Groveton Mill Site

A Study of Business Enterprises to Occupy the Mill Site

Commissioned and Funded by the North Country Council
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Overview

This report narrates and documents the analysis of five business proposals utilizing the site of the former Groveton Mill. The five proposals include two that are primary and three that are secondary or alternative. The two primary proposals focus on (1) a Controlled Environment Agriculture (CEA) venture and (2) a commercial laundry; the three secondary proposals focus on (1) a medicinal botanicals plan, (2) a distillery proposal, and (3) a creamery plan. Each proposal is a stand-alone business plan starting with an executive summary and ending with projections.

Each of the five business plans would encounter financial or other obstacles, some larger than others. This is hardly surprising: someone would have already executed the plan if it was wholly workable. Like Edison's filaments, success comes only after numerous failures. An unworkable business plan is only unworkable *now*. Consider Hardwick, Vermont, long the object of scorn and the butt of jokes is now home to a host of innovative, successful food related businesses. Or how about a ten-year old business plan to have the U.S. export natural gas. Circumstances change on a dime.

These five plans provide a helpful starting point for someone wishing to start a business at the Mill site. At the very least they define the landscape and offer direction. Anyone wishing to start one of these businesses, or even a related business for that matter, will find their homework is behind them. The plans also invite innovative thinking of ways to overcome the obstacles to success such as public-private partnerships or collaborative relationships with other North Country economic development groups.

Controlled Environment Agriculture

Executive Summary

Hot Water and Electrical Power Requirements

SourceOne completed a thorough review of hot water and electrical power needs for the North Country Council in December 2012. The assumptions are accurate based on research of the needs of both the two acre and five acre CEA. The remaining buildings at the Groveton mill site would provide ample space to house a co-generation facility. No further costs other than the equipment addressed in the SourceOne feasibility were added to this study. The cost of electricity and gas for both the two acre and five acre CEA are included in the attached five-year financial projections.

Market and Size of the CEA

This study undertook a review of the market potential for a controlled environment agricultural (CEA) business of a two acre and five acre enterprise. The CEA focus was on acquaponic systems including aqua-culture and hydroponics. The research revealed several challenges faced by this industry and the proposed CEA:

- Aquaponics is capital intensive. A two acre system will cost approximately $5.2 million to construct and a five acre will cost $9.7 million. The project costs rise to $9,052,768 and $13,877,095, respectively, for the two acre and the five acre CEAs when the working capital necessary to fund operating losses over a five year period are included.
- Projected losses from operations before debt service, depreciation, and amortization are significant for both the two acre and five acre CEAs. The five year projections on the two acre CEA demonstrate operating losses in excess of $3.8 million and the five acre CEA operating losses of $4.1 million.
- Both the two acre and five acre will not support debt financing.
- There are a number of inherent risks in fish and plant production. The risks are mitigated with the co-generation facility and back-up heat and hot water from traditional sources. There is biological exposure mitigated by proper production procedures.
- The plan addresses a number of marketing issues related to fish, greens, and herbs, which are also addressed in the report.

Market and Size Analysis

The capital needs and projected operating deficits of a two and five acre CEA argues for creating a public/private partnership based on the following proposal:

- Attract grant funding of $4.5 and $7 million for the two acre and five acre CEA respectively.
- Create a CEA co-operative that sells shares that appeal to individuals and groups passionate about the organic food movement throughout New England. The co-operative for a two acre CEA would need to generate an additional $4.5 million in private funding. As an example, if the proposed co-operative attracted approximately 3,000 members at the initial investment of $1,500 each, the funding from this source and a public grant of $4.5 million could fund the

whole two acre CEA, including working capital. The co-operative for a five acre would need to generate an additional $7 million in private funding. As an example, if the co-operative could attract approximately 3,500 cooperative members at the initial investment of $2,000 each, the funding from this source and a public grant of $ 7 million could fund the entire five acre CEA, including working capital.

- Seek an investor such as Edward Johnson III, who owns a major stake in Fidelity Investments and owns Northern Neck Investors, LLC that operates Barnyard Farms, LLC, a large hydroponics tomato operation in Maine.

The two acre CEA will occupy approximately 87,000 square feet of the available space on the Groveton site while the five acre CEA will occupy 217,000 square feet of the available space. The available cement pad after will offer 500,000 sq ft along with over 70,000 sq ft of remaining building space.

Water and Wastewater Requirements

There are a number of variables governing the water demands of the two acre and five acre CEAs. The absorption rates of water for the herbs and vegetable production suggest that the two acre will need approximately 100,000 gallons of water/month during the peak summer period and 250,000 gallons of water/month for the five acre enterprise. The water requirements of the aqua-culture/hydroponic system will exceed the re-circulated wastewater generated from the system proposed in this plan. The plan anticipates re-circulated wastewater will provide no more than 20% of the water demands of the two and five projects.

Infrastructure Requirements

Green Steel, the owner of the Groveton Mill site, is currently demolishing the former paper mill with the exception of approximately 70,000 square feet of more recently constructed building space. The older mill structures will be removed leaving 500,000 sq ft of empty concrete pad. Water, sewer and other utilities are connected to the site according to the project manager for Green Steel and the town of Groveton. Additional infrastructure will be needed to connect utilities, water, and sewer services from the combined heat and power facility to the CEA. Infrastructure costs associated with the development of the site will likely reach $250,000.

Feasibility of the Combined Heat and Power Facility (CHP)

To repeat, the SourceOne study supports the feasibility of a co-generation plant supporting both the two and five acre CEAs and excess hot water and electricity for a commercial laundry during the summer months.

Aqua-culture Analysis

Fish Species

Many types of fish can be successfully grown in captivity but tilapia is the most logical choice for systems intended to incorporate plant production or to capture value from CHP plants. A brief comparison to two other species argues for this choice.

Large Mouth Bass are extremely sensitive to water conditions and do not thrive in crowded conditions. While they can be successfully grown in an aquaponic system, they require between sixteen and seventeen months to produce a table-ready fish. The longer the grow-out period the more chance there is of something going awry. The Bass are one of the most sensitive fish to raise in captivity. Catfish do well in captivity but require water temperatures of 80 to 90 degrees to thrive. This is too high a temperature for plants if hydroponics are to be incorporated into the system, but would make good use of waste heat if a stand-alone fish system is being considered.

Yellow perch are a popular fish to raise in captivity with nearly forty aquaculture operations located in Ohio, Indiana and Wisconsin. Typically taking from twelve to fourteen months to reach market size, perch prefer water temperatures of 70 to 75 degrees, ideal temperatures for plant propagation. In 2011, researchers at Ohio State University overcame a decade-old problem of intensive-culture larval mortality associated with the larvae not being able to inflate their swim bladders, a fatal condition. Adjusting water chemistry and temperature to finely tuned parameters has increased survival up to seventy percent of hatchlings. The second major challenge has been increasing the survivability of the larvae to fry.

Finding a very specific starter-diet regimen and fine-tuning water parameter has resulted in 50% survival into the first two critical weeks of life. From then on it is relatively easy to rear fish to marketable size. A brief web review conducted in May 2013 indicated wholesale prices for farm raised, domestic yellow perch to be approximately $3.25/lb, and wild caught perch to be $15.00/lb. These prices have not been confirmed by independent market research. Yellow perch tend to be a regional favorite with strong sales in the upper mid-west.

Tilapia has become the third most important fish in aquaculture, after carp and salmon, because of its high protein content, large size, rapid growth (11 months to grow to harvest size), and palatability. The fish can withstand high stocking densities, marginal water quality, and subsist on a grain-based diet. The fish are prolific breeders and the biology of their growth lends itself to captive systems.

Currently, tilapia is produced in the United States in outdoor ponds, as well as indoor systems, for sale as live food fish to the restaurant and supermarket trade. In most areas of the southern U.S., tilapia production in outside facilities is strictly regulated to avoid unwanted introductions and environmental damage to native fresh-water systems, particularly to sport-fishing resources.

Under culture conditions, brood stock are held onsite and spawned to produce eggs. Under ideal conditions, females may spawn every seventeen days. The eggs and resulting fry are maintained

at a temperature of 80°F to 84°F. The pH is maintained at 7.5 to 7.8, while dissolved oxygen levels should remain at or above 8.0 ppm. Under these conditions, market-sized fish of 1.75 pounds each can be obtained in about seven to ten months, depending on stocking density.

As of 2005 (the last Census of Aquaculture conducted by the USDA), 156 farms in the United States cultured tilapia, reporting total sales of $31.3 million. Most of this production reached the market as a live product destined for Asian and Hispanic consumers. While the largest number of tilapia farms were located in Hawaii and Florida, California ranked first in sales. Idaho ranked second, reporting over $1.5 million in sales from seven farms. However, data from some states with very high production but very few operations, were not available due to reporting concerns related to confidentiality (NASS 2006).The number of smaller recirculating-system based operations in the Midwest and Northeast has declined due to significant cost increases for feed, as well as competition from larger producers, who can generally sell at reduced prices because of economies of scale.

Production Systems

To recover the high capital costs and operating expenses of aquaponic systems and earn a profit, both the fish rearing and the hydroponic vegetable components must be operated continuously near maximum production capacity. The maximum biomass of fish a system can support, without restricting fish growth, is called the "critical standing crop." Operating a system near its critical standing crop uses space efficiently, maximizes production, and reduces variation in the daily feed input to the system, an important factor in sizing the hydroponic component.

There are three stocking methods that can maintain fish biomass near the critical standing crop:

- Sequential rearing houses with several age groups of fish in the same rearing tank. When one age group reaches marketable size, it is selectively harvested with nets using a grading system, and immediately restocking the same tank with an equal number of fingerlings.
- Stock splitting involves stocking very high densities of fingerlings, periodically splitting the population in half and moving them to a new tank, as the critical standing crop of the initial rearing tank is reached.
- Multiple rearing units require movement of the entire fish population to larger rearing tanks when the critical standing crop of the initial rearing tank is reached.

The logistics of working simultaneously with fish and plants can be challenging. To facilitate continuous fish harvesting with a multiple tank system, rearing tanks are stocked at regular intervals. If multiple units are used, fish may be stocked and harvested as frequently as once a week. Similarly, staggered crop production requires frequent seeding, transplanting, harvesting and marketing. Therefore, the goal of the design process is to reduce labor wherever possible and make operations as simple as possible.

Most of the fish generated fecal waste should be removed from the waste stream before it enters the hydroponic tanks. Other sources of particulate waste are uneaten feed and organisms (e.g., bacteria, fungi and algae) that grow in the system. If this organic matter accumulates in the system, it will depress dissolved oxygen (DO) levels as it decays, produce carbon dioxide and ammonia and eventually methane and hydrogen sulfide. All of these compounds are very toxic to fish.

Suspended solids in aquaponic systems must be maintained in proper concentrations to limit accumulation on plant roots that prevent nutrient uptake, but sufficient to support microbial mineralization of inorganic nutrients essential to plant growth. Without sufficient solids for mineralization, more nutrient supplementation is required, which increases the operating expense and management complexity of the system.

A floating or raft hydroponic subsystem has become the standard for high-density plant production, although a nutrient film technique, as well as gravel or sand beds, can also be used. The floating raft system is ideal for the cultivation of leafy green and other types of vegetables. Typically, hydroponic tanks are 100 feet long by 4 feet wide by 16 inches deep and contain 12 inches of water. The channels are lined with low-density polyethylene liners (20 mil thick) and covered by expanded polystyrene sheets (rafts) that are 8 feet long by 4 feet wide by 1.5 inches thick. Net pots are placed in holes in the raft and just touch the water surface. Two-inch net pots are generally used for leafy green plants, while 3-inch net pots are used for larger plants such as tomatoes or okra. Seedlings are nursed in a greenhouse and then placed into net pots. Their roots grow into the culture water, while their canopy grows above the raft surface.

For maximum growth, plants in aquaponic systems require sixteen essential nutrients. The daily application of fish feed provides a steady supply of nutrients to plants and thereby eliminates the need to discharge and replace depleted nutrient solutions or adjust nutrient solutions as in hydroponics. The plants remove nutrients from the culture water and eliminate the need for separate and expensive biofilters.

Climatic factors also are important for hydroponic plant production. Production is generally best in regions with maximum intensity and daily duration of light. Growth slows substantially in temperate greenhouses during winter because solar radiation is low. Supplemental illumination can improve winter production and is only cost effective if an inexpensive energy source is available.

Water temperature is far more important than air temperature for hydroponic plant production. The best water temperature for most hydroponic crops is about 75 °F. However, water temperature can go as low as the mid-60s for most common garden crops and slightly lower for winter crops such as cabbage, Brussels sprouts and broccoli. Maintaining the optimum water temperature requires heating during the winter in temperate greenhouses. Crop varieties may need to be adjusted seasonally for temperate aquaponic production.

Fish Production Risks

The number of firms promoting development services and equipment sales for aquaponic systems for commercial, educational, or home use far outstrip the number of profitably operated aquaponic businesses currently in production. Several projects, funded with significant private and public resources and managed by knowledgeable staff, have failed in recent years.

Carbon Harvest opened in Brattleboro, Vermont in 2010 as a futuristic $2 million project that sought to grow vegetables, make bio-diesel from algae, and raise fish from the power and heat generated by the electric generator powered by methane gas from a closed landfill.

By April 2013 the company was bankrupt. The amount of money that public and private investors lost on the project is still unknown. On its filing papers, Carbon Harvest listed assets of up to $50,000, and liabilities that ranged from $1 million to $10 million. The business was likely undercapitalized and the complexity of energy generation, coupled with plant and fish production, proved too difficult to manage.

Sweet Water Organics in Milwaukee, Wisconsin has been plagued by fish die offs and failure to meet jobs creation targets tied to public funding. Created in 2010 as a foundation to train people for jobs in urban farming, the farm has paid wages far below company projections and created 2.35 jobs, not the 35 anticipated by February 2013. Sweet Water Organics ran into financial trouble in 2012 when it failed to raise additional outside funds needed to complete a more efficient, expanded growing system and to help pay operating expenses.

Despite several large-scale failures in aquaculture and aquaponics, private investors and public entities continue to develop facilities. The Sand Plains Fish Farm, a $5.5 million 60,000 sq ft private facility was constructed in an existing building with $1.4 million in assistance from the Canadian government. The public subsidization of 25% of the development cost was justified by the anticipated creation of ten new positions, maintenance of three to five existing positions and reduced FOB cost of fish (previously imported from the US) for a Toronto based fish processing company. In phase 2 and 3 Sand Plains projected the creation of an additional 20 new positions.

An April 2013 press release from Sand Plains Fish Farm stated the facility was fully stocked with 600,000 fish and the automated system was run with five full-time and two part-time staff. This stocking density equates to 10 fish per square foot of production area. The models used for financial analysis in this study assume 1 fish per square foot of production area because the majority of developed space is devoted to vegetable production.

Barnyard Farms L.L.C. in Madison, Maine, a 42 acre hydroponic tomato operation, has been successful since its start in 2004. Based on some limited research, Barnyard Farms L.L.C. success has been a result of the investment capability from the Ned Johnson family, who has a major stake in Fidelity Investments and is worth billions.

The Sand Plains farm likely benefits from close proximity to western grown Canadian grain and a short two- hour drive to a major processing plant contribute significantly to the profitability of the model. Focusing on only fish production, and not including plant production and harvesting significantly reduces labor costs compared to an aquaponic system. Additionally, the developer has extensive experience managing a successful warehousing business.

Market Fluctuation

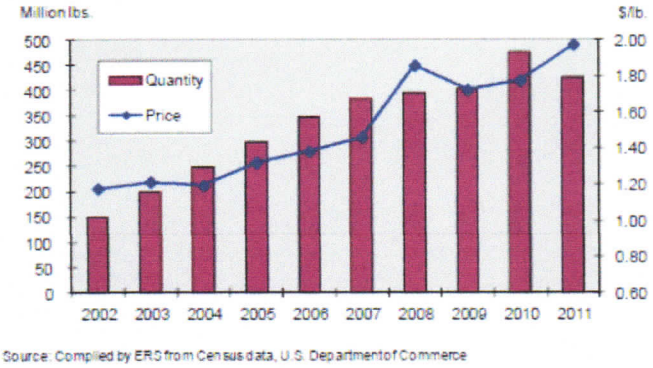
A commonly utilized hydroponic enterprise budget published in 2006 suggested a sales price for tilapia of $2.50/pound and lettuce of $20/case based on 2003 market data from Calgary, Canada and the US Virgin Islands. Data gathered by the USDA Economic Research Service indicates the highest average price received for wholesale tilapia between 2002 and 2011 was $2.00 per pound and the current average market price for lettuce in the Boston market place is $16.00 per case, with seasonal fluctuations on either side of this price point. Research published from the University of Mississippi in 2001 indicated production costs for tank-raised yellow perch in the range of $2.30 to $3.00/pound and the break-even cost for the system was $2.58/ pound. Even in a best-case scenario, the profit margin was slim for intensively managed fish production.

When the price of tilapia plunged in 2001, some producers switched their operation to the more profitable yellow perch. A staple of weekend fish fries in the Great Lakes, perch promised good money, especially since wild harvests in that region had fallen from 40 million to 10 million pounds a year.

With increasing demand on limited supplies of fingerlings from hatchery producers, the price for juveniles went up — some five times more, the profit margin grew smaller, and then tilapia prices rebounded.

As with any form of livestock production, the cost of feed represents the greatest segment of operating expenses. Tilapia and yellow perch are both omnivorous species and will subsist on largely grain based diets. The relationship between fish production and grain production is evident in a review of thefishsite.com which features reports from the Chicago Mercantile Exchange corn futures on its website headlines between 2004 and 2013 the price of corn in the United States has risen from $2.50 per bushel to $6.75 per bushel and has been as high as $7.60 per bushel. Between 2004 and 2012 the wholesale price of tilapia varied from $1.30 per pound to $2.00 per pound. A simple ratio of the price for a bushel of corn divided by the price for a pound of tilapia indicated a decrease from an index of .52 to an index of .29.

Prices received per bushel of corn in the US 2004-2013.



Prices received and pounds sold for tilapia in the US 2002 -2011.

Access to Technical Assistance

There is limited access to technical assistance or veterinary services in the northeast to support aquaculture or hydroponic systems. Without an established industry there is limited local access to supplies and materials. The farming infrastructure has, over many years, grown up around land-based agriculture.

Many producers are plagued by lack of support services needed to make fish farming profitable. There is comparatively little development within the land grant university system in fish nutrition and health management compared with agriculture. What expertise does exist is centered in states with established aquaculture industries such as Kentucky, Arizona, and Wisconsin.

Several private fee-for-service businesses and consultants are available to design aquaponic systems and provide technical support. A brief review of such companies shows technical support ranging from highly sophisticated companies offering a range of services and equipment to small establishments focused on do-it-yourselfers and educational projects. Unlike technical assistance for the livestock or dairy industries, all of these services are available on a fee-for-service basis only.

Biological Risks

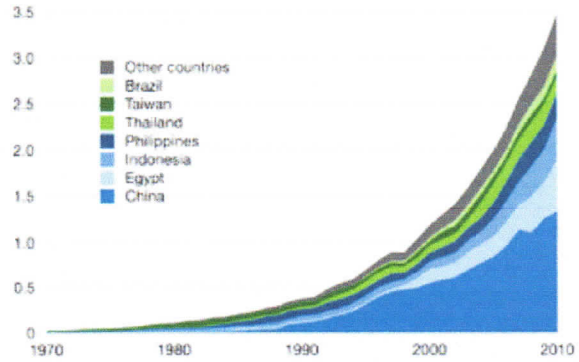
Re-circulating systems remove the impact of weather and threats from parasites and predators from production models, although disease control must still be closely monitored. Utilization of on-site CHP technology reduces the risk of fluctuating energy costs. Because tilapia is extremely temperature sensitive and water flow must be maintained to assure quality, a redundant energy system is necessary to prevent production losses.

Foreign Competition

Wholesale price points for tilapia are currently strong because of high input costs in China. A January 2013 news article in *Undercurrent News*, a seafood trade journal, quoted wholesale prices for frozen fish of $2.30 per pound. The market often varies widely for fresh fish verses frozen fish. In December of 2011 the price of frozen tilapia dropped to $1.95 per pound from $2.25 per pound, while the price of fresh fish remained steady in the $3.80 to $4.00/pound range.

Farmed tilapia from U.S. closed tanks and ponds have been recognized by several seafood sustainability certification organizations as the best choice to source tilapia. Effluent from confined fish operations and the impact of escaped fish on native species is cause for concern amongst environmental groups. Fish from rural regions of China and Taiwan are on the "avoid list" for these organizations, although eleven Taiwanese tilapia farms received Aquaculture Stewardship Council certification of production practices in April 2013.

In 2012, US tilapia imports from China were expected to expand, especially as the demand for filleted products from grocery stores and mid–priced restaurants continues to increase.



Aquaculture production of tilapia by country in million metric tons as reported by the FAO, *1950–2009*

Tilapia Marketing

A thorough analysis of processing costs and market viability for various tilapia products funded by the USDA Agricultural Marketing Service and completed in 2011 outlined several challenges for marketing fresh or frozen, whole or processed tilapia.

Processing cost

At the time the AMS study was completed, an automated fish processing facility could cut tilapia fillets for an estimated cost of $0.77/lb. However, the capital expense of an automated line cannot be justified at the scale being considered for the Groveton site. Hand cutting facilities in the US reported costs of $1.62/lb for filleting in 2010.

In 2010 an entire container of frozen tilapia fillets of mixed sizes (3 oz, 5 oz, 7 oz and greater than 7 oz) delivered to the mid-Atlantic region routinely sold for $1.65/lb. It is very unlikely that a U.S. producer could ever compete with frozen fillets at this price, since the cost of filleting alone will likely exceed $1.65/lb. Wholesale price points into restaurants and grocery stores in 2010 varied from $3.60/lb to $6.25/lb for frozen and fresh fillets

Market Demand

Chain restaurants commonly use tilapia in tacos, soups, fish casseroles and as entrées. Purchasers for this market segment want a fresh, wholesome product with no surprises, at a low cost. The White Table Cloth sector places a high premium on quality and is willing to pay more for it. The sector "educates" its customers to some extent, especially regarding sourcing, with local products being highly desired. This sector demands fresh tilapia fillets and has no interest in a frozen fillet. The challenge of restaurants from a marketing perspective is that the restaurants require a relatively small volume, delivered frequently. Hence, the supplier would most likely need to work with a distributor to assure frequent, timely delivery. Use of a distributor would add another cost, reducing the profit available to the tilapia producer.

Colleges commonly serve a fish entrée every day and rotate through the species they serve (salmon, tuna, and tilapia). The demand at colleges varies from fresh fillets to high quality frozen fillets. Often colleges and universities have policies that only allow them to purchase fish approved by the Monterey Bay Seafood Watch as being environmentally friendly (farmed tilapia

meets this criterion). University purchasing also supports premiums necessary to procure environmentally sustainable products to be passed on to students. On the other hand, college students are generally price conscious and might not want to cover a premium price for attributes such as high in omega-3 fatty acids or locally sourced.

Upscale groceries are aware of the Monterey Bay Seafood Watch, and many carry the card put out by the group to help identify fish that is safe and sustainable. Customers value local and domestic sourcing, but consider environmental sustainability as the most important attribute. Omega-3 enhanced products are viewed in a positive light, as long as they come from a natural source. High-End Specialty groceries provide the most promising options for marketing a domestic tilapia fillet. Typically they have a wide variety of fresh, ready-to-eat, and frozen products, but also have a small selection of fresh, value added fillets that offer an intriguing possibility. Market research of co-operatively owned grocery stores in New Hampshire and Vermont indicated limited interest in locally produced tilapia.

If the fish will be hand processed on site, offering a simple value added option such as a Parmesan-crusted tilapia fillet might increase sales opportunities and margins. For example, a fillet that was roughly 7oz by weight and sold for $9.00/lb translates to a per pound cost of $20.57. There would be some costs associated with the ingredients for the breading, but it is likely that there would still be sufficient room for profitable marketing of a domestically produced fillet.

A possible option for market placement is a locally produced healthy food choice at an affordable price. It is doubtful that tilapia will ever break into the "specialty" high value market sector so it might be wise to embrace it as a *moderately* priced source of protein from local, sustainable production.

This study's authors made contact with retails stores, co-ops, food service companies, and food distributors to determine the market potential for tilapia produced in the northeast, using organic inputs. Only two companies expressed interest in the fish. While they were willing to sign letters of intent to purchase hydroponically produced vegetables, they were reluctant to purchase tilapia, either fresh or frozen at the price points required to cover operating and capital expenses. One large distributor of frozen fish based in Pennsylvania orally expressed interest in purchasing domestically produced tilapia but did not provide a letter of intent to purchase at the necessary prices to support an economically sound operation.

The *Aquaculture 2013* conference in Nashville, Tennessee discussed the prospect of having *certified* organic aquaculture products. Farmed aquatic animals are the only type of food not represented in the marketplace with a United States Department of Agriculture (USDA) Organic seal. The USDA is initiating the process for developing an organic aquaculture standard. Several areas that promise to be contentious in winning approval for organic labeling of farmed fish in re-circulating tank systems raising tilapia are:

- the origin of juvenile animals raised in aquaculture;
- the use of fishmeal and fish oil in aquaculture feed;
- open water net pen operations;
- and special consideration for bivalve mollusks

Hydroponic System Analysis

Greens and Herbs Marketing

Vegetables produced using aquaponic or hydroponic techniques are not eligible for organic certification. Although they require the use of labor-intensive integrated crop management, synthetic controls for most pests and diseases are utilized for fish. Local contacts indicated moderate interest in a local source of hydroponically grown vegetables available at scale and in consistent numbers. Specifically, there is interest in hydroponic lettuce because the "clean" growing system makes the crop appealing to consumers and chefs.

Vegetable Varieties

Many types of vegetables have been grown in aquaponic systems. However, the goal is to culture a vegetable that will generate the highest level of income per unit area and per unit time. Culinary herbs are the best choice according to this criterion. They grow very rapidly and command high market prices. The income from herbs such as basil, cilantro, chives, parsley, Portulaca and mint is much higher than that from fruit crops such as tomatoes, cucumbers, eggplant, and okra. Interestingly, in 2013 the bulk of fresh herbs in the US retail market are sourced from South America and Israel. Market research conducted on May, 2012 indicted only limited interest from the major wholesaler of fresh herbs located in the Chelsea Terminal Wholesale Market in Massachusetts for locally sourced fresh herbs. The price point and quality of imported fresh herbs satisfied the demand of consumers and there was little additional appeal for locally produced herbs.

Vegetable Production Risks

Biological Risks

Pesticides can not be used to control insects on aquaponically grown plant crops. Even appropriately registered products pose a threat to fish and are not be permitted in a fish culture system. Similarly, products for treating fish parasites and diseases should not be used because vegetables may absorb and concentrate them. Non-chemical methods of integrated pest management must be used. The prohibition on the use of pesticides makes crop production in aquaponic systems more difficult. However, this restriction ensures that crops from aquaponic systems will be raised in an environmentally sound manner and be free of pesticide residues. A major advantage of aquaponic systems is that crops are less susceptible to attack from soil borne diseases. Plants grown in aquaponic systems may be more resistant to diseases.

Market Fluctuations

Unlike prices paid for fish, the market fluctuation in vegetable prices is largely seasonal and can be anticipated through the use of the USDA Agricultural Marketing Service reporting system. Although vegetables grown in hydroponic systems cannot be marketed as organic, some varieties of greens can command a higher price point than conventionally grown crops.

The growing period is short for most hydroponically grown crops and, therefore, the producer can make changes quickly in response to market demands. Most lettuce and herbs varieties can be harvested within 30 days of placement in the floating rafts and the rafts can be easily modified to accommodate different sizes of plants. Careful attention to market trends and flexibility in crop production will allow a producer to accommodate changes in profit margins by crop type.

Financial Assessment of the Proposed Groveton Mill CEA

Pricing Assumptions

This study analyzed the capital and operating costs for development of an aquaponic CEA facility at the site of the former Groveton paper mill. The study considered both a two-acre project and a five-acre project and developed input costs based on Dr. James Rakocy's research. Dr. Rakocy developed the University of the Virgin Islands' re-circulating tank aquaponic system and is widely considered the industry standard for large scale tilapia production. The study adjusted for a cold weather rearing system by using data from yellow perch raised in a re-circulating CEA structure in Wisconsin. The developer of the site would be responsible for site construction preparation for construction of production and administrative buildings which would be financed by the aquaponic business. In addition, the site developer would construct and maintain the CHP system to provide electricity, heat and hot water to the project, based on a kilowatt usage fee.

The financials include the cost of a redundant propane energy system as an emergency back up to the CHP at a cost of $301,000.

Sales prices for tilapia assumed a sales price of $1.80/pound with average live weight at harvest of 1.75 pounds per fish for an estimated average price of $3.15 per fish. Feed was priced with assistance from Morrison's Feeds, a manufacturer of organic animal feeds located in Barnet, VT.

The study developed four price scenarios for the five-acre project. The scenarios address the impact of a 10% increase in fish and vegetable prices received by the project coupled with a conventional grain prices at 30% less than the cost of organic grain and, lastly, reduced labor needs in the event of production efficiencies.

Personnel Assumptions

The CEA would be staffed with a combination of administrative and labor positions including the owner/manager serving as the Director of Sales and Business Management. Three FTEs were included regardless of the facility scale. These positions included:

Hydroponic Manager
Aquaponic Manager
Logistics and Facilities Manager.

The specialized expertise for each of these positions requires specific training and skills to carry out the required management duties. Once the two-acre facility is up and running each of these managers will likely also work in production which will reduce the need for separate production

staff. In contrast, each of these positions will be a full-time job for the five-acre facility.

Significant labor will be needed during start-up of the facility to complete construction and support production while systems are developed. The production labor force will stabilize at 5.5 FTE at 20 months into the project for the two-acre project and 13 FTE for the five acre project. This is in addition to the three management positions. In addition to employees, contracted CEA specialists will be needed to assist with system development and management of animal and plant health.

Production Quantity Assumptions

This study developed production estimates based upon extrapolations from a proposal for a comparable large-scale hydroponic system in the northeast. A two-acre aquaponic system will support production from 41 fish rearing tanks, 12 nursery tanks, and 11 greenhouses holding 840 4' X 8' rafts of plants (73.5 rafts per greenhouse). Based on standard packaging, these production targets represent annual sales of 91,428 pounds of tilapia and 35,714 cases of vegetables (based on an average weight of 16 pounds per case) for a two-acre facility.

A five-acre aquaponic facility supports production from 100 fish rearing tanks, 17 nursery tanks and 28 greenhouses holding 2048 4' X 8' rafts of plants. Based on standard packaging, these production targets represent annual sales of 228,570 pounds of tilapia and 89,285 cases of vegetables for a five-acre facility.

Square footage	acres	Fish (pounds)	Vegetables (pounds)	Vegetables (cases)
87,120	2	91,428	571,428	35,714
217,800	5	228,570	1,428,570	89,285

Production estimates for tilapia and vegetables produced in 2 acre and 5 acre re-circulating tank controlled environment systems.

Marketing Assumptions

This analysis assumes the fish would be sold live weight FOB for shipment to Gloucester, MA for processing and vegetables would be sold to distributors at wholesale prices. Greater margins can be realized through on-site processing of fish and vegetables but handling invites increased regulatory oversight of production and requires investment in equipment that would not be efficiently utilized at the scale represented by this project.

This study calculated the annual revenue per greenhouse for crops commonly grown in aquaponic systems based on growing time, yields, and sales price. The highest value crops are basil, mint and parsley. Although there is strong market demand for hydroponically grown Bibb and Romaine lettuce, the low revenues per greenhouse do not warrant their production. Neither of the distributors contacted in support of this study, however, anticipated distributing the quantity of basil, mint, and parsley produced if the project focused on just these three high-income crops.

Crop	Plants per raft	Plants per Greenhouse	Weeks in raft/ harvest	# of plants/cs	Price/cs	Revenue/ plant	Revenue/ raft	Annual Revenue/ Greenhouse
VEGETABLES								
Romaine	48	3528	4	24	14	$0.50	$19.20	$18,345
Hydro Boston (Bibb)	88	6468	3	24	12	$0.50	$35.20	$44,844
Bok Choy	48	3528	4	24	23	$0.96	$36.80	$35,162
Arugula	60	4410	4	12	9	$0.75	$36.00	$34,398
HERBS								
Basil	60	4410	4	1.5	5.0	$3.17	$152.00	$145,236
Mint	36	2646	4	4.5	10	$2.22	$64.00	$61,152
Cilantro	60	4410	4	14	13	$0.93	$44.57	$42,588
Parsley	60	4410	4	14	18	$1.14	$54.86	$52,416
Dill	60	4410	4	62	9	$0.15	$6.97	$6,657

Production and revenue estimates for vegetables and herbs grown in aquaponic systems.

Additional Assumptions to the Financial Projections

- The study assumed the land and much of the current infrastructure at the Groveton site would be part of a public-private partnership arrangement, whereby the current owner of the site would deed over with no consideration the necessary space on the open pad. The value of the pad was assumed to be $200,000 for the two acre CEA and $500,000 for the five acre CEA.
- There was no consideration in the projections for real estate taxes.
- Direct capital costs of building out the two and five acre CEA in the projections was based on industry research and other proposed controlled environment agriculture enterprises in Northern New England.
- Revenue assumptions are documented in the text of this plan.
- The large portion of the cost of goods expense is generated from utility costs. Both the annual electricity and natural gas expense was verified in the SourceOne report and used in the five year projections for both the two acre and five acre CEAs.
- Water usage was estimated at 254,000 gallons per month for the five acre CEA or 3,048,000 gallons per year. Water usage for the two acre CEA was estimated at 99,000 gallons per month or 1,188,000 gallons per year. The water rates are based on Groveton's municipal water rates of $4.50 per 1,000 gallons.
- Sewage usage was based on industry research of re-circulating aquaponics systems as referenced in this plan and further verification through industry consultation. The two acre CEA is expected to use 37,000 gallons per month or 444,000 gallons per year. The five acre CEA is expected to use 100,000 gallons per month or 1,200,000 gallons per year. The sewer rates are based on Groveton's sewage rates of $5.75 per 1,000 gallons.

- Personnel needs for both CEAs are detailed in the text of the plan.
- Depreciation and amortization are included as an expense based on the amortization schedules noted on the sources and uses page of the projections.

Breakeven Analysis

The operating costs of both the two and five acre CEA are not supported by the revenue projections for either entity. Revenue for the two acre CEA would need to increase an additional $695,828 or 52% in the fifth year to breakeven before depreciation and amortization. Revenue for the five acre CEA would need to increase an additional $551,321 or 20% in the fifth year to breakeven before depreciation and amortization. Both the two and five acre CEAs are projected to operate at maximum capacity, so generating the additional revenue to breakeven will be difficult unless they are expanded beyond their sizes. Increase size of the CEAs will require additional greenhouses, equipment and working capital, moving breakeven to a much higher level.

Profitability

Barriers common to profitable fish and vegetable production in CEA projects located in the northeast include:

- Cost of energy necessary for heat and lighting in cold, northern climates
- Regulatory compliance for water use and discharge
- Price swings in feed costs
- Price swings in fish prices
- High price of feed transported from the mid-west growing region
- Difficulty in garnering a market premium for high quality vegetables available consistently year round.

The project proposed for Groveton eliminates the variability in energy costs through development of the on-site CHP and removes the regulatory issues through use of a contained re-circulating tank system.

Below is a five-year cash flow and income analysis based on the estimated capital and operating expenses to develop the Groveton Mills site for either a two-acre or five-acre CEA. The projections indicate a net loss by year five of $551,321 for the five-acre project Scenario One and a loss of $695,828 for the two-acre project using comparable assumptions.

Below are summaries of the income statements for five years on both the two acre and five acre CEA:

Two Acre CEA

Year	2013	2014	2015	2016	2017
Revenue	$0	$917,175	$1,253,970	$1,288,843	$1,323,716
Cost Of Revenue	($405,410)	($1,448,042)	($1,403,005)	($1,407,623)	($1,412,355)
Gross Profit	($405,410)	($530,867)	($149,035)	($118,779)	($88,638)
Operating Expenses	($193,880)	($562,018)	($588,630)	($597,443)	($607,190)
Operating Losses	($599,290)	($1,092,885)	($737,664)	($716,223)	($695,828)

Five Acre CEA Scenario One

Year	2013	2014	2015	2016	2017
Revenue	$0	$1,904,346	$2,603,640	$2,676,047	$2,748,454
Cost Of Revenue	($707,192)	($2,558,226)	($2,517,064)	($2,526,289)	($2,535,729)
Gross Profit	($707,192)	($653,880)	$86,576	$149,758	$212,725
Operating Expenses	($253,731)	($706,858)	($737,318)	($750,135)	($764,046)
Operating Losses	($960,923)	($1,360,738)	($650,742)	($600,376)	($551,321)

Operating losses were before depreciation, amortization and taxes.

The study developed three additional scenarios for the five acre project:

Scenario 2. Changing the feed source for the fish from organically produced grains to conventionally produced grains would reduce the net losses for the five-acre project in year 5 to $453,608.

Scenario 3. Maintaining the relatively low conventional grain feed price and increasing the estimated revenue for both the plants and the fish by 10% (assuming a premium for regionally produced food, available year round) reduces the year 5 net losses for the five-acre project to $442,945.

Scenario 4. Maintaining the conventional grain feed price and high product prices and reducing the number of production personnel from 13 to 9.5 reduced year five net losses to $392,347. Although there is improvement in the performance of the facility, it continues to demonstrate significant losses in year five.

Scenario	Grain Source	Product price	Production Employee number	Year Five Net Loss	Five Year Cumulative Losses
1	organic	standard	13	($551,321)	($4,124,100)
2	conventional	standard	13	($453,608)	($3,393,169)
3	conventional	high	13	($442,945)	($3,313,402)
4	conventional	high	9.5	($392,347)	($2,934,914)

The five year cumulative losses are skewed by heavy losses in year one and year two as the project ramps up to full production. Although the annual losses diminish by year five of operation, the five acre CEA will not achieve positive net earnings under any of the scenarios considered.

References

This study used the following references to develop the CEA portion of the plan:

- Groveton CEA Food and Energy Center New Hampshire development Strategy
- The SUUNY Center for Brownfield Studies State University of New York
- SourceOne, Groveton Paper Mill Combined Heat and Power Feasibility Study
- The New Forest Economy Study, State University of New York Brownfield Studies
- Louise Calderwood Agricultural Consultant Craftsbury, Vermont
- Re-circulating Acquaculture Tank Production Systems: Acquaponics--Integrating Fish and Plant Culture Southern Regional Aquaculture Center
- Supporting the Growth of the U.S. Re-circulating Aquaculture Industry Through Analysis of Processing Costs and Market Viability for Tilapia Products, Department of Food Science and Technology Virginia Tech
- James E. Rakocry ,Hydroponic lettuce Production in a Re-circulating Fish Culture System
- Marilyn Brentlinger, Chief Operations Officer of Cropking Lodi, Ohio
- Mike Stirling, Project Manager Green Steel Co.
- Benoit (Beno) Lamontagne, Business Resource Specialist Department of Economic Development of New Hampshire

Commercial Laundry Facility

Executive Summary

This study determined that a market exists for a commercial laundry service situated in Groveton, NH but the market is currently under contract with existing laundries. Someone contemplating starting a commercial laundry would need to survey existing laundry customers to determine their interest in switching to another company, what current contracts they have, and what would be needed to get their business. A laundry relying solely on the North Country-North East Kingdom market of four million pounds of laundry/year, however, will be financially fragile because a loss of one or two customers would render it unprofitable. The laundry facility could be at a volume scale much larger than the identified current market but that option would require a detailed analysis well beyond the scope of this project.

The Groveton Village wastewater facility could accommodate a commercial laundry facility depending on the other businesses at the mill site. Annual water consumption and wastewater is estimated at over seven million gallons annually for the size of the facility contemplated. The average daily wastewater will be slightly over 27,000 gallons per day processing at a five-day work week. If the plant processed double the amount (8,200,000 pounds) the wastewater would be 54,246 gallons per day based on a five-day work week.

The hot water/electrical needs for a four million pound facility is at 79,090 therms and 417,972 KW. The consumption would be 158,260 therms and 836,367 KW if the plant processed double the amount (8,200,000 pounds). Thus, the laundry may provide sufficient demand to justify consideration of a natural gas fired co-generation facility, depending upon the market price of electricity.

Purpose

The purpose of this analysis is to examine the assumption that the laundry market exists and determine the potential size for the commercial laundry facility. In addition, the study seeks to determine the hot water/electrical and wastewater needs of the facility. The writer assumes that the Groveton Village wastewater facility of 200,000 gallons/day can handle the proposed businesses.

Description

The laundry plant is an off-premise industrial laundry facility featuring large capacity washing and drying to serve the hospitality and healthcare businesses within the region. The 10,800 square foot plant will run on a one-shift, five-day weekly schedule for the first two years with the potential of an additional shift at year three.

SWOT Analysis

Strengths	Weakness
• Labor availability • Village wastewater facility • Financing incentives	• Distance to interstate highway • Established contracted competitors • Transportation costs
Opportunities	**Threats**
• Hotel Development in VT • Equipment technology • Combined heat & power plant	• Increasing price pressures • Industry consolidation • EPA Regulations[1]

Operations

In addition to upper management and office staff the employee list per shift comprises:

- Maintenance operator
- Washer operator
- Folder/Stacker operator
- Catcher – two per shift
- Driver

Employees must be trained in safety and handling of equipment, lockout/tag out, laundry, chemical handling, and other OSHA requirements.

For the first two years of operation the facility will be run on one shift with the potential to expand to a second shift in year three or at an annual four million pounds.

Potential Market

This writer identified the following businesses as target customers with their estimated annual pounds of laundry. The study proposal did not budget resources to interview the businesses and, therefore, businesses should be contacted to determine their interest level of a nearby facility for their laundry needs. The analysis assumes the Balsams Resort restoration is complete and the hotel is open and fully functional. The total estimated annual pounds of laundry from these businesses are 4,097,928.

Facility	Location	# Beds	Industry Est.[2]	Est. Pounds/day
Balsams Resort	Dixville Notch	149	12.8	1907.2
Mountain View Grand	Whitefield	145	12.8	1856
Omni Mount Washington	Bretton Woods	200	12.8	2560
Comfort Inn	St. Johnsbury	107	9.6	1027.2
Hotel Jay & Conference Center	Jay	176	9.6	1689.6
Tram Haus Lodge	Jay	57	9.6	547.2
Littleton Regional Hospital	Littleton	25	10	250
Weeks Medical Center	Lancaster	25	10	250
Androscoggin Valley Hospital	Berlin	25	10	250
Upper Connecticut Valley Hospital	Colebrook	16	10	160
Northeastern Vermont Regional Hospital	St. Johnsbury	25	10	250
North Country Hospital	Newport	48	10	480

The regional correctional facilities and smaller healthcare and hospitality facilities such as outpatient facilities, high-end bed and breakfast businesses, larger motel resort facilities and restaurants would add additional customers. These additional potential customers would bring the market to well over 6.8 million pounds annually.

Capturing additional businesses to the south in the Lincoln-Plymouth region such as Loon Mountain Resort and Plymouth State University worth considering. Also, the new hotel/conference center complex planned for Newport VT is another opportunity for expansion and further increasing potential pounds.

Specific information should be gathered when contacting potential customers within the region to determine type of laundry used, equipment age, staffing, laundry volume, linens, wash frequency, and contingency plans. If the prospective business currently conducts its own in-house laundering then an assessment should be gathered to compare in-house versus out-sourced costs and benefits.

Competition

The region consists of several commercial laundry facilities within a 100-mile radius of Groveton. UniFirst and G&K Services focus on the garment industry and thus are not potential competitors. Kleen Laundry and General Linen Service are the largest competitors because they focus on the healthcare and hospitality business. General Linen Service is the only Clean Green certified facility on the list.

General Linen dismissed thoughts of relocating to the Groveton site and Kleen Laundry did not respond to inquiries.

Company	Address	Miles from Groveton
UniFirst Corporation	125 Etna Rd, Lebanon NH	75
Kleen Laundry & Dry Cleaning Services Inc	1 Foundry St, Lebanon NH	77
G&K Services Inc.	165 Rue Saint-Hubert, Granby Quebec	82
UniFirst Corporation	30 Tigan St, Winooski, VT	84
UniFirst Corporation	430 Riverside Industrial Pkwy, Portland ME	85
General Linen Service Co. Inc.	88 Scott Dr., Westbrook, ME	87
General Linen Service Co. Inc.	75 Centre Road, Somersworth NH	99

Plant and Equipment

Based upon comparable sized laundries, the Groveton site would need to occupy 10,800 square feet to house a facility capable of processing four million pound of laundry annually. This sized facility could handle the necessary equipment to wash, dry, fold and press the laundry. The Groveton plant would require additional space if it stored unprocessed laundry; some operations hold up to three days of laundry before processing in order to regulate the processing flow.

The laundry equipment[3] will consist of the following:

- 1 – 65 pound capacity washer/extractor
- 2 – 80 pound capacity washer/extractor
- 3 – 200 pound capacity washer/extractor
- 400 pound capacity washer/extractor
- 2 – 80 pound capacity gas dryer
- 6 – 200 pound capacity front load gas dryer
- 4 - folders (2 small & 2 large)
- spreader/feeder
- thermal ironer
- folder/cross folder
- stacker

- water heater
- water softening equipment (if necessary)
- air compressor
- sortation table
- monorail system

Additional equipment will consist of HVAC for comfort air, one box-truck with lifts and laundry carts for storage, processing and deliveries, inventory/billing software and computers, office furniture, employee rest area furniture, and safety equipment.

Estimated equipment costs are $675,000. Written quotations from specific equipment manufacturers should be obtained for verification and include tax and freight charges.

Facility Layout

The physical layout of the plant must address levels of infection control if the facility is processing hospital linen. The Healthcare Laundry Accreditation Council requires the facility to be designed and ventilated to minimize environmental contamination and promotes the flow of hygienically clean textiles. Physical barriers should separate areas for soiled linen with negative air pressure systems in the area to reduce aerosolized contaminated lint from contaminating the clean linen. Standards for air rotation should be followed.[4]

Estimated Water and Energy Use

This study determined the hot water/electrical and wastewater needs of the facility using industry standards as well as comparisons of healthcare/hospitality off-site processing facilities. Equipment and detergent technology improvements have made substantial differences in water use and wastewater over the years. By incorporating the latest technology, equipment, and processes it is possible to save significant amounts of water, natural gas, and electricity.

Energy savings could be accomplished by doing the following:

- Utilizing energy-efficient lighting and motion-sensor lighting.
- Utilizing overhead rail system to move laundry through the facility.
- Installing the latest industrial washers and presses to reduce the amount of water used and reduce drying time.
- Install heat reclamation and water recycling equipment.

Laundry wastewater recycling technology improves energy and water efficiency. The system works by cleaning the water and removing solids, and then disinfects the wastewater from the washers. The water is pumped to a holding tank where it continues to be disinfected with oxidizing agents until it is ready for reuse. AquaRecylce, Norchem, Wastewater Resource Inc., and Kemco Systems offer recycling systems.

Many factors must be considered in order to get a precise estimate of water and power needs.

The factors include the textile type and weight being processed through the facility and the level of soil with each type. Equipment considerations play a substantial role in determining water and power needs as well as chemicals and scheduling. This analysis used utilized primary and secondary information based on reports and conversations within the industry.

The table below shows the estimated water and energy needed to process the estimated four million pounds of laundry per year. The methodology for the analysis combined the 2006 "PRMP Commercial Laundry Facilities Report" by Koeller and Company, a water consulting company[5], and from laundry industry sources. This model provided the estimated percentage improvements an industrial facility would likely experience if using a water recycling system.

The table shows the total annual usage to process over 4 million pounds of laundry per year:

Water – 7,107,373 gallons
Gas – 72,892 therms
Electric – 402,539 KW

Facility	Soil Class	Estimated Percent Distribution	Estimated Annual Pounds	Water usage gallons per pound	Baseline annual consumption (gallons)	Btu/100 pound usage	Baseline annual Consumption (therms)	KW/100 pound usage	Baseline annual Consumption (KW)
Hotel	Heavy	15	524,899	1.8	944,819	1.81	9,501	5.87	55,461
3499328	Medium	30	1,049,798	1.75	1,837,147	1.79	18,791	5.79	106,371
	Light	55	1,924,630	1.7	3,271,872	1.76	33,873	5.50	179,953
Hospitals									
598600	Heavy	40	239,440	1.8	430,992	1.81	4,334	5.87	25,299
	Medium	40	239,440	1.75	419,020	1.79	4,286	5.79	24,261
	Light	20	119,720	1.7	203,524	1.76	2,107	5.50	11,194
	Total		4,097,928		7,107,373		72,892		402,539

A water recycle unit installed at the site such, as AquaRecycle, would significantly reduce water consumption. A 30% water saving would translate to an annualized usage of 4,975,161 gallons at an annual water savings of over two million gallons. The daily estimated wastewater amount would be 19,135 gallons using a 260-day production cycle. Saving water also saves energy. The recycled water goes back into the process at a higher temperature compared to the temperature of municipal or ground water. This results in a 30% energy savings. The annual un-recycled consumption would be 72,892 therms but only 51,024 annual therms using a recycling system. This equipment is not included in this study.

Avendra, a comprehensive procurement solutions company based in Maryland, conducted a study of the water and power needs using water and heat recovery systems. The company compared an on-site laundry versus outsource. The analysis concluded the following[6]:

- Uses 0.25 gallons of water per pound (based on recycling 75% of fresh water) on lightly soiled linen.
- Fuel usage is less than 2.2 therms per 100 cwt. with a heat recovery system or water recycling system in place.
- Electricity use is about 7.5 KWH per 100 cwt.
  The projected annual Groveton water and power needs with water and heat recovery systems are as follows:
- Water – 1,024,482 gallons
- Heat – 90,154 therms
- Electric – 307,345 KWH

Estimating Water and Energy Use for Combined Heat and Power Without Water Recycling

The wastewater and power needs for a Groveton plant will vary depending upon the type of laundry being processed through the facility at any given time. This analysis does not use a water recycling process because the cost of water recycling equipment may be prohibitive for certain types of soiled laundry. This analysis utilizes the "PRMP Commercial Laundry Facilities Report" by Koeller and Company cited above and documented usage water and power use at a series of facilities in North Carolina.

Annual Pounds	Water usage gallons per pound	Annual consumption (gallons)	Btu/100 pound usage	Annual Consumption (therms)	KW/100 pound usage	Annual Consumption (KW)
4,097,928	1.49	6,105,913	1.60	65,567	4.99	304,685
4,097,928	1.72	7,048,436	1.93	79,090	5.93	417,972

The wastewater and power needs for a Groveton plant processing twice as many pounds per year would as follows:

Annual Pounds	Water usage gallons per pound	Annual consumption (gallons)	Btu/100 pound usage	Annual Consumption (therms)	KW/100 pound usage	Annual Consumption (KW)
8,200,000	1.49	12,218,000	1.60	131,200	4.99	609,678
8,200,000	1.72	14,104,000	1.93	158,260	5.93	836,367

Financial Analysis

The analysis that follows assumes that a Groveton laundry developer would be responsible for site preparation, new construction, and building renovation costs.

Building Renovation Costs

The following list is estimated renovation costs for a 10,800 square foot building. These should be verified with a proper assessment and quotations.

Item	Dollars
General Construction	206,000
HVAC	240,000
Electrical	75,000
Plumbing	85,000
Concrete & Flooring	58,000
Contingency	136,000
Total	800,000

This analysis contemplates three loans: construction, equipment, and operating. The first two loans will be fully amortized while the operating loan will annual renewable.

Purpose	Equipment	Construction	Operating
SBA Guaranty (Yes/No)	Yes	Yes	No
Amount of Financing Needed	$540,000	$640,000	$150,000
Annual Interest Rate	3.00%	3.00%	4.5%
Term (in Years)	15	10	1
Beginning Month	1	1	1
SBA Loan Guaranty Fee	$10,318	$12,229	0
Total Financing	$550,318	$652,229	$150,000
Monthly Payment	$3,800.40	$6,297.97	$12,806.78

The laundry facility will lease the space at an assumed rate of $4.44 per square foot based on a comparison of current market listings. The website CityFeet.com provided property listings to determine lease pricing. The price comparison was based on the following properties available at the time during the research:

- 1 Lafayette Road Unit 1, Hampton NH--10,010 sq ft /$6.50/sq ft/year Industrial - Central seacoast location (close to MA & ME) and minutes to Route 101 & I-95 (less than ¼ mile from Route 101). High ceilings, loading dock, drive in door and 3-phase power. Clean, open 10,010 sq ft of industrial flex space. Fully air-conditioned. Handicapped accessible.
- 6 A Street, Derry NH--10,000-23,840 sq ft /$5.00/sq ft/yr free- standing industrial building situated on 2.08 acres. This fully air-conditioned building features quality brick construction, a flexible floor plan layout with 10'-12' clear heights, one tailboard dock, 1600 amps of power, and 53 parking spaces. The sale price and lease rate have recently been reduced. The space is sub-dividable up to 10,000 SF for lease.

- 44 Simon Street, Nashua NH--10,000-67658 sq ft /$4.50/sq ft/yr industrial, fully air-conditioned high technology/manufacturing sublease space; sub-dividable to accommodate users as small as 10,000 sq ft. The space offers excellent infrastructure for design, development, and manufacturing. Features include a 190 sq ft Class 10,000 clean room, over 20,000 sq ft of ESD flooring, 4,000 amps, 277/480 volts, 3-phase power, a 1,000 kw natural gas generator, tailboard and drive-in loading, and a 3.7/1000 parking ratio.
- 134 Riverside Drive, Littleton NH--3,750-9,000 sq ft /$4.50/ sq ft /yr industrial warehouse on large level lot. Ideal for light manufacturing and/or storage. Property has 3 phase power, fully sprinkled, town water and sewer. Supports heavy floor loads, has 16 ft ceilings, and loading docks. There is ample parking. Rental rate is flexible and dependent on credit worthiness of tenant and length of lease

Additional Assumptions to the Pro-Forma

- The business will have funds of $295,000 in equity to pay for the start up costs.
- The financial projections use industry benchmarks.[7] The comparison assumes a price per pound[8] rate of $0.63 across the three-year analysis. The volume of laundry pounds increases over the three years to the maximum amount determined in the market assumption analysis.
- The facility is leased for the first three years of operation with no consideration of ownership.
- Included depreciation and amortization as an operating expense.

Three Year Projections

The three-year projections assume the business captures significant market share of the region by the third year of business. The market exists, as stated above, but competition is well established and contracted. Potential customers must be contacted and interviewed by a company considering a facility in the Groveton location prior to commitment of resources. The Cost of Revenue below consists of operating expenses associated with textile processing, chemicals, distribution, supplies, and fifty percent of the employee wages, payroll taxes, workers' compensation, and utilities.

	YR 1	YR 2	YR3
Laundry Volume lbs.	**1,250,000**	**2,674,000**	**4,098,000**
Sales Revenue	**787,500**	**1,684,620**	**2,581,740**
Operating Expenses			
Costs of Revenue	308,034	315,898	623,790
Selling, general & administrative	386,669	289,593	512,942
Depreciation and amortization	1,911	21,911	21,911
Other expenses	1,200	1,200	1,200
Total Operating Expenses	**289,780**	**312,704**	**354,863**
Gross Profit	**479,466**	**1,368,722**	**1,957,951**
Net Income	**189,686**	**1,056,018**	**1,603,088**

Break-Even Analysis

The revenue projected from the enterprise supports the operating costs. Based on the volume profit ratio, the revenue for the laundry facility would need to be at $525,000 or 66.7% of projections in the first year to breakeven before depreciation and amortization. The break-even sales revenue requires that the business will capture over 800 pounds of laundry/day at $0.63/pound.

Volume Profit Ratio After Break-even		
Sales %	Gross Sales Volume	Profit
50.0%	$393,750	($55,482)
66.7%	$525,000	$21,580
75.0%	$590,625	$60,111
125.0%	$984,375	$291,297
150.0%	$1,181,250	$406,890
200.0%	$1,575,000	$638,077

The year one income statement, balance sheet and cash flow are below. Technology advances in equipment and cleaning chemicals demand that this financial analysis be viewed as a *guide*. Technology changes occur rapidly and may require modifications to these financial projections.

References Consulted:

[1]TRSA-Government Threat to all Laundries: Webinar - http://www.trsa.org/prmedia/government-threats-all-laundries-webinar

[2]http:www.commerciallaundryequip.com/brochures/equip_sizing.pdf - *Sizing Formulas and Information by Market*

[3]Trickett, David H.. "*Winona ORC Laundry Feasibility Study*" May 2010

[4]The Healthcare Laundry Accreditation Council, "*Accreditation Standards for Processing Reusable Textiles for Use in Healthcare Facilities*", April 2006

[5]Riesenberger, James. "*PRMP Commercial Laundry Facilities Report*" Koeller and Company, 2006.

[6]http:www.laundryplususa.net/avendra.doc

[7]American Laundry, *2010-2011 Textile Care Processing Cost Benchmarks*- http://www.americanlaundrynews.com/article/exclusive-2010-2011-textile-care-processing-cost-benchmarks

[8]The Laundry Forum -Price per pound: Business talk - http://www.thelaundryforum.com/forums/business/price-per-pound-t41.html

Energy Management and the Realities of the Bottom Line - http://www.laundrytoday.com/index.php?option=com_content&view=article&id=472:energy-management-and-the-realities-of-the-bottom-line&catid=43:bottom-line&Itemid=110&fontstyle=f-smaller

Dunne, Tom "*Assessing the Environmental Impacts of Industrial Laundering*" –Donald Bren School of Environmental Science & Management, University of California, Santa Barbara, April

2011
2010-2011 Processing Costs Benchmarks-The Laundry Forum
http://www.thelaundryforum.com/forums/general-discussion/2010-2011-processing-costs-benchmarks-t1019.html

Company Internet Sites
http://www.gabraun.com
http://www.milnor.com
http://www.unimac.com

Interviews:
Steve Marcq – General Linen Company, Somersworth NH
David Quaglieri – Industrial Engineer, MA
Michael Russo – Retired Commercial Laundry Facilities Manger, NY
Harold Smith – UNX Inc., Raleigh NC

Market and Feasibility Research For Medicinal Botanicals

Executive Summary

This study explored the market potential for medicinal herbs. The study examined demand for medicinal herbs and specific market requirements needed to satisfy the demands of the pharmaceutical, vitamin, and tea industries. It also explored the possibility of therapeutic cannabis.

The study determined that the pharmaceutical and vitamin industry requires production facilities to demonstrate continued adherence to Good Manufacturing Practices (GMPs) which are defined by the US Food and Drug Administration (FDA). The FDA also certifies and oversees homeopathic medications. A list of the homeopathic medications can be found in the Homeopathic Pharmacopoeia of the United States, which the Food, Drug, and Cosmetic Act recognizes as an official drug compendium.
Within the medicinal botanical market, the tea industry was most receptive and interested in new sourcing opportunities for raw materials. Hain Celestial Group, makers of Celestial Seasonings® Teas, provided welcome information and would be willing to receive sample products.

With respect to therapeutic cannabis, the study found that while the state of NH considered Groveton well-situated to serve the northern population, (a key criteria for the four approved treatment centers is that they be located such that collectively they enable the state to provide optimal geographic coverage), the site, as the bill currently stands, would be disqualified because of its proximity to school and residential areas.

While there is interest in herbs, the study found herb production, much of which can be based on perennial crops, may be more feasible both from financial and logistical perspectives to be grown outdoors, rather than in a CEA.

Financial Summary

The study found the average break-even price is $130 per pound to produce dried herbs. A commodity price sampling of three popular herbs, however, revealed $5.90 as the average price per dried pound. A 2 acre CEA has approximately 86,000 square feet of growing space, if the entire space were devoted to hydroponics, no aquaculture, the space could triple the volume of vegetative production that is defined in the 2 acre CEA business plan. Therefore, the operation could house approximately 2,420 4'x8' rafts of plants. A two acre dried herb CEA could yield a gross revenue potential of approximately $216,000 per year. Meanwhile, cost of production and operating expense would lead to a net annual loss of $1.36 million per year. Unless operating efficiency can be increased and operating expenses therefore decreased or further research reveals herbs that command a higher value, the profitability of growing medicinal herbs, in a controlled environment agriculture (CEA) arrangement is doubtful.

Market Size and Scope

Hain Celestial Group's requires a grower to be able to supply a minimum of 2,000 pounds of a

single herb per year. One entire plant will yield about one-half of an ounce of dried herb, so it will take about thirty-two plants to produce a pound and 64,000 to produce 2,000 pounds. Based on the CEA model, between 7,920 and 13,200 plants can be produced per month in each greenhouse depending on the herb. The 2 acre CEA with 11 greenhouses, therefore could produce approximately 43,560 pounds of dried herb per year.

The product must be dried, in whole leaf form, free of chemical residues, and vacuum packaged in fifty pound bags. To service the pharmaceutical and vitamin industry, the products must have GMP (good manufacturing processes) that meet FDA regulations and are certified by the FDA.

Pricing will be commodity based. Using a sampling of three herbs- Anise, Mint, and Lemon Grass, wholesale pricing found on the internet ranged from a low of $4 per pound to a high of $9.50.

$4.60-5.50 per pound dried mint

$5.90 per pound dried anise

$4-9.50 per pound dried lemon grass

Following is a list of the Botanicals that Celestial Seasonings is interested in purchasing:

Common name--Botanical Name--Part Used--Current Commodity Price (USDA 8/26/2013)

Alfalfa,	Medicago sativa,	Leaf
Angelica,	Angelica archangelica,	Root
Anise	Pimpinella anisum	Seed
Barley,	Hordeum vulgare,	Fruit/Grain
Blackberry,	Rubus fruticosus,	Leaf
Calendula (Marigold),	Calendula officinalis,	Flower
Caramel Malt,	Hordeum vulgare,	Grain
Cassia,	Cinnamomum cassia,	Bark
Catnip,	Nepeta cataria,	Leaf
Cayenne Pepper,	Capsicum annuum,	Seeds/Pod
Chamomile,	Matricaria chamomilla,	Flower
Chicory,	Cichorium intybus,	Root
Chinese Blackberry,	Rubus suavissimus,	Leaf
Crystal Malt,	Hordeum vulgare,	Grain
Dandelion Root,	Roasted Taraxacum officinale,	Root
Echinacea,	Echinacea angustifolia,	Leaf
Echinacea,	Echinacea purpurea,	Leaf & Root
Eleuthro Ginseng,	Eleuthrococcus senticosus,	Root
Eucalyptus,	Eucalyptus globulus,	leaf
Fennel,	Foeniculum vulgare,	Seed
Ginger,	Zingiber officinale,	Root
Ginkgo,	Ginkgo biloba,	Leaf

Goldenseal,	Hydrastis canadensis,	Leaf/Stem/Root
Hawthorn,	Crataegus spp.,	Fruit
Hibiscus,	Hibiscus sabdariffa,	Calyx
Hops,	Humulus lupulus,	Cone
Jasmine,	Jasmininum officinale,	Flower
Lavendar,	Lavandula angustifolia,	Flower
Lemon Grass,	Cymbopogon citratus,	Leaf
Lemon Verbena,	Aloysia triphylla,	Leaf
Licorice,	Clycyrrhiza glabra,	Root
Lovage,	Levisticum officinale,	Root
Mate,	Ilex paraguariensis,	Leaf
Milk Thistle,	Silybum marianum,	Seed
Panax Ginseng,	Panax ginseng & Panax quinquefolius,	Root
Peppermint,	Mentha piperita,	Leaf
Red Clover,	Trifolium prantense,	Leaf/Stem
Rooibos,	Aspalathus linearis,	Stem/Needles
Rosebuds,	Rosa spp.,	Flowers
Rosehips,	Rosa spp.,	Fruit
Sarsaparilla,	S. aristolochiaefolia,	Root
Senna,	Cassia angustifolia,	Leaf & Pods
Slippery Elm,	Ulmus fulva,	Bark
Siraitia (Lo Hao Guo),	Siraitia grosvenorii,	Fruit
Spearmint,	Mentha spicata,	Leaf
St. John's Wort,	Hypericum perforatum,	Leaf/Flower
Stevia,	Stevia rebuudiana,	Leaf
Tilia,	Ternstroemia pringlei,	Flower
Valarian,	Valeriana officinalis,	Root
Wintergreen,	Gaultheria procumbens,	Leaf

When contacting tea companies, the study discovered that TAZO is a brand of Starbucks, and that Starbucks also owns Teabana. Starbucks customer service noted that they do not accept solicitation inquiries and although our call was of a market research nature, they would not guarantee it would avoid being labeled an uninvited solicitation. The representative forwarded this writer's telephone inquiry via internal e-mail communication to his corporate development office but he anticipated it would be ignored.

Production and Operating Expenses

The production of herbs for medicinal use would be similar to the processes and expenses for the edible herbs in the CEA study, therefore for simplicity we used the CEA operating expenses for a two acre CEA less the income and expenses (including infrastructure expenses) directly related to fish production. The only other alterations were that labor was reduced by 1/3rd to eliminate the fish manager, and replacement equipment was divided in two to account for the fact that there will be no aquaponic equipment replacement needs.

Resources Contacted

Lindsey Wells, Email: Lindsey.Wells@state.vt.us: Voice: 802-241-5222: Public Safety, Dept of Waterbury
Mike Holt, NH DHHS Administrative Rules Unit, 603-271-9234
New Chapter Organics, Executive Assistant, Lynn, 800-543-7279
Food Science Corporation, Margaret Rogalski, mrogalski@foodsciencecorp.com, 800-451-5190
Traditional Medicinals, Joseph, Sustainability Manager, 800-543-4372 x 6759
Yogi Teas, 800-964-4832
Tazo, 800-235-2883
Starbucks Store Customer Service, owners of TAZO and Teabana, 800-235-2883 x 2
Hain Celestial Group, 800-434-4246
http://www.atlanticspice.com/store/herbs-and-spices-botanicals,category.asp
http://botanical.com/botanical/mgmh/m/mints-39.html
http://www.chrisconrad.com/pdf/cannayieldsdosage10.pdf
http://forums.gardenweb.com/forums/load/herbs/msg031044308703.html
http://www.herbco.com/c-104-anise.aspx
http://www.herbco.com/c-308-lemongrass.aspx
http://www.herbco.com/c-267-peppermint.aspx
http://www.hpus.com/whatsthis.php homeopathic pharmacopoeia of the United States
http://www.sfherb.com/store/botanical-herbs-bulk,category.asp
http://www.sfherb.com/store/FullView.asp?URLStr=165
http://marketnews.usda.gov/portal/fv?paf_dm=full&paf_gear_id=1200002&startIndex=1&dr=1&navType=comm&navClass=HERBS&final=true
http://www.richters.com/progrow.cgi?search=list&cart_id=2191236.12095
http://www.theweedblog.com/new-study-examines-medical-marijuana-patient-demographics/

Appendix

Hain Celestial Group Grower Requirements

August 19, 2013

Ms. Rose Wilson

Dear Ms. Wilson,

Thank you for taking the time to contact us regarding our Celestial Seasonings® Teas.
We always appreciate hearing from people involved in growing herbs. Celestial Seasonings has established minimum guidelines and requirements for those of you interested in growing herbs as a livelihood:

1. Purchase of any herb by Celestial Seasonings depends upon sample approval by both the Purchasing and Quality Control Departments. Samples must be at least 500 grams for our complete testing procedures.

2. The grower should have adequate acreage to produce our minimum requirements. For the majority of herbs this is 2,000 pounds.

3. The product must be clean, dried and completely free of chemical residues or extraneous material.

4. The product must be processed and packaged according to Celestial Seasonings' specifications (whole leaf and packed in bags weighing 50 pounds each, for most products).

5. To supply Celestial Seasonings requires competitive pricing. The pricing of agricultural commodities may fluctuate widely in the botanical market.

Samples may be sent to the following address:

Kay Wright, Director of Botanical Purchasing
Celestial Seasonings
The Hain Celestial Group
4600 Sleepytime Drive
Boulder, CO 80301-3292
USA
Thank you for your continued support. If we can be of further assistance, please feel free to contact us at 1-800-434-4246, Monday through Friday from 9AM - 7PM Eastern Time.
Sincerely,

Lynda
Customer Care Representative
Ref # 2674158

Groveton Distillery

Executive Summary

A recent trend in value added food production has been the creation of craft distilleries across the country. There are now thirty-one distillers in New England alone, and two national craft distilling associations. Products range from Moonshine to clear liquors, brown liquors, and fortified wines and liqueurs. Some producers are capitalizing on their "terroir," using locally sourced ingredients for their products, such as honey, potatoes, and grains, while others are simply noting they are using local water, or not mentioning anything at all other than the story of why they got started. A 500 gallon still operation would be considered a medium sized craft distillery. This size of an operation could easily fit within a 10,000 square foot space. A 500 gal still would yield about 120 gallons of 80 proof liquor per run. Assuming one run per day, five days per week, a 500 gallon still operation could yield 31,200 gallons of 80 proof liquor per year.

In order to establish a presence in the marketplace and ensure a stronger financial footing, the operator would be wise to consider a diversified product line including both clear and brown liquor. Clear liquors, such as vodka, could benefit from claiming terroir of local base ingredients, such as potatoes, however, brown liquors, such as whiskey, command a significantly higher premium and attract more caché in the market place.

Financial Summary

The study explored two financial models: 1) production of whiskey and 2) production of vodka. In addition, it also evaluated the production of vodka using locally sourced potatoes versus buying grain neutral spirits (GNS) on the open market.

The study assumed no debt service and a fifteen-year, straight-line depreciation schedule on capital expenses.

The study, based on these assumptions, found that the vodka model would cash flow if it sourced GNS but would be challenged if it focused on locally sourced inputs. At full production of one run five days per week, vodka could yield a 6% return that could be used for depreciation, reinvestment, and owners distributions. The whiskey fared better, yielding a 32% return that could be applied towards depreciation, reinvestment and distribution to owners.

Producing just whiskey might, therefore, seem most profitable; it would make marketing sense to produce both products, with the higher margin whiskey enabling the production of the lost leader local potato vodka. The vodka brings the benefit of expanded market visibility, competitive pricing, and immediate cash flow while the whiskey matures.
Capital expense to renovate and equip a building to house a distillery would run approximately $600,000.

Products

Vodka

The idea of producing vodka made from locally sourced potatoes is attractive when considering the terroir aspect of the product. The region surrounding Groveton is known to be good for potatoes, and is home to one of Vermont's largest former commercial potato farms, Peaslee's Potatoes. In addition, New Hampshire has the unique claim of being the first state to commercially grow potatoes, and potatoes are the traditional base for vodka. Other benefits of vodka or clear spirits are that they require no aging, unlike brown spirits, therefore they provide immediate cash flow and return on expenses.
Concerns with vodka however, are that it is a price sensitive liquor category, and the price range required for significant movement (approximately $19.99 per 750 ml bottle) is below the cost of craft distilling production. Additionally, traditionally, clear liquors are known as "neutral spirits." They are not supposed to have an aroma or distinctive flavor profile that differentiates one from the other, which makes the notion of promoting the terroir of a neutral spirit an oxymoron.

Whiskey/Single Malts

The benefits and challenges of producing a brown liquor, such as a single malt or whiskey, are exactly the inverse of those for vodka. Brown liquors command a higher premium (they retail for approximately $46/750 ml bottle), sufficient to absorb the cost of craft distilled production. Brown liquor has historically been marketed based on its terroir, therefore lending itself to craft distilling.
Scotch, for example, can only be called Scotch if made in Scotland. Given Groveton's location in the White Mountains, a Groveton brown liquor could market itself as the "New Hampshire Highlands," which would lend additional cache because it could free associate its terroir with existing Scotch nomenclature (there are four recognized Scotch terroirs: The Highlands, The Lowlands, Islay, and Campbeltown). The issues with a brown liquor, however, are that it requires aging (generally a minimum of five years), and is grain based. The distillery would unlikely be able to source much local grain and therefore the product would yield minimal trickle down effect on the local agricultural economy. Cash to cover operating expenses will need to come from other sources until income from the first product run is available for distribution.
Product mix thoughts from Paul Hall, owner, Affordable Distillery Equipment LLC:

> " It is my understanding that it is best for a craft distillery to have as many product lines as possible. The most successful craft and Micro Breweries have broad product lines. Having broad product lines makes your distributor's job easier, and helps broaden your market share, especially within smaller highly populated areas with lots of Bars and Clubs. There are lots of spirits that you can produce. You can use your Vodka column along with a gin basket to create Gin."
>
> "From Corn you could distill a Sweet Mash Corn Whiskey for a really smooth flavor full moonshine, then backset the wash 2 to 3 times and distill sour mash corn Whiskey for the barrel to make Bourbon. One of the great things about Sour Mash is the PH always comes out nearly perfect without any modification."

" With the addition of a sparging arm to the mash tun you could use Malted Barley to make some wonderful single malts. I tried a single malt the other day that one of my customers gave me, that had been aged in a Brandy Cask for 2 years, and it was absolutely delicious."

" I know the Moonshine sounds corny but believe it or not it is the best seller by far, for most craft distilleries. Even in the Northeast and West. My grandfather always said that sweet Mash Corn Whiskey was best un-aged and sour mash was best for the barrel, and I have to agree. Well-made Sweet mash corn whiskey has a wonderfully subtle sweet corn aroma and it is actually pleasant to sip strait at around 40%ABV. When made in a column still it is really smooth, with lots of flavor and it does not have the wang that sour mash has. Unfortunately, most craft distillers that make a moonshine product don't know this and they make Sour Mash or even worse sugar whiskey (it will say Spirit Whiskey on the bottle). The sour flavors in sour mash work really well with the char in the barrel to make a great bourbon. It sounds crazy but it works that way."

"With the addition of a Gin Basket in the line arm of the still, you can make Gin. There is a huge assortment of botanicals that can be used with gin to give it some really great flavors. With the addition to the mash tun, of a sparging arm, side manway for clean out and a removable false bottom screen, you can make Single Malts from Barley. You can also use this distilling system to make Brandy, Rum, Corn Whiskey, Bourbon, Vodka, Gin, Agave Spirits, single malt Whiskeys from Corn and single Malt Whiskeys from Barley. You can also produce Whiskey from rye with this system. I have a customer in Texas that produces Vodka from Black Eyed Peas. He owns a huge farm there and grows black eyed peas. It's not something that I would try. I had to design a special mash tun for him with a huge 8hp geared agitator. Black Eyed Pea Mash is Really thick."

Market Size and Scope

Distillery

A leading New England craft distiller reported that their productions rate is 250 liters per week. This equates to approximately 17,333 750ml bottles per year. The distiller's distribution extends as far down the eastern seaboard as Washington DC and internet based sales shipping as far away as Japan. In New Hampshire, liquor can only be sold via liquor brokers through NH Department of Liquor Control (DLC) stores and to on-premise establishments (restaurants and bars), and on-site at the distillery. DLC requires a trial period or distribution through its stores. DLC places new products in is top twenty five stores and the new products must generate at least $13,000 in gross profit for the DLC (after cost of goods sold) within six months. If the new product achieves this target, the product is authorized for placement in 100% of the state's 77 DLC outlets. On the other hand, if a new product can achieve a minimum of 70% of the sales target, it will be authorized for distribution in the top 55 stores.
The DLC mark up is approximately 1.465%. If the vodka retails for $19.99, this means COGS to NH DLC is $13.64 and the state is making $6.35 in gross profit per bottle. To achieve $13,000 in gross profit in six months from 25 stores, the product sales rate must average 14 bottles per month per store. Assuming this is the target sales rate and assuming the product was in all 77 locations, sales in New Hampshire would consume 2,500 gallons per year or twenty 120 gallon production runs. If the distillery can produce up to 260 runs, then NH could conceivably make up approximately 8% of total sales.
According to the National Institute on Alcohol Abuse and Alcoholism, the average per capita consumption rate for alcohol in the United States in 2007 was 2.31 gallons of alcohol per year. Of that total volume, a 2005 poll by Gallup found that 21% is made up of hard alcohol. Therefore the average per capita consumption rate for hard alcohol is .48 gallons per year. Extrapolated to the New England population of 14,444,865 (see 2010 table below from www.census.gov) this means the total potential market for distilled spirits in New England is 6.9 million gallons (34.8 million 750ml bottles) per year.

State	Population
Massachusetts	6,547,629
Rhode Island	1,052, 567
Connecticut	3,574,097
Vermont	625,741
New Hampshire	1,316,470
Maine	1,328,361
Total	**14,444,865**

Competition

New Hampshire is home to at least three well known craft distillers: Flagg Hill Winery & Distillery, Sea Hagg Distillery, and Rye Harbor Distilling and Whiskey House. There are at least 31 craft distillers across New England and more than 500 nationwide. This study found the following local spirits for sale at Norwich Wine & Spirits (VT):

Product	**Price/750ml**	**Selling Points Being Marketed**
Vodka		
Barr Hill Vodka	$65.99	Honey based, VT made
Literary Dog	$53.99	None
Vermont Gold	$38.99	Maple based, VT made
Vermont White	$38.99	Milk based, VT made
Silo Vodka	$34.99	Local, organic grain, VT made
Smugglers Notch	$26.99	Vermont water
Green Mountain Organic	$24.99	None
Whiskey		
Whistle Pig*	$108.99	VT "made" (only processed/bottled)
Gin		
Barr Hill Gin	$42.99	Honey and juniper based, VT made

* Note, Whistle Pig is imported, bottling and reselling Western Canadian made whiskey.

Start Up Costs and Infrastructure Needs

The start-up costs to outfit and equip a facility with a 500 gal still system (the minimum set up size suggested by Global Stainless Systems and Affordable Distillery Equipment LLC for a commercial endeavor) are approximately as follows:

Equipment	
500 gal jacketed still with copper column and stainless column	$46,000
Low pressure steam boiler, blow down tank, condensate return line, water softener	$26,000
500 gal mash tun with agitator and steam jacket	$20,000
500 gal jacketed fermenters	$30,000
all around pump, 40 gal/min	$4,500
2" diameter hoses	$1,500
Enolmaster 4 bottle bottler, 500 bottles/hr	$4,255
750-1,000 gal water holding tank	

	$9,000
1 horsepower alcohol pump	$ $1,200
gin basket	$1,000
sparging arm	$600
Manway	$2,340
removable false bottom screen	$545
plumbing fit up	$50,000
building fit up/explosion proof	$100,000
electrical switch	$13,000
electrical wiring	$65,000
contingency at 10%	$37,494
Total Capital Expense	**$412,434**

This selection of distilling equipment would enable the distillery to produce Brandy, Rum, Corn Whiskey, Bourbon, Vodka, Gin, Agave Spirits, single malt Whiskeys from Corn, single Malt Whiskeys from Barley, and Whiskey from Rye. This entire system, with room for dry storage, finished goods storage, production, bottling, and fermentation tanks should fit comfortably within a 10,000 square foot space.

Production process

Following is an example of the production process assuming a vodka run, with locally sourced raw materials.

1. Store and process potatoes or dry ingredients
    a. Store bags of potatoes (need room for up to 321,000 pounds of potatoes)
    b. Need a prep area to cut/dice potatoes
    c. Need a wort/cooking kettle to boil the potatoes
    d. Need to strain the liquid into a/multiple fermentation tank(s)
2. Ferment 5 days
3. Process through the still

a. Could install a side still column and process only half the batch day one and the other half of the batch day two. This enables the distiller to do a rough run and then run through the side column for final distillation

4. Run through the distiller into a 300 gal holding tank
5. Repeat running through the distiller as many times as needed to achieve desired alcohol content.
6. Distill into 50-100 gal finishing tanks, flavor if desired.
7. Store in 55 gallon barrels if needed or for aging.
8. Bottle, label, package, palletize, shrink wrap.
9. Store for distribution.

Raw Ingredients

It takes 50 pounds of potatoes to produce 20 liters (5 gal) of vodka. Therefore, a 120 gallon batch of vodka would require a minimum of 1,200 pounds of potatoes. After the fermentation process the mash should have approximately 10-12% alcohol content from the conversion of starch to sugar, which has fermented into alcohol. The 2011 Maine Potato harvest, according to the Associated Press, yielded an average of 29,000 pounds of potatoes per acre; this volume was echoed by Chappelle's Potatoes of Vermont whose owners noted that their 50 acre farm yielded an average of 30,000 pounds of potatoes per acre. Assuming 29,000 pounds of potatoes per acre, the distillery would need access to 11 acres of potatoes annually to produce 32,000 gallons of vodka. One of the largest former commercial potato operations in Vermont, Peaslee's Potatoes, is located seven miles from the Groveton plant. There is some intra-family situation that may make sourcing directly from the farm difficult, but the farm's past production demonstrates that the area is suitable for commercial potato production, and the farm itself could be a key producer for the distillery.

There is an alternate source to buying potatoes. The plant could purchase ultra pure, corn or potato derived grain neutral spirits (GNS) as its product base, available for approximately $5-6/gallon shipped. This option could reduce ingredient costs as well distilling costs. One New Hampshire distillers, Rye Harbor Distilling & Whiskey House, in fact, produces and resells wholesale spirits, and could potentially be a source for GNS. According to Paul Hall, owner, Affordable Distillery Equipment LLC, as many as 80% of craft distilleries are reprocessing purchased GNS as a way to keep costs down.

Todd Hardie, owner of Caledonia Spirits & Winery, recommended that Groveton would need to be certified organic to succeed with a new, local potato vodka. This research did not factor in the cost of sourcing *organic* wholesale potatoes. However, given the cost challenge of using conventionally grown potatoes it is impractical to price organic potatoes unless research reveals a premium can be secured for the certified organic finished product.

Financial Assumptions

Pricing

This research established the retail pricing for vodka and whiskey based on conversations with Pine State Beverage, one of New Hampshire's liquor brokerage firms and comparisons with price points found in Vermont. Pine State felt vodka would need to retail for $19.99 per 750 ml bottle in order to be competitive enough to achieve DLC's minimum sales volume threshold. "Brown liquor" such as a scotch or a whiskey, however, could retail for as high as $46/750ml and still hit the state sales targets. In the latter case Pine State recommended the sales strategy would be to enter the market with a $34.99/750ml "sale" to hook new buyers into trying the product, then go up to full retail price once people have decided they like the product.
Pine State's pricing makes sense. Therefore, this study uses a retail price of $19.99/750 ml of vodka and $34.99/750 ml of whiskey. Adding a state mark up of 1.465% (as described by Pine State), the price FOB to the liquor store is $13.64/750 ml vodka and $23.88/750 ml of whiskey. Next the distributor expense must be factored into the pricing. Expense for distribution varies, Pine State averages a 33% margin, therefore it would be buying in the product at $9.14 per 750 ml for vodka and $16/750 ml whiskey, whereas Southern Wine & Spirits of New England (SWS) said they only charge 10% of FOB to the state. Selling through SWS would yield a gross price to the distillery of $12.27 per 750 ml of vodka and $21.49 per 750 ml of whiskey.

Other assumptions

- Distribution will be through SWS.
- On-premises sales conservatively estimated one bottle/week.
- $1/lb for conventional potatoes or $6/gal for wholesale grain neutral spirits.
- Staffing included one distiller, two production assistants, a part-time office manager and a sales representative.
- Licenses included the cost of the NH license; federal license has no charge.
- Taxes included state sales tax of 8% on any product sold on premise and federal excise tax on production based on $13.50 Per 100 Proof Gallon Produced.
- Made expense estimates for packaging, sales and marketing, shipping and maintenance, and repair. Additional expenses for ingredients including sugar and yeast would need to be included.
- Expense for water calculated at 2000 gal/run @ Groveton municipal water rates of $4.50/1000 gallons.
- Expense for waste water at 1/3 water usage translates to waste water expense @ $5.75/1000 gallons based on Groveton's sewage rates.
- Heat expense was at $6/dekatherm from Source One page 14, assume the boiler runs at 2250MBH, 8hrs/run = 180therms per day (18decatherm)
- Electricity expense based on $0.123/kwH, PSNH rates from Source One page 7
- Rent estimated at $4.44/sq ft, for 10,000'
- Telephone and internet priced at $240/month.

Resources Contacted

americancraftdistillers.org
bartlettwinery.com
boston.com/news/local/maine/articles/2011/03/06/maine_potato_harvest_grows_in_2010/?asid=7c8067e7
boydenvalley.com/vermonticemaplecreme.html
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census.gov/popfinder
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globalstainlesssystems.com/distilleries.html
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mainedistilleries.com/cold-river-classic-vodka.html
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www2.potsdam.edu/hansondj/Controversies/1116895242.html
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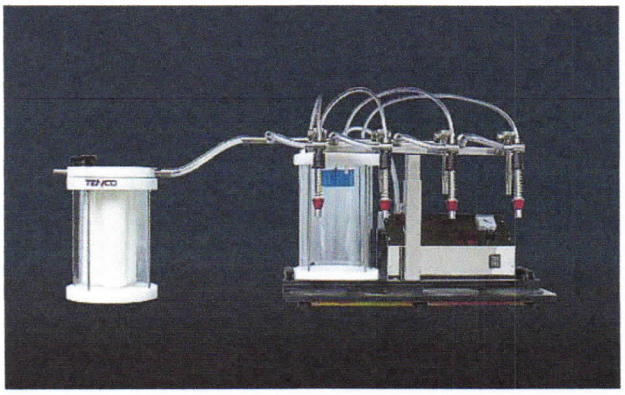
Axelrod, S. Maine craft distilleries making gin sing. Portland Press Herald. 7/10/2013
Meeting with Tanya, Sales and Marketing Manager, Caledonia Spirits, 7/24/2013
Telephone conversation with Guinevere de Amblia, owner, Global Stainless Systems, 7/10/2013
Telephone conversation with Paul Hall, owner, Affordable Distillery Equipment LLC, 7/15/2013
Telephone conversation with Penn Jensen, Executive Director, American Craft Distillers Association, 7/2013
Telephone conversation. Pine State Distributors, 7/22/2013
Telephone conversation. New Hampshire Department of Liquor Control, 7/19/2013
Telephone conversation. Randy Barnhart, Southern Wine & Spirits of New England, 7/23/2013.
Telephone conversation. Todd Hardie, owner Caledonia Wine & Spirits, 7/15/2013.

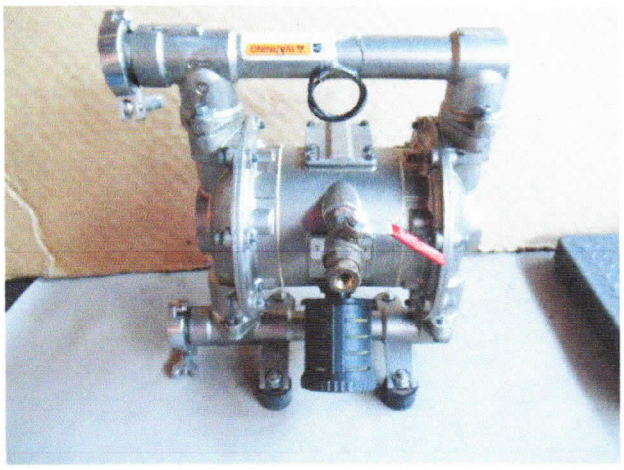
Appendices

Examples of Distillery Equipment from quote provided by Affordable Distillery Equipment LLC

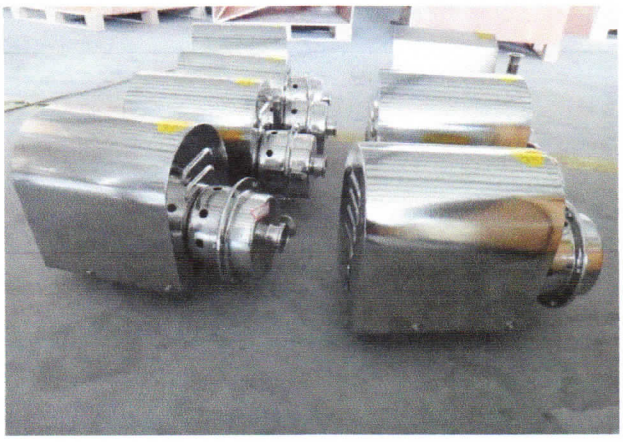
750 gallon water holding tanks.



Enolmaster bottler



1040 Graco Sanitary pump



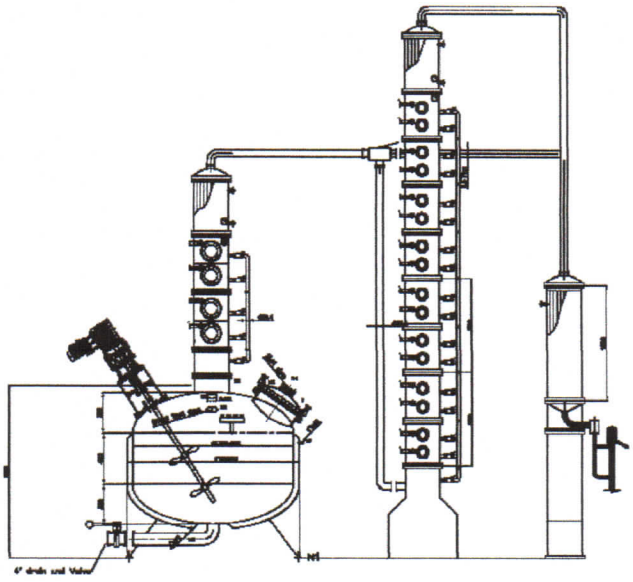
1 horse power alcohol pumps

Trey Nickels mash tun top

Trey Nickels 600 gallon mash tun

300 gallon square jacketed fermenter

500 gallon Jacketed Conical Josh Fermenters



300 gallon vodka still

3300 gallon, 300 gallon working capacity still.

15 PSI Low Pressure Steam Boilers
Atmospheric / Natural Gas Fired

PRODUCT DESCRIPTION

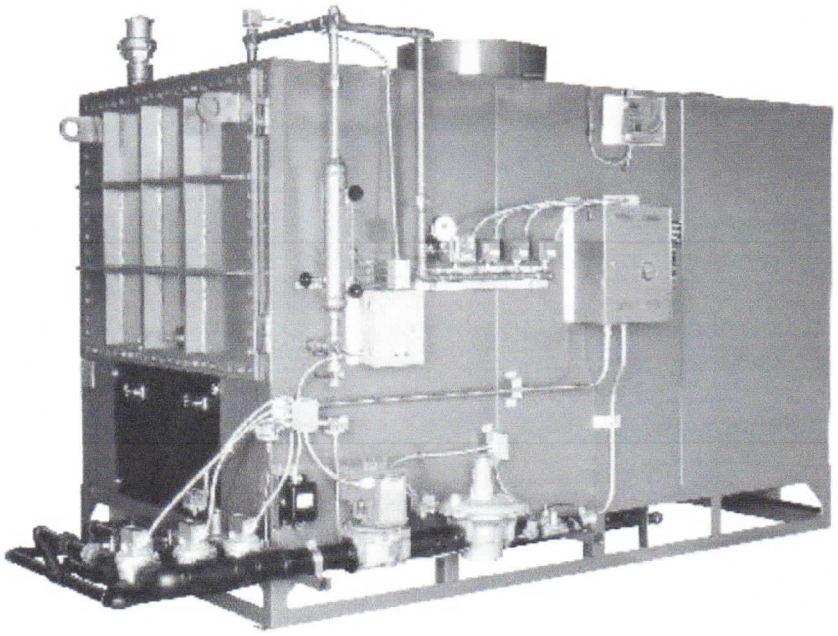
Rite Atmospheric Natural Gas Fired Low Pressure Steam Boilers have been providing our valued customers with high quality steam safely and reliably for over forty years. From autoclaves to humidifiers, bakeries to breweries - these heavy duty watertube steamers are available in 47 different models, ranging from 480 - 12,499 MBH input (11 - 300 Boiler Horsepower) for the widest selection possible.

So simple to maintain and operate, Rite Steam Boilers feature **complete waterside access** so that virtually all scale and mud deposits can be seen and mechanically cleaned during a single scheduled maintenance shutdown. The result - **Better fuel-to-steam efficiency and lower operating cost *over the life* of your boiler investment.** Consider a few of our other standard features: • Rite's floating heads that eliminate pressure vessel cracks and broken welds caused by thermal stress cycling (backed by our **25 Year Thermal Shock Warranty**) • Rite's "superheated" drying tubes that regularly boost steam quality at the nozzle into the 99%+ range • Rite's bolted/gasketed headplates that eliminate any possibility of hydraulic explosion in the event that safety devices fail - and you have a better boiler by design.

RITE ATMOSPHERIC BURNER FEATURES

Rite Atmospheric Boilers are an excellent choice when: Low NOx emissions are not required, natural gas will be the only fuel used, the installation is indoors (See our line of weatherproof models for outdoor applications), and when lower combustion efficiencies at less than full firing rate are acceptable.

Atmospheric burners are far less expensive than power burners, so when the above criteria is met, then Atmospherics are a strong economical alternative to Rite's outstanding line of power burner fired steam boilers. Other factors favoring Atmospherics are: • Extremely low electrical power consumption (no energy hogging fan motors) • Rapid start-up on demand (No pre-purge blower run) • Lighter weight • Lower height • Whisper quiet burner operation.



RITE ENGINEERING & MFG. CORP. **COMMERCE, CALIFORNIA 90040 PHONE 562-862-2135** FAX (562)861-9821
website: www.riteboiler.com
Rev. 2/2005

Groveton Creamery

Executive Summary

The artisanal cheese market has grown for the past ten years. Retail prices of $20-30/lb were common early in the past decade, but increased demand prompted more production which has driven the average price down to $15-$20/lb. This retail price is a far cry from what is paid to the producer. The retailer takes a 35% slice from the retail price and the distributor does likewise. This leaves $6.34/lb. for the creamery. The creamery has another option: it can sell its product fresh to the Cellars at Jasper Hill (Craftsbury, VT) for aging, sales, and distribution. This option facilitates sales and distribution but effectively causes the creamery to spend an additional $3/lb., thus bringing the creamery's gross sales down to $3.34/lb.

A new creamery, therefore, will need to operate efficiently and at a relatively high volume to be successful. Mateo Kehler from the Cellars at Jasper Hill suggested new creameries consider a layout of six, 4,000 liter cheese vats in tandem. This configuration could enable optimal efficiency with production of 4,500-5,000 pounds of cheese in three hours per day with a three-member staff--one cheese maker and two assistants.

A creamery using this system could conservatively produce 702,000 pounds of cheese per year if it made cheese three days per week. This level of production could in turn support approximately 500-550 dairy cows with average milk yields of 45 pounds per day/per cow for 305 lactating days per year. The average New Hampshire dairy farm has 115 cows. Thus, this size endeavor could support up to four New Hampshire dairy farms, or approximately $1.4 million in milk sales at $20/cwt.

Financial Summary

The study explored two financial models: 1) selling fresh cheese to Jasper Hill and 2) aging cheese on site and selling aged cheese to a distributor for resale. The study assumed no debt service and a fifteen-year, straight-line, depreciation schedule on capital expenses. The fresh cheese sales model would require sales at 200% the projected volume in order to break even and cover depreciation. The aged cheese model, in contrast, would break-even on operating expense and depreciation at 22% of projected sales. It could generate net profits of 19%, up to $750,000 per year to cover depreciation, debt service, re-investment in the business, and distributions to owners if it met projected sales.

Start-up capital expenses for the two options range between $1.5 to 2 million, not including permanent working capital needed to cover start-up operating shortfall.

Market Size and Scope

Production & Demand

A May 2012 study by Malinda Geisler, AgMRC, Iowa State University, reported total U.S. cheese production in 2011, excluding cottage cheese, was 10.6 billion pounds, up 1.5 percent from 2010. Of that production, Italian-type cheese totaled 4.5 billion pounds, up 3.3 percent from the previous year, and American-type cheese totaled 4.3 billion pounds, down 0.5 percent. In 2009, Americans consumed an average of 32.8 pounds of cheese per person. Cheddar cheese

comprised 10 pounds of this volume, while mozzarella made up 10.6 pounds leaving approximately 12.2 pounds per person per year for other types of cheese including artisanal and farmstead cheese. Of this total market potential, sales for natural and specialty blended cheeses[1] in 2010 came in at $14 billion.[2] If one assumed an average price point of $15 per pound, this equates to 933 million pounds of specialty cheese.

Competition

Jeff Roberts, co-founder of the Vermont Institute for Artisan Cheese and author of *The Atlas of American Artisan Cheese* (2007) at the University of Vermont, notes that over 450 artisan cheese makers are located in 43 states with numbers increasing each year. Vermont has the most per capita artisan and farmstead cheese makers; Maine has the fastest growing artisan cheese maker population;[3] New Hampshire has a relatively small volume of cheese makers, and as yet little national presence. There are eleven members of the New Hampshire Cheese makers Guild, these include

- Agape Homestead Farm, LLC, Center Ossipee
- Boggy Meadow Farm, Walpole
- Brookford Farm, Canterbury
- Country Critters Farm, LLC, Winchester
- Heart Song Farm, Gilmanton Iron Works
- Hickory Nut Farm, Lee
- Knight Farm, Acworth
- Landaff Creamery, Landaff
- Robie Farm, Piermont
- The Sandwich Creamery, Sandwich
- Taylor Brothers Creamery, Meriden

Pricing

Retail price for artisan cheese varies. It can be as high as $30 per pound but both Mateo Kehler, of the Cellars at Jasper Hill and a recent study *Coming of Age: the Status of North Bay Artisan Cheesemaking* note the average retail price is hovering around $15 per pound. To repeat what was said above, the cheese maker gets only a fraction of the sale price: the retailer takes 35%so the price to retailer would then be approximately $9.75 per pound, and the price to a

---

1 Defined as "less than 40 million pounds of production per year."

2 http://www.agmrc.org/commodities__products/livestock/dairy/cheese-industry-profile/

3 http://www.wgme.com/news/top-stories/stories/wgme_vid_18269.shtml. August 13, 2013.

wholesaler/distributor would be $6.34 per pound. If the product were sold fresh to an aging facility, the income to the producer would further drop by $3.00/lb to provide a price for fresh cheese of $3.34 per pound.

Raw Ingredients

Source of milk: It takes approximately 10 lbs. of raw milk to yield 1lb. of cheese from goats and cow; it takes approximately 5-6 pounds of milk to yield 1 pound of cheese from sheep.
It will be a challenge to locate a consistent, year-round source of goat and sheep's milk unless new producers come online. Cow's milk, on the other hand, is readily available and could be obtained directly from the farms or from regional haulers. The most expeditious manner to secure milk with minimal start-up costs will be to purchase it from a regional co-op or milk hauler, such as Agri-Mark, whose trucks could drop off milk while on their New Hampshire routes. Several artisan cheese makers in Vermont source milk from a regional dairy cooperative or hauler.
If the creamery were to invest in a milk truck, it could explore direct partnerships with local dairy farms. This would alleviate the need to pay the $2/cwt overhead premium to the hauler, and facilitate branching out into multi-species cheeses, but the creamery would need to ensure it could purchase 100% of a farm's milk, or work out an arrangement that enables it to source a portion of a farm's milk while the farm's regular hauler continues to retrieve the majority of the product. The latter scenario provides the best risk management for farms, insulating them from direct impact of the performance of the creamery. Most milk haulers indicate they will work with their farmers to facilitate arrangements that enable the farm to divert a portion of their milk to local production, but if the project pursues this route ensuring such an arrangement would be feasible should be documented before any further planning is undertaken.

Production process

Larry Wampler from Agri-Source, Inc., a supplier of creamery equipment, recommends creameries be outfitted with equipment sized to produce total desired yield at only 2-3 days per week in production, leaving room for the remainder of the week to work on equipment repairs, cleaning, and expansion.
As noted in the above summary, Mateo Kehler at the Cellars at Jasper Hill recommends investing in a six 4,000 liter vat system. The recommended system would enable the business to make upwards of 4,500 lbs. of cheese in three hours per day with just one cheese maker and two assistants.
The business could distribute its own product but would likely find it much easier to get a foot hold in the marketplace with immediate distribution through selling its product wholesale for distribution via Provisions International or The Cellars at Jasper Hill.
Assuming cheese were made three days per week, deliveries would then be made to a distributor or aging facility three days per week, and two days per week would be reserved for clean up, repairs and maintenance, and other.

Start Up Costs and Infrastructure Needs

A perspective developer should anticipate costs of $1.5-2 million to build out a creamery capable of producing 4,500 lbs. of cheese/day. Build out should include a laboratory, an office, a raw milk room, cheese making room, dry goods storage, refrigerated goods storage, washroom, loading/unloading docks for delivery vehicles, and a climate-controlled aging room. The building will need washable walls, ceilings, and floor surfaces, floor drains, and curved base boards. The study recommends designing a retail and viewing area of the production floor for the general public into the facility. The more product sold onsite at retail pricing the better net income for the project.

Financial Narrative

This study analyzed the profitability of a creamery from two perspectives: selling fresh cheese to the Cellars at Jasper Hill and selling aged cheese to a distributor such as Provisions International.

Income Assumptions

- There will be shrinkage of 10% on total volume of cheese produced.
- One pound per day will be sold retail on site at $15/lb.
- Product sold fresh to Jasper Hill estimated at $3.34/lb.
- Product sold to a distributor was estimated at $6.34lb.

Expense Assumptions

- The plant will need 45,000 pounds of milk per day, three days per week.
- Milk will be purchased from a hauler with an average price of $20/cwt. for the milk, plus $2/cwt. for hauler handling fees, and $60 per delivery for hauler transportation expense.
- Based staffing expenses on one cheese maker, two assistants, an office manager/sales and marketing rep, a plant maintenance manager/engineer, and a driver for the finished product.
- The model wherein fresh cheese is sold to the Cellars at Jasper Hill will not require sales or marketing expense, nor finished packaging supplies.
- Utility costs are based on estimates provided by Food and Agriculture Organization of the United Nations' *Energy Requirements in Milk Processing* study. The study estimates the average modern plant requires 25MJ of electric energy per ton of milk chilled per day and 450MJ per ton of milk processed into cheese per day. It estimates 110MJ of heat is required to chill 1 ton of milk per day and 270MJ of heat is required to process 1 ton of milk into cheese per day. One MJ equals 0.278 kWh and one MJ is estimated at 0.095 therm. One therm is 0.1 decatherm. The price per kWh is estimated at $0.123/kWh per

PSNH rates from Source One page 7. The price per decatherm is estimated at $6/decatherm per Source One page 14.

- Rent is estimated based on $4.44 per square foot for 10,000 square feet.
- Water usage is based on estimating 5% of total volume of milk multiplied by Groveton municipal water rates of $4.50/1000 gallons.
- Waste water usage is based on assuming 90% of total milk volume multiplied by Groveton's sewage rates of $5.75/1000 gallons.

Resources Consulted

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Interview with Larry Wampler, Sales, Agri-Source, Inc., December, 2012.
Interview with Mateo Kehler, Cellars at Jasper Hill, June 25, 2008.
USDA National Agricultural Statistic Service. January, 2011.
Energy Requirements in Milk Processing. Food and Agriculture Organization of the United Nations Corporate Document Repository. Agriculture and Consumer Protection.
http://www.fao.org/docrep/004/T0515E/T0515E03.htm#note5

Income / Case Flow Statement (Page 1)

Groveton Mills CEA (5 Acre)

			Year 1	Year 2	Year 3	Year 4	Year 5
Income Statement	Revenue	Vegetables & Herbs	$0	$1,580,299	$2,160,601	$2,220,687	$2,280,773
		Tilapia	$0	$324,046	$443,039	$455,360	$467,681
			$0	$1,904,346	$2,603,640	$2,676,047	$2,748,454
	Cost Of Revenue (COGS)	Crop Production	($2,022)	($125,378)	($145,600)	($145,600)	($145,600)
		Fish production	($64,446)	($300,276)	($306,543)	($312,942)	($319,478)
		Electric costs	($294,715)	($934,715)	($934,715)	($934,715)	($934,715)
		Natural gas	($87,600)	($408,400)	($408,400)	($408,400)	($408,400)
		Water and waste water	($77,200)	($31,244)	($31,244)	($31,244)	($31,244)
		Water quality management	($5,175)	($22,673)	($29,732)	($30,540)	($31,371)
		QC & Packaging	($12,140)	($38,434)	($39,202)	($39,986)	($40,786)
		Labor Costs for production	($152,175)	($645,346)	($572,477)	($573,230)	($574,013)
		Contingency	($11,719)	($51,760)	($49,151)	($49,631)	($50,122)
			($707,192)	($2,558,226)	($2,517,064)	($2,526,289)	($2,535,729)
	Gross Profit		($707,192)	($653,880)	$86,576	$149,758	$212,725
	Operating Expenses	General & Administrative	($162,104)	($397,149)	($404,905)	($415,282)	($426,999)
		Business Development/Marketing	($20,833)	($51,000)	($52,020)	($53,060)	($54,122)
		Research & Development	$0	$0	($694)	($1,061)	($1,082)
		Transportation & Distribution	$0	$0	$0	$0	$0
		Replacement Equipment	$0	$0	($15,606)	($15,918)	($16,236)
		Labor costs (non-production)	($56,990)	($217,138)	($221,681)	($221,862)	($222,051)
		Contingency	($13,804)	($41,571)	($42,413)	($42,950)	($43,555)
			($253,731)	($706,858)	($737,318)	($750,135)	($764,046)
	Earnings From Operations		($960,923)	($1,360,738)	($650,742)	($600,376)	($551,321)
	Other	Depreciation	($336,552)	($807,724)	($807,724)	($807,724)	($807,724)
		Amortization of Start-up Expenses	($22,222)	($53,333)	($53,333)	($53,333)	($53,333)
			($358,774)	($861,057)	($861,057)	($861,057)	($861,057)
	Net Earnings / Losses		($1,319,696)	($2,221,795)	($1,511,799)	($1,461,433)	($1,412,378)
Cash Flow	**Beginning Cash Balance**		$0	$3,494,608	$2,133,871	$1,467,522	$851,228
	Cash Inflow	Revenues	$0	$1,904,346	$2,603,640	$2,676,047	$2,748,454
		Private Equity Injection	$13,842,095	$0	$0	$0	$0
			$13,842,095	$1,904,346	$2,603,640	$2,676,047	$2,748,454
	Cash Outflow	Construction Phase					
		Capital Expenditures	($9,386,564)	$0	$0	$0	$0
		Operating Expenses					
		Cost of Revenue (COGS)	($707,192)	($2,558,226)	($2,517,064)	($2,526,289)	($2,535,729)
		Operating Expenses	($253,731)	($706,858)	($737,318)	($750,135)	($764,046)
		Investing Activities					
		Property & Equipment	$0	$0	($15,606)	($15,918)	($16,236)
			($10,347,487)	($3,265,083)	($3,269,988)	($3,292,342)	($3,316,012)
	Cash Flow		$3,494,608	($1,360,738)	($666,348)	($616,294)	($567,558)
	Ending Cash Balance		$3,494,608	$2,133,871	$1,467,522	$851,228	$283,670

Client Name: **Groveton Laundry**
FINANCIAL STATEMENT: **Pro Forma Income Statement**
Date Prepared: 8/31/13

		Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	TOTALS
REVENUE		$65,625	$65,625	$65,625	$65,625	$65,625	$65,625	$65,625	$65,625	$65,625	$65,625	$65,625	$65,625	$787,500
COST OF GOODS SOLD														
Employee Wages		$6,783	$6,783	$6,783	$6,783	$6,783	$6,783	$6,783	$6,783	$6,783	$6,783	$6,783	$6,783	$81,396
Payroll Taxes	10.35%	$702	$702	$702	$702	$702	$702	$702	$702	$702	$702	$702	$702	$8,424
Workers Comp	9.00%	$610	$610	$610	$610	$610	$610	$610	$610	$610	$610	$610	$610	$7,326
Textile Costs		$2,083	$2,083	$2,083	$2,083	$2,083	$2,083	$2,083	$2,083	$2,083	$2,083	$2,083	$2,083	$24,996
Chemicals		$3,125	$3,125	$3,125	$3,125	$3,125	$3,125	$3,125	$3,125	$3,125	$3,125	$3,125	$3,125	$37,500
Utilities		$1,950	$1,950	$1,950	$1,950	$1,950	$1,950	$1,950	$1,950	$1,950	$1,950	$1,950	$1,950	$23,400
Textile Distribution/Return		$8,333	$8,333	$8,333	$8,333	$8,333	$8,333	$8,333	$8,333	$8,333	$8,333	$8,333	$8,333	$99,996
Supplies		$2,083	$2,083	$2,083	$2,083	$2,083	$2,083	$2,083	$2,083	$2,083	$2,083	$2,083	$2,083	$24,996
TOTAL COGS		$25,670	$25,670	$25,670	$25,670	$25,670	$25,670	$25,670	$25,670	$25,670	$25,670	$25,670	$25,670	$308,034
GROSS PROFIT		$39,955.49	$39,955.49	$39,955.49	$39,955.49	$39,955.49	$39,955.49	$39,955.49	$39,955.49	$39,955.49	$39,955.49	$39,955.49	$39,955.49	$479,466
EXPENSES:														
Owner's Salary		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Employee Wages		$6,783	$6,783	$6,783	$6,783	$6,783	$6,783	$6,783	$6,783	$6,783	$6,783	$6,783	$6,783	$81,396
Payroll Taxes	10.35%	$702	$702	$702	$702	$702	$702	$702	$702	$702	$702	$702	$702	$8,424
Workers Comp	9.00%	$610	$610	$610	$610	$610	$610	$610	$610	$610	$610	$610	$610	$7,326
Bad Debts	0.00%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Outside Services		$100	$100	$100	$100	$100	$100	$100	$100	$100	$100	$100	$100	$1,200
Maintenance/Repair		$1,625	$1,625	$1,625	$1,625	$1,625	$1,625	$1,625	$1,625	$1,625	$1,625	$1,625	$1,625	$19,500
Ad/Promotion		$200	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200	$2,400
Office Expense		$650	$650	$650	$650	$650	$650	$650	$650	$650	$650	$650	$650	$7,800
Acct & Legal		$100	$100	$100	$100	$100	$100	$100	$100	$100	$100	$100	$100	$1,200
Rent		$4,000	$4,000	$4,000	$4,000	$4,000	$4,000	$4,000	$4,000	$4,000	$4,000	$4,000	$4,000	$48,000
Telephone		$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$6,000
Insurance		$200	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200	$2,400
Equipment Lease		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Taxes (R/E)		$4,583	$4,583	$4,583	$4,583	$4,583	$4,583	$4,583	$4,583	$4,583	$4,583	$4,583	$4,583	$54,996
Internet		$200	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200	$2,400
Other		$262	$262	$262	$262	$262	$262	$262	$262	$262	$262	$262	$262	$3,144
Other		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Other		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Other		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Other Direct	0.0%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Other Direct	0.0%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Other Direct	0.0%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Int - Loan 1		$1,370	$1,370	$1,364	$1,358	$1,351	$1,345	$1,339	$1,333	$1,327	$1,321	$1,314	$1,308	$16,100
Int - Loan 2		$1,631	$1,619	$1,607	$1,595	$1,584	$1,572	$1,560	$1,548	$1,536	$1,525	$1,513	$1,501	$18,790
Int - Loan 3		$563	$517	$470	$424	$378	$331	$284	$237	$190	$143	$96	$48	$3,681
Int - Loan 4		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Int - Loan 5		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Int - Loan 6		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Int-Line of Credit	0.00%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Depreciation		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Amortization		$159	$159	$159	$159	$159	$159	$159	$159	$159	$159	$159	$159	$1,911
Miscellaneous		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
TOTAL EXPENSES		$24,238	$24,180	$24,116	$24,052	$23,988	$23,923	$23,858	$23,794	$23,728	$23,663	$23,597	$23,531	$286,669
NET PROFIT BEFORE TAX		$15,718	$15,776	$15,839	$15,903	$15,968	$16,032	$16,097	$16,162	$16,227	$16,293	$16,358	$16,424	$192,797
INCOME TAX	0.0%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
NET INCOME		$15,718	$15,776	$15,839	$15,903	$15,968	$16,032	$16,097	$16,162	$16,227	$16,293	$16,358	$16,424	$192,797

Client Name:	**Groveton Laundry**
FINANCIAL STATEMENT:	**Pro Forma Cash Flow**
Date Prepared:	8/31/13

BUDGET YEAR	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	TOTAL
CASH RECEIPTS													
Cash Sales	$65,625	$65,625	$65,625	$65,625	$65,625	$65,625	$65,625	$65,625	$65,625	$65,625	$65,625	$65,625	$787,500
Coll. from Credit	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Draw/(Repay) LOC	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Loan Injection	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Equity Injection	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
TOTAL CASH RECEIVED	$65,625	$65,625	$65,625	$65,625	$65,625	$65,625	$65,625	$65,625	$65,625	$65,625	$65,625	$65,625	$787,500
CASH PAID OUT													
Cost of Goods Sold	$25,670	$25,670	$25,670	$25,670	$25,670	$25,670	$25,670	$25,670	$25,670	$25,670	$25,670	$25,670	$308,034
Owner's Salary	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Employee Wages	$6,783	$6,783	$6,783	$6,783	$6,783	$6,783	$6,783	$6,783	$6,783	$6,783	$6,783	$6,783	$81,396
Payroll Taxes	$702	$702	$702	$702	$702	$702	$702	$702	$702	$702	$702	$702	$8,424
Workers Comp	$610	$610	$610	$610	$610	$610	$610	$610	$610	$610	$610	$610	$7,326
Bad Debts	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Outside Services	$100	$100	$100	$100	$100	$100	$100	$100	$100	$100	$100	$100	$1,200
Maintenance/Repair	$1,625	$1,625	$1,625	$1,625	$1,625	$1,625	$1,625	$1,625	$1,625	$1,625	$1,625	$1,625	$19,500
Ad/Promotion	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200	$2,400
Office Expense	$650	$650	$650	$650	$650	$650	$650	$650	$650	$650	$650	$650	$7,800
Acct & Legal	$100	$100	$100	$100	$100	$100	$100	$100	$100	$100	$100	$100	$1,200
Rent	$4,000	$4,000	$4,000	$4,000	$4,000	$4,000	$4,000	$4,000	$4,000	$4,000	$4,000	$4,000	$48,000
Telephone	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$6,000
Insurance	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200	$2,400
Equipment Lease	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Taxes (R/E)	$4,583	$4,583	$4,583	$4,583	$4,583	$4,583	$4,583	$4,583	$4,583	$4,583	$4,583	$4,583	$54,996
Internet	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200	$2,400
Other	$262	$262	$262	$262	$262	$262	$262	$262	$262	$262	$262	$262	$3,144
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Other Direct	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Other Direct	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Other Direct	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Int - Loan 1	$1,370	$1,370	$1,364	$1,358	$1,351	$1,345	$1,339	$1,333	$1,327	$1,321	$1,314	$1,308	$16,100
Int - Loan 2	$1,631	$1,619	$1,607	$1,595	$1,584	$1,572	$1,560	$1,548	$1,536	$1,525	$1,513	$1,501	$18,790
Int - Loan 3	$563	$517	$470	$424	$378	$331	$284	$237	$190	$143	$96	$48	$3,681
Int - Loan 4	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Int - Loan 5	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Int - Loan 6	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Int-Line of Credit	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Depreciation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Amortization	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Miscellaneous	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Subtotal	$49,748	$49,690	$49,626	$49,562	$49,498	$49,433	$49,369	$49,304	$49,239	$49,173	$49,108	$49,042	$592,792
Princ. Pmt - Loan 1	$2,425	$2,431	$2,437	$2,443	$2,449	$2,455	$2,461	$2,467	$2,474	$2,480	$2,486	$2,492	$29,499
Princ. Pmt - Loan 2	$4,667	$4,679	$4,691	$4,702	$4,714	$4,726	$4,738	$4,750	$4,762	$4,773	$4,785	$4,797	$56,785
Princ. Pmt - Loan 3	$12,244	$12,290	$12,336	$12,383	$12,429	$12,476	$12,522	$12,569	$12,616	$12,664	$12,711	$12,759	$150,000
Princ. Pmt - Loan 4	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Princ. Pmt - Loan 5	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Princ. Pmt - Loan 6	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Capital Purchases	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Income Taxes	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Owner's Withdrawal	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
TOTAL CASH PAID	$69,084	$69,090	$69,090	$69,090	$69,090	$69,090	$69,090	$69,090	$69,090	$69,090	$69,090	$69,090	$829,076
CHANGE IN CASH	($3,459)	($3,465)	($3,465)	($3,465)	($3,465)	($3,465)	($3,465)	($3,465)	($3,465)	($3,465)	($3,465)	($3,465)	($41,576)
Beginning Balance	$0	($3,459)	($6,924)	($10,389)	($13,855)	($17,320)	($20,785)	($24,250)	($27,715)	($31,180)	($34,646)	($38,111)	
Ending Balance	($3,459)	($6,924)	($10,389)	($13,855)	($17,320)	($20,785)	($24,250)	($27,715)	($31,180)	($34,646)	($38,111)	($41,576)	

Client Name:	**Groveton Laundry**
FINANCIAL STATEMENT:	**Pro Forma Balance Sheets**
Date Prepared:	8/31/13

	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14
Cash	$0	($3,459)	($6,924)	($10,389)	($13,855)	($17,320)	($20,785)	($24,250)	($27,715)	($31,180)	($34,646)	($38,111)	($41,576)
Accounts Receivable	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Inventory	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Prepaids	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Current Assets	$0	($3,459)	($6,924)	($10,389)	($13,855)	($17,320)	($20,785)	($24,250)	($27,715)	($31,180)	($34,646)	($38,111)	($41,576)
Net Fixed Assets	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Net Intangibles	$22,548	$22,389	$22,229	$22,070	$21,911	$21,752	$21,592	$21,433	$21,274	$21,115	$20,955	$20,796	$20,637
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
TOTAL ASSETS	$22,548	$18,929	$15,305	$11,681	$8,056	$4,432	$807	($2,817)	($6,441)	($10,066)	($13,690)	($17,315)	($20,939)
Notes Payable - Bank	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Notes Payable - Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Line of Credit Payable	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Accounts Payable	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Accruals	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Taxes Payable	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
CPLTD-Loan 1	$29,499	$29,572	$29,646	$29,720	$29,795	$29,869	$29,944	$30,019	$30,094	$30,169	$30,244	$30,320	$30,396
CPLTD-Loan 2	$56,785	$56,927	$57,070	$57,212	$57,355	$57,499	$57,643	$57,787	$57,931	$58,076	$58,221	$58,367	$58,513
CPLTD-Loan 3	$150,000	$137,756	$125,466	$113,129	$100,747	$88,318	$75,842	$63,320	$50,750	$38,134	$25,470	$12,759	$0
CPLTD-Loan 4	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
CPLTD-Loan 5	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
CPLTD-Loan 6	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Current Liabilities	$236,284	$224,255	$212,182	$200,062	$187,897	$175,686	$163,429	$151,125	$138,775	$126,379	$113,936	$101,446	$88,908
Long-Term Loan 1	$520,820	$518,321	$515,817	$513,306	$510,789	$508,265	$505,736	$503,200	$500,657	$498,109	$495,553	$492,992	$490,424
Long-Term Loan 2	$595,444	$590,635	$585,813	$580,980	$576,134	$571,277	$566,407	$561,525	$556,631	$551,724	$546,806	$541,875	$536,931
Long-Term Loan 3	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Long-Term Loan 4	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Long-Term Loan 5	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Long-Term Loan 6	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Sub. Officer Debt	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Liabilities	$1,352,548	$1,333,211	$1,313,812	$1,294,348	$1,274,820	$1,255,228	$1,235,571	$1,215,850	$1,196,063	$1,176,212	$1,156,295	$1,136,312	$1,116,264
Common Stock	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Add'l Equity Injections	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Retained Earnings	$0	$15,718	$31,493	$47,333	$63,236	$79,204	$95,236	$111,333	$127,495	$143,722	$160,015	$176,373	$192,797
- Treasury Stock	($0)	($0)	($0)	($0)	($0)	($0)	($0)	($0)	($0)	($0)	($0)	($0)	($0)
Total Owner's Equity	($0)	$15,718	$31,493	$47,333	$63,236	$79,204	$95,236	$111,333	$127,495	$143,722	$160,015	$176,373	$192,797
TOT LIA & NET WORTH	$1,352,548	$1,348,929	$1,345,305	$1,341,681	$1,338,056	$1,334,432	$1,330,807	$1,327,183	$1,323,559	$1,319,934	$1,316,310	$1,312,685	$1,309,061
CHECK	($1,330,000)	($1,330,000)	($1,330,000)	($1,330,000)	($1,330,000)	($1,330,000)	($1,330,000)	($1,330,000)	($1,330,000)	($1,330,000)	($1,330,000)	($1,330,000)	($1,330,000)

Groveton Mills CEA (2 Acre)

Assumptions

		Rates	
Payroll Taxes & Benefits	FICA	7.65%	
	FUTA	0.6%	
	SUTA	6.4%	
	Worker's Comp	15.0%	
	Employee Pension Programs	0.0%	
	Total	29.7%	
Health Insurance	Insurance cost (avg.)	$1,200	per month
	Insurance escalator	4.0%	
	Insurance effective year	Year 3	
TAXES			
Income Tax Rate		15.0%	

Sources

		Funds
Equity Investment (Private)	Applied to Real Estate	
	Applied to Equipment	
	Applied to Start-up Expenses	
	Applied to Working Capital	
	Total	$0

Uses

			Deprec (Yrs)	Ammor (Yrs)
	Site Work & Infrastructure	$1,178,100	15 Yrs	
	Plant Equipment	$1,839,752	7 Yrs	
Misc Start-up		$160,000		3 Yrs
Working Capital				
	Total	$3,177,852		

Capital Budget (Page 1)

Capital Budget (Page 1) Continued

		Qty	Item Cost	Factor	Total Cost	M 1	M 2	M 3	
Infrastructure	Outdoor lighting								
	Septic System (waste-water)								
	Leach field								
	Composters								
	DE-chlorination								
	Utility Connections								
	Fire system	1	$10,000		$10,000				
					$10,000				
Plant Construction	Concrete & Gravel pads								
	Foundations								
	Buildings	1							
	Main Building	1							
	Build-out (Admin, Shipping, Receiving)	1	$400,000	0.8	$400,000				
	HVAC, air handling & electric								
	Heat and ventilation in Main Building	1	$210,000	0.6	$210,000				
	Electrical for Main Building & Greenhouse	1	$300,000	0.6	$300,000				
	CHP Plant								
	Biomass Storage Building								
	ORC Building								
	Burner								
	ORC								
	Piping								
	Feedstock Auger/Hopper System								
	Equipment Interconnect								
	Energy Management System								
	Redundant Backup								
	Geothermal heating system	6	$16,000	1.0	$96,000				
	Propane tank	1	$5,000	0.6	$5,000				
	Propane to electric generator	1	$50,000	0.6	$50,000				
	Miscellaneous				$0				
	Weigh Station	1	$41,000		$41,000				quote from Perras Lumber
	Interior guardrails	1	$10,000		$10,000				
					$1,112,000				

Capital Budget (Page 2)

Capital Budget (Page 2) Continued

Plant Equipment	Site & Plant Equipment				$0				
	Forklift - front mount	1	$8,500		$8,500				
	Forklift - side mount	1	$16,000		$16,000				
	Production Equipment				$0				
	Plant beds	20	$12,500	0.6	$250,000				quotes from AES
	Styrofoam rafts	1	$63,000	0.6	$63,000				quotes from AES
	Net pots & seedling trays	20	$500	0.6	$10,000				quotes from AES
	Aluminum Seed Carts	80	$800	0.6	$64,000				quotes from AES
	Replant Tables	60	$1,000	0.6	$60,000				quotes from AES
	Production Handling Bins	100	$5	0.6	$500				quotes from AES
	Lighting				$0				quotes from AES
	Lighting in Main Building	100	$885	0.6	$88,500				quotes from AES
	LED Lighting	571	$1,995	0.6	$1,139,145				quotes from AES
	Admin/Shipping/Receiving Equipment	1	$45,000	0.6	$45,000				quotes from AES
	Security				$0				quotes from AES
	Bio security	1	$5,000		$5,000				quotes from AES
	Security systems	1	$2,500		$2,500				quotes from AES
					$1,752,145				
Misc Start-up Expenses	Corporate structuring (legal)	1	$20,000		$20,000	$20,000			legal fees for private placement m
	Not applicable				$0				
	Permits	1	$50,000		$50,000	$50,000			miscellaneous-might not be neede
	General Contractor	1	$90,000		$90,000	$11,250	$11,250	$11,250	
					$160,000				
Contingency	Contingency	5%			$143,707	$0	$0	$0	
					$3,177,852				

Groveton Mills CEA (2 Acre)

Sales Forecast

	$/unit	Units/month	Increase	Year 1	Year 2	Year 3	Year 4	Year 5	
	(Dried Pound)								
HERBS									
Anise	$5.90	1207	0%	$85,425	$85,425	$85,425	$85,425	$85,425	
Mint	$4.60	965	0%	$53,282	$53,282	$53,282	$53,282	$53,282	
Lemon Grass	$4.00	1609	0%	$77,220	$77,220	$77,220	$77,220	$77,220	
TOTAL REVENUES					$215,926	$215,926	$215,926	$215,926	$0

Product Information

# of Greenhouses

Reference Data

# of Greenhouses	11
# of Rafts per Greenhouse	220
Total # of rafts	2420
Mortality rate in rafts	10.0%

Plant Production Data

production matrix (individual crop capacity per Greenhouse)

Crop	Plants per raft	Plants per Greenhouse	Plants per Greenhouse	Weeks in raft for cultivation	% of Greenhouse harvested / wk	Plants harvested / wk (10.0% attrition)
HERBS						
Anise	60	13200	13200	4.0	25%	2970
Mint	36	7920	7920	4.0	25%	1782
Lemon Grass	60	13200	13200	4.0	25%	2970
TOTALS						

Sales Forecast

# GH's in production per crop	# of plants harvested / wk (10.0% attrition)	# of ounces dried herb/wk	# of pounds dried herb/wk (10.0% attrition)	# of pounds dried herb/yr	Price Per Pound	Revenues per week	Revenues per month	Revenues per year
3.00	8910	4455	278	14479	6	1643	7119	85425
4.00	7128	3564	223	11583	5	1025	4440	53282
4.00	11880	5940	371	19305	4	1485	6435	77220
11.00				45366.75		4152.43	17993.87	215926.43

Income / Case Flow Statement

Income Statement

		Annual
	Anise	85425
	Mint	53282
Revenue	**Lemon Grass**	$77,220
		$215,926
Cost Of Revenue (COG	Crop Production	($57,200)
	Electric costs	($385,000)
	Natural gas	($167,200)
	Water and waste water	($12,176)
	Water quality management	($14,682)
	QC & Packaging	($26,758)
	Labor Costs for production	($382,675)
	Contingency	($38,407)
		($1,084,098)
Gross Profit		($868,172)
Operating Expense	General & Administrative	($277,612)
	Business Development/Marketing	($54,122)
	Research & Development	($1,082)
	Transportation & Distribution	$0
	Replacement Equipment	($8,118)
	Labor costs (non-production)	($111,026)
	Contingency	($36,086)
		($488,046)
Earnings From Operations		($1,356,217)
Other	Depreciation	($341,362)
	Ammortization of Start-up Expenses	($53,333)
		($394,695)
Net Earnings / Losses		($1,750,912)

Cash Flow

Beginning Cash Balance		$0
Cash Inflow	Revenues	$215,926
	Private Equity Injection	
		$215,926
Cash Outflow	Construction Phase	
	Capital Expenditures	$3,177,852
	Operating Expenses	
	Cost of Revenue (COGS)	$1,084,098
	Operating Expenses	$488,046
	Investing Activities	
	Property & Equipment	$0
		$4,749,996
Cash Flow		($4,534,070)
Ending Cash Balance		($4,534,070)
Payback Period on Return on Investment (in years)		-2
To Reach Break even, need $/dried pound		$43

Courtesy: Vermont Farm Viability Enhancement Program

CASH FLOW PROJECTION

Groveton Whiskey/Scotch Distillery

For the period of (dates):	At 13,000 bottles Projection	At 17,000 bottles Projection	At max production Projection	
Production Information				
80 proof (40%) acl/vol scotch/whisley in gallons	2576	3369	31200	assuming 3,785 ml per gallon
vodka production in 750 ml bottles	13000	17000	157456	assuming 3,785 ml per gallon
vodka sold in 750 ml bottles	12628	16490	152732	increase in sales assumes distillery has met State sales goals to expand to 77 stores.
500 gal still produces 120 gal/run, # runs/yr =	21	28	260	
shrinkage (bottles lost in production/spoilage/marketing)	372	510	4724	3%
Cash Receipts				
whiskey/scotch sales	$ 201,216	$ 262,176	$ 2,442,053	assume $34.99/bottle less 1.465 state mark up, and 33% Pine State margin=$15.99 FOB from distill. to Pine St.
on premise whiskey/scotch sales	$ 1,819	$ 3,639	$ 3,639	at $34.99/bottle retail less 8% state liquor sales tax = $32.19; assume 1 bottle/wk incr. to 2 bottles/wk
TOTAL CASH RECEIPTS	$ 203,035	$ 265,815	$ 2,445,692	
Cash Expenses				
Variable Expenses:				
Ingredients				
Corn Mash and/or Grain Neutral Spirits				Buying pre-made Grain Neutral Spirits $6/gal delivered
Purchased Whiskey or Scotch for resale	$ 51,519	$ 67,371	$ 624,000	$20/gal
Yeast				
Sugar				
Labor				
1 distiller	$ 5,614	$ 7,341	$ 67,995	assume $68,000 gross salary ($32.69/hr), distilling 1 day per week 8 hrs/day
1 bottling assistant	$ 3,055	$ 3,995	$ 37,003	assume $37,000 gross salary $17.79/hr 8 hrs/day 1 day/wk
1 shipping manager	$ 3,055	$ 3,995	$ 37,003	assume $37,000 gross salary $17.79/hr 8 hrs/day 1 day/wk
Sales Commission	$ 6,091	$ 7,974	$ 73,371	at 3% gross sales
payroll tax	$ 897	$ 1,173	$ 10,867	10.35% (same as assumption for commercial laundry)
workers compensation	$ 1,055	$ 1,380	$ 12,780	9% for production staff
Licenses and Permits				
NH Liquor Manufacturers License	$ 1,692	$ 1,692	$ 1,692	
Federal Liquor Manufacturers License	$ -	$ -	$ -	no cost for the permit itself
Liquor Tax				
NH sales tax: 8% of any direct retail sales	$ 146	$ 291	$ 291	
Federal Production Tax	$ 27,820	$ 36,380	$ 336,960	$13.50 Per 100 Proof Gallon Produced
Marketing, Advertising and Promotion (includes sales travel)	$ 25,000	$ 25,000	$ 100,000	start at 20% of gross sales to gain placement then tapering down to 10%
Distribution Expense- to get product to Pine State warehouse				
truck @ $0.55/mi	$ 3,093	$ 4,045	$ 149,578	262 miles round trip in NH, expanding to 1046 miles round trip to reach DC and back at full capacity
driver	$ 1,610	$ 2,105	$ 93,600	$15/hr
Packaging				
bottles	$ 19,500	$ 25,500	$ 236,184	assuming $1.50/bottle
caps	$ 6,500	$ 8,500	$ 78,728	assuming $0.5/cap
foil/wax seals				
labels	$ 1,950	$ 2,550	$ 23,618	assuming $0.15/label
glue				
cardboard boxes	$ 2,167	$ 2,833	$ 26,243	assuming $1/box, 6 bottles per box
cardboard bottle divider inserts	$ 1,083	$ 1,417	$ 13,121	assuming $.50/insert
shrink wrap	$ 182	$ 239	$ 2,210	$17/roll, assume we need a new roll every 2 runs
pallets	$ 339	$ 443	$ 4,100	$7.50/pallet, 12 cases per row, 4 rows high = 48 cases per pallet
Maintenance & Repair	$ 19,500	$ 19,500	$ 19,500	(same as assumption for commercial laundry)
Supplies, Other	$ 1,073	$ 1,404	$ 13,000	$50/run for cleaning supplies, other/miscellaneous
Utilities				required for production
electric			$ 57,000	$0.123/kwH, PSNH rates from Source One page 7
natural gas	$ 2,318	$ 3,032	$ 28,080	$6/decatherm, Source One page 14, assume 2250MBH, 8hrs/run = 180therms per day (18decatherm)
water	$ 193	$ 253	$ 2,340	assume 2000 gal/run @ Groveton municipal water rates of $4.50/1000 gallons
waste water	$ 81	$ 107	$ 987	assume 1/3 water usage turns into waste water @ $5.75/1000 gallons based on Groveton's sewage rates
Other				
Total Variable Expenses:	$ 185,535	$ 228,520	$ 2,050,252	
Variable Expenses as a % of Gross Income	91%	86%	84%	
Fixed Expenses:				
Labor				
1 part time office manager	$ 34,000	$ 34,000	$ 34,000	$68,000 base salary
1 sales manager	$ 60,000	$ 60,000	$ 60,000	base salary
payroll tax	$ 9,729	$ 9,729	$ 9,729	10.35% (same as assumption for commercial laundry)
workers compensation	$ 470	$ 479	$ 787	0.0047% for office staff
Office Expense	$ 2,000	$ 2,000	$ 2,000	
Acct & Legal	$ 1,200	$ 1,200	$ 1,200	
Interest				
Insurance	$ 5,474	$ 5,474	$ 5,474	liability, equipment, contents

Property tax				
Rents paid—land, buildings	$ 44,400	$ 44,400	$ 44,400	assuming $4.44/sq ft, 10,000' (same as assumption for commercial laundry)
Rents paid—equipment				
Utilities				required for basic functionality of the plant
electric	$ 1,440	$ 1,440	$ 1,440	
natural gas	$ 1,000	$ 1,000	$ 1,000	
water	$ 100	$ 100	$ 100	
waste water	$ 100	$ 100	$ 100	
telephone & internet	$ 2,880	$ 2,880	$ 2,880	
Other				
Total Fixed Expenses	**$ 162,794**	**$ 162,802**	**$ 163,110**	
Fixed Expenses as a % of Gross Income	**80%**	**61%**	**7%**	
TOTAL CASH EXPENSES	**$ 348,329**	**$ 391,322**	**$ 2,213,362**	
RECEIPTS MINUS EXPENSES	**$ (145,294)**	**$ (125,507)**	**$ 232,330**	**At 17,000 bottles per year, the distillery needs to sell the whiskey/scotch for at least $23.66/bottle to cash flow which means Pine State would sell it to DLC for $35.31 and it would retail for $51.73**
Net Income as a % of Gross Income	**-72%**	**-47%**	**9%**	
Plus CAPITAL CONTRIBUTIONS				
Plus CAPITAL SALES				
Less CAPITAL EXPENSE				
equipment				
500 gal jacketed still with copper column and stainless column	$ 46,000			
Low pressure steam boiler, blow down tank, condensate return	$ 26,000			
500 gal mash tun with agitator and steam jacket	$ 20,000			
500 gal jacketed fermenters	$ 30,000			$15,000 each
all around pump, 40 gal/min	$ 4,500			
2" diameter hoses	$ 1,500			
Enomatic 4 bottle bottler, 500 bottles/hr	$ 4,000			
750-1,000 gal water holding tank	$ 9,000			
1 horsepower alcohol pump	$ 1,200			
gin basket	$ 1,000			
sparging arm	$ 600			
manway	$ 2,340			
removable false bottom screen	$ 545			
plumbing fit up	$ 50,000			
building fit up/explosion proof	$ 100,000			
electrical switch	$ 13,000			
electrical wiring	$ 65,000			
contingency at 10%	$ 37,469			
item				
Total Capital Expense	**$ 412,154**	**$ -**	**$ -**	
Less DEBT SERVICE				
Plus STARTING CASH				
NET RETAINED CASH EARNINGS (DEFICIT)	**$ (557,447)**	**$ (125,507)**	**$ 232,330**	
- Income Taxes				
- Depreciation				
- Capital Reserve				
NET AFTER CAPITAL RESERVE, DREPCIATION, FAMILY LIVING AND INCOME TAX ALLOCATION	$ (557,447)	$ (125,507)	$ 232,330	

Courtesy: Vermont Farm Viability Enhancement Program

CASH FLOW PROJECTION

Groveton Whiskey/Scotch Distillery				
For the period of (dates):	At 13,000 bottles	At 17,000 bottles	At max production	
	Projection	Projection	Projection	
Production Information				
80 proof (40%) acl/vol scotch/whisley in gallons	**2576**	**3369**	**31200**	assuming 3,785 ml per gallon
vodka production in 750 ml bottles	**13000**	**17000**	**157456**	assuming 3,785 ml per gallon
vodka sold in 750 ml bottles	**12628**	**16490**	**152732**	assume $34.99/bottle less 1.465 state mark up, and 33% Pine State margin=$15.99 FOB from distill. to Pine St.
500 gal still produces 120 gal/run, # runs/yr =	**21**	**28**	**260**	at $34.99/bottle retail less 8% state liquor sales tax = 32.19, assume 1 bottle/ wk, growing to 2 bottles/wk
shrinkage (bottles lost in production/spoilage/marketing)	**372**	**510**	**4724**	3%
Cash Receipts				
whiskey/scotch sales	$ 270,258	$ 352,135	$ 3,279,983	assume 34.99$/bottle less 1.465 state mark up, and 10% of FOB to SNHWS = $21.49 to distillery
on premise whiskey/scotch sales	$ 1,819	$ 3,639	$ 3,639	at $34.99/bottle retail less 8% state liquor sales tax = 32.19, assume 1 bottle/ wk, growing to 2 bottles/wk
TOTAL CASH RECEIPTS	$ 272,078	$ 355,774	$ 3,283,622	
Cash Expenses				
Variable Expenses:				
Ingredients				
Corn Mash and/or Grain Neutral Spirits				Buying pre-made Grain Neutral Spirits $6/gal delivered
Purchased Whiskey or Scotch for resale	$ 51,519	$ 67,371	$ 624,000	$20/gal
Yeast				
Sugar				
Labor				
1 distiller	$ 5,614	$ 7,341	$ 67,995	assume $68,000 gross salary ($32.69/hr), distilling 1 day per week 8 hrs/day
1 bottling assistant	$ 3,055	$ 3,995	$ 37,003	assume $37,000 gross salary $17.79/hr 8 hrs/day 1 day/wk
1 shipping manager	$ 3,055	$ 3,995	$ 37,003	assume $37,000 gross salary $17.79/hr 8 hrs/day 1 day/wk
Sales Commission	$ 8,162	$ 10,673	$ 98,509	at 3% gross sales
payroll tax	$ 897	$ 1,173	$ 10,867	10.35% (same as assumption for commercial laundry)
workers compensation	$ 1,055	$ 1,380	$ 12,780	9% for production staff
Licenses and Permits				
NH Liquor Manufacturers License	$ 1,692	$ 1,692	$ 1,692	
Federal Liquor Manufacturers License	$ -	$ -	$ -	no cost for the permit itself
Liquor Tax				
NH sales tax: 8% of any direct retail sales	$ 146	$ 291	$ 291	
Federal Production Tax	$ 27,820	$ 36,380	$ 336,960	$13.50 Per 100 Proof Gallon Produced
Marketing, Advertising and Promotion (includes sales travel)	$ 25,000	$ 25,000	$ 100,000	start at 20% of gross sales to gain placement then taper down to 10%
Distribution Expense- to get product to distributor warehouse				
truck @ $0.55/mi	$ 3,093	$ 4,045	$ 149,578	262 miles round trip in NH, expanding to 1046 miles round trip to reach DC and back at full capacity
driver	$ 1,610	$ 2,105	$ 93,600	$15/hr
Packaging				
bottles	$ 19,500	$ 25,500	$ 236,184	assuming $1.50/bottle
caps	$ 6,500	$ 8,500	$ 78,728	assuming $0.5/cap
foil/wax seals				
labels	$ 1,950	$ 2,550	$ 23,618	assuming $0.15/label
glue				
cardboard boxes	$ 2,167	$ 2,833	$ 26,243	assuming $1/box, 6 bottles per box
cardboard bottle divider inserts	$ 1,083	$ 1,417	$ 13,121	assuming $.50/insert
shrink wrap	$ 182	$ 239	$ 2,210	$17/roll, assume we need a new roll every 2 runs
pallets	$ 339	$ 443	$ 4,100	$7.50/pallet, 12 cases per row, 4 rows high = 48 cases per pallet
Maintenance & Repair	$ 19,500	$ 19,500	$ 19,500	(same as assumption for commercial laundry)
Supplies, Other	$ 1,073	$ 1,404	$ 13,000	$50/run for cleaning supplies, other/miscellaneous
Utilities				required for production
electric			$ 57,000	$0.123/kwH, PSNH rates from Source One page 7
natural gas	$ 2,318	$ 3,032	$ 28,080	$6/decatherm, Source One page 14, assume 2250MBH, 8hrs/run = 180therms per day (18decatherm)
water	$ 193	$ 253	$ 2,340	assume 2000 gal/run @ Groveton municipal water rates of $4.50/1000 gallons
waste water	$ 81	$ 107	$ 987	assume 1/3 water usage turns into waste water @ $5.75/1000 gallons based on Groveton's sewage rates
Other				
Total Variable Expenses:	$ 187,606	$ 231,219	$ 2,075,390	
Variable Expenses as a % of Gross Income	69%	65%	63%	
Fixed Expenses:				
Labor				
1 part time office manager	$ 34,000	$ 34,000	$ 34,000	$68,000 base salary
1 sales manager	$ 60,000	$ 60,000	$ 60,000	base salary
payroll tax	$ 9,729	$ 9,729	$ 9,729	10.35% (same as assumption for commercial laundry)
workers compensation	$ 480	$ 492	$ 905	0.0047% for office staff

Office Expense	$ 2,000	$ 2,000	$ 2,000	
Acct & Legal	$ 1,200	$ 1,200	$ 1,200	
Interest				
Insurance	$ 5,465	$ 5,474	$ 5,474	liability, equipment, contents
Property tax				
Rents paid—land, buildings	$ 44,400	$ 44,400	$ 44,400	assuming $4.44/sq ft, 10,000' (same as assumption for commercial laundry)
Rents paid—equipment				
Utilities				required for basic functionality of the plant
electric	$ 1,440	$ 1,440	$ 1,440	
natural gas	$ 1,000	$ 1,000	$ 1,000	
water	$ 100	$ 100	$ 100	
waste water	$ 100	$ 100	$ 100	
telephone & internet	$ 2,880	$ 2,880	$ 2,880	
Other				
Total Fixed Expenses	**$ 162,794**	**$ 162,815**	**$ 163,228**	
Fixed Expenses as a % of Gross Income	**60%**	**46%**	**5%**	
TOTAL CASH EXPENSES	**$ 350,400**	**$ 394,034**	**$ 2,238,618**	
RECEIPTS MINUS EXPENSES	**$ (78,323)**	**$ (38,260)**	**$ 1,045,003**	**At 17,000 bottles per year, the distillery needs to sell the whiskey/scotch for at least $23.66/bottle to cash flow which means Pine State would sell it to DLC for $35.31 and it would retail for $51.73**
Net Income as a % of Gross Income	**-29%**	**-11%**	**32%**	
Plus CAPITAL CONTRIBUTIONS				
Plus CAPITAL SALES				
Less CAPITAL EXPENSE				
equipment				
500 gal jacketed still with copper column and stainless colum	$ 46,000			
Low pressure steam boiler, blow down tank, condensate retur	$ 26,000			
500 gal mash tun with agitator and steam jacket	$ 20,000			
500 gal jacketed fermenters	$ 30,000			$15,000 each
all around pump, 40 gal/min	$ 4,500			
2" diameter hoses	$ 1,500			
Enomatic 4 bottle bottler, 500 bottles/hr	$ 4,000			
750-1,000 gal water holding tank	$ 9,000			
1 horsepower alcohol pump	$ 1,200			
gin basket	$ 1,000			
sparging arm	$ 600			
manway	$ 2,340			
removable false bottom screen	$ 545			
plumbing fit up	$ 50,000			
building fit up/explosion proof	$ 100,000			
electrical switch	$ 13,000			
electrical wiring	$ 65,000			
contingency at 10%	$ 37,469			
item				
Total Capital Expense	**$ 412,154**	**$ -**	**$ -**	
Less DEBT SERVICE				
Plus STARTING CASH				
NET RETAINED CASH EARNINGS (DEFICIT)	**$ (490,476)**	**$ (38,260)**	**$ 1,045,003**	
- Income Taxes				
- Depreciation				
- Capital Reserve				
NET AFTER CAPITAL RESERVE, DREPCIATION, FAMILY LIVING AND INCOME TAX ALLOCATION	$ (490,476)	$ (38,260)	$ 1,045,003	

Courtesy: Vermont Farm Viability Enhancement Program

CASH FLOW PROJECTION

Groveton Vodka Distillery Distributed Via Pine State Trading Company at 38% margin

For the period of (dates):	At 13,000 bottles	At 13,000 bottles	At 17,000 bottles	At 17,000 bottles	At max production	At max production	
	Projection	Projection	Projection	Projection	Projection	Projection	
Production Information	Using Local Potatoes	Buying pre-made GNS	Using Local Potatoes	Buying pre-made GNS	Using Local Potatoes	Buying pre-made GNS	
80 proof (40%) acl/vol vodka in gallons	2576	2576	3369	3369	31200	31200	assuming 3,785 ml per gallon
vodka production in 750 ml bottles	13000	13000	17000	17000	157456	157456	assuming 3,785 ml per gallon
vodka sold in 750 ml bottles	12628	12628	16490	16490	152732	152732	same State required levels of sales--see whiskey notes
500 gal still produces 120 gal/run, # runs/yr =	21	21	28	28	260	260	
shrinkage (bottles lost in production/spoilage/marketing)	372	372	510	510	4724	4724	3%
Cash Receipts							
vodka sales	$ 106,896	$ 106,896	$ 139,281	$ 139,281	$ 1,297,341	$ 1,297,341	assume 19.99$/bottle less 1.465 state mark up, and 33% margin to Pine State = $9.14 FOB price from distillery to Pine State of $9.14
on premise vodka sales	$ 1,039	$ 1,039	$ 2,079	$ 2,079	$ 2,079	$ 2,079	distill to Pine State & $19.99/bottle retail less 8% state liquor sales tax = 18.39, assume 1 bottle/ wk, growing to 2 bottles/wk
							bottle/wk, growing to 2 bottles/wk
TOTAL CASH RECEIPTS	$ 107,935	$ 107,935	$ 141,360	$ 141,360	$ 1,299,420	$ 1,299,420	
Cash Expenses							
Variable Expenses:							
Ingredients							
Potatoes and/or Grain Neutral Spirits	$ 25,760	$ 15,456	$ 33,686	$ 20,211	$ 312,000	$ 187,200	50# of potatoes = 20 litres (5 gal) of vodka. assuming $1/# wholesale, delivered, local potatoes. Buying pre-made Grain Neutral Spirits $6/gal delivered
Yeast							Buying pre-made Grain Neutral Spirties 46/gal delivered
Sugar							
Labor							
1 distiller	$ 5,614	$ 5,614	$ 7,341	$ 7,341	$ 67,995	$ 67,995	assume $68,000 gross salary ($32.69/hr), distilling 1 day per week 8 hrs/day
1 bottling assistant	$ 3,055	$ 3,055	$ 3,995	$ 3,995	$ 37,003	$ 37,003	assume $37,000 gross salary $17.79/hr 8 hrs/day 1 day/wk
1 shipping manager	$ 3,055	$ 3,055	$ 3,995	$ 3,995	$ 37,003	$ 37,003	assume $37,000 gross salary $17.79/hr 8 hrs/day 1 day/wk
Sales Commission	$ 3,238	$ 3,238	$ 4,241	$ 4,241	$ 38,983	$ 38,983	at 3% gross sales
payroll tax	$ 897	$ 897	$ 1,173	$ 1,173	$ 10,867	$ 10,867	10.35% (same as assumption for commercial laundry)
workers compensation	$ 1,055	$ 1,055	$ 1,380	$ 1,380	$ 12,780	$ 12,780	9% for production staff
Licenses and Permits							
NH Liquor Manufacturers License	$ 1,692	$ 1,692	$ 1,692	$ 1,692	$ 1,692	$ 1,692	
Federal Liquor Manufacturers License	$ -	$ -	$ -	$ -	$ -	$ -	no cost for the permit itself
Liquor Tax							
NH sales tax: 8% of any direct retail sales	$ 83	$ 83	$ 166	$ 166	$ 166	$ 166	
Federal Production Tax	$ 27,820	$ 27,820	$ 36,380	$ 36,380	$ 336,960	$ 336,960	$13.50 Per 100 Proof Gallon Produced
Marketing, Advertising and Promotion (includes sales travel)	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 100,000	$ 100,000	
Distribution Expense- to get product to distributor							
truck @ $0.55/mi	$ 3,093	$ 3,093	$ 4,045	$ 4,045	$ 149,578	$ 149,578	262 miles round trip in NH, expanding to 1046 miles round trip to reach DC and back at full capacity
driver	$ 1,610	$ 1,610	$ 2,105	$ 2,105	$ 93,600	$ 93,600	$15/hr
Packaging							
bottles	$ 19,500	$ 19,500	$ 25,500	$ 25,500	$ 236,184	$ 236,184	assuming $1.50/bottle
caps	$ 6,500	$ 6,500	$ 8,500	$ 8,500	$ 78,728	$ 78,728	assuming $0.5/cap
foil/wax seals							
labels	$ 1,950	$ 1,950	$ 2,550	$ 2,550	$ 23,618	$ 23,618	assuming $0.15/label
glue							
cardboard boxes	$ 2,167	$ 2,167	$ 2,833	$ 2,833	$ 26,243	$ 26,243	assuming $1/box, 6 bottles per box
cardboard bottle divider inserts	$ 1,083	$ 1,083	$ 1,417	$ 1,417	$ 13,121	$ 13,121	assuming $.50/insert
shrink wrap	$ 182	$ 182	$ 239	$ 239	$ 2,210	$ 2,210	$17/roll, assume we need a new roll every 2 runs
pallets	$ 339	$ 339	$ 443	$ 443	$ 4,100	$ 4,100	$7.50/pallet, 12 cases per row, 4 rows high = 48 cases per pallet
Maintenance & Repair	$ 19,500	$ 19,500	$ 19,500	$ 19,500	$ 19,500	$ 19,500	(same as assumption for commercial laundry)
Supplies, Other	$ 1,073	$ 1,073	$ 1,404	$ 1,404	$ 13,000	$ 13,000	$50/run for cleaning supplies, other/miscellaneous
Utilities							required for production
electric					$ 57,000	$ 57,000	$0.123/kwH, PSNH rates from Source One page 7
natural gas	$ 2,318	$ 2,318	$ 3,032	$ 3,032	$ 28,080	$ 28,080	$6/decatherm, Source One page 14, assume 2250MBH, 8hrs/run = 180therms per day (18decatherm)
water	$ 193	$ 193	$ 253	$ 253	$ 2,340	$ 2,340	assume 2000 gal/run @ Groveton municipal water rates of $4.50/1000 gallons
waste water	$ 81	$ 81	$ 107	$ 107	$ 987	$ 987	assume 1/3 water usage turns into waste water @ $5.75/1000 gallons based on Groveton's sewage rates
Other							
Total Variable Expenses:	$ 156,860	$ 146,556	$ 190,976	$ 177,502	$ 1,703,740	$ 1,578,940	
Variable Expenses as a % of Gross Income	145%	136%	135%	126%	131%	122%	
Fixed Expenses:							
Labor							
1 part time office manager	$ 34,000	$ 34,000	$ 34,000	$ 34,000	$ 34,000	$ 34,000	$68,000 base salary
1 sales manager	$ 60,000	$ 60,000	$ 60,000	$ 60,000	$ 60,000	$ 60,000	base salary
payroll tax	$ 9,729	$ 9,729	$ 9,729	$ 9,729	$ 9,729	$ 9,729	10.35% (same as assumption for commercial laundry)
workers compensation	$ 442	$ 442	$ 442	$ 442	$ 442	$ 442	0.0047% for office staff
Office Expense	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	
Acct & Legal	$ 1,200	$ 1,200	$ 1,200	$ 1,200	$ 1,200	$ 1,200	
Interest							
Insurance	$ 5,474	$ 5,474	$ 5,474	$ 5,474	$ 5,474	$ 5,474	liability, equipment, contents
Property tax							
Rents paid—land, buildings	$ 44,400	$ 44,400	$ 44,400	$ 44,400	$ 44,400	$ 44,400	assuming $4.44/sq ft, 10,000' (same as assumption for commercial laundry)
Rents paid—equipment							
Utilities							required for basic functionality of the plant
electric	$ 1,440	$ 1,440	$ 1,440	$ 1,440	$ 1,440	$ 1,440	
natural gas	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	shouldn't need any extra heat.
water	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	
waste water	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	
telephone & internet	$ 2,880	$ 2,880	$ 2,880	$ 2,880	$ 2,880	$ 2,880	
Other							
Total Fixed Expenses	$ 162,765	$ 162,765	$ 162,765	$ 162,765	$ 162,765	$ 162,765	
Fixed Expenses as a % of Gross Income	151%	151%	115%	115%	13%	13%	
TOTAL CASH EXPENSES	$ 319,625	$ 309,321	$ 353,741	$ 340,266	$ 1,866,504	$ 1,741,704	
RECEIPTS MINUS EXPENSES	$ (211,690)	$ (201,386)	$ (212,381)	$ (198,907)	$ (567,085)	$ (442,285)	**At 17,000 bottles per year, the distillery needs to sell the potato based vodka for at least $21.40/bottle to cash flow, which means Pine State would sell it to DLC for $31.93 and it would retail for $46.79**
Net Income as a % of Gross Income	-196%	-187%	-150%	-141%	-44%	-34%	**At 17,000 bottles per year, the distillery needs to sell the GNS based vodka for at least $20.58/bottle to cash flow, which means Pine State would sell it to DLC for $30.72 and it would retail for $45.**
Plus CAPITAL CONTRIBUTIONS							
Plus CAPITAL SALES							
Less CAPITAL EXPENSE							

equipment						
500 gal jacketed still with copper column and stainless column	$ 46,000	$ 46,000				
Low pressure steam boiler, blow down tank, condensate return line, water softener	$ 26,000	$ 26,000				
500 gal mash tun with agitator and steam jacket	$ 20,000	$ 20,000				
500 gal jacketed fermenters	$ 30,000	$ 30,000				
all around pump, 40 gal/min	$ 4,500	$ 4,500				
2" diameter hoses	$ 1,500	$ 1,500				
Enolmaster 4 bottle bottler, 500 bottles/hr	$ 4,255	$ 4,255				
750-1,000 gal water holding tank	$ 9,000	$ 9,000				
1 horsepower alcohol pump	$ 1,200	$ 1,200				
gin basket	$ 1,000	$ 1,000				
sparging arm	$ 600	$ 600				
manway	$ 2,340	$ 2,340				
removable false bottom screen	$ 545	$ 545				
plumbing fit up	$ 50,000	$ 50,000				
building fit up/explosion proof	$ 100,000	$ 100,000				
electrical switch	$ 13,000	$ 13,000				
electrical wiring	$ 65,000	$ 65,000				
contingency at 10%	$ 37,494	$ 37,494				
item						
Total Capital Expense	**$ 412,434**	**$ 412,434**				
Less DEBT SERVICE						
Plus STARTING CASH						
NET RETAINED CASH EARNINGS (DEFICIT)	**$ (624,124)**	**$ (613,820)**	**$ (212,381)**	**$ (198,907)**	**$ (567,085)**	**$ (442,285)**
- Income Taxes						
- Depreciation						
- Capital Reserve						
NET AFTER CAPITAL RESERVE, DREPCIATION, FAMILY LIVING AND INCOME TAX ALLOCATION	$ (624,124)	$ (613,820)	$ (212,381)	$ (198,907)	$ (567,085)	$ (442,285)

$15,000 each

Courtesy: Vermont Farm Viability Enhancement Program

CASH FLOW PROJECTION

Groveton Vodka Distillery Distributed Via Southern Wine & Spirits of New hampshire at 10% of FOB price to DLC							
For the period of (dates):	At 13,000 bottles	At 13,000 bottles	At 17,000 bottles	At 17,000 bottles	At max production	At max production	
	Projection	Projection	Projection	Projection	Projection	Projection	
Production Information	Using Local Potatoes	Buying pre-made GNS	Using Local Potatoes	Buying pre-made GNS	Using Local Potatoes	Buying pre-made GNS	
80 proof (40%) acl/vol vodka in gallons	2576	2576	3369	3369	31200	31200	assuming 3,785 ml per gallon
vodka production in 750 ml bottles	13000	13000	17000	17000	157456	157456	assuming 3,785 ml per gallon
vodka sold in 750 ml bottles	12628	12628	16490	16490	152732	152732	assuming hit the state min sales of $13,000 state gross profit (see notes) in 25 stores at $6.35 gross profit/bottle, this comes to 82/store every six months or 164 bottles/store per year and then the state extends the sales to all 77 stores.
500 gal still produces 120 gal/run, # runs/yr =	21	21	28	28	260	260	
shrinkage (bottles lost in production/spoilage/marketing)	372	372	510	510	4724	4724	3%
Cash Receipts							
vodka sales	$ 154,308	$ 154,308	$ 201,056	$ 201,056	$ 1,872,749	$ 1,872,749	assume 19.99$/bottle less 1.465 state mark up, and 10% of FOB to SNHWS = $12.27 to distillery
on premise vodka sales	$ 1,039	$ 1,039	$ 2,079	$ 2,079	$ 2,079	$ 2,079	at $19.99/bottle retail less 8% state liquor sales tax = 18.39, assume 1 bottle/ wk, growing to 2 bottles/wk
TOTAL CASH RECEIPTS	$ 155,347	$ 155,347	$ 203,135	$ 203,135	$ 1,874,828	$ 1,874,828	
Cash Expenses							
Variable Expenses:							
Ingredients							
Potatoes and/or Grain Neutral Spirits	$ 25,760	$ 15,456	$ 33,686	$ 20,211	$ 312,000	$ 187,200	50# of potatoes = 20 litres (5 gal) of vodka. Assuming $1/# wholesale, delivered, local potatoes. Buying pre-made Grain Neutral Spirits $6/gal delivered
Yeast							
Sugar							
Labor							
1 distiller	$ 5,614	$ 5,614	$ 7,341	$ 7,341	$ 67,995	$ 67,995	assume $68,000 gross salary ($32.69/hr), distilling 1 day per week 8 hrs/day
1 bottling assistant	$ 3,055	$ 3,055	$ 3,995	$ 3,995	$ 37,003	$ 37,003	assume $37,000 gross salary $17.79/hr 8 hrs/day 1 day/wk
1 shipping manager	$ 3,055	$ 3,055	$ 3,995	$ 3,995	$ 37,003	$ 37,003	assume $37,000 gross salary $17.79/hr 8 hrs/day 1 day/wk
Sales Commission	$ 4,660	$ 4,660	$ 6,094	$ 6,094	$ 56,245	$ 56,245	at 3% gross sales
payroll tax	$ 897	$ 897	$ 1,173	$ 1,173	$ 10,867	$ 10,867	10.35% (same as assumption for commercial laundry)
workers compensation	$ 1,055	$ 1,055	$ 1,380	$ 1,380	$ 12,780	$ 12,780	9% for production staff
Licenses and Permits							
NH Liquor Manufacturers License	$ 1,692	$ 1,692	$ 1,692	$ 1,692	$ 1,692	$ 1,692	
Federal Liquor Manufacturers License	$ -	$ -	$ -	$ -	$ -	$ -	no cost for the permit itself
Liquor Tax							
NH sales tax: 8% of any direct retail sales	$ 83	$ 83	$ 166	$ 166	$ 166	$ 166	
Federal Production Tax	$ 27,820	$ 27,820	$ 36,380	$ 36,380	$ 336,960	$ 336,960	$13.50 Per 100 Proof Gallon Produced
Marketing, Advertising and Promotion (includes sales travel)	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 100,000	$ 100,000	
Distribution Expense- to get product to distributor							
truck @ $0.55/mi	$ 3,093	$ 3,093	$ 4,045	$ 4,045	$ 149,578	$ 149,578	262 miles round trip in NH, expanding to 1046 miles round trip to reach DC and back at full capacity
driver	$ 1,610	$ 1,610	$ 2,105	$ 2,105	$ 93,600	$ 93,600	$15/hr
Packaging							
bottles	$ 19,500	$ 19,500	$ 25,500	$ 25,500	$ 236,184	$ 236,184	assuming $1.50/bottle
caps	$ 6,500	$ 6,500	$ 8,500	$ 8,500	$ 78,728	$ 78,728	assuming $0.5/cap
foil/wax seals							
labels	$ 1,950	$ 1,950	$ 2,550	$ 2,550	$ 23,618	$ 23,618	assuming $0.15/label
glue							
cardboard boxes	$ 2,167	$ 2,167	$ 2,833	$ 2,833	$ 26,243	$ 26,243	assuming $1/box, 6 bottles per box
cardboard bottle divider inserts	$ 1,083	$ 1,083	$ 1,417	$ 1,417	$ 13,121	$ 13,121	assuming $.50/insert
shrink wrap	$ 182	$ 182	$ 239	$ 239	$ 2,210	$ 2,210	$17/roll, assume we need a new roll every 2 runs
pallets	$ 339	$ 339	$ 443	$ 443	$ 4,100	$ 4,100	$7.50/pallet, 12 cases per row, 4 rows high = 48 cases per pallet
Maintenance & Repair	$ 19,500	$ 19,500	$ 19,500	$ 19,500	$ 19,500	$ 19,500	(same as assumption for commercial laundry)
Supplies, Other	$ 1,073	$ 1,073	$ 1,404	$ 1,404	$ 13,000	$ 13,000	$50/run for cleaning supplies, other/miscellaneous
Utilities							required for production
electric					$ 57,000	$ 57,000	$0.123/kwH, PSNH rates from Source One page 7
natural gas	$ 2,318	$ 2,318	$ 3,032	$ 3,032	$ 28,080	$ 28,080	$8/decatherm, Source One page 14, assume 2250MBH, 8hrs/run = 180therms per day (18decatherm)
water	$ 193	$ 193	$ 253	$ 253	$ 2,340	$ 2,340	assume 2000 gal/run @ Groveton municipal water rates of $4.50/1000 gallons
waste water	$ 81	$ 81	$ 107	$ 107	$ 987	$ 987	assume 1/3 water usage turns into waste water @ $5.75/1000 gallons based on Groveton's sewage rates
Other							
Total Variable Expenses:	$ 158,283	$ 147,979	$ 192,829	$ 179,355	$ 1,721,002	$ 1,596,202	
Variable Expenses as a % of Gross Income	102%	95%	95%	88%	92%	85%	
Fixed Expenses:							
Labor							
1 part time office manager	$ 34,000	$ 34,000	$ 34,000	$ 34,000	$ 34,000	$ 34,000	$68,000 base salary
1 sales manager	$ 60,000	$ 60,000	$ 60,000	$ 60,000	$ 60,000	$ 60,000	base salary
payroll tax	$ 9,729	$ 9,729	$ 9,729	$ 9,729	$ 9,729	$ 9,729	10.35% (same as assumption for commercial laundry)
workers compensation	$ 442	$ 442	$ 442	$ 442	$ 442	$ 442	0.0047% for office staff
Office Expense	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	
Acct & Legal	$ 1,200	$ 1,200	$ 1,200	$ 1,200	$ 1,200	$ 1,200	
Interest							
Insurance	$ 5,474	$ 5,474	$ 5,474	$ 5,474	$ 5,474	$ 5,474	liability, equipment, contents
Property tax							
Rents paid—land, buildings	$ 44,400	$ 44,400	$ 44,400	$ 44,400	$ 44,400	$ 44,400	assuming $4.44/sq ft, 10,000' (same as assumption for commercial laundry)
Rents paid—equipment							
Utilities							required for basic functionality of the plant
electric	$ 1,440	$ 1,440	$ 1,440	$ 1,440	$ 1,440	$ 1,440	
natural gas	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	shouldn't need any extra heat.
water	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	
waste water	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	
telephone & internet	$ 2,880	$ 2,880	$ 2,880	$ 2,880	$ 2,880	$ 2,880	
Other							
Total Fixed Expenses	$ 162,765	$ 162,765	$ 162,765	$ 162,765	$ 162,765	$ 162,765	
Fixed Expenses as a % of Gross Income	105%	105%	80%	80%	9%	9%	
TOTAL CASH EXPENSES	$ 321,047	$ 310,744	$ 355,594	$ 342,120	$ 1,883,767	$ 1,758,967	
RECEIPTS MINUS EXPENSES	$ (165,700)	$ (155,397)	$ (152,459)	$ (138,985)	$ (8,938)	$ 115,862	**At 17,000 bottles per year, the distillery needs to sell the potato based vodka for at least $21.40/bottle to cash flow, which means Pine State would sell it to DLC for $31.93 and it would retail for $46.79**
Net Income as a % of Gross Income	-107%	-100%	-75%	-68%	0%	6%	**At 17,000 bottles per year, the distillery needs to sell the GNS based vodka for at least $20.58/bottle to cash flow, which means Pine State would sell it to DLC for $30.72 and it would retail for $45.**
Plus CAPITAL CONTRIBUTIONS							
Plus CAPITAL SALES							

Less CAPITAL EXPENSE							
equipment							
500 gal jacketed still with copper column and stainless column	$ 46,000	$ 46,000					
Low pressure steam boiler, blow down tank, condensate return line, water softener	$ 26,000	$ 26,000					
500 gal mash tun with agitator and steam jacket	$ 20,000	$ 20,000					
500 gal jacketed fermenters	$ 30,000	$ 30,000					$15,000 each
all around pump, 40 gal/min	$ 4,500	$ 4,500					
2" diameter hoses	$ 1,500	$ 1,500					
Enolmaster 4 bottle bottler, 500 bottles/hr	$ 4,255	$ 4,255					
750-1,000 gal water holding tank	$ 9,000	$ 9,000					
1 horsepower alcohol pump	$ 1,200	$ 1,200					
gin basket	$ 1,000	$ 1,000					
sparging arm	$ 600	$ 600					
manway	$ 2,340	$ 2,340					
removable false bottom screen	$ 545	$ 545					
plumbing fit up	$ 50,000	$ 50,000					
building fit up/explosion proof	$ 100,000	$ 100,000					
electrical switch	$ 13,000	$ 13,000					
electrical wiring	$ 65,000	$ 65,000					
contingency at 10%	$ 37,494	$ 37,494					
item							
Total Capital Expense	**$ 412,434**	**$ 412,434**					
Less DEBT SERVICE							
Plus STARTING CASH							
NET RETAINED CASH EARNINGS (DEFICIT)	**$ (578,134)**	**$ (567,831)**	**$ (152,459)**	**$ (138,985)**	**$ (8,938)**	**$ 115,862**	
- Income Taxes							
- Depreciation							
- Capital Reserve							
NET AFTER CAPITAL RESERVE, DREPCIATION, FAMILY LIVING AND INCOME TAX ALLOCATION	$ (578,134)	$ (567,831)	$ (152,459)	$ (138,985)	$ (8,938)	$ 115,862	

Break Even Analysis	VODKA	Percent of Gross Income
Gross Income	$1,874,828	100%
Cost of Goods (Variable Expenses)	$1,596,202	85%
Gross Margin	$278,627	15%
Fixed Expenses	$162,765	9%
Loan Principal Payments	$0	0%
Depreciation	$27,496	1%

BREAK-EVEN Including debt service and depreciation	% OF PROJECTED SALES
$ 1,280,228	68%

VOLUME PROFIT RATIO		
SALES %	GROSS SALES VOLUME	PROFIT
50.0%	$937,414	($50,947)
66.7%	$1,250,511	($4,416)
75.0%	$1,406,121	$18,710
125.0%	$2,343,536	$158,023
150.0%	$2,812,243	$227,680
200.0%	$3,749,657	$366,993

Break Even Analysis	WHISKEY	Percent of Gross Income
Gross Income	$3,283,622	100%
Cost of Goods (Variable Expenses)	$2,075,390	63%
Gross Margin	$1,208,231	37%
Fixed Expenses	$163,228	5%
Loan Principal Payments	$0	0%
Depreciation	$27,477	1%

BREAK-EVEN Including debt service and depreciation	% OF PROJECTED SALES
$ 518,280	16%

VOLUME PROFIT RATIO		
SALES %	GROSS SALES VOLUME	PROFIT
50.0%	$1,641,811	$413,411
66.7%	$2,190,176	$615,186
75.0%	$2,462,716	$715,469
125.0%	$4,104,527	$1,319,584
150.0%	$4,925,432	$1,621,642
200.0%	$6,567,243	$2,225,758

Courtesy: Vermont Farm Viability Enhancement

CASH FLOW PROJECTION

Name:	Groveton Creamery	
Production Information		
milk in pounds	7020000	
Cheese in pounds produced	702000	assume a 10:1 pound milk to cheese ratio
cheese in pounds sold	631800	assuming 10% shrinkage (product loss)
cheese make days per week	3	
cheese in pounds made per day	4500	
Acid Whey By Product in Pounds	6318000	assume 90% of total milk
Consumption of water (gals) for cheese production	41294	Assume 5% of total gallons of milk used

Model 1- Sale of Fresh Cheese to Cellars at Jasper Hill		
Cash Receipts		
cheese sold at retail value on site	$ 5,475	assume 1lb per day $15/lb
cheese sold fresh to Cellars at Jasper Hill	$ 2,108,993	assuming $3.34/lb wholesale for fresh cheese
TOTAL CASH RECEIPTS	**$ 2,114,468**	
Cash Expenses		
Variable Expenses:		
Ingredients & Supplies	$ 56,000	
Milk	$ 1,544,400	Assuming $20/cwt +$2/cwt premium
Milk Delivery	$ 9,360	3x/wk $60/delivery
Testing	$ 7,800	
Labor		
Office Management & Retail Store/Visitor C	$ 52,000	
Cheese maker	$ 55,000	8 hrs/day
Cleaning & Production Assistants (1)	$ 62,400	2 assistant 8 hrs/day $15/hr
Plant Maintenance Engineer/Manager	$ 50,000	
Driver to JHF	$ 18,720	3 days per week 8hrs/day $15/hr
Transportation gas/vehicle expense	$ 9,360	$60/trip, 3 trips per week to JHF
Payroll Taxes	$ 18,216	at 7.65%
Workers Comp	$ 16,773	9% for production, 0.47% for management
Repairs and Maintenance	$ 20,000	
License and Registration	$ 400	
Dues/Memberships	$ 775	American Cheese Society and NH Cheese Makers Guild
Utilities		
electric	$ 56,969	$0.123/kwH, PSNH rates from Source One page 7
natural gas	$ 7,488	$6/decatherm, Source One page 14,
water	$ 186	Groveton municipal water rates of $4.50/1000 gallons
waste water	$ 36,329	$5.75/1000 gallons based on Groveton's sewage rates
Marketing and Promotion		
Total Variable Expenses:	**$ 2,022,175**	
Variable Expenses as a % of Gross Income	**96%**	
Fixed Expenses:		
Interest		
Insurance	$ 6,000	liability, equipment, contents
Rents paid—land, buildings	$ 44,400	4.44/sq ft
Rents paid—equipment		
telephone/internet	$ 2,880	$240/mon
Utilities		
electric	$ 1,440	$0.123/kwH, PSNH rates from Source One page 7
natural gas	$ 1,000	$6/decatherm, Source One page 14,
water	$ 35	Groveton municipal water rates of $4.50/1000 gallons
waste water	$ 23	$5.75/1000 gallons based on Groveton's sewage rates
Other:		
Total Fixed Expenses	**$ 55,778**	
Fixed Expenses as a % of Gross Income	**3%**	
TOTAL CASH EXPENSES	**$ 2,077,954**	

Model 2- Sale of Aged Cheese		
Cash Receipts		
cheese sold at retail value on site	$ 5,475	assume 1lb per day $15/lb
cheese aged on site, sold to Provisions International	$ 4,003,298	assuming $6.34/lb wholesale
TOTAL CASH RECEIPTS	**$ 4,008,773**	
Cash Expenses		
Variable Expenses:		
Ingredients & Supplies	$ 56,000	
Milk	$ 1,544,400	Assuming $20/cwt +$2/cwt premium
Milk Delivery	$ 9,360	3x/wk $60/delivery
Cheese Labels (100 counts)	$ 224,640	assuming $0.16/label, 1 label per 8oz cheese
Vaccuum Seal Packaging	$ 702,000	$0.50/bag
Testing	$ 7,800	
Labor		
Office Management/Retail Store	$ 52,000	Book-keeping/Inventory Management/Record Keeping
Sales and Marketing	$ 52,000	
Cheese maker	$ 55,000	8 hrs/day
Cleaning, Production, and Packaging Assistants (2	$ 62,400	2 assistant 8 hrs/day $15/hr
Plant Maintenance Engineer/Manager	$ 50,000	
Driver to Provisions International	$ 18,720	3 days per week 8hrs/day $15/hr
Transportation gas/vehicle expense	$ 9,360	$60/trip, 3 trips per week to Provisions
Payroll Taxes (medicare and social security @ 0.0765	$ 22,194	at 7.65%
Workers Comp	$ 16,773	9% for production, 0.47% for management
Repairs and Maintenance	$ 20,000	
License and Registration	$ 400	
Dues/Memberships	$ 775	American Cheese Society and Vermont Cheese Council
Utilities		
electric	$ 56,969	$0.123/kwH, PSNH rates from Source One page 7
natural gas	$ 7,488	$6/decatherm, Source One page 14,
water	$ 186	Groveton municipal water rates of $4.50/1000 gallons
waste water	$ 36,329	$5.75/1000 gallons based on Groveton's sewage rates
Marketing and Promotion	$ 200,439	assume 5% of gross sales
Total Variable Expenses:	**$ 3,205,232**	
Variable Expenses as a % of Gross Income	**80%**	
Fixed Expenses:		
Interest		
Insurance	$ 6,000	liability, equipment, contents
Rents paid—land, buildings	$ 44,400	4.44/sq ft
Rents paid—equipment		
telephone/internet	$ 2,880	$240/mon
Utilities		
electric	$ 1,440	$0.123/kwH, PSNH rates from Source One page 7
natural gas	$ 1,000	$6/decatherm, Source One page 14,
water	$ 35	Groveton municipal water rates of $4.50/1000 gallons
waste water	$ 23	$5.75/1000 gallons based on Groveton's sewage rates
Other:		
Total Fixed Expenses	**$ 55,778**	
Fixed Expenses as a % of Gross Income	**1%**	
TOTAL CASH EXPENSES	**$ 3,261,010**	

RECEIPTS MINUS EXPENSES	$ 36,514
Net Income as a % of Gross Income	2%
Price Per Pound Needed for Break Even	$ 3
Less CAPITAL EXPENSE	
Renovate building/site (building, concrete, general electric, plumbing, site work)	$ 500,000
Boiler	$ 15,000
Air and refrigeration compressors	$ 5,000
Refrigerator system	$ 7,500
Walk-in-Cooler/Freezer (15'W X 35'L X 11'H)	$ 9,000
Raw milk bulk tank, with cooling jacket	$ 35,000
Cheese vat batch pasteurizer w/agitator (6, 4000 liter vats)	$ 300,000
Jacketed, pasteurized milk storage tank	$ 20,000
Whey holding tank	$ 8,000
Clean-in-place (CIP) System	$ 11,000
Pumps	$ 8,000
Plate Heat Exchanger	$ 14,000
4-wheel cart with handle (food grade)	$ 500
Stainless (3) compartment sinks	$ 1,500
Stainless steel racks w/poly shelves	$ 2,000
Draining tables, 2	$ 24,000
Stainless steel work tables	$ 1,750
Stainless steel shelving	$ 5,000
Brining tanks, 6	$ 3,000
Cheese molds w/plate	$ 2,000
Digital Scale	$ 200
Thermometer	$ 100
Mats for draining tables	$ 250
Accessories: paddles, forkers, knives	$ 5,000
Equipment shipping expense, Equipment installation, Stainless steel welding, Processing Plumbing, Processing Electrical	$ 477,800
Used refrigerated box truck	$ 26,000
Engineer	$ 10,000
Contingency (10% of itemized capital costs)	$ 149,160
Total Capital Expense	**$ 1,640,760**
Pay Back In Years	45

RECEIPTS MINUS EXPENSES	$ 747,763
Net Income as a % of Gross Income	19%
Price Per Pound Needed for Break Even	$ 5
Less CAPITAL EXPENSE	
12550' building. build out incl. basic plumbing, water, electric no equipment	$ 500,000
Boiler	$ 15,000
Air and refrigeration compressors	$ 5,000
Refrigerator system	$ 15,000
Walk-in-Cooler/Freezer/Aging Cave	$ 50,000
Raw milk bulk tank, with cooling jacket	$ 35,000
Cheese vat batch pasteurizer w/agitator (6, 4000 liter vats)	$ 300,000
Jacketed storage tank	$ 20,000
Whey holding tank	$ 8,000
Clean-in-place (CIP) System	$ 11,000
Pumps	$ 8,000
Plate Heat Exchanger	$ 14,000
Packaging and sealing machine	$ 9,000
4-wheel cart with handle (food grade)	$ 500
Stainless (3) compartment sinks	$ 1,500
Stainless steel racks w/poly shelves	$ 2,000
Draining tables, 2	$ 24,000
Stainless steel work tables	$ 1,750
Stainless steel shelving	$ 5,000
Brining tanks, 6	$ 3,000
Cheese molds w/plate	$ 2,000
Digital Scale	$ 200
Thermometer	$ 100
Mats for draining tables	$ 250
Accessories: paddles, forkers, knives	$ 5,000
Stainless steel welding and equipment installation, Processing Plumbing, Processing Electrical	$ 535,300
Used refrigerated box truck	$ 26,000
Engineer	$ 10,000
Contingency (10% of itemized capital costs)	$ 160,660
Total Capital Expense	**$ 1,767,260**
Pay Back In Years	2

Break Even Analysis	**At $3.34/lb**	
		Percent of Gross Income
Gross Income	$2,114,468	100%
Cost of Goods (Variable Expenses)	$2,022,175	96%
Gross Margin	$92,292	4%
Fixed Expenses	$55,778	3%
Loan Principal Payments	$0	0%
Depreciation (assuming 15 yr on capital expense)	$109,384	5%

BREAK-EVEN Including debt service and depreciation	% OF PROJECTED SALES
$ 3,783,950	178.96%

VOLUME PROFIT RATIO		
SALES %	GROSS SALES VOLUME	PROFIT
50.0%	$1,057,234	($119,016)
66.7%	$1,410,350	($103,603)
75.0%	$1,585,851	($95,943)
125.0%	$2,643,085	($49,797)
150.0%	$3,171,702	($26,723)
200.0%	**$4,228,936**	**$19,423**

Break Even Analysis	**At $6.34/lb**	
		Percent of Gross Income
Gross Income	$4,008,773	100%
Cost of Goods (Variable Expenses)	$3,205,232	80%
Gross Margin	$803,541	20%
Fixed Expenses	$55,778	1%
Loan Principal Payments		0%
Depreciation (assuming 15 yr on capital expense)	$117,817	3%

BREAK-EVEN Including debt service and depreciation	% OF PROJECTED SALES
$ 866,048	**21.60%**

VOLUME PROFIT RATIO		
SALES %	GROSS SALES VOLUME	PROFIT
50.0%	$2,004,386	$228,175
66.7%	$2,673,852	$362,366
75.0%	$3,006,580	$429,060
125.0%	$5,010,966	$830,831
150.0%	$6,013,159	$1,031,716
200.0%	$8,017,546	$1,433,486

Other Businesses

As noted earlier in this executive section, there is ample improved space for the cogeneration facility and additional warehouse/commerical space of 60,000 and available pad space for other business ventures. Some of the suggested businesses to consider:

- Craft/micro brewer- craft beer continues to lead market growth in the malt beverage industry. NH has an established reputation as a home of premium craft breweries. Craft breweries are energy and hot water intensive but the high premiums they can command can support their cost of operations, and access to the co-gen plant would provide additional benefit that could make this a strong candidate. This is the most promising idea to pursue as a next step.

Strengths	Weaknesses
Already strong brand recognition for NH micro/craft brews Energy and water intensive, would benefit from co-gen plant While established, local competition is strong, craft beer drinkers are known for their interest in exploration of the category, making entrance into a competitive market easier than other industries	Will be unlikely to provide residual benefit to other elements of the production supply chain because will likely need to rely on external (western/mid-western) grain and hops.
Opportunities	**Threats**
Continued long term growth of micro/craft brew market segment Capitalize on the existing brand recognition for NH made craft beer market High premium for the value add product Could help support growth of agricultural production for local grain and hop producers	Cost and access of inputs from west/Midwest, cost and access to glass (few glass producers) Capital required for start up

- Distillery- there is a growing interest in Northeastern grain and large-scale vegetable cropping production, such as potatoes. A distillery would be able to make use of the local production and create a premium, value added product. Research would need to be conducted on feasibility of access to raw materials- could grain and/or potatoes be grown in consistent and

sufficient volumes to support a value added facility? Also, maturing of the product must be explored, potato based vodka, for example may be ideal as it is a crop that is known to grow well in NH, and is a product that does not require long term maturation, unlike whiskey which can takes years before being ready for sale. Distilleries are energy and hot water intensive but the high premiums they can command can support their cost of operations, and access to the co-gen plant which will further reduce operating expenses, and ease of access to raw ingredients (Maine is the 8th largest potato producing state in the nation), make this a strong candidate. This would be the second idea to pursue as a next step.

Strengths	Weaknesses
Already good at growing potatoes First known US potato patch was in Londonderry, New Hampshire in 1719[1][2][3] could be leveraged in the marketing and branding Vodka has short turn around time Energy and water intensive, would benefit from co-gen plant	Not known for distillation in NH Access to Technical Resources is minimal
Opportunities	**Threats**
Growing interest in grains Growing interest in locally produced spirits High premium for the value add product Possible premium for "NH-made" branding	Access to raw materials Capital required for start up

- Artisan cheese producer- NH is not as well known for its food/value added agriculture as Vermont but Provisions International and Jasper Hill Cheese sell and market local cheese including New Hampshire made offerings, so there is ready access to markets, along with technical assistance and aging facilities. Creameries are energy and hot water intensive but the high premiums they can command can support their cost of operations, and access to the co-gen plant will further reduce operating expenses, making this a strong candidate. This would be a third idea to pursue as a next step.

Strengths	Weaknesses
Established market for "Vermont" artisan cheese, which could be leveraged to influence sales of New Hampshire artisan cheese Access to Jasper Hill for aging facility and	Few dairies remain in NH, access to raw ingredient may be difficult. Need to explore cost of sourcing milk from Agri-Mark.

[1] http://agriculture.nh.gov/news/documents/reg-potato-history.pdf
[2] http://www.theheartofnewengland.com/garden-PotatoesGrowing.html
[3] http://answers.yahoo.com/question/index?qid=20081207103636AAJzyf8

marketing/distribution Access to Provisions International for distribution and marketing Significant amount of Technical Assistance available from Vermont While established, local competition is strong, artisan cheese eaters are known for their interest in exploration of the category, making entrance into a competitive market easier than other industries	
Opportunities Capitalize on the existing brand recognition for VT made artisan cheese High premium for the value add product Could help support growth of agricultural production for local dairy	Threats Access to raw materials Capital required for start up

- Craft/artisan furniture maker, The demand for high quality furniture, and the willingness to pay a premium for "American Made" is increasing and the resources of this type of business are able in the Groveton area. Furniture manufacturing is energy intensive but the high premiums they can command can support their cost of operations, and access to the co-gen plant will further reduce operating expenses, making this a strong candidate. This would be a fourth idea to pursue as a next step.

Strengths Already strong brand recognition for NH/VT artisan furniture makers (Ethan Allen, Pompanoosuc Mills, Table Legs, Copeland Furniture, etc.)	Weaknesses Entrenched, well-established local competition, may be more difficult to penetrate the furniture market- buyers looking at furniture, which is a long term purchase, unlike cheese or beer, may have a more difficult time considering a new, untested source for quality furniture Capital needed for start up.
Opportunities Leverage growing demand for "American made" furniture products Leverage established brand recognition for NH-VT made furniture	Threats Furniture purchases are less frequent and higher dollar value transactions and are considered an investment, therefore the frequency and amount that people are willing to spend will directly correlate to the health of the national economy, and could lead to major

Capitalize on ease of access to raw materials High premium for the value add product Energy and water intensive, would benefit from co-gen plant	swings in cash flow that may be difficult to manage. Capital needed for start up.

Other candidates that could be explored

- Regional food processing facility

Strengths	Weaknesses Demand needs to be researched. Limited ability to charge a premium for use of the facilities, or finished goods may make the financial feasibility questionable
Opportunities Statewide growing interest and desire to increase the agricultural economy could lead to demand/need for a regional food processing facility	Threats Capital needed for start up.

- Regional freezer facility

Strengths	Weaknesses Demand needs to be researched. Limited ability to charge a premium for use of the facilities, or finished goods may make the financial feasibility questionable
Opportunities Statewide growing interest and desire to increase the agricultural economy could lead to demand/need for a regional food processing facility	Threats Capital needed for start up.

- There may be demand/need for a meat processor which would be energy and water intensive.

Strengths	Weaknesses
	Demand needs to be researched. Margins for this business will be slim. Pricing for services to agricultural producers will need to be viable for the producers, so the only opportunity to generate real margin will be if the processor can process and resell cuts of meat at a premium.
Opportunities Statewide growing interest and desire to increase the agricultural economy could lead to demand/need for an additional regional meat processor	Threats Capital needed for start up. Slim margins.