SECTION 5
DESIGN CONSIDERATIONS

GARLAND URBAN AGRICULTURE CENTER
HYDROPONIC SUPPLY STORE
Section 5 of this proposal for the Garland Urban Agricultural Center addresses design considerations for the Hydroponic Supply Store. Ideally this supply store would be located next door to the Garland Aquaponic Farm/Café/Grocery. Think of the entire Garland Urban Agricultural Center as a commercial eco-system where all the businesses complement and support each other.

Hydroponics forms part of the aquaponic system. The plants are grown exactly as they would be in a hydroponic system—except instead of organic compounds, the plants in an aquaponic system are fed fish waste in a self-perpetuating little eco-system whereby the fish feed the plants. Instead of feeding the plants, humans feed the fish.

However, all the equipment (with the exception of the plant food) is the same as it is for hydroponic gardening: grow baskets, inert growing medium; air pumps; etc. In an aquaponic system, plant food is not needed because the fish supply the nutrients.

Following is a photo from Tomato Joe’s Garden and Hydroponic Supply Store located in Hampton Falls, New Hampshire. In the background near the front window, we see various containers (reservoirs). These buckets and containers will hold the water that is oxygenated with a small pump. The top of the bucket contains a net basket with the medium and the plant. The roots of the plant will dangle into the water. In the foreground we see all the various bottles of plant food—all organic, of course. Most of the hydroponic plant food is in liquid form. (By the way, as Garland becomes more firmly entrenched in its food-based local economy, we will see entrepreneurs making and selling their own hydroponic plant food. It’s easy enough to do—even using low-tech methods. Worm farming will also become another thriving industry too. Worm castings are often used to make plant juice to feed to plants. Many cottage industries will spring up around the establishment of the Garland Urban Agricultural Center and hydroponic plant food will just be one of these industries.)
Below is a photo showing a close-up of a hydroponic bucket. The plant (not shown) will be placed in the medium of hard clay pellets and then water will fill the reservoir. The purpose of hydroponic medium is to hold the plant upright as it gets its nourishment from the water below to which the gardener adds hydroponic feed. The medium is itself pH neutral and provides no nourishment.

**NOT ALL URBAN GARDENERS WILL WANT TO CREATE AN AQUAPONIC SYSTEM WITH FISH—AT LEAST NOT AS THEIR INITIAL FORAY INTO HYDROPONIC FARMING.**

However, many will be interested and curious after visiting the Garland Aquaponic Farm to try out a small hydroponic garden at first. Perhaps with just one plant. And when they do . . . they will be hooked.

Imagine growing a vegetable garden without having to fight the soil. No more worries about too much water; or too little water; or how much fertilizer; or when to fertilize; or the labors of cultivating and weeding to provide just the right soil consistency and texture; and how much space to give each plant to avoid competing for food and water; etc. Hydroponics works for the beginner and the experienced gardener.

Hydroponic vegetables are healthy, vigorous and consistently reliable. Gardening is clean and extremely easy, requiring little effort. A green thumb is not required.

In soil, vegetables grow a large root system to search for food and water. In hydroponics, food and water are fed directly to the roots. This enables the plants to spend more energy growing the part above the surface, thus growing two times faster. With small roots the plants may be grown very close together conserving space. **In general, hydroponic gardens require only about 20% of the overall space required of soil gardens for the same vegetable production.**

Again as there is more demand for hydroponic supplies, cottage industries will also spring up around the creation of hydroponic reservoirs. These containers are many and varied. Many of the commercial designs are somewhat expensive. For example, the five-gallon bucket shown above retails for about $40.00 and the homemade container below can be made for less than half that amount.
In addition to reservoirs, plant food, and plant medium, the hydroponic store will carry many different types of grow lights for those who wish to grow their plants indoors and year round.

The hydroponics store is not the typical garden supply store. Among other things, no garden soil is sold. There is no need for the typical garden implements such as spades, hoes and rakes. There are no large heavy bags of fertilizer or potting soil to carry home. Instead there are only quart and gallon-sized plastic containers of liquid plant feed.

Also, in part because the general public is not familiar with the process of growing plants hydroponically, these stores often feature plants growing in various systems throughout the store. The best hydroponic store I know of in the Dallas area is Green Habitat located at 4821 Columbia Avenue Dallas, TX 75226.
Below is a photo of the Santa Cruz, California hydroponic store. As you can see, once again, the primary product sold in these stores is the liquid plant food.

As you can see from the photo below of a NYC rooftop garden above the Bell, Book and Candle restaurant, hydroponic plant supports come in all shapes and sizes. However, they are all based on the same principles: a reservoir to hold the water and growing medium or some structure such as the vertical tubes as shown below to support the plant. The electrical cords you see running from the reservoirs of this setup lead to a solar powered energy source that runs the pumps that oxygenate the water in the reservoirs. That is one of the requirements of the hydroponic system—oxygenation of the water. It cannot be stagnant. The lids on the reservoirs prevent rapid evaporation of the water.
BUILD TEAM FOR THE HYDROPONIC STORE

Ideally this store would be an employee owned, locally held business as opposed to a Wall Street chain. In fact, that should be a requirement for ownership.

It is anticipated that this store will be highly profitable, because of its proximity to and relationship with the Garland Urban Agriculture Center. Because the goal of this project is to grow and enhance the stability of our local economy, this store should be locally held and ideally an employee-owned enterprise.

Again the mission of this entire project is one of strengthening the local economy via job creation of locally owned and held businesses that grow a food-based local economy that encourages urban farmers and other food-related entrepreneurial activities of our citizens.

The site for the hydroponic store should be selected and secured at the same time the Garland Urban Aquaponic Farm site is selected and secured. Ideally, this store would be next door to the farm. If not, it is highly recommended that it be located within walking distance of the Garland Aquaponic Farm.

Much of the plans for and possibly all the fixtures needed for the store should be in place at the time of the completion of the Aquaponic Farm.

Again as with the other Build Teams, the one for the Hydroponic store would need to follow a similar structure with a Build Team Liaison who communicates and stays in touch with the Build Team Liaisons for the Aquaponic Center, the Aquaponic Café, the Aquaponic Grocery and THE HOUR COMMERCIAL KITCHEN (as well as any other setups for enterprises related to the Garland Urban Agricultural Center.)