Small Business Economic Impact Analysis

Concentrated Animal Feeding Operation General Permit

National Pollutant Discharge Elimination System and State Waste Discharge Permit

By

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For the

Water Quality Program

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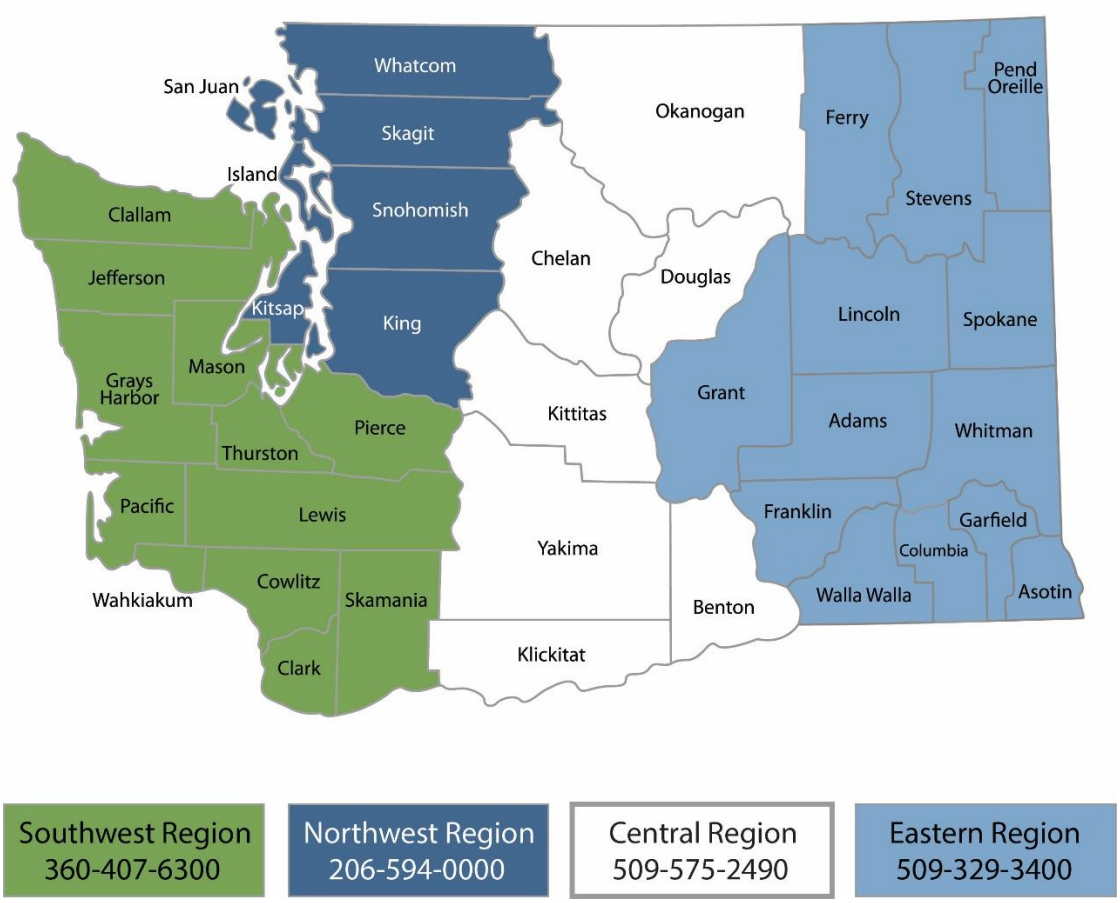

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Acronyms

BMP: Best Management Practice

CAFO: Concentrated Animal Feeding Operations

CFR: Code of Federal Regulations

CWA: Clean Water Act

DNMP: Dairy Nutrient Management Plan

EPA: Environmental Protection Agency

MPPP: Manure Pollution Prevention Plan

NPDES: National Pollutant Discharge Elimination System

NRCS: Natural Resource Conservation Service

RCW: Revised Code of Washington

SBEIA: Small Business Economic Impact Analysis

WAC: Washington Administrative Code

WSDA: Washington State Department of Agriculture

Executive Summary

This Small Business Economic Impact Analysis (SBEIA) estimates the costs of complying with the:

- Concentrated Animal Feeding Operations (CAFO) National Pollutant Discharge Elimination System (NPDES)[2] and State Waste Discharge General Permit[3] (combined permit).
- CAFO State Waste Discharge Permit (state-only permit) ("permit") [4].

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[5], 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.

For the purposes of the SBEIA, a small business is an independent entity with 50 or fewer employees. Government enterprises are excluded. Employment is typically based on the highest available level of ownership data.

Ecology uses the requirements set in a state rule as the baseline and we analyze requirements in Ecology's draft combined and state-only permit that are more stringent that the rule requirements.

Ecology also uses the requirements set in the United States Environmental Protection Agency's (EPA) CAFO rule (federal) and state law Chapter 90.64 RCW[6] as the baseline and we analyze requirements in Ecology's draft general permit that are more stringent than the federal rule or state law. However, if the federal CAFO rule mandates a requirement, but is not specific about how to meet that requirement, we compare to two baselines (both including the requirements of Chapter 90.64 RCW):

1. **Baseline 1: EPA's Idaho CAFO general permit[7].**
   Under Baseline 1, certain Ecology requirements are more stringent in comparison to EPA's set requirements for CAFOs in Idaho.

   We present estimates using EPA's Idaho CAFO general permit as a baseline, because in the absence of Ecology as a permitting authority, the permitting authority for the state

[2] https://www.epa.gov/npdes/animal-feeding-operations-npdes-cafo-permitting
[3] https://ecology.wa.gov/Water-Shorelines/Water-quality/Water-quality-permits
[4] https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Concentrated-animal-feeding-operation
[5] Chapter 173-226 WAC Waste Discharge General Permit Program
https://apps.leg.wa.gov/wac/default.aspx?cite=173-226
[6] https://apps.leg.wa.gov/RCW/default.aspx?cite=90.64
[7] NPDES Permit No. IDG010000

would be EPA. In cases where EPA's CAFO rule is non-specific about its requirements, we compare to EPA's CAFO general permit in Idaho as a proxy for how EPA might permit in Washington State. EPA is the permitting authority in Idaho. Washington State and Idaho have different characteristics, however, and EPA would not necessarily mandate the same requirements.

2. **Baseline 2: No federal mandate.**
   Under Baseline 2, the total cost is attributed to Ecology's discretion. Because, without a federal mandate, there would be no law or statute specifying what Ecology must put in a permit and requirements would be based solely on Ecology's discretion. Discretion refers to the requirements Ecology chose to include in the general permit that are more stringent than the baseline (no permit requirement).

Table i: Summary of estimated compliance costs per CAFO

Baseline for Comparison (in 2022 dollars)	Baseline 1	Baseline 2
Waste storage: Medium CAFO	$315,500	$315,500
Waste storage: Large CAFO	$1,262,000	$1,262,000
Waste storage: Manure, litter, process wastewater, and nutrient analysis	$2,883	$3,501
Soil Sampling: Low	$5,218	$12,976
Soil Sampling: High	$31,169	$38,927
Soil Sampling: Permit Fees	$10,180	$11,362
Manure pollution prevention plan: Low	$0	$0
Manure pollution prevention plan: High	$13,720	$13,720
Lagoon assessment, planning and repair: Low	$1,380	$1,380
Lagoon assessment, planning and repair: High	$472,000	$472,000

The costs above represent an average number of samplings per site and average permit fees[8]. Low estimates represent situations where fewer additional samples were needed. High estimates represent situations where more additional samples were needed. As discussed above, some of these costs may not apply to a specific permittee. These are costs over five years, using a 0.92-percent discount rate[9].

Table ii and Table iii, below, shows the cost per employee for small and large businesses under each baseline.

[8] The permit fee for non-dairy CAFOs was used for the combined permit, using 700 animal units to estimate permit fees, as dairies, which use lagoons, would fall under the state-only permit, while non-dairies would likely fall under the combined permit. The permit fee for dairy CAFOs was used for the state only permit. The state-wide average of roughly 1,000 cows per dairy was used to approximate permit fees, with the understanding that one animal unit is not equivalent to one cow. Fees for Fiscal Year 2023 and beyond were assumed to remain at Fiscal Year 2022 levels.

[9] US Treasury Department (2021). Historic average real rate of return on US Treasury Department I-Bonds. Associated historic average inflation rate is about two percent.

Table ii: Cost per employee for small businesses

Baseline for Comparison (in 2022 dollars)	Baseline 1	Baseline 2
Waste Storage: Medium CAFO	$21,033	$21,033
Waste Storage: Large CAFO	$84,133	$84,133
Waste Storage: Manure, litter, process wastewater, and nutrient analysis	$192	$233
Soil Sampling: Low	$348	$865
Soil Sampling: High	$2,078	$2,595
Soil Sampling: Permit Fees	$679	$757
Manure pollution prevention plan: Low	$0	$0
Manure pollution prevention plan: High	$915	$915
Lagoon assessment, planning and repair: Low	$92	$92
Lagoon assessment, planning and repair: High	$31,467	$31,467

Table iii: Cost per employee for large businesses

Baseline for Comparison (in 2022 dollars)	Baseline 1	Baseline 2
Waste Storagea: Medium CAFO	$4,207	$4,207
Waste Storagea: Large CAFO	$16,827	$16,827
Waste Storagea: Manure, litter, process wastewater, and nutrient analysis	$38	$47
Soil Sampling: Low	$70	$173
Soil Sampling: High	$416	$519
Soil Sampling: Permit Fees	$136	$151
Manure pollution prevention plan: Low	$0	$0
Manure pollution prevention plan: High	$183	$183
Lagoon assessment, planning and repair: Low	$18	$18
Lagoon assessment, planning and repair: High	$6,293	$6,293

It is likely the costs of complying with the permit disproportionately burden small businesses. Ecology is therefore required to mitigate this disproportionate impact to the extent it is legal and feasible.

Ecology could not phase in additional requirements for small business, because they are intended to help CAFOs meet legal requirements that protect the state's surface and ground waters from unpermitted discharges and contamination (Chapter 90.48 RCW [10], Chapter 173-201A WAC[11], Chapter 173-200 WAC).

[10] https://apps.leg.wa.gov/RCW/default.aspx?cite=90.48
[11] https://apps.leg.wa.gov/WAC/default.aspx?cite=173-201A

If the size of a small business correlates with the size of the CAFO, a small business will inherently have lower reporting requirements because they have smaller degrees of sampling and inspection.

To mitigate the burden on the smallest businesses (small CAFOs), we included a lower threshold for CAFOs that require a permit. If Ecology determine a small CAFO is a significant contributor of pollutants, they will require the small business to apply for a permit.

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Chapter 1: Introduction to the Small Business Economic Impact Analysis

This Small Business Economic Impact Analysis (SBEIA) estimates the costs of complying with the:

- Concentrated Animal Feeding Operations (CAFO) National Pollutant Discharge Elimination System (NPDES)[12] and State Waste Discharge General Permit[13] (combined permit).
- CAFO State Waste Discharge Permit (state-only permit) ("permit")[14].

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[15], 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 SBEIA 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 businesses 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.

[12] https://www.epa.gov/npdes/animal-feeding-operations-npdes-cafo-permitting
[13] https://ecology.wa.gov/Water-Shorelines/Water-quality/Water-quality-permits
[14] https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Concentrated-animal-feeding-operation
[15] Chapter 173-226 WAC Waste Discharge General Permit Program https://apps.leg.wa.gov/wac/default.aspx?cite=173-226

- A comparison, to the greatest extent possible, of the cost of compliance for small businesses with the cost of compliance for the largest 10 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 SBEIA, a small business is an independent entity with 50 or fewer employees. Government enterprises are excluded. Employment is typically based on the highest available level of ownership data.

1.3 Permit Coverage

The Federal Clean Water Act (CWA[16]) establishes water quality goals for navigable (surface) waters of the United States. One of the mechanisms for achieving the goals of the CWA are the NPDES permits.

EPA delegated the responsibility for administering the NPDES permit program in Washington State to Ecology. The delegation of authority is based on Chapter 90.48 RCW[10], which defines Ecology's authority and obligations in administering the NPDES permit program.

When developing and issuing NPDES permits, Ecology must comply with the CWA and EPA's implementing rules. Ecology does not have the authority to issue NPDES permits to federal facilities or on federal and Tribal Lands.

The CAFO general permit covers the confined animal or poultry growing operations for meat, milk or egg production, or stabling, and its supporting activities. Those covered by the permit fall under NAICS 112: Animal Production and Aquaculture[17]. This covers:

- Milk cows
- Beef
- Veal
- Raising heifers
- Pigs
- Poultry (chickens, turkeys, and ducks)
- Sheep

[16] 33 U.S.C. §1251 et seq.
[17] https://www.census.gov/naics/?input=112&year=2017&details=112

- Horses

The CAFO general permit may cover other animal types if Ecology determines the facility is a significant contributor of pollutants to state waters and meets the definition of a CAFO.

Only CAFOs that discharge pollutants into surface or ground waters are required to get a permit. All CAFOs have the ability to avoid the required permit by not discharging to state waters.

CAFOs are defined as a point source of pollution in the CWA, Section 502(14)[18] if there is a discharge to surface waters. Sources of pollution from CAFOs include, but are not limited to:

- Manure and litter generated by livestock.
- Process waste water from production (e.g. milk parlor wash water, egg wash water)
- Run-off from composting or silage leachate.

Manure, litter, and process wastewater contain nitrogen and phosphorus compounds (which feed the growth of algae and bacteria) as well as fecal coliform bacteria. The content is variable depending on animal type, feeding regime, and other facility practices.

There are currently 25 permittees.

1.4 Excluded costs

This SBEIA 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 SBEIAs 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.
- Dairy Nutrient Management Act (Chapter 90.64 RCW).

1.5 Compliance costs included in the SBEIA

[18] https://www.epa.gov/cwa-404/clean-water-act-section-502-general-definitions

According to WAC 173-226-120, the SBEIA must estimate the costs of the following:

- Minimum treatment technology
- Monitoring
- Reporting
- Recordkeeping
- Plan submittal
- Equipment
- Supplies
- Labor
- Administrative costs

Chapter 2: Costs of Compliance with the General Permit

2.1 Baseline

WAC 173-226-120 describes the costs Ecology is required to examine in this economic impact analysis. However, there are certain requirements Ecology does not include in the analysis, because they are required regardless of the permit, and these requirements are discussed in this section.

The baseline for an economic analysis is the regulatory context of an industry in the absence of the proposed general permit. When adopting a state CAFO general permit, at a minimum, Ecology must meet the federal requirements. Ecology must also meet any state rules.

For many types of CAFOs, the baseline is the existing state and federal water quality protection rule (e.g. Clean Water Act, State Water Pollution Control Act). The dairy segment may be the largest CAFO industry segment that is covered by either the combined permit or state-only permit[19]. Being the largest industry segment, costs to dairies above baseline (Chapter 90.64 RCW requirements) are used to represent costs to CAFOs from permit requirements.

Existing baseline requirements for dairy operations in Washington are set in the Dairy Nutrient Management Act,[20] outside of any Ecology permit program. RCW 90.64.026(1) requires all dairies to have a Dairy Nutrient Management Plan (DNMP).[21] RCW 90.64.026(2) requires that the DNMP contain the elements established by the Conservation Commission[22]. Many of the elements of a DNMP are incorporated into the combined and state-only permits. Because dairies are likely the main industry segment covered by the combined and state-only permits, current requirements under Chapter 90.64 RCW and the Dairy Nutrient Management Act are considered part of the baseline for analyzing additional permit related costs to CAFOs.[23]

Even if the CAFO general permit did not exist, CAFOs operating in Washington State would be required to comply with the federal and state rules. If the combined and state-only permit requirements are not more stringent than the federal or state laws and rules, they are not considered as additional costs in this economic impact analysis because they would still be incurred to comply with the law.

As such, this economic impact analysis only analyzes the additional costs resulting from the general permit that are more stringent than those in the federal and state laws and rules. In

[19] Dairies represent 68% of the 25 current permittees. An additional 8% were dairies when they initially obtained permit coverage, but transitioned to non-dairy livestock in the course of the permit cycle.
[20] Chapter 90.64 RCW
[21] RCW 90.64.026(1)
[22] The elements established by the commission can be found at: http://agr.wa.gov/FoodAnimal/Livestock-Nutrient/DairyNutrientMgmtPlans.aspx
[23] Dry lot manure is not liquid and CAFOs using it would not have liquid lagoon storage.

addition to the federal CAFO rule, other pertinent standards set in state and federal law or rule are:

- State ground water quality standards.
- State surface water quality standards[11].
- State sediment management standards.
- Human health based criteria in the National Toxics Rule[24] (40 CFR 131.36).
- Dairy Nutrient Management Act[6].

Ecology uses the requirements set in a state rule as the baseline and we analyze requirements in Ecology's draft combined and state-only permit that are more stringent than the rule requirements.

Some requirements of the federal CAFO rule are non-specific. For example, the federal rule states that CAFOs must maintain "adequate" waste storage, but is non-specific about what is "adequate" or how to achieve adequacy. Even if certain requirements are partially due to the directives of the federal rule, they are not separable from the proposed general permit's specific requirements.

Ecology also uses the requirements set in the federal CAFO rule and state law Chapter 90.64 RCW as the baseline and we analyze requirements in Ecology's draft general permit that are more stringent than the federal rule or state law. However, if the federal CAFO rule mandates a requirement, but is not specific about how to meet that requirement, we compare to two baselines (both including the requirements of Chapter 90.64 RCW):

1. **Baseline 1: EPA's Idaho CAFO general permit[25].**
   EPA is the permitting authority in Idaho. Certain Ecology requirements are more stringent in comparison to the EPA-set requirements for CAFOs in Idaho.

   We present estimates using EPA's Idaho CAFO general permit as a baseline, because in the absence of Ecology as a permitting authority, the permitting authority for the state would be the EPA.

   In cases where the EPA CAFO rule is non-specific about its requirements, we compare to the EPA CAFO general permit in Idaho as a proxy for how the EPA might permit in Washington State. Washington State and Idaho have different characteristics, however, and the EPA would not necessarily mandate the same requirements.

2. **Baseline 2: No federal mandate.**
   Without a federal mandate, the total cost is at Ecology's discretion, because, in such a situation, there would be no law or statute specifying what Ecology must put in a permit and requirements would be based solely on Ecology's discretion. Discretion refers to the

[24] https://ecfr.federalregister.gov/current/title-40/chapter-I/subchapter-D/part-131#131.36
[25] NPDES Permit No. IDG010000

requirements Ecology chose to include in the general permit that are more stringent than the baseline (no permit requirement).

2.2 Compliance Requirements

Costs associated with permit requirements include costs of complying with:

1. Waste storage.
2. Management of mortalities.
3. Diversion of clean water.
4. Prevention of direct animal contact with water.
5. Chemical handling.
6. Conservation practices to control nutrient loss.
7. Manure, litter, and process wastewater sampling and nutrient analysis.
8. Soil sampling and nutrient analysis
9. Protocols for land application of manure, litter, and process wastewater.
10. Record keeping.
11. One-time waste storage inspection.
12. Manure Pollution Prevention Plan (MPPP)
13. Planning and implementation of repairs for high-risk lagoons

The impact, if any, on permittees of each requirement is discussed below.

2.2.1 Waste storage

The EPA CAFO rule does not specify requirements for waste storage beyond that the CAFO must have adequate storage. The permit requires permittees to locate solid waste storage facilities on impervious surfaces (such as concrete) or soil pads with low permeability. While this is already a strongly recommended best practice, facilities may incur additional costs.

2.2.2 Management of mortalities

Ecology's general permit requirements for management of mortalities are the same as the federal rule, with the exception of additional state requirements mandated by Chapters 16.36[26] and 70A.205 RCW[27], and Chapters 16-25[28] and173-350 WAC[29]. The state rules dictate, for

[26] https://apps.leg.wa.gov/RCW/default.aspx?cite=16.36
[27] https://app.leg.wa.gov/RCW/default.aspx?cite=70A.205
[28] https://apps.leg.wa.gov/WAC/default.aspx?cite=16-25
[29] https://apps.leg.wa.gov/WAC/default.aspx?cite=173-350

example, burial or composting setbacks away from well heads, property lines, and flood plains. Chapter 90.64 RCW does not include requirements for management of mortalities.

Because these additional state requirements are mandated by existing law or rule they are considered part of the baseline and as a result they are not analyzed in this document.

2.2.3 Diversion of clean water

The requirements for diversion of clean water are identical to those mandated by EPA's CAFO rule and largely similar to Chapter 90.64 RCW[6] requirements. These include diverting clean water away from facilities through the use of gutters, berms, or other methods. Because they are mandated by federal rule, they are not analyzed in this document.

2.2.4 Prevention of direct animal contact with water

Baseline 1

Under Baseline 1, the requirements for preventing direct animal contact with water are identical to those mandated by EPA's CAFO rule. As such, they are not analyzed in this document.

Baseline 2

Chapter 90.64 RCW[6] does not include direct requirements for preventing direct animal contact with water. Therefore, under Baseline 2, permittees may incur some additional costs due to this requirement, however they would be minimal, as it is already a strongly recommended practice.

2.2.5 Chemical handling

Baseline 1

Under Baseline 1, the requirements for chemical handling are identical to those mandated by EPA's CAFO rule. As such, they are not analyzed in this document.

Baseline 2

Under Baseline 2, Chapter 90.64 RCW[6] does not include requirements for chemical handling, therefore, permittees will likely incur additional costs in this area. However, it is not possible to estimate likely costs with any level of certainty, as costs will be site-specific.

2.2.6 Conservation practices to control nutrient loss

Baseline 1

Under Baseline 1, the requirements for conservation practices to control nutrient loss (the addition of waste to the waters of the state) in the draft Ecology general permit are identical to those mandated by EPA's CAFO rule.

Baseline 2

Chapter 90.48 RCW[10]prohibits the discharge of pollutants into state waters.

Under Baseline 2, permittees must use technology, BMPs, or buffers of some type to ensure there is no surface water discharge from their land application fields. This represents no change from the baseline.

2.2.7 Manure, litter, process wastewater, and nutrient analysis

Baseline 1

Under Baseline 1, the draft permit requires spring sampling of all nutrient sources as well as two additional samplings spaced throughout the application season to account for potential changes in nutrient concentration.

EPA's CAFO rule requires nutrient sources to be sampled once per year.

Compared to Idaho's general permit, Ecology's draft general permit requires CAFOs to:

- Provide more analyses on each sample.
- Take samples more frequently.

Baseline 2

Chapter 90.64 RCW[6] does not specify what manure and soil sampling occurs. The law requires a dairy to have a DNMP that contains elements specified by a technical advisory committee[30]. One of the specific elements is whether manure and soil sampling and testing procedures are required, by the DNMP. The DNMP does not specify the testing procedures for manure and soil sampling. However, Ecology chose to use the guidance documents currently in use[31]. Based on discussions with producers, industry representatives, and comments on previous permits, the sampling based on the listed guidance documents should be considered the baseline for a dairy operation under Chapter 90.64 RCW only.

In comparison with the state rule, Ecology's draft permit requires a full set of analyses (four tests) for all nutrient sources a total of three times per year. We therefore assume that in the absence of Ecology's draft general permit, non-dairy permittees would not need any sampling.

2.2.8 Soil sampling and nutrient analysis

Baseline 1

EPA's CAFO rule does not provide specific guidance on manure, litter, process wastewater, and soil sampling.

[30] Available on the Washington State Dairy Association's Website at: http://agr.wa.gov/foodanimal/livestock-nutrient/dairynutrientmgmtplans.aspx

[31] Bary, A., Cogger, C., Sullivan, D. (2000). *Fertilizing with Manure.* Pacific Northwest Extension, WSU Food and Farm Connections Team; Moore, A., de Haro-Marti, M., Chen, L. (2015). *Sampling Dairy Manure and Compost for Nutrient Analysis*. Pacific Northwest Extension, University of Idaho; Staben, M. L., et. al. (2003). *Monitoring Soil Nutrients Using a Management Unit Approach*. Pacific Northwest Extension. Pub. No. PNW 570E; Sullivan, D., Cogger, C., Bary, A., Bittman, S., Brewer, L. (2021). *Post-Harvest Soil Nitrate Testing for Manured Grass and Silage Corn (West of the Cascades)*. Oregon State University Extension Service. Pub. No. EM 8832.

In comparison with Idaho's CAFO general permit, Ecology's draft general permit requires CAFOs sample at one to three different depths[32] twice per year:

1. Once, before the first application of manure, litter, or process wastewater onto fields.
2. After the harvest of crops.

This results in a total of two to six samples per year. Samples must represent the fields being sampled. Therefore, the number of required samples varies substantially depending on the characteristics of the fields in question.

Idaho's general permit requires permittees to sample once a year.

Ecology's draft general permit requires CAFOs to analyze samples for:

- Nitrate + Nitrite.
- Ammonia/Ammonium N.
- Total Kjeldahl N

Additionally, every three years, the fall sample must include:

- Phosphorus.
- Organic Matter.

The draft permit requires sampling before land application, while the Washington State Department of Agriculture's (WSDA) Dairy Nutrient Management Program requires post-harvest soil testing for compliance.

Idaho's general permit only requires the CAFO to sample for:

- Nitrogen.
- Phosphorus.

Compared to Idaho's general permit, Ecology's draft general permit requires CAFOs to:

- Provide a greater number of analyses on each sample.
- Take samples more frequently.

Baseline 2

As discussed above, the sampling based on the listed guidance documents should be considered the baseline for a dairy operation under Chapter 90.64 RCW only.

In general, soil samplings that are part of NMPs are limited to a single representative 0-12 inch soil depth sample per crop field in the fall after harvest. Some operations may voluntarily have

[32] Areas with 25 inches or less of annual precipitation are required to sample at 0-12 inches and at 12-24 inches. In some cases, they may need to take an additional sample at 25-36 inches. Areas with more than 25 inches of precipitation are required to sample at 0-12 inches.

more sampling done. Sample analysis is done for total nitrogen (which is nitrate+nitrite, organic nitrogen, and ammonia/ammonium), but an accredited lab is not required to do that analysis.

In comparison with the state rule, Ecology's draft permit requires a full set of analyses (two tests) at one to three depths, twice a year, for four to twelve analyses total per year for each sampling location. We therefore assume that in the absence of Ecology's draft general permit, non-dairy permittees would not need any sampling.

2.2.9 Protocols for the land application of waste

EPA's CAFO rule requires Ecology to develop technical standards for the land application of waste, but does not provide specific guidance on how. Ecology's draft general permit also prohibits waste application to:

- Fields that do not have crops on them or that are not being prepared for crops.
- Field buffers and setbacks.

Chapter 90.64 RCW[6] has a number of requirements for land application. Ecology discussions with industry representatives indicate they are currently applying at agronomic rates and that there is adequate storage to accommodate the amount of manure, litter, and process wastewater generated.

2.2.10 Record keeping

Under Baseline 1, the federal CAFO rule (40 CFR 122.42(e)(4)[33] and 40 CFR 122.41[34]) requires permittees prepare and submit an annual report that provides the field budget (the part of the NMP that budgets nutrients for specific fields) for the next year, as well as non-compliance notification. The conditions for terminating coverage under the general permit is mandated by federal rule 40 CFR 122.22[35], 122.64[36], and state rule WAC 173-226-240[37].

Under Baseline 2, Chapter 90.64 RCW[6] and WAC 16-611-020[38] have a number of record keeping requirements, including:

- Soil and manure tests.
- Application of the solid and liquid components of the manure.
- Cropping.
- Other significant factors and practices.

[33] https://ecfr.federalregister.gov/current/title-40/chapter-I/subchapter-D/part-122#122.42
[34] https://ecfr.federalregister.gov/current/title-40/chapter-I/subchapter-D/part-122#122.41
[35] https://ecfr.federalregister.gov/current/title-40/chapter-I/subchapter-D/part-122#122.22
[36] https://ecfr.federalregister.gov/current/title-40/chapter-I/subchapter-D/part-122#122.64
[37] https://apps.leg.wa.gov/WAC/default.aspx?cite=173-226-240
[38] https://app.leg.wa.gov/wac/default.aspx?cite=16-611-020

Appendix A shows a comparison of current record keeping requirements with permit requirements. These requirements show significant overlap.

While conducting visual inspections of clean and wastewater lines is currently required, documenting the inspections is not. This documentation is now required under the draft permit. Ecology provides a template for recording these inspections. Costs will be minimal, as the inspections are already occurring.[39]

Similarly, while collecting and retaining relevant information is required under Chapter 90.64 RCW[6], there is no requirement to report that information. Under the draft permit annual reporting is required. Impact should be minimal, as the information should be readily available.

2.2.11 One-time waste storage inspection

The draft permit requires a one-time waste storage inspection. The lagoon inspection must be done by a qualified expert using the Washington Natural Resource Conservation Service (NRCS) Engineering Technical Note 23 for lagoon assessment and reported. The assessment must contain information on:

- Design and construction.
- Structure site characteristics.
- Operation and maintenance.

The Engineering Technical Note 23 is an assessment document produced by the NRCS for assessing the current state of lagoons to determine how much of a risk the lagoon poses to the environment. Impact is the cost of the assessment.

The draft permit also requires a one time inspection of the soild waste storage facility. The inspection must be done by a qualified expert. If a soil pad is used, the permability of the soils must be tested.

2.2.12 Manure pollution prevention plan

The draft permit requires development and implementation of a MPPP. Currently, all dairy producers have a DNMP in place and are implementing those plans. The requirements of these plans closely align; therefore, many of the elements required by the MPPP are already developed. A permittee would be able to copy the necessary information directly, thereby greatly reducing the time cost of MPPP development. Appendix B contains a comparison of the requirements for a DNMP and a MPPP.

If the non-dairy permittee does not have a NMP, it will absorb the entire cost of creating a MPPP.

[39] If no irregularity occurs, documentation would entail checking a box indicating such. If an irregularity occurs, documentation would entail detailing said irregularity.

2.2.13 Planning and implementation of repairs for high-risk lagoons

If a lagoon is assessed at Levels 3A, 3B, 3C, or 4, NRCS recommends discontinued use until repairs can be made. In these cases, the permit requires the permittee to develop a plan to address the deficiency within six months and start implementing the plan within 18 months. If a lagoon is assessed at Levels 2B or 2C, the minor deficiencies must be addresses immediately.

Industry representatives have indicated, during meetings discussing the CAFO permit, that their producer's lagoons are in good shape. In addition, as the NRCS lagoon assessment has been available for several years as part of receiving cost-share money from NRCS, a producer must complete the NRCS lagoon assessment and address deficiencies in the lagoon before NRCS provides funding.

Depending on which risk category a lagoon is assessed, the creation and implementation of a repair plan could range from minor effort and cost, up to and including replacement of the lagoon.

2.3 Compliance costs

The costs for CAFOs to comply with Ecology's draft CAFO general permit depend somewhat on the number of acres the CAFO encompasses due to sampling requirements. The number of animals is usually proportional to the acreage. While it seems appropriate to assume CAFOs with less acreage will have fewer employees, this is not always the case. In this Chapter, Ecology estimated ranges of costs for most requirements based on the size of the CAFO in terms of the number of animals. We only give estimates for Medium 1, Medium 2, Medium 3, and Large[40] CAFOs because CAFOs with less than a threshold number of animals (Small CAFOs based on EPA rule definition in 40 CFR § 122.23(b))[41] are not required to apply for a permit unless Ecology determines they are a significant contributor of pollutants[42].

Compliance costs specific to the permit fall into the following categories:

1. Waste storage.
2. Manure, litter, process wastewater, and nutrient analysis.
3. Soil sampling.
4. Permit fees.
5. Manure pollution prevention plan.
6. Lagoon assessment, planning and repair.

[40] CAFO size definitions appear in Appendix C.
[41] https://ecfr.federalregister.gov/current/title-40/chapter-I/subchapter-D/part-122#122.23
[42] Cost estimates for Small CAFOs are not available. Estimates for Medium 1 CAFOs may be used to conservatively estimate the upper bound for Small CAFO costs.

2.3.1 Waste storage

If a permittee is not currently using best practices for solid waste storage, they may need to install concrete pads beneath their storage site(s). These sites average 50,000 ft^2 for Medium CAFOs and 200,000 ft^2 for large CAFOs[43]. With concrete slabs averaging $6.31 per ft^2,[44] concrete slabing will cost permittees an average of $315,500 each for medium CAFOs and $1,262,000 for large CAFOs. This is a conservative estimate of the costs for this requirement, as the permittee may already have concrete slabs in place or choose to place sites on soils with low permeability. Permittees would only choose to build concrete slabs if it was their least-cost alternative.

2.3.2 Manure, litter, process wastewater, and nutrient analysis

EPA's CAFO rule does not provide specific guidance on nutrient source sampling. In comparison with Idaho's CAFO general permit, Ecology's draft general permit specifies CAFOs must sample sources a total of three times annually:

1. Once in the spring.
2. Twice spaced throughout the application season.

Idaho's general permit requires permittees to sample once a year.

Ecology's general permit specifies the CAFO must sample for:

- Nitrate + Nitrite.
- Organic Nitrogen.
- Ammonia/Ammonium N.
- Phosphorus.

EPA's Idaho general permit only requires the CAFO to sample for:

- Nitrogen.
- Phosphorus.

Ecology's draft general permit requires CAFOs to sample more frequently compared to EPA's Idaho general permit. It also requires more analyses (4) be done for each sample than EPA's Idaho permit (2).

From the 2002 EPA Cost Methodology[45] we find a one-time capital cost for manure sampling to be $42 (to purchase sampling equipment). There is also an estimated analysis cost of $56 per

[43] Per email from Kyrre Flege, Washington State Department of Agriculture, 3/31/2022.
[44] https://concrete.promatcher.com/cost/washington.aspx
[45] United States Environmental Protection Agency (2002) Cost Methodology for the Final Revisions to the National Pollutant Discharge Elimination System Regulation and the Effluent Guidelines for Concentrated Animal Feeding Operations

sample based on a survey of costs by state Natural Resource Conservation Service (NRCS) laboratories. Costs have been adjusted for inflation.[46]

The Ecology general permit requires two more samples and ten more analyses than the Idaho general permit.

Table 1: Comparison of permit requirements for analysis and baseline

	Samples Per Year	Analyses Per Year
Idaho general permit	1	2
Ecology general permit	3	12
Increase	2	10

In comparison to a baseline of no federal mandate, as the CAFO rule does not provide specifics, the cost of all three samples and 12 total analyses per year is attributed to Ecology discretion. CAFOs average roughly three nutrient sources.

The total five-year present value[47] cost per CAFO per nutrient source is:

- Two thousand eight hundred and eighty three dollars compared to the Idaho general permit.
- Three thousand five hundred and one dollars compared to no federal mandate.

These are costs over 5 years, using a .92 percent discount rate[48].

2.3.3 Soil sampling

EPA's CAFO rule does not provide specific guidance on waste and soil sampling. In comparison with Idaho's CAFO general permit, Ecology's general permit specifies CAFOs must sample soil at one to three different depths twice per year:

1. Before applying waste onto fields.
2. After the harvest of crops.

Idaho's general permit requires permittees to sample once a year.

Ecology's draft general permit specifies the CAFO must sample for:

- Nitrate + Nitrite.
- Ammonia/Ammonium N.

[46] GDP Implicit Price deflator, https://fred.stlouisfed.org

[47] When analyzing money over time, it is necessary to discount future payments. This is because money today is worth more than money in the future. For example, if offered $100 today or $100 a year from now, one would choose today, because the $100 could earn interest over the year and be worth more than $100 a year from now. Similarly, $100 a year from now would be worth less than $100 now. The interest rate used to evaluate these payments is called the discount rate.

[48] US Treasury Department (2020). Historic average real rate of return on US Treasury Department I-Bonds. Associated historic average inflation rate is approximately 2 percent.

- Total Kjeldahl N

Additionally, every three years, the fall sample must include:

- Phosphorus.
- Organic Matter.

EPA's Idaho general permit only requires the CAFO to sample for

- Nitrogen.
- Phosphorus.

Ecology's general permit requires CAFOs to both provide a greater number of samples, as well as sample more frequently compared to EPA's Idaho general permit. It also requires more analyses (four) be done for each sample than the EPA Idaho permit (two).

From the 2002 EPA Cost Methodology we find a one-time capital cost for soil sampling to be $35 (to purchase sampling equipment). There is also an estimated analysis cost of $14 per sample based on a survey of costs by state Natural Resource Conservation Service (NRCS) laboratories. Costs have been adjusted for inflation.[49]

Sampling must be representative of the field(s) which will receive the manure. The number of samples required is directly related to the size and landscape of the area being sampled.

Currently, an average of 10.5 fields per farm are sampled.[50] Compared to the Idaho general permit, permittees in Washington State must gather 25 to 75 samples total per year and perform a total of 50 – 150 analyses on these samples, as opposed to 13 samples per year under the Idaho general permit with a total of 25 analyses performed on these samples. The Ecology general permit therefore requires 12 to 62 additional samples and 25 – 125 additional analyses compared to the Idaho general permit. Additionally, every three years, an additional 50-150 analyses must be performed for Washington permittees.

Table 2: Comparison of permit requirements for sampling and baseline

	Samples per year	Analyses per year
Idaho general permit	13	25
Ecology general permit	21 - 63	42 - 126
Increase	8 - 50	17 - 101

In comparison to a baseline of no federal mandate, as the CAFO rule does not provide specifics, the cost of all 21 to 63 samples per year is at Ecology's discretion, as are the additional 42 to 126 analyses every three years.

[49] GDP Implicit Price deflator, https://fred.stlouisfed.org
[50] Email correspondence with Chery Sullivan April 22, 2021.

The cost per CAFO under Baseline 1 is $5,218 to $31,169, and the cost per CAFO under Baseline 2 ranges from $12,976 to $38,927. These are costs over 5 years, using a 0.92-percent discount rate[51].

2.3.4 Permit fees

Permit fees vary by type of CAFO and the number of animal units served by the CAFO. Table 3 summarizes the fee schedule.

Table 3: Permit Fees[52]

Category	FY 2022	FY 2023
Non-Dairy CAFO: <200 animal units	$308	$308
Non-Dairy CAFO: 200 - <400 animal units	$772	$772
Non-Dairy CAFO: 400 - <600 animal units	$1,546	$1,546
Non-Dairy CAFO: 600 - <800 animal units	$2,317	$2,317
Non-Dairy CAFO: 800 animal units and up	$3,094	$3,094
Dairies - $0.50 per animal unit subject to listed maximums	$2,076	$2,076

2.3.5 Manure pollution prevention plan

The cost of creating a MPPP will vary with the amount of pre-existing information for the CAFO. CAFOs with a current NMP will have already completed many of the requirements for the MPPP, as these plans carry many similar requirements.[53] However, if a CAFO does not have a pre-existing NMP, the entire cost of preparing the MPPP will be attributable to the permit.

Using the 2002 EPA Cost Methodology[54], preparation of a NMP can range from $5,740 to $13,720. As the plans are very similar in scope, Ecology used a range of $0 to $13,720 as the estimated cost of preparing a MPPP, depending on how much information the CAFO has already prepared. Costs have been adjusted for inflation.[55]

2.3.6 Lagoon assessment, planning and repair

The cost of conducting the one-time lagoon assessment is estimated to be about $460 per lagoon, including eight hours of staff time for an agricultural assessor. CAFOs average three lagoons each[56], for a total cost of $1,380.

At this time Ecology does not have data on how many lagoons will rate risk category 3 or 4 and therefore need to have deficiencies addressed. WSDA is currently gathering data based on their

[51] US Treasury Department (2020). Historic average real rate of return on US Treasury Department I-Bonds. Associated historic average inflation rate is approximately 2 percent.
[52] Animal units are defined in WAC 173-224-030.
[53] Appendix B contains detailed information on which portions of the MPPP and NMP overlap.
[54] Ibid.
[55] GDP Implicit Price deflator, https://fred.stlouisfed.org
[56] Per email from Chery Sullivan, April 22, 2021.

use of the NRCS assessment on Yakima County dairy lagoons. However, the risk category data will not be available to Ecology for some time. Therefore, to update cost assessment, Ecology is conservatively assuming that 25 percent of lagoons will need some work based on the NRCS assessment result of risk category 3 or 4. However, based on discussions with industry representatives indicating that their producer's lagoons are in good shape, as well as the assessment being used to receive NRCS cost-share funding, Ecology believes the actual number of lagoons that will need work based on the NRCS assessment is going to be much lower.

Depending on which risk category a lagoon is assessed, the cost to create and implement a repair plan could range from minor repairs, which would include minor effort and cost, up to and including replacement of the lagoon.

Using the 2002 EPA Cost Methodology[57], replacement of a lagoon can range from $56,000 to $630,000. Minor repairs could be as low as a few hundred dollars. Costs have been adjusted for inflation.[58]

The average expected cost to permittees using the conservative estimates of three lagoons per CAFO, and 25 percent of lagoons needing at least some work based on the NRCS assessment ranges from a few hundred dollars to $42,000 - $472,000.

2.4 Overall compliance costs

This EIA compares the quantified costs of compliance for small and large businesses to determine if the general permit disproportionately impacts small businesses. Ecology compares costs by looking at the cost per employee, where businesses with fewer than 50 employees are considered small businesses. Table 4 summarizes the estimated compliance costs per CAFO.

Table 4: Summary of estimated compliance costs per CAFO

Baseline for Comparison (2022$)	Baseline 1	Baseline 2
Waste storage: Medium CAFO	$315,500	$315,500
Waste storage: Large CAFO	$1,262,000	$1,262,000
Waste storage: Manure, litter, process wastewater, and nutrient analysis	$2,883	$3,501
Soil Sampling: Low	$5,218	$12,976
Soil Sampling: High	$31,169	$38,927
Soil Sampling: Permit Fees	$10,180	$11,362
Manure pollution prevention plan: Low	$0	$0
Manure pollution prevention plan: High	$13,720	$13,720
Lagoon assessment, planning and repair: Low	$1,380	$1,380
Lagoon assessment, planning and repair: High	$472,000	$472,000

These costs represent an average number of samplings per site, and average permit fees59. Low estimates indicate fewer additional samples were needed. High estimates indicate more

[57] ibid.

[58] GDP Implicit Price deflator, https://fred.stlouisfed.org

[59] The permit fee for non-dairy CAFOs was used for the combined permit, using 700 animal units to estimate permit fees, as dairies, which use lagoons, would fall under the state-only permit, while non-dairies would likely

additional samples were needed. As discussed above, some of these costs may not apply to a specific permittee. These are costs over five years, using a 0.92-percent discount rate60.

fall under the combined permit. The permit fee for dairy CAFOs was used for the state only permit. The state-wide average of roughly 1,000 cows per dairy was used to approximate permit fees, with the understanding that one animal unit is not equivalent to one cow. Fees for FY 2023 and beyond were assumed to remain at FY 2022 levels.

[60] US Treasury Department (2021). Historic average real rate of return on US Treasury Department I-Bonds. Associated historic average inflation rate is approximately 2 percent.

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

There are both small and large businesses in the CAFO industry. Small businesses average 15 employees, and large businesses average 75 employees.

3.2 Relative costs of compliance

Table 5 and Table 6, below, shows the cost per employee for small and large businesses under each baseline.

Table 5: Cost per employee for small businesses

Baseline for Comparison (2022$)	Baseline 1	Baseline 2
Waste Storage: Medium CAFO	$21,033	$21,033
Waste Storage: Large CAFO	$84,133	$84,133
Waste Storage: Manure, litter, process wastewater, and nutrient analysis	$192	$233
Soil Sampling: Low	$348	$865
Soil Sampling: High	$2,078	$2,595
Soil Sampling: Permit Fees	$679	$757
Manure pollution prevention plan: Low	$0	$0
Manure pollution prevention plan: High	$915	$915
Lagoon assessment, planning and repair: Low	$92	$92
Lagoon assessment, planning and repair: High	$31,467	$31,467

Table 6: Cost per employee for large businesses

Baseline for Comparison (2022$)	Baseline 1	Baseline 2
Waste Storage: Medium CAFO	$4,207	$4,207
Waste Storage: Large CAFO	$16,827	$16,827
Waste Storage: Manure, litter, process wastewater, and nutrient analysis	$38	$47
Soil Sampling: Low	$70	$173
Soil Sampling: High	$416	$519
Soil Sampling: Permit Fees	$136	$151
Manure pollution prevention plan: Low	$0	$0
Manure pollution prevention plan: High	$183	$183
Lagoon assessment, planning and repair: Low	$18	$18
Lagoon assessment, planning and repair: High	$6,293	$6,293

While there is likely correlation between the size of a CAFO in terms of employees and acres it encompasses, it is unclear whether this would mean larger CAFOs need to take more samples, as sampling requirements depend on the specific lands being sampled. However, given that large businesses in this industry have five times the number of employees that small businesses do, and greater costs due to increased sampling are unlikely to be five times larger, this cost would still be disproportionate.

There is also likely correlation in the number of animals serviced and the number of employees, however this is not universal. More animals serviced would lead to larger permit fees, however, as the fees are capped, fees for large businesses would be significantly less than five times greater than those for small businesses.

There may be correlation in the size of a CAFO in terms of employees and the size of lagoon used (replacement or repair of larger lagoons cost more). However, a CAFO may use more, smaller lagoons as opposed to fewer, larger lagoons. In either case, given that large businesses in this industry have five times the number of employees than small businesses do, and greater costs due to lagoon repair or replacement are unlikely to be five times larger, this cost would still be disproportionate.

It is likely that the costs of complying with the permit disproportionately burden small businesses. Ecology is therefore required to mitigate this disproportionate impact to the extent it is legal and feasible.

Chapter 4: Mitigation of Disproportional Impacts

The general permit likely imposes disproportionate costs on small businesses, so 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 could not phase in additional requirements for small business, because they are intended to help CAFOs meet legal requirements that protect the state's surface and ground waters from unpermitted discharges and contamination (Chapter 90.48 RCW [10], Chapter 173-201A WAC[11], Chapter 173-200 WAC).

Small businesses, if business size is correlated with CAFO size, inherently have lower reporting requirements, in that they have smaller degrees of sampling and inspection.

To mitigate the burden on the smallest businesses (small CAFOs), Ecology has included a lower threshold of animal numbers below which a CAFO does not have to apply for a permit unless Ecology determines the small CAFO is a significant contributor of pollutants. The lower threshold of animal numbers depends on the type of animals and is pulled from the federal CAFO rule (40 CFR § 122.23(b))[41]. For example, the lower threshold for mature dairy cows is less than 200 cows while the lower threshold for chickens is less than 37,500 laying hens.

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.

Bary, A., Cogger, C., Sullivan, D. (2000). *Fertilizing with Manure.* Pacific Northwest Extension, WSU Food and Farm Connections Team.

Moore, A., de Haro-Marti, M., Chen, L. (2015). *Sampling Dairy Manure and Compost for Nutrient Analysi*s. Pacific Northwest Extension, University of Idaho.

Staben, M. L., et. al. (2003). *Monitoring Soil Nutrients Using a Management Unit Approach*. Pacific Northwest Extension. Pub. No. PNW 570E.

Sullivan, D., Cogger, C., Bary, A., Bittman, S., Brewer, L. (2021). *Post-Harvest Soil Nitrate Testing for Manured Grass and Silage Corn (West of the Cascades)*. Oregon State University Extension Service. Pub. No. EM 8832.

Internal peer review

Review by staff internal to Ecology.

External peer review

Review by persons that are external to and selected by Ecology.

Open review

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

WA Department of Ecology (2011). Water quality program permit Writer's Manual. Publication no. 92-109.

United States Environmental Protection Agency (2002) Cost Methodology for the Final Revisions to the National Pollutant Discharge Elimination System Regulation and the Effluent Guidelines for Concentrated Animal Feeding Operations

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.

40 CFR 122.23: Concentrated animal feeding operations[41]

40 CFR 412: Concentrated Animal Feeding Operations Point Source Category[61]

40 CFR 122.44: Establishing limitations, standards, and other permit conditions[62]

40 CFR 131.36: Toxics criteria for those states not complying with Clean Water Act section 303(c)(2)(B) [63].

Chapter 173-200 WAC: Water quality standards for groundwaters of the state of Washington.

Chapter 173-201A WAC: Water quality standards for surface waters of the state of Washington[11].

Chapter 173-204 WAC: Sediment management standards.

Chapter 173-224 WAC: Water quality permit fees.

Chapter 173-226 WAC: Waste discharge general permit program[64].

Chapter 90.64 RCW: Dairy nutrient management[6].

Chapter 90.48 RCW: Water Pollution Control[10]

Independent data

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.

U.S. Census Bureau (2017). North American Industry Classification System. http://www.census.gov/eos/www/naics/

U.S. Department of Commerce: Bureau of Economic Analysis (2021). Gross National Product: Implicit Price Deflator. http://research.stlouisfed.org/fred2/data/GNPDEF.txt

U.S. Treasury (2021): Historical I-bond Rates: https://www.treasury.gov/resource-center/data-chart-center/Pages/index.aspx

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

Email correspondence with Chery Sullivan, WSDOA April 22, 2021.

Email correspondence with Kyrre Flege, WSDOA March 31, 2022.

Other

Sources of information that do not fit into other categories.

NPDES Permit No. IDG010000 (EPA Idaho CAFO General Permit)

[61] https://ecfr.federalregister.gov/current/title-40/chapter-I/subchapter-N/part-412
[62] https://ecfr.federalregister.gov/current/title-40/chapter-I/subchapter-D/part-122#122.44
[63] https://ecfr.federalregister.gov/current/title-40/chapter-I/subchapter-D/part-131#131.36
[64] https://app.leg.wa.gov/wac/default.aspx?cite=173-226