Farm of Qi — TimberFish Expansion Plan

Permaculture Aquaponics & Clean Water Integration

Vision

Farm of Qi is expanding its permaculture operations to include integrated aquaponics and clean water processing through a partnership with TimberFish Technologies. The TimberFish system converts locally available organic waste — weeds, wood chips, and agricultural residues — into a microbial biomass that feeds fish and crustaceans in a closed-loop recirculating aquaculture system. This approach aligns with the farm's ethos of working with the natural wetland ecology of the site rather than against it.

Founder: Jere Northrop

Jere Northrop is a microbiologist and environmental engineer whose career spans five decades of work at the intersection of microbial ecology, water treatment, and aquaculture. His path began in 1973 at the Center for Theoretical Biology at SUNY Buffalo, where he worked with the Relational Systems group on theoretical biology. In his spare time he built the first prototype of what would become TimberFish — fermenting weeds in barrels to produce a microbial biomass and feeding it to minnows.

Northrop went on to serve as chemist and process superintendent at the Town of Amherst, NY Advanced Wastewater Treatment Plant (1979–1989), a 36 MGD facility where he developed biomonitoring systems using trout, fathead minnows, and daphnia grown in plant effluent. He then founded Bion Environmental Technologies (1989–2008), developing patented nutrient management systems for agricultural operations across the eastern United States.

In 2008, Northrop launched TimberFish Technologies with a new focus: building economically self-sustaining systems that integrate fish production with waste conversion, removing dependency on regulatory markets. The technology has been validated through independent third-party trials at the Freshwater Institute (a program of The Conservation Fund), one of the world's premier recirculating aquaculture research centers.

The TimberFish Small-Scale System

The TimberFish system is a modular, scalable technology designed to operate at small-farm and homestead scales. It converts lignocellulosic organic matter (wood chips, weeds, crop residues) into a nutrient-rich microbial biomass through controlled fermentation in bioreactors. This biomass then enters the aquaculture loop as supplemental feed for fish and crustaceans.

Core System Components

Component	Function
Bioreactor	Aerobic fermentation vessel where organic matter is inoculated with microbial cultures and irrigated with recirculating effluent to produce biomass
Solids Ecoreactor	Composting bed that processes settled solids into a beneficial soil amendment (BionSoil) for permaculture use
Fish Growth Tanks	Recirculating tanks for growing fish and crustaceans; water is filtered through wood-chip biofilters mounted above each tank
Wood Chip Biofilter	Biological filtration layer atop fish tanks that removes ammonia and nitrites; doubles as aquaponics growing medium (watercress, herbs)
Worm Farm	Vermiculture beds fed with microbial biomass; worms serve as live feed supplement for fish

Species Successfully Grown

Species	Type	Notes
Rainbow Trout	Coldwater fish	Grown to market size in proof-of-concept outdoor systems year-round including winter
Channel Catfish	Warmwater fish	Grown in enclosed facility at Five & 20 Spirits site, Westfield, NY
Yellow Perch	Coolwater fish	High-value species suitable for northeast markets
Largemouth Bass	Warmwater fish	Demonstrated in prototype system
M. rosenbergii	Freshwater prawn	Giant river prawn; high market value crustacean grown alongside fish

Alignment with Farm of Qi

The Farm of Qi site in Southampton Township, NJ is classified as 100% freshwater wetlands with hydric Mullica fine sandy loam soils and a water table at the surface. Conventional agriculture and permanent construction are heavily restricted. The TimberFish system is uniquely suited to this environment:

Site Constraint	TimberFish Compatibility
100% wetlands coverage	System uses above-ground tanks and bioreactors; no excavation or grading required
Hydric soils / high water table	Recirculating closed-loop design minimizes ground contact and nutrient discharge
50-ft riparian buffer zone	Modular footprint can be positioned outside buffer; zero-discharge operation
Temp structures <32 sq ft permitted	System components can be configured as multiple small modular units
Native Coastal Plain Hardwood Swamp	Organic feedstock (fallen branches, native plant trimmings) sourced on-site supports habitat management

Proposed Expansion Phases

Phase 1 — Bioreactor Pilot

Install a small-scale bioreactor using on-site woody debris and native plant trimmings as feedstock. Establish microbial cultures and begin biomass production. Integrate worm farm for secondary protein conversion. Estimated footprint: two modular units under 32 sq ft each.

Phase 2 — Aquaculture Integration

Add recirculating fish tanks with wood-chip biofilters. Begin with species suited to the site's temperature profile — yellow perch and channel catfish for warm months, with potential for trout in cooler seasons. Aquaponics layer (watercress, native herbs) grown on biofilter surfaces.

Phase 3 — Closed-Loop Permaculture

Connect system outputs to existing permaculture zones: BionSoil amendment for raised beds and food forest plantings, nutrient-rich water for irrigation (within regulatory limits), harvested fish and prawns for on-site food production and local market. Watercress and herbs as additional crop revenue.

FoQ-13: Wetland Enhancement & Clean Water Demonstration

Site Remediation Proposal — Community Vote

Project Summary

This proposal describes a site remediation project that would enhance and upgrade the existing wetland areas and provide for reclamation and reforestation of some of the upland area in the cleared, historically disturbed portion of the site. The project would demonstrate that small-scale ecotech interventions can produce measurably superior water quality compared to ambient conditions in the surrounding watershed.

Stormwater & Flow Management

A berm would be installed on the southwestern border of the site so that all water leaving the property would exit through a single point discharge into the watercourse at the extreme southernmost location where it encounters New Freedom Road. Regulatory agencies favor point-source discharges since they are easy to monitor and regulate. Additional flow diversion and redirection structures would be installed within the site to manage water movement through treatment zones before reaching the discharge point.

Ecotech Treatment Systems

Small ecotech-type systems — principally bundles of wood sticks or brush piles containing wood sourced from the site — would be installed at strategic locations to capture nitrogen and phosphorus from the water as it moves through the property. These are passive biological systems that leverage microbial biofilm colonization on woody surfaces for nutrient uptake and denitrification. The installations would be small in scale and would not alter the appearance, aesthetics, or functionality of the existing wetlands.

Water Quality Documentation Program

The modifications would provide straightforward documentation showing that effluent samples from the modified site have superior water quality when compared with samples from the watercourse upstream of the site or from Beaverdam Creek, and would meet or exceed the FW2-NT standards of the NJDEP.

Monitoring Parameters

Tier	Parameters	Method	Frequency
Routine (Test Kit)	pH, Temperature, Ammonia, Ortho-Phosphorus	Field test kits; can be performed by volunteers, students, and community members without scientific background	Weekly to biweekly
Certified Lab (Verification)	Ammonia, Ortho-Phosphorus, TKN, Total Phosphorus, TSS, VSS, Alkalinity, BOD or COD, Salinity	Certified laboratory analysis to verify and support field test kit results	Monthly to quarterly
Extended (Budget Dependent)	Dissolved Oxygen (DO), Oxidation-Reduction Potential (ORP)	Instrument-based field measurement; added depending on budget or regulatory necessity	As needed

Sampling Locations

Sample Point	Purpose
Upstream of site (watercourse)	Baseline / control — ambient water quality entering the property from the surrounding watershed

Beaverdam Creek	Regional reference — representative conditions in the local drainage basin for comparison
Point discharge at New Freedom Road	Site effluent — water quality after passing through the enhanced wetland and ecotech treatment systems

Community Science & Education

A key feature of this proposal is its accessibility. Routine test kit measurements can be performed by individuals without a scientific background, including students, local volunteers, and community members interested in water quality and environmental monitoring. This transforms the site into both a functional clean-water demonstration and a hands-on education platform — aligning with Farm of Qi's mission of community engagement and transparent, measurable ecological stewardship.

Regulatory Compliance Target

The project targets NJDEP FW2-NT (Freshwater 2, Non-Trout) surface water quality standards. The on-site tributary is classified FW2-NT with a 50-ft riparian zone. By consolidating discharge to a single monitored point and routing flow through passive ecotech treatment, the site would demonstrate compliance with or exceedance of these standards — providing a replicable model for wetland-compatible land stewardship in the New Jersey Coastal Plain.

COMMUNITY VOTE — FoQ-13
Wetland Enhancement & Clean Water Demonstration Project

This proposal is submitted for DAO governance vote by Qi holders. Voting opens with the next Town Hall. All project data, monitoring results, and budget allocations will be published on-chain.