

# Regulatory Burdens On Dairy Farmers in Vermont With Regard to Water Quality Requirements

---

Caroline Gordon, VAAFM Externship, VLS Fall Semester 2018

This research project was conducted for the Vermont Agency of Agriculture, Food and Markets. For more information please contact:

Laura Ginsburg  
Agricultural Development Section Chief |  
VAAFM | 116 State St., Montpelier Vermont  
05602-2901 | Tel:802-522-2252 |  
[Laura.Ginsburg@vermont.gov](mailto:Laura.Ginsburg@vermont.gov)

# Table of Content

<b>INTRODUCTION</b>	<b>3</b>
<b>PART 1, REGULATORY BURDENS DERIVED FROM STATE LAW</b>	<b>4</b>
<b>A. DAIRY REGULATION</b>	<b>4</b>
(1) 6 V.S.A. CH. 151: SUPERVISION, INSPECTION, AND LICENSING OF DAIRY OPERATIONS	4
(2) 6 V.S.A. CH. 152: SALE OF UNPASTEURIZED (RAW) MILK	5
(3) 6 V.S.A. CH. 153: STANDARDS AND PURITY	6
(4) 6 V.S.A. CH. 155: FROZEN DESSERTS	6
(5) 6 V.S.A. CH. 163, SUBCHAPTER 2: PRODUCER TAX	6
<b>B. WATER QUALITY REQUIREMENTS</b>	<b>7</b>
(1) 6 V.S.A. CH. 215 AGRICULTURAL WATER QUALITY	7
(2) REQUIRED AGRICULTURAL PRACTICE RULE	8
a. Regulatory Burdens	8
b. Costs Associated	10
(3) MEDIUM AND SMALL FARM OPERATION RULES FOR THE ISSUANCE OF GENERAL AND INDIVIDUAL PERMITS	11
a. Regulatory Burdens	11
b. Cost Associated	14
(4) LARGE FARM OPERATION RULE	14
a. Regulatory Burdens	15
b. Costs Associated	21
<b>C. PASTEURIZED MILK ORDINANCE (PMO)</b>	<b>22</b>
(1) SECTION 3: PERMITS	22
(2) SECTION 4: LABELING	22
(3) SECTION 5: INSPECTION OF DAIRY FARMS AND MILK PLANTS	23
(4) SECTION 6: THE EXAMINATION OF MILK AND/OR MILK PRODUCTS	23
(5) SECTION 7: STANDARDS FOR GRADE "A" MILK AND/OR MILK PRODUCTS	24
a. Abnormal Milk	24
b. Milking Barn, Stable or Parlor – Construction	24
c. Milking Barn, Stable or Parlor – Cleanliness	24
d. Cowyard	24
e. Milkhouse – Construction and Facilities	25
f. Milkhouse – Cleanliness	25
g. Toilet	25
h. Water Supply	26
i. Utensils and Equipment – Construction	26
j. Utensils and Equipment – Cleaning	26
k. Utensils and Equipment – Sanitation	26
l. Utensils and Equipment – Storage	26
m. Milking – Flanks, Udders, and Teats	26
n. Protection from Contamination	26
o. Drug and Chemical Control	27
p. Personnel – Cleanliness	27
q. Raw Milk Cooling	27
r. Insect and Rodent Control	27

<b>PART 2, EVALUATION OF A TEST-RUN OF INTERVIEWS WITH DAIRY FARMERS</b>	<b>28</b>
<b>A. KEY RESULTS</b>	<b>28</b>
(1) PERCEPTIONS ON BURDENSOME REGULATIONS	28
(2) PERCEPTIONS ON FINANCIAL BURDENS	31
(3) PERCEPTIONS ON THE MANURE MANAGEMENT SYSTEM AND THE NUTRIENT MANAGEMENT PLAN	33
(4) PERCEPTIONS ON THE RELATIONSHIP OF REGULATIONS AND THE DECLINE IN FARM NUMBERS	33
(5) WAYS IN WHICH THE STATE CAN SUPPORT FARMERS	34
(6) VISIONS FOR THE FUTURE OF DAIRY FARMING IN VERMONT	34
(7) ADDITIONAL THOUGHTS AND COMMENTS	35
<b>B. RECOMMENDATIONS</b>	<b>36</b>
<b>C. RESEARCH QUESTIONS</b>	<b>37</b>
<b>CONCLUSION</b>	<b>38</b>
<b>ANNEX, CONSOLIDATED TEST-RUN OF INTERVIEWS</b>	<b>39</b>

## Introduction

A common refrain from the farm sector is that the Vermont Agency of Agriculture, Food and Markets (VAAFMM) regulations are overly burdensome, causing business owners' financial distress and decreased competitiveness in the market. At the same time, VAAFMM has received feedback from other farm owners that being compliant with regulations makes them better business owners and offers an advantage in the way they market their services and products. Therefore, the given research question is: Are the regulations (and their associated fees, operating requirements, and system modifications) burdensome on Vermont dairy farmers in a way that decreases their competitiveness and viability, creating financial hardship and restricted growth?

In order to approach this question, the goals of this research project are (1) to gain an overview of the regulatory burdens the state imposes on dairy farmers in Vermont, through a summary of the legal background and (2) to begin to understand the farmers' perception of, and experiences with, the regulatory framework through a field-tested interview guide. Accordingly, the first part of this paper focuses on a summary of the existing regulatory burdens and the second part consists of an evaluation of a test run of interviews with dairy farmers in Vermont, in preparation of a future survey on the matter.

The legal part of this report focuses on the "regulatory burdens" relating to dairy farmers in Vermont by state law with regard to water quality requirements. The relevance of federal law on the matter is left uncommented, as they are out of the given scope. One exception is made for the FDA's Grade "A" Pasteurized Milk Ordinance (2017 Revision) because of its outstanding significance for dairy operations. The standards for grade "A" milk are included without going into the technical details provided by the ordinances' administrative procedures.

A regulatory burden is understood to require an obligatory practical and/or financial action by dairy producers. Legal obligations that are met by refraining from performing an action are not understood to be burdensome (e.g. 6 V.S.A. § 2801 is not a burden as it does not require an action, but instead prohibits the sale of adulterated dairy products). In short: prohibitions and grants are excluded, while requirements are included. There is an argument to be made, however, that prohibitions also require the producers' knowledge, compliance, sometimes hinder marketing options and thus are burdensome. Regulations that entail requirements and prohibitions, e.g. surrounding buffer zones or raw milk production, have been included. This study focuses on regulatory burdens for producers only. Burdens on handlers, distributors, and Secretary entitlements are excluded. The financial burdens considered came from regulatory fees and compliance costs, for which only estimates can be derived from economic impact analyses.

## Part 1, Regulatory Burdens Derived from State Law

### A. Dairy Regulation

#### (1) 6 V.S.A. Ch. 151: Supervision, Inspection, And Licensing of Dairy Operations

Dairy farms face **inspection** at least once a year (§ 2742). Farm premises, equipment, dairy animals, procedures, and sanitation conditions are all inspected as the governmental warranty for the producers' compliance and as such create an indirect burden, as inspections create pressure to be in alignment with the regulations.

Primarily this chapter contains regulations for handlers and processors. On the border is § 2681, which could affect small producers who package their milk for retail sales themselves. The **labeling requirement** determines that additives shall be conspicuously stated in descending order of volume.

**Sanitation rules** (§ 2701) have been established by the FDA (**FDA, Pasteurized Milk Ordinance (PMO), 2017**) and are summarized at the end of this legal overview because of their significance in setting the standard for uniformity and a high level milk sanitation practice in the United States.

Furthermore, state-federal-cooperative **livestock disease control and/or eradication programs** require all milk producers to comply with the regulations. Thereunder federal programs are significant but outreach the given focus on state law. For cattle, there is to be named the **National Tuberculosis Eradication Program**, and the **National Brucellosis Eradication Program**.<sup>1</sup>

---

<sup>1</sup> For more information please visit USDA's Animal and Plant Health Inspection Service (APHIS) homepage, <https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/>.

## (2) 6 V.S.A. Ch. 152: Sale of Unpasteurized (Raw) Milk

The **sale of raw (unpasteurized) milk** is limited to on-farm sales directly to consumers for personal consumption (§§ 2775, 2777 (b)) within four days after milking (§ 2777 (d)(5)). Producers selling between 87.5 gallons to 350 gallons (or more than 350 to 1,400 quarts) may deliver off the farm to customers' homes or through a farmers' market under additional conditions (so-called Tier II producers of raw milk, § 2777 (f)). The sale of more than 350 gallons of raw milk per week **is prohibited** (§ 2777 (g)). Producers are allowed to use contractors for delivery, whereby a joint liability persists. All animals are **tested for brucellosis and tuberculosis** (see fn. 1 for the livestock disease control and eradication programs mentioned above) and the test results are posted in a prominent place so that they are available to customers and the agency (§ 2777 (c)).

Requirements for production and marketing are (§ 2777 (d)):

- **Record keeping and reporting obligations:**
  - Each day samples of raw milk are taken and kept frozen for 14 days.
  - A list of all customers is kept.
  - A list of transactions, including customer names, purchase dates and amount is maintained for at least one year.
- **Labeling requirements** include milking date, the producer's contact information, the words "Unpasteurized (Raw) Milk. Not pasteurized. Keep Refrigerated." on the container's principal display panel, and the words "This product has not been pasteurized and therefore may contain harmful bacteria that can cause illness particularly in children, elders, and persons with weakened immune systems and in pregnant women can cause illness, miscarriage, or fetal death, or death of a newborn." on the container. Also, a sign with these two phrases has to be posted in a place on the farm where it can be easily seen by customers.
- Within two hours after milking the raw **milk has to be cooled** to 40 degrees Fahrenheit.
- All **storage containers** must be emptied and cleaned (sanitized) at least every 72 hours. If not cleaned daily, a written log shall be posted visibly to customers.
- Customers shall have the **opportunity to tour the farm** and any area associated with milking.

Tier II Producers who produce between 87.5 gallons to 350 gallons also are subject to the following obligations § 2777 (f):

- **Registration** with the Agency.
- Annual **inspection** of sanitary standards. This is an additional inspection to the annual inspection of § 2742 mentioned above only if a farm is both a raw milk seller/producer and a Grade A dairy farm. In such a combined situation the agency does both inspections at the same time.
- Producers are liable to ensure that only **clean bottles** are filled and distributed.
- Raw milk has to be **tested twice per month** by an FDA accredited laboratory and results have to be forwarded to the agency within five days of receipt. The test results have to be kept on file for a year and shall be displayed in a prominent place on the farm visible to customers.

- Producers have to **submit a statement** of the total gallons of raw milk sold in the past 12 months to the agency by March 1<sup>st</sup> of each year.
- Delivery:
  - Has to occur with an **unbroken cool chain** of 40 degrees Fahrenheit,
  - Protected from exposure to **direct sunlight**,
  - May be sold only to customers who **purchased the milk in advance**, and
  - delivered either **to a customers' home into a refrigerated unit or to a farmers' market**. Delivery to a farmers' market has to be notified with the agency in advance and a **sign** meeting the label requirements has to be placed in the stall or on a stand in a prominent manner that is clearly visible to customers.

### (3) 6 V.S.A. Ch. 153: Standards and Purity

In general, producers sell their milk to a handler and the provisions for the marking of retail packages do not apply to them. For producers with their own processing plant, the marking of retail packages requires:

- The **name of the product** as defined by statute or regulation.
- The **name of all ingredients** in descending order of importance if it is not a single defined product.
- The **name and address of the producer** or handler and the **identification number** of the plant.
- The net weight or volume of package contents.

### (4) 6 V.S.A. Ch. 155: Frozen Desserts

As producers generally sell their milk to handlers, the requirements for frozen desserts do not apply to them. Producers of frozen desserts must meet the following requirements:

- A **license** for which a fee of \$75.00 has to be paid.
- The product must conform with the FDA's standard of identity for frozen desserts (**21 U.S.C. Part 135**).
- The established sanitary and bacteriological requirements (**FDA, PMO, 2017**) are met.

### (5) 6 V.S.A. Ch. 163, Subchapter 2: Producer Tax

Each producer must pay a \$0.10 per hundredweight **tax** from the price paid to him or her by a handler. This is the generic dairy promotion at the state level, the so-called dairy checkoff.

## B. Water Quality Requirements

Producers commonly think that Vermont has the most stringent water quality laws in the nation. A status that is the result of being pressured by the EPA to fulfill the responsibilities under the federal Clean Water Act and the prominent phosphorus pollution of Vermont's waterways, especially visible at Lake Champlain. Act 64 amended or enacted in 2015 multiple statutes related to water quality in Vermont. The following water quality requirements for agriculture are largely an outcome of this legislation.

### (1) 6 V.S.A. Ch. 215 Agricultural Water Quality

All farmers have to implement the **Required Agricultural Practices (RAPs)** laid down by rule (see below). On demand of the Secretary, **Best Management Practices (BMPs)** may apply in addition (§ 4810).

The rules of the RAP were revised 2016 to inter alia prohibit the stacking or piling of manure or other fertilizers and nutrients on a farm in a manner that imposes a risk to a waterbody or the groundwater. In order to prevent this risk, such piles have to be located **200 feet away** from a private well or waterbody (§ 4810a (a)(2)).

Large farm operations (more than 700 mature dairy animals) require a **permit** for which an annual operating **fee** of \$2,500.00 is due.<sup>2</sup> A prerequisite is an adequately sized **Manure Management System** and a **Nutrient Management Plan (NMP)**. The farms are subject to **inspections** once per year. The average water use has to be **reported** if the farm draws more than 57,600 gallons of groundwater per day (§ 4851 (g)). The construction of a new barn requires a **permit** if it is not replacing an existing barn at its existing capacity (§ 4851 (a)).

A medium farm (200 to 699 mature dairy animals) requires **authorization** from the Secretary. A small farm (less than 199 mature dairy animals) only requires authorization under exceptional conditions, § 4858 (d). Since July 1, 2017, small farms have to certify annually that they operate in compliance with the RAPs pursuant to § 4871 and 4.3 RAPs. The details on general and individual permits are laid down by the **Medium and Small Farm Operation Rules for Issuance of General and Individual Permits (2006)**, see below. Prerequisites are also an adequately sized and designed **Manure Management System** and an **NMP**. General and individual permits have a term of no more than five years. Farms that operate under a general permit are **inspected** at least once every three years. If a medium farm obtains a permit, an annual operating **fee** of \$1,500.00 is due. Additionally, **discharge permits** could be required for small and medium-sized farm operations (6 V.S.A. § 4858 (d) and 10 V.S.A. § 1263). In case the ownership or lessee changes the Secretary has to be **notified** within 30 days.

---

<sup>2</sup> The Secretary of Natural Resources may also require a large farm to obtain a discharge permit under 10 V.S.A. §1263, see 6 V.S.A §4851. This includes application fees accordingly to 3 V.S.A. §2822.

## (2) Required Agricultural Practice Rule

With the Required Agricultural Practices coming into effect the Accepted Agricultural Practices have been replaced, and as noted above, the regulation of Small Farm Operations has been reformed. Now, small dairy farms that manage at least 10 acres of land for livestock and have at least 50 mature dairy cows have to certify annually their compliance with the Required Agricultural Practices Rule (RAPs). Large Farm Operations, Medium Farm Operations, and Certified Small Farm Operations (CSFOs) shall obtain four hours of approved **agricultural water quality training** at least once every five years.

### *a. Regulatory Burdens*

The regulatory burdens derived from the RAPs are the following:

- The farm **shall utilize runoff and leachate collection systems**, diversion, or other management strategies in order to prevent the discharge of agricultural wastes to surface- or groundwater.
- Waste management and storage systems have to be **maintained** in a manner that prevents structural or mechanical failures. This requires especially:
  - Vegetation management;
  - Adequate volume for the facility; and
  - Construction in accordance with **USDA NRCS Code 313**<sup>3</sup>
- Field stacking of manure shall be consistent with **USDA NRCS Code 318**<sup>4</sup>, or:
  - Shall consist of at least 20% solids and be able to be stacked four feet high;
  - Over a three-year period, the pile shall be land applied, actively managed as compost, or moved to a suitable alternative location.
- Manure and waste application standards and restrictions:
  - Consist of prohibitions (spread bans) and thereby lie beyond the definition of this paper for burdensome regulations, as the compliance is achieved by refraining from a certain action. Nevertheless, the ban on applications on floodplains between October 16 and April 14 and the ban on applications on field slopes exceeding 10% (unless 100 feet buffer zone) are included in the economic impact analyses (EIA, see below). The EIA confirms the assumption that the pure adaption to a prohibition by refraining from an action can be met by an adopted management practice that does not impose additional costs while an adoption that requires a real change, like the installment of an increased buffer zone, does entail such costs.
- Fertilizer shall be stored in accordance with the **Vermont Fertilizer and Lime Regulations**, Section XIII, which entail:
  - Storage areas are placarded appropriately.
  - Bagged or bulk fertilizers and waste fertilizer materials shall be stored under cover and on a non-porous surface.

---

<sup>3</sup> Online available at [https://www.nrcs.usda.gov/Internet/FSE\\_DOCUMENTS/nrcs143\\_026465.pdf](https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs143_026465.pdf) (last visited on October 23, 2018).

<sup>4</sup> Online available at [https://www.nrcs.usda.gov/Internet/FSE\\_DOCUMENTS/stelprdb1263507.pdf](https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1263507.pdf) (last visited on October 23, 2018).



- Containers are fabricated in a way known to minimize breakage, leakage contamination of non-target lands and waters of the State.
- Fertilizer is managed in such a way that its concentrations in groundwater lie within the preventive action limits and the primary groundwater quality enforcement standards established by Appendix One of the Groundwater Protection Rule and Strategy.
- Pesticides shall be used in accordance with **6 V.S.A. Chapter 87**.<sup>5</sup>
- All Certified Small Farm Operations (CSFOs) and all permitted Medium and Large Farm Operations (MFOs and LFOs) shall implement a field-by-field NMP consistent with **USDA NRCS Code 590**.<sup>6</sup>
  - For all other farming operations, soil samples once every five years; and recommended nutrient application rates;
  - NMP balances/reduces excessive soil phosphorus levels (greater than 20 ppm);
  - Documentation obligations for significant changes in animal numbers, management, nutrient application rates, field management, or crop management. Changes shall result in appropriate modifications of the NMP;
  - Obligations to keep waste application records (date of application, field location, application rate, the source of nutrients applied; weather and field conditions at the time of application) for five years.
- Soil health management and cover crop requirements:
  - Certain soil management activities shall be considered and implemented as practicable;
  - Performance management standard for cropland cultivation;
  - Obligatory cover crops on floodplains.
- Buffer Zones:
  - Buffer zones to surface waters by 25 feet of perennial vegetation;
  - Ditches shall be buffered from croplands by 10 feet of perennial vegetation;
  - Surface inlets shall be buffered from croplands by 25 feet of perennial vegetation;
- Animal mortality management requirements:
  - Stored, handled, and disposed within 48 hours;
  - Rules for burials on a farm (e.g. 150 feet from the property line, 3 feet above the high water table, covered with 24 in of soil, 200 feet from drinking water supplies, not in a floodway);
  - Rules for composts on a farm (e.g. 200 feet from the property line, 300 feet from neighboring buildings, 200 feet from surface waters, 200 feet from drinking water supplies).
- On-farm composting of imported food processing residuals:

---

<sup>5</sup> Thereafter consider also the Vermont Regulations for Control of Pesticides (1991), accordingly authorization in 6 V.S.A. §§ 1103, 1105a.

<sup>6</sup> Online available at [https://www.nrcs.usda.gov/Internet/FSE\\_DOCUMENTS/stelprdb1192371.pdf](https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1192371.pdf) (last visited October 23, 2018).

- Site-specific standards (e.g. 200 feet from the property line, 200 feet from surface waters, 200 feet from water supplies, 300 feet from neighboring buildings not in floodways);
- Exclusion of livestock from the waters of the state:
  - Limited livestock trampling on banks of surface waters;
  - Maintenance of crossings and watering areas;
  - Limited access of livestock to surface waters (e.g., at crossing or watering areas);
- Groundwater quality and groundwater quality investigations:
  - Farm operations shall be conducted so that the concentration of wastes in groundwater does not reach or exceed primary or secondary groundwater quality enforcement standards identified by **Appendix One of the Groundwater Protection Rule and Strategy**<sup>7</sup> in accordance with **10 V.S.A. Chapter 48** (Groundwater Protection);
  - Farm operations shall be conducted with the goal of reducing wastes in groundwater to the preventive action levels (PALs).
- Construction of farm structures:
  - Notification of the proposed construction activity.
- Site-specific on-farm conservation practices:
  - On-farm conservation practices designed to prevent agricultural wastes from entering the waters of the State as required by the Secretary.

*b. Costs Associated*

The EIA (16P015, p. 11 et al.) estimates the required adjustments in land management practices to result in an average one-time cost of \$28,094.91 for medium and large farm operations and \$13,691.90 for small farm operations.

The EIA calculated that the average MFO (536 acres) would implement approximately 17 acres of vegetated buffers on their ditches with a total cost of \$9,872.24 (\$580.72 per acre). The same rule would require an average SFO of 107 acres to implement 3.4 acres of vegetated buffers on farm ditches for a cost of \$1,974.45 (\$580.72 per acre). These are worst-case scenarios in which no buffer zone has been in place already. An additional increase of buffer zones from 25 to 100 feet derive from the rule 6.05(f), that requires them for the spreading of manure on slopes greater than 10%. Here the EIA estimates \$10,580.71 for the average MFO to implement the estimated 18.22 acres of additional buffer. SFOs face \$2,113.82 to implement an additional 3.64 acres of the vegetated buffer. Finally, the EIA calculates that all SFOs have to increase their vegetated buffer zones from 10 to 25 feet from surface waters (an average total of 4.27 acres additional buffer) at a cost of approximately \$2,479.67.

The cover crop requirement in floodplains results in an estimate of 16% of farm fields in cover crops. This translates into approximately 86 acres and \$7,641.96 per year (\$88.86 per acre) for the average sized MFO. The same rule would require the average sized SFO to implement 17 acres of cover crop, costing them \$1,510.96 per

---

<sup>7</sup>The standards consist in Tables 1 and 2 that lists substances, enforcement standard and preventive action level as the primary and secondary groundwater quality standard.

year (\$88.86 per acre). No economic impact is seen to result from the potentially necessary shift to shorter season corn in order to facilitate the seed of cover crops. The provision that manure is not allowed to be spread on frequently flooded fields from October 16th to April 14th can be managed at no-cost through adoption. This means that the spreading of manure on frequently flooded lands has to be prioritized when it's allowed. Furthermore, no additional costs occur for MFOs and LFOs with the necessary stabilization of all gully erosion, for example with grassed waterways. This already has been the standard of USDA NRCS Code 590, which is why MFOs and LFOs are assumed to already have addressed this issue. SFOs that install grassed waterways can calculate \$0.25 per square foot.

The costs to develop an NMP for Certified Small Farm Operations are estimated with \$2,938.00 for an average 107 acres' farm. Implementation costs add \$2,675.00. The EIA emphasizes that the economic benefit of NMPs is significant and results in optimized yields, reduced need for fertilizers and better soil health.

### **(3) Medium and Small Farm Operation Rules for the Issuance of General and Individual Permits**

Existing and new animal feeding operations (AFOs) that consist of 200 to 699 mature dairy animals and therefore meet the definition of a Medium Farm Operation (MFO), shall seek coverage under the Medium Farm General Permit.

#### *a. Regulatory Burdens*

Within 180 days (or six months) from the issuance of the General Permit, a Notice of Intent to Comply (NOIC) has to be submitted. A NOIC also has to be submitted before increasing animal numbers towards becoming a Large Farm Operation (LFO).

Coverage under the general permit may be sold with the farm. Written **notification** has to reach the agency within 10 days of the transaction. Any proposed changes in the operation, as well as a lack of changes, have to be notified additionally within 30 days of the transaction.

In contrast to the Medium Farm General Permit, the Individual Medium Farm Operation Permit may be required by the Secretary, if:

- A MFO is not in compliance with the conditions of the General Permit;
- A MFO has had a history of non-compliance and continues not to be in compliance with the Accepted Agricultural Practices (AAPs), now RAPs;
- A MFO owner or operator is using unproven experimental technology;
- A field is no longer acceptable for spreading or spray irrigation of wastes, thereby requiring site-specific conditions;
- The nutrient application rates need to be adjusted, thereby requiring site-specific conditions; or,
- The implementation of an NMP may result in an unpermitted discharge to waters of the state.

Farmers shall request the Individual Permit by **petition in writing** to the Secretary. The application shall contain any facts or reasons of support and include an explanation of why the coverage under a General Permit would be inadequate. Once the Individual Permit is granted, any changes to the operation have to be announced to the Secretary with a **letter of intent**.

Permittees have to comply with the following **Rules for Individual Permits**:

- Management and design standards;
- NMP requirements and components;
- Plan maintenance and record keeping;
- Annual reporting requirements; and,
- Other site-specific conditions required by the Secretary in order to comply with these rules and protect water quality.

### 1) Management and Design Standards

The burden of proof that all structures meet design, construction, and operation performance standards lies with the farmers.

MFOs:

- Shall have a **field-by-field NMP** to manage wastes. The application of wastes to the land has to be conducted accordingly.
- Shall not discharge wastes from the production area to waters of the state. Appropriate **conservation practices** shall be in place. All wastes are stored in such a way that runoff from a 25-year, 24-hour rainfall is prevented.
- Comply with **RAPs**.
- Shall have a **waste storage facility** that is capable of holding waste for 180 consecutive days. Alternatively, a manure management program may ensure compliance with these rules.

MFOs and SFOs:

- Shall be conducted so that wastes do not reach the primary or secondary groundwater standard (**Agency of Natural Resources Groundwater Protection Rule and Strategy**). If concentrations exceed these standards, the farm operation shall be managed to reduce the contamination from current and future activities.
- Cost-share assistance for the design, construction or modification of a waste storage facility is guaranteed, as modifications shall be suspended if the Secretary lacks adequate funds until funding is available.
- Any construction, upgrade or modification of an agricultural waste storage facility shall meet the standards of all applicable **NRCS conservation practice standards (NRCS Code 313, 318** or equivalent standards certified by a professional engineer licensed in the State of Vermont). Waste storage facilities existing before July 1, 2006, are not subject to these standards if the facilities not causing groundwater to exceed state groundwater standards or causing a discharge of wastes to waters of the State.

## 2) Nutrient Management Plan Requirements

MFOs shall have a field-by-field NMP developed or approved by a certified nutrient management planner.

The NMP shall ensure:

- **Adequate storage of manure**, litter, and process wastewater, including procedures to ensure proper operation and maintenance of the storage facilities;
- **Proper management of mortalities** to ensure that they are not disposed of in liquid manure, stormwater, or a process wastewater storage or treatment system that is not specifically designed to handle animal mortalities;
- That **clean water is diverted**, as appropriate, from the production area;
- That appropriate site-specific **conservation practices** are identified to be implemented, including appropriate buffers or equivalent practices, to control the runoff of pollutants to waters of the state;
- **Protocols** for appropriate testing of manure, litter, process wastewater, and soil are identified;
- **Protocol** every land application of manure, litter or process wastewater in accordance with site-specific nutrient management practices; and,
- **Specific records** that will be maintained to document the implementation of the NMP are identified and shall be kept on-farm for a period of no less than 5 years.

## 3) Annual Compliance Reporting Requirements

An **Annual Compliance Report Form** and the **Nutrient Management Report Form** have to be submitted to the agency by April 30 of each year.

MFOs have to give the following information about the previous 12 months in their Annual Compliance Report Form:

- Number and type of animals, whether in open confinement or housed under roof;
- An estimated amount of total manure, litter, and process wastewater generated (tons/gallons); and transferred to other persons (tons/gallons);
- Number of acres for land application covered by the NMP;
- Total number of acres under control of the MFO that were used for land application of manure, litter, and process wastewater;
- Summary of all manure, litter, and process wastewater discharges from the production area that has occurred including the date, time, and approximate volume; and,
- A statement indicating whether the current version of the MFOs NMP was developed or approved by a certified nutrient management planner.

The Nutrient Management Report Form includes the following information:

- Tract number, field number, acreage, previous year's crop, and previous year's crop yield for each field;

- Highly Erodible Land (HEL) determination, planned soil loss (as determined using **RUSLE2**), and previous soil loss (as determined using **RUSLE2**) for each field;<sup>8</sup>
- Animal waste application rates by the source per field;
- Fertilizer application rates by formulation per field;
- A copy of all animal waste test results; and,
- A copy of all soil test results.

*b. Cost Associated*

The requirement to provide an agricultural waste storage system that will hold all wastes generated during 180 consecutive days (or six months) may require farms to design and construct silage leachate structures and barnyards. The EIA (05P045, p. 8 et al.) states that this will incur additional costs in terms of additional capital investment and possibly additional sampling (monitoring) costs. The average cost per animal to construct a proper waste storage facility was estimated at \$350.00. The construction of an entire silage leachate structure would cost an average of \$18,500.00 per farm.

The requirement to have a field-by-field NMP in place, written by a certified nutrient management planner, imposes costs. The EIA estimates costs for additional plan development of \$6.00 per acre (the average MFO is 536 acres), additional sampling and monitoring costs (average of 50 soil tests for \$9.00ea and two manure tests for \$30.00ea), and those costs related to annual plan maintenance and upkeep (\$2,000.00 per year for the first two years, and \$1,000.00 for the third). The EIA estimates the total average costs of an NMP for an MFO at \$8,726.00. As the purpose of the NMP is to balance the nutrient loading of soils with the crop yield goals, adaptations within the field/crop rotation could become necessary in order to stay within the tolerable soil loss of the dominant soil type. This could result in costs in the form of reduced annual crop production that is estimated at \$75 per acre per year.

The recordkeeping and reporting requirements established by the rule impose, according to the EIA, additional operation and maintenance costs. It is estimated that the recordkeeping and reporting will cost each farmer an hour per day on each day the farmer is spreading wastes or harvesting crops. They amount to an average of 24-30 hours per year. Farmers are encouraged to offset these costs by applying for the voluntary or incentive programs CREP, BMPs, and ICM.

#### **(4) Large Farm Operation Rule**

The construction, expansion or operation of any number of barns that house more than 700 mature dairy animals (whether milked or dry) require a Large Farm Operation **permit** from the agency (further detail in Subchapter 6.D. & E.).

---

<sup>8</sup> RUSLE2 stands for Revised Universal Soil Loss Equation, Version 2. RUSLE2 and RUSLE2 are NRCS computer models containing empirical and process-based data that predict rill and inter-rill erosion by rainfall and runoff, online available at [http://fargo.nserl.purdue.edu/rusle2\\_dataweb/RUSLE2\\_Index.htm](http://fargo.nserl.purdue.edu/rusle2_dataweb/RUSLE2_Index.htm) (last visited October 4, 2018).

### a. Regulatory Burdens

Permission of construction and operation of an LFO are issued in one single permit. No permit is required for the replacement of a barn at its existing capacity. The documents required for the application are listed in Subchapter 5 of the Rule. They include the compliance of waste storage facilities with **Vermont NRCS Field Office Technical Guide Section IV**<sup>9</sup>, certified by NRCS or a professional engineer licensed in VT; the amount of wastes generated, stored (capacity minimum of 180 days) and transferred annually; as well as the farms NMP. In the application review process, after the application is administratively complete, the applicant is responsible for **organizing** the informational meeting (Subchapter 5.B.2.d, e, f, i), which includes initiating a **newspaper notice** at least 14 days in advance. In absence of a timely determination by the agency (within 45 days), the permit is awarded by default (Subchapter 5.B.4.f). In this case, the applicant has to demonstrate upon request: *“Compliance with AAPs [now RAPs]; compliance with adopted LFO Rules; compliance with LFO statutory criteria; and to demonstrate that the LFO facility will be managed consistent with a well managed, similarly sized farm of the same animal type; and that there will be no discharge to waters of the state and groundwater impacts will meet state groundwater quality standards.”*

Subchapter 6 lists the following management and design standards.

#### 1) Operational and Maintenance Standards

- Compliance with **Vermont NRCS Field Office Technical Guide Section IV**, or an equivalent standard as recommended in writing by the permittees' hired professional engineer, licensed in the state of Vermont.
- Adequate waste management structures assure that there are no direct discharges of wastes to waters of the state or to prevent groundwater from exceeding state standards. Overtopping is avoided by removal of material and the creation of space for the ongoing generation of waste.
- Compliance with the RAPs.
- Land application of wastes in compliance with the NMP.
- Odor issues are evaluated by the agency in comparison with similar farms and with the **American Society of Agricultural Engineers (ASAE), ASAE EP379.1 DEC96, Control of Manure Odors**, standard.
- No noise disturbance, traffic flows or pests other than those occurring on well managed similar sized farms of the same animal type.
- Implementation of erosion and sediment control conservation practices to prevent movement of sediment to waters of the state, groundwater, or across property boundaries.
- All compost and compost leachate shall be collected, managed and spread on land without causing a discharge to waters of the state or to cause groundwater to exceed state groundwater quality standards, and in accordance with the NMP (compare A.11 & 12 and B.1.d).

---

<sup>9</sup> Available online: [https://efotg.sc.egov.usda.gov/references/Agency/VT/Archived\\_VT\\_Practice\\_Documentation\\_151218.pdf](https://efotg.sc.egov.usda.gov/references/Agency/VT/Archived_VT_Practice_Documentation_151218.pdf) (last visited on October 23<sup>rd</sup>, 2018).

## 2) Structural Design Standards

The waste management system has to meet the following standards:

- **Vermont NRCS Field Office Technical Guide Section IV** or an equivalent standard as certified by an engineer licensed to practice in Vermont (further detail in Subchapter 6.C);
- A **capacity of holding waste** generated in 180 consecutive days or manure management program that is a combination of field stacking, composting, or contracts which transfer the ownership of manure to another party (see also the exception from B.2.c). Field stacking of manure may be permitted on a case-by-case basis and shall meet the criteria defined in Vermont NRCS Field Office Technical Guide, Section IV, as amended by **Practice Code 313** (see also B.2.e.). Waste storage facilities are designed to handle a 25-year, 24-hour storm event. Plans for new or upgraded waste storage facilities or runoff control systems shall be submitted to the agency prior to construction. Post construction documentation shall be submitted within 60 days of project completion (or as otherwise specified by the Secretary).
- Milkhouse waste systems and leachate runoff systems are accounted for in the design of the waste management system and are prevented from discharge to waters of the state.
- Mortalities are managed in such a way as to prevent a discharge to surface waters or to cause groundwater to exceed state groundwater quality standards.

## 3) Nutrient Management Plan Standards

All LFOs have an NMP **developed** by the permittee or a certified nutrient management planner. Periodically the NMP is **inspected** by the agency in order to ensure documentation and compliance with the following requirements:

- The plan meets or exceeds the RAP's standard.
- Compliance with Vermont NRCS Field Office Technical Guide Section IV, as amended by **Practice Code 590** for Nutrient Management.
- **Clean water is diverted**, as appropriate, from entering the production area.
- **Adequate waste storage** and proper operation and maintenance of storage facilities.
- **Protocols** about all land application of manure, compost, other wastes, fertilizer, or any other source of nutrients; and for appropriate testing of waste and soil.
- Documentation of the destiny of the total annual volume of manure produced.
- **Proper management of mortalities** in a way specifically designed to treat animal mortalities.
- Identifies appropriate site-specific **conservation practices** to be implemented.

On a field-by-field basis:

- Yearly soil loss shall not exceed T (of the dominant soil type) as determined by RUSLE 2 (Revised Universal Soil Loss Equation 2). If a **rotation** is needed to meet T, that rotation shall not exceed 10 years in length.
- **Conservation practices** shall be implemented as necessary to reduce the runoff of pollutants to waters of the state or to prevent groundwater from exceeding state



standards. **Soil amendments** shall be applied, as needed, to adjust soil pH to the specific range of the crop for optimum availability and utilization of nutrients.

- Soil should be **tested** every three years unless no nutrients have been applied. When developing the NMP at least one-third of all fields must have a soil test less than three years old. Soil samples shall be collected and prepared according to **UVM guidance or standard industry practice** (using Modified Morgan Extract for available phosphorus and aluminum). Soil tests shall include the minimum content of available phosphorus, reactive aluminum, pH, and additional parameters as required by the Secretary. If subject to monitoring or amending the annual nutrient budget, the soil has to be tested for electrical conductivity (EC) and soil organic matter.
- **Nutrient recommendations** (pounds of N and P<sub>2</sub>O<sub>5</sub> per acre) shall be made based on the University of Vermont's "**Nutrient Recommendations for Field Crops in Vermont**" (or industry practice when recognized by the University) using current soil test results, realistic yield goals, and management capabilities.
- Every waste storage facility shall be **sampled** for nutrient content analysis prior to preparing the **nutrient management plan** and thereafter yearly. The analysis shall be representative of the waste stored.
- A **buffer zone** of at least 25 feet of perennial vegetation shall be maintained between annual croplands and the top of the bank of adjoining surface waters.
- A **risk assessment** for potential nitrogen transport into groundwater (using the **Leaching Index**) and for potential phosphorus transport into waters of the state (using the **VT Phosphorus Index**) is required for all land receiving an application of nutrients. When the Leaching Index is greater than 10 directly adjacent to a private well, the nutrient setback distance shall be increased to 100 feet.
- All applicable **records** identified including test results shall be kept on-farm for a period of no less than 5 years.

#### **4) Production Area Standards**

All LFOs shall perform **visual inspections** and appropriate corrective actions as soon as possible. Weekly inspections concern all stormwater diversion devices, manure, litter, and process wastewater impoundments. Water lines (drinking and cooling water lines) require daily inspection.

#### **5) Waste Management Standard for Wastes Transferred to Another Manager**

Wastes which are transferred to another manager shall require a **contract** including the requirement to prevent groundwater from exceeding state standards, of no direct discharges to waters of the state, and to comply with the RAPs. Waste transferred must be analyzed at least once a year for their contents of nutrients and organic matter. The results of the analyses shall be used to determine application rates. Small volumes of wastes (buckets or trunk loads) do not require a contract but shall be tracked as part of the annual report requirements.

The permittee shall:

- Maintain records showing the date and amount of manure, compost, or other wastes that leave the permitted operation;
- Record the name and address of the recipient;
- Provide the recipient(s) with representative information on the nutrient content of the wastes; and,
- Retain records on-site for a period of 5 years.
- Submit all records relating to the transfer of manure, compost, or other wastes to the Agency with the Annual Report.

## **6) Site and Soil Design Operations Standards**

Manure and other wastes shall not be spread within buffer areas for streams, rivers, lakes, ponds, and water supply wells; and in a waterway, terrace channel or any areas where there may be a concentration of runoff. Manure and other wastes spread on annual cropland that is subject to overland flow from adjacent surface water shall be **incorporated** within 48 hours. This restriction does not apply to no-till land or land planted to a cover crop.

## **7) Groundwater Protection Criteria and Groundwater Investigation**

Wastes of farm operations shall not reach or exceed the primary or secondary groundwater standards as established by the Secretary of the Agency of Natural Resources in the **Groundwater Protection Rule and Strategy**.

**Water testing** is required for farm drinking water supplies, for each farm water supply within 500 feet of cropland, and for each barn that has a waste management system. Water supplies shall be analyzed for nitrates, chlorides, total and fecal coliform bacteria, and for soil-applied pesticides if specified by the agency. If nitrate-N levels are greater than 5 ppm, chloride levels are greater than 250 ppm or soil-applied pesticides are detected, the LFO shall conduct testing on an annual basis (or as otherwise directed by the agency) until nitrate-N levels are less than 5 ppm, chloride levels are less than 250 ppm and soil-applied pesticides are not detected. The Secretary may conduct groundwater sampling.

## **8) Recordkeeping Requirements**

### *a) Recordkeeping for NMPs*

The frequency of testing and record development shall be defined in the LFOs permit. NMPs shall be **maintained annually** for an analysis of manure, compost, and other wastes; and every three years **soil shall be sampled and analyzed** for nutrient content. The Secretary might deem the implementation of additional conservation practices or application rate modifications necessary. **Records** pertaining to the implementation and maintenance of the NMP and a copy of annual reports submitted to the Agency shall be kept on-farm for a period of no less than 5 years and shall include:

- Results from manure, compost, other waste, and soil sampling;
- Planned soil loss (as determined using RUSLE2); and,
- A list of fields with high or excessive Phosphorus Index results.

The records shall also include yearly NMP **implementation information** (which may differ from those planned), field-by-field, including:

- A list of crops planted, planting dates, and harvest dates;
- A list of yields;
- The amount of, and the date(s) of manure, compost, other waste, and fertilizer applications by source;
- Fertilizer application rates by formulation; and,
- The date and weather conditions at the time of nutrient applications.

Records specific to sampling all media shall describe the date, exact location, method, and time of sampling or measurement; the individual who performed the sampling or measurements; the date the analysis was performed; the individual who performed the analysis; the analytical techniques or methods used; and the results of the analyses.

The following **records** specific to land applying manure should be maintained on a field-by-field basis: expected crop yields; the date(s) waste is applied to each field; weather conditions at the time of application and for 24 hours prior to and following application; the method used to apply the wastes; date(s) of manure application equipment inspection; test methods used to sample and analyze manure, or waste, and soil; explanation of the basis for determining manure application rates, as provided in the technical standards provided by these rules; calculations showing the total nitrogen and phosphorus to be applied to each field, including documentation of calculations for the total amount applied, and including sources other than wastes; and, all manure and other wastes that are spread shall be documented on log sheets, including each field name or number; dates of spreading; whether each field is owned or leased; gallons per acre or tons per acre of manure or waste spread each date; grade and tons per acre of commercial fertilizer applied; name of waste structure from which manure or other waste came; and last manure analysis for each waste structure.

*b) Recordkeeping for the Production Area and Associated Conservation Practices*

Routine visual inspections of the LFO facility and conservation practices have to be documented for weekly inspections of stormwater diversion devices; daily inspections of water lines; weekly inspections of the manure, litter, and process wastewater impoundments; weekly inspections of mortality handling area(s); waste storage facility(s) inspections (for cracks and corrosion), and any earthen manure storage structures shall be inspected for damage (e.g. from frost, equipment and rodents). Any deficiencies found as a result of these inspections must be corrected as soon as possible. The **inspection reports** shall be maintained by the permittee and shall be made available for inspection by the agency. **Records** shall be kept on the farm for a period of no less than 5 years.

**Inspection reports**, at a minimum, shall include:

- The date and names of persons performing the inspection;
- An inspection description including the components inspected;
- Details of what was discovered during the inspection;

- Recommendations for repair or maintenance;
- Any taken actions;
- Records of the date, time, and estimated volume of any discharge to waters of the state; and,
- A signed certification statement (form provided by the Agency) verifies that the owner has reviewed all the materials.

Non-compliance with a permit condition shall be **reported** by the permittee to the agency within 24 hours, or during the next business day following the observation of non-compliance. In the event that a spill or accidental release of any waste results in a discharge to waters of the state or to prevent groundwater from exceeding state standards the permittee shall **notify** the agency within 48 hours, or the next working day.

All LFO operators shall submit **annual reports** to the agency no later than February 15 of each year. The annual report shall include:

- Results from water supply tests taken as required in the groundwater section of the LFO Rules during the previous reporting period.
- A reconciliation of the previous year's plan for managing nutrients, and how this information will be used in the next year's nutrient management plan.
- All the information required by **Vermont NRCS Field Office Technical Guide Section IV, as amended Practice Code # 590**, and an accounting of animals; or
  - Manure analysis: submit sample results from each waste management structure annually. This includes waste management structures on other farms if manure or other nutrient wastes from those farms will be land spread on fields associated with the LFO. The frequency of sampling and analysis may be reduced by written authorization from the Secretary. The laboratory analysis report shall include the moisture content of the manure and the available nitrogen, phosphorus, and potassium content, calculated per ton or 1,000 gallons of manure or other nutrient waste;
  - The number and type of livestock or domestic fowl, whether in open confinement or housed under roof;
  - The total amount of manure and other nutrient wastes produced by the LFO;
  - The total amount of manure and other nutrient wastes produced by other farms if the cropland and non-cropland on those farms will be used to land spread manure and other wastes from the LFO facility;
  - Estimated total pounds of total nitrogen, phosphorous, and potassium produced on the LFO facility and land applied;
  - Estimated total pounds of total nitrogen, phosphorous, and potassium produced on the LFO facility and transferred to other managers;
  - Estimated total pounds of total nitrogen, phosphorous, and potassium produced on other farms and used by the LFO as part of the Nutrient Management Plan;
  - The estimated amount of total wastes transferred to another person by the LFO in the previous 12 months (tons/gallons);

- Total number of acres for land application covered by the nutrient management plan, including the number of acres rented, and the number of acres owned;
- Total number of acres under control of the LFO that were used for land application of wastes in the previous 12 months;
- Summary of all waste discharges from the production area that has occurred in the previous 12 months, including date, time, and approximate volume;
- A statement indicating whether the current version of the LFO's nutrient management plan was developed or approved by a certified nutrient management planner;
- For permitted operations that construct or expand, an annual reporting requirement regarding the increase in square footage added or otherwise made available for the purpose of housing animals or domestic fowl; and,
- All reports required by an LFO permit shall be signed by the owner of the LFO facility operation and in the case of a corporation, a principal executive officer or a duly authorized representative having overall responsibility for the operation of the LFO facility for which the permit is issued.

*b. Costs Associated*

The EIA of the 2007 (07P026) amended rule stated that no significant economic burdens were anticipated for the affected farms. Through adaptations of the rule to the revised NRCS Code 590 standard and the Federal Clean Water Act, the LFO rule would prevent large farms in VT from having to obtain a federal National Pollutant Discharge Elimination System (NPDES) permit. This would save them a substantial economic burden, as the federal permit would entail substantially more economic burdens on the farms than the state permitting program. The EIA emphasizes that there are numerous opportunities for large farms to obtain cost-share assistance from state and federal sources when building structures, adapting or amending nutrient management planning or implementing other conservation practices on the farm.

The summary of the EIA does state some of the associated costs. Originating from the requirement that large farms need to provide waste storage capacity for 180 days, the EIA calculates the average cost to design and construct a waste structure of approximately \$350 per animal. Having adequate manure storage capacity is identified as the most costly aspect of complying with the rule. Farms would be required to design and construct silage leachate structures at an average cost of \$18,500 per farm. Most of the farms, which are under the jurisdiction of the LFO law, would have already taken advantage of state and federal grant programs prior to when the rule was first enacted in 1999, and have constructed manure storage lagoons. For those who haven't, cost-share assistance would be available from either the USDA or the Agency.

Furthermore, the costs to develop a nutrient management plan has been estimated to be \$6 per acre, \$9 per soil test, and \$30 per manure test. Farmers would have annual plan maintenance costs of at least \$2 per acre. Additional costs are seen in the requirement to prevent soil erosion, increase buffers to reduce sediment flows, and maintain recordkeeping, which causes farmers additional costs. Some of these

costs are estimated as follows: a range from winter cover cropping at \$25/acre, to conservation crop rotation at \$33/acre (these costs would be reimbursable up to 80%). The EIA summary (07P026) states that: "Farms may opt to farm with fewer cows, as a medium-size farm;" without describing the economic benefits of such suggestion.

Any additional costs associated with the amended rule would be considered normal operational costs. The preparation of the application for the LFO permit could be done without a cost and within the range of 10 to 20 hours to assemble the information "that is already available". Much of the documentation necessary (field identification, maps, etc.) is information that most farmers have, or that can be easily obtained free of charge from local Natural Resources Conservation Service (NRCS) offices. Designing manure storage lagoons, determining highly erodible land (HEL) status, and developing waste utilization plans can all be done by NRCS, and in some cases with the help of UVM Extension Agents. The design work by NRCS to develop manure storage or runoff control systems requires several hours to several days of work.

## **C. Pasteurized Milk Ordinance (PMO)**

### **(1) Section 3: Permits**

Every milk producer [...] shall hold a valid **permit**. A prerequisite for obtaining a permit is compliance with the requirements of the ordinance.

### **(2) Section 4: Labeling**

It is required that the milk and milk products be designated by their common or usual names. All bottles, containers, and packages containing milk or milk products defined in Section 1 of the ordinance shall be labeled in accordance with the applicable requirements of the **Federal Food, Drug, and Cosmetic Act (FFD&CA)**, the **Nutrition Labeling and Education Act (NLEA)** of 1990, and regulations developed thereunder, the **Code of Federal Regulations (CFR)** and, in addition, shall comply with applicable requirements of this section as follows (cans of raw milk from individual dairy farms are exempt):

- The identity of the milk plant.
- The words "keep refrigerated after opening" in the case of aseptically processed and packaged low-acid milk and milk products and retort processed after packaging low-acid milk and milk products.
- The common name of the hooved mammal producing the milk shall precede the name of the milk or milk product when the product is or is made from anything other than cow's milk.
- The words "Grade "A" on the exterior surface. Acceptable locations shall include the principal display panel, the secondary or informational panel, or the cap or cover.
- The word "reconstituted" or "recombined" if the product is made by reconstitution or recombination.
- In the case of condensed or dry milk products the following shall also apply:

- The identity of the milk plant where the milk was condensed or dried and, if distributed by another party, the name and address of the distributor shall also be shown by a statement, such as "Distributed by ...".
- A code or lot number identifying the contents with a specific date, run, or batch of the product, and the quantity of the contents of the container.

### **(3) Section 5: Inspection of Dairy Farms and Milk Plants**

Each dairy farm [...] shall be **inspected/audited** by the regulatory agency prior to the issuance of a permit. Following the issuance of a permit, the regulatory agency shall: [...] inspect each dairy farm at least once **every six months**. For the purposes of determining the inspection frequency for dairy farms, [...], the interval shall include the designated six-month period plus the remaining days of the month in which the inspection is due. Inspections of dairy farms shall be made at **milking time** as often as possible and of milk plants at different times of the day in order to ascertain if the processes of equipment assembly, sanitizing, pasteurization, ultra-pasteurization, cleaning, and other procedures comply with the requirements of this ordinance. A copy of the inspection or audit report shall be filed as directed by the regulatory agency and for at least twenty-four months.

### **(4) Section 6: The Examination of Milk and/or Milk Products**

During any consecutive six-month period, at least **four samples** of raw milk for pasteurization, ultra-pasteurization, aseptic processing and packaging, or retort processed after packaging, shall be collected from each producer, in at least four separate months, except when three months show a month containing two sampling dates separated by at least twenty days. These samples shall be obtained under the direction of the regulatory agency or shall be taken from each producer under the direction of the regulatory agency and delivered in accordance with this section. Samples of milk and milk products shall be taken while in the possession of the producer, milk plant or distributor at any time prior to delivery to the store or consumer.

Required **bacterial counts, somatic cell counts, and cooling temperature checks** shall be performed on raw milk for pasteurization, ultra-pasteurized, aseptic processing and packaging, or retort processed after packaging. In addition, **drug tests** for beta-lactams on each producer's milk shall be conducted at least four times during any consecutive six months. The results of the screening test or confirmatory test shall be recorded on the official records of the dairy farm and a copy of the results sent to the milk producer. When a warning letter has been sent, because of excessively high somatic cell counts, an official inspection of the dairy farm should be made by regulatory personnel or certified industry personnel. This inspection should be made during milking time.

## (5) Section 7: Standards for Grade “A” Milk and/or Milk Products

*STANDARDS FOR GRADE "A" RAW MILK FOR PASTEURIZATION, ULTRA-PASTEURIZATION, ASEPTIC PROCESSING, AND PACKAGING OR RETORT PROCESSED AFTER PACKAGING*

### *a. Abnormal Milk*

Lactating animals which show evidence of the secretion of milk with abnormalities in one or more quarters, based upon bacteriological, chemical or physical examination, **shall be milked last or with separate equipment** and the milk shall be **discarded**. Lactating animals producing contaminated milk, that is, lactating animals which have been treated with, have consumed chemical, medicinal or radioactive agents, which are capable of being secreted in the milk and which, in the judgment of the regulatory agency, may be deleterious to human health, shall be **milked last or with separate equipment** and the milk **disposed** of as the Regulatory Agency may direct. Equipment, utensils, and containers used for the handling of milk with abnormalities are not used for the handling of milk to be offered for sale unless they are first **cleaned and effectively sanitized**.

### *b. Milking Barn, Stable or Parlor – Construction*

A milking barn, stable or parlor **shall be provided** on all dairy farms in which the milking herd shall be housed during milking time operations. The areas used for milking purposes shall:

- Have floors constructed of concrete or equally impervious materials.
- Have walls and ceilings, which are smooth, painted or finished in an approved manner; in good repair; and ceiling dust-tight.
- Have separate stalls or pens for horses, calves, and bulls, and not be overcrowded.
- Be provided with natural or artificial light, well distributed, for day or night milking.
- Provide sufficient air space and air circulation to prevent condensation and excessive odors.

### *c. Milking Barn, Stable or Parlor – Cleanliness*

The interior shall be **kept clean**. Floors, walls, ceilings, windows, pipelines, and equipment shall be free of filth and litter and shall be clean. Swine and fowl shall be kept out of the milking area. Feed shall be stored in a manner that will not increase the dust content of the air or interfere with the cleaning of the floor. Surcingle's, or belly straps, milk stools, and anti-kickers shall be kept clean and stored above the floor.

### *d. Cowyard*

The cowyard shall be **graded and drained** and shall have no standing pools of water or accumulations of organic wastes. In loafing or lactating animal-housing areas, lactating animal droppings and **soiled bedding shall be removed, or clean bedding added** at sufficiently frequent intervals to prevent the soiling of the lactating animal's udder and flanks. Cooling ponds shall be allowed provided they are constructed and maintained in a manner that does not result in the visible



soiling of flanks, udders, bellies, and tails of lactating animals exiting the pond. Waste feed shall not be allowed to accumulate. Manure packs shall be properly drained and shall provide a reasonably firm footing. Swine shall be kept out of the cowyard.

*e. Milkhouse – Construction and Facilities*

A milkhouse of sufficient size shall be provided, in which the cooling, handling and storing of milk and the washing, sanitizing and storing of milk containers and utensils shall be conducted, except as provided for in Item 12r of this section. The milkhouse shall be provided with a **smooth floor** constructed of concrete or equally impervious material; **graded to drain**; and **maintained in good repair**. Liquid waste shall be disposed of in a sanitary manner. Floor drains shall be accessible and shall be trapped if connected to a sanitary sewer system. The walls and ceilings shall be constructed of smooth material; be in good repair; and be well painted, or finished in an equally suitable manner. The milkhouse shall have **adequate natural and/or artificial light** and be **well ventilated**. The milkhouse shall be used for no other purpose than milkhouse operations. There shall be **no direct opening** into any barn, stable or parlor or into a room used for domestic purposes. Provided, that a direct opening between the milkhouse and milking barn, stable or parlor is permitted when a tight-fitting, self-closing, solid door(s) hinged to be single- or double-acting is provided. Screened vents in the wall between the milkhouse and a breezeway, which separates the milkhouse from the milking parlor, are permitted, provided animals are not housed within the milking facility. Water under pressure shall be piped into the milkhouse. The milkhouse shall be equipped with a two (2) compartment wash vat and adequate hot water heating facilities. A transportation tank may be used for the cooling or storage of milk on the dairy farm. Such a tank shall be provided with a suitable shelter for the receipt of milk. Such a shelter shall be adjacent to, but not a part of, the milkhouse and shall comply with the requirements of the milkhouse with respect to construction items; lighting; drainage; insect and rodent control; and general maintenance.

*f. Milkhouse – Cleanliness*

The floors, walls, ceilings, windows, tables, shelves, cabinets, wash vats, non-product- contact surfaces of milk containers, utensils and equipment, and other milkhouse equipment **shall be clean**. Only articles directly related to milkhouse activities shall be permitted in the milkhouse. The milkhouse shall be **free of trash, animals, and fowl**.

*g. Toilet*

Every dairy farm shall be provided with **one or more toilets**; conveniently located; properly constructed; operated; and maintained in a sanitary manner. The waste shall be inaccessible to insects and shall not pollute the soil surface or contaminate any water supply.

*h. Water Supply*

Water for milkhouse and milking operations shall be from a supply properly located, protected and operated and shall be easily accessible, adequate and of a safe, sanitary quality.

*i. Utensils and Equipment – Construction*

All multi-use containers, utensils, and equipment used in the handling, storage or transportation of milk shall be made of smooth, nonabsorbent, corrosion-resistant, non-toxic materials, and shall be so constructed as to be easily cleaned. All containers, utensils, and equipment shall be in good repair. All single-service articles shall have been manufactured, packaged, transported and handled in a sanitary manner and shall not be reused.

*j. Utensils and Equipment – Cleaning*

The product-contact surfaces of all multi-use containers, equipment, and utensils used in the handling, storage or transportation of milk shall be cleaned **after each usage**.

*k. Utensils and Equipment – Sanitation*

The product-contact surfaces of all multi-use containers, equipment, and utensils used in the handling, storage or transportation of milk shall be **sanitized** before each usage.

*l. Utensils and Equipment – Storage*

All containers, utensils, and equipment used in the handling, storage or transportation of milk, unless stored in sanitizing solutions, shall be stored to assure complete drainage and shall be protected from contamination prior to use. Provided that pipeline milking equipment, such as milker claws, inflations, weigh jars, meters, milk hoses, milk receivers, tubular coolers, plate coolers and milk pumps which are designed for CIP cleaning and other equipment, as accepted by FDA, meets these criteria, it may be stored in the milking barn or parlor. This equipment shall be designed, installed and operated to protect the product and solution-contact surfaces from contamination at all times.

*m. Milking – Flanks, Udders, and Teats*

Milking shall be done in the milking barn, stable or parlor. The flanks, udders, bellies, and tails of all milking lactating animals shall be **free from visible dirt**. All **brushing** shall be completed prior to milking. The udders and teats of all milking lactating animals shall be **clean and dry** before milking. Teats shall be treated with a **sanitizing solution** just prior to the time of milking and shall be dry before milking. Wet hand milking is prohibited.

*n. Protection from Contamination*

Milking and milkhouse operations, equipment and facilities shall be located and conducted to **prevent any contamination** of milk, containers, utensils, and equipment. Milk shall not be strained, poured, transferred or stored unless it is

properly protected from contamination. After sanitization, all containers, utensils, and equipment shall be handled in such a manner as to prevent the contamination of any milk product-contact surface. Vehicles used to transport milk shall be constructed and operated to **protect their contents from sun, freezing, and contamination**. Such vehicles shall be **kept clean**, inside and out, and any substance capable of contaminating the milk shall not be transported with the milk.

*o. Drug and Chemical Control*

Cleaners and sanitizers shall be **stored** in properly identified, dedicated end-use containers. Animal drugs and drug administration equipment shall be stored in such a way that milk, milking equipment, wash vats, and hand sinks are not subject to contamination. Animal drugs shall be properly labeled and segregated, lactating from non-lactating. Unapproved drugs shall not be used.

For the purpose of this item, drugs intended for use in dry dairy animals shall be stored with the “non-lactating drugs”. Therefore, drugs intended for use in dairy calves, dairy heifers, dairy bulls and dry dairy cows shall be **segregated from drugs for cows that are currently being milked**. This required storage system shall also be followed for drugs intended for use in goats, sheep, and other dairy animals.

The only drugs that shall be stored with the “lactating drugs” are drugs that are specifically indicated on the drug label or on a veterinarian’s label for extra-label drug use to be used in a specific class or species of lactating dairy animals. For the purpose of complying with this Item “lactating dairy animals” shall mean those dairy animals that are currently producing milk.

*p. Personnel – Cleanliness*

Hands shall be washed clean and dried with an individual sanitary towel or other approved hand-drying devices immediately **before milking**, before performing any milkhous function and immediately after the interruption of any of these activities. Milkers and bulk milk hauler/samplers shall wear **clean outer garments** while milking or handling milk, milk containers, utensils, or equipment.

*q. Raw Milk Cooling*

Raw milk for pasteurization, ultra-pasteurization, aseptic processing, and packaging or retort processed after packaging shall be **cooled to 10°C (50°F)** or less **within four hours** or less, of the commencement of the first milking, and to **7°C (45°F)** or less, **within two hours** after the completion of milking. Provided, that the blend temperature after the first milking and subsequent milking’s does not exceed 10°C (50°F).

*r. Insect and Rodent Control*

Effective measures shall be taken to **prevent the contamination of milk**, containers, utensils, and equipment by insects and rodents and by chemicals used to control such vermin. Milkhouses shall be **free of insects and rodents**. Surroundings shall be kept neat, clean and free of conditions, which might harbor or be conducive to the breeding of insects and rodents. Feed shall be stored in such a manner that it will not attract birds, rodents or insects.

## **Part 2, Evaluation of a Test-Run of Interviews with Dairy Farmers**

After having gained an overview of the regulatory burdens that dairy farmers face by state law and the PMO, the second phase of this research project consists of a test-run of five interviews with dairy farmers and the evaluation of those interviews. The eleven questions ranged from describing perceptions of burdensome regulations, requesting opinions about the manure management system and the NMP requirements, and whether the regulations in place are necessary. Furthermore, thoughts on the relationship between regulatory burdens and the decline in farm numbers, as well as on factors impacting dairy farm viability were discussed. The interviewees have been asked how the state can provide support to dairy farmers and how they envision the future of dairy farming in Vermont. The last question gave room for additional thoughts and comments.

From the five participants, the Agency provided contact information of two. The remaining three participants were recruited out of personal connection or recommendation. None of the interviewees was compensated for their time. The interviews have been evaluated anonymously. The following findings do not follow statistical methods nor qualitative analysis for open-ended responses. The methodology would need to be further developed if additional interviews were to take place. The following analysis, is the attempt to put the given perceptions into a thematic order as the provided answers were often outside the scope of the asked question. Furthermore, relations between the perceptions will be drawn and recommendations as well as further research questions will be derived.

### **A. Key Results**

#### **(1) Perceptions on Burdensome Regulations**

Even though the overview of state law and PMO indicates that farmers face complicated and detailed regulations, the interviewees did not express feeling overly burdened by them, except the smallest of the producers (Q6/A1). Two of the five interviewees expressed that water quality law was well reasoned (see Q5/A1 & A6). Another one said that regulations were necessary and mostly well reasoned for the most part (see Q5/A5). Other problems, in particular low milk prices, are evidently more worrisome. All five participants named the current milk price and the oversupply of milk as the largest factors impacting dairy farm viability (see answers to Q8). One participant with a value-added, grass fed dairy farm claimed a profitable production (Q11/A8).

Twenty-three regulatory issues were identified through this survey, fourteen of which related to the RAPs (see table 1). This could be because RAPs are the most recent regulation that came into effect. Another reason mentioned is that in the course of the RAP meetings, despite good intentions, not all of the discussions around definitions could be resolved (Q5/A8).

Due to the early start of winter weather conditions, emptying manure pits on time to provide 180 consecutive days of storage capacity and the manure-spreading ban were of great concern (see e.g. Q4/A6, Q4/A11). Interviewees stated that themselves and other farmers might not have had time to complete manure spreading and would still have full manure pits by the time the manure spreading ban came into effect on December 15. Together, issues regarding manure were voiced six times and thereby dominated the concerns raised. This urgent issue seems to put farmers in a quandary of non-compliance. Therefore, agency guidance is needed. One farmer emphasized that they are pro-active on the spreading ban and that it doesn't make sense to spray in winter. However, the template for the record-keeping for manure spreading would be confusing (Q2/A5). The contrast to sustainable agriculture was impressive, where liquid manure is not a problem due to composting (Q4/A9).

It is noticeable that the majority of issues raised were voiced only one time each. This most likely has to do with the few numbers of interviews held. In exception to this, four issues have been named twice. Aside from the aforementioned concerns about the manure spreading ban, another concern voiced twice was the determination of fields subject to "frequent flooding". Both participants criticized the relevant model, saying it would vary from reality by considering entire fields as frequently flooded when really only small fractions are involved (see Q2/A10; Q5/A4). Indeed, the relevant USDA Soil Survey Flooding Frequency Class definitions (RAP, Section 6.05 (b), (c)) do not differentiate among the percentages of a field affected by frequent flooding.<sup>10</sup> There have been different opinions about whether the actual rule has changed in favor of the farmer to "use his or her best judgment" (Q2/A10) or whether the interpretation of the rule has changed towards a differentiation (Q5/A4). Neither perception could be confirmed. Notice that the rule is not what's decisive (RAP, Section 6.05 (b), (c)) but rather its' referenced USDA Soil Survey Flooding Frequency Classes. Clarification about the understanding of those classes is needed.

Two different aspects about buffer zones have been seen as problematic. First, in Vermont many slopes are deprived from cropping due to 100 feet buffer zones which was perceived as very strict. Second, it was criticized that buffer zones remain taxable land.

Two participants mentioned a lack of communication among agencies and that federal and state law would contradict each other. After researching the substance of the given example for the alleged contradiction (see problem #2) it was found that state law refers to the NRCS standard so there is no conflict. Yet one of the participants admitted to be unfamiliar with the regulations (Q11/A9, Q5/A7, Q6/A6). It remains questionable whether state and federal agricultural laws actually contradict each other. A lack of communication among agencies could be a legal or an administrative issue.

For further information on the perception of regulatory burdens please review the consolidated test-run interview evaluation in the annex and the table below.

---

<sup>10</sup> See the class definitions online [https://www.nrcs.usda.gov/wps/PA\\_NRCSCconsumption/download?cid=nrcseprd1296628&ext=pdf](https://www.nrcs.usda.gov/wps/PA_NRCSCconsumption/download?cid=nrcseprd1296628&ext=pdf) (last visited on December 12, 2018).

**Table 1: Regulations<sup>11</sup> and their Associated Issues**

	<b>Regulation</b>	<b>Description</b>	<b>Problems</b>	<b>Voiced</b>
1	?	Communication between Agencies	Agencies are not allowed to pass on information.	2x
2	?(e.g. RAP, Section 6.02 (e))	Federalism	Laws contradict each other, e.g. NRCS standard for manure stacking is more stringent than RAPs [no, RAPs refer to NRCS].	2x
3	RAP, Section 6.05 (b, c)	Manure spreading ban on frequently flooded fields	Determination “frequently flooded field” not by model but by reality.	2x
4	MFO Rule, Subch. 11 D (c)	Manure pit capable of holding waste for 180 consecutive days	Because of the early winter farmers did not empty their pits on time.	2x
5	RAP, Section 6.05 (e)(2)	Manure spreading ban	Legality of injecting manure.	1x
6	RAP, Section 6.06	Manure spreading ban variance	Variance is very strict.	1x
7	RAP, Section 6.03 (f)	Waste application records	Template is confusing which is time-consuming.	1x
8	RAP, Section 6.07	Buffer zones	Shouldn’t be taxable land.	1x
9	RAP, Section 6.05 (f)	100 feet buffer zone from slopes	Seem like an imaginary number that is very strict.	1x
10	RAP, Section 6.03	NMP	High maintenance costs.	1x
11	RAP, Section 6.04 (d)	Obligatory cover crops	Difficulties with old equipment.	1x
12	RAP, Section 6.02 (e)	Manure stacking criteria	Timeframe is problematic.	1x
13	?	Labor regulations	Different payrolls for processing and agricultural labor in value-added production.	1x
14	RAP, Section 13	Effective Date	Didn’t give enough implementation time.	1x
15	RAP, Section 6.01 (b)	Bunker leachate	Agency of Ag held farmers to redo projects after regulation update.	1x
16	RAP	Required Agricultural Practice Rule	Act 64 did not have a funding component.	1x
17	RAP	Required Agricultural Practice Rule	The regulations shouldn’t apply to everyone but only to those geographic areas where Phosphorus is a big issue.	1x
18	6 V.S.A. Ch.152 §2777(f)(3)	Testing for Tier II raw milk producers	The few laboratories are out of reach for many potential producers.	1x
19	PMO, Section 7 (g)	Toilet provided on every	Huge expense, there should be an	1x

<sup>11</sup> Citations do not follow bluebook citation standards in order to ease discoverability.

		dairy farm	exception for small farms.	
20	6 V.S.A. Ch.152 §2778(b)(1)	Purchase of raw milk in advance of delivery	Limits profitability, mandates customers to visit farm.	1x
21	6 V.S.A. Ch. 152 §2777(g)	Limit to raw milk sales	Arbitrary & limits profitability.	1x
22	MFO Subch. 12, A, 1 LFO Subch. 6, F, 1, a	Classes on becoming a certified NMP planner	System is time consuming, which is burdensome.	1x
23	-	Stocking density	Missing requirement leads to unsustainable practices.	1x
24	6 V.S.A. Ch. 215 §4851 LFO, Subch. 4, A	Permit for new barn	Limits business growth.	1x

## (2) Perceptions on Financial Burdens

Not surprisingly, the most commonly voiced financial burden is the milk crisis – the lack of profitability of dairy farming. It is the biggest factor currently impacting dairy farm viability (see answers to Q8). One farmer suggested that large farms don't contribute the same revenue stream to local economies as small farms, which is why the same number of milking cows with a decline of farm numbers is problematic (Q8/A1c). Especially for the tourists who come to Vermont to see the animals, the open land and old, operating barns (Q9/A2; Q7/A1). It was also emphasized that as the second largest market, agriculture is of great importance for Vermont and that open lands need to be cropped and grazed with livestock (Q8/A9). On the other hand, it was mentioned that one negative aspect of agriculture being such a large market is that farmers tend to increase their production to unsustainable levels due to missing requirements for stocking densities, which results in the problems that the RAPs are trying to prevent (Q8/A7). Another farmer stated they would produce in a more environmentally sound way voluntarily if there was more money to be made (Q7/A10). Payments for ecosystem services have been suggested as a solution in this regard (Q7/A13). Even though the premium for value added production makes another small-scale sustainable production viable (Q11/A8), this farmer said that milk should be valuable within itself (Q7/A14). If the milk price would rise compliance wouldn't be as concerning (Q8/A2).

Expressly named as a limit to profitability were the restrictions of raw milk sales in 6 V.S.A. Ch. 152 § 2777(g) and the permit requirement for the construction of a new barn in 6 V.S.A. Ch. 215 § 4851. The maintenance costs for NMPs and investment costs for infrastructure (manure pit, tile drainage) and equipment (repairs, no-till drill) were mentioned as specific financial burdens (see Q2/A7 & 11, Q4/A12). In this regard improvements were recommended for simplifying the NMPs in a way, that requirements would be based on soil test results (Q4/A8). The percentage of investment costs not covered by grants would be out of reach for many farmers (Q8/A3) and grants would not be awarded before purchasing equipment but would be arranged as reimbursements (Q11/A5). Small farms in particular would not have the financial ability to implement the practices utilized on the bigger farms (Q7/A9). Giving individual farmers a higher tier during the application for equipment cost-share programs was recommended (Q9/A10).



**Table 2: Regulations and Associated Costs**

The following table lists the costs derived from agricultural fees and the economic impact analyses of the relevant rules (see above), without any claim to comprehensiveness. Statements about estimated costs associated with these regulations are not made since neither of the costs are given consistently per average farm and year (sometimes a time component is missing at all). It is also not clear how the EIA positions relate to each other, e.g. whether positions like the adjustment of land-management practices in- or exclude smaller positions like the installment of buffer zones. None of the positions have been proved. It is questionable whether the estimates are adequate. For example, the construction of a waste storage facility is estimated at \$350 per animal. Even though per definition MFOs have a minimum of 200 animals and LFOs a minimum of 700 animals, for both types of operation the average construction costs of a leachate waste storage facility are priced at \$18,500.00. The calculation with the price per animal would result in a minimum cost of \$70,000 for MFOs and \$245,000 for LFOs. Thus, the reasoning behind the given numbers remains questionable.

<b>Regulation</b>	<b>Burden</b>	<b>Cost</b>	<b>Farms Affected</b>
6 V.S.A. § 2981	Producer tax	\$0.10/cwt	Sales to handlers
6 V.S.A. § 2703	Grading Service	?	Handlers
6 V.S.A. § 2855	Frozen desserts license fee	\$75.00	Value-added
3 V.S.A. § 2822 (2)	Discharge application fee	\$240.00	CSFOs & MFOs & LFOs
RAP	One-time adjustments in land management practices	\$28,094.91	MFOs & LFOs
6 V.S.A. § 4851 (i)/ /3 V.S.A. § 2822 (A) (iv)(IX)]	Discharge annual operation fee	\$2,500.00	LFOs
LFO, Subch. 6, B (b)	Construction of waste storage facility	\$18,500.00 (\$350/animal)	LFO's
LFO, Subch. 6, F	One-time development of NMP	\$6/acre	LFO's
LFO, Subch. 6, F	Annual NMP maintenance	\$2/acre	LFO's
LFO, Subch. 6, F, 3	Soil test	\$9/test	LFO's
LFO, Subch. 6, F, 3	Manure test	\$30/test	LFO's
LFO, Subch. 6, F	Winter cover cropping	\$25/acre	LFO's
LFO, Subch. 6, F	Conservation crop rotation	\$33/acre	LFO's
6 V.S.A. § 4858 (e) /3 V.S.A. § 2822 (A) (iv)(VIII)]	Discharge annual operation fee	\$1,500.00	MFOs
RAP, 6.03; MFO, Subch. 12	One-time development of NMP (for 3-years)	\$8,726.00	MFO's
MFO, Subch. 11, D	Construction of waste	\$18,500.00	MFO's



(c)	storage facility	(\$350,00/animal)	
RAP, 6.07	Buffer zones	\$9,872.24	MFO's
RAP, 6.05 (f)	Buffer zones on slopes	\$10,580.71	MFO's
RAP, 6.04 (d)	Cover crops on floodplains/ annually	\$7,641.96	MFO's
RAP	One-time adjustments in land management practices	\$13,691.90	CSFO's
RAP, 6.03	One-time development of NMP	\$2,938.00	CSFO's
RAP,6.03	Implementation NMP	\$2,675.00	CSFO's
RAP, 6.07	Buffer zones	\$1,974.45	CSFO's
RAP, 6.05 (f)	Buffer zones on slopes	\$2,113.82	CSFO's
RAP, 6.07 (a)	Buffer zones from surface Waters	\$2,479.67	CSFO's
RAP, 6.04 (d)	Cover crops on floodplains/ annually	\$1,510.96	CSFO's
RAP, 6.04 (c)	Installment of grassed waterways	\$0,25/sq. ft.	CSFO's

### **(3) Perceptions on the Manure Management System and the Nutrient Management Plan**

The perceptions about the manure management system and the nutrient management plan requirements have differed greatly. While one farmer claimed the regulations created a lot of confusion and anxiety (Q4/A2), another farmer stated that it was not a problem to keep better records and that it's been a learning curve (Q4/A9). A third one stated long-term experience with both the manure management system and the nutrient management plan requirements (Q4/A5, 6). As mentioned above, the maintenance costs of the NMP's as well as the investment costs for manure management systems have been emphasized as financially burdensome (Q2,3/A7, Q2,3/A14). Furthermore, farmers wished for simplified NMP's based on soil test results (Q4/A8) and fewer penalties for not following the plan (Q4/A11).

### **(4) Perceptions on the Relationship of Regulations and the Decline in Farm Numbers**

Two farmers expressed that regulations are not the cause of the decline in farm numbers, they would be "just one of the straws that break the camels back" (Q7/A2&3). Huge debt burdens would hinder farmers' ability to comply with regulations (Q7/A12). This connection has not been made by other farmers but is noted as a potential research question. Further comments raised other issues unrelated to the given question and have been considered in other parts of this evaluation.

## **(5) Ways In Which the State Can Support Farmers**

No farmer saw potential for financial support from the state (Q8/A8; Q9/A1; Q9/A6). The author assumes all dairy farmers would agree that it would be best to receive higher milk prices and make farming financially viable that way (Q9/A9). The interviewees all had different opinions on the Agency of Agriculture, Food and Markets. One farmer criticized the state would not be supportive to small farms (Q9/A2) and that New York would do a much better job in encouraging young farmers (Q11/A1). A farmer stated that it was disheartening how the state “has closed their eyes on farmers” because of “water quality and what was happening in the last 5-7 years” (Q8/A8). Another one acknowledged that the agency has been more positive and supportive towards farmers in the last two years (Q9/A7). More acknowledgement of how farmers engage for water quality and more empathy with their financial situation in this milk-crisis was suggested (Q8/A8, Q9/A13). Also more community awareness about the services that farmers provide was desired (Q10/A5).

For an increased support of small farmers, the following suggestions have been made (Q9/A3 & 5):

- Encouragement of value-added production with the ease of regulations and their interpretation;
- Grants for small-farm “incubators” [anchor institutions], e.g. food-hubs with shared commercial kitchens, business services, and workshops, e.g. on safe raw milk production.
- More sites for raw milk testing.

One farmer alleged that other dairy farmers desire a quota system like in Canada with more governmental support (Q8/A5). Given the urgency of the dairy crisis at least an evaluation of Canadian quota system would be appropriate. Another approach to solve the milk crisis would be payments to farmers for the ecosystem services they provide (Q7/A13), subsidies, or other incentives for good RAP compliance (Q9/A12). In this regard it was adequately stated that “the subsidies for commodity crops, rather than ecosystem services, create more of the problem that created the regulations in the first place” (Q10/A5).

## **(6) Visions for the Future of Dairy Farming in Vermont**

Even though this question was not asked in the first interview, the farmer has expressed a vision of an infrastructure that functions like an incubator for small-farms (Q9/A3). Similar to food-hubs, these would include shared commercial kitchens for value-added productions and business services (e.g. writing of business plans and bookkeeping). Along these lines another farmer stated that producers should build networks to process collaboratively (or even be managed collectively, Q10/A3), and that small dairy farms survive when they are diversified (Q10/A1). A farmer who engages in value-added production (Q11/A8) envisions that all dairy farms are grass fed and therefore get paid a premium for their milk (Q10/A4). Farms would stay alive if they farm in a lower impact way and produce a more valuable product. This would solve the surplus problem and go along with the idea

of payments for ecosystem services. Therefore, the farmers' reputation has to change through raising community awareness (Q10/A5). The two medium sized farms did not provide visions for the future. One expressed concerns for their children's future (Q10/A6). The other was very optimistic because of Vermont's abundance in water and lucrative marketing location (Q10/A3). The farmer did not recognize his own dilemma when he stated that in the future farms will be judged by calories produced per acre and that he's not excited about adding another milking robot to the barn because of two limiting factors: manure and phosphorus (Q10/A3).

### **(7) Additional Thoughts and Comments**

An issue that also has been raised twice but lies outside of agricultural law is that it can be hard to find farm workers (Q8/A4; Q2/A13). Compatible to this it was stated that the youth should be better involved (Q1/A11 & 6). It was suggested that New York is doing a better job in this regard (Q11/A1), whereas in Vermont the dairy coops don't accept new members (Q11/A6).

A fear of suburbanization through scattered residential homes was noticeable in the comment that the "right to farm" would be challenged by residential neighbors, e.g. by feeling disturbed by farming practices (Q7/A4).

## B. Recommendations

First, a consideration of the ways in which the state can support farmers in the ways mentioned above is recommended. Secondly, the two most urgent areas that require agency guidance are the price of milk and the problem of having full manure pits. The milk crisis may require a paradigm shift in agriculture away from industrialization towards a more sustainable food production.<sup>12</sup> Remarkable was the sharp contrast concerning dairy farm viability and perceptions on regulatory burdens between the interviewee who claimed to farm sustainably and those who struggle to empty their manure pits on time. This translates into a clear signal to further promote sustainable agriculture practices as they promise to resolve multiple issues: perceptions of regulatory burdens, the milk crisis, water quality and soil erosion. Surely this hypothesis requires verification. Stronger incentives towards this direction have been mentioned in form of payments for ecosystem services, the introduction of stocking density requirements and the encouragement of more diversified and small-scale productions, e.g. through easements of regulatory burdens. Also, the idea to build small-farm incubators that encourage farmers to enter value-added production (shared commercial kitchens), ease marketing and provide services (i.e. writing business plans, training, bookkeeping, etc.) is a promising vision for the future of (dairy) farming in Vermont. It could be taken even further to be community centers for sustainable agriculture that include agricultural education in professionally led community farms that are connected to farm to school and work force development. Examples of these sorts of efforts include Shelburne Farms,<sup>13</sup> the Intervale Center,<sup>14</sup> the Center for an Agricultural Economy,<sup>15</sup> Cedar Circle Farms<sup>16</sup> or Hub on the Hill (NY).<sup>17</sup> Following the new economy movement<sup>18</sup> idea about the significance of anchor institutions,<sup>19</sup> there could be a new form of public or private institutions for the preservation and re-cultivation of Vermont's agricultural landscape.

Financial burdens aside from the price of milk indicate a need for further assistance with infrastructure and equipment costs. The potential for optimizing cost-share programs by giving individual farmers a higher tier should be evaluated.

The problem of full manure pits in winter questions the strict enforcement of the manure spreading ban. Genuine solutions other than breaking with the rule should be offered. Part of the solution could be agency guidance on the availability and restrictions of the variance to the prohibition. Thereto RAP, 6.06 foresees that the Secretary may grant seasonal exemptions under the conditions of Section 6.06(b) – (d). These variances are not issued as a general ruling but on a case-by-case basis

---

<sup>12</sup> See IAASTD, Agriculture at a Crossroads, Synthesis Report, online (last opened December 17, 2018) <http://wedocs.unep.org/bitstream/handle/20.500.11822/7862/-Agriculture%20at%20a>

<sup>13</sup> <https://shelburnefarms.org/>

<sup>14</sup> <https://www.intervale.org/>

<sup>15</sup> <https://hardwickagriculture.org/>

<sup>16</sup> <https://cedarcirclefarm.org/>

<sup>17</sup> <http://thehubonthehill.org/>

<sup>18</sup> <https://www.vermontlaw.edu/academics/centers-and-programs/new-economy-law-center>

<sup>19</sup> <https://democracycollaborative.org/democracycollaborative/anchorinstitutions/>

that requires the written request of the affected farmers. It is unclear how well informed farmers are about these circumstances. It could be necessary to give advice or guidance through the agency because of the urgency of the concerns. Finally, the fact that only a fraction of the regulatory requirements have been conceived as burdensome could indicate that the majority of regulations are necessary and well reasoned. It could also indicate that farmers don't feel confident in knowing the laws that affect them. In this regard the questionnaire could be improved. A professionalization of the methodology is recommended in case the agency decides to run a proper survey on the matter.

## C. Research Questions

In the course of evaluating the interviews the following questions emerged and could be considered as further research topics:

- Are there models for how to install payments for agricultural ecosystem services?
- Are there case-studies on whether a stocking density requirements enhance sustainability?
- How have other states encouraged diversified farming practices, agricultural education and institutions that facilitate both, similar to food hubs?
  - Could further diversification of the regulations ease the regulatory burdens on small producers and collectives of small producers?
  - Do the limitations of raw milk sales (6 V.S.A. Ch. 152 §2777(g)) limit the profitability of raw milk producers?
  - How does the state of New York encourage young farmers?
- Do federal and state agricultural laws contradict each other?
- Is there a lack of communication among (state and federal) agencies?  
If so, what are the (legal or administrative) reasons for it?
- Have the USDA Soil Survey Flooding Frequency Classes or their interpretation changed?
- What is the relation between huge debt burdens and hurdles to comply with regulations?

## Conclusion

This survey test-run was based off the research question of whether the regulations –and their associated fees, operating requirements, and system modifications – are burdensome on Vermont dairy farmers in a way that decreases their competitiveness and viability, creates financial hardship or restricts growth. The test-run of interviews indicated that this is not the case. Pre-dominant issues that concerned interviewees were full manure pits and the ongoing milk crisis of low prices. Of the five respondents, 60% held the regulations somewhat necessary and well reasoned. Only the smallest of the producers expressed being subject to overly burdensome regulations and suggested that the regulations could be more diversified. Limited profitability was expressed in relation to the limited sales of raw milk and the permit requirements for new barns.

Repeatedly sustainable agricultural practices could be seen as advantageous to conventional counterparts. So was the sustainable production the only one that claimed to be profitable and where manure handling was unproblematic. A proper survey is needed to either confirm or reject this hypothesis.

Due to the small number of participants most problems have been voiced only a single time (19/24) and were mostly related to the RAP's (14/24). Only the outstanding representative survey would be capable of detecting actual trends among the perceptions.

## Annex, Consolidated Test-Run of Interviews

The test-run of interviews was held between November 11<sup>th</sup> and December 4<sup>th</sup> with five dairy farms from across Vermont. The following is a consolidated overview that summarizes all the perceptions expressed, visualized through different font colors for each participant.

1. **Is your dairy farm a small (less than 199 mature dairy animals), medium (200 to 699 mature dairy animals) or large operation (more than 700 mature dairy animals)?**
  - Small 3/5 (Interviewees: 1, 2, and 4)
  - Medium 2/5 (Interviewees: 3, and 5)
  - Large (0/5)
  
2. **Can you name the regulations that impose the largest burdens (practically or financially) on your operation?**
  - (1) Testing regulation for tier 2 raw milk producers.
  - (2) Federally required antibiotic test for dairy value-added production (e.g. ice cream production).
  - (3) Bathroom for inspector as a requirement for building a creamery on site.
  - (4) Pre-pay for raw milk to be send off farm.
  - (5) The recordkeeping (especially about the manure spreading), the template and booklet for that are confusing and it takes time.
  - (6) Buffer Zones. (see also Q6/A5)
  - (7) Financially, probably maintaining our NMP for \$550/moths through the service of the Agricultural Consulting Services (ACS). This expense is not just because of the regulations, without them we may or may not still use the service for doing soil tests and consulting weed control.
  - (8) It's practically difficult for us to get cover crops established in the fall, we are trying to cover too many acres with too old equipment. We applied the second time for a grant for a new no-till drill.
  - (9) Manure spreading ban.
  - (10) It's good that the rule for cropping on frequently flooded land has changed. Now farmers are allowed to change the visual maps for frequently flooded fields under the terminology "use your best judgment". (See the different perception in Q5/A4)
  - (11) Financially the largest burden is probably the infrastructure investments into our dairy plant or equipment (including repairs). Good hay equipment is essential for our grass-fed operation.
  - (12) The fact that we are 100% grass fed eases our regulatory burden in some ways because we don't till, plow and plant (cover crop); we just apply our compost, graze and hay and keep track of that.
  - (13) Labor regulations have been costly for us because we have two different payrolls (processing and agricultural labor) and we are in a remote location so that it's hard to find good people. It is also financially difficult to being able to pay people well, especially when they become overtime eligible.
  - (14) Water quality regulations that don't give enough time to collect the necessary money to fix things.

- (15) Bunker leachate projects didn't have the technology for being in compliance with updated regulations, which caused the Agency of Ag to ask farmers to redo their projects.
- (16) Not using tile drainage is deterring our ability to grow healthy crops and to be in competition with other parts of the country.

3. **Describe the burdens or challenges these regulations create for your farm.**

- (1) [To Q2/A1] Drive to Burlington to drop off milk sample 1-2x/month (time/ labor expense). The alternative to send it priority overnight is too expensive. Because of this burden there are only a handful of tier 2 raw milk producers in Vermont.
- (2) [To Q2/A2] The test with an expense of \$ 8/ test seems unnecessary for a certified organic operation that cannot use antibiotics anyways.
- (3) [To Q2/A3] Huge expense, unnecessary for the 1hour visit, there should be an exception for small-scale farms.
- (4) [To Q2/A4] Limits profitability. It shouldn't be mandated by the state that the customers must visit the farm before they are able to buy ones raw milk. The raw milk has a limit on quarts that you can sell each day that limits our ability to sell. And those limits seem to be arbitrary.
- (5) [To Q2/A5] It has been a compliance burden, which has gotten worse with the RAP's and we don't know whether we are doing it right or not. We support the idea behind RAP's though.
- (6) [To Q2/A6] We are paying taxes on land that we can't really use. (See also Q6/A5)
- (7) [To Q2/A7] The financial burden of maintaining the NMP is about \$6,600 annually.
- (8) [To Q2/A8] The timing of establishing the fall cover crops right after all the harvest work is very weather dependent.
- (9) [To Q2/A9] The other day it had just frozen a little bit, so we were able to go out with our chisel plow and actually chisel up the land, about 10 acres of it, that broke up the frost and got rid of the snow and then we were able to go and inject the manure. Which in my mind was following the rules because the ground wasn't actually frozen.
- (10) Sometimes there's a lot of time consuming recordkeeping and reporting that needs to be done but that's just part of doing business. It's nothing that we're expecting not to do.
- (11) Sometimes we wonder whether the Agency's within the state and across state lines communicate with each other, it seems our bookkeeping parts are in an endless loop (see comment Q6/A4).
- (12) Sometimes the laws contradict each other (see Q6/A3).
- (13) [To Q2/A14] We ran out of farm bill money with the construction and the expansion of our manure pits. All other practices we need to incur have to be paid for out of pocket. Act 64 did not have a funding component.
- (14) [To Q2/A15] My problem with the bunker leachate is that the Agency of Ag told farmers after they've put in new systems that those were not good enough.

4. **What is your opinion about the manure management system and the nutrient management plan requirements?**

- (5) Forced because of Lake Champlain and the phosphorus issue.
- (6) They created a lot confusion and anxiety.
- (7) There are not enough inspectors to enforce them.



- (8) There are two to three red sections where Phosphorus is a big issue, primarily at Lake Champlain; therefore the regulations shouldn't apply to everyone in the same way.
- (9) We have had a nutrient management plan for 25 years; we have it updated periodically by a crop consultant who is also doing the soil testing to make sure it's been done properly. The system for the individual farmer to get certified in nutrient management planning is burdensome. I don't have the time to do it that way. But there is help available through the conservation districts.
- (10) We've been under that program for 30 years probably, where you can't spray manure after December 15<sup>th</sup> or before April 1<sup>st</sup>, that isn't a problem. The problem comes when there's fall and everyone's manure pit is full and the snow came early and you can't spread it. The variance to spread manure on snow-covered ground is very strict. (See comments in Q3/A9, and below Q4/A7, Q4/A11)
- (11) I would like some flexibility on injecting manure under the snow, we know we can't spray it on top of the snow, but we'd like the option to inject under the snow.
- (12) The NMP could rely more on the soil test (results) of the actual fields. I think farmers should be able to put on as much manure as they want as long as the soil tests are within a certain range, otherwise they are being told that they can't spray on that field. It's easily enforceable by just doing soil tests. The Agency of Ag's cost-sharing program on meters and GPS mapping units for manure spreaders seems to be more complicated (more data to evaluate).
- (13) We have been doing something pretty sustainable and with a minimal amount of liquid and runoff. It was not a problem for us to start keeping better records. It's been a learning curve. We don't have an overflowing pit with liquid manure. We are using solid manure and we're trying to keep as much organic matter on the farm as possible in order to build that soil carbon here.
- (14) My husband went to a class on nutrient management planning. So there has been some learning in understanding all the things in the NMP, enter all the data properly, and also communicating with the team on how to enter the data properly. That can be an extra time expense that can be burdensome.
- (15) I think every farm should have a NMP, no matter the size. Because mother nature has a lot to do with how that plan could be acted out, I think no one should get in trouble for not following the plan, e.g. today is the fourth of December and I know many farms that have not emptied out their manure pit for the 180 consecutive days of storage that they need.
- (16) The manure management system requirements entail very high investment costs that are going to cause much stress, especially for small farmers.

**5. Do you think the regulations in place are necessary and well reasoned?**

- (1) Some of them are necessary, the reasoning to clean up Phosphorus and the manure runoff issue is clear, but there should be a focus on the geographically impacted areas.
- (2) The pre pay regulation for raw milk just seems to prevent farmers from selling raw milk. Something else is being forced on the customer (they have to visit the farm).
- (3) I don't want to spread outside the manure-spreading ban; it doesn't make sense to do that. I want to be pro-active.
- (4) The determination of a "frequently flooded field" should not be made by model but in reality. There were efforts made to get to a more differentiated interpretation of

the rule, so that not a whole field is considered as frequently flooded when only a small section of it is the issue.

- (5) Yes, for the most part. It would be beneficial if the NMP's would be simpler so that we could save some money from the paperwork.
- (6) I think the main goal of the NMP's was to keep runoff out of the rivers and lakes, and that makes sense to me.
- (7) I don't know, because I don't know exactly what they are.
- (8) I think that everybody had good intentions but also that the Agency of Ag does not really listen to the dairy farmers that showed up at those RAP meetings. There were many discussions about definitions and many of them couldn't be resolved. Instead of listening to the farmers the Agency followed an agenda imposed by the EPA. But now that we have the strictest water quality rules in the country, maybe we should have been federally mandated.

**6. Can you name a regulatory requirement that you think is overly burdensome and unnecessary, whether it effects your operation or not?**

- (1) All of the above [Q2].
- (2) The rule about frequently flooded fields.
- (3) The criteria for manure stacking, the timeframe is problematic. The federal NRCS standard is different and more stringent than the states RAP's standard. It seems to be a matter of the individual officers interpretation (see comment Q3/A12).
- (4) It was a big deal to get the information for the supplementation for the Margin Protection Program because the Agency's are not allowed to pass information back and forth (I wish there would be more coordination among the Agency's) (see comment Q3/A11).
- (5) Not being able to harvest buffer zones was overly burdensome, but that has changed.
- (6) I don't know.
- (7) The manure-spreading ban from December 15<sup>th</sup> to April 1<sup>st</sup> could be re-looked at.
- (8) The 100 feet step back seems like an imaginary number that is very strict. We are in Vermont, we have many slopes, and we need to crop those slopes in order to keep our livestock fed.

**7. Tell me your thoughts about the relationship of regulations placed on VT dairy farmers and the decline in farm numbers.**

- (1) It's the community and the tourist industry that suffer when dairy farmers disappear from the economy.
- (2) The current decline in dairy farms I don't believe has anything to do with regulations from the state at least; there are other reasons for that.
- (3) It's just one of the straws that brake the camels back.
- (4) The right to farm is being challenged by residential neighbors that feel disturbed by farming practices.
- (5) It's not just dairy farmers; the vegetable producers are impacted by FSMA.
- (6) There are a lot of farmers that are barely in business anyways, who can't afford to pay for the next upgrade and then go out of business.
- (7) I don't think the role of the Agency of Ag is to guarantee that anybody who wants to farm can farm.
- (8) I don't know about certain rules that are unnecessary.

- (9) There are a lot of small farms that don't have the financial ability to implement some of the practices that some of the bigger farms are doing (see comment in Q8/A3).
- (10) If the general public wants the production of their food to be done in a more environmentally sound way, then either we need to get more for what we sell or we need these grants and other state incentives. Some of this would be done voluntarily if there would be more money to be made.
- (11) Farmers are going out of business all the time but there are just as many cows and we're making as much milk as we always have. (See statement in Q8/A1c) Maybe it's going to be for dairy the way it is for grain farmers in the Mid-West, that the price per acre [per cow] is so low that they have to be of large size to be financially viable.
- (12) I think that the main reason why people are not able to comply with the regulations is that there is already such a huge debt burden on farmers. It's such a costly business to be in and it's such a not profitable business to be in.
- (13) I want to see farmers being paid for their ecosystem services and paid to farm well, paid for taking care of the water and the soil. It seems like if there were a financial incentive to be compliant, it would be more effective all around (see Q10/A4).
- (14) I wish that dairy farms could produce a product that would be valuable within itself, without them having to do value-added. Because I don't think that it is fair that everyone should have to do that to make a living farming (see Q11/A8).
- (15) The regulation that you need permission to build a new barn is burdensome for the growth of a business. I think there should be a timeline for how fast this process has to go through so that farmers can plan. I know many farmers that couldn't meet their plans, within the few months eligible for construction work, because of the permission process. The bottom line is, its volume that keeps you in business.

**8. What do you think is the biggest factor currently impacting dairy farm viability?**

- (1) It is an oversupply of milk, which is forcing the price down and is forcing quotas on farmers. The oversupply comes from:
  - a. Less consumption of milk by the younger generations.
  - b. Plant juices (soy milk, almond milk, oat milk, coconut milk, rice milk, hemp milk) affect the amount of cow milk that is consumed.
  - c. Same numbers of cows but fewer farms, e.g. mega dairy farms like Aurora Dairy with more than 30,000 cows are equivalent to 300 dairy farms of 100 cows. These larger farms don't contribute the same revenue stream to their local communities. The Agency of Ag is saying we still have the same number of cows we just have fewer farms. Well, it's not the same don't be proud of that.
- (2) The milk price, if the milk price was up the problems of complying with the regulations would not be as concerning.
- (3) The percentage of investment costs not covered by a grant is out of reach in many cases.
- (4) Despite the low unemployment rate it's hard to find farm workers.
- (5) The low milk price. It's the exact same amount of work if you are making \$15cwt or \$25cwt. Some say we should do what the Canadians do and have a quota system with more governmental support. The federal farm programs were initially thought to guarantee the food supply for the citizens and it's been great for that but not at the end of the farmers. I think Americans pay the least amount percentage-wise for food in the world, you never hear about food shortages [what about food deserts?].

- (6) The value of the end product, the price of the raw material. While we are trying to preserve our working landscape and we're producing a product that we're being told there is a world surplus of.
- (7) Another important factor is the stocking density. I don't know if there is a stocking density requirement, if you are only allowed to have so many animals per acre in the RAPs. Certainly, part of the reason why people overgraze is they have too many animals for the amount of land that they have. And the overgrazing is causing soil erosion and water runoff and all kinds of things. But the reason why a lot of people are keeping too many animals is that they can't make enough money per gallon of milk and the only way to make more money is to make more milk. Yet it's a product that we know we have too much of in the world. It's something that you would find in the organic standards, but it's something to take into consideration. If you have a lot of animals in a small area, it's going to cause all the problems that the RAPs are trying to prevent: bad smell, bad water, and bad soil. All those things are going to be a result if you have too many animals.
- (8) I would love to say water quality, but it's definitely milk pricing. We are going to be less than 700 farms by the beginning of the year. The state should at least, not financially help the farmers, but acknowledge and empathize with their financial situation in this crisis. Because of water quality and what was happening in the last 5-7 years, I feel the state has closed their eyes on farmers and it's very disheartening. Because agriculture is still the second largest market for the state of Vermont. I mean what's going to happen when dairy is gone from here? The bottom line is that in order to keep these lands open, they need to be cropped and there needs to be livestock on there.

**9. In what ways can the state provide support to dairy farmers?**

- (1) I don't think it has much to do with money (loans & grants), it might help but it's not a solution. I don't know what the solution is. (See also Q9/A6)
- (2) The state is not supportive to small farms. Thereby the money is not in the milk but in the tourists that come to see the animals, the open land and that the barn is still up.
- (3) Encourage more farmers to become processors (value added). Ease regulations and ease the interpretation of regulations to allow small farms to succeed with going into the value-added business perhaps. Encourage (with grants) the building of food hubs that would be the incubators for small-local farms with shared commercial kitchens and services attached to it (like writing of business plans and bookkeeping), e.g. Hub on the Hill, NY.
- (4) More sites for milk testing.
- (5) Partner with NOFA VT to do something for the farmers, e.g. workshops for producers on safe raw milk production.
- (6) Obviously, they can't provide financial support, because the state doesn't have any money.
- (7) The attitude of the Agency of Ag in the last two years has been a lot more positive towards farmers, and not just coming down with the heavy hand of regulation, but trying to also be supportive.
- (8) I think it's important that people, especially young people, from the industry talk to their legislators.
- (9) I would like to think that it would be best to get paid more for the milk and make farming financially viable that way. Short-term the grants are the better incentive of getting farmers to do things a certain way (even if we don't believe in that system), than

regulations with according penalties. I never figured out the total of grants we get divided by the number of pounds of milk we produce, in theory that's what we would get per hundredweight.

- (10) Individual farmers should be given a higher tier in the application for equipment cost-share programs (like on manure spreaders or no-till drills). There are often not many farmers to share equipment with and the people that are doing custom work are in a higher tier charging the farmers, that's an unfair advantage.
- (11) Providing technical support is important.
- (12) Some kind of incentive or subsidy for doing a great job with the RAPs.
- (13) I think in just acknowledging that there is a crisis and acknowledging that they are doing everything they can to help out with water quality. I mean there is not one article that I have seen yet that has praised the farmers for doing the best they can for water quality. All you hear is the negative, negative, negative. It's really been disheartening for our neighbors and the consumers who don't understand even who we are, especially Chittenden County, who basically decided: "We don't want farmers in the state no more."

#### 10. How do you envision the future of dairy farming in Vermont?

[Interviewee one was not asked.]

- (1) Small dairy farms survive when they are diversified (see comment Q11/A8).
- (2) Producers build networks to process collaboratively.
- (3) I think when we're looking at the 100-year plan we're looking great. We've got a tremendous amount of water and we are really close to a lot of people as far as marketing. Long-term, I think farmers will be judged on how many calories you produce per acre/ per gallon of water/ per amount of nutrient input. I think dairy farming works pretty well for Vermont, because we can grow enough feed in the short growing season to produce fresh food year round. Vegetable farming is done in greenhouses in the winter, but I don't think it's viable to feed everyone. I think the biggest change is how many cows a person is managing. Maybe it's going to be a management managing half a dozen farms that are individual 150 cow farms (compare Q9/A3). We thought about adding another robot to the barn and milking more cows but I'm not excited about the idea because of the limiting factors manure/phosphorus.
- (4) So I had this vision of what if all farms were grass fed to get paid more for their milk because it was more of a premium product. Then there would not be a surplus coming from here and it would be a premium product that would be good for cheese-makers and other dairy connoisseurs. Instead of just making a cheap product you kind of have to make a more expensive product to make money from it. It goes along with the idea of being paid for ecosystem services because if we could farm in a lower impact way and somehow produce a more valuable product; that might keep farms alive.
- (5) I would like to see more understanding and community awareness about what farmers are doing. Because I think sometimes farmers get a bad reputation for being stinky and poor and all these other things. If farmers would be seen more like providing a service, which they are, to the community, I feel like that would give everyone a lot more appreciation for farmers and give farmers more backing in the community, rather than just being a drain on the subsidies that are taxpayers' money, that is being wasted on these people who are putting shit into the river. I think the subsidies for commodity crops, probably milk included, are leading to a continuation of something that isn't

completely functional. The subsidies for commodity crops, rather than ecosystem services, create more of the problem that created the regulations in the first place.

- (6) I don't know how it's going to look like and how it's going to be framed, but I want a future for my children in dairy farming in Vermont.

**11. Do you have any other thoughts or comments?**

- (1) The state of NY is doing a much better job in encouraging young farmers.
- (2) VT holds on to the brand "Vermont" and the concern about the quality of that. I think it's holding them back, the Agency could do more to help farmers but they don't.
- (3) We have a dairy inspector who has been inconsistent and who is harassing us.
- (4) The money for upgrading peoples systems all goes to the western side of the states and we are left aside.
- (5) Couldn't get a grant for purchasing a machine, but only for reimbursing a in advance made payment.
- (6) Youth that wants to get involved can't, because the coops are not accepting new members.
- (7) Our biggest expense is the grain we buy in bulk (in tractor-trailer lots). We have a imbalance in phosphorus because we produce feed on fields 7 acres away and then spread all the manure on our fields near our milking operation. We've been playing around with things as far as separating the manure and trying to pull the phosphorus out to try to get a solution of how to get the phosphorus sent back to the Midwest.
- (8) The dairy plant is what makes us continue to farm because we can do something profitable with the milk (see also Q7/A14)
- (9) I feel a little bit like I don't really know what the regulations are because I know that we're within them, but I don't know exactly what they are.
- (10) No, I think I told you pretty much everything.