SUSTAINABLE WINEMAKING ONTARIO GUIDEBOOK

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Introduction

In late 2003, the Wine Council of Ontario embarked on the development of *Sustainable Winemaking Ontario: An Environmental Charter for the Wine Industry*. This proactive program was developed for the whole of the wine industry in Ontario, including wineries, and grape growers to provide information on the environmental requirements as well as identify new sustainable opportunities and comply with existing regulations which change rapidly. The overarching goal is to continuously improve the environmental performance in the industry over the long term.

Goals of the program are:

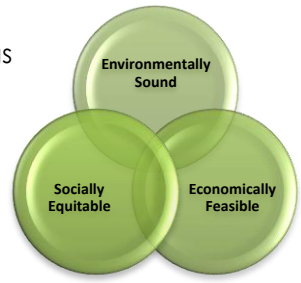
- To improve the environmental performance of Ontario's wine industry
- To continually improve the quality of wine growing and winemaking in an environmentally responsive manner
- To provide a way to address consumer and resident questions in relation to the environment and wine industry
- To add value to Ontario's wine industry

This was the first broad-range environmental program for the wine industry in Canada and was developed after researching many other wine and growing programs from international wine regions, such as California and New Zealand, but made specific to Ontario's climate, needs and uniqueness.

Development of the program was in partnership with government organizations and other stakeholders in the Ontario winey industry, it was consulted through workshops and information sessions to ensure open discussion on the content.

Sustainable winemaking and grape growing production enriches environmental quality through the stewardship of the resources that agriculture depends upon, improves the quality of life of growers, wineries, employees and consumers, and is economically viable. It benefits vineyards, wineries, the environment, and surrounding communities without compromising the needs of future generations of grape growers and winemakers, and ensures the continued success of Ontario's Grape and Wine industry.

Ontario's Winery and Viticulture Sustainability program has adapted learnings from other grape and wine regions and integrated the Environmental Farm Plan to encompass all three pillars of sustainability:



- ✓ Planet - growing and winemaking practices that are sensitive to the **environment**
- ✓ People - a **socially equitable** and safe environment for the community
- ✓ Profit - **economically feasible** to implement and maintain

Sustainable and eco-friendly attributes of wine are important considerations to consumers when making purchasing decisions. Introducing the *Sustainable Winemaking Ontario* program is important to provide a "soil to shelf" package which combined with the *Ontario Viticulture Sustainability* program will help sustain Ontario's success on the world stage as consumers and wine connoisseurs embrace local, environmentally friendly products.

Viticulture and Winery Sustainability Certification Program
Ontario's wine and grape industry is committed to enhancing its environmental performance by introducing a **voluntary and confidential** self-assessment tool and certification program to formally recognize the environmentally sound, economically feasible and socially sustainable practices already adopted by winemakers and growers. The program provides educational resources to enhance existing sustainable production practices and to record and measure progress.

The Wine Council of Ontario together with Grape Growers of Ontario, have researched similar programs, adopted many of the same criteria and have created a Sustainable Winemaking Ontario module incorporating best management practices and providing resources to help improve all aspects of sustainability in the winery. This voluntary in-depth survey for winemakers will be verifiable through an independent audit. By applying sustainable practices in both grape growing and wine production, consumers will be able to enjoy certified Ontario wines in the marketplace.

The Ontario Grape and Wine Sustainability certification program provides an opportunity to market Ontario wine products as environmentally friendly and sustainable. Certification will raise awareness of our industry's commitment to the environment and increase the ability of Ontario's wines to compete domestically and internationally.

Sustainable Winemaking Ontario WCO Module Instructions

The voluntary and confidential Sustainable Winemaking Ontario survey is found in the members' portal (http://www.members.winecouncilofontario.ca/login.php). Wineries that are not WCO members, please contact Alison Oppenlaender (alison@winecouncilofontario.ca) to gain access to the survey.

Once logged in, on the left hand side, you will find the link for the 2015 Winery Sustainability Survey, please click the link and you will be directed to begin Section 1. You can answer the questions in order, starting at Section 1 or if you prefer, you can complete the questionnaire in a random order. Just click on the section where you want to start.

Your answers will be automatically saved as you move from section to section, as well as when you exit the module. With each question, you will see that there is a "more information" link, when you click on it, it will provide you with more information on the questions - either an explanation of what is being asked, or links to useful websites.

Please do not click submit until all sections are complete, otherwise you will lock yourself out from finishing the survey.

Scoring

A scoring system has been established for two main purposes:

1. As an educational tool to help winemakers assess the performance of their operations and identify areas that can be improved;
2. To provide the opportunity for sustainable certification if desired.

The survey questions are divided into sections or categories with the scoring breakdown as follows:

Section 1: Water and Waste Water (10%)
Section 2: Solid Waste Management (15%)
Section 3: Material Handling (10%)
Section 4: Energy Efficiency (5%)
Section 5: Integrated Pest Management (20%)
Section 6: Relationship with Neighbours and the Community (5%)
Section 7: Industry Standards Awareness (10%)
Section 8: Expansion and Renovation of an Existing Winery (15%)

Each question is weighted based on its relative importance to sustainability as follows:

YES RESPONSES	NO RESPONSES
10 bonus points Demonstrates environmental leadership with progressive initiative that goes above and beyond environmental best practices.	**0 points** Not performing this action has no direct impacts on the natural environment.
10 points Behaviour that is a best management practice or supports a best management practice	**-10 points** Not performing this action either has: - A small direct impact - The potential to have an impact on the environment
0 points A standard, expected or legally required practice	**-20 points** A lack of this action can: - risk breaking legal requirements - have a moderate impact on the environment - has a potential to have a large serious impact on the natural environment

Auditors

Wineries may use the confidential, voluntary survey for their own information purposes, or may choose to proceed to receive Sustainability Certification.

An in-field or physical audit or verification of the survey responses is required once every three years in order to receive Sustainability Certification, and a paper audit is required in the interim years.

If an overall score of at least 70% is achieved and a winery wishes to proceed to receive sustainability certification, the winery may select an auditor from the approved list of auditors provided at the end of the survey. Although 70% will allow a winery to select an auditor, an overall score of 75% is required in order to receive certification. The auditor will verify answers to the survey questions and verify final score. The winery is responsible for selecting the auditor that they wish to work with and ***for making payment directly to the auditor prior to the audit being conducted.***

The selected auditor will receive access only to the individual winery's sustainability questionnaire in order to complete their auditor report. If the winery passes with an overall score of 75%, the auditor will notify the WCO that the winery has received certification.

Section 1: Water and Waste Water

Moving towards the goal of sustainability requires sometimes year or even decades in advance. Progress in this direction is thus critically dependent on proper planning and preparation. Sustainability does not occur spontaneously; it requires structure, context and a proper framework. The following section will help participants successfully achieve sustainable best practice.

Section 1-1: Water Quantity Tracking and Recording

1.1.1.0. Do you know how much water is consumed at the winery?

In order to manage water effectively, you should be aware of how much is being used onsite. Wineries obtain water from a number of sources:

- Pipe distribution directly from the Municipality
- Trucked in from municipal supplies and stored onsite before use
- Obtained from ponds, rivers or dams
- Harvested from rooftops for use in the winery or in landscaping

Each of these sources has a different treatment option. Nevertheless, it is important to track water usage in the winery so that you can measure efficiency and identify saving opportunities.

1.1.2.0. Do you know how much water you consume per kilolitre of production?

1.1.3.0. Are you metering the different aspects of production / procedures to measure water use?

There are a variety of services provided at a winery. They can range from winery operations, vineyards, hospitality, restaurant, staff accommodations, tasting room, or special events. Additional meters can help you identify water usage in these unique areas. Adding separate meters will help you track water usage, minimize waste and improve efficiencies. This ability will become increasingly important as wastewater treatment and water prices increase.

1.1.4.0. Is there a recording system in place to track all water consumed at the winery? For example; the Sustainable Winemaking Ontario Tracking sheets.

Sustainable Winemaking Ontario Tracking Sheets will provide you with a central location to track and record yearly water usage.

These are available through the WCO member's website at www.members.winecouncilofontario.ca or by contacting the Wine Council of Ontario offices at 905.562.8070 or by email at info@winecouncilofontario.ca

1.1.5.0. Have you identified areas for the reduction of water use per kilolitre of production?

1.1.5.1. Have you set targets to reduce water use per kilolitre of production?

1.1.6.0. Have you established a team or person to identify ways to reduce water use and improve efficiencies?

1.1.7.0. Can you demonstrate reductions in water use per kilolitre of production year over year due to more efficient production?

1.1.8.0. Do you get more than 50,000 litres of water from surface water (for example, lake, creek or irrigation source) or groundwater per day?

1.1.9.0. If "yes" to previous question, have you obtained your Permit to take water?

Both wineries and growers must have a permit to take water if you are using more than 50,000 litres or 11,000 imperial gallons per day. This includes water taken from "wells, inlets from surface source of supply, structure or works for divergence of water and any combination of the above".

Details of the permits are available through the Ministry of Environment, including application. Applications for taking water are issued for 1, 5 or 10 years. Within the Niagara Escarpment Development Control Area if you are taking water for commercial purposes or an amount more than 50,000 litres or 11,000 imperial gallons of water per day you also require a Development Permit from the Niagara Escarpment Commission. There are also implications under other Acts if you are proposing to take water by damming or diversion works. For further information, see *Eco-Winegrowing 101* in *Sustainable Winemaking Ontario: An Environmental Charter for the Wine Industry*.

Growers have the same obligations outlined above, but also some additional requirements in some areas. Niagara-on-the-Lake provides the only municipally administered irrigation system in Ontario. In Niagara-on-the-Lake you will also pay for the water and associated costs. For further information for growers in Niagara-on-the-Lake, call 905 468 3278.

Within the Niagara Escarpment Development Control Area, the digging or the drilling of a well for the purposes of general agricultural development is specifically exempted from requiring a Development Permit, if listed as a permitted use under the land use policies in the Niagara Escarpment Plan. Contact your local planner and the Niagara Escarpment Commission if you are unsure. The pamphlet, Do I Need a Development Permit? is also helpful.

Section 1-2: Water Quality Tracking and Recording

1.2.1.0. Do you know where your water is supplied from?

Guidance on drinking water can found on the Drinking Water Ontario website: http://www.ontario.ca/environment-and-energy/drinking-water

Businesses that receive water through piped distribution from municipally treated water plants are not affected by changes in Ontario's Drinking Water Systems Regulations. Those businesses that truck in water from a municipal system or draw water from their own surface or groundwater are affected. Businesses that may be affected include:

- Wineries
- Vineyards that provide water services to staff facilities (houses for seasonal staff)
- Hospitality areas

- Bed and breakfast establishments

Currently, these facilities are regulated under Ontario Regulation 252/05.

http://www.e-laws.gov.on.ca/html/source/regs/english/2005/elaws_src_regs_r05252_e.htm

Regulations affecting these facilities undergo regular review and are administered by your local public health units. Requirements may include monthly water sampling and testing at a licensed laboratory. Corrective action would be required if adverse test results are identified. You can obtain further information from your local Public Health Unit:

http://www.health.gov.on.ca/english/public/contact/phu/phuloc_mn.html

You can also see Eco-Winegrowing 101 for more detailed information.

1.2.2.0. Is your water supply piped in from municipal sources?

1.2.3.0 Is your water supply trucked in from municipalities, supplied from wells or drawn from surface water?

1.2.3.1. Are you aware of the changing requirements for water testing of drinking water that will affect you?

1.2.4.0. Have you tested quality of water used in production?

1.2.5.0. Have you identified pretreatment options for production based on the outcome of the water testing?

Section 1-3: Wells

1.3.0.0. Do you have wells on your property? If you do not use or have wells on your property, proceed to question 11. Otherwise, answer yes for each well you have onsite.

Understanding the groundwater system is the first step to managing your well properly. The Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) offers guidance in Understanding Groundwater.

There are a considerable number of requirements to ensure that water in wells is not contaminated. This includes construction and maintenance requirements for a variety of different types of wells. Please review the following list of resources for more information on water wells:

Ministry of the Environment

Water Supply Wells: Requirements and Best Management Practices

Green Tips: Managing your water well in times of shortage

OMAFRA

OMAFRA. Best Management Practices: Water Wells, Order No. BMP 12

Fact Sheet: Managing the Quantity of Water Supplies

Fact Sheet: Protecting the Quality of Water Supplies

Fact Sheet: Understanding Groundwater

Fact Sheet: Private Rural Water Suppliers

1.3.0.1. Well #1

1.3.0.2. Well #2

1.3.0.3. Well #3

1.3.0.4. Well #4

1.3.0.5. Well #5

1.3.1.0. Is your well located in such a way that it cannot be contaminated by surface water?

Best management practices suggest sitting your well upgradient of any potential sources of contamination. Please review Water Supply Wells: Requirements and Best Practices: Chapter 4 for more information on sitting the well correctly.

1.3.1.1. Well #1

1.3.1.2. Well #2

1.3.1.3. Well #3

1.3.1.4. Well #4

1.3.1.5. Well #5

1.3.2.0. Do you know the distance of potential contamination sources from your drilled, bored or dug well?

Best management practices suggest exceeding the minimum set-back distances listed in Table 4-1 of Water Supply Wells: Requirements and Best Practices: Chapter 4.

1.3.2.1. Well #1
1.3.2.2. Well #2
1.3.2.3. Well #3
1.3.2.4. Well #4
1.3.2.5. Well #5

1.3.3.0. Do you inspect the well casing on an annual basis to ensure that it remains in good condition?

Regular inspections of your well will help prevent contamination of the groundwater. Please review Water Supply Wells: Requirements and Best Practices: Chapter 11 for more information on well maintenance

1.3.3.1. Well #1
1.3.3.2. Well #2
1.3.3.3. Well #3
1.3.3.4. Well #4
1.3.3.5. Well #5

1.3.4.0. Does your well have a tightly secured cap that is in good working condition?

The Ministry of the Environment provides valuable guidance on well construction. You can find helpful information through the following hyperlinks:

- Water Supply Well Construction

- Best Management Practices

1.3.4.1. Well #1
1.3.4.2. Well #2
1.3.4.3. Well #3
1.3.4.4. Well #4
1.3.4.5. Well #5

1.3.5.0. Does your well have a screened vent?

Good well construction is essential for protecting your well water from contamination. Please review Water Supply Wells: Requirements and Best Practices: Chapter 5 for more information on well construction.

1.3.5.1. Well #1
1.3.5.2. Well #2
1.3.5.3. Well #3
1.3.5.4. Well #4
1.3.5.5. Well #5

1.3.6.0. Do you have elevated surface material around the well casing?

It is important to maintain proper mounding around the casing of any new wells. Ground surface should be sufficiently elevated in order to prevent the collection or ponding of water near the well.

Good well construction is essential for protecting your well water from contamination. Please review Water Supply Wells: Requirements and Best Practices: Chapter 5 for more information on well construction.

1.3.6.1. Well #1
1.3.6.2. Well #2
1.3.6.3. Well #3
1.3.6.4. Well #4
1.3.6.5. Well #5

1.3.7.0. Is the casing for your well at the appropriate depth below ground level and the right height above ground level?

It is important that your well construction complies with the Ontario Water Resources Act (Ontario Regulation 903). Regulation regarding casing depth and height can be found in Section 13 of the regulation.

Ontario Water Resources Act

Good well construction is essential for protecting your well water from contamination. Please review Water Supply Wells: Requirements and Best Practices: Chapter 5 for more information on well construction.

1.3.7.1. Well #1
1.3.7.2. Well #2
1.3.7.3. Well #3
1.3.7.4. Well #4
1.3.7.5. Well #5

1.3.8.0. Do you have a meter installed on the well?

Installing water meters on your wells can be a relatively inexpensive solution to manage water consumption at your location. A meter can help you understand your sites capacity and provide accurate water measurement if required by private or governmental agency. ThomasNet.com provides a comprehensive list of companies that offer water meter related products and services. For more detailed information visit:

http://www.thomasnet.com/ontario/water-meters-51100808-1.html

1.3.8.1. Well #1
1.3.8.2. Well #2
1.3.8.3. Well #3
1.3.8.4. Well #4
1.3.8.5. Well #5

1.3.9.0. Do you ensure that water from the well is used at the rate of infiltration?

If managed properly, well water is a renewable resource that should last a long time. Well water is replenished by the infiltration of rain water through the soil into the groundwater. However, using well water faster than it is being replenished will eventually lead to well depletion and/or contamination from silt, soil and other microbial issues. OMAFRA offers advice on managing your groundwater supply in Fact Sheet: Managing the Quantity of Water Supply.

1.3.9.1. Well #1
1.3.9.2. Well #2
1.3.9.3. Well #3
1.3.9.4. Well #4
1.3.9.5. Well #5

1.3.10.0. Do you have unused or abandoned wells on your property?

When wells are no longer used, there are some decisions that need to be made. The biggest is whether the well will simply be unused, or abandoned. A well is unused when water is not actively drawn from the well but the owner wishes to have future access to the resource. In these cases the well must continue to be maintained in accordance with the regulations, including regular inspections. The provisions for abandoning a well are covered in the Wells Regulation.

1.3.10.1. Have all unused wells been capped, properly protected and maintained?

All unused wells must be sealed, capped and maintained. Please refer to Water Supply Well: Requirements and Best Management Practices: Chapter 11 for methods of maintaining your unused well.

1.3.10.2. Have all abandoned wells been properly plugged and sealed?

The Ministry of the Environment recommends that, "*Wells must be sealed if they are dry, discontinued before completion, or not being properly maintained. Wells that produce unpotable, salty, sulphurous or mineralized water must be abandoned.*" They also state that

"Wells may also have to be abandoned if it is determined that natural gas poses a potential hazard or if well construction standards have not been followed."

All abandoned wells must be plugged with concrete or other suitable materials and sealed in accordance with the regulations. The Ministry of the Environment also recommends hiring a contractor to do this work. More information on abandoning a well can be found in Water Supply Well: Requirements and Best Management Practices: Chapter 14 and 15

Section 1-4: Waterways

1.4.0.0. Do you use permanent or intermittent water from surface sources or waterways on your property?

1.4.1.0. Are there buffer strips between existing waterways and vineyards?

Buffer strips can provide a host of associated benefits that counteract serious environmental problems.

They can assist in preventing water pollution, flooding, biodiversity loss, erosion and sedimentation. They can also act as a barrier to noise and odour, avoiding potential nuisance to your neighbours.

Please review the OMAFRA publication Best Management Practices: Buffer Strips for more information: http://www.omafra.gov.on.ca/english/environment/bmp/buffer.htm

1.4.2.0. Have you established a buffer strip of at least 10 feet for creek and drain stabilization?

Buffer strips protect ground and stream water quality and filter nutrients, particularly nitrates, from runoff. Tree roots and vegetation help reduce floodwater velocity and erosive force, stabilizing creek beds. Roots also hold stream bank soils in place and reduce potential erosion of fertile topsoil.

1.4.3.0. Is the buffer strip made up of native vegetation?

Plant species included in a buffer strip will vary depending on the purpose of the buffer. Grasses, trees and shrubs can provide distinct services. For example, grasses are better at trapping sediments and pollutants, while woody vegetation can remove nitrates from sub-surface ground water. Whichever species serves your purpose, a general rule is to select native plants. The more natural your buffer strip, the less maintenance is required to maintain it.

1.4.4.0. Have you contacted the Conservation Authority for advice and/or financial assistance for habitat restoration or reforestation?

Please visit Conservation Ontario to find you local conservation authority and find out more about the assistance they can provide for habitat restoration. Often they offer both technical and financial resources for well decomissioning, habitat restoration, nutrient management practices and conservation farm practices. Several examples of these conservation programs are listed in *Eco-Winegrowing 101*.

1.4.5.0. Have you received all approvals from authorities (Provincial, Conservation Authorities, Municipalities and NEC) before establishing a new watercourse crossing?

Alteration to any water crossing can have an impact on downstream water quality and may require approvals from various levels of the government. Contact your local conservation authority, Ontario Ministry of the Environment, Natural Resources Canada, or the Niagara Escarpment Commission to determine if you need any approvals for water crossings and dams on your property.

1.4.6.0. Have you received all approvals from authorities (Provincial, Conservation Authorities, Municipalities and NEC) before installing a new dam?

Contact Conservation Ontario, Ontario Ministry of the Environment, and Natural Resources Canada to determine if you need any approvals for water crossings and damns on your property.

1.4.7.0. Do you inspect bank conditions of streams and drains every six months or when necessary (e.g. after storms) to ensure there is no erosion?

Section 1-5: Drainage

1.5.1.0. Do you have a functioning municipal drain on your property?

Any property that has a municipal drain running through it has a number of obligations.

"The installation of subsurface drainage is very common throughout Ontario. A person who has purchased land, or an existing landowner with drainage, needs to ensure that all the appropriate checks are in place. In addition, they may find that they are located in the watershed of a municipal drain.

The establishment of municipal drains provides responsibilities both on the landholder and the municipality. These are detailed in the factsheet "So, What is a Municipal Drain" available at http://www.omafra.gov.on.ca/english/engineer/facts/01-059.htm. Specific information and further background is also available at your Local Municipality.

If you have a municipal drain on your property you can expect municipalities to periodically arrange to enter the property and perform the necessary maintenance work. You may get billed for parts of this work, and can expect that there will be disruption on your property to some degree as the work takes place.

OMAFRA also offers guidance for wineries who install their own drainage system at http://www.omafra.gov.on.ca/english/landuse/drainage.htm. Topics include drain problems, drainage system maintenance and tile drainage outlets.

1.5.1.1. Is the area surrounding the drain kept clear of debris and objects for routine municipal maintenance?

It is your responsibility to keep the drain area clear for municipal maintenance and repair. Avoid installing any long-term infrastructure (i.e. grape rows, fences, dams, etc) near municipal drains. This will avoid any potential risks or crop loss if the municipality needs to conduct repairs on the

drain. Any obstruction or damage to potential drain works may result in penalties or fines. Please review the Drainage Act for further details.

You may also want to consider rodent protection. Rodent gates are wire mesh coverings that fit over a drain to stop animals, like muskrats, from climbing into them. These should be examined regularly and maintained to reduce the chance of animals gaining access into the tile drains and damaging or blocking drainage.

For further information on responsibilities associated with maintenance of drains, see Eco-Winegrowing 101.

1.5.1.2. Did you contact the proper authorities prior to the installation of a bridge, culvert or dam near a municipal drain?

If you want to install a culvert, bridge or alter the area around a municipal drain in any way, you need to notify your municipality. Municipal drains are defined as watercourses under the Conservation Authorities Act and therefore regulated. Conservation Authorities (CA) are empowered to regulate development and activities in or adjacent to watershed areas. To find out if your property is located in a regulated area or if a development activity you wish to undertake is regulated, contact your local CA.

Municipal drains are also governed by the Drainage Act and Conservation Authorities Protocol (Ontario, 2012). This regulation is a new protocol for drain maintenance and repair activities. Landowners have no authority to build on a municipal drain. The municipality will conduct or supervise any construction. For further details see the Drainage Act. You may also want to review the DART Protocol.

1.5.2.0. Do you keep floatable materials like branches, plastics or debris away from any drains (private or municipal)?

Material such as brush and other floatable material should not be located near the drain. Heavy rain or storms can push it into drains, causing unwanted blockage. There are also restrictions on construction that can take place on municipal drains, for example, if you wish to install a bridge or culvert. Owners have no authority to build culverts on municipal drains. Should you wish for a culvert to be built you must contact the municipality first. Do not do it yourself; notify your municipality. The Municipality either constructs the culvert itself, when appropriate, or will assess if the culvert is of the appropriate size and supervise construction.

1.5.3.0. Do you ensure that all wastes are kept away from each drain on your property and do not pollute the water?

Municipal drains eventually connect to Ontario lakes, rivers and streams. You should never direct wastewater or any other pollutants directly into these drains. The discharge of harmful effluents into a surface watercourse (as defined by the Ministry of the Environment) is considered a serious offense and could be met with severe monetary penalties.

1.5.4.0. Did you contact the Conservation Authority or Ministry of Natural Resources for advice before commencing maintenance on your own drain?

The Drain Primer: Guide to Maintaining and conserving Agricultural Drains and Fish Habitat provides the following guidance on maintaining your own drain:

"If it is not a municipal drain, the local municipality may also be able to tell the landowner if it is an Award Drain, Mutual Agreement Drain or a Private Drain. If it is a Private Drain, the maintenance of the ditch is the property owner's responsibility. If it is an Award Drain or Mutual Agreement Drain, the landowner needs to find the written records for that drain to determine if they are responsible for performing maintenance.

If the landowner finds that they are responsible for maintaining the drain (i.e., that it is not a municipal drain), the next step they should take before starting any kind of drain maintenance is to call the local Conservation Authority or the Ontario Ministry of Natural Resources (OMNR) office. Both can assist in getting information for dealing with reviews and approvals for drain maintenance work that might impact fish habitat. Chances are that the Conservation Authority will also have the expertise to help the landowners develop a proper drainage maintenance plan. "

Section 1-6: Watersheds

1.6.1.0. Do you know which watershed your winery is part of?

Every vineyard and winery is part of a watershed. A watershed is the area that drains into a watercourse and its tributaries. Watersheds are a geographic unit and as such may cross municipal, provincial or even international boundaries. Maps of the watersheds in the major winegrowing regions of Ontario can be found at:

Niagara Region

Prince Edward County

Lake Erie North Shore:

Lower Thames AND Essex Region

1.6.2.0. Do you contribute or participate in watershed protection initiatives undertaken by your local Conservation Authority?

Consult with your local Conservation Authority to find out more about watershed planning in your area.

Section 1-7-9: Wastewater Treated by Municipality / Onsite / Offsite

1.7.1.0. Does your wastewater go to the sewer and get treated by the municipality?

Wineries with access to municipal treatment plants have the simplest arrangements for wastewater treatment. All waste generated will be treated by the municipality. Charges will be for both water provided and wastewater generated. The latter is usually charged based both on volume and strength of waste, usually pH and Biological Oxygen Demand (BOD). Wineries should measure both the water coming into the plant, and the volume being generated as it leaves. A number of wineries have been able to instigate pollution prevention approaches and

reduce the amount of wastewater being generated (for example, through reusing water). Wineries may be able to negotiate with the municipalities for a reduced charge based on volumes of wastewater produced, rather than assuming that the amount of water coming out is the same as coming in.

1.7.2.0. Have you investigated pollution prevention/cleaner production programs to reduce the amount of wastewater produced?

A number of wineries have been able to instigate pollution prevention approaches and reduce the amount of wastewater being generated (for example, through reusing water). More information on water quality and wastewater treatment can be found in the *Sustainability Newsletter: Water Quality*

1.7.2.1. If identified, have you implemented pre-treatment programs?

1.7.3.0. Do you have a staff person with a responsibility for wastewater management?

1.7.4.0. Do you monitor and record the quality of wastewater on a regular basis?

1.7.5.0. Have you installed a meter (or weir) to measure the amount of wastewater produced in the winery?

1.7.6.0. Have you negotiated with the municipality for a reduction of fees if there is a reduction in wastewater to be treated?

Wineries may be able to negotiate with the municipalities for a reduced charge based on volumes of wastewater produced. Often, the municipality will charge a rate based on the assumption that the volume of wastewater produced is equal to the volume for water used. Most wineries produce less than this amount and they will be able to negotiate a lower rate with the municipality.

1.8.1.0. Do you treat your wastewater onsite?

Wineries that treat their onsite own wastewater from production have a number of obligations they must meet. These are outlined in detail in *Eco-Winegrowing 101*. A trigger for different legislation is design capacity of your treatment system. If a winery has a wastewater disposal system with a design capacity of over 10,000 litres per day, then it must be added to your Environmental Compliance Approval from the Ministry of the Environment. If a winery has a wastewater system with a design capacity of 10,000 litres per day or less then approvals must be obtained through the municipality. Wineries must consider their growth when designing expansions or installations of wastewater treatment plants, since any alteration to the facility will require further amendment of the Environmental Compliance Approval

1.8.2.0. Do you have a staff person with a responsibility for wastewater management?

1.8.3.1. Do you know if your wastewater treatment system is designed with a design capacity of over 10,000 litres per day?

1.8.3.2. Is your wastewater treatment system designed with a design capacity of over 10,000 litres per day?

1.8.4.0. If over 10,000 litres per day, have you received the approvals needed by the Ministry of the Environment?

1.8.5.0. If you have a Certificate of Approval or Environmental Compliance Approval from the MOE, is it located onsite?

The Ministry of the Environment has streamlined the approval process with the new Environmental Compliance Approval (ECA). Either the ECA or your Certificate of Approval must be held on site, in case of a visit by a Ministry of the Environment Inspector. All existing Certificates of Approval will continue to be valid.

1.8.6.1. Do you know if your wastewater system is designed for under 10,000 litres per day?

Wastewater treatment facilities designed for under 10, 000 litres per day must meet the conditions outlined in the Ontario Building Code. The building code is a complex piece of legislation and you should consult with your engineer and your local municipality about its requirements.

1.8.6.2. Is your wastewater system designed for under 10,000 litres per day?

1.8.7.0. Have you the approvals needed from your regional or local municipality?

According to the Ministry of the Environment, wastewater systems designed with a capacity of under 10,000 L per day are governed by the Building Code. It is a complex piece of that is governed by a local planning authority such as the municipality or a conservation authority. The best way to learn more about what sorts of approvals are required is by contacting your local municipality or conservation authority.

1.8.8.0. Have you investigated a wastewater system that allows reuse of treated wastewater?

Using treated wastewater can seriously help water conservation and reduce the amount of wastewater produced by your facility. Care must be taken to ensure that quality of the treated wastewater is appropriate for its intended use. Improper use of treated wastewater can have serious impacts on human health and the natural environment and may have severe legal consequences.

According to the Ontario Ministry of the Environment, "The Ministry will consider site-specific applications of the reuse of effluent, provided that appropriate engineering safeguards are in place (e.g., separate plumbing systems, etc.). Currently, winery wastewater is sometimes reused through the vineyard irrigation system after the wastewater has undergone some type of treatment. Any proposed reuse of wastewater would have to be evaluated by a qualified professional and submitted for consideration by MOE engineers, together with an application for sewage works Certificate of Approval (Ontario Water Resources Act, S. 53). At this time, the Ministry does not have any information on reuse options for winery wastewater…."

The Water Recycling and Reuse: The Environmental Benefits webpage from the US EPA provides excellent guidance on the environmental benefits and potential reuse options.

1.8.9.0. Do you have good knowledge of the system installed, including size, location and operation?

Understanding your wastewater system will help ensure that it operates according to its design. Both regular maintenance and using the correct operating the system correctly will help prevent any damage to the natural environment.

1.8.10.0. Was your system (e.g., septic tank system) installed by a licensed contractor?

1.8.11.0. Do you regularly inspect your wastewater system to ensure effective operation?

Every winery should check their wastewater system regularly. A system that is not operating effectively can result in contaminants such as organic matter, nutrients or microorganisms entering the natural ecosystem. These events are considered "spills" and they may result in serious legal consequences. Routine inspection and preventative maintenance can reduce the likelihood of spills or show 'due diligence' in the event of one.

1.8.12.0. Do you record the results of your inspections?

1.8.13.0. Have all staff been trained on the "dos and don'ts" of the septic tank system?

Many chemicals can damage the septic system if they are flushed down the drain. Some may corrode the tank, while others may kill the crucial microorganisms that break down the organic material. If the system does not operate properly, it will lead to contamination of the soil and groundwater. To prevent this problem make sure staff know the "dos and don'ts" of the septic system through training and signage.

1.8.14.0. Do you have information in the washrooms advising people of what may not be flushed?

1.8.15.0. Do you have a grease trap installed?

1.8.16.0. Do you have a system in place to inspect and clean your grease traps?

1.9.1.0. Do you truck your wastewater off site?

1.9.2.0. Have you assigned responsibility for wastewater management to a member of your staff?

1.9.3.0. Have you obtained any required approvals from your regional or local municipality?

Wastewater requirements can vary by geography. In Prince Edward County, wineries not connected to a municipal system are required to place their wastewater in holding tanks and truck them to a wastewater treatment plant.

In other parts of the province, holding tanks may not be considered a permanent solution for sewage management by the Ministry of the Environment. On the other hand, wineries may wish to have a holding tank available on hand as a contingency measure.

In some instances, treated wastewater can be reused for toilets or irrigation. The Ministry of the Environment will consider site-specific applications for the re-use of effluent, taking into account appropriate safeguards. For further information, see *Eco-Winegrowing 101*.

Section 1-10: Stormwater

1.10.1.0. Has the wastewater system been designed so that stormwater does not enter the sanitary sewer or septic system? Is your stormwater system managed separately from the wastewater system?

Stormwater is an environmental problem that leads to increased run-off, erosion and contamination of our surface water. It can cause untreated sewage to enter our waterways and it can be heavily contaminated by oil, grease, fertilizers, pesticides and road salts.

Wineries can reduce the environmental impact of their stormwater by ensuring that their stormwater management system is separate from the sanitary sewer, letting stormwater flow over unpaved surfaces, treating stormwater before it enters surface water and removing all potential sources of contamination from areas near the stormwater system.

1.10.2.0. Do you know where all the stormwater drains are directed?

Knowledge of your storm water system is important for planning containment measures in the event of a spill. Ask the engineer who designed your storm water system for a copy of the blueprint to identify storm water drains and where they are directed.

1.10.3.0. Do you have a written record of all stormwater drains and where they lead to available on site?

1.10.4.0. Have you protected all stormwater drains from the possibility of contamination e.g. have mats or bungs set up?

1.10.5.0. Do you have an emergency plan established and posted to prevent a spill getting into the stormwater system? (e.g. Kitty litter or absorbant materials)

Any emergency plan should include the following to prevent a spill from getting into the containment system:
*emergency contacts
*containment procedure
*containment materials and their inspection

And if the spill reaches the natural environment:

*remedial action & procedures
*reporting procedures and requirements
*follow-up and monitoring programs
*training and communication

Remember that if the spill reaches the natural environment, the Ministry of the Environment requires that the natural environment be returned to its state before the spill occurred.

1.10.6.0. Are procedures visibly posted in the event a spill HAS entered the stormwater drain?

For effective action, emergency procedures should be posted and staff should be trained on these procedures. Also, if the spill reaches the natural environment, the contact information for the Spills Action Centre should be readily available.

1.10.7.0. Have you considered capturing and collecting stormwater runoff (from paved or roofed areas) for irrigation, landscaping or toilets?

Stormwater can be put to productive use. It should be collected seperately from the wastewater to avoid overflows of the wastewater collection and treatment systems and to avoid disruptions to the function of the treatment systems.

The collection of stormwater can be useful in the dilution of winery wastewater (to modify pH and lower salinity).

Using collected stormwater runoff (particularly paved and roofed areas) for use in gardens, etc, rather than relying on groundwater sources can substantially reduce water costs at the winery.

1.10.8.0. Do you have checks in place to ensure that stormwater does not contaminate waterways, for example, interceptors in catch basins?

Section 1-11: Water Use and Conservation: Crush and Presses

1.11.1.0. Do you monitor and repair leaks regularly (eg. weekly) to keep the water system in good repair?

1.11.2.0. Are shut-off valves (or trigger hoses) used on all hose ends in all production areas?

The *Sustainability Newsletter- Water Quality* references the Wine Business Monthly article Water Saving Products outlines several water conservation measures for wineries.

1.11.3.0. Do you train all seasonal, cellar and laboratory staff in proper cleaning procedures and water conservation approaches?

The *Sustainability Newsletter- Water Quality* references the Wine Business Monthly article Water Saving Products outlines several water conservation measures for wineries.

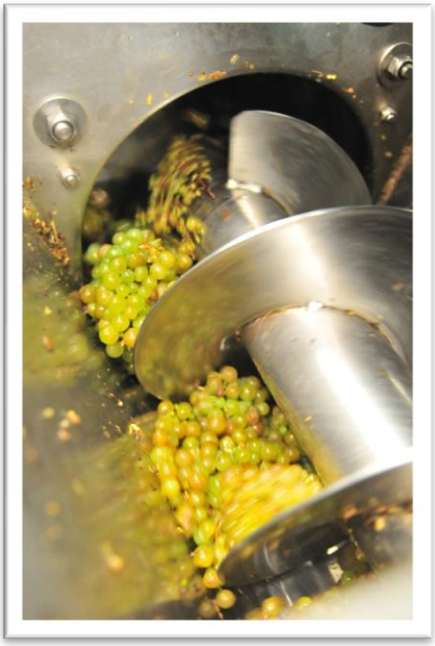
Section 1-12-18: Water Use and Conservation: Tanks / Barrels / Bottling / Cellars / Laboratories / Landscaping

1.12.1.0. Do you pre-clean and remove large material before washing?

1.12.2.0. Do you have a cleaning procedure developed for the crush and press that reduces water use? E.g. pressure washer

1.12.3.0. Have you investigated caustic reclamation and reuse?

1.13.1.0. Have you investigated alternative cleaning methods (for example high pressure spray or steam) for winery cleaning?



High temperatures and high pressure will break down debris and residues inside your tanks faster, often resulting in less water used to clean tanks. Please read the Wine Business Monthly article Tank Cleaning and Sanitation for more advice on tank cleaning procedures.

1.13.2.0. If water is used for cleaning tanks, have you estimated water use through measurement and calculations?

1.13.3.0. If water is used for cleaning tanks, have you estimated or calculated the organic content contributed to the wastewater stream? (i.e.: check Biological Oxygen Demand)

1.13.4.0. Have you installed high efficiency water nozzles to reduce water used in tank cleaning?

1.13.5.0. Have you investigated reusing rinse water?

1.13.5.1. If identified, have you implemented reusing rinse water based on your system set up and regulations?

1.14.1.0. Have you investigated and continue to investigate cleaner production techniques to reduce the amount of water used in barrel cleaning?

1.14.2.0. Have you reduced water use by installing high pressure/low volume nozzles for barrel washing?

1.14.3.0. Do you control and monitor the temperature of the water?

1.14.4.0. Do you track and record the amount of water used in barrel washing?

1.14.5.0. Do you fill each barrel to the top with fresh water to detect leaks and to seal?

1.14.6.0. Have you investigated water conservation methods for barrel testing e.g. vacuum testing?

1.15.1.0. Do you know how much water you use in bottling?

1.15.2.0. Do you have established cleaning times for hot and cold water cleaning?

1.15.3.0. Do you use water conservation methods when cleaning? (For example: steam)

1.15.4.0. Do you investigate alternative cleaning technologies? (For example: CIP systems)

CIP or clean in place systems, utilize pumps to wash bottles with high pressure water, steam or detergents. These systems reduce the amount manual labour for staff and some systems may reduce water use for bottle cleaning.

Just remember that if you use detergents, the rinse water should be tested (pH) to ensure that no detergent is left in the bottles. Additionally, you should look at more environmentally friendly detergents that don't contain harmful chemicals such as phosphates, chlorides or nitrates.

More information on cleaning and sanitation methods can be found in Appendix D of Comprehensive Guide to Sustainable Management of Winery Water and Associated Energy from the Wine Institute.

1.16.1.0. Have you investigated the method of water cleanup in cellar area?

1.16.2.0. Have you implemented technologies to improve cleaning and water use? (Eg. Epoxy floor)

1.17.1.0. Do you know how much water is used in the lab?

1.17.2.0. Are faucets on sinks and rinse tanks fitted with water-saving devices (such as flow restrictors)?

1.17.3.0. Have you investigated techniques for reducing water use?

1.18.1.0. Have you made choices for landscaping that minimize the need for water?

1.18.2.0. Have you installed an efficient watering system, for example, a timer?

1.18.3.0. Do you apply mulch on all garden beds to suppress weeds and reduce water use?

Section 2: Solid Waste Management

Section 2-1: Training and Leadership

2.1.1.0. Do you train all staff of the company expectations; to reduce the amount of waste produced, reuse material and recycle?

Staff play a key role in waste reduction and diversion strategies. Their actions control the success of waste diversion programs. Training and education of staff is crucial in ensuring that these strategies are implemented.

2.1.2.0. Do you encourage staff to identify innovations to reduce waste?

2.1.3.0. Do you encourage your suppliers to minimize the amount of packaging that they use, and to incorporate recyclable materials in their packaging?

2.1.4.0. Do you know how much recyclable material you capture and recycle?

While most wineries are not required to conduct a waste audit or develop a waste reduction work plan, according to O. Reg 102/94. Measuring and monitoring the waste you generate, through waste audits, can be extremely in lowering your environmental impact. They will allow you to establish a baseline quantity of waste production, establish a plan to reduce waste and monitor the effectiveness of your waste diversion programs.

The Ministry of the Environment provides guidance on waste reduction workplans and waste audits in A Guide To Waste Audits And Waste Reduction Work Plans For The Industrial, Commercial And Institutional Sectors

2.1.5.0. Have you added more items that can be recycled to increase the amount of recycled materials?

Section 2-2: Fruit Waste – Pomace (or Marc)

2.2.1.0. Do you know how much marc is produced in your winery?

Pomace, or marc, are the stems, skins and seeds left after the grapes are crushed and pressed. Pomace does not include the material at the bottom of the tanks (lees) which is usually much wetter than the marc and needs to be managed differently.

2.2.2.0. Have you considered alternatives such as distillation of the marc or developments of other products?

2.2.2.1. Have you implemented alternatives? (eg. Bio fuel, animal feed, etc.)

2.2.3.0. Is your marc composted onsite or shipped for conversion into compost and organic fertilizer?

The Ministry of the Environment has confirmed that material produced onsite, i.e., marc, can be composted onsite with no additional approvals required.

2.2.4.0. If you apply marc to land, do you comply with the protocol for the Utilization of Waste Fruits on Agricultural Lands available through the Ministry of the Environment?

Section 2-3: Tank Bottoms, Lees and Musts

2.3.1.0. Do you apply this material to land?

The Ministry of the Environment has advised that a winery can seek approval for the application of materials from tank bottoms, lees and musts. If it is in liquid form then it may be applied as a soil conditioner to land. It must pass a slump test. Before applying material to land, advice and approval must be first sought from the Ministry of the Environment office.

2.3.2.0. Have you considered alternative reuse or recovery including distillation of this material?

2.3.2.1. Are you recapturing this material? (E.g. Rotary vacuum extraction of the lees)

Section 2-4: Diatomaceous Earth

2.4.1.0. Have you researched cleaner production techniques and equipment that means you do not have to use diatomaceous earth? (E.g. Crossflow filtration)

By using crossflow filtration systems, you will produce much less waste than conventional filtration, such as using filter pads or diatomaceous earth. It utilizes a membrane, where the wine flows across the membrane, known as permeation, and the contaminants are retained by the membrance, known as permeate. More information on crossflow filtration can be found in Product Review Update: Cross-flow Filtration and Crossflow Filtrations Systems, both published by Wine Business Monthly

2.4.2.0. Have you implemented cleaner production techniques for filtering processes?

2.4.3.0. Do you measure and record the amount of diatomaceous earth that you use each year and track year over year?

2.4.4.0. Do you include diatomaceous earth in composting material and apply it to land, in compliance with all guidelines? (This is currently under review by OMAFRA)

Section 2-5-11: Glass / Paper Products / Plastics / Chemical Containers / Cork / Metals Recycling

2.5.1.0. Do you send all appropriate broken glass bottles in the bottling line to recycling?

Not all glass materials can be recycled. Some types of glass, such as pyrex, a type of glass capable of being heated to very high temperatures cannot be recycled. These need to go to waste containers.

2.5.2.0. Do you regularly review bottling line operations to reduce waste including glass, packaging, glues and sealants (including cork)?

2.5.3.0. Do you evaluate containers for wines to identify lighter and more energy efficient packaging, for example, alternatives to glass bottles or lighter bottles?

Following the LCBO lightweight glass standard is an example of finding lighter and more energy efficient packaging for wines. Another example of more energy efficient packaging includes the bag-in-a-box, which carries more wine in each container and reduces the total amount of packaging.

2.5.4.0. Do you collect and facilitate collection of bottles from tasting bar and customers and return to appropriate facility for recycling?

2.6.1.0. Do you recycle all cardboard in production areas?

The best point to recycle this material is directly in the production areas, in particular your shipping/receiving areas. Wineries should have a clearly labeled bin for corrugated cardboard so it can be separated from waste immediately its contents are removed.

2.6.2.0. Do you reuse office paper where appropriate and recycle spent paper?

There are two sides to every page. If staff needs to take rough notes staff should use the second side of the paper before it is recycled. Place reminders near the printers and recycle bins to encourage staff to use single sided paper as scrap.

2.6.3.0 Do you use double-sided printing in the office where appropriate?

Many printers will automatically double side pages. Talk to your computer system administrator about setting double sided printing as your default setting in the office.

2.6.4.0. Do you reduce the amount of paper consumed by using electronic means wherever possible (including publicity)?

2.6.5.0. If you use paper towels in washrooms, do you use recycled, unbleached and non-printed paper?

2.6.6.0. Do you minimize extra paper product waste in packaging and production through innovation, for example, by exploring more efficient packaging and marketing approaches?

2.7.1.0. Do you minimize your purchase and use of plastic packaging, for example, unnecessary plastic wrapping? Do you use environmentally friendly bags, or offer bags as an option?

You and your suppliers can make a difference. Offer reusable bags to customers and speak to your suppliers about eliminating excessive packaging in the products they send.

2.7.2.0. Do you recycle all plastic from the winery using appropriate containers?

Clearly labeled and accessible source separation bins will help staff remember and identify opportunities to recycle plastic containers. Remember, if it is not easy, then staff won't do it.

2.8.1.0. Do you consider environmental and health impacts of chemicals (including cleaning material) when you purchase them?

Several organizations often assess the impact of consumer products. Look for certifications such as GreenSeal, EcoLogo, Green Guard and the U.S. EPA Design for the Environment, for products that are safer for your staff and the environment.

2.8.2.0. Do you purchase concentrated versions, and use returnable or refillable containers, wherever possible?

Concentrated products are equally effective but require less packaging and less transportation than the normal formulations of these products.

2.8.3.0. Do you recycle chemical containers to the appropriate place wherever possible? (Eg. Pesticide containers returned to supplier.)

2.9.1.0. Do you collect all used corks for recycling?

2.10.1.0. Have you investigated pallets made from recycled plastic?

2.10.2.0. Do you repair pallets and reuse and recycle them wherever possible?

2.11.1.0. Do you separate metals out of the waste stream for recycling?

Metal is often one of the most valuable components of the recycling stream due to a high demand for virgin material and the fact that its quality does not degrade when it is recycled.

2.11.2.0. Do you consider the ability to recycle material when making decisions about closures, for example, corks or caps?

There is still no consensus about the most sustainable choice of closure. The best a winemaker can do is by being informed and make their own decisions. Check out these articles on the debate for more information: Comparing the same wine sealed with cork and screw from Dr. Jamie Goode and Cork Screw Top Wine Debate, from the Huffington Post.

2.11.3.0. Do you recycle steel drums where the service is available?

2.11.4.0. Do you recycle any metal cans and aluminum-based products?

Section 2-12: Cooperage

2.12.1.0. Do you buy barrels created from sustainably managed forests?

What are sustainably managed forests? They are forests that are designed to maintain the productive capacity (or stock of trees) while conserving the natural ecosystem in the managed forests. Ask your supplier or check the product labels for certifications. The most common certifications you may see in Canada are:
*Programme for the Endorsement of Forest Certification (PEFC)
*Forest Stewardship Council (FSC)
*CSA- Canada's National Sustainable Forest Management Standard

2.12.2.0. Do you have an end-use policy for barrels other than disposal? (Eg. Selling for reuse, made into chips)

Section 3: Material Handling

Section 3-1: Hazardous Waste Materials and Disposals

3.1.1.0. Do you know the potential hazards and sources of your waste materials in your business?

The Ministry of the environment has recently introduced the Toxics Reduction Act, it is designed to:

- Manage and reduce the use and creation of toxic substances
- Inform the public about toxics

Presently, wineries are unlikely to be covered by this act. However, eliminating what toxic substances you can within your winery makes sense for the safety of the environment and the safety of your staff.

3.1.2.0. Do you measure, monitor and track materials that could be classified as Liquid Industrial and Hazardous Waste?

Hazardous waste is defined as any waste that is corrosive, ignitable or toxic and harmful to human health and the environment. Hazardous wastes range from common household products like cleaning products, used oil and oil-based paints to complex chemicals used in the dry cleaning industry and during manufacturing processes. Further information on hazardous waste may be found on the Ministry of the Environment's Business Hazardous Waste webpage.

Hazardous wastes in the winery setting can include waste cleaners, solvents, cleaners, waste pesticides, oils and lubricants. Increasingly, as wineries expand and do more in-house laboratory work, they need to be aware of and manage potential hazardous wastes.

3.1.3.0. Do you identify individual staff as responsible for specific waste streams for recycling or disposal, for example, hazardous waste?

3.1.4.0. Do you record the volume or weight of hazardous waste produced?

3.1.5.0. Have you checked to see if you are a generator of hazardous waste as defined by the Ministry of the Environment?

Regulation 347 and 558/00 outlines the process for deciding if an operation is generating hazardous waste or industrial waste:
"Regulation 347 requires waste generators to evaluate their waste and if found to be Hazardous or Liquid Industrial to register them with the Ministry of the Environment (MOE). It is an offence to store, process, dispose or transport such wastes in Ontario unless a Generator Registration document for the generator has been posted on the Hazardous Waste Information Network (HWIN), accessible from the MOE website."

Appendix B-28 of the Registration Guidance Manual for Generators of Liquid Industrial and Hazardous Waste outlines the waste classes that need to be considered. They also provide

guidance for Characterizing Hazardous and Liquid Industrial Wastes. *Eco-Winegrowing 101* outlines several types of hazardous and industrial wastes that may be common in the wine industry:

WASTE TYPES TO BE MONITORED
(By Waste Class Code assigned by the Ministry of the Environment)

114- Other inorganic acid wastes	Off-specification acids; by-product hydrochloric acid; dilute acid solutions; acid test residues
148- Miscellaneous waste inorganic chemicals	Waste inorganic chemicals including laboratory, surplus or off-specification chemicals that are not otherwise specified in this table

ORGANIC WASTES

212 -Aliphatic solvents and residues	Acetone, methylethylketone and residues, alcohols, cyclohexane and residues
213 Petroleum distillates	Varsol, white spirits and petroleum distillates
241Halogenated solvents and residues	Spent halogenated solvents and residues such as perchloroethylene, halogenated still bottoms; residues and catalysts from trichloroethylene and carbon tetrachloride (dry cleaning solvents); halogenated hydrocarbon manufacturing or recycling processes
251 Waste oils/sludges (petroleum based)	Oil/water separator sludge; dissolved air flotation skimming; heavy oil drainage; slop oil and emulsions
252 Waste crankcase oils and lubricants	Soluble oils; waste-cutting oils; machine oils
263-Miscellaneous waste organic chemicals	Waste organic chemicals including laboratory surplus or off-specification chemicals that are not otherwise specified in this table

COMPRESSED GASES

331 Waste compressed gases, including cylinders	Methane (natural gas); nitrous or nitric oxide; propane; butane

3.1.6.0. If you have sufficient quantities of hazardous waste, then have you registered with the Ministry of the Environment?

There are some exemptions for small quantities of waste generated, depending on which type of waste is involved. For example, if you have Hazardous Industrial Waste, "the small quantity exemption is 5 kg per month. If you generate more than 5 kg in a one-month period, or accumulate more than 5 kg on your site over any period, registration is required. Empty containers and inner liners are not hazardous."

If you hold more than the allowed small quantity exemption of this waste for 90 days, you must complete a Notice of Storage of Subject Waste within 5 days of the 90 day storage period.

3.1.7.0. Do you comply with all Workplace Hazardous Materials Information System (WHMIS) regulations, including training and storage requirements for materials covered by legislation, i.e., Compressed gas, Flammable and Combustive material; Oxidizing material

WHMIS requirements "place an onus on employers to ensure that controlled products used, stored, handled or disposed of in the workplace are properly labeled, MSDSs are made available to workers, and workers receive education and training to ensure the safe storage, handling and use of controlled products in the workplace."

Further guidance for WHMIS can be found in the *Sustainability Newsletter: Winery Management* and *Eco-Winegrowing 101*, available through the Wine Council of Ontario member's site.

3.1.8.0. When you use any product classified under WHMIS, do you consider alternative and more environmentally friendly products when they are available?

Wineries should look to replace the use of hazardous materials with more benign substances, where technically and economically feasible. Particularly, many cleaning products and pesticides can be hazardous. Certifications such as EcoLogo, Green Seal, Green Guard, and EPA Design for the Environment can assist you in identifying product alternatives that are less harmful to staff and the environment.

3.1.9.0. Do you ensure that all staff have appropriate WHMIS training?

All staff that have access to or may be exposed to hazardous chemicals should be trained in the appropriate areas of the WHMIS system. Specifically, employers must have labels for all controlled products, obtain MSDS for these products and educate their workers on the WHMIS program. For more information on employer requirements under WHMIS please visit http://www.labour.gc.ca/eng/health_safety/prevention/employer.shtml

3.1.10.0. If you have propane tanks onsite, do you ensure that you manage your propane tanks in accordance with regulations?

Improperly designed fuel storage tanks can results in leaks or spills that will damage the natural environment significantly. For advice on the proper design and operation of petroleum fuel storage tanks please visit the Storage of Petroleum Fact Sheet from OMAFRA.

3.1.11.0. Do you recycle tires, for example, by taking tires to the depot for recycling?

To find tire disposal depots in your area please http://rethinktires.ca/#sthash.auRmX7eE.dpbs

3.1.12.0. Have you tried to move from batteries for all small household style or office equipment by using recyclable, rechargeable, solar operated or some other non-hazardous system?

3.1.13.0. Do you ensure all non-rechargeable or vehicular batteries are collected and taken to a hazardous waste collection site, or can be recycled where available?

You may be able to bring your used batteries to the household hazardous waste depots in the waste diversion program of your local municipality if you produce less than the small quantity exemption. Otherwise, all batteries must be classified and registered with the Hazardous Waste Information Network and disposed of as hazardous and liquid industrial waste.

3.1.14.0. Do you consider environmental and safety issues when you choose your paints, for example, whether to use oil-based or water-based paints?

3.1.15.0. Do you use appropriate disposal methods for paints and thinners?

You may be able to bring your used paint and thinners to the household hazardous waste depots in the waste diversion program of your local municipality if you produce less than the small quantity exemption. Otherwise, all paints and thinners must be classified and registered with the Hazardous Waste Information Network and disposed of as hazardous and liquid industrial waste.

3.1.16.0. Do you choose non-aerosol dispensers in preference to aerosol cans?

Despite the ban of chlorofluorocarbons (CFC), aerosol cans still contain substances that act as ozone depleting substances and greenhouse gases.

3.1.17.0. Do you store toxic or combustible aerosol products in a location that keeps material protected?

Keep you aerosol products away from sources of heat and anything that may puncture the containers, or they will become a serious risk to health and safety at your winery.

Section 3-2: Petroleum Products

3.2.1.0. Do you or your contractors if they are undertaking maintenance, dispose of lubricants, oils, coolants and solvents used in your business in accordance with regulations?

You may be able to bring your used oils, lubricants, coolants and solvents to the household hazardous waste depots in the waste diversion program of your local municipality if you produce less than the small quantity exemption. Otherwise, all used oil, lubricants, coolants and solvents must be classified and registered with the Hazardous Waste Information System and disposed of as hazardous and liquid industrial waste.

3.2.2.0. Do you use oil as a dust suppressant on roads or footpaths?

Waste oil cannot be used as a dust suppressant. The Ministry of the Environment advises that Regulation 347, Section 5, subsection 4 prohibits the use of this material. However, some oil

products are able to be used for dust suppressant. Contact your local Ministry of the Environment office for further information.

Section 3-3: Fuel Storage

3.3.1.0. Do you know the location of all bulk fuel storage tanks both underground and above ground?

Inappropriate fuel storage and use can have significant risks to the environment both in terms of contamination of water and soil, as well as fire risk.

The Canada-Ontario Environmental Farm Plan has a very detailed checklist for petroleum products. In addition, you can see an outline of actions to reduce these risks at the related Fact Sheet, Infosheet #5 – Storage of Petroleum Products produced by OMAFRA, updated in March 2005.

3.3.2.0. Have you mapped all fuel storage areas, including propane tanks?

3.3.3.0. Have all tanks been installed by a registered contractor or under the supervision of a registered contractor?

Installers of fuel tanks have their own requirements which also assist in protecting the environment and must be adhered to. Should you purchase a property that has existing oil tanks then you may wish to obtain clarification whether the tanks have been installed appropriately. Ministry of the Environment advises that "buyer beware" applies particularly to old tanks. The Technical Safety and Standards Authority can provide further information on requirements.

3.3.4.0. Do you ensure that all above-ground tanks have protection to catch all spills including a lip or containment wall where required?

3.3.5.0. Do you dispose of all obsolete tanks in a correct manner, including draining all contents and disposing of them appropriately, and decommissioning tanks?

3.3.6.0. Do you track and record the amount of all fuel used and identify any losses in all underground tanks?

Section 3-4: Emergency Response

3.4.1.0. Do you have clean-up materials at hand in case of spills, including materials like kitty litter or bentonite absorbent?

These clean up materials should be inspected and replace, as needed, to ensure that it is ready for a spill at all times.

3.4.2.0. Do you have the phone numbers of appropriate organizations nearby for any emergency?

The contact information for the Spills Action Centre, and your local fire, police and hospital should be readily available.

3.4.3.0. Do you train staff in handling, spill prevention, control and clean-up?

Every employee should be trained on WHMIS and have access to the Material Safety Data Sheets. The Material Safety Data Sheets outline handling, personal protection and emergency response for the specific hazardous chemicals that are used in your winery.

Section 3-5: Cleaning Suppliers

3.5.1.0. Do you consider environmental and health impacts of cleaning products before you purchase them?

Several organizations often assess the impact of consumer products. Look for certifications such as GreenSeal, EcoLogo, Green Guard and the U.S. EPA Design for the Environment, for products that are safer for your staff and the environment.

3.5.2.0. Do you ensure that all product labels are read and complied with before usage?

3.5.3.0. Do you purchase cleaning products with low toxicity where available?

3.5.4.0. If you use outside cleaning contractors, do you specify the use of low toxicity cleaning materials?

Section 4: Energy Efficiency

Section 4-1: Planning and Monitoring

4.1.1.0. Have you identified a person or established an energy efficiency team responsible for energy oversight and management?

Assigning responsibility for the energy management programs will ensure that there is oversight, monitoring and follow-up on energy use programs. Ideally, part of the team should include someone from senior management who can enthusiastically support the program and avoid "roadblocks" to the program's success.

4.1.2.0. Do you have information on energy use or costs in your winery?

Energy bills from your utility companies are an excellent place to start gathering this information.

4.1.3.0. Have you undertaken an energy efficiency audit of the whole winery within the last 5 years, either internally or with consultants?

Energy audits include a review of your energy bills to determine your baseline energy costs; a walk-through assessment of your facility; and a review of building material and equipment. The audit will identify areas where energy is lost and your winery can save money by implementing energy saving practices and technology. Many utility companies offer financial assistance to companies who wish to conduct an energy audit.

4.1.4.0. Do you attend workshops on energy efficiency and/or keep up to date with energy efficiency technologies? Do you engage professionals, and or attend workshops or field days, to investigate the feasibility of all alternative sources of power and government grants?

Several organization offer workshops or financial incentives to improve energy efficiency, which include:

Natural Resources Canada- Dollars to $ense
Niagara Sustainability Initiative
Ontario Power Authority- Case Studies on Energy Efficiency
The Electricity Insider Newsletters from IESO (Independent Electricity System Operator)
Managing your Electricity Cost: a guide for Business, from IESO

4.1.5.0. Have you taken advantage of government funding programs to assist in increasing HVAC energy efficiency?

The Retrofit Program through the Ontario Power Authority may provide help with improving the energy efficiency of your HVAC system. Contact your local distribution company to take advantage of these incentives.

4.1.6.0. Do you have a formal monitoring and recording system to check energy use for the winery?

If you don't monitor your energy use, you cannot manage it. Measuring use will help you develop a plan to become more energy efficient and measure your progress towards meeting your energy efficiency goals.

4.1.7.0. Do you compare energy consumption year over year per unit of production?

4.1.8.0. Do you have a scheduled plan incorporated into the capital budget to increase energy efficiency per unit of production?

4.1.9.0. Do you implement incremental energy efficiency improvements during regular maintenance?

4.1.10.0. Have you identified how to convert the energy savings to greenhouse gas (CO2) savings?

Environment Canada offers emission factors to help you convert your energy savings into greenhouse gas savings. Calculate greenhouse gas savings for each type of greenhouse gas emission generating activity (fuel combustion from gas, diesel, or natural gas; industrial processes; electricity use; agriculture; waste).

1. Determine baseline energy use
2. Determine current energy use
3. Calculate energy savings
4. Calculate greenhouse gas emissions for CO2, N2O and CH4 using emission factors
5. Convert greenhouse gas emissions into a common unit known as carbon dioxide equivalents using each gases global warming potential
6. Sum the converted greenhouse gas emissions for each greenhouse gas
7. Sum the converted greenhouse gas emissions for each emission generating activity

The emission factors, global warming potentials and other guidance resources can be found in the Greenhouse Gas Emission Quantification Guidance website. With more emission generating activities, come more complex calculations. There are several carbon accounting firms that offer their services to do these calculations for you.

4.1.11.0. Have you identified ways of selling your greenhouse gas savings, if available?

Carbon offsets are verified emissions reductions that may be purchased or sold. Some energy use reductions may qualify. Certifying these reductions can be expensive, and it may make sense for very large projects or several companies working together to build a joint application. To become certified the project must achieve reductions that are:

1. Real
2. Quantified
3. Validated and verified
4. Permanent
5. Additional, where projects reduce greenhouse gas emissions more than projects that maximize economic savings

More information on verified emission reductions can be found at www.v-c-s.org

4.1.12.0. Do you consider energy efficiency and Best Practice in new winery design or expansion?

Please review *Energy Best Practices for Wineries* for ideas on implementing the best practices for energy efficiency in your winery.

4.1.13.0. Do you implement energy efficiency and Best Practice in new winery design or expansion?

Section 4-2: Energy Economics

4.2.1.0. Do you understand the tariff system used to charge for energy?

Electricity prices are variable costs that are different for each time of the day. The cost of electricity is highly dependent on the demand for electricity. As result, the cost of electricity is highest during periods of peak demand, often between 7 and 10 in the morning and between 3 and 7 at night.

More information on the tariff system, current electricity demand and the current electricity price can be found on Independent Electricity Systems Operators website.

4.2.2.0. Do you keep aware of the changes in the energy market in Ontario?

Remember to review the websites of your local utility provider, as well as the Ontario Power Authority and the Independent Electricity System Operators and the Ontario Energy Board for updates on the energy market in Ontario

4.2.3.0. Have you reviewed the rates being charged for energy and negotiated a better price structure keeping the environment in mind?

4.2.4.0. Have you identified opportunities to switch to off-peak power and reduced electricity charges for your business?

You local utility offers incentive programs to shift electricity usage away from peak hours. Please contact your local utility about their peak-saver PLUS, demand response, and other incentive programs for shifting electricity usage away from peak hours. More information about these programs can be found at https://saveonenergy.ca/business

4.2.5.0. Have you taken advantage of government grants for audits and to increase energy efficiency?

Several programs offer incentives for energy efficiency. Please check *Energy Best Practices for Wineries* for more details.

Section 4-3: Refrigeration Systems, Tanks and Lines

4.3.1.0. Have you or a consultant conducted a refrigeration system energy audit within the last five years?

4.3.2.0. Do you separately consider refrigeration when implementing and considering energy efficiency?

4.3.3.0. Do you have a proactive program for preventative maintenance, for example, by ensuring regular repair and maintenance of energy using equipment, structured service shut-downs and monitoring energy accounts?

A proactive housekeeping program for your refrigeration system can include scheduling regular inspections and maintenance of equipment. Structured shutdown of equipment means that you can build in times when equipment will be turned off and maintenance, repair or replacement is undertaken. This compares to waiting until equipment is broken before maintenance takes place.

4.3.4.0. Do you identify opportunities for more operations in off-peak, low tariff times, for example, using "overchilling" refrigeration in off peak load times?

"Overchilling" is a technique being trialled in Australia where wine is over-chilled during off peak times and the refrigeration is left off during peak times. The idea is to shift more cooling to out-of-peak tariff loads. While this does not have an impact on the amount of energy used, by shifting it to off peak operations, savings on the monthly bills can be made. It is important to assess whether this is appropriate for each winery operation, particularly to ensure that wine quality is not impacted. For more examples, see A Guide to Energy Efficiency in Australian Wineries (pages 22, 29, 30).

4.3.5.0. Do you annually review your cooling and refrigeration systems to ensure that the equipment is designed and run for optimal efficiency?

4.3.6.0. Whenever there is an increase in production requiring investment in equipment, do you review the existing and proposed approach to identify opportunities for energy efficiency and reduction in costs?

Often it is not cost effective to purchase new energy efficient equipment until the old equipment is at the end of its useful life. Incorporating the energy efficiency of new equipment into your purchasing decisions will save you money on energy costs in the long run. Look specifically for EnergyStar rated equipment or look at the EnerGuide label when making a purchase.

4.3.7.0. Do you identify ways to reduce the load on the refrigeration system, for example, keeping chiller doors closed?

4.3.8.0. Do you consider fruit temperature at harvest in relation to energy use, for example, night harvesting of fruit?

4.3.9.0. Do you identify new technologies that minimize energy consumption while maintaining or improving wine quality, e.g., low energy tank agitators, motors, drives and pumps?

New technologies are being introduced all the time. Keeping on top of wine industry publications such as Wine Business Monthly and Vineyard and Winery Management to stay informed about all the latest trends in the wine industry, including the latest technology.

4.3.10.0. Do you locate tanks to reduce heating or cooling needs?

4.3.11.0. Do you identify opportunities for increased energy efficiency for heating and cooling of tanks?

4.3.12.0. Have you insulated all of your temperature controlled tanks?

Why waste the energy you are putting in to heating or cooling your tanks. Insulation keeps more of the energy you put into your tanks where it should be, inside the tank, rather than the surrounding environment.

4.3.13.0. Have you insulated all your Glycol lines?

Section 4-4: Lighting – Shops and Facilities, Offices and Outdoors

4.4.1.0. Have you organized a review of lighting and removed or disconnected unnecessary lights within the last five years?

Unnecessary lighting can increase can cause several problems in your winery. On top of additional electricity costs, it contributes to problems with light pollution which affects bird populations, can become a nuisance for neighbors, and people's enjoyment of the night skies.

4.4.2.0. Do you organize regular inspection of all lighting?

Dust and grease on lighting fixtures can reduce the light that reaches the target area by as much as 30 per cent. Light fittings should be regularly cleaned to ensure you are lighting your winery effectively.

4.4.3.1. Have you installed high efficiency lighting – in the office?

4.4.3.2. Have you installed high efficiency lighting – in the labs?

4.4.3.3. Have you installed high efficiency lighting – for outside lighting?

4.4.3.4. Have you installed high efficiency lighting – in production area?

4.4.3.5. Have all the above been installed?

4.4.4.0. Have you implemented where appropriate automatic lighting technologies, for example, motion sensors and timers?

Putting sensors or timers on lighting in certain areas will reduce energy costs by ensuring that lights are only used during periods of activity.

4.4.5.0. Do you consistently remind staff to turn off lighting and equipment not in use? (E.g. Reminding signs)

Staff can be a critical component of successful sustainability programs. Their actions have the greatest effect on the success of any energy efficiency program you put in place. Please read

Team up! for Energy Savings. A Guide for Building an Energy-Saving Culture in the Workplace from Natural Resources Canada for guidance on how to engage staff at your winery.

Section 4-5: Heating, Ventilation and Air Conditioning (HVAC)

4.5.1.0. Have you had a consultant and or contractor undertake a HVAC system audit in the last five years?

4.5.2.0. Do you conduct annual preventative maintenance for the HVAC system?

Regular preventive maintenance of your HVAC system will make sure it is operating at peak performance. It ensures that you are being energy efficient and avoiding indoor air quality problems such as dust or mold in the ventilation system.

4.5.3.0. Do you annually check and maintain the building to reduce heating and cooling losses? For example, ensure that seals on windows are intact, and building cladding is well maintained?

4.5.4.0. Did you incorporate energy efficiency designs, such as passive solar energy and geothermal energy, into the building design or renovations wherever possible?

Passive solar and geothermal power take advantage of energy that is freely available to every winery.

Geothermal power is a heat pump that transfers heat in the ground through fluid filled pipes back into the building. The heat will be transferred into your building, during the winter months, and out of your building during the summer months.

Passive solar power captures the heat in the sun's rays and transfers the heat back inside the building. It can use various items such as water tanks or heat walls to capture this heat.

More information on passive solar and geothermal heating can be found in *Energy Best Practices for Wineries*

Section 4-6: Sustainable Power Sources

4.6.1.0. Do you consider alternative sources of power? (Eg. solar photovoltaic, passive solar hot water systems and wind power)

4.6.2.0. Do you purchase green power sources available through the electricity grid?

You can purchase and support renewable energy by signing a contract with an organization such as Bullfrog Power. By paying a little bit extra on your electricity bill, you support renewable energy projects, which lets the government know that you wish more renewable electricity sources on the grid. For more information on green power please visit: http://www.bullfrogpower.com/products/electricity.cfm.

4.6.2.1. Have you implemented alternative sources of power?

Section 4-7: Alternative Vehicle Fuel Sources and Technologies

4.7.1.0. Do you know and systematically track the amount of fuel used in the winery and for onsite vineyard?

4.7.2.0. Do you undertake a systematic review of your fleet, including sales vehicles, of monthly fuel consumption and maintenance?

4.7.3.0. Have you investigated alternative fuel sources and supplements including biodiesel, ethanol, propane or natural gas for the winery?

Many of the alternative fuel sources are cleaner burning and emit fewer greenhouse gases than conventional gasoline. However, you should check with your manufacturer or a mechanic to see if your vehicle is capable of handling a chosen alternative fuel source before making the shift. For example, while most vehicles can handle a 10% ethanol-gasoline fuel mix, higher purity blends and other alternative fuels can only be handled in specifically designed vehicles. More information on alternative fuels can be found on the Natural Resources Canada webpage Alternative Fuels.

4.7.4.0. Have you installed alternative fuel sources and supplements including biodiesel, ethanol, propane, natural gas or for the winery?

4.7.5.0. Do you purchase and use the most fuel efficient equipment of its type in vehicles and outside equipment in the wineries, for example, moving towards hybrid vehicle fleets when considering replacements?

Natural Resources Canada offers guidance on the most fuel efficient vehicles on the market. Visit Purchasing a Fuel Efficient Vehicle Guide from Natural Resources Canada.

4.7.6.0. Have you considered and purchased hybrid vehicles for use in fleet operations?

In the last few years, hybrid vehicles have become more available. These use a combination of gasoline and electric power. The electric power is generated through capture of waste energy, such as heat from braking, and typically do not require an electric outlet and recharging through external power sources. Most automobile manufacturers now produce a line of hybrid electric vehicles. Over time, the technology has demonstrated remarkable reliability. Take a look at this video from Consumer Reports.

If you are looking for a new hybrid vehicle, please review the Consumer Reports Recommended Buying Guide.

Section 5: Integrated Pest Management

Please note that this section is included for the management of landscaping areas.

Section 5-1: Pesticide Handling and Storage (gardens and grounds)

5.1.1.0. Do you report all major spills, fires or thefts involving pesticides to the Ontario Ministry of the Environment?

5.1.2.0. Do you have contact details available for the Ministry of the Environment Spills Action Centre and the local municipality if there is a pesticide spill that will affect the environment?

The Spills Action Centre can be reached 24 hours a day in case of a spill. Their contact information should be easily accessible for everyone at your facility as a part of your emergency response plan. They can be reached at 1-800-268-6060.

5.1.3.0. Do all assistants have formal pesticide training before they handle or use schedule 2 or 5 pesticides under supervision?

Formal training is essential for the safe storage and handling of pesticides. You or your assistants can obtain your pesticide certification through the Ontario Pesticide Education Program. They offer pesticide manuals, training programs and certification

5.1.4.0. Do you or your consultant have pesticides stored in compliance with all provincial regulations?

For both wineries and grape growers, it is important that pesticides be stored in a proper and safe manner. Under the Pesticides Act, it is illegal to store pesticides in unsafe conditions.

According to the OMAFRA Fact Sheet Farm: Pesticide Storage Facility pesticides must be stored so that:

*They will not impair the health or safety of any person.
*They will not have any contact with food or drink intended for human or animal consumption.
*They will not contaminate the natural environment or any other pesticides stored in the same area.
*Emergency telephone numbers, including the fire department, hospital and poison control centre (Ontario Poison Centre) are prominently displayed near the area where the pesticides are stored. Other important numbers include ambulance, physician, police and the MOE Spills Action Centre (1-800-268-6060). Although not specified in O. Reg. 63/09, it is also a good idea to post these important emergency numbers at the telephone closest to the storage area.
*A warning sign is prominently displayed near the area and at all entrances to where the pesticides are stored. Details about signage are discussed below.

They also recommend that your pesticide storage facility be a separate free standing structure. It should be planned so that:
*there is no contamination of food or drinking water

*fumes are vented to the outside atmosphere
*there must be an impervious floor and a curb that will contain spills, and chemical warning signs must be prominently posted.

More information on pesticide storage, handling and application can be found in *Eco Winegrowing 101* and OMAFRA's Best Management Practices: Pesticide Storage, Handling and Application.

5.1.5.0. Do you store your pesticides in a separate free-standing building or cabinet used only for pesticides that comply with regulations?

5.1.6.0. Do you store your pesticides so that there is an impermeable floor and a curb installed to contain leaks or spills?

5.1.7.0. Do you ensure human safety by having an appropriate locked storage system, warning signs, ventilation, respiratory equipment and protective clothing, emergency phone numbers posted and only labeled containers?

5.1.8.0. Have you ensured that your pesticide storage (or your consultant's pesticide storage) is well away from surface and groundwater sources, including wells?

Section 5-2: Mixing and Loading Pesticides (gardens and grounds)

Please note that this section is included for the management of landscaping areas.

5.2.1.0. Do you ensure that mixing and loading of pesticides are kept well away from natural water sources/courses?

You must make sure that you protect water supplies. It is an offense to contaminate surface and ground water with pesticides. To protect water supplies OMAFRA recommends in Pesticide Contamination of Farm Water Supplies: Recommendations on Avoidance, Cleanup and Responsibilities:

*always read the label every time before applying a pesticide product
*keep concentrates above floodplain in locked storage
*triple-rinse, and properly dispose of empty pesticide containers
*mix concentrates and water 30 metres or more from water supply
*use appropriate buffer zones and berms to avoid surface water contamination by spray drift or runoff waters
*draw drinking water supplies from a separate well
*do not spray within 10 metres of shallow wells or 5–10 metres of other water supplies.

Remember that labels can change from year to year. As such, you cannot assume that the precautions last year will be correct every year. It is essential to read the label.

5.2.2.0. Do you ensure no soil contamination from spills or leakage in the mixing or loading area?

5.2.3.0. Do you ensure that there is someone present at all times during filling?

5.2.4.0. Do you dispose of sprayer rinse water to crops not listed on the label?

5.2.5.0. Do you use returnable or refillable containers wherever possible?

5.2.6.0. Do you triple rinse or pressure rinse containers and take them to a recycling depot with paper and cardboard taken to a municipal landfill or wholesaler?

5.2.7.0. Are you aware that containers for pesticide must be rinsed and disposed of in an appropriate manner?

Section 6: Relationships with Neigbours and the Community

Section 6-1: Providing Information

6.1.1.0. Where appropriate, do you provide information in advance to neighbours about upcoming changes in the winery or vineyard? For example, do you knock on neighbours doors to talk to them, issue newsletters and/or provide an after-hours contact number?

A challenge to wineries and vineyard operators is how to ensure good relationships with both neighbours and the community over time. New neighbours may not be aware of the realities of running a farm enterprise or a winery. Certainly, if a development has promoted "views over the vineyards" then promoters are unlikely to point out that this may mean the use of tractors and equipment at early or late hours, the use of sprays, and noise from equipment, farm workers, bird bangers and visitors.

Making sure that neighbours are well informed can significantly reduce future problems. This could be as simple as a written information sheet, or perhaps inviting neighbours in for a look around and wine tasting, providing up-to-date information and contact information at the same time. Please refer to the *Eco-Winegrowing 101* and the *Sustainability Newsletter: Community and Neighbour Relations* for more information on establishing good relationships with your neighbours and the community

6.1.2.0. Is information available, if required, to the public about the winery processes so they understand how and why you do certain things through the year?

Section 6-2: Minimizing Nuisance

6.2.1.0. Have you identified all noisy equipment in the winery that may cause a problem offsite and installed baffles, or relocated them as necessary?

6.2.2.0. Have you worked to minimize light pollution from outside lighting?

Light pollution refers to unwanted light spilling from the targeted area. For example, a floodlight attached to a building may illuminate the grounds and access to the sheds, but may also light up a neighbour's bedroom. In more general terms, light can also spill upward and have an impact on native species. It also reduces the ability to see the night sky. To overcome this, well targeted lights with the appropriate designs that reduce upward glare, possibly combined with the use of sensors, can reduce the nuisance of unnecessary lighting.

Section 6-3-4: Community Action

6.3.1.0. Do you have a nominated person for managing the complaints process?

6.3.2.0. Do you log all complaints?

6.3.3.0. Do you ensure that all complaints are followed up on?

6.3.4.0. Do you have a written procedure for all staff to follow if they receive a complaint?

6.3.5.0. Do you ensure that all staff are aware of the process?

6.4.1.0. If you participate in the development of a watershed, do you encourage neighbours that share that watershed to participate in your efforts?

6.4.2.0. Do you participate in trials with conservation groups or other environmental groups on your property?

You local Conservation Authority protects and manages water and natural resources in partnership with government, landowners and other organizations. They are organized by watershed and developed specific plans for each watershed. Please contact your local Conservation Authority to view their watershed plan or to talk to them about any upcoming public consultations they may be holding.

6.4.3.0. Do you monitor proposals for development near your property and do you actively participate in discussions with potential developers and local government?

Section 7: Industry Standards Awareness

Section 7-1: Measuring Ripeness and Quality

7.1.1.0. Do you follow established grape sampling and testing protocol when accepting delivery loads of harvested grapes at your facility?

7.1.2.0. Do you consider at least one of juice Brix, Titratable Acid, and pH in grapes when deciding when fruit is mature?

7.1.3.0. Have you together with the grower frequently evaluated the grapes in the vineyard as they mature, i.e. for ripeness, disease, pests, and sensory testing?

7.1.4.0. Do you keep records of quality parameters including Brix, TA and pH, harvest dates, seasonal conditions and yield for comparison year after year?

Section 7-2: Tasting Wine

7.2.1.0. As a winery representative, do you provide feedback in the form of instruction to your grower on viticultural methods or suggestions to enhance quality?

7.2.2.0. Do you meet and taste your wine with the grower after harvest?

7.2.3.0. Do you participate in comparative tastings of domestic and international wines, on a regular basis?

7.2.4.0. Do you understand components of wine quality and how they can be traced back to the vineyard?

Section 7-3: Knowledge of Wine Industry

7.3.1.0. Are you aware of trends such as regulatory issues, harvests and consumption trends in the Ontario wine industry?

7.3.2.0. Do you know the trends in market share in Ontario?

The Grape Growers of Ontario offer guidance on the market share of grapes and wine in Ontario on their web-pages Grape Facts and Wine Facts.

7.3.3.0. Do you keep up to date with knowledge about winegrowing, winemaking and wine tasting techniques by reading current materials, and attending conferences and seminars?

Section 7-4: Viticultural Improvement

7.4.1.0. Do you assist in trials onsite to identify growing techniques that improve the quality of wine?

7.4.2.0. Do you work with the grower or consultants to identify viticultural practices that had a positive or negative impact on wine quality?

7.4.3.0. Do you understand the relationship between vine balance, vine health and wine quality?

Section 7-5: Food Safety and Security

7.5.1.0. Are you aware of the development of the Hazardous Analysis and Critical Control Points (HACCP) program with the Wine Council of Ontario?

HACCP is a formal management system to promote safe food production. It is founded on the belief that all physical, chemical and biological hazards to food safety can be prevented or mitigated. Wineries installing a HACCP system will:

a. Conduct a hazard analysis
b. Determine points in your process where a food safety hazard can be reduced to accept-able level or eliminated
c. Establish monitoring procedures
d. Establish critical limits
e. Establish corrective actions
f. Establish verification procedures
g. Establish record keeping and documentation procedures

For more information on the HACCP System please read the *Sustainability Newsletter: Winery Management* or review the food safety programs at OMAFARA.

7.5.2.0. Have you initiated or completed a partial portion of the HACCP program at your winery/processing facility?

7.5.3.0. Have you been fully certified in all areas of winery processing for HACCP?

Section 8: Expansion and Renovation of an Existing Winery

Section 8-1: Obtaining Approvals

8.1.1.0. Have you allocated enough time to obtain all approvals from all levels of government (for example, Ministry of the Environment, Conservation Authority, Municipality and the Niagara Escarpment Commission), if applicable?

8.1.2.0. Have you allocated enough time to obtain all approvals from all levels of government (for example, Ministry of the Environment, Conservation Authority, Municipality and the Niagara Escarpment Commission), if applicable?

8.1.3.0. Have you examined whether the expansion will lead to changes in your wastewater system? (E.g. Will you be exceeding the 10 000 litre per day limit and needing approval from appropriate organizations i.e. MOE?)

If you have changes to your wastewater systems, you may need to amend your Environmental Compliance Approval or Certificate of Approval. Please visit the Environmental Compliance Approval webpage to learn how to amend your approval.

8.1.4.0. Have you applied for amendments to permits for air emissions, for example, for boilers, where required?

If you have changes to your boiler system, you may need to amend your Environmental Compliance Approval or Certificate of Approval. Please visit the Environmental Compliance Approval webpage to learn how to amend your approval.

8.1.5.0. Have you considered how you will manage an increase of waste?

Section 8-2: Vegetation Management

8.2.1.0. Have you identified all vegetation that is to be retained, enhanced or removed?

8.2.2.0. Have you identified areas where new native vegetation is to be planted?

Planting new native vegetation in bare patches around your winery will help promote the establishment of native natural wildlife to the site and prevent invasive species from establishing themselves within your vineyard.

8.2.3.0. Have you considered linkages between vegetation to be retained and vegetation offsite to assist in wildlife movement?

The Greenbelt Act is designed to protect both farmland and natural habitat from the pressures of population growth and urban sprawl. Linking vegetation off-site to vegetation retained on-site will help link natural areas and let the wildlife move between green spaces and help keep their habitat continuous and maintain genetic diversity within the wildlife populations.

8.2.4.0. Have you considered the use of vegetation as buffers, particularly for neighbours?

Leaving strips of native vegetation, known as buffer strips, can serve various functions that are key to the sustainable management of your winery or vineyard property. Buffer strips can help reduce nuisances to neighbours by:

a. Acting as barrier to noise
b. Acting as a barrier to spray drift
c. Reducing run-off that can cause drainage conflicts
d. Increasing the set-back distances from farm activities such as pesticide spraying and noise deterrents for birds

The function of your buffer strip will depend upon its design. Please read OMAFRA Best Management Practices: Buffer Strips for more information on the function, design and maintenance of buffer strips.

8.2.5.0. Have you considered planting native vegetation near waterways to assist in water quality and maintaining fish habitat?

Section 36 of the federal Fisheries Act states that no one may deposit a deleterious (harmful) substance in water frequented by fish. Deleterious substances can include silt/dirt from farmland, pesticides, or fertilizers. Planting native vegetation helps maintain water quality and maintaining fish habitat by:

- Stabilizing banks and steep slopes to reduce erosion
- Increasing the soils ability to absorb moisture to reduce run-off
- Filtering organic and chemical pesticides to reduce the contamination of waterways

Section 8-3: Water Management

8.3.1.0. Have you identified locations of any pipelines for water coming onto the property or wastewater pipes that might have an impact on your renovation?

Your contractors must know the location of all waste water pipes and other utilities. Knowing their location will prevent damage to these lines on your site that can lead to spills.

8.3.2.0. Have you designed your renovations to keep any winery waste from getting into stormwater drains?

Winery waste contains a lot of organic material, which stormwater systems are not designed to treat. If this waste gets into the stormwater system, it may eventually reach and contaminate lakes, ponds, rivers or streams.

8.3.3.0. Wherever possible, have you kept buffers of un-mown native vegetation alongside waterways?

Un-mown native vegetation along waterways stabilizes the soil, increases water absorption and partially filters contaminants from run-off. It protects waterways from erosion and harmful contaminants polluting their waters.

Section 8-4: Site Design

8.4.1.0. Have you been able to make related changes to overcome longstanding problems, for example, noise and lighting concerns?

Often the best time to improve your winery's environmental performance is when you are expanding or renovating your winery. While some environmentally friendly upgrades may not be economically feasible during normal operations, you can make the most of your investment by investing in energy and water conserving upgrades during expansion or renovation.

Section 8-5: Building Envelope

8.5.1.0. Have you considered environmental issues in the design and construction of your renovations, for example, reducing energy consumption and managing water more efficiently?

8.5.2.0. Did you make reference to the Leadership in Energy and Environmental Design (LEED) program for assistance in design and construction decisions for your buildings?

The LEED Green Rating System is the most widely known green building standard in North America. They assess a variety of buildings for their environmental performance. The program assesses buildings for their environmental performance in areas such as:

*Sustainable sites
*Water efficiency
*Energy and atmosphere
*Building materials and resources
*Indoor environmental quality
*Innovation

Is LEED certification too expensive for your winery? You can still use the LEED Green Rating system as a framework for your new expansion or renovation. Many of the principles incorporated into the LEED system can help your winery save money, create a healthier workplace and attract better talent. Visit the Canadian Green Building Council for more information on LEED certification.

8.5.3.0. Have you designed energy and water systems to reduce the ongoing environmental impact and costs of the building's operation? (E.g. LEEDS or equivalent certified programs)

8.5.4.0. Have you been certified by LEEDS or an equivalent program? If so, please mark in comments.

Resources:

Wine Council of Ontario: www.winecouncilofontario.ca
Grape Growers of Ontario: www.grapegrowersofontario.com
Winery & Growers Associations of Ontario: www.wgao.ca
Canadian Vintners Associations: www.canadianvinters.com
Ontario Fruit and Vegetable Growers Association: www.ofvga.org

Wine Council of Ontario

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