engineering and permitting services for these two tsunami damage repair projects for two sites impacted by the March 2011 Tohoku tsunami. Project work involved repairs to the existing loading pier, crib wall revetment, seawall, and navigation hazards removal as well as miscellaneous repairs to upland infrastructure at the site. With extensive coral colonies present within the direct project impact area, managed marine biological surveys and the development of a suitable coral transplantation program. Responsible for obtaining the necessary permits and approvals from USACE, NOAA-National Marine Fisheries, and State of Hawai'i Department of Health 401 water quality certification.

Pier 200 Replacement, Haleiwa Small Boat Harbor, Haleiwa, Hawai'i — Provided environmental permitting services to secure the necessary state and federal permits and approvals for this project. In addition to securing the necessary permits with USACE, also managed the marine biological surveys for the project and provided an engineering evaluation of the proposed flexible mooring system for the project.

DREDGED MATERIAL MANAGEMENT

Dredged Material Beneficial Reuse Analysis, Figure Eight Island, North Carolina — Gathered all existing data concerning native sediment characteristics along beach profile transects for Figure Eight Island and Hutaff Island, as well as dredged material deposited in USACE disposal islands along the Atlantic Intracoastal Waterway in North Carolina. Coordinated further geotechnical investigations of dredged material disposal areas and performed sediment compatibility analysis for beach nourishment using updated technical standards set forth by the North Carolina Division of Coastal Management.

Portlock Beach Beneficial Reuse of Dredged Material and Beach Nourishment, Oahu, Hawai'i — This project consisted of dredging the entrance channel to the Hawai'i Kai Marina on Oahu, Hawai'i, to restore navigable depths and beneficially reuse dredged sediment as a source for beach nourishment at Portlock Beach. Coordinated and conducted geological site investigations, topographic and hydrographic surveys, and led the engineering design, state and federal permitting, and construction management aspects of the project.

Kapalama Container Terminal, Honolulu Harbor, Hawai'i — Served on the design team and was responsible for coordinating geotechnical explorations, topographic and hydrographic surveys, and conducting additional field investigations of existing site conditions. Assisted with dredging design for approximately 400,000 cubic yards with dredged material disposal sites including upland disposal, slip fill at Snug Harbor, and offshore disposal at the South Oahu Ocean Dredged Material Disposal Site. Also led development of the site demolition plans, which included extensive research of the State of Hawai'i Department of Transportation (HDOT) files, as well as numerous on-land and in-water investigations to better understand the existence of historical structures within the project footprint. Attended meetings with the owner on behalf of the design team and served as a liaison between regulatory agencies, the design team, and HDOT project staff.

Andrew Wycklendt, P.E., BCCE

Senior Engineering Advisor

(808) 783-6816

Honolulu, HI

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Mr. Andrew Wycklendt is a board-certified coastal engineer (BCCE) through the Academy of Coastal, Ocean, Port and Navigation Engineers (ACOPNE), a subsidiary of the American Society of Civil Engineers; with only 79 Board Certified Coastal Engineers worldwide, this is the highest certification given to a professional engineer within the field of coastal engineering. He has 18 years of coastal engineering experience designing and implementing a variety of coastal restoration, shoreline protection, sediment management, dredging, navigation, waterfront structure, and flood mitigation projects along Pacific, Atlantic, Gulf, and Arctic coasts. He has worked with barrier island, headland and embayment, estuarine, deltaic, cliff, pocket, perched, and open coastal systems to restore or nourish beaches, marshes, and other habitat that can be classified as either sand, mixed sediment, vegetated, cobble, boulder, or volcanic. Project experience includes dredge and fill, coastal structure, and marine-related upland structures.

Mr. Wycklendt is versed in all aspects of the coastal engineering discipline, inclusive of coastal modeling, project design, permitting, bid and construction document preparation, construction oversight and administration, topobathymetric and biological surveys, geophysical and geotechnical investigations, and oceanographic studies. He manages broad-based coastal engineering projects, inclusive of marketing and sales, client contact, team coordination and collaboration, feasibility analyses, engineering designs, numerical modeling, report preparation, permitting, construction engineering, and monitoring services. He collaborates across disciplines to effectively convey complex information to colleagues, stakeholders, and the public.

Education & Credentials

M.S., Ocean and Resources Engineering, University of Hawaii, Honolulu, Hawaii, 2005

B.S., Ocean Engineering, Florida Atlantic University, Boca Raton, Florida, 2003

Professional Engineer, Civil, Hawaii (License No. 14493)

Professional Engineer, Civil, Alaska (License No. 176309)

Professional Engineer, Civil, Florida (License No. 71604)

Professional Engineer, Civil, Louisiana (License No. 45361)

ACOPNE Board Certified Coastal Engineer

Continuing Education

American Academy of Underwater Sciences Diving Safety Officer and Scientific Diver

Professional Association of Diving Instructors Open Water SCUBA Instructor

Firefighter I and II

Hazardous Materials First Responder

Relevant Experience

COASTAL ENGINEERING

Barrier Island Restoration Program, Louisiana — Six barrier island restoration projects (Chaland Headland, Shell Island, Pelican Island, West Bell Pass, East Grand Terre, and Chenier Ronquille) constructed along 15.5 miles of Gulf shoreline included the dredging and placement of 18,362,000 cubic yards of sand and 9,016,000 cubic yards of mixed sediment to restore 1,441 acres of beach and dune and create 2,181 acres of marsh. Several of these barrier island restoration projects were augmented by the emergency berm that included the dredging and placement of 10,000,000 cubic yards of sand to protect interior marshes from the Deepwater Horizon oil spill. As project engineer, designed three of these projects and the emergency berm, provided bid support services for five of these projects, and provided construction engineering support services for all of these projects. Specific design tasks performed include the following:

Professional Affiliations

President, Hawaii Shore and Beach Preservation Association (HSBPA)

Director, American Shore and Beach Preservation Association (ASBPA)

engineering assessment to evaluate various footprint configurations and the ability to construct a primary dike to contain marsh fill necessary to meet both habitat restoration and design life requirements, feasibility analysis of dredging access and using *in situ* material to construct the primary dike within the web of oil and gas infrastructure, extreme event analyses to define design conditions, numerical modeling to define cross-section design requirements that considered both storm erosion and overwash, engineering assessments to develop a sediment budget and define advanced fill requirements, fill volume calculations that account for settlement or consolidation and offshore losses necessary to properly design offshore borrow areas, project performance projection calculations to assess wetland value acreage within specific tidal elevation ranges, and probable construction cost and timeline estimates. Design recommendations were provided based on review and analytical comparison of morphological modeling results. Developed construction plans and specifications to prepare bid packages.

Dare County Beach Nourishment Program, North Carolina — As project engineer, completed various engineering and modeling tasks to help design and plan beach nourishment projects for the towns of Duck, Southern Shores, Kitty Hawk, and Kill Devil Hills. These four towns participated in a comprehensive beach nourishment project between May and October 2017 that included the dredging and placement of 3,927,000 cubic yards of sand to provide storm protection along 8.3 miles of Atlantic shoreline and restore 80 acres of beach. Used several models to support project design: 1) the Storm Induced Beach Change (SBEACH) model that simulates profile changes that result from varying storm waves and water levels to evaluate cross-shore performance, 2) the Generalized Model for Simulating Shoreline Change (GENESIS) model that simulates shoreline changes that result from variations in the wave driven longshore transport to evaluate longshore performance, 3) the Simulating Waves Nearshore (SWAN) model that simulates wave propagation while accounting for the shoaling, refraction, diffraction, wind growth, whitecapping, and bottom damping of spectral waves, and 4) various run-up models used to evaluate the extent of wave inundation. To support project design and modeling, reviewed available wave, water level, and wind data and completed extreme analyses to define return period events and design conditions; analyzed water level data to develop relative sea level rise projections; analyzed historical shorelines and calculated shoreline change; analyzed profile data to define the active profile height; calculated volume changes using surface, profile, and shoreline based methods; and developed a sediment budget. The SWAN, GENESIS, and SBEACH models were then calibrated using data collected at the U.S. Army Corps of Engineers (USACE) Field Research Facility, while the run-up model was selected by comparing various analytical models with measurements collected along the Town of Kitty Hawk. Advanced fill requirements defined using the sediment budget, combined with design cross-sections developed using the SBEACH model and taper designs developed using the GENESIS model, were used to define design alternatives that offered various levels of protection.

Statewide Small-Scale Beach Restoration Program, Hawaii — As Project manager, developed the statewide small-scale beach restoration (SSBR) program in collaboration with the State of Hawaii Department of Land and Natural Resources Office of Conservation and Coastal Lands and the USACE Honolulu District. Worked with team members to prepare a comprehensive Programmatic Environmental Assessment to support program development and pursuit of a Regional General Permit, Conservation District Use Permit, and a Programmatic Agreement. Evaluated and defined program purpose and need, identified and detailed the proposed action and alternatives, defined best management practices to avoid or minimize environmental

impacts, and outlined required environmental regulations and permits. The purpose of the SSBR program is to provide a streamlined permitting approach that allows for the implementation of coastal erosion control projects that result in ecosystem restoration. Actions included within the program were designed to manage erosion threats to shoreline property and infrastructure, reduce impacts associated with climate change and sea level rise, and increase overall coastal resilience. Other benefits include ensuring the continued provision of habitat for various threatened and endangered species, protecting cultural sites and burials in the backshore, and improving water quality by providing a natural buffer between waves and exposed soil deposits, and onsite sewage disposal systems along eroded shorelines.

Repair of Metals Landfill Stone Revetment, Adak, Alaska — As engineer of record, helped develop a construction work plan for Naval Facilities Engineering Command Northwest for the repair of a damaged rubble-mound revetment to protect the metals landfill (SWMU 13) at the former naval air facility on Adak Island, Alaska. Design wave conditions, used to appropriately size armor stone, were evaluated using the numerical wave transformation model SWAN; this wave model study was a critical design tool as it showed that large Bering Sea waves were able to propagate across Sitkin Sound and enter Kuluk Bay. Construction plans and specifications that considered remote location limitations, were developed to support the work plan. Immediately prior to construction, a small unmanned aircraft system (UAS) was used to map the project site and update the construction plans accordingly. Drone imagery and resultant point cloud data were used to map structure elevations, side slopes, stone sizes, and relative stability. Relative stability was then used to rank repair areas in terms of damage susceptibility to best use available funds. Following construction, a small UAS was used to collect data needed to create as-built drawings and confirm placement quantities and improved structural stability. Drone imagery and resultant point cloud data were used to map postconstruction elevations, side slopes, stone sizes, and relative stability and graphically show or calculate elevation changes, slope changes, quantity and size of stones placed, changes in the stone size distribution, and the extent of stability improvements. The project completion report was approved by the Alaska Department of Environmental Conservation without comment.

Martin County Boat Ramp Improvements, Martin County, Florida —Provided professional engineering services necessary to completely replace and improve the sustainability and adaptability of the boat ramps, waterfront structures, and associated access at Sandsprit Park and Stuart Causeway. Both projects included the development of an adaptation management plan that considered sea level rise and storm forces and their effects on boat ramp and waterfront structure use and sustainability. Provided recommendations for adapting the boat ramps and waterfront structures to sea level rise and increased community use. As project manager, planned and coordinated engineering site investigations and assessments, geotechnical explorations and studies, topobathymetric and biological surveys, and environmental compliance sampling and analysis. As project engineer, developed demolition and conceptual design plans, completed feasibility study, prepared adaptation management plan, completed technical studies and analyzed design forces (soil, wind, wave, berthing), used value engineering to finalize design, coordinated NEPA documentation to obtain state and federal permits, prepared construction cost estimate and schedule, compiled specifications from various technical resources and codes, and prepared construction plans according to internal CAD policies and procedures.

Education & Credentials

M.S., Natural Resources and Environmental Management, University of Hawai'i at Manoa, Honolulu, Hawai'i, 2008

M.A., Philosophy of Science, Università degli Studi di Milano, Milano, Italy, 2000

Certified Lead-Based Paint Activities Risk Assessor: Hawai'i (Certification No. PB-0957)

Continuing Education

Olympus Vanta Handheld XRF Safety Training (2021)

Hazardous Waste Operations and Emergency Response 8-Hour Supervisor Training Certification (2017)

Lead Risk Assessor Initial Course (2017)

Lead Inspector Initial Course (2017)

Hazardous Waste Operations and Emergency Response 40-Hour Certification (2009, followed by yearly refreshers)

Current Red Cross First Aid, CPR, and AED Certified

Certificate in Marketing & European Public Relations, Ateneo Impresa, Rome, Italy (2001)

Silvia Gianetti Barber

Senior Consultant

(808) 374-4435

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Ms. Silvia Barber is a scientist and experienced project manager with more than 15 years of environmental consulting experience, specializing in site investigation, remediation, and litigation support. She excels in managing complex projects and executing large field efforts with an interdisciplinary approach and has a deep understanding of designing and implementing incremental sampling methodology. Ms. Barber has successfully integrated handheld x-ray fluorescence (XRF) analyzers with other analytical methods in the design of several large sampling programs. Her extensive experience includes investigating sites contaminated with lead, arsenic, and organochlorine pesticides, as well as supporting environmental due diligence for large portfolios of properties. She has also successfully supported litigation efforts, reconstructing evidence related to historical facilities and their chemical use. With an academic background in environmental science, agriculture, and natural resource economics, Ms. Barber provides a unique perspective in addressing environmental issues related to agriculture.

Relevant Experience

LITIGATION SUPPORT

Human Health Exposure Assessment, Confidential Location — Project manager leading a team of experts to review scientific and legal documents regarding potential human exposure from contaminants in a potable water system. Supporting the development of expert opinions in a defense against class action certification. Functioned as primary contact with law firm, providing project management, research coordination, and financial control.

Cleanup Liability and Divisibility Analysis, California — Project manager leading a team to review historical documents covering nearly a century of operation at a secondary lead smelter. Supported development of expert and rebuttal reports for a group of potentially responsible parties in litigation framework. Analyzed historical releases to support development of divisibility arguments. Functioned as primary contact with supervising law firm providing project management, financial control, and technical support.

Quantification of Remedial Cost Allocation, Alaska — Provided expert services to an oil company for litigation involving groundwater contamination. Conducted GIS analyses and reviewed scientific evidence to support the allocation of remedial costs among the parties involved.

Evaluation and Quantification of Settlement Scenarios, Honolulu, Hawai'i — Provided expert services on a high-profile EPA litigation matter involving illegal storage and disposal of hazardous

Professional Affiliations

Member of Hawai'i Association of Environmental Professionals (2009 to present)

waste. Conducted forensic analysis of EPA removal actions and costs in support of the sentencing process.

PCB Sources, New Jersey — Provided expert services to a chemical company for litigation involving sediment contamination at a Superfund site. Reviewed historical documentation to identify possible sources of PCBs at an industrial facility.

Assessment of Herbicide Drift Claim, Hawai'i — Provided pre-trial expert services on a case involving alleged herbicide drift. Reviewed scientific evidence and laboratory reports to assess the validity of the damage claims.

ENVIRONMENTAL ECONOMICS

Avocado Industry Analysis, Hawai'i — Coordinated a project funded by a USDA Extension Service special grant to investigate the use of locally grown avocados instead of imported avocados. Identified avocado cultivars with the highest potential for grafting and propagation.

REMEDIAL DESIGN

Remedy Selection and Engineering Design, Select Public Schools, Hawai'i — As project manager, responsible for the selection of remedies to address soil contamination at schools in the Hawai'i District. Managing the production of engineering design documents for the selected remedies, consisting of soil excavation and cap-in-place remedies. Providing environmental and regulatory oversight of remedy implementation, including pre-, during, and post-construction.

Sediment and Upland Source Tracing and Control at Electric Power Generating Station, Hawai'i —Project manager for a range of projects conducted for an electrical utility in association with the U.S. Navy's planned Superfund cleanup of PCB-impacted sediments in Pearl Harbor. Activities included a PCB source tracing and control project at the power plant to identify continuing upland sources of PCBs and ensure that those sources are mitigated; engineering design plans, drawings, and specifications development for various remedial areas with historical PCB contamination in accumulated sediment in water bodies, pipes, and tunnels; permitting support to obtain federal, state, and local approvals for the remedial actions; and support to the facility with TSCA requirements regarding PCBs.

SITE INVESTIGATION

Assessments of Hazardous Materials in Soil, Various Public Schools Statewide, Hawai'i — Project manager of two large investigation projects for the State of Hawai'i Department of Education, Facilities Division. The projects consist of building-exterior soil studies at more than 150 school campuses in Hawai'i, including development of sampling strategies, field implementation, and determining mitigation actions. Field activities include use of both XRF and incremental soil sampling. Developed recommendations and soil management plans for soil containing metals (primarily arsenic and lead) or organochlorine termiticide compounds at concentrations above regulatory action levels.

Site Investigation, Remedy Design, Remedy Implementation Oversight, and Site Closure at a Lead-Impacted Site, Kona, Hawai'i — Project manager for the oversight of an investigation and remediation project at a former scrap metal recycling facility with lead-contaminated soil and debris. Conducted multiple site investigations to evaluate removal action alternatives. Quantified

lead concentration in more than 100 discrete soil samples via innovative use of XRF technology. Performed air sampling to assess exposure of onsite workers. Prepared an environmental assessment for the site remediation considering ongoing and future uses of the property by the county. Helped with engineering design for the selected remedy. Provided oversight of the implementation of the remedial action, which consisted of soil and debris excavation and removal. Assisted the client in gaining regulator's approval of a proposed remedy modification based on site constraints.

Dust Monitoring Study, Hawai'i — Designed and coordinated sampling activities to assess airborne fugitive dust concentrations at various farms across the State of Hawai'i. Used air sampling pumps and portable TSI Dust Trak™ units to generate real-time, continuous dust concentration readings for various particle sizes. The study documented correlations of dust with human activities and with meteorological conditions.

Background Metal Study, Hawaiian Islands — Conducted a study for the Hawai'i Department of Health to identify background concentrations of metals in Hawaiian soils; findings were intended for use in setting action levels. Reviewed and statistically analyzed published data to establish upper thresholds in metal concentrations. Designed and implemented a soil sampling plan and collected soil samples across the Hawaiian Islands.

SITE ASSESSMENT

Phase I and II Environmental Site Assessments, Hawai'i, Continental U.S., Canada, and Europe — Coordinated Phase I and II environmental site assessments in support of real estate transactions involving commercial and industrial properties, and portfolios of commercial properties for the car rental industry. Phase II site assessments involved soil, groundwater, and air testing.

Phase I and II Environmental Site Assessment of Former Honouliuli Internment Camp, Hawai'i — Conducted a Phase I environmental site assessment of a former World War II internment camp on the island of Oahu. Now the Honouliuli National Monument, the site was acquired from a private landowner. The due diligence process included review of archaeological reports and other historical documents.

Phase I and II Environmental Site Assessments of Agricultural Lands, Hawai'i — Conducted site assessments of former pineapple and sugarcane fields acquired by agricultural businesses for growing seed crops. Conducted site assessment of properties used for seed crop production. Main contaminants were residual pesticides (arsenic, dioxins, organochlorine and organophosphate pesticides, and total petroleum hydrocarbons). Analyzed arsenic concentrations using XRF.

Erin Petrosian

Consultant

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Ms. Erin Petrosian specializes in environmental permitting and planning for developments during project design, construction, startup, and operations. She has consulted in this capacity on behalf of a wide variety of clients, including private power, alternative energy, research and development, manufacturing, industrial production, and residential development. Key products delivered by Ms. Petrosian include permit applicability studies, permitting schedules, permit applications, technical mitigation, testing and operating plans, permit compliance registers, and permit inventories.

Education & Credentials

B.A., Marine Chemistry, University of San Diego, San Diego, California, 2005

Continuing Education

Supervisory Training, Hawai'i Employers Council, 24-Hour (2023)

Women's Leadership Training, Dale Carnegie, 40-Hour (2022)

OSHA 10-Hour (2019) and OSHA 30-Hour (2010)

NPDES, UIC and Wastewater Operator Training (2017)

U.S. Department of Transportation Hazardous Materials (2010, 2016, 2018, 2021)

Hazardous Waste Operations and Emergency Response, 40-Hour (2015, 2017)

National Fire Protections Association 70E, Lockout/Tagout, Electrical Safety (2017, 2019, 2021)

Laser Safety Officer (2019, 2021)

Rope Access/Rescue (2019, 2021)

Fall Protection Competent (2017, 2019, 2021)

Relevant Experience

COASTAL RESILIENCE

Half Moon Bay Climate Adaptation Plan, San Mateo County, California — Prepared technical content for the City of Half Moon Bay's climate adaptation plan, which establishes strategies the city may adopt to prepare for and adapt to the effects of climate change. Summarized methodology and results of the vulnerability analysis to identify specific populations and assets subject to greater levels of risk from climate-related hazards. Developed measurable strategies to adapt and increase resilience to climate hazards and identified meaningful partnerships and financing opportunities to assist in implementing the plan.

RENEWABLE ENERGY

Biomass Fired Power Plant, Pepeekeo, Hawai'i — Responsible for environmental project management during construction of a 21.5 MW biomass-fired power plant. Worked as part of a team of contractors to convert a historical coal-fired power plant into a biomass burning facility. Oversaw all environmental permit applications to support construction. Obtained stormwater management permits and fulfilled all associated engineering, construction, sampling, and reporting requirements. Served as project lead for the refurbishment of three large production wells, three large underground injection control (UIC) wastewater wells for disposal of once-through cooling water, and hydrogeological modeling to support approval of UIC wastewater well installation. Updated zoning and state land use designations from agricultural to industrial to ensure conforming land use. Coordinated public notice and public hearing requirements to support changes to land use designations. Characterized and properly disposed of, or managed onsite, all hazardous materials and waste, including petroleum-contaminated soil, lead-based paint, asbestos, PCBs, mercury, and miscellaneous industrial products. Served as project lead and liaison with State Historic Preservation Department for archeological surveying and inventorying. Implemented and maintained compliance with the Special Management Area permit.

Continuing Education (con't.)

Environmental Regulations, Reporting and Recordkeeping, 40-Hour (2006)

Public Relations Training (2006)

Hazardous Waste Training (2006, 2010)

First Aid, CPR, AED, Wilderness First Aid (2011, 2017, 2021, 2023)

Professional Affiliations

Chamber of Commerce, Hawai'i Island

American Society of Safety Professionals

American Planning Association

HEALTH AND SAFETY

Environmental, Health, and Safety Risk Framework, Hawai'i — Developed and implemented an organization-wide environmental, health, and safety (EHS) management system for the W.M. Keck Observatory, located at the summit of Maunakea. The EHS management system was developed according to standard risk assessment and control strategies and established objective criteria for how to mitigate hazards at the facility. The framework included a risk assessment matrix and established appropriate response and resourcing expectations for high, medium, and low risks. Implementation included the socialization of new values and principles through engagement with internal stakeholders, both in leadership and at the staff level. Implementation of the EHS risk framework systematized EHS processes into day-to-day business activities and tangibly improved the EHS culture within the organization.

Environmental, Health, and Safety Audit, Hawai'i — Served as project manager for a third-party audit at the W.M. Keck Observatory, for both the headquarters facility in Kamuela, Hawai'i, and the summit facility at the summit of Maunakea. Oversaw a comprehensive audit to document areas of noncompliance with EHS rules and regulations within the organization. Prioritized, budgeted, and secured appropriate funding and labor to coordinate response actions for 150 findings, including engineering, design, and installation activities for infrastructure modifications; updates related to programmatic and procedural deficiencies; revisions to equipment maintenance and inspection schedules; and updates for recordkeeping and administrative processes.

SITE INVESTIGATION AND SOIL REMEDIATION

Lead Soil Removal, Umauma Bridge, Hawai'i — Oversaw and monitored lead-based paint and lead soil disturbance activities to protect workers' health and the environment during refurbishment and reconstruction of the Umauma Bridge in North Hilo. Responsible for ensuring workers followed protective procedures to reduce exposure and minimize lead dust generation during construction. Performed personnel air monitoring to quantify exposure to construction workers during dust generating activities, including sanding, grinding, needle gun removal, welding, and excavation. Performed soil testing on material excavated during construction of bridge footings, scrap metal, and other lead-coated waste material. Characterized more than 2,208 cubic yards of lead-contaminated soil as hazardous or nonhazardous waste and oversaw the proper packaging, transport, and disposal of lead waste according to federal, state, and local regulation.

REGULATORY COMPLIANCE

Environmental Compliance Plan, Concrete Coring Company, Hawai'i — Developed the environmental compliance plan for a concrete coring company, and integrated procedures and requirements within the overall EHS program for the facility. Conducted an inventory of all industrial activities and operations performed by the company on the island of Oahu. Performed a comprehensive applicability study to identify relevant environmental regulations, summarized compliance justification and requirements for each applicable regulation, identified minimum qualification and training requirements for personnel and subcontractors, and provided a list of records that should be retained to substantiate compliance with applicable regulations at a federal, state, and local level.

Environmental Program Oversight, Bellows Air Force Station (BAFS), Waimanalo, Hawai'i — Provided environmental consulting services to the environmental point of contact at BAFS. Prepared the site-specific hazardous waste management plan and solid waste management plan. Conducted a facilitywide air emissions inventory and permit applicability study. Conducted annual UIC testing and monitoring and documented results in report format for submission to the Hawai'i Department of Health.

HYDROLOGIC MODELING

Environmental Assessment of Process Seawater Discharge, Kailua-Kona, Hawai'i — Served as project manager for the environmental assessment of process water effluent used for the propagation of microalgae. Participated in conducting water quality analysis and monitoring, hydrogeological modeling, and conceptual site modeling to support compliance with water quality criteria for Class AA waters and obtain permit approval for the installation and operation of a UIC well for disposal of industrial wastewater.

Taylor Makana Caster, E.I.T.

Project Engineer

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Mr. Taylor Caster is a seasoned civil and coastal engineer with a proven track record of 8 years in the field of marine construction and coastal projects. With experience focused in dredging and dredged material management, harbor and marina facility enhancements, and waterfront construction, he is well-equipped to handle complex assignments in these areas. In addition to his specialization in larger-scale projects, Mr. Caster also brings valuable experience in residential civil projects, including grading, stormwater management, and individual wastewater systems. This breadth of expertise allows him to effectively navigate various project scales and complexities. Having extensively worked in the state of Hawai'i, Mr. Caster possesses an in-depth understanding of the federal, state, and county permitting requirements specific to this region. Moreover, he has developed a strong technical skill set in hydrographic surveying; GPS system setup, configuration, and management; topographic surveying; and data processing and management.

Education & Credentials

B.S., Civil and Environmental Engineering, University of Hawai'i at Manoa, Honolulu, Hawai'i, 2014

Engineer in Training (Environmental), Hawai'i, 2021

Part-107 Unmanned Aircraft Systems (Drone) Remote Pilot Certified, 2021

Certified Erosion and Sediment Control Plan Coordinator, 2024

Continuing Education

First Aid, CPR/AED, Lifeguard, Oxygen, Blood-borne Pathogens Certified (2023)

Professional Affiliations

American Shore and Beach Preservation Association

Relevant Experience

COASTAL ENGINEERING

Hawai'i Kai Marina and Entrance Channel Maintenance Dredging, Honolulu, Hawai'i — Served as project engineer leading project management, estimating, and reporting efforts for the contractor's dredging efforts, as well as conducting hydrographic progress surveys. Also worked with the engineer of record providing professional engineering services primarily including hydrographic surveying, dredge plan design, and environmental compliance and management of three upland dredged material placement sites within the marina. Additional services included conducting soil and sediment investigations, assisting with marine benthic surveys, designing beach nourishment, supporting construction management, and managing overall environmental compliance related to erosion and sediment control.

Portlock Beach, Beneficial Reuse of Dredged Material and Beach Nourishment, Honolulu, Hawai'i — Provided engineering support for the development and execution of a dredging project within the entrance channel to the Hawai'i Kai Marina on Oahu, Hawai'i. The project involved restoring navigable depths within the entrance channel and beneficially reusing the dredged sediment as a source for beach nourishment at the adjacent Portlock Beach. Provided engineering support for geological site investigations, topographic and hydrographic surveys, engineering design, state and federal permitting, environmental compliance, and construction management aspects of the project.

Evaluation of Nature-Based Shoreline Stabilization in Saipan Lagoon, Northern Mariana Islands — Provided engineering support for the development of nature-based approaches to shoreline

stabilization within Saipan Lagoon, located off the west coast of Saipan in the Northern Mariana Islands. This engineering support included participating in design team meetings, engaging with stakeholders, assisting with the development of conceptual design alternatives and a project master plan, organizing site investigation data and creating reference maps, and identifying and mapping civil infrastructure within the project area. Also developed a sediment investigation dive plan for identifying sources of beach quality sand in several areas offshore of Saipan Lagoon.

Kikiaola Small Boat Harbor Dredging, Kikiaola, Kauai, Hawai'i — This project involved dredging sediment from the Kikiaola Small Boat Harbor and transferring it to a nearby upland disposal site. Served as the sole project engineer for this project, preparing the project bid estimate and bid submittals, as well as all pre- and postconstruction submittals required throughout the project. Navigated complex submittal requirements, delivering construction plans, schedules, environmental compliance plans, and health and safety plans, among others. Performed numerous hydrographic progress surveys throughout the project, consistently completing these surveys within a single day including round-trip travel from Honolulu. Also processed and presented the survey data in progress reports.

Black Pot Beach Dredging and Flood Damage Mitigation, Hanalei, Kauai, Hawai'i — For a project involving emergency repairs to Black Pot Beach on the island of Kauai following catastrophic flooding, served as the project engineer preparing the project bid estimate and bid submittals, as well as all pre- and postconstruction submittals required throughout the project. Performed multiple topographic surveys in a challenging "disaster"-type environment, and worked closely with county officials to expedite the project to the extent possible. Project objectives were refined and changed as the project progressed based on available resources, changing site conditions, and community input.

Improvements to the Marine Corps Base Hawai'i Marina, Kaneohe, Oahu, Hawai'i — Served as the sole project engineer a project involving the installation of a precast concrete wave attenuator and floating docks, their support piles, and two boat ramps in Kaneohe Bay, Oahu, Hawai'i. Prepared all pre- and postconstruction submittals required throughout the project. Provided onsite construction support using a total station to stake-out pile, dock, and boat ramp installation locations, and directly assisted with pile-driving operations to achieve specified elevations within tolerance. Also coordinated with plumbing, electrical, and specialty subcontractors and suppliers for utility connections and dock accessories.

CLIMATE IMPACT ASSESSMENT

Congressional Report on Coastal Shoreline Erosion, American Samoa, Guam, Hawai'i, Northern Mariana Islands, Puerto Rico, and U.S. Virgin Islands — Worked alongside a team of national experts to evaluate hazards associated with sea level rise and coastal erosion to road infrastructure located within U.S. Island jurisdictions.

Evaluating the Impacts of Climate Change on Human Health and Medical Infrastructure, Ocracoke Island, North Carolina — Provided engineering support to evaluate the impacts of coastal hazard to public health and medical infrastructure on the barrier island community of Ocracoke, North Carolina. Collected extensive information about existing climate risks, critical infrastructure, and medical resources, and assisted with historical research and community outreach. Coauthored the final report, which included detailed analyses of existing climate and health risks, as well as mitigation strategies and funding opportunities for their implementation.

Assessment of Health Vulnerability to Climate Change in the Florida Keys, Florida — Assisted in the

collection of extensive information about existing climate risks, infrastructure, and medical resources throughout the Keys in support of this project investigating the impacts of climate change to public health across the Florida Keys. Coauthored the final report, which provided a detailed analysis of existing climate and health risks.

Climate Change Tool for Island Communities, Nationwide — Supported the development of a new web-based tool to assess the level of preparedness and vulnerability to climate change for island communities at the healthcare facility level. Users of the tool are presented with questions that relate to climate change hazards, social vulnerability, health vulnerability and preparedness, and facility or community vulnerability and preparedness. These inputs are then used to estimate the climate change hazard risk based on an equation that incorporates hazard probability, severity, vulnerability level, and preparedness level. Results are presented in summary graphs that plot the overall climate hazard risk as well as the individual components of vulnerability and preparedness. A second output page provides resilience strategies that are tailored to the site-specific information gathered by the tool.

SITE REMEDIATION

Pearl Harbor Sediment Remediation, Pearl Harbor, Oahu, Hawai'i — Briefly served as a project engineer on this project, involving various sediment remediation activities within Pearl Harbor. Led a project development team that developed novel techniques to apply a granular activated-carbon material under piers using a pneumatic aggregate conveyor. Also led the bid estimate, which included these novel remediation activities as well as dredging, sand placement, and dredged material disposal. Provided GPS and dredge tracking system design and installation on multiple barges and vessels for the project.

STORMWATER MANAGEMENT

Residential Grading and Stormwater Control Projects, Oahu, Hawai'i — Provided civil engineering services for several residential grading and stormwater control projects on the island of Oahu. Services included preparing grading and stormwater design, developing erosion and sediment control plans, and collecting topographic data by both conventional survey methods and by utilizing unmanned aerial vehicle surveys with photogrammetry data processing.

PLANNING AND PERMITTING

Residential Individual Wastewater System Projects, Oahu, Hawai'i — Provided civil engineering services for several residential individual wastewater system projects on the island of Oahu. Services included conducting historical research of existing systems, inspecting existing systems, performing soil infiltration testing, and assisting with design and permitting.

Presentations / Posters

Caster, T. 2022. Lions Park Living Shoreline, Tutuila, American Samoa. Presentation. American Shore & Beach Preservation Association (ASBPA) 2022 National Coastal Conference, Long Beach, CA. September 13–16.

Zoe Curley

Scientist

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Ms. Zoe Curley is a scientist with 5 years of experience in site investigation, remediation, and litigation support for a range of sites regulated under federal and state programs. Ms. Curley specializes in planning and executing incremental sampling methodology (ISM) investigations and using handheld x-ray fluorescence (XRF) instrumentation for metals analysis in soil. Her responsibilities include field planning and sampling (soil, sediment, and surface water), technical report writing, contractor oversight, and geospatial data product development. In addition, Ms. Curley excels in synthesizing historical documents and analytical data in support of litigation efforts.

Education & Credentials

B.S., Global Environmental Science, University of Hawai'i at Manoa, Honolulu, Hawai'i, 2020

Continuing Education

Hazardous Waste Operations and Emergency Response 40-Hour Certification (current)

Hazardous Waste Operations and Emergency Response 8-Hour Supervisor (2023)

DOT Hazmat Function Specific Training for Shipping Papers (2024)

First Aid, AED, and CPR Certified (current)

Olympus Vanta Handheld XRF Safety Training (current)

Professional Affiliations

Member of Hawai'i Association of Environmental Professionals (2022 to present)

Relevant Experience

SITE INVESTIGATION

Removal Action Sampling, Former Fertilizer Manufacturing Facility, Guánica, Puerto Rico — Supported the direct-push drilling sampling effort to collect and process more than 140 soil cores over the course of multiple field mobilizations across various offsite properties. Provided GIS support to develop figures and work plan elements.

Remedial Investigation, Confidential Location — Supported a large-scale field effort regarding a natural resource damage matter that included alleged injury to potential ecological and recreational uses. Assisted field lead in mobilization effort and sample tracking, processing, and quality assurance for more than 6,000 individual samples.

Former Pesticide Manufacturing Facility, Jacksonville, Florida — Responsible for planning an ISM investigation for wetland sediment. Led the collection and preparation of wetland sediment field data and developed detailed field documentation. Produced maps with proposed increment locations using ArcGIS.

Former Wood Treating CERCLA Facility, Columbus, Mississippi — Assisted with the development of technical memoranda, compliance monitoring reports, and figures for a former wood treatment and storage facility in Columbus, Mississippi.

High-Resolution, Optically Based, Chemical Contaminant Monitoring System for Remedy Performance Evaluation at DOD Contaminated Sediment Sites, Various Locations, U.S. — Participated in surface water sampling and deployment of multiple optically based sensors along with ancillary water quality sensors. Responsibilities included sensor maintenance, sample collection, handling, and shipping.

Remediation Investigation at Former Chemical Manufacturing Facility, Portland, Oregon — Assisted with sediment sample processing and quality assurance of chain-of-custody documentation for several hundred samples.

Assessment of Hazardous Materials in Soil, Various Public Schools Statewide, Hawai'i — Participates in multiple large soil investigations for the State of Hawai'i Department of Education Facilities Division. The projects consist of building-exterior soil studies at more than 150 school campuses in Hawai'i with field activities including both XRF and incremental soil sampling along exterior building perimeters and open areas at school campuses. Assists project manager in developing recommendations and authors soil management plans for soil containing metals (primarily arsenic and lead) or organochlorine termiticide compounds at concentrations above regulatory action levels. Provides support in generating hundreds of figures across multiple client deliverables.

Lead Removal Action Waste Characterization and Removal Action Determination Sampling, Kapolei, Hawai'i — Assisted in subsurface multi-increment sampling to identify lead-impacted soils along paved and exposed exterior building perimeters. Responsibilities included sample collection, handling, and processing. Produced a technical report of findings with recommended actions and disposal determinations for soils within the project site.

Site Assessment of Former Industrial Facility, Maui, Hawai'i — Conducted extensive historical records review to determine locations of interest for further investigation in support of property acquisition. Assisted in subsurface soil sampling using direct-push coring methods. Produced a report of findings and assisted in providing regulatory considerations and recommendations.

SITE REMEDIATION

Residential Yards Time-Critical Removal Action, Former Fertilizer Manufacturing Facility, Guánica, Puerto Rico — Served as a member of the construction quality assurance field team for a removal action addressing PCB-impacted soil at offsite properties. Assisted in the successful implementation of a community dust monitoring program; manifesting of hazardous and nonhazardous waste for offsite disposal; collection of soil grab samples; and oversight of soil excavation, backfilling, and stockpiling activities.

Soil Removal Actions, Various Public Schools Statewide, Hawai'i — Responsible for authoring and managing the production of regulatory documents for selected removal remedies at various school campuses in Hawai'i consisting of soil excavation and cap-in-place remedies. Serves as lead on historical preservation regulatory matters and provides environmental oversight of remedy implementation.

SUPERFUND ALLOCATION SUPPORT

Portland Harbor Superfund Site Allocation, Portland, Oregon — Supported cost allocation efforts for the Portland Harbor Superfund site. Conducted historical research and assisted in the preparation of attorney-directed expert reports focused on relevant properties located within the Superfund site.

LITIGATION SUPPORT

PFAS Litigation Support, Confidential Location — Provided litigation support regarding presence of per-and polyfluoroalkyl substances (PFAS) in municipal water suppliers. Reviewed publicly available and counsel-provided materials in support of the evaluation of related chemistry data, chemical transport, and source identification.

Cleanup Liability and Divisibility Analysis, California — Conducted historical document review covering nearly a century of operation at a secondary lead smelter. Analyzed and synthesized historical environmental data to support the development of divisibility analyses.

Avram Frankel, P.E.

Chief Operating Officer

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Mr. Avram Frankel is a professional engineer, technical expert, and program manager with more than 30 years of experience on a wide range of commercial/industrial, municipal, state, and federal projects regulated under numerous state and federal programs. A civil and environmental engineer licensed in California, Oregon, Washington, Colorado, Georgia, and Hawaii, Mr. Frankel provides his clients with strategic risk management and technical analysis in support of due diligence, redevelopment, technology evaluation, site investigation, water treatment, remediation, and legal/litigation matters. With a focus on enhancing health and safety, restoration of drinking water aquifers, and delivery of drinking water, he has overseen the design, costing, installation, and optimization of groundwater remediation and water treatment systems across the U.S. over a wide range of site scales, geologies, and technical complexities. As a program manager and technical strategist, Mr. Frankel's experience on large, complex, and performance-based projects is extensive, including the successful remediation of plumes measured in miles in challenging stakeholder environments and under litigation or settlement conditions. He has also served as a consulting and testifying expert on numerous litigation matters, including pre-trial and trial testimony.

Over his career, Mr. Frankel has addressed emerging contaminants of the past and present, including hexavalent chromium, perchlorate, per- and polyfluoroalkyl substances (PFAS), and 1,2,3-trichloropropane (1,2,3-TCP). A seasoned practitioner, he has considerable expertise in the preparation of high-stakes deliverables, incentive-based contract documents, expert technical reports, cost evaluations, and risk-reducing strategies to achieve environmental goals for an appropriate lifecycle cost.

Education & Credentials

M.S., Environmental Engineering, Northwestern University, Evanston, Illinois, 1995

B.A., History, with Honors, Johns Hopkins University, Baltimore, Maryland, 1989

Licensed Civil Engineer, California (License No. C59980)

Licensed Civil Engineer, Oregon (License No. 89636PE)

Licensed Civil Engineer, Washington (License No. 54003)

Licensed Professional Engineer, Georgia (License No. PE41986)

Licensed Professional Engineer, Colorado (License No. PE.0057535)

Licensed Professional Engineer, Hawaii (License No. 19758-C)

Professional Affiliations

Member of National Ground Water Association

Member of American Water Works Association

Member of Groundwater Resources Association of California

Relevant Experience

SITE REMEDIATION

Chlorinated Solvent Remediation, Multiple Sites, Northern California — Directing the evaluation and remediation of multiple chlorinated solvent sites in Northern California under Regional Board and local voluntary cleanup oversight. Sites involve implementation of a variety of *ex situ* and *in situ* groundwater treatment technologies in drinking water aquifers including enhanced reductive dechlorination (ERD), zero-valent iron chemical reduction, colloidal activated carbon adsorption, and use of permeable reactive barriers.

Reese Center, Reese Air Force Base, Lubbock, Texas — Served as program director for implementation of $43.5 million drinking aquifer restoration RCRA project that achieved

regulatory closure under a performance-based contract. Remediation included 200-gpm directed groundwater recirculation system with granular activated carbon (GAC) treatment and *in situ* ERD to treat a 3-mile-long trichloroethylene (TCE) plume in the Ogallala aquifer resulting from industrial sewer releases. Within 6 years, the plume footprint was reduced by 90 percent. All compliance wells achieved maximum contaminant levels 8 years from installation of systems. Oversaw soil remediation activities. Negotiated multiple RCRA permit modifications. Robust groundwater fate and transport modeling supported all groundwater remediation and guided adaptive design and remedy optimization. This is one of the largest cleanups and closure of a TCE plume of thismagnitude to date in the U.S.

RCRA Corrective Action, Brunswick, Georgia — Served as principal-in-charge for the assessment and development of remedial alternatives to address volatile organic compounds (VOCs) at an active industrial site. Developed alternate integrated remedial approach to address offsite plume migration and meet RCRA regulatory goals while addressing third-party litigation. Led team that reinterpreted conceptual site model to support revised interim corrective action approach.

Soil and Groundwater Remediation at Former Pesticide Plant, Lathrop, California — Severed as senior advisor for development of an alternative aquifer restoration strategy to significantly enhance mass removal and close a longstanding liability. Alternative included aggressive excavation of source soil fumigant and sulfolane mass in soil and *in situ* delivery of oxygen to address shallow groundwater source zones. In addition, the program included a 300 gpm revised groundwater extraction, GAC/bioreactor treatment, and reinjection system that dramatically increased mass removal to reduce lifecycle costs. Negotiated complex waste discharge requirements permit revision to support system modifications, including innovative groundwater containment and background monitoring program for both the shallow and regional aquifers.

Soil and Groundwater Remediation at Former Ordnance Facility, Hollister, California — Served as project manager and lead engineer for a site impacted with hexavalent chromium, chlorinated solvents, and perchlorate. Implemented *in situ* anaerobic bioremediation in source areas, resulting in significant decreases in groundwater chemical concentrations, including achievement of perchlorate and hexavalent chromium soil and groundwater cleanup goals. Achieved first perchlorate cleanup in vadose soil using *in situ* biological reduction methods. Led design, procurement, construction oversight, commissioning, and operation of a 250-gpm groundwater containment system, including bioreactor and GAC to treat anions and chlorinated volatile organic compounds.

Former Pharmaceuticals Plant, Flint River, Albany, Georgia — Served as program director for $13 million guaranteed remediation of multiple groundwater plumes in a drinking water aquifer and more than 50 RCRA units to facilitate site demolition and redevelopment. Oversaw costing, design, and implementation of soil and groundwater remedial systems and negotiation of RCRA permit modifications. Systems included air sparging, soil vapor extraction, and *in situ* anaerobic oxidation to address multiple toluene and methylene chloride plumes.

Baylands Recovery Project, Menlo Park, California — Served as project manager and lead engineer for the completion of a remedial action plan and remedial design for a lead-impacted salt pond and upland area. Despite difficult regulatory, environmental, and technical implementability concerns given the soft site sediments, the remedial action plan and remedial

design were accepted by all stakeholders within the required project timeframe and resulted in regulatory closure.

Product Recovery and Groundwater Treatment, Port of Oakland, Oakland, California — Served as project manager and lead engineer for a diesel product recovery and GAC and groundwater treatment system associated with Vision 2000 port redevelopment. System design was completed quickly to meet the port's compliance, financial, and engineering requirements. Oversaw system design, construction, startup, and operation. Efforts resulted in rapid completion of construction in midst of port terminal expansion and regulatory closure.

PFAS INVESTIGATION AND REMEDIATION

Fire Training Area Assessment and Remediation, Denver County, Colorado — Principal in charge for the investigation and remediation of a fire training area with PFAS in soil and groundwater overlying a drinking water aquifer. Successfully advanced site into state voluntary cleanup program. Completed site investigations, preliminary remedial alternatives evaluation, pre-design studies, soil remedy design, and implementation of soil excavation and capping interim measures. Currently designing *in situ* colloidal activated carbon (CAC) interim remedial measure and overseeing development of comprehensive regional conceptual site model.

Paulsboro Well #7 Drinking Water Treatment, Paulsboro, New Jersey — Senior technical advisor for the design, construction, and commissioning of a 1,000-gpm PFAS drinking water GAC wellhead treatment system to deliver drinking water meeting stakeholder requirements to a small rural community. Involved the rapid completion of predesign studies, including bench-scale testing, to support settlement and lay the groundwork for a successful design—the first of its kind for perfluorononanoic acid removal. Supported stakeholder coordination during design and oversaw contractor procurement. The project is operational and meeting all regulatory, owner, and client requirements.

PFAS Groundwater Remediation and Reuse Integrated Remedy, New Jersey — Senior advisor for the design, permitting, and construction of a large groundwater extraction, PFAS treatment, and reinjection system to capture and treat groundwater coupled with injection and reuse to sustain drinking water supply.

CONSULTING AND TESTIFYING EXPERT

Litigation Support, Drinking Water Treatment Complaint, Summerville, Georgia — Testifying expert for the evaluation of claims regarding the occurrence and mitigation of PFAS in a surface drinking water supply (*Earl Parris, Jr. and City of Summerville v. 3M Company et al.*, Case No. 4:21-cv-00040-TWT, U.S. District Court, Northern District of Georgia, Rome Division). Deposition. Ongoing matter.

Litigation Support, Natural Resources Damage Complaint, Vermont — Testifying expert for the evaluation of claims regarding the occurrence and mitigation of PFAS in public drinking water supplies and private wells (*State of Vermont v. 3M Company et al.*, Docket No. 547-6-19 Cncv, Superior Court Chittenden Unit). Ongoing matter.

Education & Credentials

Ph.D., Mechanical and Environmental Engineering, University of California, Santa Barbara, California, 2000

M.S., Fluid Mechanics (minors: Ocean Engineering and Environmental Engineering) University of California, Santa Barbara, California, 1996

B.S., Coastal Engineering, Texas A&M University, Galveston, Texas, 1994

Professional Affiliations

American Society of Civil Engineers

Marine Technology Society

American Geophysical Union

American Shore and Beach Preservation Association

Achievements & Awards

United States Utility Patent No. 61/857,057 (provisional). A device and method for measuring wave motion.

Recipient of J.C. Stevens Award, recognizing excellence in a paper published by the American Society of Civil Engineers. The paper is in the field of hydraulics, including fluid mechanics and hydrology.

Craig A. Jones, Ph.D.

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Dr. Craig Jones serves as the managing principal for Integral's Marine, Coastal, Climate, and Technology Services. With more than two decades in the field, he specializes in engineering and scientific projects aimed at understanding challenges at offshore sites for both governmental bodies and private enterprises. His experience spans riverine, lacustrine, estuarine, and coastal processes, delving deep into hydrodynamics, wave dynamics, and sediment and contaminant transport. He is widely recognized for employing cutting-edge field measurements and modeling techniques to deeply understand aquatic systems. He plays an instrumental role in designing field operations and tools to gather information critical to client needs. Furthermore, Dr. Jones excels in assimilating this information into varying analytical frameworks, ranging from empirical to numerical models, ensuring that each project meets the highest quality standards while being efficiently managed. He has testified in federal court and in front of public utility commissions as an expert on environmental issues and regulatory concerns, including sediments and contaminants in support of allocation activities. Dr. Jones continues to work on preparation of materials for various environmental litigation cases in the United States.

Relevant Experience

OFFSHORE ENERGY

Environmental Baseline Surveys, Mexico — Serving as principal in charge of field studies in support of environmental site characterization and risk assessment for oil and gas leases in the deep and shallow waters of the Mexican Gulf of Mexico. The Mexican regulatory agencies require extensive environmental baseline surveys and risk assessments for the lease blocks that have been auctioned in recent years. Supporting the developers with field assessment through offshore sampling activities, which include sediment profile imagery collection and analysis. The work is being submitted to both industry and Mexican government agencies. Continually developing management procedures to assist with increasing the utility while reducing the costs of these activities for industry.

Platform Usumacinta Investigation, Gulf of Mexico, Mexico — Conducted a geophysical survey and a seafloor geotechnical sampling program to investigate shallow soil conditions near a mat-supported drilling rig and offshore platform that encountered a failure in 2007. This study presented the results of a field and laboratory program to investigate the geotechnical engineering properties of the site for a forensic evaluation of the failure. Overall operational conditions and pre-conditioning of the seafloor in the region coupled with a large storm event

contributed to the failure. The team made recommendations that could be used in future operations.

Improving the Efficiency and Effectiveness for Marine Hydrokinetic Permitting — Served as a technical lead for developing a toolkit and engagement for success package increasing regulators' understanding of marine energy projects, devices, and their potential environmental impacts while reducing permitting time and costs of marine energy projects. Developed an easily accessible online toolkit that integrates relevant regulatory, scientific, and spatial marine energy data. Working with a team of consultants, communications professionals, data analysts and others to conduct in-person meetings and webinars with relevant regulators from federal and state agencies to share and gather input on the toolkit and share experts' understanding of potential impacts and the state of known/unknown science for marine energy projects.

Marine Renewable Energy Support, Sandia National Laboratories — Serving as program manager for the development of tools and techniques to improve performance, lower costs, and accelerate the deployment of marine and hydrokinetic energy technologies. The project has evaluated all aspects of marine and hydrokinetic resource characterization and environmental evaluations, through applied research and developing tools and methods to improve device performance and minimize environmental disturbance. Of particular importance to this project is the development and application of software tools and guidance for the marine renewable energy industry.

SEDIMENT FATE AND TRANSPORT STUDIES

Matilija Dam Removal Ecosystem Restoration, Ventura, California — Served as the lead modeler and project manager for the dam removal project. Removal of the Matilija Dam has the potential to provide much-needed sediment to the Ventura River Lagoon and the coastal ocean, restoring critical habitat. To evaluate the influences of the restored sediment loading to the lagoon and nearshore habitats, a suite of sediment transport modeling tools is being employed to characterize both the initial sediment pulse released from dam removal and the subsequent restored river sediment loads. Used these modeling tools to evaluate changes in water quality and to evaluate shoreline and nearshore habitat evolution under the joint effects of the Ventura River watershed, wave and tidal ocean processes, and sea level rise. The dam removal project and associated modeling are part of a comprehensive long-term effort to support ecosystem restoration of the Ventura River watershed for multiple benefits.

Hamilton Wetland Restoration, San Pablo Bay, California — Served as project manager for the assessment of an open-water dredge material storage facility for beneficial reuse and restoration of Hamilton Wetlands in California. Evaluations were conducted for a temporary dredge material transfer facility in San Pablo Bay to support the restoration at the former Hamilton Army Airfield and surrounding land. The aquatic transfer facility (ATF) is designed to handle 24 million cubic yards of material over a 10- to 15-year operational life. Knowledge of the fate of the dredged material in and around the ATF, developed using SEDflume and modeling studies, was critical to the selection of an optimal location for the ATF, and for guiding the design and configuration so that impacts to the surrounding environment will be minimized.

Sediment Transport Investigation, Lower Passaic River, New Jersey — Led the development of a conceptual site model of sediment transport in the Passaic River. Historically, the Lower Passaic

River below the Dundee Dam has been contaminated with a range of contaminants of potential concern. Since the most significant transport pathway for these hydrophobic contaminants is by transport of the sediments to which they are sorbed, sediment transport is a key system-wide process to understand when evaluating environmental risk and any remedial selection. Led the preparation of documents detailing the sediment transport processes important to the site while providing technical review of sediment transport analyses being conducted by EPA.

Dredge Disposal, Santa Cruz, California — Co-managed the design and implementation of the third inner Santa Cruz Harbor dredge monitoring program. Before these dredge monitoring programs, it was considered too great a risk to release sediment containing more than 20 percent mud into the surf zone because it might have damaging effects on the coastal environment. The project demonstrated negligible sedimentary changes occurred on the beaches and in nearshore benthic habitats of the Santa Cruz Bight during the dredging period. A variety of data collection efforts were utilized to monitor the experimental dredging event, including local stream flow, wave, and current data collection; beach and offshore sediment sampling; pre- and post-dredging multi-beam surveys and benthic habitat mapping; and sediment transport modeling.

Contaminated Sediment Dredging, Ashtabula River, Ohio — An environmental dredging and disposal project was conducted by EPA to remove PCB-contaminated sediments from the Ashtabula River. Served as a technical lead in a program that was implemented to determine the nature and source of contaminated residuals during a typical dredging operation. Led efforts to monitor water quality and bathymetric variability during the Ashtabula River navigational and environmental dredging and disposal project. Conducted both fixed and mobile current and water quality measurements near the dredging operations. In addition, water quality moorings were deployed upstream and downstream of the project to measure background conditions at the project extents. Conducted analysis to determine the nature and source of residuals post-dredging.

Dredge Material Transport, Delong Mountain Terminal, Alaska — Managed a project evaluation of erosion of a dredged material mound near the Delong Mountain Terminal in northwest Alaska, which is subject to various storm events. The evaluation was based on the combined hydrodynamics of Environmental Fluid Dynamics Code and the sediment transport algorithms of SEDZLJ. To help evaluate the physical processes and possible impacts due to dredge material placement from the Delong Mountain Terminal Navigation Improvements Project, a numerical modeling analysis of dredge mound erosion and transport was conducted. The model assisted the U.S. Army Corps of Engineers in developing the optimal methods and locations for dredge material placement to minimize future erosion and subsequent channel infilling.

Mare Island Naval Shipyard Stability Analysis, Mare Island, California — Managed a project to better characterize the stability and potential for future exposure of munitions of environmental concern (MEC) and potential unexploded ordnance in the sediment offshore of Mare Island Naval Shipyard. Sediment cores were collected and analyzed to evaluate sedimentation and sediment stability through the radioisotope and SEDflume analysis. Based on the long-term morphological change of the mudflats, it is possible for MEC to be exposed but there is no probability of MEC mobilizing. The results were carried forward into an engineering feasibility study of shoreline restoration.

Select Publications

Barr, Z., J. Roberts, W. Peplinski, A. West, S. Kramer, and C. Jones. 2021. The permitting, licensing and environmental compliance process: Lessons and experiences within U.S. marine renewable energy. *Energies*, 14(16):5048.

Peplinski, W.J., J. Roberts, G. Klise, S. Kramer, Z. Barr, A. West, and C. Jones. 2021. Marine energy environmental permitting and compliance costs. *Energies*. 14(16):4719.

David L. Revell, Ph.D.

Principal, Coastal Climate Risk and Resilience

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Santa Cruz, CA

drevell@integral-corp.com

Dr. David Revell is a coastal geomorphologist with more than 25 years of experience studying marine, coastal, and estuarine processes, working to integrate science and management of coastal processes and climate change. He has served as a technical advisor and facilitator to multiple federal, state, and local jurisdictions related to ocean and coastal management especially at the intersection of how physical processes and human alterations affect hazards, habitats, and human use. He has been involved in a wide variety of contentious community stakeholder processes ranging from evaluating erosion hazard alternatives to climate change vulnerability impacts to lagoon and fisheries management, water quality, and marine spatial planning. Much of his work involves physical process research and spatial analysis to facilitate communication of science to inform decision-making. Dr. Revell currently advises multiple local jurisdictions and agencies on dune and sediment management, climate change, estuary processes, inlet management, and local coastal program updates.

Education & Credentials

Ph.D., Earth Sciences, University of California, Santa Cruz, 2007

M.S., Oceanography and Marine Resource Management, Oregon State University, Corvallis, Oregon, 2000

B.A., Geography, and B.A. Environmental Studies, University of California, Santa Barbara, California, 1998 and 1996

Continuing Education

Postdoctoral Research, Institute of Marine Sciences, University of California, Santa Barbara, April 2007–April 2008

Relevant Experience

COASTAL RESILIENCY

West Cliff Drive Adaptation and Management Plan, Santa Cruz, California — Developing a neighborhood scale/transportation corridor adaptation plan along iconic West Cliff Drive in Santa Cruz, balancing coastal erosion, transportation, recreation, and community visioning. Specific work tasks included hazard modeling, local coastal program policy development, and social vulnerability and economic and engineering analyses. A substantial public outreach included a technical advisory committee, focus groups, and other stakeholders to identify different community adaptation visions to be evaluated by all disciplines to identify the most effective adaptation pathways through time and to develop land use policies to integrate into local coastal and city planning documents. Led a diverse team of geologists, engineers, economists, ecologists, and transportation planners on the project.

Statewide Synthesis of Public Trust Sea Level Rise Reports, California — Reviewing and synthesizing all of the legislatively mandated AB 691 sea level rise reports for the California State Lands Commission. These reports were required from grantees of subtidal and intertidal public trust resources and included vulnerabilities, economic impacts, and potential adaptation strategies for a host of ports, harbors, and wharves in California. Each report was evaluated for completeness, common themes in vulnerabilities, adaptation approaches, and economic ramifications. A statewide synthesis report will be developed and submitted to the legislature

which will include making recommendations on future funding streams and legislative actions to guide future California public trust adaptation investments.

CLIMATE IMPACT ASSESSMENT

Vulnerability Assessment for Power Generating Stations, City of Oxnard, California — Served as an expert witness to conduct a vulnerability assessment for the energy and infrastructure facilities within the coastal zone in the City of Oxnard from current and future coastal hazards. The assessment employed a variety of modeling work completed as part of the Nature Conservancy's Coastal Resilience Ventura project. This assessment provides the City with information to review the California Energy Commission application for additional energy development at the Mandalay Generating Station. The vulnerability assessment also bolsters the City's understanding of the timing and failure of the Ormond Beach Generating Station as the City considers methods to remove aging energy infrastructure.

Natural Gas and Electricity Vulnerability Assessment for the San Diego Region, California — As part of the 4th California Climate Assessment, led the coastal hazard and sea level rise assessment for the SoCal Natural Gas and San Diego Gas and Electric Utility infrastructure. Work included evaluation of COSMOS 3.0 modeling, U.S. Department of Defense hazard modeling, and integration of all modeling initiatives into the vulnerability assessment by filling data gaps and interpreting the modeling results.

Poseidon Desalination Plant, Huntington Beach, California — Evaluated current and existing hazards to a proposed desalination plant in Huntington Beach, California. Projections to the proposed facility were evaluated as well as cumulative impacts to the surrounding community. Work included evaluating and interpreting existing modeling, reviewing engineering designs, permit conditions, mapping, and report writing. Future work will include agency consultation and meeting attendance.

Local Coastal Program Update with Sea Level Rise, City of Marina, California — With a teaming partner, updating the City of Marina Local Coastal Program (LCP) with funding from the California Coastal Commission. Work includes technical analysis, mapping, and completion of the Existing Conditions, Vulnerability, and Adaptation Plan report. Will lead stakeholder engagement on the vulnerabilities and potential adaptation strategies to the City Council, Planning Commission, and public outreach process.

Coastal Resiliency: Phases 1 and 2, Santa Barbara, California — With funding from the California Coastal Commission, the Coastal Commission, and the Ocean Protection Council, modeled projected coastal hazards exacerbated by sea level rise the Santa Barbara County coast at a scale suitable for planning purposes. Deliverables included projected future coastal hazards, which include a new integrated approach of stepping through time eroding the coast and flooding newly eroded areas through hydraulic connectivity. More information on results is available at Santa Barbara County Coastal Resilience through The Nature Conservancy.

San Lorenzo River Lagoon Management, Santa Cruz, California — In collaboration with the City of Santa Cruz, working to manage the San Lorenzo River lagoon and balance often competing priorities of flood reduction, endangered species, public safety, recreation, and water quality. Extensive agency engagement has permitted a variety of different approaches to the lagoon

mouth management including multiple innovative approaches to opening the lagoon mouth, while balancing often competing priorities. Work has included technical analysis, mapping, conceptual construction plans, onsite field observations, fieldwork, construction support, permitting, and report writing.

Goleta Slough Sea Level Rise Vulnerability and Adaptation Study and Ecosystem Management Plan Update, California — Managed an adaptation study to reevaluate the study area based on projected sea level rise as part of a plan to update the Goleta Slough Ecosystem Management Plan prepared by the Goleta Slough Management Committee and adopted by the City of Santa Barbara in 1997. Through a facilitated stakeholder process and technical analyses, the study assessed vulnerability and risk to both natural and human resources and infrastructure. Based on results of the vulnerability assessment, recommended a series of adaptation strategies that included both capital improvements and policy recommendations. Led the technical analyses and provided guidance and direction to subcontractors.

COASTAL GEOMORPHOLOGY

Goleta Beach Erosion Projects, County of Santa Barbara, California — Assisting the County of Santa Barbara in multiple stakeholder processes and technical studies related to the substantial erosion to Goleta Beach County Park catalyzed by the 1997-1998 El Nino erosion wave. Studies have included peer-reviewed scientific research and technical studies on various adaptation strategies with several alternative park reconfigurations and managed retreat options. Peer-reviewed other technical modeling and led a technical team to conduct wave run-up and climate change modeling to support the Environmental Impact Report on a managed retreat strategy. Throughout the process, presented research results to stakeholder group.

Surfer's Point Managed Retreat, Ventura, California — Provided geomorphic evaluation of the site, input on the engineering and design quantities, and developed the monitoring plan for the Surfer's Point Managed Retreat project, which included the removal of a public parking lot, nourishment of 50,000 cubic yards of cobbles, construction and planting of native dunes, and subsequent monitoring. Actively coordinating with the City of Ventura (on a volunteer basis) to ensure that sand augmentation and monitoring results are consistent with the original design concepts.

Technical Evaluation of Erosion Mitigation Alternatives and Regional Sediment Management Plan for Southern Monterey Bay, California — Managed an evaluation of erosion mitigation alternatives (adaptation strategies) for Southern Monterey Bay to support development of a regional strategy to address coastal hazards. Twenty-two different erosion mitigation measures were evaluated, including land use planning tools, soft engineering solutions, and hard engineering solutions. The measures were compared using a variety of criteria including an innovative effectiveness criterion, which ranked each measure's merit at protecting upland property and beach widths (a highly valued community resource). The study then compared the costs and benefits of each measure over multiple time horizons by tracking the physical impacts of each measure on the beach and upland through time. The holistic cost-benefit analysis included accounting for beach recreation and ecosystem services in addition to traditional storm damages. While this initial study did not include climate impacts directly, it began to inform adaptation strategies across the region.

Select Publications

Ellenson, A., D. Revell, M. Jamieson, and S. Blakesley. 2023. Influence of living shoreline elements on wave runup elevations. *Shore & Beach* 91(2):30–37. doi.org/10.34237/10091224

Revell, D., P. King, J. Giliam, J. Calil, S. Jenkins, C. Helmer, J. Nakagawa, A. Snyder, J. Ellis, and M. Jamieson. 2021. A holistic framework for evaluating adaptation approaches to coastal hazards and sea level rise: A case study from Imperial Beach, California. *Water* 13(9):1324. https://doi.org/10.3390/w13091324.

Dave Anning, Ph.D.

Senior Consulting Economist

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Dr. Dave Anning is an environmental economist with a background in marine science and environmental management. His research and interests lie at the intersection of environmental, social, and governance influences, including climate change and sustainability, and he holds tertiary qualifications in science, environmental management, economics, and geography. Sectors in which he is active include climate vulnerability and adaptation, coastal resilience, offshore wind and marine renewable energy, natural resource damage assessment, and environmental and social impact assessment.

Dr. Anning has particular expertise in valuing impacts on natural resources, and the way in which those resources are used for recreation, tourism, and other ecosystem services. He has considerable experience in identifying climate change and project impacts on coastal and aquatic ecosystems, including cost–benefit analysis, fiscal impact analysis, and the development of adaptation plans and environmental policies. Dr. Anning has a keen interest in distributional analysis of costs and benefits of climate impacts or management interventions across community sectors and stakeholder groups. He excels at relating technical information to nonspecialist audiences, and has delivered professional development courses in coastal climate change adaptation and the use of environmental justice screening tools.

Education & Credentials

Ph.D., Geography, University of New South Wales, Sydney, Australia, 2012

M.E.M., Environmental Tourism, University of Queensland, Brisbane, Australia, 2005

Graduate Diploma of Economics, University of New England, Armidale, Australia, 2013

B.S. with Honours, Anatomy, University of Queensland, Brisbane, Australia, 2002

B.S., Marine Biology, University of Queensland, Brisbane, Australia, 2001

Continuing Education

Introduction to Environmental Law and Policy, University of North Carolina (2021)

Statutory Interpretation, Crown Law Queensland, Australia (2016)

Coastal Hazard Management Short Course, Griffith University, Gold Coast, Australia (2014)

Summer School in Discrete Choice Models-Advanced Module, University of Bologna (2008)

Discrete Choice Modelling, University of Sydney (2008)

Relevant Experience

CLIMATE IMPACT ASSESSMENT

Miramontes Point Sea Level Rise Vulnerability and Fiscal Impact Assessment, City of Half Moon Bay, California — Conducted an economic and fiscal impact analysis of cliff erosion impacts on public walking trails, beaches, a luxury hotel property, and two golf courses. The analysis included estimates of tax revenues and regional economic impacts of expenditures within the commercial properties, and non-market values associated with recreational use of public trust assets. This was integrated with spatial and temporal estimates of impacts on the threatened assets and natural features, to inform the selection of viable adaptation options.

South Coast Sea Level Rise Vulnerability Assessment, San Mateo County, California — Valued erosion and inundation impacts on agricultural, commercial, and residential properties and buildings due to a range of sea level rise scenarios. Hazards included coastal wave flooding, estuary flooding, dune erosion, and cliff erosion.

Byron Bay Embayment Economic Analysis, New South Wales, Australia — Completed a fiscal and economic analysis of the costs and benefits of coastal management options, including

Professional Affiliations

Member of American Shore and Beach Preservation Association

Wentworth Group of Concerned Scientists, Alumnus

managed retreat, terminal seawalls, beach nourishment, and combined approaches. Assets at risk included private houses, public open space, and regional rail infrastructure.

Beach and Surf Tourism and Recreation in Australia: Vulnerability and Adaptation, Australia — Assessed the existing economic importance of beaches and surfing locations in four case study locations around Australia, and analyzed the extent to which these values are threatened by climate change-induced beach erosion. This analysis employed both existing tourism research information and collection of survey information about coastal tourism and the likely behavioral response to natural hazards and reduced environmental quality.

Kingscliff Foreshore Management Option Cost-Benefit Assessment, New South Wales, Australia — Assessed the costs and benefits of different terminal seawall designs, sand nourishment, and managed retreat options for a campground and surf club facing imminent erosion impacts due to storm activity and variability in longshore sand supply.

Assessment and Decision Frameworks for Existing Seawalls, Australia — Conducted an economic assessment of factors affecting decisions to repair, upgrade, or replace existing seawall structures. The project examined factors that influence the selection of management options, including erosion rates and assumptions about storm wave intensity and future sea levels.

Sydney Beaches Valuation Project, New South Wales, Australia — Estimated the nonmarket value of selected beaches in the Sydney region, to assist local and state government agencies in the selection of the most appropriate responses to existing coastal management pressures and the projected impacts of climate change. The project used a range of valuation methods, including the travel cost method, hedonic pricing, and surveys that integrated contingent behavior and valuation components.

NATURAL RESOURCE DAMAGE ASSESSMENT

Recreational Resource Valuation, Idaho — Assisted in assessment of impacts on recreation resources, and scaling of restoration projects to compensate the public for lost recreational opportunities.

Habitat Equivalency Analysis, New Jersey — Assisted in assessment of impacts on aquatic, wetland, and marsh ecosystems, and scaling of restoration projects to compensate for lost ecological services.

Economic Valuation of Proposed Restoration Projects, New Jersey — Assisted in the valuation of two proposed restoration projects designed to provide recreational opportunities in disadvantaged communities.

ENVIRONMENTAL IMPACT ASSESSMENT

Cost-Benefit Assessment of Three-Point Plan for Coastal Protection, Queensland, Australia — Estimated the economic benefits associated with a large navigational dredging and sand nourishment campaign. Values incorporated into the analysis included beach-related tourism and impacts on surf amenity through the targeted placement of sand to create improved surfing conditions.

Tweed Sand Bypass Social and Economic Impact Assessment, New South Wales, Australia — Estimated the economic impact of the Tweed River Entrance Sand Bypass Scheme, including valuation of beach recreation, surfing, commercial fishing, scuba diving, and recreational boating. Included quantification of vessel trips, the value of commercial fish landings, and the recreational use values associated with saltwater angling, charter fishing trips, whale watching, and recreational scuba diving.

Attachment 3

Integral Statement of Qualifications, References, and Additional Promotional Literature

Additional Firm Information and Qualifications

INTEGRAL CONSULTING INC. LOCATION

With 31 offices nationwide and 1 in Mexico, Integral offers a highly qualified team of science and engineering professionals and support staff. Integral has been present in Hawaii since 2008.

Integral's Hawaii staff understand the local issues and regulatory complexities of working in Hawaii. We support local businesses and governmental entities with permitting, operational compliance, and solutions to complex environmental issues, and have developed effective, long-term working relationships with federal, state, and local regulators and agencies.

PROJECT TEAM

Robert Walker, P.E., is a highly experienced coastal engineer with 20 years of expertise in coastal and marine projects. He specializes in dredging and dredged material management, coastal analyses and studies, shoreline protection, the design of waterfront facilities, and nature-based coastal hazard mitigation. Mr. Walker's proficiency goes beyond planning, design, and field investigations—he also excels in guiding clients through the complex regulatory permitting process, successfully securing local, state, and federal permits for numerous complex coastal projects. In addition, Mr. Walker brings valuable expertise in hydrographic surveying, sediment sampling and analysis, construction management, and environmental compliance services for dredging and coastal and waterfront construction projects.

Andy Wycklendt, P.E., BCCE, is a board-certified coastal engineer with over 18 years of experience in shoreline restoration, flood protection, and marine infrastructure across U.S. coasts. He is one of only 79 engineers globally certified by the Academy of Coastal, Ocean, Port and Navigation Engineers. Andrew specializes in coastal design, modeling, and construction oversight, with expertise spanning estuaries, barrier islands, and diverse sediment systems.

Silvia Barber is an environmental scientist with 16 years of consulting experience who is based in Hawaii and serves as the primary point of contact for Hawaii clients. Ms. Barber has a background in science, environmental management, and natural resource economics. Ms. Barber graduated with a M.S. degree from UH Manoa, has managed site investigation and remediation projects across nearly all the Hawaiian Islands, and has supported projects led by federal and state agencies across the U.S.

Avram Frankel, P.E., is a professional engineer, technical expert, and program manager with more than 30 years of experience. He is a licensed P.E. in six states including Hawaii. Mr. Frankel has experience on a wide range of commercial/industrial, municipal, state, and federal sites regulated under numerous state and federal programs.

Craig Jones, Ph.D., is a principal ocean and environmental engineer with 20 years of experience based in Santa Cruz, California. His experience includes developing and executing engineering and science projects for government agencies and the private sector to characterize offshore environmental sites. In addition, his experience includes riverine, lacustrine, estuarine, and coast processes involving hydrodynamics, waves, sediment, and contaminant transport. Prior to joining Integral, Dr. Jones worked as a Senior Environmental and Ocean Engineer with Sea Engineering, Inc.

David Revell, Ph.D., is a principal coastal geomorphologist with more than 25 years of international experience in coastal resilience and adaptation based out of Santa Cruz, California. His experience includes studying marine, coastal, and estuarine processes, and working to integrate science and management of coastal processes and climate change. Much of his work involves physical process research and spatial analysis to facilitate communication of science to inform decision-making. Dr. Revell currently advises multiple local jurisdictions and agencies on dune and sediment management, climate change, estuary processes, inlet management, and local coastal management programs and policies. Dr. Revell voluntarily supports the North Shore Coastal Erosion Working Group to identify adaptation options to the extreme erosion witnessed in recent years.

Dave Anning, Ph.D., has a broad environmental background with qualifications in marine science, environmental tourism management, economics, and geography. Dr. Anning is active in coastal resilience, offshore wind and marine renewable energy, natural resource damage assessment, and environmental, social, and governance (ESG) planning and analysis sectors.

INTEGRAL HAWAII TEAM

Our Hawaii office is located in central Oahu. Integral currently has the following staff based in Hawaii:

- Robert Walker, P.E.—Principal
- Andrew Wycklendt, P.E., BCCE–Senior Engineering Advisor
- David Revell, Ph.D.—Principal, Coastal Resilience
- Silvia Barber—Senior Consultant
- William Cutler, Ph.D., P.G.—Associate
- Erin Petrosian—Consultant

- Patrick Niemeyer—Scientist
- Taylor Caster—Project Engineer
- Zoe Curley—Assistant Scientist
- Christina Oey—Intern
- Brenda Lee—Office Manager/Project Coordinator

Additional key staff located in Integral mainland offices, supporting Hawaii projects:

- Avram Frankel, P.E.—Chief Operating Officer
- Craig Jones, Ph.D.—Director, Marine Science and Engineering
- Dave Anning, Ph.D.—Senior Economist, Coastal Recreation and Natural Resources.

EXPERIENCE

Integral is a science and engineering consulting firm providing technical and strategic support to address health, environmental, economic, and natural resource challenges. We are leaders in developing science-based approaches and cost-effective solutions to complex climate challenges in the private and public sectors. Our 300+ professionals and support staff are in 31 U.S. and 1 international offices. We have a broad array of scientific specialties from geologists and oceanographers to economists and environmental engineers, among many others.

An overview of our company and our core services is presented in our statement of qualifications, included as Attachment 3. A fully completed DPW Form 120 is included as Attachment 2. Attachment 4 includes the insurance certificate.

CIVIL AND ENVIRONMENTAL ENGINEERING

Integral designed and implemented remediation of arsenic and dioxin contaminated land on a Hawaii Island Community Development Corporation property in North Kohala, Hawaii, to be developed as residential housing. Remediation in 2016 resulted in cleanup to residential land use standards, and a No Further Action determination by the Hawaii Department of Health (DOH) Hazard Evaluation and Emergency Response (HEER) Office. Integral has recently completed a sediment, biota, and soil sampling program in Pearl Harbor, along with our teaming partner Sea Engineering, Inc., in support of the engineering design for sediment dredging and capping. DOH HEER staff observed Integral's sediment sampling activities along the shores of Pearl Harbor. Integral just completed the engineering design of various environmental remedies in Pearl Harbor involving contaminated sediments, producing biddable specifications and drawings. Integral has been managing and implementing a significant soil sampling program for the Hawaii

Department of Education, Facilities Division, on various islands since 2016; DOH HEER is involved and providing oversight. Integral assisted the County of Hawaii with the closure of two landfills (the former metal scrap yard portions of the landfills), including remedial engineering design, environmental sampling, contractor bid procurement support, and construction observation.

ENVIRONMENTAL PLANNING & DUE DILIGENCE

Integral staff have supported due diligence efforts for property and business transactions ranging from small sites and parcels to large commercial/industrial facilities. In many cases, systematic and strategic evaluation of potential liabilities was also required. In Hawaii, Integral has performed Phase I and II Environmental Site Assessments on large tracts of agricultural land transitioning from pineapple and sugarcane to new diversified agricultural uses. The Phase II investigations included sampling of environmental media and laboratory analyses.

Integral staff have also prepared Environmental Assessment under HRS 343 for our Hawai'i clients. Recent relevant projects include the County of Hawaii related to the remediation and closure of a former scrap yard located on state land in Kona, Hawaii, and an Environmental Assessment for in-water work at a Kaneohe residence to support construction of a fixed dock.

COASTAL ENGINEERING- CLIMATE RISK AND RESILIENCE

Integral conducts and applies the best science and modeling approaches to assist our clients in addressing climate-related challenges and identifying the best, most feasible solutions. Our Coastal Climate Risk and Resilience practice utilizes a 360° approach to develop robust solutions that evolve over time for our clients. Our services include coastal hazard modeling, property resiliency and vulnerability assessment, adaptation planning that develops future pathways balancing, economic analyses with changing risks. We prioritize the use of nature-based approaches and sound policy development before relying on strictly engineered solutions. Our Integral staff have worked on climate risk and resilience projects in California, Florida, Oregon, Texas, and Australia. Our experts have been engaged for two projects in Hawaii commencing in 2023, examining adaptation pathways in areas threatened by erosion and inundation on Oahu and Maui.

ECONOMICS- NATURAL RESOURCES

Integral economists support clients with valuation of natural capital and ecosystem services, and the use of this value information in public policy development and funding allocation. Our economists have expertise in benefit–cost and economic impact analysis, including examining the fiscal importance of tourism and recreational expenditures and

assets for municipal and agency budgets. Of particular relevance to the Hawaiian context, Integral's economists have specialized skills in the assessment of values associated with human use of the coastal zone, and the valuation of impacts due to natural hazards and climate change, including loss of ecological functions. We conduct technically sound analyses and provide effective communications to assist decision-makers and inform stakeholders. Integral's economics team is currently engaged on two Hawaiian projects, examining the recreational value and cultural importance of coastal public spaces, and identifying funding and financing options for managed retreat.

COASTAL ENGINEERING - HARBORS/MARINAS AND DREDGING

Integral staff have significant expertise in the planning, design, and regulatory permitting of small-craft harbors and waterfront facilities. Project experience includes floating docks, fixed piers, boat launch ramps, and site layout design – and includes new facilities as well as the maintenance and repair of existing infrastructure. Dredging and dredged material management project experience includes navigation dredging for ports and harbors, maintenance dredging of marinas and small-craft harbors, and dredging for beneficial reuse for shore protection projects. Our staff also has extensive experience in contaminated sediment management, dredged material disposal design, sediment investigations, and water quality monitoring for dredging and waterfront construction projects.

ENVIRONMENTAL PERMITTING

Integral works closely with regulatory agencies at a federal, state and county level to obtain the required permits, approvals, authorizations and determinations necessary to implement our clients projects. Integral has obtained permits ranging in complexity from grading permits to support our civil designs to Environmental Assessments to support large scale projects with cross-jurisdictional oversight.

REFERENCES—CLIENTS

The following person is familiar with Integral's staff and capabilities, and may be contacted for references:

- **Hawaii DLNR, Office of Conservation and Coastal Lands**. Contact person: Michael Cain, Administrator, (808) 587-0377.
- **Hawaii DLNR, Division of Boating and Ocean Recreation**. Contact person: Finn McCall, Engineering Branch Head, (808) 587-3250.

- **State of Hawaii Department of Education**. Integral has provided environmental consulting services to the Department of Education since 2016. Contact person: Gary Bignami, Environmental Services Division, (808) 784-5067.
- **Hawaiian Electric Company, Inc. (Hawaiian Electric)**. Integral has provided environmental consulting and engineering services to Hawaiian Electric companies (HECO, HELCO, and MECO) since 2008. Contact person: Donielle Comeau, Environmental Manager, (808) 543-4509.
- **County of Hawaii Department of Parks and Recreation**. Integral has provided environmental consulting and engineering services to the County of Hawaii since 2011. Contact person: James Komata, Planner, (808) 961-8311.

Engineering

Integral develops permanent solutions that achieve risk-based goals, minimize future liability, and maximize project value.

We apply our breadth of engineering expertise to remediation, stormwater, water supply, and development projects. From legal support to project planning through construction, our engineering teams develop practical solutions to solve our clients' challenges. We prepare engineering plans and specifications, obtain permits, provide construction management, and optimize existing treatment systems. To address risks related to sea level rise, we work collaboratively to develop resilient infrastructure and protect coastlines.

- REMEDIATION
- STORMWATER
- CONSTRUCTION MANAGEMENT
- CONTROL SYSTEMS
- WATER SUPPLY
- RESILIENCY

integral consulting inc.

Selected Projects

To expedite the investigation of PCE in groundwater, we used innovative tools including a cone penetrometer and a hydraulic profiling tool.

In Situ Groundwater Remediation

California

PCE from a former industrial laundry had contaminated the groundwater beneath a commercial building and nearby properties, causing neighborhood and regulator concern. To expedite the investigation, we used innovative tools, developed a robust conceptual site model and 3-dimensional groundwater plume depiction, and finalized an *in situ* bioremediation remedial design. The overall progress restored good relations with stakeholders, mitigating potential third-party litigation.

When contaminants were discovered during a ferry terminal project, Integral's engineering team provided a timely, cost-effective solution.

Sediment Cap Evaluation, Design, and Permitting

California

During construction of a new ferry terminal for the Port of San Francisco, contaminated sediments were discovered—requiring a rapid response. We served as Engineer of Record for design of the engineered cap required to manage contaminated sediments. The multilayered cap design included an erosion protection layer to safeguard the underlying isolation sand cap from hydrodynamic forces caused by vessel traffic, tidal currents, and storms.

We vetted and tested technologies and oversaw design of a system that is now providing clean drinking water.

PFAS in Drinking Water

New Jersey

When per- and polyfluoroalkyl substances (PFAS) were detected in a potable water supply well, prompt treatment was essential. Integral vetted PFAS drinking water treatment technologies and successfully completed testing of granular activated carbon (GAC). We designed and oversaw construction of the GAC system, while meeting an accelerated schedule. The system has been reliably providing clean drinking water since 2017.

REMEDIATION

Our clients rely on our expertise in remediation of contaminated soil, sediment, and groundwater. We conduct thorough engineering evaluations and design and implement remedial actions. Applying our robust understanding of the conceptual site model and our in-depth knowledge of and experience with remedial technologies and their application, we implement remediation programs that work.

STORMWATER

We offer a comprehensive approach to stormwater management. From simple, facility-level stormwater sampling for permit compliance, to more complex sampling for basin-wide source control evaluation, we devise practical stormwater monitoring programs. We integrate these data, supplementing with treatability studies and modeling as needed, to design and implement effective stormwater treatment systems.

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Environment

Integral offers diverse expertise in multimedia environmental investigations and forensic analyses.

We approach our clients' environmental challenges with the endgame in sight—whether it's cleaning up legacy pollution, complying with environmental protection standards, or ensuring that restored environments are safe. We combine our multidisciplinary and collaborative approach with technical expertise and practical perspectives to achieve permanent solutions that work.

- SITE INVESTIGATION
- REGULATORY COMPLIANCE
- EMERGING CONTAMINANTS
- CONTAMINANTED SEDIMENT
- FATE AND TRANSPORT
- MONITORING TECHNOLOGIES

integral consulting inc.

Selected Projects

We are leading the feasibility study, which is focused on a source control interim remedy in the upper 9 miles of the 17-mile study area.

Lower Passaic River RI/FS

New Jersey

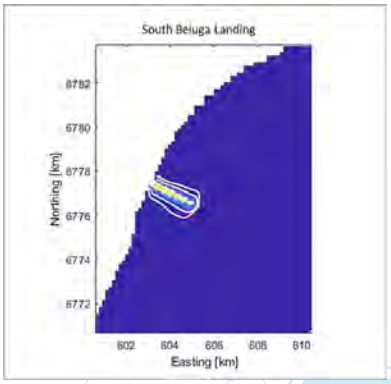
The Lower Passaic River has a long history of industrialization, leading to elevated levels of dioxin and other contaminants. Our integration of the remedial investigation results, modeling, and risk assessments is supporting an adaptive management approach to remediation. Involving more than 60 cooperating parties, the project requires strong technical coordination and effective collaboration.

Our risk assessments support health-protective and cost-effective remedies.

Environmental and Litigation Support Services

Rhode Island

At the Centredale Manor Restoration Project Superfund site, Integral provided regulatory consultation services and expert witness testimony on issues related to CERCLA liability and divisibility. Our scientists refined the conceptual site model and reassessed the human health and ecological risks based on plausible exposure scenarios. We are currently performing critical studies as part of the pre-design investigation.



We set up multiple hydrodynamic and sediment transport models to predict erosion and deposition.

Sediment Modeling

Alaska

Alaska LNG has proposed constructing a pipeline from the North Slope to Cook Inlet that would deliver natural gas for commercialization and in-state distribution. As a member of the Draft Environmental Impact Statement (DEIS) team, our role was to evaluate turbidity impacts resulting from the proposed pipeline construction. Our focused and streamlined modeling approach allowed us to present comprehensive and compelling analyses, supporting the DEIS.

SITE INVESTIGATION

Our team designs and delivers efficient, science-based, multimedia environmental investigations that provide the data needed to answer the important questions and develop the right solutions. We are targeted, on point, and strategic. The result is remedial strategies that are protective, sustainable, and cost-effective.

CONTAMINATED SEDIMENT

We offer comprehensive sediment management services to help our clients evaluate and remediate contaminated sediment sites; plan navigation dredging projects; and manage sediments in lakes, rivers, estuaries, and impoundments. Our services are fully integrated with our risk assessment, engineering, remediation, modeling, restoration, and natural resources capabilities. The result is sustainable, environmentally sound, and cost-effective solutions.

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X-ray Fluorescence Analyzers

Integral scientists have a deep understanding and more than 15 years of experience using portable x-ray fluorescence (XRF) analyzers, which allow real-time analyses to be conducted in the field. We specialize in detecting and assessing contaminants like lead and arsenic.

Hand-held analyzers provide a rapid and cost-effective field screening method for metals—significantly reducing the scope and cost of investigations. Using XRF, Integral scientists perform non destructive analyses of major and trace elements in soil, sediment, and solid waste samples. Applications include both screening-level and quantitative analysis for a wide array of elements of environmental interest such as arsenic, cadmium, copper, lead, mercury, and zinc. Our scientists have successfully incorporated XRF into numerous sampling programs, specializing in the detection and analysis of lead and arsenic—two of the most common and challenging contaminants of concern. Accurate elemental analyses are performed with custom corrections for site-specific matrix and moisture content.

Key Services

- Site Characterization and Remediation
- Waste and Debris Characterization
- Agricultural Applications for Elemental Nutrients & Detrimental Metals

integral-corp.com

Selected Projects

Soil Assessment at More Than 130 Public Schools

Oahu and Big Island, Hawaii

We designed and performed a study to assess potential human health hazards in building exterior soil at schools. The use of a portable XRF analyzer enabled rapid results by providing preliminary indications of elevated arsenic and lead in school soils. XRF was incorporated into the sampling design for decision-making, aiding in the identification of areas for soil sampling and reducing the total number of samples collected for conventional laboratory analyses.

Using XRF, an Integral scientist tests soil in a garden area at a public school.

Former Metal Scrap Yard

Big Island, Hawaii

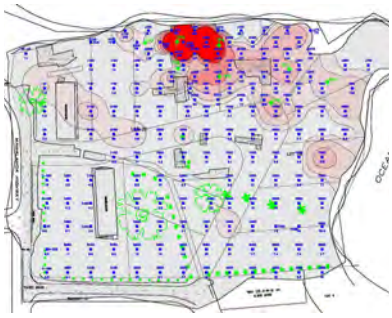
At a metal scrapyard, Integral conducted multiple site investigations to evaluate soil and debris removal action alternatives. Using a portable XRF analyzer, we quantified lead concentrations in mixed soil and debris samples. XRF was also used during the subsequent removal action before confirmation soil samples were collected—saving the client time and reducing cost.

We provided our client with a cost-effective way to test for lead in approximately 44,100 cubic yards of soil and debris.

Arsenic Contamination in Soil

Big Island, Hawaii

Integral staff have used a portable XRF analyzer to map the extent of arsenic contamination in soil on former sugar cane plantation lands on the Island of Hawaii. Using a combination of field screening with XRF followed by conventional laboratory analyses, we determined the extent of arsenic contamination requiring cleanup.



Data from a portable XRF analyzer allow efficient mapping of element concentrations across a site.

Key Contact

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Integral uses Evident Scientific (formerly Olympus) Vanta® series XRF analyzers.

What is XRF?

XRF is an established method for analyzing element concentrations in various media.

How does it work?

X-rays excite the sample resulting in characteristic x-ray fluorescence, captured by the detector as photon counts for a series of energy-level bins. The software transforms photon counts into concentrations.

What are its features?

Portable: Hand-held XRF analyzers are battery-powered and can be used in office, laboratory, or field settings.

Easy to use: XRF analyzers are easy to operate and provide immediate element concentration readings in milligrams per kilogram.

Safe: Evident Scientific XRF analyzers use an x-ray tube (not a radioactive isotope source), eliminating regulatory and operational concerns. The XRF is readily transported as checked or carry-on luggage.

Precise: Accurate elemental analyses include custom corrections for site-specific matrix and moisture content.

Solving Complex Problems in the Coastal Environment

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ABOUT INTEGRAL

Integral Consulting Inc. is an environmental consulting firm that focuses on solving complex problems in the coastal environment. Our multidisciplinary team of professionals specializes in developing sustainable alternatives to challenges impacting coastal ecosystems and the built environment along our shorelines. We provide integrated services through all phases of coastal and waterfront projects, from initial planning and permitting to full design, bid support, construction, and legislative issues that impact our clients' operations, as well as crafting tailored strategies to navigate these challenges successfully.

COASTAL ENGINEERING

Integral Consulting has extensive expertise in designing and implementing diverse coastal restoration and protection projects across the Pacific, Atlantic, Gulf, and Arctic coastlines. Our team has successfully worked on a wide range of coastal systems, including barrier islands, headlands, estuaries, deltas, cliffs, and embayments, as well as pocket, perched, and open coasts. These efforts have focused on restoring and nourishing beaches, marshes, and habitats composed of sand, mixed sediment, vegetation, cobble, boulder, or volcanic material. We emphasize nature-based resilience solutions, complemented by technical capabilities in dredging and fill operations, coastal structures (breakwaters, groins, jetties, revetments, seawalls), and marine upland infrastructure (access stairs, boardwalks, docks, piers, quays).

HARBORS, MARINAS, AND WATERFRONT FACILITIES

Integral is an expert in the planning, design, and regulatory permitting of small-craft harbors and waterfront facilities. Project experience includes floating docks, fixed piers, boat launch ramps, and site layout design. We have experience with new facilities as well as the maintenance and repair of existing infrastructure.

DREDGING AND SEDIMENT MANAGEMENT

Integral has completed navigation dredging for ports and harbors, maintenance dredging of marinas and small-craft harbors, and dredging for beneficial reuse for shore protection projects. Our staff has experience in contaminated sediment management and dredged material disposal design, sediment investigations, and water quality monitoring for dredging and waterfront construction projects.

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Modeling for Coastal Climate Risk & Resilience

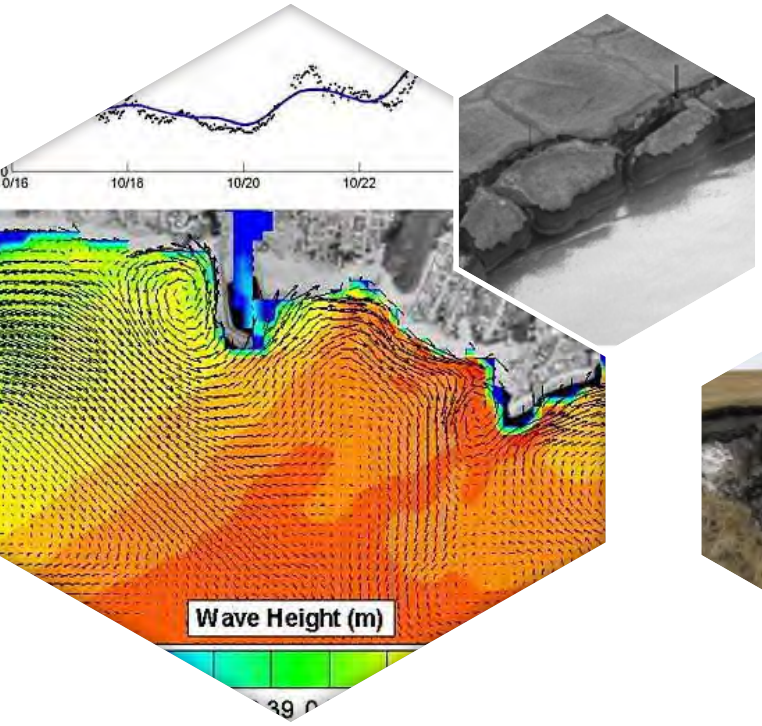
Mitigating risk requires understanding what to expect under future conditions

Integral Consulting Inc. (Integral) identifies science-based solutions to coastal -related challenges by developing and applying innovative modeling techniques to understand current and future vulnerabilities and risks to social, economic, and ecological aspects of coastal development and communities. We also utilize modeling techniques to evaluate the various benefits, costs, and trade-offs among different adaptation approaches, leading to sustainable planning for infrastructure and resource management.

Our team's modeling portfolio includes technical expertise in hydrodynamic modeling for present and future wave and current scenarios, coastal flood modeling, erosion modeling, and sediment transport. In addition, we develop high-level conceptual site models that allow clients to understand the system dynamics and the processes driving coastal change.

Service Areas

- Conceptual Site Models
- Hydrodynamic Modeling of Waves, Currents, and Sediment Transport
- Coastal Erosion Modeling
- Coastal Flood Modeling



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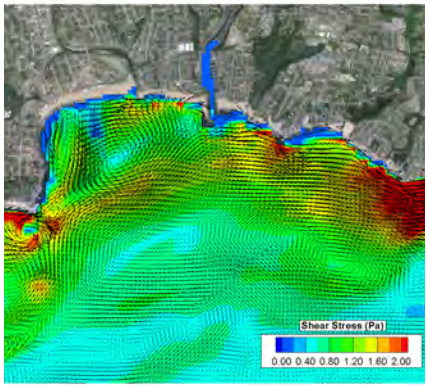
Conceptual Site Models

Do you understand the potential hazards your coastal zone locality is facing? Our site characterization and assessment service has multiple tiers that allow for increasingly detailed investigations that lead to an understanding of the causative processes that need to be addressed to improve resilience. Initial tiers can include geomorphic, habitat, and physical process evaluations that identify areas for more detailed investigation. Additional tiers may include geologic framework, shoreline change, sediment budget, ecological feedbacks, or fiscal impact and economic analyses. Site assessments, surveying, and monitoring provide mapping and detailed reporting for each site characterization.

USGS

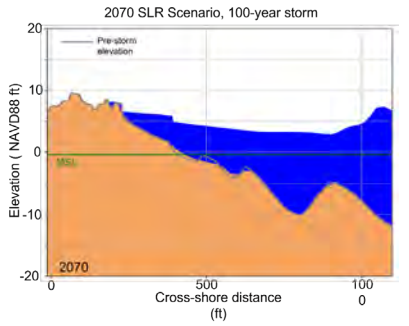
Hydrodynamic Modeling of Waves, Currents, and Sediment Transport

Employing the most widely accepted analysis frameworks utilized worldwide, Integral has developed and validated coastal zone models (e.g., DELFT3D, EFDC, ROMS, SWAN, MIKE) to provide accurate predictions of wave and current interactions in coastal regions. The models are readily applied to engineering design needs, environmental assessments, and coastal hazard analyses. We then couple these models with large-scale global forecast systems to rapidly develop accurate solutions. In addition, our expertise with site-specific coastal data allows us to validate models, thereby providing reliable modeling results for sites.



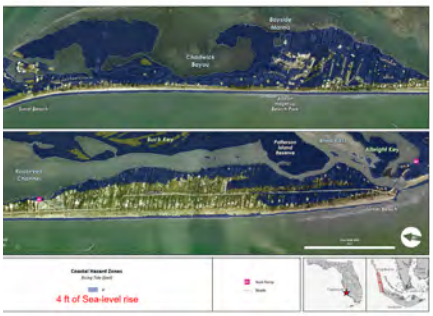
Coastal Erosion Modeling

Integral is proficient in the application of XBeach, which is a numerical model used to predict coastal erosion and accretion, and is the state-of-the-science tool for modeling coastal change potential along shoreline profiles under a range of storm wave and future sea level rise scenarios. The model assesses the interaction of waves with bathymetry and topography and predicts sediment movement in one or two dimensions. XBeach is particularly suited for modeling coastal change (e.g., volume, width, elevation) processes on timescales of single storm and wave events; it simulates tidal and wave-driven sediment transport and resulting coastal change, and is an open-source model.



Coastal Flood Modeling

A variety of approaches can be used to estimate and forecast storm and tidal flood inundation that occurs when water levels exceed the dune or berm elevation on ocean-facing coasts, or simply flows over the landscape in estuarine environments. Utilizing available topographic models for base elevations, storm wave inundation can be represented by mapping the furthest inland extent of storm wave inundation during events ranging from water levels associated with a 1% annual storm event to future 10- or 100-year storms. The base flood elevations can be escalated by adding a sea level rise scenario level to the base flood elevations. More sophisticated approaches have been applied using programs such as Delft3D-Flow or ADCIRC which enables complex modeling of maximum water depths, flood extents, and timing.



Best Modeling Practices

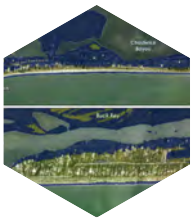
Overall, Integral follows the best modeling practices to guarantee the highest quality model results whether involved from a technical oversight perspective or as the lead modeling team. Our quality management plans include rigorous calibration, validation, and evaluation of models at any project site before their use for hindcast, nowcast, or forecast purposes. Our procedures include rigorous quality control during model development, validation, application, and interpretation that provide for accurate documentation and reporting of results.

Selected Projects

Resilient Coastal Adaptation Project Ventura County, California

Integral's Coastal Resilience team, working for the County of Ventura, conducted a vulnerability and fiscal impact study to support adaptation planning and local coastal plan policy updates. This project included a vulnerability assessment of coastal erosion, wave flooding, tidal inundation, and nuisance flooding accelerated by sea level rise.

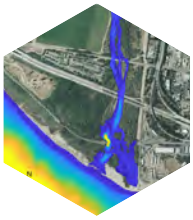
After refined coastal hazard modeling and geospatial data analyses, projected future risks were mapped to critical community sectors including land use, oil and gas, and other critical infrastructure. By integrating the hazard analysis with economic and fiscal impacts, the team holistically projected future impacts to agriculture, coastal recreation, and infrastructure and property damages.



Sea Level Rise Vulnerability Assessment and Adaptation, Captiva Island, Florida

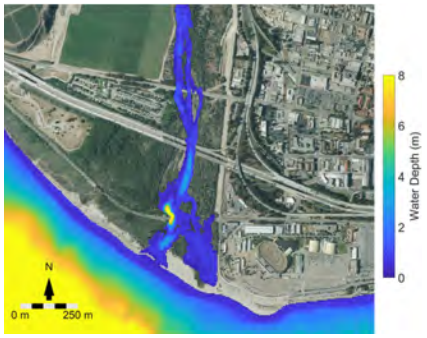
The residents of unincorporated Captiva Island, Florida, recognized that their low-lying barrier island community was vulnerable to sea level rise so they formed a committee to develop an adaption plan. They didn't know where to begin. And they didn't have the technical expertise to develop a robust plan for sea level rise adaptation. Integral worked side-by-side with committee members to identify the island's vulnerability to rising seas and conduct a risk assessment of the island's assets including homes and evacuation routes, so they could evaluate the best adaptation strategies for their community. Integral staff led the investigation, site

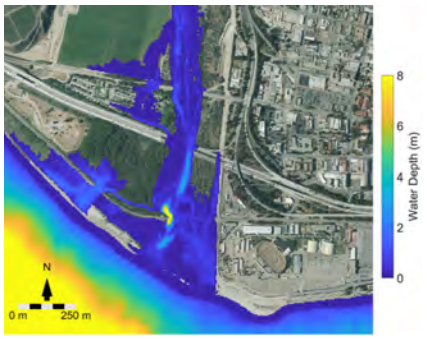
characterization, compilation and formatting of geographic information system (GIS) data, and the integration of flood model outputs from NOAA. The vulnerability assessment served as the foundation for adaptation conceptual designs, also led by Integral, for nature-based adaptation strategies.

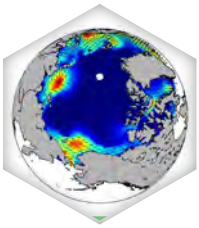


Matilija Dam Removal Modeling Ventura County, California

A numerical model was developed to assess flooding potential in the coastal lagoon and surrounding upland regions of the Ventura River. The model considered river discharge, beach berm dynamics, and coastal water level elevation to recreate flood conditions and assess potential site response to storm conditions. The 2-dimensional numerical hydrodynamic model was developed using the open-source Delft3D-Flow software to compute water levels, velocities, and sediment transport properties within the system. The figure shows water depths during base flow (right above) and storm conditions (right below) that match historical evidence of flooding extents.

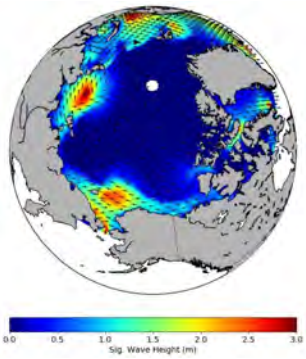






Arctic Coastal Erosion: Coastal Hazards Evaluation

Permafrost along Alaska's north slope comprises 34% of the world's coastlines. Due to heightened wave activity and temperatures, erosion of the permafrost coastline around Drew Point can exceed 10 m/year and is increasing. Current tools for predicting coastal evolution were developed for temperate areas and noncohesive sediments, limiting their applicability for permafrost coastlines. To establish adaptation strategies for Arctic infrastructure, we developed modeling and monitoring tools to accurately predict Arctic coastal erosion. The hydrodynamic components developed for the modeling system integrate oceanographic and terrestrial processes relevant to quantifying rates of permanent coastal land loss.



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Learn more at **integral-corp.com**

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Coastal ADAPT

Coastal Adaptation Decision And Planning Toolkit

Do you need to address coastal hazards related to sea level rise and climate change? Integral's Coastal ADAPT is a state-of-the-science approach that informs adaptation planning and facilitates community involvement in decision-making.

Developing robust sea level rise adaptation and management plans to increase resiliency is critical for coastal cities, communities, infrastructure, and facilities. Coastal ADAPT provides a framework used to move a community through hazard awareness into adaptation planning. Coastal ADAPT engages stakeholders in an interactive way, supporting development of a holistic adaptation plan specific to your needs.

- HAZARD IDENTIFICATION
- VULNERABILITY ASSESSMENT
- RISK EVALUATION
- ECONOMIC/COST–BENEFIT ANALYSIS
- DECISION-SUPPORT MODELING
- COMMUNITY ENGAGEMENT/ RISK COMMUNICATION

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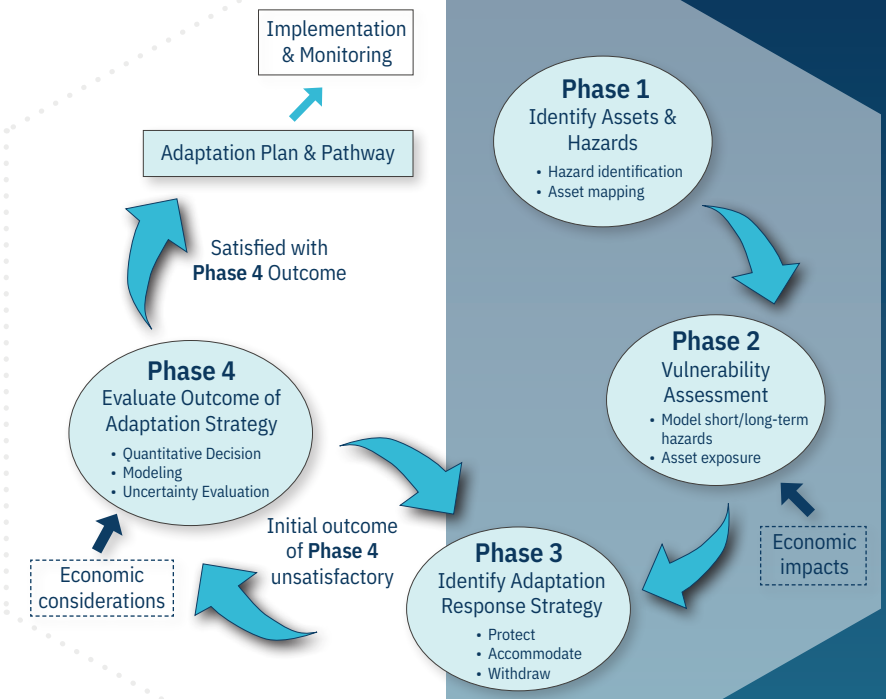
Coastal ADAPT

Coastal ADAPT is a scientific and model-based decision support framework for sea level rise and coastal hazard adaptation planning. In Phase 1, hazards are identified based on geomorphic interpretation and modeling. During Phase 2, vulnerability and exposure are assessed. Phase 4 implements an innovative, iterative modeling process to evaluate physical and economic changes from various adaptation choices. Clients may also include an economic analysis of market and nonmarket valuation, an assessment of fiscal impacts, and a cost–benefit analysis of adaptation tradeoffs. Results lead to a cohesive plan that engages stakeholders, increases resiliency, and reduces impacts from climate change.



Selected Projects

Coastal Resiliency Program:

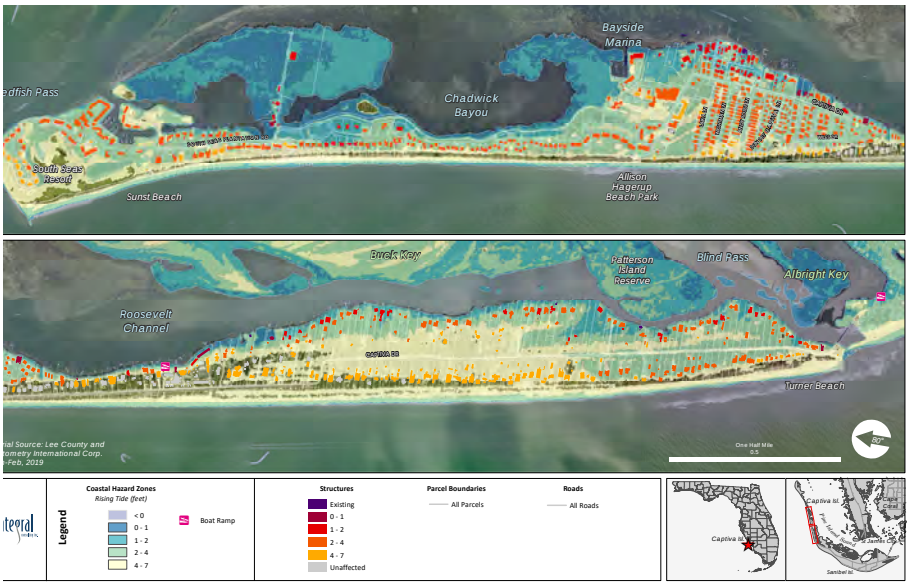
County of Ventura, California

Our staff assisted the County in conducting a vulnerability and fiscal impact study to support adaptation planning and updates to the local coastal program policy. We analyzed data and performed additional hazard modeling to round out data gaps in coastal resilience modeling. In a unique approach, we evaluated nonmarket recreational revenues as part of the integrated fiscal impact and economic analyses. Public outreach and communications were also a key focus. The adaptation planning prioritized natural infrastructure approaches—including a dune restoration and management plan, sand retention with cobble groins, and innovative sediment management that improved coastal recreation while reducing engineering and maintenance costs. The project received an award from the American Planning Association.

Sea Level Rise Adaptation:

Captiva Island, Florida

The residents of unincorporated Captiva Island, Florida, recognized that their low-lying barrier island community was vulnerable to sea level rise so they formed a committee to develop an adaption plan. But they didn't know where to begin, nor did they have the technical expertise to develop a robust plan for sea level rise adaptation. We worked side-by-side with committee members to identify the island's vulnerability to rising seas and conduct a risk assessment of the island's assets including homes and evacuation routes, so they could evaluate the best adaptation strategies for their community.



KEY CONTACTS

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Sediment Science and Management

For more than two decades, Integral has applied innovative, risk-based approaches to the assessment and management of contaminated sediment sites throughout North America.

Our expertise spans characterization of nature and extent of contamination, conceptual site model development, risk assessment, natural resource damage assessment, remedial alternatives analysis, baseline and long-term monitoring, and restoration design and construction. Our multidisciplinary and science-first focus links seamlessly with the remedial engineering team for cost-effective and sustainable resolution of contaminated sediment liabilities.

- SITE CHARACTERIZATION AND MONITORING
- RISK ASSESSMENT AND RISK-BASED CLEANUP
- REMEDIAL ALTERNATIVES ANALYSIS
- LITIGATION SUPPORT

integral consulting inc.

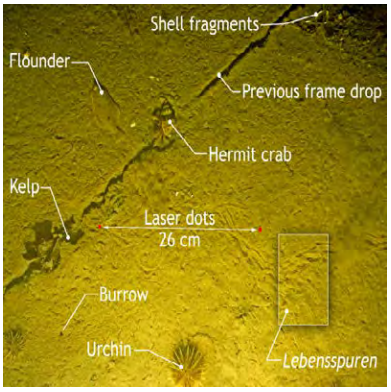
Selected Projects

Integral's unique and cost-effective OPTICS technology supported an unprecedented level of data collection and site understanding.

Berry's Creek Superfund Site

New Jersey

Integral led the remedial investigation and supported the feasibility study for the Berry's Creek Study Area. We developed conceptual site models to define the complex processes that govern contaminant fate, transport, and biological uptake. These models provided the critical basis for evaluating site remedies. We are now leading the development of the performance monitoring program for the Phase 1 remedial design.



We used SPI–PV technology to accurately map the benthic conditions prior to placement of the disposed dredged material.

Douglas Harbor Dredging

Alaska

Integral scientists monitored water quality and collected baseline and post-construction sediment samples in Douglas Harbor and in the disposal area to confirm post-dredge conditions and the disposal mound footprint following dredging and disposal activities. We used sediment profile and plan view imaging (SPI–PV) to accurately map the areal extent and thickness of disposed dredged material and the sand cap at the disposal site, as well as the benthic conditions.

The Lower Passaic River has a long history of industrialization, leading to elevated levels of dioxin and other contaminants throughout the 17-mile study area.

Lower Passaic River

New Jersey

Integral led the feasibility study for this 17-mile remediation project involving more than 60 cooperating parties, including evaluation of a source control interim remedy that would be part of an adaptive management program. As a member of the technical team, Integral has provided a wide range of services—designing sediment and water column field investigations, analyzing data, and developing an adaptive management plan to support the interim remedial action.

At an active steel mill, Integral developed a creative design approach that supported sustainable, long-term stabilization of the riverbank, while enhancing shoreline habitat and preventing contamination of river sediment. The project earned an environmental excellence award from the American Council of Engineering Companies for its innovation and achievements.

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Permitting, Planning, and Compliance Services

Integral Consulting Inc. is a national science and engineering firm delivering technical solutions to complex environmental, health, economic, and natural resource challenges faced by our clients. We employ an unrelenting commitment to technical excellence, innovation, and collaboration to help our clients minimize yesterday's impacts, comply with today's demands, and plan for tomorrow's needs.

Our multidisciplinary team of scientists, engineers, economists, toxicologists, chemists, data scientists, marine scientists, biologists, and geoscientists are committed to protecting the integrity of natural systems while meeting the needs of an ever-evolving society.

Permitting, Planning, and Compliance

Integral Consulting's Planning and Permitting services take a strategic approach to environmental consulting, emphasizing client objectives and comprehensive project development. By integrating deeply within client teams and leveraging expertise, we facilitate the identification of biological constraints, regulatory compliance, project authorization, and tailored mitigation strategies, and prepare comprehensive permitting and environmental documents. Beyond obtaining necessary permits from relevant agencies and producing well written environmental documents that comply with NEPA requirements, we ensure compliance through construction monitoring, criteria monitoring, and compliance reporting. Integral's holistic approach, enriched by our experience with large-scale projects, ensures streamlined regulatory navigation, fostering sustainable and environmentally conscious project outcomes.

Service Areas

- Delineation of waters of the U.S/state
- Special status species surveys
- Biological resource analysis
- Biological assessment
- Natural resource permitting
- Clean water act permitting
- Project planning & mitigation solutions
- Natural resource management
- Field compliance support
- Environmental planning
- California environmental quality act compliance
- National environmental policy act complinace
- Water quality permitting
- Water quality monitoring
- Stormwater planning

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NEPA, Planning, and Related Services

- Initial Studies, Mitigated Negative Declarations and EIRs
- Environmental Assessments/Environmental Impact Statements
- Community Engagement
- Biological Resource Impact Assessments
- Hazards and Hazardous Materials Evaluations
- Climate Change/Sea-Level Rise/Coastal Hazards
- Stormwater Management
- Water Quality Assessments and NPDES Permitting
- Biological Resources and Permitting
- Biological Literature Reviews, Database Searches, and Field Surveys
- Biological Constraints Analyses and Plant Community Mapping
- Focused Surveys and Habitat Assessments for Special-Status Species
- Preliminary Assessment and/or Delineation of Wetlands and Waters of the U.S.
- Special-Status Species Surveys and Reports
- Biological Monitoring
- Pre-Construction Focused Surveys and Construction Monitoring
- Mitigation Planning and Monitoring including Habitat Restoration Design
- Regulatory Agency Consultation, Permitting, and Compliance
- Compliance Monitoring and Regulatory Compliance

Key Personnel

Bridgette R. DeShields
Technical Director of Permitting and Planning
bdeshields@integral-corp.com

Ms. Bridgette DeShields has over 35 years of experience and is a specialist in regulatory strategy, site investigation, site remediation, sediment and water quality management, environmental toxicology, and environmental permitting and planning. She has managed programs ranging from large site investigations to screening and quantitative ecological and human health risk assessments. Her work has been focused on sediment assessments and waterfront projects with natural resource components and complex regulatory frameworks. She also has extensive experience in navigating California regulatory and permitting programs as well as preparing environmental documents under the National Environmental Policy Act (NEPA).

Paula C. Gill, PWS
Principal, Permitting and Planning
pgill@integral-corp.com

Ms. Paula Gill has 16 years of experience as a regulatory and wetland specialist working in the environmental arena. She has assisted with obtaining regulatory permits and approvals for vious complex projects in Hawaii. Previously, she served as a regulatory project manager with the U.S. Army Corps of Engineers (USACE), San Francisco District, providing expedited permit evaluation and related services for California Department of Transportation (Caltrans)-designated priority projects and other programmatic efforts to support efficient decision-making related to applications for Department of the Army permit activities. During this time, she gained experience with linear transportation projects while serving as the USACE liaison to Caltrans. She has evaluated Department of the Army permit applications, compliance, and enforcement cases for activities in waters of the U.S. within the regulatory authority of the Clean Water Act (CWA) and the Rivers and Harbors Act.

Cameron Johnson
Principal, Permitting and Planning
cjohnson@integral-corp.com

Mr. Cameron Johnson is a wildlife biologist and permitting specialist with 24 years of experience in the field. He has experience with projects throughout the western United States, including post-graduate fieldwork in Arizona, California, and Nevada. During the past 18 years, Mr. Johnson has worked on the permitting of large- and small-scale utility and development projects for both private and public applicants.

Attachment 4

DPW Form 120, Insurance Certificate, Projects and Clients in Hawaii, Copy of P.E. Licenses

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES

QUESTIONNAIRE FOR ARCHITECTS, ENGINEERS AND OTHER PROFESSIONAL SERVICES

QUESTIONNAIRE FOR: (LIST DISCIPLINE)	OTHER QUESTIONNAIRES SUBMITTED: (LIST DISCIPLINES)	DATE
See FY 26 Consultant Checklist	N/A	18 June 2025

FIRM NAME	ESTABLISHED YEAR	ESTABLISHED STATE	TYPE OF ORGANIZATION (Underline)
Integral Consulting Inc.	2002	WA	INDIVIDUAL PARTNERSHIP **CORPORATION** JOINT VENTURE OTHER

BUSINESS ADDRESS, TELEPHONE & FAX NO. OF HAWAII OFFICE	AGE OF FIRM	FEDERAL ID NO.	YEARS ESTABLISHED IN HAWAII
66-590 Kamehameha Highway, Suite 2A Haleiwa, HI 96712 Tel: 808.374.4440	23 years	48-1266683	17

PRINCIPALS OF FIRM: (NAMES)	ASSOCIATE MEMBERS OF FIRM: (NAMES)
Robert Walker, P.E. Andrew Wycklendt, P.E., BCCE David Revell, Ph.D. Avram Frankel, P.E. William Locke, P.E. William Cutler, PH.D., P.G.. Bridgette DeShields	Silvia Barber Erin Petrosian Taylor Caster Zoe Curley Dave Anning, Ph.D.

PRESENT BRANCH OFFICE(s): (ADDRESS, TELEPHONE & FAX NO.)	PERSON IN CHARGE: (NAMES)
719 2nd Avenue, Suite 1450 Seattle, WA 98104 Tel: 206.230.9600 Fax: 206.230.9601	Robert Walker, P.E., Principal Andrew Wycklendt, P.E., BCCE, Senior Engineering Advisor

NUMBER OF PERSONNEL IN YOUR PRESENT ORGANIZATION

LOCATED AT	PRINCIPALS & KEY PERSONNEL			OTHER PERSONNEL											TOTAL
					Engineers										
	Architect	Engineer	Others	Architect	Mech.	Electri	Civil	Others	Draftsmen	Spec. Writer/ Writer	Estimator	Inspector	Surveyor	Balance	
HOME OFFICE Boulder, CO	0	5	23				3	2							28
BRANCH IN Hawaii	0	2	6				2	1							8
BRANCH IN California		2	26				1	1							28
OTHER BRANCHES IN U.S.		18	137				5	13							156
TOTAL	0	27	190				3	14							217
TECHNICAL PERSONNEL: 134				**NUMBER OF PERSONNEL WITH HAWAII LICENSES**					2	**NUMBER OF PERSONNEL WITHOUT HAWAII LICENSES**					218

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PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES WITHIN YOUR FIRM

NAME	RESIDENT OF	YEARS OF EXPERIENCE	AS PRINCIPAL IN THIS FIRM	AS PRINCIPAL IN OTHER FIRMS	OTHER THAN PRINCIPAL
Robert Walker, P.E.	HI	20	2	5	13

TITLE
Principal

EDUCATION (COLLEGE, DEGREE, YEAR, SPECIALIZATION)
University of Hawai'i at Manoa, M.S., Geoscience, Coastal Geology, 2017
Old Dominion University, M.S., Civil (Coastal) Engineering, 2010
North Carolina State University, B.A., Spanish, 2004
North Carolina State University, B.S., Environmental Engineering, 2003

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS
LEED Accredited Professional (LEED AP) (2008)
American Shore & Beach Preservation Association (ASBPA)
Coasts, Oceans, Ports and Rivers Institute (COPRI)
American Society of Civil Engineers (ASCE)

REGISTRATION (TYPE, YEAR, STATE)
Professional Engineer, Civil, Hawaii (License No.14549)
Professional Engineer, Civil, California (License No. 79483)
Professional Engineer, Civil, North Carolina (License No. 36186)

NAME	RESIDENT OF	YEARS OF EXPERIENCE	AS PRINCIPAL IN THIS FIRM	AS PRINCIPAL IN OTHER FIRMS	OTHER THAN PRINCIPAL
Andrew Wycklendt, P.E., BCCE	HI	20	1	0	19

TITLE
Senior Engineering Advisor

EDUCATION (COLLEGE, DEGREE, YEAR, SPECIALIZATION)
University of Hawaii, M.S., 2005, Ocean and Resources Engineering
Florida Atlantic University, B.S., 2003, Ocean Engineering

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS
American Shore & Beach Preservation Association (ASBPA)
Coasts, Oceans, Ports and Rivers Institute (COPRI)
American Society of Civil Engineers (ASCE)

REGISTRATION (TYPE, YEAR, STATE)
Professional Engineer, Civil, Hawaii (License No. 14493)
Professional Engineer, Civil, Alaska (License No. 176309)
Professional Engineer, Civil, Florida (License No. 71604)
Professional Engineer, Civil, Louisiana (License No. 45361)
ACOPNE Board Certified Coastal Engineer

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NAME	RESIDENT OF	NAME	RESIDENT OF
David Revell, Ph.D.	CA	Jeffrey Davis, P.E., CGWP, CWRE	UT

TITLE				TITLE			
Principal				Principal			
YEARS OF EXPERIENCE	**AS PRINCIPAL IN THIS FIRM**	**AS PRINCIPAL IN OTHER FIRMS**	**OTHER THAN PRINCIPAL**	**YEARS OF EXPERIENCE**	**AS PRINCIPAL IN THIS FIRM**	**AS PRINCIPAL IN OTHER FIRMS**	**OTHER THAN PRINCIPAL**
25	5	11	9	30	3	0	27

EDUCATION (COLLEGE, DEGREE, YEAR, SPECIALIZATION)

University of California, Ph.D., 2007, Earth Sciences
Oregon State University, M.S., 2000, Oceanography and Marine Resource Management
University of California, B.A., 1998 and 1996, Geography and Environmental Studies

EDUCATION (COLLEGE, DEGREE, YEAR, SPECIALIZATION)

Bringham Young University, M.S., 1998, Civil and Environmental Engineering
Bringham Young University, B.S., 1993, Civil and Environmental Engineering

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

American Shore & Beach Preservation Association (ASBPA)

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

REGISTRATION (TYPE, YEAR, STATE)

REGISTRATION (TYPE, YEAR, STATE)

Professional Engineer, Utah (License No. 189690-2202
Texas (License No. 125406)
Florida (License No. 74838)
Colorado (License No. 0051575)
Alabama (License No. PE52096)
Idaho (License No. P-21839)
Oregon (License No. 104270PE)
Wyoming (License No. PE 20790)

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NAME	RESIDENT OF	NAME	RESIDENT OF
Avram Frankel, P.E.	CA	William Locke, P.E.	CO

TITLE	TITLE
Chief Operating Officer	President

YEARS OF EXPERIENCE	AS PRINCIPAL IN THIS FIRM	AS PRINCIPAL IN OTHER FIRMS	OTHER THAN PRINCIPAL	YEARS OF EXPERIENCE	AS PRINCIPAL IN THIS FIRM	AS PRINCIPAL IN OTHER FIRMS	OTHER THAN PRINCIPAL
35	11	10	14	35	22	0	13

EDUCATION (COLLEGE, DEGREE, YEAR, SPECIALIZATION)	EDUCATION (COLLEGE, DEGREE, YEAR, SPECIALIZATION)
Northwestern University, M.S., 1995, Environmental Engineering John Hopkins University, B.A., 1989, History (with honors)	Stanford University, M.S., 1989, Civil Engineering (emphasis in Water Resources) Stanford University, B.S., 1987, Geology, with distinction, Phi Beta Kappa

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS
Member of National Ground Water Association Member of American Water Works Association Member of Groundwater Resources Association of California	Society of Environmental Toxicology and Chemistry

REGISTRATION (TYPE, YEAR, STATE)	REGISTRATION (TYPE, YEAR, STATE)
Professional Engineer, PE-19758-C, expires 04/30/2026, HI	Registered Professional Civil Engineer, 2000, CO

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NAME	RESIDENT OF	NAME	RESIDENT OF
William Cutler, Ph.D., P.G.	CO		

TITLE	TITLE
Associate	

YEARS OF EXPERIENCE	AS PRINCIPAL IN THIS FIRM	AS PRINCIPAL IN OTHER FIRMS	OTHER THAN PRINCIPAL	YEARS OF EXPERIENCE	AS PRINCIPAL IN THIS FIRM	AS PRINCIPAL IN OTHER FIRMS	OTHER THAN PRINCIPAL
38	15	0	23				

EDUCATION (COLLEGE, DEGREE, YEAR, SPECIALIZATION)	EDUCATION (COLLEGE, DEGREE, YEAR, SPECIALIZATION)
University of Hawaii at Manoa, Ph.D., 2011, Geology and Geophysics University of Calgary, M.S., 1982, Geology and Geophysics University of Michigan, B.S., 1980, Geological Sciences	

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS
Geological Society of America	

REGISTRATION (TYPE, YEAR, STATE)	REGISTRATION (TYPE, YEAR, STATE)
Professional Geologist, 1987, CA	

PERSONAL HISTORY STATEMENT OF TECHNICAL PERSONNEL WITHIN YOUR FIRM

NAME		STATUS (Underline)	Name		STATUS (Underline)
Silvia Barber		**Full-Time** Part-Time	Erin Petrosian		**Full-Time** Part-Time
TITLE OR POSITION		**YEARS OF EXPERIENCE**	**TITLE OR POSITION**		**YEARS OF EXPERIENCE**
Senior Consultant		18	Consultant		18
WITH THIS FIRM	**WITH LAST FIRM (NAME & NO. OF YEARS)**	**WITH OTHER FIRMS**	**WITH THIS FIRM**	**WITH LAST FIRM (NAME & NO. OF YEARS)**	**WITH OTHER FIRMS**
16	University of Hawaii, 2	2	2	W. M. Keck Observatory, 6	16
EDUCATION (COLLEGE, DEGREE, YEAR, SPECIALIZATION)			**EDUCATION (COLLEGE, DEGREE, YEAR, SPECIALIZATION)**		
University of Hawaii, M.S., 2008, Natural Resources and Environmental Management Università degli Studi di Milano, Italy, Bachelor of Arts and Master of Arts, 2000, Philosophy of Science			University of San Diego, B.A., 2006, Marine Chemistry		
REGISTRATION (TYPE, YEAR, STATE)			**REGISTRATION (TYPE, YEAR, STATE)**		
Certified Lead-Based Paint Activities Risk Assessor: Hawaii (Certification No. PB-0957)					

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NAME		STATUS (Underline)	NAME		STATUS (Underline)
Zoe Curley		Full-Time Part-Time	Taylor Caster. E.I.T		Full-Time Part-Time
TITLE OR POSITION		YEARS OF EXPERIENCE	TITLE OR POSITION		YEARS OF EXPERIENCE
Assistant Scientist		5	Project Engineer		9
WITH THIS FIRM	WITH LAST FIRM (NAME & NO. OF YEARS)	WITH OTHER FIRMS	WITH THIS FIRM	WITH LAST FIRM (NAME & NO. OF YEARS)	WITH OTHER FIRMS
5	0	0	2	7	0
EDUCATION (COLLEGE, DEGREE, YEAR, SPECIALIZATION)			EDUCATION (COLLEGE, DEGREE, YEAR, SPECIALIZATION)		
University of Hawaii, B.S., 2020, Global Environmental Science			B.S., Civil and Environmental Engineering, University of Hawai'i at Manoa, Honolulu, Hawai'i, 2014 Engineer in Training (Environmental), Hawai'i, 2021		
REGISTRATION (TYPE, YEAR, STATE)			REGISTRATION (TYPE, YEAR, STATE)		
			Part-107 Unmanned Aircraft Systems (Drone) Remote Pilot Certified, 2021 Certified Erosion and Sediment Control Plan Coordinator, 2024		

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NAME			STATUS (Underline)
Dave Anning, Ph.D.			**Full-Time** Part-Time
TITLE OR POSITION			**YEARS OF EXPERIENCE**
Senior Consulting Economist			5
WITH THIS FIRM	**WITH LAST FIRM (NAME & NO. OF YEARS)**		**WITH OTHER FIRMS**
4	14		0
EDUCATION (COLLEGE, DEGREE, YEAR, SPECIALIZATION)			
University of New South Wales, Ph.D., 2012, Geography University of New England, Graduate Diploma, 2013, Economics University of Queensland, B.S., 2001 and 2002, Anatomy and Marine Biology			
REGISTRATION (TYPE, YEAR, STATE)			

OUTSIDE ASSOCIATES AND CONSULTANTS USUALLY EMPLOYED

DISCIPLINE	NAME OF FIRM OR INDIVIDUAL		DISCIPLINE	NAME OF FIRM OR INDIVIDUAL
N/A				

ERRORS AND OMISSIONS INSURANCE

DOES YOUR FIRM HAVE ERRORS & OMISSION (E&O) INSURANCE? (Underline)			AMOUNT OF COVERAGE PER CLAIM	AMOUNT OF DEDUCTIBLE
YES	**NO**	**PROJECT INSURANCE**	**$1,000,000***	**$15,000**

* The E&O policy has a $2,000,000 aggregate, and Integral has an excess liability policy of $10,000,000 in addition to the E&O. Please see insurance certificate, Attachment 4, See Professional Liability Coverage.
Submit proof of insurance or insurability from your insurance carrier with this form. See Attachment 4.

SUMMARY OF YOUR FIRM'S COMPLETED AND PRESENT PROJECTS DURING THE LAST 10 YEARS AS A PRIME A/E CONSULTANT

TOTAL NUMBER OF COMPLETED PROJECTS	1,742
TOTAL ESTIMATED CONSTRUCTION COST OF COMPLETED PROJECTS	**$268,552,000**
TOTAL NUMBER OF PRESENT PROJECTS	565
TOTAL ESTIMATED CONSTRUCTION COST OF PRESENT PROJECTS	**$141,280,000**

AS AN ASSOCIATE WITH OTHER A/E CONSULTANTS

TOTAL NUMBER OF COMPLETED PROJECTS	751
TOTAL ESTIMATED CONSTRUCTION COST OF COMPLETED PROJECTS (ONLY THE PORTION OF WORK FOR WHICH YOUR FIRM WAS RESPONSIBLE)	**$78,850,000**
TOTAL NUMBER OF PRESENT PROJECTS	231
TOTAL ESTIMATED CONSTRUCTION COST OF PRESENT PROJECTS (ONLY THE PORTION OF WORK FOR WHICH YOUR FIRM IS RESPONSIBLE)	**$6,750,000**

CLASS OF WORK AND PROJECT TYPE SPECIALIZATION

TYPE OF PROJECT	TOTAL NO. OF COMPLETED PROJECTS	TOTAL ESTIMATED CONSTRUCTION COST	TOTAL ESTIMATED PROJECT SIZE (G.S.F.)
Coastal Resilience	42	9,800,000	500,000,000
Ports/Harbors/Beaches	38	2,500,000	700,000
Municipal/Local Gov't/Public Agency	30	525,000	7,717,500
Litigation Support	162	NA	NA
Planning & Permitting	75	1,400,000	830,000,000
Industrial	242	2,100,000	20,947,500

Categorize your firm's class for work during the last 10 years by project type. Examples of project types include Educational, Commercial, Industrial, Residential, Health Care, Correctional and Judicial Facilities. Work may also be categorized as planning, civil site work, renovation/alteration, architectural barrier removal, fire alarm system, etc.

PRESENT/COMPLETED PROJECTS IN WHICH YOUR FIRM IS/WAS DESIGNATED THE PRIME CONSULTANT (BY TYPE)

(LIST A MAXIMUM OF 10 PROJECTS FOR EACH DISCIPLINE/TYPE OF WORK BEING APPLIED FOR. LIST PROJECTS THAT REFLECT YOUR ABILITY TO PROVIDE QUALITY WORK FOR YOUR REQUESTED PROJECTS.)**TYPE:**

YEAR	NAME AND LOCATION OF THE PROJECT	NAME OF LEAD DESIGNER	NAME, ADDRESS, PHONE & FAX NO. OF THE OWNER	ESTIMATED CONST. COST ($)	DURATION FOR DESIGN (MONTHS)	% COMPLETED	
						DESIGN	CONST.
	Spreadsheet attached at the end of this form						

Explain firm's individual project assignment, project management structure, project execution (work flow and responsibilities) and quality control process. In the event the spaces provided on this form are not sufficient for entries, or if you wish to furnish additional information, it may be inserted here or on separate sheets, with appropriate references.

Individual Project Assignment: Principals, Senior Advisors/Technical Reviewers, and Project Managers will be selected based on the type of project awarded. The selected Project Manager will work with the Principal and Senior Advisor/Technical Reviewer to assemble a team with appropriate experience, qualifications, and availability to complete the project on time and within budget. For larger projects, Task Leads may be used to manage individual tasks. Key staff will be selected to provide the best value to the client, where staffing typically consists of senior and junior staff working together to complete technical tasks. We are confident that identified, selected, and committed staff will complete tasks in a timely and cost-effective manner. The selected organizational structure for each project will be shared with the client prior to beginning work; in the event that a change in a key staff is required, we will recommend a replacement with at least equal qualifications and await client approval before making the change.

Project Management Structure: Integral has a large team of scientists, engineers, project managers, technicians, and administrative staff available to support a variety of projects. The project team will be assigned in a manner that aligns their experience and qualifications with the type of project awarded. Project team members include the Principal, Senior Advisor/Technical Reviewer, Project Manager, Task Manager, Project Coordinator, Engineers/Scientists, Technicians, and a broad range of administrators including, but not limited to, accounting, publications, contracts/insurance, legal, and quality assurance.

Project Execution (work flow and responsibilities): The Principal oversees the technical scope of work. The Senior Advisor/Technical Reviewer prepares the technical scope and reviews the technical work for accuracy. The Project Manager oversees project budget and schedule, maintains client communication, and ensures contract terms are met. Task Leads/Managers help Project Managers on larger projects by overseeing task budget and schedule. The Project Coordinator supports the Project Manager by updating schedules and budgets and is responsible for drafting invoices. Engineers/Scientists are responsible for data processing, technical analyses, technical writing, and drafting review. Technicians perform field work, AutoCAD drafting, and GIS figure creation.

Quality Control Process: Integral has established a formal QA/QC program that is documented in the Quality Management Plan prepared for each project and is followed by all project leadership, management, technical, and support staff. Feedback and verification of the quality of work we provide to our clients are key components of the Quality Assurance process and is generally executed by the Senior Advisor/Technical Reviewer. Quality Control is achieved through independent peer reviews, calculation checks, and document editing by technical experts on our deliverables (proposals, reports, project briefings) throughout the project life cycle. The Principal in Charge will be responsible for ensuring full implementation of our QA/QC procedures and will ultimately be responsible for the quality of all deliverables.

As of this date June 18, 2025 the foregoing is a true statement of facts.

NAME OF FIRM OR INDIVIDUAL SUBMITTING QUESTIONNAIRE	TYPE NAME AND TITLE OF PERSON SIGNING	SIGNATURE
Integral Consulting Inc.	Robert Walker	

PRINCIPALS ONLY - ADDITIONAL INFORMATION

NAME	TITLE AND POSITION	YEARS WITH FIRM
Robert Walker, P.E.	Principal	2

MAJOR RESPONSIBILITIES WITH THIS FIRM

Mr. Robert Walker is a highly experienced coastal engineer with 19 years of expertise in coastal and marine projects. He specializes in dredging and dredged material management, coastal analyses and studies, shoreline protection, the design of waterfront facilities, and nature-based coastal hazard mitigation. Mr. Walker's proficiency goes beyond planning, design, and field investigations—he also excels in guiding clients through the complex regulatory permitting process, successfully securing local, state, and federal permits for numerous complex coastal projects. In addition, Mr. Walker brings valuable expertise in hydrographic surveying, sediment sampling and analysis, construction management, and environmental compliance services for dredging and coastal and waterfront construction projects.

PRIOR EMPLOYMENT

(START WITH LATEST EMPLOYMENT PRIOR TO JOINING THIS FIRM AND PROVIDE SIMILAR INFORMATION FOR EACH SEPARATE EMPLOYMENT OR MAJOR CHANGES IN DUTIES WITH THE SAME EMPLOYER.)

FIRM:	DATE FROM:	DATE TO:	FIRM:	DATE FROM:	DATE TO:
Shoreline Science and Engineering, LLC.	2/2014	12/2023	Moffatt & Nichol	8/2012	2/2014
ADDRESS: Haleiwa, HI			**ADDRESS:** Honolulu, HI		
JOB TITLE: President and Principal Engineer			**JOB TITLE:** Senior Coastal Engineer		
SUPERVISOR'S NAME AND TITLE: Self-employed			**SUPERVISOR'S NAME AND TITLE:** Russ Boudreau, Vice President and Principal Coastal Engineer		

MAJOR DUTIES: Focused primarily on projects in Hawaii, Robert Walker provided coastal engineering for dredging and navigation projects, harbor/marina planning and design, beach and nearshore surveying, shoreline restoration, coastal hazard evaluations, regulatory permitting and construction management. Also provided civil and environmental engineering services.	**MAJOR DUTIES:** Managed multiple projects and performed engineering analysis and design for projects in coastal areas. Project types included beach nourishment, dredging, design for waterfront infrastructure, living shorelines, coastal structures. Provided engineering design and regulatory permitting for various waterfront improvement projects.

NAME	TITLE AND POSITION	YEARS WITH FIRM
Andrew Wycklendt, P.E., BCCE	Senior Engineering Advisor	1

MAJOR RESPONSIBILITIES WITH THIS FIRM

Mr. Andrew Wycklendt is a board-certified coastal engineer (BCCE) through the Academy of Coastal, Ocean, Port and Navigation Engineers (ACOPNE), a subsidiary of the American Society of Civil Engineers (ASCE); with only 79 board-certified coastal engineers worldwide, this is the highest certification given to a professional engineer within the field of coastal engineering. Mr. Wycklendt is versed in all aspects of the coastal engineering discipline, inclusive of coastal modeling, project design, permitting, bid and construction document preparation, construction oversight and administration, topobathymetric and biological surveys, geophysical and geotechnical investigations, and oceanographic studies. He leads technical aspects of Integral's coastal resilience and engineering program and oversees the management of broad-based coastal engineering projects, inclusive of team coordination and collaboration, coastal process and hazards analyses, project scoping, feasibility analyses, engineering designs, numerical modeling, permitting, construction engineering, and monitoring services. He collaborates across disciplines to effectively convey complex information to colleagues, stakeholders, and the public.

PRIOR EMPLOYMENT

(START WITH LATEST EMPLOYMENT PRIOR TO JOINING THIS FIRM AND PROVIDE SIMILAR INFORMATION FOR EACH SEPARATE EMPLOYMENT OR MAJOR CHANGES IN DUTIES WITH THE SAME EMPLOYER.)

FIRM:	DATE FROM:	DATE TO:	FIRM:	DATE FROM:	DATE TO:
Aptim Environmental & Infrastructure (previously the coastal program at Chicago Bridge & Iron, The Shaw Group, and Coastal Planning & Engineering)	12/2006	8/2024			
ADDRESS: Boca Raton, FL			**ADDRESS:**		
JOB TITLE: Senior Coastal Engineer			**JOB TITLE:**		
SUPERVISOR'S NAME AND TITLE: Nicole Sharp, Douglas Mann, Thomas Pierro, Gordon Thomson			**SUPERVISOR'S NAME AND TITLE:**		

MAJOR DUTIES:	MAJOR DUTIES:
Acquired 19 years of coastal engineering experience designing and implementing a variety of coastal restoration, shoreline protection, sediment management, dredging, navigation, waterfront structure, and flood mitigation projects along Pacific, Atlantic, Gulf, and Arctic coasts. He worked within barrier island, headland and embayment, estuarine, deltaic, cliff, pocket, perched, and open coastal systems to restore or nourish beaches, marshes, and other habitat that can be classified as either sand, mixed sediment, vegetated, cobble, boulder, or volcanic. Project experience includes dredge and fill (for disposal, nourishment, or restoration), coastal structure (breakwaters, groins, jetties, revetments, seawalls), and marine-related upland structures (beach access stairs, boardwalks, boat ramps, docks, piers, quays).	

NAME	TITLE AND POSITION	YEARS WITH FIRM
Avram Frankel, P.E.	Chief Operating Officer	11

MAJOR RESPONSIBILITIES WITH THIS FIRM

Mr. Avram Frankel is a professional engineer, technical expert, and program manager with more than 30 years of experience on a wide range of commercial/industrial, municipal, state, and federal sites regulated under numerous state and federal programs. A civil and environmental engineer licensed in California, Oregon, Washington, Colorado, Georgia, and Hawaii, Mr. Frankel provides his clients with strategic risk management and technical analysis in support of due diligence, redevelopment, technology evaluation, site investigation, water treatment, remediation, and legal/litigation matters. With a focus on enhancing health and safety, restoration of drinking water aquifers, and delivery of potable water, he has overseen the design, costing, installation, and optimization of groundwater remediation and water treatment systems across the U.S. over a wide range of site scales, geologies, and technical complexities. As a program manager and technical strategist, Mr. Frankel's experience on large, complex, and performance-based projects is extensive, including the successful application of combined remedies and remediation of plumes measured in miles. These projects often included the remediation of large commingled and multi-contaminant groundwater plumes in challenging stakeholder environments and under litigation or settlement conditions. He has also served as a consulting and testifying expert on numerous litigation matters, including pre-trial and trial testimony.

PRIOR EMPLOYMENT

(START WITH LATEST EMPLOYMENT PRIOR TO JOINING THIS FIRM AND PROVIDE SIMILAR INFORMATION FOR EACH SEPARATE EMPLOYMENT OR MAJOR CHANGES IN DUTIES WITH THE SAME EMPLOYER.)

FIRM:	DATE FROM:	DATE TO:	FIRM:	DATE FROM:	DATE TO:
Arcadis	12/2003	08/2013	URS Corporation	02/1997	11/2003

ADDRESS:	ADDRESS:
100 Montgomery St. #300 San Francisco, CA 94104	1 Montgomery St. #900 San Francisco, CA 94104
JOB TITLE:	**JOB TITLE:**
Vice President	Engineering Manager
SUPERVISOR'S NAME AND TITLE:	**SUPERVISOR'S NAME AND TITLE:**
Janet Peters, SVP	Des Garner, Manager

NAME	TITLE AND POSITION	YEARS WITH FIRM
William Locke, P.E.	President & Chief Operating Officer	22

MAJOR RESPONSIBILITIES WITH THIS FIRM

Mr. William Locke is a hydrologist and registered civil engineer with more than 30 years of experience in environmental investigation, fate and transport assessments, remedy analysis and selection, and regulatory affairs. He specializes in designing physical and chemical investigations of complex environmental systems, including soil, groundwater, sediments, surface water, and biota. He advises a broad range of clients on scientific and engineering issues, regulatory strategy, and management of environmental assets and liabilities. Mr. Locke has overseen and contributed to numerous remedial investigations, risk assessments, engineering feasibility studies, and fate and transport evaluations conducted under the Comprehensive Environmental Response, Compensation and Liability Act (Superfund); Resource Conservation and Recovery Act (RCRA); and state-led environmental cleanup programs. He has also provided expert support for environmental litigation matters and natural resource damage assessments.

Mr. Locke is well versed in the environmental behavior of a wide array of organic chemicals (e.g., dioxins and furans, polychlorinated biphenyls, polycyclic aromatic hydrocarbons, and chlorinated solvents) and inorganic chemicals (e.g., cyanide, arsenic, cadmium, lead, and other metals). He has designed and executed technical studies to differentiate site-related releases from natural and anthropogenic background chemical concentrations in soil, water, and sediments. Mr. Locke has evaluated groundwater-sediment-surface water interactions at several sites across the U.S., where he has developed and successfully implemented a multiple-lines-of-evidence approach for differentiating impacts of historical releases to sediments from those caused by migration of upland groundwater plumes. Mr. Locke has also developed analytical and numerical models to assess chemical fate and transport in groundwater and surface water systems, predict the effects of mining on water quality and quantity, analyze the feasibility of environmental remediation projects, and address questions related to water resources quantity and quality.

PRIOR EMPLOYMENT

(START WITH LATEST EMPLOYMENT PRIOR TO JOINING THIS FIRM AND PROVIDE SIMILAR INFORMATION FOR EACH SEPARATE EMPLOYMENT OR MAJOR CHANGES IN DUTIES WITH THE SAME EMPLOYER.)

FIRM:	DATE FROM:	DATE TO:	FIRM:	DATE FROM:	DATE TO:
Exponent	1995	2002	PTI Environmental Services	1992	1995
ADDRESS: 4940 Pearl East Circle #300 Boulder, CO 80301			**ADDRESS:** 4940 Pearl East Circle #300 Boulder, CO 80301		
JOB TITLE: Managing Scientist			**JOB TITLE:** Project Manager		
SUPERVISOR'S NAME AND TITLE: Walt Shields, Ph.D., Principal			**SUPERVISOR'S NAME AND TITLE:** Andy Davis, Ph.D.		

MAJOR DUTIES: Project management; sediment and groundwater modeling.	**MAJOR DUTIES:** Project management; sediment and groundwater modeling.
MAJOR DUTIES: Engineering, management, business development.	**MAJOR DUTIES:** Engineering, management, business development.

FIRM: Outboard Marine Corporation (OMC)	**DATE** **FROM:** 06/1995	**TO:** 08/1996	**FIRM:** E&E	**DATE** **FROM:** 10/1989	**TO:** 06/1994
ADDRESS: Waukegan, IL			**ADDRESS:** San Francisco, CA		
JOB TITLE: Engineer			**JOB TITLE:** Project Manager		
SUPERVISOR'S NAME AND TITLE: Larry Keller, Manager			**SUPERVISOR'S NAME AND TITLE:** Thompson Chambers, Manager		

MAJOR DUTIES: Engineering, compliance evaluations, permitting.	**MAJOR DUTIES:** Emergency response, environmental cleanup.

NAME	TITLE AND POSITION	YEARS WITH FIRM
William Cutler, Ph.D., P.G.	Principal Geologist	15

MAJOR RESPONSIBILITIES WITH THIS FIRM

Dr. William Cutler is a professional geologist with more than 30 years of experience in geosciences primarily focused on environmental site assessment and remediation. He is well-versed in managing all aspects of environmental projects, including strategy development, study design, technology assessments, senior management and agency communications, consulting and contracting services, field implementation, community relations, government affairs, and financial assessment and control. He has managed complex remediation projects in excess of $50 million. In addition to the management of individual projects, he has managed strategies and financial reserves for environmental liability site portfolios.

Dr. Cutler's areas of expertise include site assessments and investigations, sampling plan development, geophysical surveys, remedial technology assessments, and application of risk-based approaches. He has designed and managed site remediation projects under federal Superfund, RCRA corrective action, and state programs. Remedies employed range from simple soil removals to complex treatment systems for soil, groundwater, free product, and waste materials. Dr. Cutler is very experienced at communicating with the community and regulators, and he often functions as the link between the scientific/technical team and nontechnical stakeholders. One of his great strengths is financial evaluation of potential environmental liabilities, including individual sites and portfolios.

PRIOR EMPLOYMENT

(START WITH LATEST EMPLOYMENT PRIOR TO JOINING THIS FIRM AND PROVIDE SIMILAR INFORMATION FOR EACH SEPARATE EMPLOYMENT OR MAJOR CHANGES IN DUTIES WITH THE SAME EMPLOYER.)

FIRM:			FIRM:		
ERM	10/2004	10/2008	FMC Corporation	10/1993	08/2004
ADDRESS: Honolulu, HI			**ADDRESS:** 1735 Market Street, Philadelphia, PA 19103		
JOB TITLE: Environmental Consultant			**JOB TITLE:** Remediation Project Manager and Associate Director		
SUPERVISOR'S NAME AND TITLE: John Cavanaugh, Principal			**SUPERVISOR'S NAME AND TITLE:** Robert Forbes, Director EHS		
MAJOR DUTIES: Environmental Remediation			**MAJOR DUTIES:** Environmental Remediation		

FIRM:			FIRM:		
The Dow Chemical Company	09/1988	08/1993	UNOCAL Corporation	09/1983	08/1988

ADDRESS: Midland, MI	**ADDRESS:** Los Angeles, CA
JOB TITLE: Environmental Engineer	**JOB TITLE:** Exploration Geologist
SUPERVISOR'S NAME AND TITLE: Steve Curry	**SUPERVISOR'S NAME AND TITLE:** Terry McCauliff
MAJOR DUTIES: Environmental Remediation	**MAJOR DUTIES:** Oil and Gas Exploration

NAME	TITLE AND POSITION	YEARS WITH FIRM
Bridgette DeShields	Principal	12

MAJOR RESPONSIBILITIES WITH THIS FIRM

Ms. Bridgette DeShields has more than 35 years of experience and is a specialist in regulatory strategy, site investigation, site remediation, sediment and water quality management, and environmental toxicology. She has managed programs ranging from large site investigations to screening and quantitative ecological and human health risk assessments. She also designed and participated in dredging program management, field evaluations, bioaccumulation studies, literature reviews, and specially designed study programs. Her work has been focused on sediment assessments and waterfront projects with natural resource components and complex regulatory frameworks. She also has technical expertise in the area of bioaccumulation and bioavailability.

Ms. DeShields has developed excellent working relationships with regulatory agency staff, including the U.S. Environmental Protection Agency, U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, National Oceanic and Atmospheric Administration, California State Water Resources Control Board and regional boards, California Environmental Protection Agency, California Department of Toxic Substances Control, and numerous other state agencies. She has extensive experience in navigating California regulatory and permitting programs.

Ms. DeShields represents the interests of the Bay Area refineries on San Francisco Bay water and sediment quality issues as a representative for the Western States Petroleum Association, serving as chair of the Regional Monitoring Program (RMP) Technical Review Committee since January 2000. Her responsibilities include technical review of RMP documents and attending technical meetings. She also has led the dioxin strategy for San Francisco Bay.

PRIOR EMPLOYMENT

(START WITH LATEST EMPLOYMENT PRIOR TO JOINING THIS FIRM AND PROVIDE SIMILAR INFORMATION FOR EACH SEPARATE EMPLOYMENT OR MAJOR CHANGES IN DUTIES WITH THE SAME EMPLOYER.)

FIRM:	DATE FROM:	DATE TO:	FIRM:	DATE FROM:	DATE TO:
Arcadis	09/2005	03/2013	Arcadis (formerly Blasland, Bouck & Lee)	03/2002	09/2005
ADDRESS: Petaluma, CA			**ADDRESS:** Petaluma, CA		
JOB TITLE: Vice President			**JOB TITLE:** Vice President		
SUPERVISOR'S NAME AND TITLE: Pat Keaney, Vice President			**SUPERVISOR'S NAME AND TITLE:** Tyler Gass, Vice President		

MAJOR DUTIES: California Practice Leader, Sediment and Waterfront Group	**MAJOR DUTIES:** Senior Risk Assessor and Project Manager

FIRM: Harding Lawson Associates (now AMEC/MACTEC)	**DATE** **FROM:** 06/1994	**TO:** 02/2002	**FIRM:** SR Hansen and Associates	**DATE** **FROM:** 11/1991	**TO:** 06/1994
ADDRESS: Novato, CA			**ADDRESS:** CA		
JOB TITLE: Project Manager			**JOB TITLE:** Project Manager		
SUPERVISOR'S NAME AND TITLE: Liz Hawkins, Director			**SUPERVISOR'S NAME AND TITLE:** Steve Hansen, Owner		
MAJOR DUTIES: Risk Assessment Team Leader and Project Manager			**MAJOR DUTIES:** Toxicology Studies		

Projects and Clients in Hawaii

Client Name/Project	Start Date	Completion Date	Services Performed	Professional Fees
Office of Planning and State Development/An Analysis of Managed Retreat Strategies in Hawai'i: Policy and Funding Opportunities and Challenges	May-23	Ongoing	Analysis of the funding and financing arrangements necessary for implementation of managed retreat in the State of Hawai'i, with case studies on the north shore of Oahu and the Kahana Sunset condominium complex on Maui.	$152,500
County of Maui Department of Park and Recreation/ Ho'aloha Park Adaptation Plan	May-23	Ongoing	Development of park user profiles and adaptation pathway planning for Ho'aloha Park. The scope of services includes development and administration of a travel cost survey, coastal wave run-up hazard modeling, vulnerability analysis, and identification and prioritization of adaptation options and pathways to implementation.	$105,000
Maunalua Bay Boat Ramp Maintenance Dredging and Facility Improvements	Jun-23	Ongoing	Providing coastal engineering, environmental planning, regulatory permitting, and construction oversight.	$450,000
Kazmarek Mowrey Cloud Laseter LLP/Subsurface PCB Investigation/Kahului, Maui	Jun-22	Apr-23	Conducted extensive historical records review including review of third party due diligence work. Designed and implemented subsurface soil investigation to assess possible PCB impacts from historical site uses.	$106,600
Bayer Crop Science/Environmental Site Assessment and Property Redevelopment Support	Sep-20	Ongoing	Performed Phase I and Phase II site investigation of agricultural land in support of property acquisitions. Providing environmental support for property redevelopment.	$199,600
Hawaii Department of Education/XRF Assessment of Building Perimeter Metals, Various Schools, Oahu, HI	May-19	Dec-22	Assist the Facilities Division on building-exterior soil studies at various elementary school campuses on the Island of Oahu.	$775,000
Hawaii Department of Education/Hazardous Material Assessments, Various Locations, HI	May-16	Ongoing	Assist the Facilities Division on building-exterior soil studies at various school campuses in Hawaii. Developed recommendations and a soil management plan for any soil impacted by metals or pesticide compounds.	$1,266,235
County of Hawaii Department of Environmental Management/Kealakehe Scrap Metal Facility Soil Investigation, Kailua-Kona, HI	May-11	Feb-22	Characterized lead in stockpiled soils at a solid waste transfer station and former scrap yard site. Evaluated potential worker exposure hazards. Developed soil disposition plan for presentation to Hawaii Department of Health. Developed engineering design for site remediation and provided construction contractor procurement support. Prepared Environmental Assessment (EA) for the remediation and closure project (final EA and Finding of No Significant Impact published in June 2016). Provided contractor oversight of remedy implementation.	$843,200
Hawaiian Electric Company/Environmental Studies and Engineering, Oahu, HI	Sep-14	Ongoing	Assist client on multiple soil and sediment studies, including both on-land and in-water sample collection. Provide engineering design services of improvements and remedies under TSCA EPA Region IX oversight.	$5,039,838
Hawaii Island Community Development Corporation/Removal Action Planning and Implementation, North Kohala, HI	Dec-14	Oct-16	Developed removal action plans for the remediation of a former pesticide mixing facility in support of its redevelopment as residential housing. Provided oversight of arsenic and dioxin impacted soil removal action, and final closeout documentation. Provided contractor procurement support. Site cleaned up and approved for "No Further Action" by Hawaii Department of Health in 2016.	$144,000
Various clients/Environmental Site Assessments, Multiple Islands, HI	Jan-11	Dec-14	Performed Phase I and Phase II site investigations of former sugar cane lands, in support of property acquisitions, long-term leases, and divestitures. Phase II investigations included soil sampling and laboratory analysis.	$85,000
Monsanto Company/Irrigation Studies, Multiple Islands, HI	May-11	Oct-13	Evaluated groundwater resources supporting irrigation water use. Performed hydrogeological and water quality assessments of water resources in basal aquifer systems on Oahu and Maui.	$66,000
Lihue and Kekaha Sugar Mills/Demolition Oversight, Kauai, HI	May-11	Jul-13	Performed oversight of demolition activities and hazardous materials abatement at the idle sugar mills in Lihue and Kekaha. Attended regular public meetings with the community over the course of the project.	$88,000
Ohana Military Communities, LLC/Marine Corps Base, Kaneohe, HI	Apr-11	Nov-11	Characterized chlorinated pesticide-contaminated soil at a military housing community scheduled for demolition and redevelopment. Activities included sampling of surface and subsurface soil, laboratory coordination, data interpretation, and recommendations for soil disposal or reuse.	$90,000

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 11/1/2024

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Alliant Insurance Services, Inc. 353 North Clark Chicago IL 60654	**CONTACT NAME:** Sara Arnold **PHONE (A/C, No, Ext):** 725-245-1061 **FAX (A/C, No):** **E-MAIL ADDRESS:** Sara.Arnold@alliant.com
INSURED INTECON-42 Integral Consulting Inc. 1701 Pearl Street, Suite 200 Boulder, CO 80302	**INSURER(S) AFFORDING COVERAGE** / **NAIC #** **INSURER A :** Crum & Forster Specialty Insur — 44520 **INSURER B :** Continental Insurance Company — 35289 **INSURER C :** Arch Insurance Company — 11150 **INSURER D :** Valley Forge Insurance Company — 20508 **INSURER E :** Continental Casualty Company — 20443 **INSURER F :**

COVERAGES **CERTIFICATE NUMBER:** 742155551 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X **COMMERCIAL GENERAL LIABILITY** [ ] CLAIMS-MADE [X] OCCUR X Contractual Incl X for Railroads GEN'L AGGREGATE LIMIT APPLIES PER: [ ] POLICY [X] PRO-JECT [ ] LOC X OTHER: XCU			EPK-149296	11/1/2024	11/1/2025	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG 	$ 1,000,000 $ 300,000 $ 25,000 $ 1,000,000 $ 2,000,000 $ 2,000,000 $
E	**AUTOMOBILE LIABILITY** [ ] ANY AUTO [ ] OWNED AUTOS ONLY [ ] SCHEDULED AUTOS X HIRED AUTOS ONLY [X] NON-OWNED AUTOS ONLY			BUA 7036127003	11/1/2024	11/1/2025	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident) 	$ 1,000,000 $ $ $ $
A	[ ] **UMBRELLA LIAB** [X] OCCUR X **EXCESS LIAB** [ ] CLAIMS-MADE [ ] DED [ ] RETENTION $			EFX-126255	11/1/2024	11/1/2025	EACH OCCURRENCE AGGREGATE 	$ 10,000,000 $ 10,000,000 $
D B	**WORKERS COMPENSATION AND EMPLOYERS' LIABILITY** ANYPROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? Y / N: N **(Mandatory in NH)** If yes, describe under DESCRIPTION OF OPERATIONS below	N / A		WC 7 36126997 WC 7 36126983	11/1/2024 11/1/2024	11/1/2025 11/1/2025	X PER STATUTE [ ] OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	 $ 1,000,000 $ 1,000,000 $ 1,000,000
A A C	Pollution Liability Professional Liability Managment Liability			EPK-149296 EPK-149296 PCD1004368-00	11/1/2024 11/1/2024 9/26/2022	11/1/2025 11/1/2025 9/26/2028	See Additional See Additional See Additional	Remarks Schedule Remarks Schedule Remarks Schedule

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

See Attached...

CERTIFICATE HOLDER

Evidence of Insurance

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

AGENCY CUSTOMER ID: INTECON-42

LOC #: _____

ADDITIONAL REMARKS SCHEDULE

AGENCY Alliant Insurance Services, Inc.	**NAMED INSURED** Integral Consulting Inc. 1701 Pearl Street, Suite 200 Boulder, CO 80302
POLICY NUMBER	
CARRIER / **NAIC CODE**	**EFFECTIVE DATE:**

ADDITIONAL REMARKS

THIS ADDITIONAL REMARKS FORM IS A SCHEDULE TO ACORD FORM,

FORM NUMBER: 25 **FORM TITLE:** CERTIFICATE OF LIABILITY INSURANCE

Stop Gap coverage is included for OH, ND, WA, WY, Insurer A - Policy #EPK-149296
EL $1,000,000 limit; $15,000 deductible

Excess Liability coverage policy #EFX-126255 Effective: 11/1/24 - 11/1/25
Insurer: Crum & Forster Specialty Insurance Company, follows form over General Liability, Employer's Liability, Contractors Pollution, and Professional Liability coverages. Auto Liability is capped at $5,000,000.

Workers Compensation and Employers Liability -All Other States Policy #WC 7 36126983
Effective: 11/1/24 - 11/1/25, Insurer: Continental Insurance Company
Statutory limits and $1M for EL coverage. Coverage for the following states: CO,CT,FL,HI,ID,IL,IN,LA,MA,MD,ME,MT,NC,NJ,NV,NY,OR,PA,RI,TN,TX,UT,VA

Workers Compensation and Employers Liability – CA Only Policy #WC 7 36126997
Effective: 11/1/24 - 11/1/25, Insurer: Valley Forge Insurance Company
Statutory limits and $1M for EL coverage. Coverage for the following state: CA

Management Liability Coverage: Policy #PCD1004368-00 Effective: 9/26/2022-9/26/2028
Insurer: Arch Insurance Company, D&O $2,000,000 limit, $25,000 deductible, continuity date 7/25/07 EPL $2,000,000 limit, $25,000 deductible, continuity date 7/25/07 Fiduciary $3,000,000 limit, $0 deductible, continuity date 7/25/07 Crime (employee theft)/ERISA Fidelity $2,000,000 limit, $10,000 ded (ded $0-ERISA Fidelity), Kidnap & Ransom $2,000,000 limit each insured event, no deductible

Professional Liability Coverage: Policy #EPK-149296 Effective: 11/1/24 - 11/1/25
Insurer: Crum & Forster Specialty Insurance Company
$1,000,000 each act limit: $2,000,000 aggregate limit; $15,000 deductible

Pollution Liability Coverage: Policy #EPK-149296 Effective: 11/1/24 - 11/1/25
Insurer: Crum & Forster Specialty Insurance Company
$1,000,000 per occurrence, $2,000,000 aggregate limit; $15,000 deductible

Maritime General Liability and Employers Liability Coverage: Policy GI2400337, Effective: 11/1/24 - 11/1/25
Insurer: Lloyd's Syndicate, $1,000,000 any one accident or occurrence; $10,000 any one accident or occurrence deductible

Marine Equipment Floater Coverage: Policy# MSS003624, Effective: 11/1/24 - 11/1/25, $1,000,000
Insurer: Lloyd's Syndicate; 5% each item subject to a min of $10,000 deductible any one loss or occurrence

Cyber Liability Coverage: Policy #AB-6738694-01 Effective: 11/1/24 - 11/1/25
Insurer: At-Bay Specialty insurance Company; $2,000,000 limit; $10,000 retention

Foreign Policy Coverage: Policy # 83HIPBA4640 Effective: 11/1/24 - 11/1/25
Insurer: Hartford Fire Insurance Company
International Commercial General Liability ($1M/occurrence, $2M aggregate, $25K medical expense); International Business Auto (hired and non-owned auto for $1M limit); Employee Foreign Protection ($1M limit each for accident, bodily injury by disease policy limit and bodily injury by disease each employee)

Unmanned Aircraft Systems Physical Damage Coverage: Policy #9014191 Effective: 11/1/24 - 11/1/25
Insurer: Global Aerospace, Inc., Insured Value per Schedule

Aviation Coverage: Policy #9014191 Effective: 11/1/24 - 11/1/25
Insurer: American Alternative Insurance Corporation
$1,000,000 per occurrence
-

STATE OF HAWAII

DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS

BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS AND LANDSCAPE ARCHITECTS

This is to Certify that
ROBERT A WALKER
was duly licensed as a

PROFESSIONAL ENGINEER

In the State of Hawaii.

and is therefore authorized to practice this Profession within the State of Hawaii. In witness whereof, this License has been issued and the Seal of the Board affixed hereto, this 27th Day of June, A.D 2011

No. *14549*

Chairperson

STATE OF HAWAII

DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS

BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS AND LANDSCAPE ARCHITECTS

This is to Certify that
ANDREW J WYCKLENDT
was duly licensed as a

PROFESSIONAL ENGINEER

In the State of Hawaii.

and is therefore authorized to practice this Profession within the State of Hawaii. In witness whereof, this License has been issued and the Seal of the Board affixed hereto, this 9th Day of June, A.D 2011

No. *14493*

Chairperson

STATE OF HAWAII

DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS

BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS AND LANDSCAPE ARCHITECTS

This is to Certify that
Avram J Frankel
was duly licensed as a

PROFESSIONAL ENGINEER

In the State of Hawaii.

and is therefore authorized to practice this Profession within the State of Hawaii. In witness whereof, this License has been issued and the Seal of the Board affixed hereto, this 14th Day of March, A.D 2022

No. *19758*

Chairperson