

**HELEN WATTS ENGINEERING, PLLC**

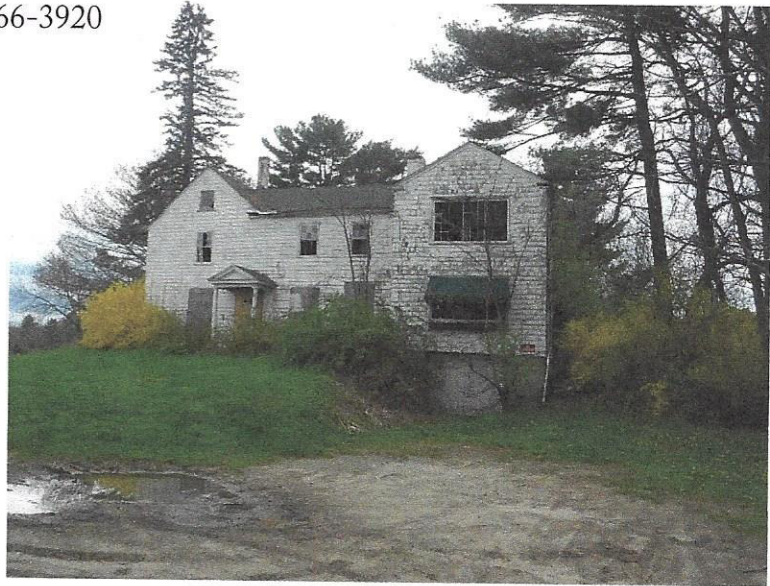
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May 20, 2019

Nathan Poore, Town  
Manager  
Town of Falmouth  
271 Falmouth Road  
Falmouth, ME 04105

RE: RFQ, Tidewater Farm,  
Falmouth, ME, HCW Project  
No. 19-035

Dear Nathan:



Thank you for the opportunity to visit the Tidewater Farm again. I was last there while providing structural engineering assistance to Bangor Savings Bank, as Trustee for the family who owned the farm and the surrounding fields. I evaluated the condition of the barn and brought in Scott Burner for the barnwright, having worked with him on other barn renovation/repair projects, and we did our best to help the barn with the funding provided. I started my firm, Helen Watts Engineering PLLC, in 2007, and have worked on several historic properties on the National Register, as well as on many properties that are over 150 years old.

I am a member of the Timber Guild's Engineering Council; this August I will be speaking at the Guild's annual conference in New Hampshire about my inspection and recommendations for the Gedney House in Salem, Massachusetts, built in 1665. The Guild, and my ongoing work, provides me with connections to craftspeople with the various skills needed to rejuvenate old structures while maintaining the old fabric.

My resume is attached. What I generally do for projects is to provide an inspection then a report stating what I observed, what it means (historic fabric, water/rot, insects, egress), what was needed to be done immediately and in the foreseeable future, and what options the owner should consider. Then, when the building is opened further, I provide additional inspections, structural designs, repair options, and ideas. I don't provide recommendations or referrals for contractors, but I can provide lists of names.

Here, there is no "angel investor", and no plan for a need to be filled. I have seen projects start and falter due to funding difficulties, and the schedule impacts of working with historic tax credits on financing. I think you need a developer with a plan, and experience getting historic funding, and that the plan will take the most-historically valuable parts of the buildings and add modern functionality. New modern uses need to meet the Life Safety Code (fire and egress) and the ADA accommodations for the disabled. This means that the first floor is the most useful, and that would need two acceptable means of egress, so the house would need a pair of access ramps

30' long at the front and back, for example, if it was to be used at the current floor height relative to the grade outside.

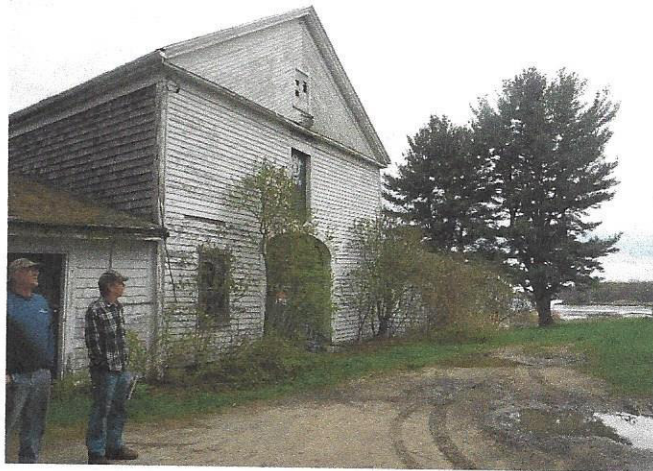
Other needs and observations:

- The parking lot/driveway is gravel in fair condition and could be addressed with reclaim asphalt or porous paving.
- There is a water main running through the property, so no well is needed
- If bathrooms are provided, you need as a minimum two unisex bathrooms with one acceptable for wheelchairs.
- The basement of the house, and the lowest level of the barn, appear to be below the seasonal water table, so the buildings could be moved to a new foundation with either a crawl space or to a slab-on-grade
- If power is to be provided, you need a new power supply and wiring, LED lights, and a plan for solar PV panels (PV is less expensive over a 25-year span than purchased power).
- The south part of the house needs new roofing or temporary roofing in 2019, other parts may also need this.
- The windows are single-pane wood windows in fair to poor condition.
- There are two chimneys. Most chimneys are at the end of their useful life at 100 years old, and except where needed for exterior appearance, they can be taken down and any heating done with modern electric heat exchangers with (eventual) solar panels; the heat exchangers will also provide cooling.
- The basement of the house should be kept above freezing to minimize foundation damage due to freeze-thaw if this feature is to be repaired.
- The south part of the house was built first, then the middle part of the ell, then the north part.
- The south part has beautiful wood paneling, floorboards that are just under 24" wide, wood panel doors with early knobs, and other original features. Some of these can be repurposed either to other historic structures or by reusing them in parts of the revitalized house. This part of the building also has large rooms. The first floor framing is sagging around the chimney; this framing shouldn't be supported by the chimney, but I didn't traverse the basement swamp.  
The west room on the first floor has a sloping floor, but this may have been originally built as a porch then enclosed – or the replacement foundation may have settled.  
The plaster appears to be a lime-based horsehair plaster on split lathe. This is a favorite feature for historians, and where viewed it appeared to be in good condition.  
The attic has some holes in the roof and water damage, but the timber framing appears to be in good condition. I saw an ant here, possibly a carpenter ant, so the wood would need to be checked, fumigated if needed, then sounded and repaired.
- The middle part has the oldest foundation, with multi-wythe brick masonry walls above mortared ashlar. These show freeze-thaw foundation movement, and the floor is a plastic clay soil; I understand that a week before our visit there was much deeper water in the

basement. There is a brick masonry chimney arch with a concrete masonry (CMU) wall supporting the center; the bricks are over 100 years old, with a limey mortar.

The first floor framing has some damaged foil-faced insulation between the joists; if intact, it would have protected the framing from moist conditions somewhat, preventing rot. The first floor framing joists are timbers, where viewed. The lower part of the east wall has concrete cast against the stone foundation; this is in good condition. The concrete goes around the basement for the south part of the building as well. This part of the building has one large room on each floor.

- The north part of the building has a concrete slab with a trench drain and a garage door, with brick-topped stone foundation walls. The slab is heaving (more freeze-thaw movement). The first floor has a kitchen with a bath and bedroom above. There is little of the historic fabric left in this area.
- One idea for the house is to place the oldest part of the house on a radiant slab, then to build an ell with kitchen/refrigerator/bathroom facilities. The older part of the house could then be used for offices/meeting spaces, and support rooms for functions, and the main part of the barn could be used for functions and activities.
- The south part of the barn has extensive sill damage on the west side but otherwise appears to have acceptable first floor framing and footings. The headroom is limited and the rooms are chopped into stables.
- The main part of the barn is the oldest part of the barn, and is missing 50% of the floor framing – the basement could be filled and topped with a radiant slab to eliminate most of the moisture in the building and provide a durable and easily accessible floor. The second floor has a 3'-raised center portion for good headroom below. This is the most flexible space.
- The north part of the barn has no floor; this adds moisture into the building. This area is in fair condition and could be removed and rebuilt if the space was needed.
- The barn is being supported by timbers and equipment from Scott Burner. If the barn is taken down, they should be returned to him.



Your opportunity is to take the house and barn structures at the Tidewater Farm, and to keep as much as possible of the historic elements in good shape while making the area into a facility useful to the people of Falmouth. This will need to be cost-effective, meaning that the facility will need to bring in funding when completed. One possible use is for the Falmouth Land Trust, with

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some office area, a meeting space, and space for programs. The space could also be used for events – barns are popular for weddings, and the house could provide support space.

I think that, without an “angel investor” or some significant crowdfunding donating cash, it would be difficult to cover the cost of making the house usable. The barn could be made usable, without bathroom facilities and with a new roof and floor, for the least amount of funding, then the other parts of the barn could be removed or left for unoccupied light storage. The house should be properly closed up, with ventilation for the basement and closure for the roof holes, until a plan is made for re-use of the building (or demolition).

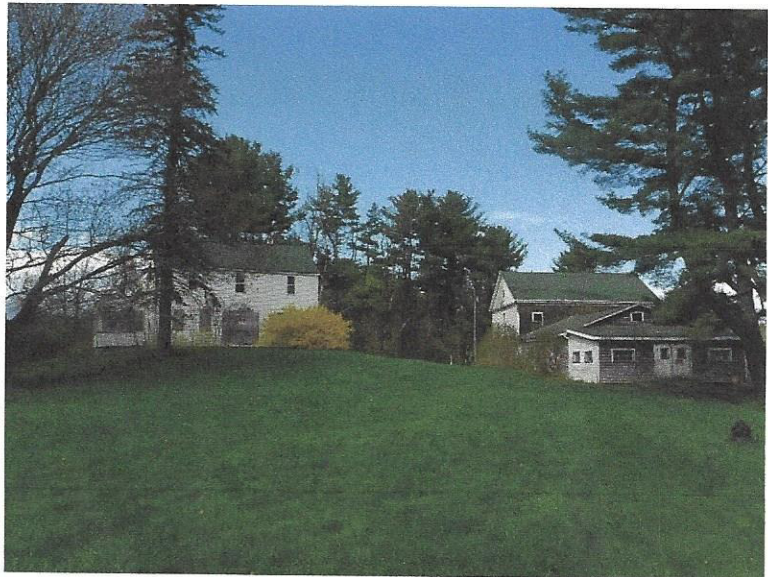
I usually work for a developer or contractor; I like working with old structures. I’ve given you some ideas. I prefer to work for pay, having my own projects to finance. I bill at \$125 per hour, including travel, and have done some work for non-profits such as the Theater at Monmouth at a reduced rate.

The Town of Falmouth and the Falmouth Land Trust need to decide what they want for this property. The location is beautiful and central, and it should provide a safe and useful space for the townspeople. Please contact me if you need assistance, and thank you for the opportunity to go through the buildings again.

Yours truly,



Helen C. Watts, P.E.  
Principal



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**HELEN C. WATTS, P.E., SECB**  
**Principal, Helen Watts Engineering PLLC**

Professional Engineer, Civil Engineering: Maine, #5261, Massachusetts, #47515, New Hampshire, #12984, Hawaii #16949. SECB and NCEES Certified. State of Maine Certified Woman-Business Enterprise (WBE) and Local Project Administration (LPA), State of New Hampshire WBE. Also: OSHA 30-Hour Construction Certificate, ECATTS Certificate, MaineDEP Erosion Control Certificate, Red Cross First Aid/CPR/AED.

***CAREER SUMMARY***

Hands-on, on site, experience, developing and completing effective, on-time, and on-budget projects, including construction, design, repairs, litigation and planning.

***ACCOMPLISHMENTS***

Engineer of record, new construction of various new commercial and residential properties 2007 - , including:

- Additions providing new industrial spaces, 8000 SF, Portland, 5000 SF, Topsham
- Design, construction inspection, permitting assistance, new residence + cottage and new sea wall under the new Sand Dune regulations, 3200 SF, Biddeford
- Design, construction management, horizontal boring machine foundations, Portsmouth Naval Shipyard, Kittery
- Design, construction inspection, new restaurant, 3000 SF, Limington

Facility engineer at Bath Iron Works, 10 years+, projects include:

- Managed BIW \$2M Medical Building from conceptual design to move-in, including teaming, union and non-union subcontract labor, and value analysis, and providing ADA access and IT connectivity for adjacent buildings on a tight site, opening on schedule and at budget.
- Developed and defended a DEP/Army Corps permit application for a 200-Ton Transporter Roadway crossing saltwater wetlands against three intervenors, designed and built the roadway.

Performed various construction quality/structural evaluations, commercial and residential facilities.

Working with masonry and concrete repair, façades, parking garages, bridges, determining urgent repairs and planning and completing maintenance contracting. Façade inspections with rope access.

**Published:** *The Pretty Good House, A Graphic Handbook*, 2013, *Volume 2, The Pretty Good House, A Graphic Handbook*. 2016; available on Etsy as a download, residential building science.

***Experience:***

2007 – Structural engineering consultant, Helen Watts Engineering PLLC, Principal

2000-2007: Project structural engineer, Criterium-Mooney Engineers

1996-2000: Structural engineering, technical writing, various clients. Secret clearance with DOD, 1999.

1986-1996: Bath Iron Works Corporation, Bath, ME, Facility Engineer for 9000 employee shipbuilder.

Project and structural engineering, from concept to close-out, including permitting, funding requests, estimated and actual costs, and schedule performance. Projects included marine structures, heavy industrial buildings and fixtures, office and medical areas, rentals, subcontracting and vendors, accommodating disabilities, parking lots, industrial ventilation.

1980-1982: Cianbro Corporation, Pittsfield, ME, Construction engineer: \$25M Recycled Fiber Facility and Waste Treatment Plant, Scott Paper, Winslow Mill. \$185M design/build Paper Machine #3, Madison Paper Industries, Madison, ME. Also responsible for construction of wastewater treatment facility, joint with MPI and the Town of Madison, including landfill construction and basin aerators.

B.S. Civil Engineering, University of New Hampshire, 5<sup>th</sup> Year Certificate, Pulp and Paper, University of Maine. Developed curriculum + taught Structural Mechanics at Kennebec Valley Community College, taught structural engineering section, Mechanical Engineering PE Review Course, USM.

Active member, SEAM, ASCE, TFEC, SWE.