FORM A

NON-PRICE PROPOSAL NAGOG HILL ORCHARD LEASE

Submit this form in **a separate envelope** clearly marked on the outside as **"Non-Price Proposal – NAGOG HILL ORCHARD LEASE" Use additional paper as necessary**

A. **RESPONDANT**: Sandra and Michael Santoro

Contact Person (if other than Respondent) _____

Town: Littleton State: MA Zip: 01460

Telephone: (978) 501-6733

E-Mail: sandrasantoro1286@gmail.com

B. CURRENT AGRIGULTURAL BUSINESS

This section is if you are currently operating your own agricultural business. **If you do not own an agricultural business, leave this section blank.**

Legal Name of Business: _____

Name(s) of Owner: _____

Date Established: _____

Type of Business (Sole Proprietorship, General Partnership, LLP, LLC, Corporation 501(c)(3), etc.

For consideration, all proposals must provide the following information for further evaluation:

1. A narrative describing:

(a) Respondent's current agricultural business, including the ownership interest, number of acres, description of crops and/or goods respondent grows and sells and the livestock Respondent raises;

(b) the number of employees Respondent has;

(c) how Respondent intends to use Nagog Hill Orchard in conjunction with their existing business in a manner that will comply with the APR;

(d) an equipment investment plan describing the farming equipment respondent owns, leases or intends to procure that would be used in the operation and maintenance of the Orchard;

(e) the experience and licensing of the Respondent to perform pesticide management;

(f) which of the parcels and Buildings/structures the Respondent proposes to lease and for what purpose;

(g) Respondent's educational background

2. Proposal contains a Preliminary Management Plan for the Orchard, equipment and Building/structures, based on what the respondent knows about the property, which may be developed into a formal Management Plan during lease negotiations if respondent is selected to lease the property.

3. The Preliminary Management Plan should contain any information that the respondent considers important for their vision for the property and also provide for (a) pesticide management; (b) periodic reporting to the Town of the number and types of plantings, crop yields, and prices; (c) a schedule and description of best management practices that will be utilized; (d) a schedule and description of all minor/routine maintenance activities that respondent intends to perform on structures included with the lease; and (e) annual inspections by the Town.

   The Town is not seeking a fully developed Management Plan at this stage. A plan in outline form that covers the identified topics, to the best of respondent's knowledge and ability at this stage, is sufficient.

I understand that Proposals that do not meet the Minimum Evaluation Criteria will be judged non-responsive and will not be reviewed further. I also understand that this nonprice proposal information will be evaluated by the Town and separate from the price proposal.

Signature: S M Santoro

Print Name: Sandra Santoro and Michael Santoro

Date: 09/19/2024

NAGOG HILL ORCHARD + TREE FARM

NON-PRICE PROPOSAL TO LEASE, MANAGE AND OPERATE THE NAGOG HILL ORCHARD OWNED BY THE TOWN OF LITTLETON

DUE DATE: Friday, September 20, 2024, at 10:00 AM

OFFERED TO:
Town of Littleton
Office of the Town Administrator
Town Offices, Room 306, 37 Shattuck Street, Littleton, MA 01460

NAGOG HILL ORCHARD & TREE FARM PROPOSAL CONTACTS:
Sandra Santoro
(978) 501-6733, sandrasantoro1286@gmail.com

Michael Santoro
(978) 512-1182, arbormike927@gmail.com
46A Nagog Hill Road
Littleton, MA 01460

This proposal includes proprietary information that shall not be disclosed for any purpose other than to evaluate this proposal.

1. In accordance with the Town of Littleton's Request for Proposals, dated August 15, 2024, Sandra and Michael Santoro submit the following narrative descriptions in support of a proposal for Nagog Hill Orchard & Tree Farm, to be located at the current Nagog Hill Orchard:

(a) Respondent's current agricultural business, including the ownership interest, number of acres, description of crops and/or goods respondent grows and sells and the livestock Respondent raises;

Currently, Michael Santoro is a MA Certified Arborist (#2203) and Manager of the Billerica, MA location of Bartlett Tree Experts. While the position does not include ownership interest, as Bartlett Tree Experts is privately owned by the Bartlett Family of Stanford, CT, each branch location operates as its own small business. For the local Billerica, MA location, Michael is responsible for selling tree and plant health care work to residential and commercial clients, managing heavy machinery, equipment, safety, billing and administrative tasks, as well as the coordination and completion of all scheduled client jobs. In this role, Michael is also responsible for creating, updating annually, and carrying out a unique business plan for his branch. The Bartlett Tree Experts Billerica branch alone services roughly 500 client properties with a total of approximately 1,000 work orders completed this past year.

(b) the number of employees Respondent has;

Michael is responsible for the supervision and training of a crew of 7 employees including one arborist representative, 2 plant healthcare technicians, and 4 tree crew members. Additionally, Michael oversees 3 seasonal workers who join the team each spring from Mexico under the H2B Visa Program.

(c) how Respondent intends to use Nagog Hill Orchard in conjunction with their existing business in a manner that will comply with the APR;

The Respondents intend to use Nagog Hill Orchard as a separately owned and operated business from existing businesses we work for. However, a part of our proposed business of Nagog Hill Orchard & Tree Farm would include a tree and shrub nursery. Michael's current work for Bartlett Tree Experts includes a great deal of tree work and plant health care for plantings already existing on client properties. It would be our intent to run a section of the orchard property as a tree farm and nursery in order to supply trees and shrubs to both wholesale and retail customers.

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(d) an equipment investment plan describing the farming equipment respondent owns, leases or intends to procure that would be used in the operation and maintenance of the Orchard;

The Respondents currently own a 20 horsepower John Deere Tractor with a field mower attachment and have access to a spray attachment for pesticide applications. We also own a small Allis Chalmers tractor and have access to a third tractor, a Kubota, and a small excavator, if needed. We own a Stihl Kombisystem with many attachments and have access to a rototiller. Smaller farming equipment we currently own includes chain saws, pole saws, Orchard Ladder, pruning shears, loppers, shovels, rakes, wheelbarrows, and buckets.

We also have a full workshop at our house, conveniently located across from the orchard, at 46A Nagog Hill Road. In our workshop we have welding equipment, a drill press, and other woodworking tools.

Additional equipment we intend to procure includes a Batwing mower(or similar), Kombisystem tiller attachment, and orchard harvesting extension poles. On top of all existing and planned equipment, Michael also has an abundance of electrical and mechanical knowledge and experience.

The Offeror proposes that any agricultural equipment contained in or on the leased parcels be made available and accessible to the Offeror for use on the property. Further, the Respondent proposes that any irrigation systems currently present on the property be made available to the lessee for inspection, use, or repair. If existing irrigation systems are deemed by the Offeror to be unusable, then the Offeror proposes that installation of a usable irrigation system be made available. It is our understanding that installation of a new pump at the well next to the Main Barn (Field 8) as well as an agreement for the Offerors to utilize the roadside town water hookup near Field 1 at a limited set dollar rate per year would satisfy this requirement.

(e) the experience and licensing of the Respondent to perform pesticide management;

With regards to pesticide management specifically, Michael has many years of experience, having first received his pesticide applicator license in 2015. Michael worked for Harrod Tree Farm in Shirley from 1999 to 2005, Allenby Tree Service from 2007 to 2008, Matthew R. Foti Tree Service (with Tree Farms located in Groton, Westford, and VT) from 2008-2016, and, as noted previously, as a certified arborist for Bartlett Tree Experts from 2016 to present day.

(f) which of the parcels and Buildings/structures the Respondent proposes to lease and for what purpose;

Of the premises, as depicted in Attachment 1: Nagog Hill Orchard Property Sketch, the Respondent proposes to lease the following parcels and building structures:

Proposed Parcels to be Leased by the Respondent

Assessor's Parcel	Description	Total Acreage	APR Acreage	Annual Property Taxes
R04-8-0	Nagog Hill Rd North Mainly APR Plot	33.16	29.53	$834.27
R02-3-0	75 Nagog Hill Rd Main Barn + APR Plot	7.56	6.05	$1,784.09
		40.72	35.58	$2,618.36

Assessor's Parcel R04-8-0

The Respondent proposes to utilize the leased parcels in a variety of ways. For Assessor's Parcel R04-8-0 (Nagog Hill Rd North), the parcel represents 33.16 acres of land 29.53 acres of which is APR-designated.

This parcel would be divided for use in several different ways including restoring a section of existing apple trees for "U-Pick" apple picking open to the public in the fall on sections of Fields 3, 4 and 5 (please reference Attachment 1). This parcel would also include some new apple tree sapling plantings including more popular new varieties, such as Honeycrisp, as well as a heritage variety "tasting" orchard. New plantings would be installed in the modern, trellised fashion in accordance with current orchard research and practices.

Research of the Nagog Hill Orchard Working Group has shown that a commercial apple orchard alone is not economically viable. Furthermore, the existing conditions of the orchard are poor overall, with minimal maintenance of trees and no pest management practices to control diseases, invasives, or other pests in recent years. As noted in the RFP, "Based on advice from local experts, there are no commercially viable fruit trees on the property." Our interpretation of this advice is that, from a commercial growers standpoint, the old-fashioned planting techniques and spread out, tall trees, combined with the market rates for bushels of apples make this small-scale orchard unable to compete with modern, economically viable orchards. We agree and take another viewpoint into consideration as well - that the value proposition for "U-Pick" apples is different.

While not economically practical as a crop to pack up and ship out large scale, apples would be an integral part of our offerings as a "U-Pick" oriented farm, where customers are not simply looking to purchase a bag or a crate of apples, but rather an experience - a crisp fall day with

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their friends/family in a beautiful place, with other complementary offerings available as well.

Parcel R04-8-0 would also include an "Autumn Garden" area on parts of Fields 3 and 4, including several pumpkin, gourd, and squash fields to be made available for "U-Pick" and open to the public. We plan to plant some Atlantic Giant pumpkins as a novelty attraction. A portion of sunflower garden would be planted as well for photography sessions and flower cuttings.

Another section of plot R04-8-0, Fields 1, 2 and part of Field 3, would be used for Christmas Tree farming. We intend to plant a variety of conifers commonly used as Christmas trees, to include firs and pines. These types of tree take seven years on average to reach harvesting size. Because investment of resources into these plantings would not pay off for many years, it is vital to diversify our plantings, especially in the shorter term. Once trees reach optimal size and are ready for harvest, we would open up the fields to the public for "Cut your own" tree experiences. At that time, we would also sell pre-cut trees purchased wholesale and ramp up more of the associated offerings such as wreath making workshops and photos with Santa Clause at the Main Barn.

A portion of Field 5 would include saplings of new peach varieties, nectarines, plums, and cherries. This "Stone Fruit" orchard would eventually be used for "U-Pick" purposes.

Assessor's Parcel R02-3-0

For Assessor's Parcel R02-3-0 (75 Nagog Hill Rd - Main Barn lot), the parcel represents 7.56 acres of land 6.05 acres of which is APR-designated. This parcel includes the Main Barn, which is the only structure the Respondent proposes be included in a Lease. As noted in the RFP:

> *Built in 1940, the structure has three levels. The lower level contains approx. 2,400 sq. ft. and opens onto Nagog Hill Road. The lower level includes retail space, general storage, and temperature controlled cold storage. The main floor contains approx. 3,260 sq ft of space divided into a larger storage area and workshop areas. Stairs are on the main level that go to the approx. 2,400 sq. ft. second floor, which is used for storage. There are two exterior sliding doors that provide access to the second-floor storage area by a forklift. A small one-story residential structure containing approx. 540 sq. ft. is located off the south side of the barn, which contains a small kitchen and bathroom.*

We propose use of the Main Barn for retail, public educational workshop, function, and storage spaces. Use of the Main Barn would be central to our successful operations. The Main Barn is not part of the APR, so some of the agriculturally adjacent activities that may not be permitted under the APR (or may be particularly cumbersome to have approved) but that would help make our operation economically viable would be held on the acre-plus of land that the Main Barn sits on.

A small retail farmstand area will be used as a storefront to sell a small selection of farmed and

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handcrafted items. Outside of the Main Barn, we would eventually like to create a children's area with a play area/sandbox, a rabbit hutch, and chicken coop and run, with the possibility of adding additional animals in later years. Also farther down the line, we would like to set up an area for public educational workshops within the Main Barn to include a working cider press (with proper certifications, of course) and observational honeybee hive. We would be interested in eventually having a small event/function space in the Main Barn as well if the building is fit for that purpose. Lastly, we would additionally be interested in hosting professional photographers for family photo sessions and licensed food trucks on occasion, and would set up several picnic tables outside of the Main Barn for patrons to use.

In terms of storage, we would require cold storage for our products as well as space for farm equipment and supplies. We will need to use a separate, locked, and ventilated area for pesticide/herbicide storage.

The remaining APR acreage on parcel R02-3-0 would be used for a blueberry field and nursery crops. We would request that The Town remove all existing apple and stone fruit trees from plots R-02-3-0 and R-02-9-1. The latter plot would not be a part of the lease; however, other fields on the property would be affected by the pests and diseases that are currently present on these trees. We would like plot R-02-9-1 to be a hay field for the immediate future.

Plot R02-3-0 would also include a "Summer Garden" area containing a blueberry grove with a surrounding netted structure. Blueberries would begin to bear fruit within one to two years and would offer a summer "U-Pick" option. A small, adjacent strawberry field would be planted as well, with diversified varieties in order to stagger crop ripening times. This area would also feature a flower garden with summer blooming flowers for bouquets.

Lastly, a significant portion of acreage on plot R-02-3-0 would be utilized as a nursery for various trees and shrubs for sale to area tree companies, landscapers and retail nurseries. We would apply for a Nursery Grower's Certificate under the Massachusetts Department of Agricultural Resources. Plantings would include an assortment of native species and high demand ornamental and flowering trees and shrubs. Similar to Christmas trees, this portion of our business would take several years to realize a return on investment.

Any Permitted Uses noted here that are not allowed under the APR would take place at the Main Barn on non-APR land. Of the diversified listing of uses above, many of these endeavors will take years before they are adequate size for crop harvesting. In the short term, we will have high up-front costs with little return. However, as long as we focus on utilizing available resources to their full potential and minimizing unnecessary costs, our investments will begin generating returns. To ensure the Orchard remains viable and productive for years to come, business operations will need to be multifaceted.

(g) Respondent's educational background

In terms of educational background, Michael earned his Bachelor of Science degree in Urban Forestry from the University of Massachusetts (UMASS) in Amherst, MA in 2007. Prior to that he earned his Associates Degree in Arboriculture and Park Management from The Stockbridge

School of Agriculture at UMASS in 2004. Coursework included Fruit Tree Pruning, Entomology, Plant Pathology, Botany, Soil Science and Turfgrass management.

Sandra's educational background includes a Master of Business Administration degree from the Carroll School of Management at Boston College in Chestnut Hill, MA in 2021. Prior to that, Sandra earned a Bachelor of Science degree in Business Administration with a Concentration in Economics from Massachusetts College of Liberal Arts in North Adams, MA in 2009. Sandra also holds a Level II Certification in U.S. Air Force Contracting and has been employed as a Contract Specialist for the U.S. Air Force since 2013 where she has practiced implementation of Government Acquisition Regulations as well as worked with stakeholders to define requirements, solicit proposals, negotiate and award contracts, and administer contracts.

2. Proposal contains a Preliminary Management Plan for the Orchard, equipment and Building/structures, based on what the respondent knows about the property, which may be developed into a formal Management Plan during lease negotiations if respondent is selected to lease the property.

Please See Preliminary Management Plan below.

3. The Preliminary Management Plan should contain any information that the respondent considers important for their vision for the property and also provide for (a) pesticide management; (b) periodic reporting to the Town of the number and types of plantings, crop yields, and prices; (c) a schedule and description of best management practices that will be utilized; (d) a schedule and description of all minor/routine maintenance activities that respondent intends to perform on structures included with the lease; and (e) annual inspections by the Town.

The Town is not seeking a fully developed Management Plan at this stage. A plan in outline form that covers the identified topics, to the best of the respondent's knowledge and ability at this stage, is sufficient.

Please See Preliminary Management Plan below.

VISION

Nagog Hill Orchard & Tree Farm is a proposed business to be established by the Respondents, Sandra and Michael Santoro of 46A Nagog Hill Road, Littleton, MA 01460. It has long been both a personal and professional aspiration for us to own and run our own agricultural business and, combined, we have both the education and background as well as professional agricultural experience necessary to succeed. As current abutters to the orchard, we have seen the changes that have taken place over the years and hope to bring life back to the property through the establishment and growth of a multifaceted business to include many opportunities for local community members to experience hands-on, agritourism activities. We plan to balance out seasonal "U-Pick" and Educational Workshop offerings by additionally operating a wholesale

tree and shrub nursery.

In line with The Town's vision, the Respondent is committed to ensuring that this land continues to be an example of sustainable agriculture and best environmental practices and operates consistent with the Town's values as a community. We are passionate, knowledgeable and committed to land preservation and agriculture in New England, and in particular, within our own small town and neighborhood.

We have progressive ideas that we would like to offer as part of this proposal in order to reach our individual goals in conjunction with goals for our community. Having grown up in Littleton myself (Sandra), I have fond memories of crushing apples into cider at Chase Farm where The Point now sits, cutting down our family Christmas tree at Durkee Farm, pumpkin picking in the fall at Pickard Farm, and apple picking at Nagog Hill Orchard. These experiences are core childhood memories for me and I look forward to being a part of providing these types of activities for others.

PRELIMINARY MANAGEMENT PLAN

1. Plan for Orchard/Farm Management

As noted in the RFP, Required Uses of the Orchard intended under this proposal include maintenance and management of the Premises consistent with the terms of the APR, normal maintenance and upkeep of the Orchard land, integrated pest management, mitigation of invasive species, and any other necessary agricultural operations.

With regards to management of the premises IAW the Agricultural Preservation Restriction (APR), the Respondent notes that we shall manage the Premises according to the approved conservation plan, referenced in the APR document, that was developed using the standards and specifications of the Natural Resources Conservation Service (NRCS) Technical Guide, 7 CFR Part 12, and is approved by the Middlesex County Conservation District. The Offeror requests a copy of this document in order to ensure compliance. The Offeror agrees to refrain from any prohibited uses, acts, and structures as well as to follow set processes for acquiring necessary prior approvals, as required.

It is also our understanding that the APR requires a Certificate of Approval (COA) from MDAR in order to make changes to agricultural fields (https://www.mass.gov/doc/apr-stewardship/download). We are prepared to be in contact with our local MDAR office in order to begin the process of applying for a (COA) for our proposed agricultural field changes.

Our plan is to revive the property and work towards bringing it back into active commercial agricultural use with the goal of farming 26 acres of land within the first three years of operations. For the first year, we plan to sell apples, pumpkins, and firewood, at a minimum, and anticipate bringing in several thousand dollars through the sales of these items, above the approximate $600 minimum annual sales requirement of the APR.

Normal maintenance and upkeep of the Orchard land will include mowing along the main pathways and along the roads on a monthly basis and mowing between all rows on a bimonthly basis or as needed on a rotating schedule. Weeds and vines would be weed whacked between trees and vines cut as needed. A sickle bar mower would be utilized situationally as well as herbicide treatments for more difficult to control areas. The sumac, walnut, and other invasive species present in stone walls and barriers would be cut and removed. The removal of some sections of existing orchard trees will assist with the mitigation of invasive species as well, as it will make mowing of the invasives easier and more efficient than weed whacking. Invasive species removal through cutting and selective herbicide treatment is required throughout the property. Many trees are so entwined that the vines will be cut at ground level, but left in the canopies to decompose. Frequent weed wacking and herbicide treatments between trees will keep invasives at bay.

Integrated Pest Management (IPM) practices would be utilized in order to control pests. Pests and pest damage will be checked for regularly and identified accurately. We will make our best efforts to choose pest-resistant plant varieties, encourage/introduce beneficial insects, time planting to avoid pests, and use low-risk pesticides as needed. Other techniques we anticipate applying include prevention barriers and humane traps for larger "pests."

We would utilize IPM practices to address common issues specific to the crops included in this proposal. While many portions of existing orchard trees should be removed due to disease and damage, it would be our intention to preserve several acres of apple trees and bring them back to health, at least short term, until new plantings are established and productive. Restoring some portions of the existing orchard in R04-8-0 would allow us to quickly bring significant acreage back into current use under the APR.

Apple trees will be pruned to increase airflow and decrease periods of foliage wetness. Initial work will include pruning of some existing apple trees in Fields 3, 4, and 5 for "U-Pick" production. Grass between rows will be mowed and weeds and vines between trees will be managed. Any dead trees within managed blocks will be culled. We will chip, mow, or burn brush in order to reduce inoculum. For fungi management (scab/rust/fireblight) we plan to follow the attached application table (Attachment 2: 2024 Edible Crop Pest Management Recommendations). Typical insects we would monitor for include moths/caterpillars and would be treated as needed per the recommendations, tracking the growing degree days for specific pests and leaf eating caterpillars.

Stone Fruit IPM will include following of the Attachment 2 recommendations as well. Stone fruit plantings will all be new saplings, so extra efforts will be made to physically protect the young trees using barriers.

A common issue for Christmas trees is Balsam Twig Aphid, which would be treated with dormant season horticultural oil, M Pede (insecticidal soap), and Altus (translaminar qualities), as needed. Mites are also common and would be treated with horticultural oil as well. Needle Cast fungus would be prevented through 3-4 treatments of an approved fungicide during mid-late spring as new foliage emerges. We would also monitor for excessive and/or prolonged foliage moisture.

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Further, Respondents will follow Good Agricultural Practices (GAPs) set forth in the Orchard BMP Manual (https://ag.umass.edu/fruit/publications/orchard-bmp-manual) and The New England Fruit Tree Management Guide (https://netreefruit.org/homepage).

All pesticides, herbicides, and fungicides will be stored in a locked, ventilated store room in the Main Barn IAW the Massachusetts Pesticide Control Act (MPCA), 333 CMR, and the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). Any disposal of these chemicals will be made IAW the Resource Conservation and Recovery Act (RCRA). Please reference Attachment 3: Pesticide Storage Guidelines for the full Guidelines we would follow as part of this plan.

Periodic reporting to the Town in the form of a State of the Farm report will be made annually. This report will detail the number and types of plantings that have been completed in the prior year, crop yields from the prior year, and prices and quantities of all items sold at the farm.

Additionally, in order to participate in U.S. Department of Agriculture programs such as crop insurance and loan programs, we intend to file a Report of Crop Acreage (Form FSA-578), which includes the farm's crop and crop type or variety, intended crop use, number of acres, map with location and approximate boundaries, planting date(s), planting pattern, when applicable, producer shares, irrigation practices, and acreage prevented from planting.

In terms of the basics of our business administration setup, we plan to establish Nagog Hill Tree Farm as a Limited Liability Corporation. We will use FarmRaise Tracks as our Farm accounting and bookkeeping software and fully flesh out our business plan utilizing the MDAR APR Farm Business Plan Template (https://www.mass.gov/doc/farm-business-plan-template/download). We plan to utilize our existing equipment and fund first year planting and operating expenses with our personal cash through a business account as well as supplement financing with any USDA or MDAR grant funds we may receive.

IAW the APR, The Commonwealth of Massachusetts reserves the right to enter upon the property in a reasonable manner and at reasonable times for the purposes of inspection and determination of compliance with the APR. We would also be agreeable to annual inspections by The Town for similar purposes.

Excluded from the leased Premises are those parcels of land that are in the care, custody, management, and control of the Conservation Commission. The Offeror notes that portions of those parcels are intended to be licensed to the selected respondent and included in the agreement as portions of the orchard that the selected respondent is expected to manage. The area excluded from the lease but included as land to be managed consists of approximately 4.18 +/- acres of land. The Offeror requires additional information with regards to the management plan for these parcels before agreeing to manage the additional parcels.

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2. Plan for Equipment Management

Michael has an abundance of mechanical knowledge and expertise and will be able to fix any equipment issues that arise in addition to providing standard maintenance, sharpening, oil changes, etc.

3. Plan for Building/Structure Management

There are currently three building structures on the plots of land included in this proposal. All are in need of significant work, varying from cleanup, refreshing and paint, to removal. There are two sheds on parcel R-04-8-0 and the Main Barn on parcel R-02-3-0. Of the structures on parcel R04-8-0, the structure on Field 3 is a hazard in disrepair and should be taken down. The Respondent requests the removal of this structure from the property by The Town. The roadside shed on Field 4 is in need of structural repair. The respondent proposes to repair the Field 4 shed for use as a "U-Pick" shed. Lastly, the Main Barn on parcel R-02-3-0 requires some repairs and remediations but is a beautiful and solidly built barn with many more years ahead.

During our tour of the Main Barn, we noted that the posted Certificate of Inspection expired on March 30, 2019. We would like to request that a current Certificate of Inspection be acquired by the Town. We do have some concerns with regards to the condition of the Main Barn building and would request that the attic contents be removed and any mold remediation necessary in the basement cold storage area be completed by the Town. We would also be interested in discussing a phased plan for necessary capital improvements to the Main Barn such as siding and window replacement.

It is our understanding that a contractor is scheduled to perform some construction work on the Main Barn and we would be interested in learning the details of that planned work. Also of note is that we will need to use a separate, locked, and ventilated area for pesticide/herbicide storage. It is our understanding that building improvements are slated to be performed on the Main Barn that could provide for a secured area that fits this description.

Our plan for ongoing building and structure maintenance includes the keeping of a clean barn and barnyard that is free from hazards. As part of ensuring the success of all of the proposed endeavors herein, we would take all commercially feasible and necessary steps to perform small repairs and upkeep of the Main Barn building and managing pests as well as refreshing the aesthetic appeal of the property to include painting doors, installing new signage, landscaping/gardening, cleaning, and setting up the interior of the facilities to be conducive to current uses.

One item still in question is with regards to bathroom facilities and septic system services to the Main Barn. We would like confirmation that the bathroom is operational and to see the septic plan on file for the Main Barn.

The Lessee will be responsible for minor maintenance and repairs on all physical structures

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that do not require skilled labor and are needed to prevent deterioration of the property. Substantial improvements that require skilled labor such as structural work involving barns and fences, exterior siding, roofing, water supply systems, etc., shall be brought to the attention of the Select Board via written notice to the Town Administrator within 72 hours of realizing the need for such an improvement. Lastly, the Lessee will be responsible for the costs of utilities on the Premises including, electric, water and telephone.

It is our goal to honor the intent of this land by utilizing the property for marketable and sustainable agricultural purposes as Farmer Morrisson believed it would be. We believe our plans for Nagog Hill Tree Farm represent an economically viable business and, through this proposal, we have demonstrated our ability and willingness to ensure the property is managed responsibly and held to the standards expected by Littleton Town officials and the residents of Littleton.

As a side note to this proposal, the Offeror would like to express future interest in the purchase of the Residential Structure (70 Nagog Hill Road/Lot 104) for the purpose of family member housing, with the intention of preserving the existing structure and historical character. The Offeror would likely be able to manage the additional, adjacent farmland at that time as well, if it remains available. Long term, we would like to grow this into a family business.

Thank you for your consideration of our proposal for the lease and management of Nagog Hill Orchard. We are available to answer any questions you may have with regards to our ideas and plan. Sandra Santoro can be reached at Phone: (978) 501-6733 or Email: sandrasantoro1286@gmail.com. Michael Santoro can be reached at (978) 512-1182 or Email: arbormike927@gmail.com.

Sincerely,

Sandra and Michael Santoro
46A Nagog Hill Road
Littleton, MA 01460

Attachments (3):

1. Attachment 1: Nagog Hill Orchard Property Sketch
2. Attachment 2: 2024 Edible Crop Pest Management Recommendations
3. Attachment 3: Storage, Mixing, and Loading of Pesticides Guidelines from mass.gov

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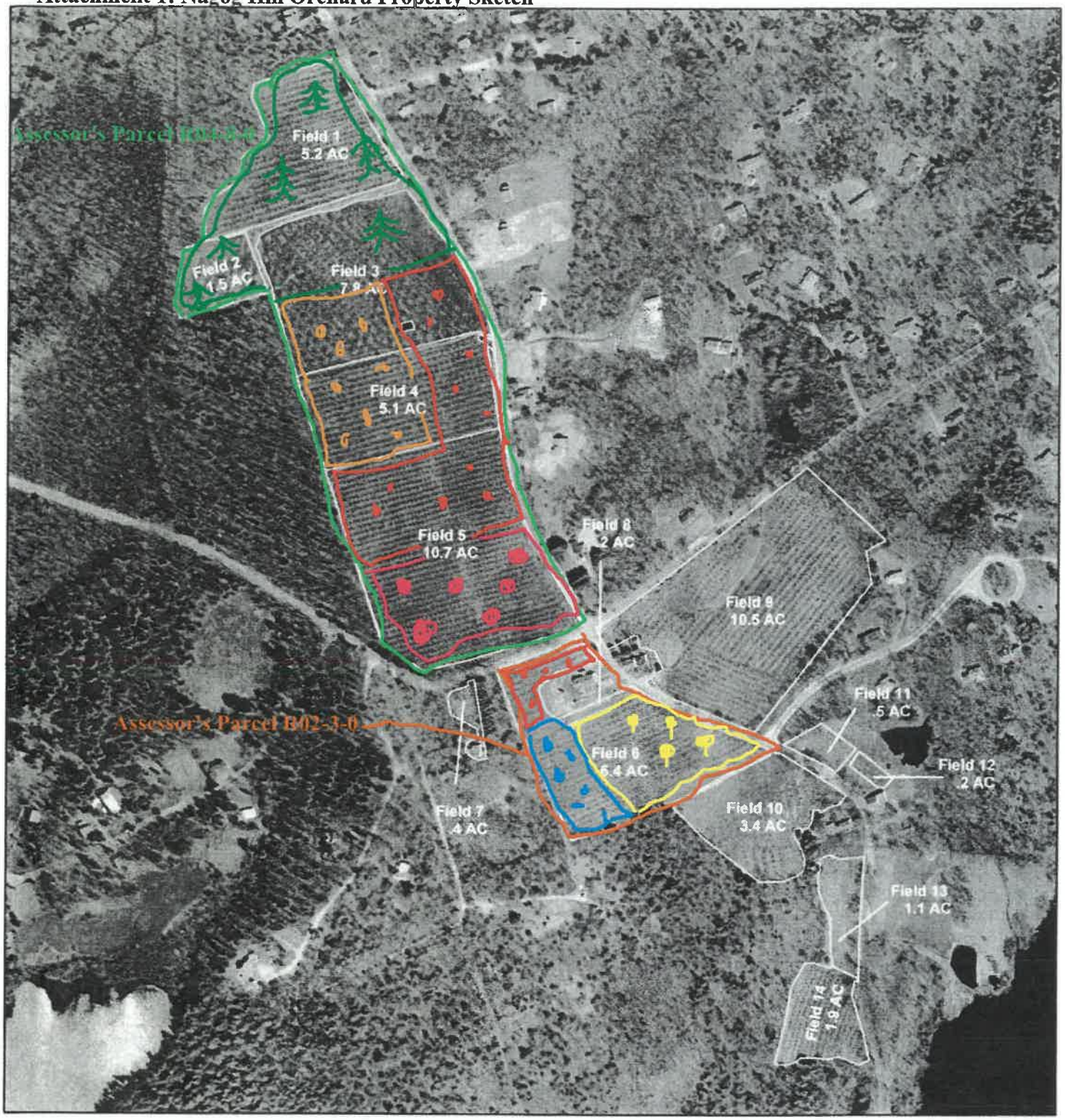
Attachment 1: Nagog Hill Orchard Property Sketch



USDA United States Department of Agriculture
Farm Service Agency

Digital Orthophotography
Not to Scale

N

=Christmas tree plantings

=new stone fruit orchard plantings

=tree and shrub nursery

=blueberry fields (netted enclosure)

=Autumn Garden

=Apple Orchard

Attachment 2: 2024 Edible Crop Pest Management Recommendations

Basic Program for Apples

Timing	Products/Rate Per 100 Gallons	Target Pests/Treatments
Bud-swell/Silvertip	Badge X2 (5 lbs) or SC (5 pts) PLUS Hort Oil (2 gals)	Fireblight Spider mites, scale and other over-wintering pests
Peak Bloom	Badge X2 (0.5 lb) or SC (0.5 pt)	Fireblight
Petal Fall (DO NOT mix Myclotect and Altus during bloom)	Myclotect (6 oz) OR Pageant (12 oz)* PLUS Altus (10.5 oz) OR Astro (8 oz) Conserve (8 oz)	Scab, mildew Scale, leafhopper, aphids Leafrollers, leafminers, codling moth**, defoliators
First Cover 2 weeks later	Myclotect (6 oz) OR Pageant (12 oz)* PLUS Altus (10.5 oz) OR Astro (8 oz) Conserve (8 oz)	Scab, mildew Scale, leafhopper, aphids Leafrollers, leafminers, codling moth**, defoliators
Second Cover 2 weeks later	Myclotect (6 oz) OR Pageant (12 oz)* PLUS Altus (10.5 oz) OR Astro (8 oz) Conserve (8 oz)	Scab, mildew Scale, leafhopper, aphids Leafrollers, leafminers, codling moth**, defoliators
Third Cover 1 month later	Myclotect (6 oz) OR Pageant (12 oz)* PLUS Altus (10.5 oz) OR Astro (8 oz) Conserve (8 oz)	Scab, mildew Scale, leafhopper, aphids Leafrollers, leafminers, codling moth**, defoliators

*Do not apply more than four treatments with Pageant per year.

Attachment 2: 2024 Edible Crop Pest Management Recommendations

Basic Program for Apples

Timing	Products/Rate Per 100 Gallons	Target Pests/Treatments
Bud-swell/Silvertip.	Badge X2 (5 lbs) or SC (5 pts) PLUS Hort Oil (2 gals)	Fireblight Spider mites, scale and other over-wintering pests
Peak Bloom	Badge X2 (0.5 lb) or SC (0.5 pt)	Fireblight
Petal Fall (DO NOT mix Myclotect and Altus during bloom)	Myclotect (6 oz) OR Pageant (12 oz)* PLUS Altus (10.5 oz) OR Astro (8 oz) Conserve (8 oz)	Scab, mildew Scale, leafhopper, aphids Leafrollers, leafminers, codling moth**, defoliators
First Cover 2 weeks later	Myclotect (6 oz) OR Pageant (12 oz)* PLUS Altus (10.5 oz) OR Astro (8 oz) Conserve (8 oz)	Scab, mildew Scale, leafhopper, aphids Leafrollers, leafminers, codling moth**, defoliators
Second Cover 2 weeks later	Myclotect (6 oz) OR Pageant (12 oz)* PLUS Altus (10.5 oz) OR Astro (8 oz) Conserve (8 oz)	Scab, mildew Scale, leafhopper, aphids Leafrollers, leafminers, codling moth**, defoliators
Third Cover 1 month later	Myclotect (6 oz) OR Pageant (12 oz)* PLUS Altus (10.5 oz) OR Astro (8 oz) Conserve (8 oz)	Scab, mildew Scale, leafhopper, aphids Leafrollers, leafminers, codling moth**, defoliators

*Do not apply more than four treatments with Pageant per year.

Basic Program for Peaches and Cherries

Timing	Products/Rate Per 100 Gallons	Target Pests/Treatments
Dormant/Spring	Badge X2 (5 lbs) or SC (5 pts) PLUS Hort Oil (2 gals)	Bacterial canker, leaf curl, spider mites and over-wintering pests
Petal Fall (DO NOT mix Myclotect and Altus during bloom)	Myclotect (3 oz) OR Pageant (12 oz)* PLUS (as appropriate) Altus (10.5 oz), Astro (4 oz) Conserve (8 oz)	Brown rot, blossom blight, mildew, Lesser Peachtree borer, plum curculio, aphids, scale, oriental fruit moth, defoliators
First Cover 2 weeks later	Myclotect (3 oz) OR Pageant (12 oz)* PLUS (as appropriate) Altus (10.5 oz), Astro (4 oz) Conserve (8 oz)	Brown rot, blossom blight, mildew, Lesser Peachtree borer, plum curculio, aphids, scale, oriental fruit moth, defoliators
Second Cover Summer	Myclotect (3 oz) OR Pageant (12 oz)* PLUS (as appropriate) Altus (10.5 oz), Astro (4 oz) Conserve (8 oz)	Brown rot, blossom blight, mildew, Lesser Peachtree borer, plum curculio, aphids, scale, oriental fruit moth, defoliators
Third Cover 10-14 Days Later Summer	Myclotect (6 oz) OR Pageant (12 oz)* PLUS Altus (10.5 oz) OR Astro (8 oz) Conserve (8 oz)	Brown rot, blossom blight, mildew, Lesser Peachtree borer, plum curculio, aphids, scale, oriental fruit moth, defoliators
Dormant/Fall	Badge X2 (5 lbs) or SC (5 pts)	Bacterial canker, leaf curl

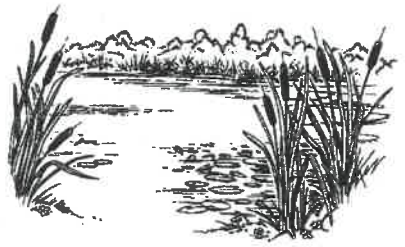
*The use of pheromone traps for Oriental Fruit Moth and Lesser Peachtree borer are available to reduce pest pressure and properly time product applications.

Attachment 3: Storage, Mixing, and Loading of Pesticides Guidelines from mass.gov

INTRODUCTION

Poorly stored pesticides and improper mixing/loading practices can present a potential risk to our health and to the integrity of the environment. The quality of surface water, groundwater and soil can be degraded in areas where pesticides are stored under inappropriate conditions, improperly mixed and loaded into application tanks and where equipment is washed and rinsed after application. Accidents involving spills or leakages may have serious health and environmental consequences. Over the past several years, the Pesticide Bureau of the Department of Food and Agriculture (DFA) has received numerous phone calls from farmers, golf course superintendents and other pesticide users looking for guidance on building pesticide storage facilities. Questions concerning proper mixing and loading procedures have also been common. The purpose of this document is, very simply, to provide guidance to individuals looking for information on appropriate techniques and approaches for the mixing, loading and storage of pesticides. This document was prepared with input from written resources, individuals and organizations with a broad range of expertise and experience. It is a compilation of the best information available regarding the mixing, loading and storage of pesticides. The result is a solid body of guidance which represents a general consensus on how pesticide mixing, loading and storage issues should be approached. It is important to remember however that mixing, loading and storage needs will vary greatly from situation to situation and site to site. No document could specify exactly what approach should be taken in each situation. As such, it should be kept in mind that this document is intended as general guidance only. These are recommendations, not standards or regulations and as such can be adjusted to meet individual needs. These recommendations are designed to assist pesticide users in managing their storage areas and conduct their mixing/loading operations in ways that will help minimize exposure to pesticides and reduce the risks to public health and the environment. These are not intended to be regulations and are not enforceable by any state or local agency.

These guidelines are not intended to be regulations and are not enforceable by any state or local agency



Storage

Safety is the key element in pesticide storage. The safest approach to any pesticide problem is to limit the amounts and types of pesticides stored. The amounts and types of pesticides stored should be maintained at the level that is immediately required and should not be stored beyond immediate needs.

Selecting a Storage Location

An existing or proposed area should be carefully evaluated to determine its suitability for pesticide handling and storage. In particular the potential harm to human health and the environment due to spills, contaminated runoff or fires should be assessed. If possible, the area should be located at least four hundred feet (preferably down hill or down gradient) from any public or private drinking water supplies and two hundred feet (preferably down hill or down gradient) from surface water. Separation from water resources should be greater in areas of sandy soil or fractured bedrock. Whenever feasible, the area should not be located in a 100 year floodplain. Runoff from adjacent areas resulting from a 25 year 24 hour storm should be diverted around the facility. The site location should be accessible in the event of an emergency situation. The pesticide storage area should be located away from direct sunlight, freezing temperatures and extreme heat.

The area should be located at least four hundred feet from any drinking water supply and two hundred feet from surface water

Temperatures in the storage area should be kept between 40F and 100F. Pesticides should not be stored outdoors. Where practical, the mixing/loading area should be located close to the storage facility to minimize the distance that chemicals are carried. Consideration should also be given to the additional area required by a mixing/loading pad when selecting the site for storage.

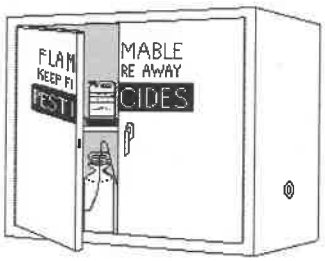
Storage Practices

Pesticide storage shall be restricted to a first story room or area which has direct access to the outside (according to the Board of Fire Prevention). Pesticides cannot be stored in basements. Pesticides should be stored in accordance with their label requirements in their original container with the label clearly visible. They should always be kept off the ground to prevent the accumulation of water in or under the containers. Separation of pesticides by hazard and function is essential. Flammable pesticides should be stored separately from non-flammable pesticides, in a fire proof cabinet for example. Dry pesticides should be stored separately from liquid pesticides to avoid wetting from spills. Fungicides, herbicides and insecticides should be stored in separate locations of the storage area to prevent cross contamination and accidental misuse. Pesticides should be stored away from fertilizer, food, feed, potable water supplies, veterinary supplies, seeds and personal protective equipment to avoid cross-contamination. Particular care should be taken if storing phenoxy herbicides due to their volatility. Pesticides shall not be stored in the same place as ammonium nitrate fertilizer (according to the Board of Fire Prevention). Exposure to sunlight can cause chemical breakdown. Pesticides should not be stored in front of windows, unless the windows are covered. Because shelf life is difficult to predict, pesticides should not be stored longer than two years.

Pesticide storage shall be restricted to a first story room or area which has direct access to the outside. Pesticides cannot be stored in basements

Storage of Medium Quantities of Pesticides

(less than or equal to 500 lbs or 220 gallons)



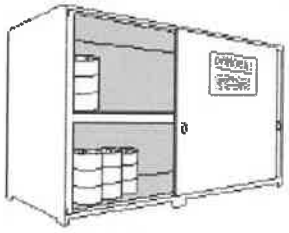
Flammable pesticides should be stored separately from non-flammable pesticides in a fire proof cabinet

Storage Inside an Existing Building

For storage of medium quantities of pesticides inside an existing building, metal cabinets work well. Metal cabinets should be double walled and constructed with 18-gauge sheet metal. Steel cabinets for storing hazardous materials such as pesticides are available commercially in different dimensions of various capacities. Capacities range from one gallon cans to five gallon cans and fifty five gallon drums. Frequently, cabinets feature built in secondary containment systems such as deep, leak-proof sumps. Wooden cabinets can also be used but should be constructed from 1" thick exterior grade plywood and finished with a chemically resistant product that permits easy cleanup. Shelves can be wooden (if finished with a chemically resistant product) or metal. The door sill to the cabinets should be high enough -at least 5"- to contain up to 5 gallons of spilled liquid. The cabinets should be locked at all times and identified as a place of pesticide storage. The cabinets should be located along an outside wall in an area away from extreme heat or freezing. In the absence of cabinets, storage containers should be placed on impermeable shelves (steel or painted wood) with a lip to catch minor spills or leaks. Storing the containers in plastic leak proof trays to contain any leaks is recommended. Other options include spill containment pallets or floor pallets. Access should be unimpeded. Leaks should be detectable. If containers are in danger of leaking, they should be placed in an oversized plastic container or plastic lined (leak proof) cardboard box with vermiculite or other non flammable absorbent material for spill protection.

Storage of Large Quantities of Pesticides

(more than 500 lbs or 220 gallons)



For storage of large quantities of pesticides (more than 500 lbs or 220 gallons), use of a separate facility is a good idea. Two options for storing large quantities of pesticides should be considered where possible:

1) The acquisition of a Hazardous Materials Storage (HMS) Building

2) The construction of a new Pesticide Storage Facility.

(1) Hazardous Material Storage (HMS) Building

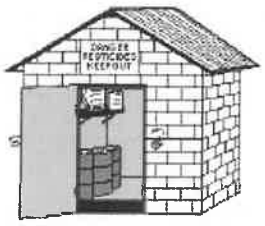
Free standing hazardous materials storage buildings composed of heavy duty steel frames with twelve gauge steel roof and walls are available commercially. The building should ideally have a two hour fire rating. They generally provide double stacking and vertical storage of fifty five gallon capacity drums. Secondary containment is achieved by means of sumps. Doors are self closing and can be locked. The walls have air vents or ventilation fans for improved circulation and relief of gaseous vapor build up. Generally the capacities of the HMS buildings vary from five to forty 55 gallon capacity drums.

(2) Construction of a New Pesticide Storage Facility

(general recommendations)

It is important to consult with an engineer or licensed contractor familiar with the state building code requirements before implementing any plan. Before construction begins, consult with local agencies that deal with planning, zoning, wetlands, health and fire. Areas used for the storage of pesticides shall be constructed in accordance with the Board of Fire Prevention Regulations (527 CMR 37.00), the State Building Code (780 CMR) and the BOCA Mechanical Codes (527 CMR 12.00 Appendix A). A properly designed storage area should be built with regard for worker safety and protection of the environment and public health. It should, at a minimum, facilitate the secure, dry storage of pesticides; safe working conditions for workers with easy access to worker Personal Protective Equipment; secondary containment of incidental spills due to normal mixing/ loading practices and secondary containment of large accidental spills.

Areas used for the storage or mixing of pesticides shall be constructed in accordance with the Board of Fire Prevention Regulations (527 CMR 37.00), the State Building Code (780 CMR) and the BOCA Mechanical Codes (527 CMR 12.00 Appendix A)



HOLLOW MASONRY DEFINITION

<75% solid cross section
or
>25% void

Hollow Masonry Block
Cored Brick
Block Tile

The storage facility shall be constructed in such a way that run-off from fire streams will not contaminate streams, ponds, groundwater, croplands or buildings

SOLID MASONRY DEFINITION

>75% solid cross-section
or
<25% void

Solid Masonry Brick
Solid Masonry Block
Clay Tile

Containment

The building should provide adequate within-building spill containment. In the event of an accident or major spillage, the building should be capable of containing 125% of the volume of the largest container. This can be achieved by surrounding the floor with a curb or by a grated trench which drains to a sump. If possible the floor should slope slightly to the center. A change in slope of, at most, 0.06 inches of drop per foot of run (0.5%) is advisable.

These measures will also prevent water or other liquids from seeping or flowing onto the storage area.

The storage facility shall be constructed in such a way that run-off from fire streams will not contaminate streams, ponds, groundwater, croplands or buildings.

Walls

The storage building should be separated as much as is reasonably possible from other use areas. The building should be designed to prevent against potential fires due to storage of flammable pesticides within the building and from fire in adjacent buildings. A fire wall slows the spread of fire from one area to another. It is recommended that a storage building with a 1-hour fire wall should be located at least fifty feet from other buildings. For a 2-hour fire wall, the set back distance should be twenty five feet. For a 4-hour fire wall, there is no minimum setback distance. The building should be accessible from all sides for emergency and fire fighting equipment.

Fire Rating	Wall Type	Wall Type	Wall Type
1 Hour Wall	3" Hollow Masonry	4" Solid Masonry	3" Solid Concrete
2 Hour Wall	4" Hollow Masonry	6" Solid Masonry	4" Solid Concrete
4 Hour Wall	6" Hollow Masonry	10" Solid Masonry	6" Solid Concrete

Gypsum wallboards of 5/8" thickness on both sides of the wall constitute a one hour rated firewall. Two gypsum wallboards on both sides are considered to be 2 hour fire rated fire walls.

The interior wall surfaces should be impervious to pesticides and easily cleaned. Suitable wall liners are painted steel, aluminum, fiberglass, or high density plastic reinforced plywood panels.

Doors
The doors should be windowless, steel (solid core), 36" wide, set in a steel frame and open to the outside.

Floors & Concrete Specifications
The storage building floors should be water tight, chemically impervious and skid resistant. Concrete floors with an impervious sealant or some other material of comparable strength and impermeability should be used. The following specifications should be used for concrete:

- Type I or Type II high quality cement with 5 - 7.5% air entrainment (this improves water tightness) and compressive strength of 4,000 - 4,500 psi;
- Water - cement ratio of 0.40-0.45 for a stiff (1.5" - 3") slump; a relatively dry mix for maximum strength, pesticide and fertilizer resistance, freeze/thaw resistance and water tightness;

Protective coatings for concrete seal the surface and help prevent the corrosive actions of pesticides and fertilizers on concrete

While concrete is durable, it will deteriorate over time. Liquid fertilizers are the main cause of concrete deterioration. However, pesticides can contaminate concrete and leak through cracks into groundwater. Protective coatings for concrete seal the surface and help prevent the corrosive actions of pesticides and fertilizers on concrete. Among the coatings commercially available are epoxies, urethanes, polyesters, vinyls, chlorosulfonated polyethylene, and polyureas. The appropriate type of coating will depend on the types of pesticides and fertilizers being stored and should be determined in consultation with a distributor.

Lighting
Lighting should be bright enough so that labels may be easily read. The lighting and fan should be turned on by the same switch.

Electrical Design
Electrical equipment and wiring should be designed to prevent sparks. The wires should be shielded. An exterior electrical service disconnect in a locked National Electric Manufacturers Association (NEMA) rated, weather proof box should be provided.

Temperature
Area temperatures should be kept below 100 deg F and above pesticide

freezing points. An electrical heater can be used to keep the temperature above 40 deg F during the winter. Open flames should never be used. Air conditioning may be needed during the summer to prevent the volatilization of pesticides, if this is likely to be a problem. If the storage area is outside, the area must be enclosed in order to protect against the elements, particularly precipitation, freezing temperatures. Outside storage is not recommended in Massachusetts.

For personal safety and protection, good air ventilation should be present at the facility

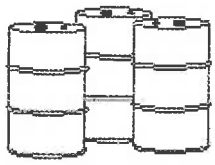
Ventilation design

For personal safety and protection, good air ventilation should be present at the facility. The area should have a continuously operating ventilation system sufficient to prevent the accumulation of vapors and to control temperature. Ventilation should be provided by means of fans. The fans should operate off the same switch as the lighting system. An air inlet should be located within 12" of the floor to facilitate the escape of heavier than air vapors. During occupancy, the ventilation system should provide 6 air changes/hour.

Bulk Containers

Storage containers and appurtenances such as valves, fittings, pipes and hoses, should be installed and maintained so as to prevent the discharge of liquid pesticides. As such they should be structurally sound, resistant to changes in temperature extremes and be constructed of materials that are resistant to corrosion, puncture or cracking. Stainless steel, fiberglass, polyethylene, and lined ferrous metal are acceptable. Valves on storage containers should be locked or otherwise secured except during times of authorized access.

Mixing and Loading Facilities



Contamination of soil, groundwater and surface water can result from small quantities of pesticides spilled regularly in areas where pesticides are mixed and loaded into applicator tanks and where equipment is washed and rinsed after application. Spills or overflows can lead to the accumulation of pesticides in the soil and drinking water supplies.

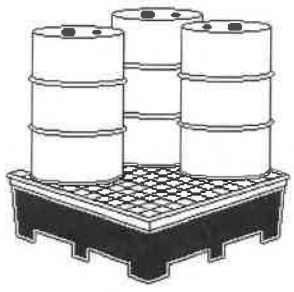
Mixing / Loading Location

Mixing and loading should be avoided in areas where a spill, a leak or overflow could allow pesticides to get into water systems. The mixing and loading of pesticides should not occur within four hundred feet of any private or public drinking water supply or two hundred feet of surface water. No pesticide application equipment or mix tank should be filled directly from any source waters unless a back siphon prevention device is present. Mixing and loading should not occur on gravel driveways or on other surfaces that allow spills to move quickly through the soil.

The mixing and loading of pesticides should not occur within four hundred feet of any private or public drinking water supply or two hundred feet of surface water

Mixing / Loading Practices

Mixing or loading of pesticides should be avoided in areas where a spill, leak or overflow could allow pesticides to get into water systems. All transfers of pesticides between containers, including mixing, loading and equipment cleaning, should be conducted over a spill containment surface designed to intercept, retain and recover spillage, leakage and wash water.

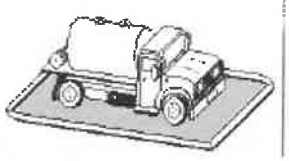


MIXING SAFELY

1. Wear the protective equipment.
2. Mix in a well ventilated area.
3. Pour pesticide down the side of the tank ..... this avoids splashing.
4. Make sure you have a solid footing while pouring.
5. Do your calculations prior to mixing.
6. Mix during daylight hours if possible.
7. Water supply should have a back flow prevention device - to prevent back flow into the water supply.
8. Water should be carefully added to the pesticide mix by pouring down the side of the tank.
9. Do not submerge the end of the water supply hose into the pesticide mix as it could back siphon.
10. Work in pairs.
11. Wash gloves before removing them.

Courtesy of Ward Management Company

Appropriate personal protective equipment (PPE) should be worn before opening a pesticide container



Appropriate personal protective equipment (PPE) should be worn before opening a pesticide container. The label should be checked for Agricultural Use Restrictions. PPE should include front protection such as a bib top apron made of butyl, nitrile, or foil laminate material. A face shield, shielded safety glasses or goggles should be worn. When pouring any pesticide from its container, container and pesticide should be kept below face level. A respirator will ensure protection against dusts or vapors. The container should be closed after each use. A tank should never be left unattended while it is being filled. If the pesticide user should splash or spill pesticides on his person, he should stop the operation, wash thoroughly with a mild liquid detergent and water, put on clean PPE and clean up the spill.

Containment needs depend on the quantities of pesticides that are being mixed and loaded. If mixing small quantities, a tarpaulin can be sufficient to contain any spills. Spills can be then cleaned up with an absorbent material. If mixing large quantities regularly, the construction of a mixing/loading pad is an option to consider. The important point to keep in mind, whichever approach is used, is that incidental spills or accidental spills can be contained and cleaned up. If no spill containment is available, pesticides should be mixed in the field away from sensitive resources and in a different area each year.

Containment needs can be achieved in one of three ways:

1) Mobile Containment Systems
2) Closed Mixing Systems
3) Construction of a Mixing/Loading pad

1.0 Mobile Containment Systems

If mixing pesticides in granular formulations, loading over a tarpaulin that can contain any spillage of materials is adequate.

A recommended strategy is to use a mobile containment system. Mobile containment systems, such as a basin or pad of a chemically compatible construction material that contains spills are economical, flexible and efficient approaches to mixing and loading.

Several types of portable, temporary, synthetic drive-over mixing/loading pads are available commercially. Generally the pads are vinyl or nylon reinforced elastomer pads or steel pads and vary in size from 4 X 8 feet to 34 X 74 feet. Most have a flexible wall designed to be self-supporting. The material can be decontaminated. The pads are lightweight, easily deployed, durable and reusable.

The pad is rolled over a rock-free level surface. The sprayer is driven over the berm onto the pad. The spray material is loaded and the sprayer is driven off. Spillages are collected with a sump pump, squeegee, or sponge and mop. The spilled material can be collected and returned to the tank.

A sound option would be to haul water to the field or site and do all pesticide mixing onsite on a mobile pad. Sprayers and equipment could also be rinsed in the field to avoid concentrating residues from repeated rinsing near wells. The mixing site should change each year within the field of application.

Absorbent material such as re-usable gelling agents, vermiculite, clay, pet litter or activated charcoal should be on hand along with a garbage can and shovel to quickly contain and clean up any spills. The spilled pesticide should be contained - it should not be hosed down. Absorbing materials should be used to soak up the pesticide which can then be shoveled into a leak proof drum.

Areas used for storage or mixing of pesticides should be constructed in accordance with Board of Fire Prevention Regulations (527 CMR 37.00) , the State Building Code (780 CMR) and the BOCA Mechanical Codes (527 CMR 12.00 Appendix A)

2.0 Closed Mixing Systems

An excellent option is the use of a closed mixing system (CMS). A CMS transfers pesticides from sealed containers to mixing tanks without exposing the worker to the pesticides. The CMS can accurately measure quantities, rinse containers and transfer the mixed pesticide into applicator tanks. Using a CMS greatly reduces the hazards of exposure to concentrated pesticides.

3.0 Construction of a Mixing/ Loading Pad

It is important to consult with an engineer or licensed contractor familiar with the state building code requirements before implementing any plan. Before construction begins, consult with local agencies that deal with planning, zoning, wetlands, health and fire.

If pesticides are often mixed and loaded in the same place, or equipment is cleaned in the one spot, a permanent pesticide mixing/ loading pad is a sound option. Spill clean ups can be made easier, and pesticide waste can be reduced. They can also prevent the harm that spills and runoff can cause to the environment or to people. The area should be located at least four hundred feet (preferably down hill) from any public or private drinking water supplies and two hundred feet (preferably down hill) from surface water. It should not be located within any residential area or other sensitive area (such as feedlots, animal shelters, play areas, schools).

Design

The design of the pad should be a function of the operations performed at the site - the number and volume of different pesticides stored and applied, the rinsing procedures, the size of the spray boom- and also the weather conditions, especially the levels of precipitation and freezing conditions. The pad should be located adjacent to the storage area.

It is recommended that the pad be constructed of an impervious material such as sealed concrete. The pad should remain intact under freezing conditions. The following concrete specifications should be followed to ensure a water tight pad and good surface durability:

- Type I or Type II high quality cement with 5 - 7.5% air entrainment (this improves water tightness) and compressive strength of 4,000 - 4,500 psi;
- Water- cement ratio of 0.40-0.45 for a stiff (1.5" - 3") slump; a relatively dry mix for maximum strength, pesticide and fertilizer resistance, freeze/thaw resistance and water tightness;
- The subgrade (original ground) upon which the pad will be placed must be dense, uniform and relatively free draining to provide a good foundation for the concrete pad. If the subgrade is not adequate a sub-base material should be installed consisting of 4 inches of well compacted clean sand, gravel or sand and gravel mixture;
- The subgrade or sub-base should be moistened immediately prior to concrete placement to minimize shrinkage and cracking potential;
- Large coarse aggregate (1 to 1.5 inches) which permits a lower water content and reduces the potential for cracking should be used;
- Reinforcing steel should be placed two inches from the top of the pad. Reinforcing bars (supported #4 bars at 15 to 18 inch spacing) are superior to wire mesh for proper location of the steel in the slab and to allow workers to step between the bars. Reinforcing steel will keep shrinkage cracks closed if properly located;
- A high level of workmanship should be ensured during concrete placement and curing of the pad.

While concrete is durable, it will deteriorate over time. Pesticides can contaminate concrete and leak through cracks into groundwater. Protective coatings for concrete seal the surface and help prevent the corrosive actions of pesticides and fertilizers on concrete

While concrete is durable, it will deteriorate over time. Pesticides can contaminate concrete and leak through cracks into groundwater. Protective coatings for concrete seal the surface and help prevent the corrosive actions of pesticides and fertilizers on concrete. Among the coatings commercially available are epoxies, urethanes, polyesters, vinyls, chlorosulfonated polyethylene, and polyureas. The appropriate type of coating will depend on the types of pesticides being used and should be determined in consultation with a distributor.

Containment Volume
The total mixing / loading area containment volume should be 1.25 times the volume of the largest tank to be loaded in the area. If the area is not protected from contact with precipitation, the containment volume should be equal to the volume generated by a 2 year 24 hour storm (2.9 - 3.6 inches of rainfall). If the rainwater mixes with a single known pesticide or compatible pesticides (i.e., pesticides with at least one common use site on their labels) the mixture can be applied to the field at or below the label rate.

The pad should be curbed to a sufficient height in order to contain spills, leaks, releases or other discharges that are generated during the mixing and loading of pesticides and to prevent water or other liquids from flowing onto and off of the surface.

To avoid rainwater mixing with pesticides, it is recommended that the area be roofed. Roof overhangs should be at least a thirty degree angle from vertical from the edge of the mixing/loading pad in all directions. As an alternative to roof overhangs, heavy plastic strips or plastic sheeting can be installed to prevent rain from entering the pad.

To avoid rainwater mixing with pesticides, it is recommended that the area be roofed. Roof overhangs should be at least a thirty degree angle from vertical, from the edge of the mixing/loading pad in all directions

A well secured heavy tarpaulin can serve as a low cost alternative to a roof. Pads should be constructed with fastening points such as eye hooks to allow quick and secure anchoring of the tarp. It is recommended that a device to elevate the center of the tarp is placed under the tarp to allow rain water to drain off. A greenhouse frame covered with a three year co-polymer film can also be a low cost alternative to a roof. Greenhouse frames are available in widths of up to forty feet. Clean surface and roof water should be diverted away from the pad by a waterway.

Containment needs may be further met by constructing the pad in such a way that it slopes (at least 2%) to a single liquid tight sump.

Sump Designs
The pad should slope to a water tight sump or catch basin. The purpose of a sump is to collect the spilled material and facilitate its reuse. Collected rinsates should be pumped to an above ground holding tank or reservoir and reused for mixing subsequent loads. The sump pump should be capable of transferring the liquid to the holding tank from the sump at a rate equivalent to the fastest sump filling rate. The tanks should not be filled beyond 95% of their capacity to allow for thermal expansion and must be placed on a concrete or other impervious surfaced floor on pallets or on a raised platform to allow the detection of leaks from, or water in or under, the pesticide container.

A single sump can be placed monolithically with the mixing/loading pad or a precast concrete or prefabricated steel sump could be installed before the concrete pad is placed. Precast concrete sumps are built in a range of sizes with capacities up to 100 gallons. A double lined stainless steel sump allows the monitoring by inspection of potential leaks from the sump. Most have a capacity of thirty gallons.

The sump should be kept clean to avoid the creation of sludge due to dirt, mud, trash and rocks. Sludge is considered to be a hazardous waste if contaminated by unknown or incompatible pesticides. If the sludge is contaminated by only one pesticide or a compatible mix, the material can be applied to the land at or below the label rate. To reduce sludge problems in sumps where applicator vehicles are washed, some facilities may require two sumps in series. Sumps should be kept clean as contaminated soil and debris in sumps creates a serious hazardous waste disposal problem. In addition, the sump should be covered with a structural grate to ensure safety. The grate should be covered with a dust cover. The sump should be kept covered and cleaned out especially during spraying season.

The sump should be kept clean to avoid the creation of sludge due to dirt, mud, trash and rocks. Sludge is considered to be hazardous waste if contaminated by unknown or incompatible pesticides

Washing and Rinsing Operations
Washing and rinsing of pesticide residues from application equipment, mixing equipment or other items used in storing, handling or transporting pesticides should occur on the pad.

Protection of Water Supplies
No pesticide application equipment or mix tank should be filled directly from any source waters unless a back siphon prevention device is present.

Non-Liquid Pesticides
If non-liquid pesticides are mixed or loaded the spill containment surface may consist of a tarpaulin made of non-absorbent materials which is of adequate thickness to withstand all forseeable loading conditions.

Recommended Safety Practices

Pesticide Handling Instructions

Materials Safety Data Sheets for each pesticide should be posted in a prominent location. At a minimum the employer should have posted the product label and physical and health hazards associated with the pesticides being used. Agricultural enterprises are required by law to post the labels of the pesticides in use. The measures employees can take to protect themselves from these hazards, including safety precautions and protective work procedures, should be posted.

Emergency Response Plan

An emergency response plan should be developed. Such a plan lists actions to take and personnel to contact in the event of a spill or accident. The plan should begin with a current listing of the pesticides used or stored at the facility and should include the following information:

- Names and quantities of pesticides;
- Location of the property including a map with directions;
- Names, addresses and telephone numbers of the owner and key employees;
- Plan of the facility showing pesticides locations, flammable materials, electrical service, water supply, fuel storage tanks, fire hydrants, storm drains, and nearby wetlands, ponds, or streams;
- Location of emergency equipment supplies including breathing equipment and protective equipment;

Copies of the emergency response plan should be located near the entrance to the pesticide facility and with business records. Copies should also be given to the local police department and fire department.

Copies of the emergency response plan should be located near the entrance to the pesticide facility and with business records

Contacts should include the following: fire department; police; spill clean up firm; nearest hospital; pesticide bureau; board of health; owner of the facility;

The plan should be available in both English and the language or languages understood by workers if this is not English.

Fire Prevention

An automatic smoke detection system or smoke and heat detection system should be installed. The appropriate fire prevention and emergency procedures should be devised in consultation with the local fire department. Suitable methods for extinguishing fires should be installed, such as the

appropriate type and number of fire extinguishers. The number and placement of fire extinguishers should conform with the National Fire Protection Association Standard No. 10. All electrical fixtures and appliances should be non-sparking units approved for use in facilities storing flammable and combustible liquids.

In the event of a fire it is frequently more environmentally sound to allow the fire to burn itself out if it can be contained within the area. This avoids the likelihood of pesticides being released into the ground as a result of water being added.

Personal Safety

Personal protection equipment such as respirators, chemical resistant (CR) gloves, CR footwear, coveralls with long sleeves, protective eyewear, CR headgear, CR aprons and a first-aid kit should be available immediately outside the storage area. The first-aid kit should include the following items: adhesive strips, tape, ammonia inhalant, eye pads, burn cream, gauze bandages and tweezers. Gloves should be made of rubber, neoprene or other chemical resistant material.

It is essential that protective eyewear be worn when mixing/loading. The protective eyewear should consist of safety glasses that provide front, brow and temple protection, goggles or a face shield

It is essential that protective eyewear be worn during mixing/loading. The protective eyewear should consist of safety glasses that provide front, brow and temple protection, goggles or a face shield.

Workers should be instructed in the correct procedure for the removal of contaminated clothing.

Eye wash stations or portable eye wash bottles should be easily accessed by each person engaged in the operation and should be capable of flushing eyes for a minimum of fifteen minutes. At a minimum, a hose and nozzle should be on hand. Routine wash up facilities, equipped with soap, hand cleanser and single use paper towels should be available near the storage area.

Record Keeping

All discharges to the environment or spills should be recorded. The records should include the date and time of the incident and the cleanup.

Accident Response

An absorbent material such as re-usable gelling agents, vermiculite, clay, pet litter or activated charcoal should be on hand along with a garbage can and shovel to quickly contain and clean up any spills.

Security

The storage cabinets should be kept locked and the door to the storage area should contain a weather proof sign warning of the existence and danger of pesticides inside. The door should be kept locked. The sign should be visible at a distance of twenty five feet and should read as follows:

The storage cabinets should be kept locked and the door to the storage area should contain a weather proof sign warning of the existence and danger of pesticides inside

DANGER
PESTICIDE STORAGE
AREA
ALL UNAUTHORIZED
PERSONS KEEP OUT
KEEP DOORS LOCKED
WHEN NOT IN USE

The sign should be posted in both English and the language or languages understood by workers if this is not English.

The following checklist should assist you in quickly assessing your facility

Pesticide Safety Checklist	Yes	No
GENERAL RECOMMENDATIONS		
Clean, neat pesticide storage site		
MSDS posted for each pesticide		
SAFETY		
Smoke detectors / detection system		
Appropriate numbers of fire extinguishers		
Personal Protection Equipment available outside storage area		
First Aid Kit		
Eye wash stations or portable eye wash bottles		
Wash up facilities		
ACCIDENT RESPONSE		
Emergency Response Plan with on-site pesticide inventory		
Posted emergency phone number		
Absorbent materials, shovel and bucket		
RECORD KEEPING		
Accurate storage log maintained		
All discharges to the environment recorded		
Inspection and maintenance records		
PESTICIDE CONTAINERS		
Insecticides, herbicides and fungicides separated		
Pesticides stored in original containers with purchase date and legible labels		
Pesticides stored off floor		
"No smoking" signs posted		
SECURITY		
Storage room posted with sign: Danger - Keep Out		
Storage site well lit and ventilated		
Storage Room locked		
Safety Equipment separated from pesticides		

Funding Options For Farmers

United States Department of Agriculture, Natural Resources Conservation Service
451 West Street
Amherst,
MA 01002-2995
Tel: 413-253-4350

Environmental Quality Incentives Program (EQIP)

EQIP provides technical, education and financial assistance to eligible farmers to address soil, water and related natural resource concerns on their land in an environmentally beneficial and cost effective manner. The program provides assistance to farmers in complying with Federal, State and tribal environmental laws and encourages environmental enhancement. The program is funded through the Commodity Credit Corporation. The purposes of the program are achieved through the implementation of a conservation plan which includes structural, vegetative and land management practices on eligible land. Five to ten year contracts are made to implement the plans with eligible producers. Cost share payments may be made to implement one or more eligible structures such as mixing, loading pads.

Contact: United States Department of Agriculture, Natural Resources Conservation Service, 451 West Street, Amherst, Massachusetts, 01002-4350. Telephone: 413-253-4350

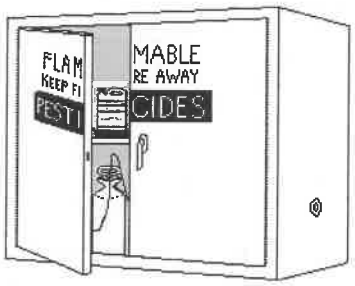
Massachusetts Department of Food and Agriculture
100 Cambridge Street,
Boston, MA 02202
Tel: 617-727-3000
Fax: 617-727-7235

Agricultural Environmental Enhancement Program

Beginning in the winter of 1999, the Massachusetts Department of Food and Agriculture's new **Agricultural Environmental Enhancement Program** will grant $200,000 a year to farmers to purchase materials to protect water quality from the potential impacts of agricultural practices. Eligible materials include pesticide storage facilities and mixing/loading pads, fencing, culverts, seed and gutters.

Contact: Massachusetts Department of Food and Agriculture, 100 Cambridge Street, Boston, Massachusetts 02202. Telephone: (617)727-3000. Fax: (617)727-7235.

Equipment Distributors



1) Grainger Industrial Supplies Inc.
54 New Market Square
Boston, MA 02118
www.grainger.com 888-WWG-4MASS

2) Safety Strategy
Manchester
MA, 01944 978-526-7715

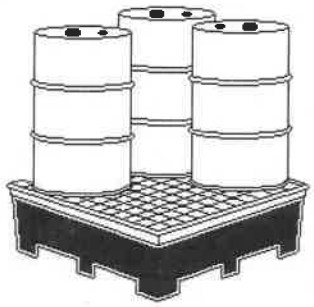
3) Albeco Fasterner & Supply Corp
44 Border St.
West Newton, MA 02465 617-965-8840

4) Environmental Equipment Systems
Division of Turf, Products Corp
157 Moody Rd.
Enfield, CT 06083 800-243-4355

5) Haz Mat Containment Corp. Inc
712 Bancroft Rd., No. 216
Walnut Creek, CA 94598 510-943-5250

6) Safety Storage, Inc.
2301 Bert Dr.
Hollister, CA 95023
www.safetystorage.com 408-637-7405

7) Global Occupational Safety
22 Harbor Park Dr.
Port Washington, NY 11050 800-433-4848



8) Eagle Manufacturing Company
2400 Charles St.
Wellsburg, WV 26070 304-737-3171

9) Hunter Agri-Sales
Box 2
Coatesville, IN 46121 317-539-4400

Acknowledgements

A great deal of the information in this document is drawn from the following document which is the definitive guide to pesticide storage, mixing and loading and is highly recommended.

Kammel, David W., Noyes, Ronald T., Riskowski, Gerald L., Hofman, Vernon L., 1991
Designing Facilities for Pesticides and Fertilizer Containment, First Edition, MWPS-37
MidWest Plan Service, Iowa State University, Ames, Iowa

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United States Environmental Protection Agency
The Green Industry Alliance
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The following publications were also used as reference guides

1) Ross, David S., Bartok, John W. 1995. On-Farm Agrichemical Handling Facilities
NRAES, CES, Ithaca

2) Conference Proceedings, National Symposium on Pesticides and Fertilizer Containment
Design and Management. MWPS-C1. 1992.
MidWest Plan Service, Iowa State University, Ames, Iowa

3) Dean, Thomas W., Ray A. Bucklin. 1995.
Permanently - Sited Storage Facilities in Florida
Florida Cooperative Extension Service

4) Storrs, CT. 1990
Pesticide Storage
Connecticut Extension System

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