DEPARTMENT OF
ECOLOGY
State of Washington

Economic Impact Analysis

Winery General Permit
State Waste Discharge General Permit for Discharges from Winemaking Facilities

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Executive Summary

This Economic Impact Analysis (EIA) estimates the costs of complying with the Winery General Permit ("permit"). It compares the costs of complying with the permit for small businesses to the costs of compliance for the largest 10 percent of businesses, to determine whether the permit disproportionately impacts small businesses. This analysis is required by state rule in Washington Administrative Code (WAC) 173-226-120, which directs Ecology to determine if the permit imposes disproportionate burden on small businesses, and if it does, to mitigate the disproportion to the extent that is legal and feasible.

WAC 173-226-120 requires the EIA to include:

- A brief description of the compliance requirements of the general permit.
- The estimated costs of complying with the permit, based on existing data for wineries intended to be covered under the general permit, including:
    - The minimum technology based treatment requirements identified as necessary under WAC 173-226-070.
    - The monitoring requirements contained in the general permit.
    - The reporting and recordkeeping requirements.
    - Plan submittal requirements.
    - Equipment.
    - Supplies.
    - Labor.
    - Increased administrative costs.
- A comparison, to the greatest extent possible, of the cost of compliance for small businesses with the cost of compliance for the largest ten percent of businesses intended to be covered under the permit.
- A summary of how the permit provides mitigation to reduce the effect on small businesses (if a disproportionate impact is expected), without compromising the mandated intent of the permit.

The permit covers wineries that discharge winery process wastewater (called "wastewater" in the permit), including wineries that produce juice that is made into wine at another location. For clarity, the permit categorizes requirements based on how the wastewater is discharged:

- To a wastewater treatment plant
- To land treatment via irrigation to managed vegetation
- To a lagoon or other liquid storage structure
- As road dust abatement
- To a subsurface infiltration system (as in septic drainfields)
- To an infiltration basin
- Wineries not included under the permit's Special Condition S1.B, which states the permit does not apply to:

- Home manufacturing of alcoholic beverages
- Exclusive production of mead or hard cider
- Wineries that discharge all wastewater to a:
  - Delegated publicly-owned treatment works (POTW)
  - Double-lined evaporation lagoon with a leak detection system
  - Storage tank to be pumped and hauled off site to a treatment facility
  - A Listed wastewater treatment plant (WWTP; identified and named in the permit)
- Wineries discharging less than 53,505 gallons of wastewater per calendar year
- Wineries producing fewer than 7,500 cases of wine or juice per calendar year
- Wineries producing less than 17,835 gallons of wine or juice per calendar year

Because this is the first general permit applicable to wineries, there is significant uncertainty in the number and specific attributes of covered wineries in the state. Much of the permit is intended to protect water quality while learning more about covered wineries, to inform future general permit revisions.

Total compliance costs incurred by a winery as a result of the general permit will depend on the individual attributes and needs of the winery and its wastewater discharge. Most of the wineries covered by the general permit are small, in both wastewater discharge and employment. When comparing the majority of small wineries to the few very large wineries, compliance costs do not appear to be proportionate. However, when compliance costs per employee are compared across the majority of wineries, there will be variance that depends on winery attributes and choices made to comply with the general permit, but costs will generally be proportionate.

While it is not clear that the general permit imposes disproportionate compliance burden on small businesses in a practical sense, because the majority of the industry is likely small, Ecology took the legal and feasible actions described in this chapter to reduce small business compliance burden, including:

- Allowing Permittees to collect a grab sample (one single sample) rather than a composite sample (a combination of three separate samples).
- Not requiring permittees discharging to WWTPs to sample their wastewater. They are only required to report the results of the WWTP's analysis.
- Not requiring permittees discharging to lagoons or other liquid storage structures to sample their wastewater.
- Reducing the frequency of wastewater sample analysis. Permittees required to analyze wastewater samples are only required to do so on a quarterly basis.
- Not requiring Group 1 permittees that discharge as irrigation to managed vegetation to analyze wastewater samples to determine how much wastewater they are permitted to discharge in order to not overload their crop/soil. The general permit now contains application rates and application frequencies.
- Not requiring permittees that discharge as road dust abatement to analyze wastewater samples to determine how much wastewater they are permitted to discharge. The general permit now contains application rates and application frequencies.
- Not setting a minimum annual frequency for permittees that discharge to a subsurface infiltration system to clean the tanks. They may clean on an as-needed basis.

- Not requiring an annual report.
- Not requiring Permittees installing a new subsurface infiltration system to treat domestic sewage separate from wastewater.
- Not requiring Permittees discharging to an existing subsurface infiltration system to retrofit their existing system or to treat domestic sewage separate from wastewater.
- Establishing differing reporting requirements for small wineries.
- Not covering wineries producing less than:
    - 53,505 gallons of wastewater per calendar year
    - 7,500 cases of wine or juice per calendar year
    - 17,835 gallons of wine or juice per calendar year
- Not covering wineries discharging to delegated or listed POTWs.
- Designing requirements for lagoon and subsurface infiltration systems to be able to be done by winery staff or management, without hiring outside engineers or other contractors.
- Requiring only adaptive management when benchmarks are exceeded.
- Allowing small wineries to estimate wastewater flow.
- Phasing in requirements for removal of fine solids and design of a waste management system that accommodates future growth and beneficially reuses wastewater.
- Phasing in assessment requirements.
- Establishing different benchmarks for Group 1 wineries for some types of wastewater discharge.
- Not requiring Permittees to conduct inspections more frequently than twice per year.

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Chapter 1: Introduction to the Economic Impact Analysis

This Economic Impact Analysis (EIA) estimates the costs of complying with the Winery General Permit ("permit"). It compares the costs of complying with the permit for small businesses to the costs of compliance for the largest 10 percent of businesses, to determine whether the permit disproportionately impacts small businesses. This analysis is required by state rule in Washington Administrative Code (WAC) 173-226-120, which directs Ecology to determine if the permit imposes disproportionate burden on small businesses, and if it does, to mitigate the disproportion to the extent that is legal and feasible.

1.1 Scope

WAC 173-226-120 requires the EIA to include:

- A brief description of the compliance requirements of the general permit.
- The estimated costs of complying with the permit, based on existing data for wineries intended to be covered under the general permit, including:
    - The minimum technology based treatment requirements identified as necessary under WAC 173-226-070.
    - The monitoring requirements contained in the general permit.
    - The reporting and recordkeeping requirements.
    - Plan submittal requirements.
    - Equipment.
    - Supplies.
    - Labor.
    - Increased administrative costs.
- A comparison, to the greatest extent possible, of the cost of compliance for small businesses with the cost of compliance for the largest ten percent of businesses intended to be covered under the permit.
- A summary of how the permit provides mitigation to reduce the effect on small businesses (if a disproportionate impact is expected), without compromising the mandated intent of the permit.

1.2 Definitions of small and large businesses

For the purposes of the EIA, a small business is an independent entity with 50 or fewer employees organized for the purpose of making a profit. Employment is typically based on the highest available level of ownership data. Not-for-profit and government enterprises are excluded.

Because information received from wineries differed from available employment estimates, in this analysis we also used reported typical small and large winery employment.

1.3 Permit Coverage

The permit covers wineries that discharge winery process wastewater (called "wastewater" in the permit), including wineries that produce juice that is made into wine at another location. For clarity, the permit categorizes requirements based on how the wastewater is discharged:

- To a wastewater treatment plant

- To land treatment via irrigation to managed vegetation
- To a lagoon or other liquid storage structure
- As road dust abatement
- To a subsurface infiltration system (as in septic drainfields)
- To an infiltration basin
- Wineries not included under the permit's Special Condition S1.B, which states the permit does not apply to:
    - Home manufacturing of alcoholic beverages
    - Exclusive production of mead or hard cider
    - Wineries that discharge all wastewater to a:
        - Delegated publicly-owned treatment works (POTW)
        - Double-lined evaporation lagoon with a leak detection system
        - Storage tank to be pumped and hauled off site to a treatment facility
        - A Listed wastewater treatment plant (WWTP; identified and named in the permit)
    - Wineries discharging less than 53,505 gallons of wastewater per calendar year
    - Wineries producing fewer than 7,500 cases of wine or juice per calendar year
    - Wineries producing less than 17,835 gallons of wine or juice per calendar year

Because this is the first general permit applicable to wineries, there is significant uncertainty in the number and specific attributes of covered wineries in the state. Much of the permit is intended to protect water quality while learning more about covered wineries, to inform future general permit revisions.

Existing data from the WA Liquor and Cannabis Board[1] lists 952 wineries in 2016, up from 928 in 2015, and from 917 in 2014. Many of the reported wineries had zero net production, which may indicate using existing stock in place of production, but may also indicate that those wineries were not operational. Of wineries listed with positive production in this data, the average production at a winery is approximately 68,600 gallons, while the median production is approximately 2,100 gallons. In illustrating the distribution of winery sizes, this indicates most wineries in the dataset produced relatively small quantities, while a few wineries produced very large quantities.

1.3.1 The Washington wine industry

For an alternative number of wineries, we used data from the WA Employment Security Department (ESD).[2] Wineries are classified as North American Industry Classification System (NAICS) code 31213 – "Wineries". ESD data was available at the three-digit NAICS code level, and indicated that in parent code 312 – "Beverage and tobacco product manufacturing" – there were 652 establishments operating in Washington in the first quarter of 2016.

[1] WA Liquor and Cannabis Board (2017). Domestic Winery Report. Detail Information. January 2016 to December 2016; WA Liquor and Cannabis Board (2016). Domestic Winery Report. Detail Information. January 2015 to December 2015; WA Liquor and Cannabis Board (2015). Domestic Winery Report. Detail Information. January 2014 to December 2014.

[2] WA Employment Security Department (2016). Number of establishments and employment for all ownerships by 3-digit NAICS industry code. Washington State, 2016 Q1. Source: Employment Security Department/LMEA, Quarterly Census of Employment and Wages.

Available comprehensive data on winery attributes was limited, particularly regarding wastewater. A 2015 survey of wineries did, however, find the following at surveyed wineries.[3]

Table 1: Distribution of winery size by tons of grapes crushed

Tons of Grapes Crushed	Percent of Wineries
0	3.60
<2	3.60
2 to 5	6.31
5 to 10	5.41
10 to 20	18.92
20 to 40	16.22
40 to 80	13.51
80 to 150	10.81
150 to 500	9.91
500 to 1000	2.70
1000 to 1500	0.90
1500 to 5000	1.80
5000 to 10000	1.80
10000+	4.50

Of wineries that meter their wastewater, the same survey found the following distribution of wastewater quantities.

Table 2: Distribution of wineries by surveyed maximum daily process wastewater

Maximum Daily Process Wastewater Discharge	
Gallons	**Percent of Responses**
Less than 100 gal per day	25.81
Less than 200 gal per day	35.48
Less than 500 gal per day	51.61
More than 500 gal per day	35.49
Unknown	12.90
Gallons Process Wastewater Discharged Annually	
Gallons	**Percent of Responses**
Less than 3,000 gal annually	31.25
Less than 5,000 gal annually	45.31
Less than 10,000 gal annually	50.00
Less than 50,000 gal annually	56.25
More than 50,000 gal annually	18.75
Unknown	25.00

1.3.2 Group 1 and Group 2

Because the Washington winemaking industry includes a spectrum of winemaking facilities that range in production size and resources, Ecology established requirements that are scaled based on the volume of wastewater discharged. Examples of these requirements include benchmarks and additional documentation. Permittees are either in Group 1 or in Group 2 and are given multiple

[3] Winerywise (2015). 2015 Winery Wastewater Survey. Conducted by Winerywise with help from the Washington Wine Industry Foundation.

ways to determine what group they are in. Small winemaking facilities are in Group 1 and large winemaking facilities are in Group 2. Depending on their size, medium winemaking facilities may fall in either group.

After consulting with technical experts and stakeholders, Ecology determined that the appropriate threshold for establishing more stringent benchmarks and requiring additional documentation is 600,000 gallons of wastewater discharged in a typical calendar year. A winemaking facility that discharges more than 600,000 gallons of wastewater each year could have total flows during crush of 150,000 gallons, which could result in a peak daily flow of about 3,600 gallons per day. Additionally, the Federal Alcohol and Tobacco Tax and Trade Bureau defines a small winemaking facility as one that sells less than 100,000 gallons of wine (approximately 600,000 gallons of wastewater) each year.

According to the Washington State Liquor and Cannabis Board and the 2015 survey conducted by Winerywise, about 87% of total gallons of wine sold by winemaking facilities in Washington would be in Group 2.[4] The two sources of data differ on the percentage of licensed winemaking facilities that could be in this group. The Washington State Liquor and Cannabis Board data shows that about 3% of licensed Washington winemaking facilities would be in Group 2, whereas the Winerywise survey data shows that about 11% would be in Group 2. The table below summarizes those results for 2015.

Table 3: Group 1 and Group 2 winery percentages

Source	**Total Production**	**Total # of Wineries**				
LCB Data	32,755,164	928	<100,000 Gallons of Wine			
			# of Wineries	% of Wineries	Total Gallons	% of Gallons
			902	97.20%	4,141,871	12.64%
			>100,000 Gallons of Wine			
			# of Wineries	% of Wineries	Total Gallons	% of Gallons
			26	**2.80%**	28,613,293	87.36%
Winerywise Survey	76,905,228	900	<100,000 Gallons of Wine			
			# of Wineries	% of Wineries	Total Gallons	% of Gallons
			803	89.22%	9,905,252	12.88%
			>100,000 Gallons of Wine			
			# of Wineries	% of Wineries	Total Gallons	% of Gallons
			97	**10.78%**	66,999,976	87.12%

[4] Winerywise (2015). 2015 Winery Wastewater Survey. Conducted by Winerywise with help from the Washington Wine Industry Foundation.

1.4 Excluded costs

This EIA does not include the costs of complying with existing laws and rules, as permittees would be required to comply with requirements regardless of whether the permit reiterated or referenced them, or if the permit did not exist. Costs excluded from all EIAs include the costs of complying with:

- State ground water quality standards (WAC 173-200).
- State surface water quality standards (WAC 273-201A).
- State sediment management standards (WAC 173-204).
- Wastewater discharge permit fees (WAC 173-224).
- Federal laws and rules, including but not limited to the Clean Water Act and federal National Pollutant Discharge Elimination System (NPDES) regulations if discharging to surface waters.
- Submission of Plans and Reports for Construction of Wastewater Facilities (WAC 173-240). System with a design capacity exceeding 14,500 gallons per day.
- On-Site Sewage Systems (WAC 246-272A). Applies to single family residences, mobile home parks, flows up to 3,500 gallons per day. Does **not** cover industrial wastewater.
- Large On-Site Sewage System Regulations (WAC 246-272B). Applies to on-site sewage systems with design flows greater than or equal to 3,500 gallons per day and up to and including 100,000 gallons per day. Does **not** cover industrial wastewater.

1.5 Compliance costs included in the EIA

The permit contains general requirements applicable to all discharge methods, as well as discharge method-specific requirements, and additional requirements.

General requirements include:

- Discharge limits
- Wastewater sample analysis
- Estimating or measuring flows
- Best management practices (BMPs)

Discharge-based requirements include:

- Wastewater treatment plants (WWTPs)
- Land treatment via irrigation to managed vegetation
- Lagoons and other liquid storage structures
- Road dust abatement
- Subsurface infiltration system
- Infiltration basins

Additional requirements include:

- Residual solid waste management
- Winery Pollution Prevention Plan (WPPP)
- Conditions for domestic sewage

1.5.1 General discharge limits

Discharge limit requirements for all covered wineries include the following.

- Do not violate Washington State Water Quality Standards (excluded cost; see 4.1).
- If a benchmark is exceeded, comply with adaptive management requirements.

1.5.2 General monitoring requirements

Monitoring requirements for all covered wineries include the following.

- Start monitoring wastewater flow and sampling wastewater discharges at the beginning of the first complete quarter after receiving permit coverage.
- Monitor wastewater flows every calendar month a discharge occurs.
- Submit discharge monitoring reports (DMRs) quarterly
- Sample wastewater (if required for the winery's discharge method):
    - Once per quarter in which a discharge occurs.
    - Wineries that do not produce wine, but do store wine, and have consistent strength wastewater, are required to sample twice per year.
    - Samples must be analyzed by an accredited lab.

1.5.3 General estimating or measuring flows

Requirements for estimating or measuring wastewater flows include the following.

- Group 1 wineries:
    - Use a flow meter or estimate flows.
    - Determine total monthly flow, number of days a discharge occurred, and average daily flow.
- Group 2 wineries:
    - Use a flow meter.
    - Determine total monthly flow, number of days a discharge occurred, and average daily flow.
    - New wineries must use a continuous flow meter and determine maximum daily flow.

1.5.4 General BMPs

All covered wineries must comply with BMP requirements as follows.

- Once the wineries receive coverage:
    - Don't exceed design capacity.
    - Only use and dispose of chemicals as recommended by the manufacturer.

- Starting the second year after the wineries receive permit coverage:
    - Reduce the strength of the wastewater by removing solids (including fine solids) to the extent practicable.
    - Manage, store, and transfer materials (including raw materials, processed materials, and wastes) so they are not exposed to precipitation.
- Starting the third year after the wineries receive permit coverage:
    - Design and maintain the waste management system to:
        - Accommodate maximum daily flow and organic loading.
        - Accommodate future growth.
        - Beneficially reuse wastewater and residual solids.
    - Conduct a water balance.
- New wineries must comply with all BMPs immediately upon coverage.
- Train relevant employees.

1.5.5 Discharge-based: WWTPs

Covered wineries discharging to WWTPs have the following requirements under the permit, in addition to general requirements.

- Don't exceed effluent limitations established by the WWTP discharged to.
- Comply with prohibited discharges.
- Submit the results of wastewater analysis conducted by the WWTP discharged to.
- Comply with WWTP pretreatment standards.
- Notify the WWTP of all discharges that could cause problems.
- Conduct inspections at least two times per year.

1.5.6 Discharge-based: Land treatment via irrigation to managed vegetation

Covered wineries discharging to land treatment via irrigation to managed vegetation have the following requirements under the permit, in addition to general requirements.

- If benchmarks are exceeded, comply with the required adaptive management actions (new wineries in year 1; existing wineries in year 2).
- Benchmarks are established in the permit.
- Comply with prohibited discharges.
- Group 1: Report application rate and application frequency.
- Group 2: Analyze wastewater samples and report total organic concentration (TOC) and loading rate, average daily flow, and application frequency.
- Comply with BMPs.
- Conduct inspections at least two times per year.

1.5.7 Discharge-based: Lagoons and other liquid storage structures

Covered wineries discharging to lagoons or other liquid storage structures have the following requirements under the permit, in addition to general requirements.

- Comply with BMPs.
- Existing lagoon assessment:
    - Conduct an assessment of each lagoon constructed before the effective date of the permit, to determine the leakage rate of the lagoon.
    - Submit an Existing Lagoon Assessment to Ecology by the end of year 2.
    - If the assessment results in a risk to water quality, comply with requirements to correct deficiencies.
- New lagoons and other liquid storage structures:
    - Must meet design and construction requirements.
- Conduct inspections at least two times per year.

1.5.8 Road dust abatement

Covered wineries discharging to road dust abatement have the following requirements under the permit, in addition to general requirements.

- Don't exceed benchmarks (new wineries in year 1; existing wineries in year 2).
- Benchmarks are established in the permit.
- Comply with prohibited discharges.
- Report application rate and application frequency.
- Comply with BMPs.
- Conduct inspections at least two times per year.

1.5.9 Discharge-based: Subsurface infiltration system

Covered wineries discharging to a subsurface infiltration system have the following requirements under the permit, in addition to general requirements.

- Existing wineries: only Group 2 wineries comply with benchmarks.
- New wineries: comply with benchmarks.
- Benchmarks are established in the permit.
- Comply with prohibited discharges.
- Group 2: Analyze wastewater samples for average daily flow, pH, and concentration of 5-day carbonaceous biochemical oxygen demand ($CBOD_{5)}$ and total suspended solids (TSS).
- Comply with BMPs.
- Existing subsurface infiltration system assessment:

    - Conduct an assessment of each system constructed before the effective date of the permit, to determine how effectively it treats wastewater.
    - Submit an Existing Subsurface Infiltration System Assessment to Ecology by the end of year 2.
- New subsurface infiltration systems:
    - Must meet design and construction requirements.
    - May be designed and constructed to treat both wastewater and domestic sewage.
- Conduct inspections at least two times per year.

1.5.10 Discharge-based: Infiltration basins

Covered wineries discharging to an infiltration basin have the following requirements under the permit, in addition to general requirements.

- Comply with discharge limits.
- Comply with prohibited discharges.
- Analyze wastewater samples for average daily flow, pH, nitrate, chloride, sulfate, and concentration of TOC and TDS.
- Comply with BMPs.
- Conduct inspections at least two times per year.

1.5.11 Residual solid waste management

All covered wineries handling residual solid waste have the following requirements under the permit, in addition to general requirements and discharge-based requirements.

- Handle and dispose of in compliance with local and state laws.
- Don't allow leachate to discharge into state ground or surface waters.
- Collect solids to ensure proper operation of the waste management system.
- Inspect storage area.

1.5.12 Winery pollution prevention plan

All covered wineries must develop, submit, and implement a Winery Pollution Prevention Plan (WPPP) by the end of year 2. Wineries must review and update the WPPP at least annually (e.g., after facility or process changes in addition to annual review). Plans must include:

- Facility overview
- Storage/discharge operations
- Facility map
- Sampling plan
- Exported wastewater
- Adaptive management actions
- Recordkeeping

1.5.13 Conditions for domestic sewage

The permit includes special conditions for wineries that commingle winery wastewater and domestic sewage, as follows.

- Existing wineries must not discharge commingled waste:
    - As irrigation to managed vegetation.
    - To a lagoon or aboveground liquid storage structure.
    - As road dust abatement.
    - To an infiltration basin.
- New wineries discharging to a subsurface infiltration system may discharge commingled waste to the system as long as it is designed to treat both waste streams and the winery consults the jurisdictional health department. They may also discharge commingled waste to a WWTP.

Chapter 2: Costs of Compliance with the General Permit

Compliance with the general permit, including and excluding costs as discussed in Chapter 1, involves multiple possible compliance behaviors that depend on winery attributes and wastewater discharge methods. We have estimated compliance costs for general costs applicable to all covered wineries, as well as costs that depend on discharge method. This chapter discusses these cost estimates.

It is important to note that a winery is not likely to incur all of the identified compliance costs, even for a particular discharge method. This is because some estimated costs are for new equipment that may not be planned or necessary, and because wineries also have the option of adjusting their discharge methods to incur lower costs (e.g., via trucking wastewater to a WWTP if it is more cost-effective than replacing liquid storage or subsurface infiltration systems). If a winery chooses to incorporate into their compliance strategy a large cost item like a lagoon, the associated materials and construction costs may differ greatly depending on the size of the lagoon. Additionally, a winery may choose to pay for large-cost items over a period of time, but to maintain conservative assumptions, this analysis assumes costs are fully incurred in the year they are spent.

2.1 Compliance costs

Costs associated with general requirements include costs of complying with:

- Discharge limits
- Monitoring requirements
- Best management practices (BMPs)
- Residual solid waste management
- Winery Pollution Prevention Plan (WPPP)

Costs associated with discharge-based requirements (as applicable) are organized by discharge method:

- Wastewater treatment plants (WWTPs)
- Land treatment via irrigation to managed vegetation
- Lagoons and other liquid storage structures
- Road dust abatement
- Subsurface infiltration system
- Infiltration basins

2.1.1 General discharge limits

Because general discharge limits include not violating existing WA water quality standards as established in rule, we do not expect additional cost over baseline. The adaptive management requirements are only enforced if wineries fail to meet existing rules.

2.1.2 General monitoring requirements

General monitoring requirements apply to the monitoring required for each type of wastewater discharge, as applies to a given winery. We discuss the discharge-specific costs (lab fees) in the relevant sections below. Some monitoring costs are likely universal, including:

- Labor:
    - Minimal labor to read a wastewater flow meter or perform a calculation, and conduct a water balance.
    - We assumed one hour per sampling event, with four events per year.
    - Based on the median hourly wage for agricultural and food science technicians of $18.03,[5] four hour-long sampling events would cost $72.10 per year.
- Supplies
    - Lab fees estimated for each set of discharge-specific tests (if required) include requested supplies.[6]
- Completing DMRs
    - We assumed one hour per DMR, completed at the same rate as sampling. Assuming the same food science technician completes the DMR, this cost would mirror the labor costs estimated above.

Based on input received from wineries, [7] we estimate a cost for estimating or measuring wastewater flow of:

- Minimal cost for small wineries in Group 1. These wineries are allowed to estimate flow based on known quantities from water usage.
- $500 for a flow meter, plus $500 installation cost, totaling $1 thousand.
- Large wineries generally estimated the cost of a meter as part of the overall cost of a larger treatment system (discussed in the relevant sections below).

2.1.3 General BMPs

The costs of general BMPs include:

- Employee training costs:
    - We assumed one hour of training, four times per year allowing for turnover, involving one manager and one employee.
    - Based on the median hourly wage for agricultural and food science technicians of $18.03, and a median managerial hourly wage of $53.88, four hour-long training events per year would cost $287.62 annually.
- Chemical disposal is considered part of baseline, as safe and legal disposal is already required.

[5] US Bureau of Labor Statistics (2016). May 2016 State Occupational Employment and Wage Estimates. Washington; Adjusted to 2017 dollars using: US Bureau of Labor Statistics (2017). Consumer Price Index for 2016 and July 2017.
[6] Personal communication with Nancy Rosenbower, Project Coordinator, Manchester Environmental Laboratory.
[7] Email communication between Stacey Callaway and representatives from Kiona Vineyards and Winery, Isenhower Cellars, Columbia Winery, Claar Cellars, Ginkgo Forest Winery, Chateau Ste. Michelle Winery. August 2016 through August 2017.

- Based on input from wineries, solids removal and a comprehensive wastewater system were included in combined wastewater treatment system costs (discussed in the relevant sections below).
- Managing materials (including raw materials, processed materials, and wastes) so they are not exposed to precipitation. Based on Ecology experience and the amounts of solids managed by most wineries, this could be achieved using overhangs in loading areas, or potentially tarps, to prevent precipitation exposure. There are no associated requirements for impervious surfaces.

2.1.4 Discharge-based: WWTPs

Costs to wineries discharging to WWTPs include (in addition to general, non-discharge-based):

- Discharge limits and pretreatment standards established by the WWTP are considered baseline costs.
- Minor costs of notification, only in cases of discharges potentially causing problems.
- Inspection costs of labor two times per year. We assumed one hour at small wineries, and two hours at large wineries. Assuming a food science technician performs these inspections at a median hourly wage of $18.03,[8] this results in an estimated annual cost of $36.05 for small wineries, and $72.10 for large wineries.

2.1.5 Discharge-based: Land treatment via irrigation to managed vegetation

Costs to wineries discharging to land treatment via irrigation to managed vegetation include:

- Potential treatment and storage costs to meet benchmarks (new wineries in year 1; existing wineries in year 2). Based on input from wineries, and depending on the system quoted, the estimated costs range from $82 thousand to in excess of $110 thousand installed, with a potential $100 thousand additional cost for storage (likely the primary cost component of complying with BMPs).

  Note that treatment is not required, and would be used if a winery wanted to discharge larger quantities or chose not to store wastewater during times it could not be used for irrigation.
- Group 1: Minimal costs of reporting application rate and frequency.
- Group 2: Sample analysis costs of lab fees and minor calculations for average daily flow, pH, and concentration and loading of TOC. Minimal costs of reporting application frequency. Based on lab fees at Ecology's Manchester lab[9] these sum to $50 per sampling event. With quarterly sampling, this cost is $200 per year.
- Inspection costs of labor two times per year. We assumed one hour at small wineries, and two hours at large wineries. Assuming a food science technician performs these

[8] US Bureau of Labor Statistics (2016). May 2016 State Occupational Employment and Wage Estimates. Washington; Adjusted to 2017 dollars using: US Bureau of Labor Statistics (2017). Consumer Price Index for 2016 and July 2017.

[9] Personal communication with Joel Bird, Manchester Environmental Lab, 8/31/2017. Lab staff indicated that private lab fees would likely be lower than those at Manchester Lab.

inspections at a median hourly wage of $18.03,[10] this results in an estimated annual cost of $36.05 for small wineries, and $72.10 for large wineries.

2.1.6 Discharge-based: Lagoons and other liquid storage structures

Costs to wineries discharging to lagoons or other liquid storage structures include:

- The primary costs of BMPs include appropriate maintenance and use of lagoons. These costs are partially accounted for in lagoon replacement costs discussed below.
- Lagoon assessment costs for existing lagoons, based on an assumed 8 hours of labor performed by a winery operator. We assumed a manager with a median wage of $53.88,[11] this results in an estimated one-time cost of $431.03. As there is uncertainty in whether lagoons will need repairs after assessment, we conservatively assume a worst-case scenario resulting in complete lagoon replacement, with associated cost as described below.
- New lagoon design and installation costs (if new lagoons are constructed).
    - Design and construction requirements would result in the installation and maintenance of lagoons less likely to impact groundwater. Based on ranges of costs in the literature for naturally-lined lagoons on the West Coast[12] with sizes and costs in line with Ecology staff estimates for a large winery lagoon:[13]
        - Median small-to-medium lagoon costs of $102 thousand, with annual operating costs of $5 thousand.
        - Median large lagoon costs of $316 thousand, with annual operating costs of $16 thousand.
- Inspection costs of labor two times per year. We assumed one hour at small wineries, and two hours at large wineries. Assuming a food science technician performs these inspections at a median hourly wage of $18.03,[14] this results in an estimated annual cost of $36.05 for small wineries, and $72.10 for large wineries.

2.1.7 Discharge-based: Road dust abatement

Covered wineries discharging to road dust abatement have the following requirements under the permit, in addition to general requirements.

- Potential treatment and storage costs to meet benchmarks (new wineries in year 1; existing wineries in year 2). Based on input from wineries, and depending on the system quoted, the estimated costs range from $82 thousand to in excess of $110 thousand installed, with a potential

[10] US Bureau of Labor Statistics (2016). May 2016 State Occupational Employment and Wage Estimates. Washington; Adjusted to 2017 dollars using: US Bureau of Labor Statistics (2017). Consumer Price Index for 2016 and July 2017.
[11] US Bureau of Labor Statistics (2016). May 2016 State Occupational Employment and Wage Estimates. Washington; Adjusted to 2017 dollars using: US Bureau of Labor Statistics (2017). Consumer Price Index for 2016 and July 2017.
[12] US Environmental Protection Agency (2001). Cost Methodology Report for Beef and Dairy Feeding Operations. EPA-821-R-01-019.
[13] Personal communication with Stacey Callaway and Patrick J. Hallinan (2017). Email and attachment. Subject: Lagoon Price Estimate. 10/5/2017.
[14] US Environmental Protection Agency (2001). Cost Methodology Report for Beef and Dairy Feeding Operations. EPA-821-R-01-019.

$100 thousand additional cost for storage (likely the primary cost component of complying with BMPs).

Note that treatment is not required, and would be used if a winery wanted to discharge larger quantities or chose not to store wastewater during times it could not be used for road dust abatement.

- Inspection costs of labor two times per year. We assumed one hour at small wineries, and two hours at large wineries. Assuming a food science technician performs these inspections at a median hourly wage of $18.03,[15] this results in an estimated annual cost of $36.05 for small wineries, and $72.10 for large wineries.

2.1.8 Discharge-based: Subsurface infiltration system

Covered wineries discharging to a subsurface infiltration system have the following requirements under the permit, in addition to general requirements.

- Potential treatment and storage costs for Group 2 wineries and all new wineries to meet benchmarks. Based on input from wineries, and depending on the system quoted, the estimated costs range from $82 thousand to in excess of $110 thousand installed.
- Sample analysis costs of lab fees and minor calculations for average daily flow, pH, and concentration and loading of: 5-day carbonaceous biochemical oxygen demand ($CBOD_{5)}$ and total suspended solids (TSS). Based on lab fees at Ecology's Manchester lab[16] these sum to $95 per sampling event. With quarterly sampling, this cost is $380 per year.
- BMP costs are primarily baseline costs, depending on local on-site sewer regulations.
- Existing subsurface infiltration system assessment costs, based on an assumed 8 hours performed by a manager at the facility, at a median hourly wage of $53.88 for eight hours.[17] The estimated total cost of this assessment is a one-time cost of $431.03.
- Potential cost of new subsurface infiltration systems meeting design and construction requirements:
    - The EPA estimates a revitalization cost for a subsurface infiltration system of $1,200 – $2,500.[18] A complete replacement would cost $12 thousand – $25 thousand.
- Inspection costs of labor two times per year. We assumed one hour at small wineries, and two hours at large wineries. Assuming a food science technician performs these

[15] US Bureau of Labor Statistics (2016). May 2016 State Occupational Employment and Wage Estimates. Washington; Adjusted to 2017 dollars using: US Bureau of Labor Statistics (2017). Consumer Price Index for 2016 and July 2017.
[16] Personal communication with Joel Bird, Manchester Environmental Lab, 8/31/2017. Lab staff indicated that private lab fees would likely be lower than those at Manchester Lab.
[17] US Bureau of Labor Statistics (2016). May 2016 State Occupational Employment and Wage Estimates. Washington; Adjusted to 2017 dollars using: US Bureau of Labor Statistics (2017). Consumer Price Index for 2016 and July 2017.
[18] US Environmental Protection Agency (1999). Decentralized Systems Technology Factsheet, Septic Tank – Soil Absorption Systems. EPA 932-F-99-075.

inspections at a median hourly wage of $18.03,[19] this results in an estimated annual cost of $36.05 for small wineries, and $72.10 for large wineries.

2.1.9 Discharge-based: Infiltration basins

Costs for wineries discharging to an infiltration basin include:

- Potential treatment and storage costs to meet discharge limits. Based on input from wineries, and depending on the system quoted, the estimated costs range from $82 thousand to in excess of $110 thousand installed.
- Sample analysis costs of lab fees and minor calculations for average daily flow, pH, nitrate, chloride, sulfate, and concentration of: TOC and total dissolved solids (TDS). Based on lab fees at Ecology's Manchester lab[20] these sum to $110 per sampling event. With quarterly sampling, this cost is $440 per year.
- BMP costs primarily involve inspections to maintain proper functioning of the infiltration basin, as discussed below.
- Inspection costs of labor two times per year. We assumed one hour at small wineries, and two hours at large wineries. Assuming a food science technician performs these inspections at a median hourly wage of $18.03,[21] this results in an estimated annual cost of $36.05 for small wineries, and $72.10 for large wineries.

2.1.10 Residual solid waste management

Costs for residual solid waste management requirements include:

- Leachate control, which is considered part of the baseline of avoiding contamination of ground and surface waters in violation of existing water quality standards.
- Solids collection, which based on input from wineries was included in estimates for comprehensive planned wastewater treatment systems (discussed in the relevant sections above).
- Inspection of the storage area:
    - We assumed one hour per inspection of a storage area, performed at the same time as monitoring events are occurring.
    - Assuming a food science technician performs this task (though it is designed to be performed by various positions), this cost would mirror the monitoring labor costs estimated above in section 2.1.2.

2.1.11 Winery pollution prevention plan

For initial development of the Winery Pollution Prevention Plan (WPPP), we assumed 40 hours for small wineries, and 80 hours for large wineries. We also assumed a manager would develop the plan, at an

[19] US Bureau of Labor Statistics (2016). May 2016 State Occupational Employment and Wage Estimates. Washington; Adjusted to 2017 dollars using: US Bureau of Labor Statistics (2017). Consumer Price Index for 2016 and July 2017.
[20] Personal communication with Joel Bird, Manchester Environmental Lab, 8/31/2017. Lab staff indicated that private lab fees would likely be lower than those at Manchester Lab.
[21] US Bureau of Labor Statistics (2016). May 2016 State Occupational Employment and Wage Estimates. Washington; Adjusted to 2017 dollars using: US Bureau of Labor Statistics (2017). Consumer Price Index for 2016 and July 2017.

average managerial wage for WA of $53.88.[22] This would result in an initial cost of $2,155 for small wineries, and $4,310 for large wineries.

We based assumptions for annual WPPP maintenance on past analyses of pollution prevention plans for a previous industrial food processing general permit.[23] This included up to eight hours for a small winery, and up to 16 hours for a large winery. This would result in annual costs in years 2 – 5 of $431 for small wineries, and $862 for large wineries.

2.1.12 Trucking wastewater to treatment

Wineries that choose to incur the cost of transporting wastewater by truck, to a WWTP, would no longer be covered by the general permit. Wineries indicated that, in lieu of treatment and replacement, they could choose to ship their wastewater to a POTW via truck. Depending on the volume and frequency of shipping, this could result in annual costs of (at 6 gallons wastewater per gallon of wine) between $15 thousand and $61 thousand.

2.2 Estimated total compliance cost

We combined the flows of costs discussed in section 2.1 into five-year present values for each cost type. We could not sum for specific types of wineries or discharges, because of uncertainty in the specific attributes of small and large wineries. The table below summarizes the streams of costs and five-year present values, based on a 1.09 percent discount rate.[24]

It is important to note that a winery is not likely to incur all of the identified compliance costs, even for a particular discharge method. This is because some estimated costs are for new equipment that may not be planned or necessary, and because wineries also have the option of adjusting their discharge methods to incur lower costs (e.g., via trucking wastewater to a WWTP if it is more cost-effective than replacing liquid storage or subsurface infiltration systems).

Table 4: Summary of annual and present value compliance costs for various compliance options

COST TYPE	Year 1	Year 2	Year 3	Year 4	Year 5	Present Value
GENERAL MONITORING REQUIREMENTS						
Labor	$72	$72	$72	$72	$72	$353
Completing DMRs	$72	$72	$72	$72	$72	$353
GENERAL ESTIMATING OR MEASURING FLOWS						
Large wineries – meter	$1,000					$1,000
GENERAL BMPS						
Employee training	$288	$288	$288	$288	$288	$1,407
DISCHARGE-BASED: WWTPS						
Inspection costs - Small	$36	$36	$36	$36	$36	$176
Inspection costs - Large	$72	$72	$72	$72	$72	$353

[22] Ibid.
[23] WA Department of Ecology (2016). Economic Impact Analysis, National Pollution Discharge Elimination System (NPDES) Wastewater Discharge General Permit, Fresh Fruit Packing Industry. May 2016. Ecology publication no. 16-10-014.
[24] Historic average of US Treasury Department (2017). Series I Savings Bond Earnings Rates Effective May 1, 2017.

DISCHARGE-BASED: LAND TREATMENT VIA IRRIGATION TO MANAGED VEGETATION						
Treatment - Large (not required; May be used if wineries wish to discharge greater volumes of wastewater)	$110,000					$110,000
Storage (If unable to discharge based on conditions, and there is no existing storage; may use another discharge method instead)	$100,000					$100,000
Lab fees - Large	$200	$200	$200	$200	$200	$979
Inspection costs - Small	$36	$36	$36	$36	$36	$176
Inspection costs - Large	$72	$72	$72	$72	$72	$353
DISCHARGE-BASED: LAGOONS AND OTHER LIQUID STORAGE STRUCTURES						
Lagoon assessment (for lagoons constructed before the effective date of the general permit)	$431					$431
New lagoon design and construction - Small	$102,295	$15,777	$15,777	$15,777	$15,777	$163,722
New lagoon design and construction - Large	$315,543	$15,777	$15,777	$15,777	$15,777	$376,970
Inspection costs - Small	$36	$36	$36	$36	$36	$176
Inspection costs - Large	$72	$72	$72	$72	$72	$353
DISCHARGE-BASED: ROAD DUST ABATEMENT						
Treatment - Large (not required; May be used if wineries wish to discharge greater volumes of wastewater)	$110,000					$110,000
Storage	$100,000					$100,000
Inspection costs - Small	$36	$36	$36	$36	$36	$176
Inspection costs - Large	$72	$72	$72	$72	$72	$353
DISCHARGE-BASED: SUBSURFACE INFILTRATION SYSTEM						
Treatment - Large (not required; May be used if wineries wish to discharge greater volumes of wastewater)	$110,000					$110,000
Storage (If unable to discharge based on conditions, and there is no existing storage; may use another discharge method instead)	$100,000					$100,000

Lab fees – Large[25]	$380	$380	$380	$380	$380	$1,859
System assessment (for systems constructed before the effective date of the general permit)	$431					$431
New system - Small	$12,000					$12,000
New system - Large	$25,000					$25,000
Inspection costs - Small	$36	$36	$36	$36	$36	$176
Inspection costs - Large	$72	$72	$72	$72	$72	$353
DISCHARGE-BASED: INFILTRATION BASINS						
Treatment – All	$110,000					$110,000
Storage – All	$100,000					$100,000
Lab fees	$440	$440	$440	$440	$440	$2,153
Inspection costs - Small	$36	$36	$36	$36	$36	$176
Inspection costs - Large	$72	$72	$72	$72	$72	$353
RESIDUAL SOLID WASTE MANAGEMENT						
Inspection of storage area	$72	$72	$72	$72	$72	$353
WINERY POLLUTION PREVENTION PLAN						
WPPP – Small	$2,155	$431	$431	$431	$431	$3,833
WPPP – Large	$4,310	$862	$862	$862	$862	$7,666
REMOVAL FROM GENERAL PERMIT COVERAGE – TRUCKING WASTEWATER						
Trucking to POTW - Small	$15,338	$15,338	$15,338	$15,338	$15,338	$75,054
Trucking to POTW - Large	$61,352	$61,352	$61,352	$61,352	$61,352	$300,218

[25] New small wineries discharging to subsurface infiltration systems would also incur this cost, while existing small wineries would not.

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Chapter 3: Relative Compliance Costs for Small and Large Businesses

This chapter compares the costs of compliance per employee for small businesses to the compliance cost per employee at the largest ten percent of businesses covered by the permit. The governing rule (173-226-120) allows for this comparison to be made on one of the following bases:

- Cost per employee
- Cost per hour of labor
- Cost per one hundred dollars of sales

We use cost per employee, because this data is readily and most comprehensively available for businesses operating in Washington State.

3.1 Facility size data

Facility size distribution was based on WA Employment Security Department (ESD) data for the number of establishments and total employment in each size class (1-4 employees, 5-9 employees, etc.) by the US Census Bureau's North American Industry Classification System (NAICS) code. This data was available at the 3-digit NAICS level, for wineries in the most-likely applicable industry groups:

- NAICS 312 – Beverage and tobacco product manufacturing

Note that this parent industry includes other types of beverage manufacturing, as well as the manufacture of tobacco products. We observe that based on the distribution of businesses across employment size category in the ESD data, most businesses in the larger parent industry are likely to be small businesses. This is consistent with production data provided by the WA LCB. Most wineries are likely to experience proportionate impacts, excluding the few very large wineries in the state.

The average employment estimates in the ESD data were:

- Small wineries – 8 employees.
- Largest ten percent of wineries – 65 employees.

Based on input from wineries, however, typical employment at a single location is:[26]

- Small wineries – 2 employees (excluding seasonal harvest labor).
- Large wineries – 10 employees (excluding seasonal harvest labor and the largest multiple-facility wineries)

To associate specific types of cost with winery size, we made the simplifying assumption that small winery costs could be incurred by Group 1 wineries, and large winery costs could be incurred by Group 2 wineries.

[26] Communication between Stacey Callaway and wineries participating in general permit development.

3.2 Relative costs of compliance

The table below summarizes the cost of compliance per employee for each cost type identified for all or small wineries. The size of the wastewater discharge at a winery does not necessarily correlate one-to-one with its size in terms of employees, but we made the simplifying assumption that small wineries were also small businesses.

Table 5: Compliance cost per employee for small wineries, for various compliance options and using two employee averages

COST TYPE - ALL OR SMALL	Present Value	COST PER EMPLOYEE (ESD)	COST PER EMPLOYEE (WINERY INPUT)
GENERAL MONITORING REQUIREMENTS			
Labor	$353	$44	$176
Completing DMRs	$353	$44	$176
GENERAL BMPS			
Employee training	$1,407	$176	$704
DISCHARGE-BASED: WWTPS			
Inspection costs - Small	$176	$22	$88
DISCHARGE-BASED: LAND TREATMENT VIA IRRIGATION TO MANAGED VEGETATION			
Storage	$100,000	$12,500	$50,000
Inspection costs - Small	$176	$22	$88
DISCHARGE-BASED: LAGOONS AND OTHER LIQUID STORAGE STRUCTURES			
Lagoon assessment	$431	$54	$216
New lagoon design and construction - Small	$163,722	$20,465	$81,861
Inspection costs - Small	$176	$22	$88
DISCHARGE-BASED: ROAD DUST ABATEMENT			
Storage	$100,000	$12,500	$50,000
Inspection costs - Small	$176	$22	$88
DISCHARGE-BASED: SUBSURFACE INFILTRATION SYSTEM			
Storage	$100,000	$12,500	$50,000
Lab fees (new small wineries only)	$1,859	$232	$930
System assessment	$431	$54	$216
New system - Small	$12,000	$1,500	$6,000
Inspection costs - Small	$176	$22	$88
DISCHARGE-BASED: INFILTRATION BASINS			
Treatment	$110,000	$13,750	$55,000
Storage	$100,000	$12,500	$50,000
Lab fees	$2,153	$269	$1,077
Inspection costs - Small	$176	$22	$88
RESIDUAL SOLID WASTE MANAGEMENT			

Inspection of storage area	$353	$44	$176
WINERY POLLUTION PREVENTION PLAN			
WPPP - Small	$3,833	$479	$1,917
TRUCK AND HAUL			
Trucking to POTW - Small	$75,054	$9,382	$37,527

The table below summarizes the cost of compliance per employee for each cost type identified for all or large wineries. The size of the wastewater discharge at a winery does not necessarily correlate one-to-one with its size in terms of employees, but we made the simplifying assumption that large wineries were also large businesses.

Table 6: Compliance cost per employee for large wineries, for various compliance options and using two employee averages

COST TYPE - LARGE	Present Value	COST PER EMPLOYEE (ESD)	COST PER EMPLOYEE (WINERY INPUT)
GENERAL MONITORING REQUIREMENTS			
Labor	$353	$5	$35
Completing DMRs	$353	$5	$35
GENERAL ESTIMATING OR MEASURING FLOWS			
Flow meter	$1,000	$15	$100
GENERAL BMPS			
Employee training	$1,407	$22	$141
DISCHARGE-BASED: WWTPS			
Inspection costs - Large	$353	$5	$35
DISCHARGE-BASED: LAND TREATMENT VIA IRRIGATION TO MANAGED VEGETATION			
Treatment - Large	$110,000	$1,692	$11,000
Storage	$100,000	$1,538	$10,000
Lab fees	$979	$15	$98
Inspection costs - Large	$353	$5	$35
DISCHARGE-BASED: LAGOONS AND OTHER LIQUID STORAGE STRUCTURES			
Lagoon assessment	$431	$7	$43
New lagoon design and construction - Large	$376,970	$5,800	$37,697
Inspection costs - Large	$353	$5	$35
DISCHARGE-BASED: ROAD DUST ABATEMENT			
Treatment - Large	$110,000	$1,692	$11,000
Storage	$100,000	$1,538	$10,000
Inspection costs - Large	$353	$5	$35
DISCHARGE-BASED: SUBSURFACE INFILTRATION SYSTEM			
Treatment - Large	$110,000	$1,692	$11,000
Storage	$100,000	$1,538	$10,000
Lab fees	$1,859	$29	$186

System assessment	$431	$7	$43
New system - Large	$25,000	$385	$2,500
Inspection costs - Large	$353	$5	$35
DISCHARGE-BASED: INFILTRATION BASINS			
Treatment	$110,000	$1,692	$11,000
Storage	$100,000	$1,538	$10,000
Lab fees	$2,153	$33	$215
Inspection costs - Large	$353	$5	$35
RESIDUAL SOLID WASTE MANAGEMENT			
Inspection of storage area	$353	$5	$35
WINERY POLLUTION PREVENTION PLAN			
WPPP - Large	$7,666	$118	$767
TRUCK AND HAUL			
Trucking to POTW - Large	$300,218	$4,619	$30,022

Total compliance costs incurred by a winery as a result of the general permit will depend on the individual attributes and needs of the winery and its wastewater discharge. Most of the wineries covered by the general permit are small, in both wastewater discharge and employment. When comparing the majority of small wineries to the few very large wineries, compliance costs do not appear to be proportionate. However, when compliance costs per employee are compared across the majority of wineries, there will be variance that depends on winery attributes and choices made to comply with the general permit, but costs will generally be proportionate.

Chapter 4: Mitigation of Disproportional Impacts

While it is not clear that the general permit imposes disproportionate compliance burden on small businesses in a practical sense, because the majority of the industry is likely small, Ecology took the legal and feasible actions described in this chapter to reduce small business compliance burden.

4.1 Mitigation options under WAC 173-226-120

The governing rule states the following options should be considered to reduce the impact of the permit on small businesses.

- Establishing differing compliance or reporting requirements or timetables for small businesses.
- Clarifying, consolidating, or simplifying the compliance and reporting requirements under the general permit for small businesses.
- Establishing performance rather than design standards.
- Exempting small businesses from parts of the general permit.

4.2 Mitigation actions

Ecology has taken the following actions to mitigate the compliance cost impact of the permit. These actions were taken during the development of the permit, as Ecology incorporated input from wineries to best achieve environmental protection while reducing compliance burden.

- Allowing Permittees to collect a grab sample (one single sample) rather than a composite sample (a combination of three separate samples).
- Not requiring permittees discharging to WWTPs to sample their wastewater. They are only required to report the results of the WWTP's analysis.
- Not requiring permittees discharging to lagoons or other liquid storage structures to sample their wastewater.
- Reducing the frequency of wastewater sample analysis. Permittees required to analyze wastewater samples are only required to do so on a quarterly basis.
- Not requiring Group 1 permittees that discharge as irrigation to managed vegetation to analyze wastewater samples to determine how much wastewater they are permitted to discharge in order to not overload their crop/soil. The general permit now contains application rates and application frequencies.
- Not requiring permittees that discharge as road dust abatement to analyze wastewater samples to determine how much wastewater they are permitted to discharge. The general permit now contains application rates and application frequencies.
- Not setting a minimum annual frequency for permittees that discharge to a subsurface infiltration system to clean the tanks. They may clean on an as-needed basis.
- Not requiring an annual report.
- Not requiring Permittees installing a new subsurface infiltration system to treat domestic sewage separate from wastewater.

- Not requiring Permittees discharging to an existing subsurface infiltration system to retrofit their existing system or to treat domestic sewage separate from wastewater.
- Establishing differing reporting requirements for small wineries.
- Not covering wineries producing less than:
    - 53,505 gallons of wastewater per calendar year
    - 7,500 cases of wine or juice per calendar year
    - 17,835 gallons of wine or juice per calendar year
- Not covering wineries discharging to delegated or listed POTWs.
- Designing requirements for lagoon and subsurface infiltration systems to be able to be done by winery staff or management, without hiring outside engineers or other contractors.
- Requiring only adaptive management when benchmarks are exceeded.
- Allowing small wineries to estimate wastewater flow.
- Phasing in requirements for removal of fine solids and design of a waste management system that accommodates future growth and beneficially reuses wastewater.
- Phasing in assessment requirements.
- Establishing different benchmarks for Group 1 wineries for some types of wastewater discharge.
- Not requiring Permittees to conduct inspections more frequently than twice per year.

Exempting wineries from significant permit requirements, however, cannot be done legally and feasibly, because further reducing requirements is not possible without reducing the effectiveness of the permit in preventing creation or contribution to contamination of ground and surface waters, per the stated objectives of the Clean Water Act and chapter 90.48 RCW (the State Water Pollution Control Act).

References

RCW 34.05.272 requires Ecology to categorize sources of information used in significant agency actions made in the Water Quality Program.

Independent peer review: Review is overseen by an independent third party.

n/a

Internal peer review: Review by staff internal to Ecology.

n/a

External peer review: Review by persons that are external to and selected by Ecology.

n/a

Open review: Documented open public review process that is not limited to invited organizations or individuals.

n/a

Legal and policy documents: Documents related to the legal framework for the significant agency action, including but not limited to: federal and state statutes, court and hearings board decisions, federal and state administrative rules and regulations, and policy and regulatory documents adopted by local governments.

US Environmental Protection Agency (1999). Decentralized Systems Technology Factsheet, Septic Tank – Soil Absorption Systems. EPA 932-F-99-075.

US Environmental Protection Agency (2001). Cost Methodology Report for Beef and Dairy Feeding Operations. EPA-821-R-01-019.

WA Department of Ecology (2016). Economic Impact Analysis, National Pollution Discharge Elimination System (NPDES) Wastewater Discharge General Permit, Fresh Fruit Packing Industry. May 2016. Ecology publication no. 16-10-014.

Data from primary research, monitoring activities, or other sources, but that has not been incorporated as part of documents reviewed under independent, internal, or external peer review.

US Bureau of Labor Statistics (2016). May 2016 State Occupational Employment and Wage Estimates. Washington; Adjusted to 2017 dollars using: US Bureau of Labor Statistics (2017). Consumer Price Index for 2016 and July 2017.

US Treasury Department (2017). Series I Savings Bond Earnings Rates Effective May 1, 2017.

WA Employment Security Department (2016). Number of establishments and employment for all ownerships by 3-digit NAICS industry code. Washington State, 2016 Q1. Source: Employment Security Department/LMEA, Quarterly Census of Employment and Wages.

WA Liquor and Cannabis Board (2017). Domestic Winery Report. Detail Information. January 2016 to December 2016

WA Liquor and Cannabis Board (2016). Domestic Winery Report. Detail Information. January 2015 to December 2015

WA Liquor and Cannabis Board (2015). Domestic Winery Report. Detail Information. January 2014 to December 2014.

Records of the best professional judgment of Ecology employees or other individuals.

Email communication between Stacey Callaway and representatives from Kiona Vineyards and Winery, Isenhower Cellars, Columbia Winery, Claar Cellars, Ginkgo Forest Winery, Chateau Ste. Michelle Winery. August 2016 through August 2017.

Personal communication with Joel Bird, Manchester Environmental Lab, 8/31/2017. Lab staff indicated that private lab fees would likely be lower than those at Manchester Lab.

Personal communication with Nancy Rosenbower, Project Coordinator, Manchester Environmental Laboratory.

Personal communication with Stacey Callaway and Patrick J. Hallinan (2017). Email and attachment. Subject: Lagoon Price Estimate. 10/5/2017.

Other: Sources of information that do not fit into other categories.

Winerywise (2015). 2015 Winery Wastewater Survey. Conducted by Winerywise with help from the Washington Wine Industry Foundation.