



Supporting the Future of Aquatic Farming

The aquaculture industry refers to the breeding, growing, and harvesting of fish and aquatic plants. Already one of the fastest growing food sectors in the world, the increasing demand for seafood presents both opportunity and challenges for businesses looking to build, expand, and modernize their infrastructure.

Stantec's aquaculture group offers the optimal blend of global expertise and local experience to ensure your project is an unqualified success. We have extensive experience in the siting and planning of aquaculture facilities, facility permitting, design of fish culture and rearing facilities, fish holding and acclimation facilities, water treatment and RAS systems, and effluent treatment and disposal and have worked with over 100 clients globally to develop signature projects.

Our Services

- Water Resources planning and management.
- Aquaculture and hatchery systems operations planning and optimization.
- Management and technology consulting.
- Permitting.
- Site selection and feasibility studies and analysis.
- Site development design services.
- Conceptual design and cost estimating services.
- Environmental impact assessment.
- eDNA sampling for measuring aquatic biodiversity.
- Water and wastewater treatment planning and design services.
- Development of pathogen early warning systems.
- Remote sensing.
- GHG services (carbon accounting and management including development of natural capital enhancements).
- ESG advisory services.
- Chemical hazard evaluation and risk assessments.
- General building planning and design.
- Aquaculture facility design.
- Fish hatchery planning and design.
- Marine habitat modeling
- Development of marine carrying capacity models.
- Water quality and sediment sampling.
- Hydrodynamic and sediment transport modeling.
- Safety audits and design services.
- Materials handling and storage systems planning and design.
- Ports and Marine terminals planning and design.
- International development services.

Our Experience

Cold Lake Fish Hatchery Upgrades

The Cold Lake Fish Hatchery, owned by the Province of Alberta, produces approximately 65,000 kg of fish annually for stocking programs to provincial lakes in support of recreational angling, including rainbow trout, brown trout, brook trout, and tiger trout, and is equipped for walleye production.

When Alberta Infrastructure (AI) wanted to convert the facility from a flow-through facility to a recirculating aquaculture system (RAS), they retained Stantec for design and construction support services. Stantec prepared a conceptual design report assessing alternatives for RAS at varying levels of water reuse and then prepared the final design for the preferred alternative. We also provided an energy analysis to estimate the potential energy savings associated with the recommended project improvements. Finally, we provided administration, engineering, and on-site support during the construction of the improvements and the start-up and commissioning support.



Mainstream Aquaculture Facility

The client required a fully automated harvesting process for their Recirculating Aquaculture System for fish farming on a greenfield site. Working closely with the client to understand their specific needs, we provided the full suite of services from our Buildings group to deliver all aspects of the integrated engineering design.

Our civil and structural teams coordinated the works associated with eight x 600 m³ tanks, pumping sumps and gravity return channels, and the design accommodated the spatial and services needs of the client's specific equipment. Comprehensive power and lighting systems included backup power generation to support system resilience for 24/7 reliability, and PLC process control systems enable efficient and automated functionality of the facility. We designed the 3,500 l/s system water circulation system, process ventilation and heat injection systems, and integrated the bulk oxygen system with the new oxygenation systems.



Aquaculture Development Project – New Zealand

Stantec provided planning, engineering, and quantity surveying assistance, including reporting on the technical framework for supporting infrastructure and its capital cost, reviewing the applicable planning frameworks, and identifying any potential issues for proposed sites for the feasibility study of a freshwater facility for marine aquaculture.

This assessment and cost estimation covered geotechnical conditions, buildings, site development, water supply, and wastewater disposal, plus mechanical and electrical equipment. The first stage of the two-stage development enables installation of 3 x 5,000 tonne RAS units housed in a 156 m by 138 m building. The second enables a further two RAS units in a 156 m by 90 m building. A 20 m x 20 m building is proposed to house sludge handling equipment. Other assets include liquid oxygen compound, water intake and storage, and sludge storage.

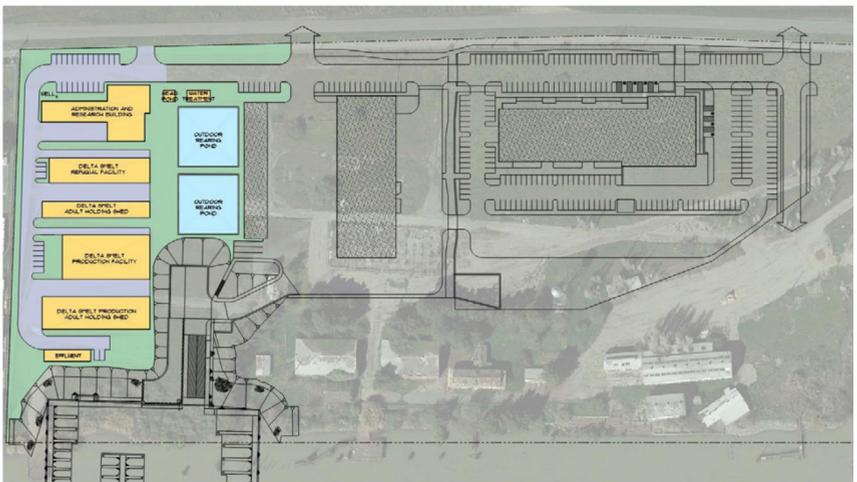




Abu Dhabi Aquaculture Site Selection Project

The UAE Aquaculture program, run by the Environment Agency in Abu Dhabi, is working with Stantec to identify a suitable site for the development of a sea-pen aquaculture zone where finfish farming can meet the growing demands of the local market.

Using a multi-criteria analysis, with state-of-the-art hydrodynamic modelling, we'll determine the best positioning of the site. The software incorporates criteria including ideal water quality conditions, shelter from storms, depth and resources, proximity to shipping lanes, transport hubs, oil and gas concession areas, and military installations. The study includes development of a geo-referenced marine habitat map, an environmental carrying capacity model, and a detailed financial analysis of the projected CAPEX and OPEX costs associated with a short-list of site options.



Delta Smelt Fish Technology Center – Rio Vista, CA

Stantec prepared a master plan, technical engineering report, and bridging document designs for the construction of a fish technology center to study delta smelt and other imperiled species at a site located near Rio Vista, California.

Envisioned as a stand-alone facility for maintaining a refuge population of Delta Smelt and for propagation research, conservation, and study of other imperiled fishes, the master plan concepts included a multi-building campus at a Rio Vista site to achieve the research goals. The project includes an administration and research building, a delta smelt refugial facility, delta smelt production facilities, influent and effluent treatment, and additional support buildings. Captive delta smelt culture requires substantial water treatment and conditioning of all rearing systems, some of which are 100% recirculating aquaculture systems (RAS). The estimated total cost for the facility is \$60-80M.



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