STATEMENT OF QUALIFICATIONS

RISK ASSESSMENT AT SEDIMENT SITES



Geosyntec consultants



GEOSYNTEC OVERVIEW

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Geosyntec is a consulting and engineering firm that works with private- and public-sector clients to address new ventures and complex problems confronting our environment, natural resource, energy, and civil infrastructure. We serve clients from more than 130 offices in the United States, Canada, the United Kingdom, Ireland, Sweden, Spain, Finland, the United Arab Emirates, Saudi Arabia, and Australia. With more than 2,800 scientists, engineers, and other professionals from around the globe, we work each day to forge an inclusive and equitable environment for all our employees, clients, partners, and for the communities we serve.

RISK ASSESSMENT AT SEDIMENT SITES

Geosyntec risk assessment experts support nature and extent characterization, baseline and site-specific human health and ecological risk and exposure assessments, active remediation, and multi-partially responsible party cost allocation actions at freshwater and marine sediment sites across the world. We help our clients navigate risk and exposure assessment challenges; develop site-specific environmental media cleanup standards; model toxic heavy metal uptake and bioavailability and food web exposures; advocate for fairly allocated site cleanup costs; and gain ready acceptance from regulators for novel site remediation strategies.

Our human health risk assessors model worker, residential, and recreational direct-contact exposures with sediment and surface water as well as complete exposure pathways related to fish and shellfish ingestion-based exposures to inform active remediation, fishing advisories, and nursing infant exposures for bioaccumulative compounds like polychlorinated biphenyls (PCBs), dioxin and furans, and per- and polyfluoroalkyl substances (PFAS). Our ecological risk assessors design and implement biota sampling programs, sediment toxicity testing, and conventional and more-innovative methods of sediment chemistry sampling for assessing population and community-level implications. Geosyntec risk assessment experts also develop pragmatic response plans to implement institutional and land use controls to preclude or mitigate exposure. In particular, our partnership with SiREM laboratories allows us to implement proprietary passive sampling methods (specializing in PFAS target analytes) that can be used to assess the bioavailability and mobility of contaminants in sediment. Understanding site-specific bioavailability allows our risk assessors to make informed decisions predicated on real-world exposures and related pathways rather than costly, time-intensive, conservative, default parameter value-based approaches.

PROJECT HIGHLIGHTS



FORMER INDUSTRIAL SITE

DIGHTON, MA

- Geosyntec navigated a complex combination of regulator and client objectives to submit an updated human health risk assessment (HHRA) and a Baseline Ecological Risk Assessment (BERA) under United States Environmental Protection Agency (USEPA) Region 1's Resource Conservation and Recovery Act (RCRA) Corrective Action program.
- Gesoyntec's BERA included SiREM's passive samplers for metals and PCBs and bioassays to evaluate the potential effects of mercury and PCBs on invertebrates in an on-site wetland. The assessment of bioavailability and detailed assessment how of bioassay results relate to chemistry showed a lack of effects to invertebrates resulting a no further action designation for the on-site wetland.
- Geosyntec's support of the site characterization included submitting a new HHRA addressing adult and child residential, EPA approval of a new HHRA, and recreational exposures at properties adjacent to site waterways.



PEARL HARBOR SEDIMENT REMEDY ASSESSMENT

PEARL HARBOR, HAWAII

- Geosyntec risk assessment experts have supported investigations at Pearl Harbor Naval Complex for over two decades, addressing direct (e.g., dermal contact with sediment) and indirect (e.g., vapor intrusion exposures) human health complete exposure pathways and ecological population and community-level exposures to volatile organic compounds (VOCs), including chlorinated solvents and breakdown products; semivolatile organic compounds; PCBs; polycyclic aromatic hydrocarbons (PAHs); total petroleum hydrocarbons (TPH); pesticides; herbicides; and heavy metals. Our characterization efforts have included risk evaluations at Ford Island, Lualualei, Peal City Burn Area, the Prince William County Wastewater Treatment Plant, the Pearl City Peninsula Landfill, the Aiea Laundry facility, and the Naval Air Station at Barber's Point.
- Geosyntec is working with the U.S. Navy on evaluating the use of uncontaminated dredge spoils that were removed during navigational dredging in the main channels of Pearl Harbor as a potential source of fill material allowing remediation of contaminated sediment while minimizing disturbance to the ecological system with foreign material and instillation.
- Working with Geosyntec's SiREM laboratory, our team deployed customized passive samplers to assess the availability of metals and PCBs. Results indicated that placing the dredged material markedly reduced contaminant availability and mobility by approximately 80% to 90% and demonstrated that using uncontaminated dredge spoils could be a successful and cost-effective remedial option for contaminated sediment.

PROJECT HIGHLIGHTS



HUMAN HEALTH AND ECOLOGICAL RISK-DRIVEN ADVOCACY AND LITIGATION SUPPORT, GOWANUS CANAL SUPERFUND SITE

BROOKLYN, NEW YORK

- Geosyntec technical experts engaged in the critical review of the human health and ecological risk assessments underpinning the RI/FS as they inform Remedial Design (RD) and Remedial Action.
- Geosyntec performed data gap assessments, detailed data evaluations, and statistical assessment to redefine assignment of quantitative expressions of carcinogenic risk and noncarcinogenic hazard of focused COCs, including PAHs, PCBs, heavy metals, and dioxin/furans.
- The updated risk evaluations featured critical reassessment of naturally occurring, nonanthropogenic and anthropogenic background conditions, refinement of applied toxicology and health-based criteria, and updated assessment of sensitive subpopulation scenarios as receptors of concern. The results of this analysis allowed Geosyntec experts to support litigation activities and define a scientifically defensible and equitable cost allocation strategy for multi-PRP inclusion.

NOVEL ASSESSMENT OF NURSING INFANT EXPOSURES TO DIOXIN-LIKE PCBS

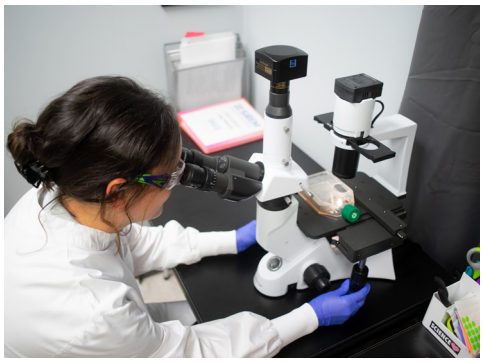
COLUMBIA RIVER, OREGON

- A Geosyntec toxicology expert helped the client to resolve a seemingly intractable position with Oregon Department of Environmental Quality (ODEQ) regarding PCB (and dioxin-like PCB) toxicity, degree of daily exposure, and extent of contamination along the Columbia River. The previous consultant's investigation and risk assessment had not been viewed favorably by the ODEQ and had resulted in public outrage and negative press.
- Risk assessors utilized novel applied toxicology and risk assessment techniques to refine the understanding of specific congener and dioxin-like congener impact to a Native American subsistence fishing population, where nursing infants of effected populations were considered the critical sensitive subpopulation receptors.
- Geosyntec's novel approach identified that risk mitigation could be achieved with a reduced dredging footprint, resulting in significant cost savings for the client. In addition, clear and open risk communication with local stakeholders allowed for community supported future planning and redevelopment aligned with client's business goals.

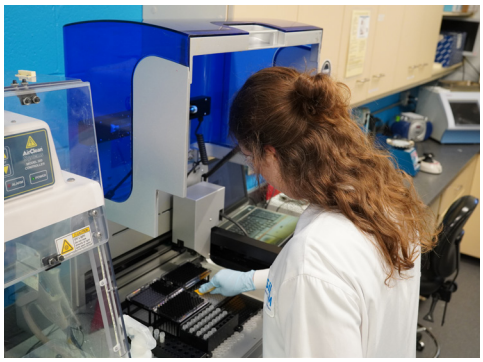
COLDBROOK CREEK REMEDIAL INVESTIGATION

CONFIDENTIAL CLIENT, ELMIRA, NY

- In consultation with New York State Department of Environmental Conservation and the current owner, Geosyntec risk assessment experts are supporting remedial investigation (including a Human Health Exposure Assessment and Fish and Wildlife Impact Assessment) in wetland areas and residential homes and yards adjacent to the site and a 2.6-mile section of a creek.
- A highlight of this successful investigation by Geosyntec staff was effective communication and cooperation with the forty-six property owners along the creek, allowing sampling at residential properties to proceed in a timely fashion.









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