DEPARTMENT OF ECOLOGY
State of Washington

Small Business Economic Impact Analysis

Upland Finfish Hatching and Rearing General Permit

National Pollutant Discharge Elimination System
and State Waste Discharge Permit

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Small Business Economic Impact Analysis

Upland Finfish Hatching and Rearing General Permit

National Pollutant Discharge Elimination System and State Waste Discharge General Permit

by

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for the

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Washington State Department of Ecology

Olympia, Washington

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Executive Summary

This Small Business Economic Impact Analysis (SBEIA) estimates the costs of complying with the Upland Finfish Hatching and Rearing General Permit ("permit"). It compares the costs of complying with the permit for small businesses to the costs of complying 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.

This statewide permit applies to upland aquaculture facilities or operations that discharge fish rearing process water to a surface water body or a system that drains to a surface water body at least 30 days a year, and meet one or more of the following criteria:

1. Produces more than 20,000 pounds of fish a year.
2. Feeds more than 5,000 pounds of fish food in any one calendar month.
3. Ecology determines the facility or operations is a significant contributor of pollution to waters of the state.

This applies to private entities, state, and local government facilities, and includes both existing and new facilities. Currently, there are nearly 100 facilities covered under this permit in Washington State, most of which are government facilities. There are 11 private facilities.

Costs associated with complying with the permit include:

- Facility Site Plan
- Sampling and Monitoring
- Reporting

Table i: Estimated Total Costs

Activity	Low Estimate	High Estimate
Facility Site Plan	$4,177	$5,569
Sampling and Monitoring	-	-
- Rearing Pond or Raceway Discharges	$13,473	$13,473
- Offline Settling Basin Discharges	$3,733	$3,733

Activity	Low Estimate	High Estimate
- Rearing Pond or Raceway Drawdown for Fish Release Discharges[1]	-	-
- Cleaning Wastewater Discharge to Municipal Sewer System (POTW)	$5,174	$5,174
Reporting	$9,033	$9,033
Total	$35,591	$36,983

If a facility discharges to a dissolved oxygen impaired waterway, they would incur additional costs of $20,725 over the five-year period of analysis.

If a facility discharges to a temperature impaired waterway, they would incur additional costs of $5,568.80 over the five-year period of analysis.

For the 11 private facilities currently permitted, small businesses average 7 employees each and the largest 10 percent average 3,000 employees.

Table ii: Cost per Employee for Small and Large Businesses

Estimate	Small Businesses	Large Businesses
Low Estimate	$5,084.38	$11.86
High Estimate	$5,283.26	$12.33

Comparing small and large businesses, we find that the permit likely imposes disproportionate costs on small businesses.

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 stakeholders to best achieve environmental protection while reducing compliance burden.

Ecology considered monthly DMR reporting but retained the quarterly schedule to reduce burden. Permittees only have to submit DMRs quarterly as opposed to monthly reducing the time

[1] Costs would depend on how many times the activity occurred over the five-year period of analysis.

spent reporting to four time per year. Quarterly reporting requires aggregating three months' worth of monitoring thereby reducing time spent uploading to the Ecology's WebPortal.

By using performance standards, as opposed to mandating specific technologies which must be used, Ecology minimized the impact on permittees by allowing them to determine how best to meet limits.

In general, however, the permit's impact on facilities of any size is difficult to legally and feasibly mitigate because more significant mitigation is not possible without reducing the effectiveness of the permit that regulates the discharge of pollutants to protect surface water and ground water quality, per the stated objectives of the Clean Water Act and chapter 90.48 RCW (the State Water Pollution Control Act).

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Chapter 1: Introduction to the Economic Impact Analysis

This Small Business Economic Impact Analysis (SBEIA) estimates the costs of complying with the Upland Finfish Hatching and Rearing General Permit ("permit"). It compares the costs of complying with the permit for small businesses to the costs of complying 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 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.
- 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 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

This statewide permit applies to upland aquaculture facilities or operations that discharge fish rearing process water to a surface water body or a system that drains to a surface water body at least 30 days a year, and meet one or more of the following criteria:

- Produces more than 20,000 pounds of fish a year.
- Feeds more than 5,000 pounds of fish food in any one calendar month.
- Ecology determines the facility or operations is a significant contributor of pollution to waters of the state.

This applies to private entities, state, and local government facilities, and includes both existing and new facilities. Currently, there are nearly 100 facilities covered under this permit in Washington State, most of which are government facilities. There are 11 private facilities. Both fall under NAICS code 1125 - Aquaculture.

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.

1.5 Compliance costs included in the SBEIA

Costs associated with complying with the permit include:

- Facility Site Plan
- Sampling and Monitoring
- Reporting

1.5.1 Facility Site Plan

The permit requires facilities to control the discharge of pollutants into state waters. This includes developing and using a specific facility site plan. The facility site plan must contain four main components:

1. Facility Sampling Plan
2. Solid Waste Management Plan
3. Pollution Prevention Plan (PPP)
4. Spill Control Plan

Facility Sampling Plan: This plan must describe the location of outfalls, intakes, and the receiving waters. The plan must identify the waste stream being discharged at each outfall such as ponds or raceways and how flow is calculated.

Solid Waste Management Plan: This plan must include all solid wastes with the exception of those solid wastes regulated by Chapter 173-303 WAC (Dangerous Waste Regulations) and describe how the permittee collects, stores, and disposes of solid and biological waste.

Pollution Prevention Plan: This plan must address operating, spill prevention, spill response, and stormwater discharge practices that will prevent or minimize the release of pollutants from the facility to the waters of the state.

Spill Control Plan: This plan must include a list of all oil and petroleum products and other materials used and/or stored on-site, which when spilled, or otherwise released into the environment, designate as Dangerous Waste (DW) or Extremely Hazardous Waste (EHW) by the procedures set forth in WAC 173-303-070. It must also describe how the facility with prevent, contain, and treat spills; their reporting system, and the training provided to implement the plan.

Additionally, if a facility discharges to waterbodies with impairments for temperature and dissolved oxygen, a Sampling Analysis Plan (SAP) is required.

Sampling Analysis Plan: This plan must be submitted once and must be approved for the facilities that discharge to waterbodies with impairments for temperature and dissolved oxygen. The plan identifies the sampling locations, sampling schedule, supplies, sampling directions and holding times, and data reporting.

1.5.2 Sampling and Monitoring

Permittees must collect and analyze samples and measure flow, settleable solids, and total suspended solids and in some cases BOD, residual chlorine, temperature and nutrients as described in the Facility Sampling Plan or Sampling Analysis Plan according to the following schedules.

Rearing Pond or Raceway Discharges

Permittees must monitor flow-through (inline settling) rearing pond or raceway discharges (effluent), and all other effluent discharges **except** offline settling basin effluent discharges and rearing pond or raceway drawdown for fish release discharges.

Table 1: Monitoring Requirements for Rearing Pond or Raceway Discharges

Parameter	Frequency	Type
Flow (MGD) [e]	Coincide with SS, TSS, and nutrient parameters.	Daily total, calculated
Settleable Solids (net mL/L)	1/week	Grab
Total Suspended Solids (net mg/L)	1/month	Composite

Offline Settling Basin Discharges

Permittees must monitor offline settling basin effluent discharges at the sampling frequency specified in the following table during every month that the settling basin discharges.

Table 2: Monitoring Requirements for Offline Settling Basin Discharges

Parameter	Frequency	Type
Flow (Gallons)	Per discharge	Daily Total
Settleable Solids (mL/L)	1/month	Grab
Total Suspended Solids (mg/L)	1/month	Grab

Rearing Pond or Raceway Drawdown for Fish Release Discharges

Permittees must collect samples for rearing pond or raceway drawdown for fish release regardless of pounds of fish on-hand.

Table 3: Monitoring Requirements for Rearing Pond or Raceway Drawdown for Fish Release Discharges

Parameter	Sampling	Type
Settleable Solids (mL/L)	1/drawdown	Grab
Total Suspended Solids (mg/L)	1/drawdown	Grab

Cleaning Wastewater Discharge to Municipal Sewer System (POTW)

Table 4: Monitoring Requirements for Cleaning Wastewater Discharge to Municipal Sewer System

Parameter	Sampling	Type
Flow (GPD)	Per discharge	Daily total, calculated
Total Suspended Solids-TSS (mg/L)	1/month	Grab
Biochemical Oxygen Demand - BOD_5 (mg/L)	1/month	Grab

Rearing Vessel Disinfection Water

Permittees must neutralize water chlorinated for rearing vessels.

Table 5: Monitoring Requirements for Rearing Pond or Raceway Drawdown for Fish Release Discharges

Parameter	Frequency	Type
Total Residual Chlorine	1/Discharge	Grab

Discharging to a Temperature-Impaired Waterbody

If a permittee is discharging to a temperature-impaired body, they must submit a Sampling and Analysis Plan (SAP) and monitor for temperature. Monitoring is continuous from May 1 to October 31.

Discharging to Dissolved Oxygen-Impaired Waterway

If a permittee is discharging to a dissolved oxygen-impaired body, they must submit an SAP and monitor for the following nutrient related parameters:

- Total phosphorus.
- Orthophosphate.
- Nitrogen (total persulfate).
- Nitrate/Nitrite.
- Total ammonia.
- pH.
- Dissolved organic carbon.
- BOD_5.

Sampling is required twice per month while feeding is occurring.

Discharging to 303(d) Listed Waterbody for PCBs

All facilities discharging to waterbodies on the Clean Water Act 303(d) list for Polychlorinated Biphenyls (PCBs) must implement procedures to eliminate, to the maximum extent possible, the release of PCBs from any known sources in the facility; including paint, caulk, or feed, that come into contact with water.

These facilities must have a PCB Feed Reduction Plan. If the facility is older than 1980, it must also have a Paint and Caulk Assessment Report and Removal Plan as well as documentation of any paint and calk removal.

1.5.3 Reporting

Permittees must submit quarterly Discharge Monitoring Reports (DMRs). The DMRs summarize monitoring data obtained during each monitoring period. They are submitted electronically on forms provided by Ecology.

Chapter 2: Costs of Compliance with the General Permit

There are various types of facilities covered by this permit. The activities they engage in impact the requirements they face from the permit. Some costs are one-time costs, such as the initial Facility Site Plan, while others are periodic (weekly, monthly, or quarterly). Costs will be aggregated over the five-year period covered by the permit.

2.1 Compliance costs

Costs associated with permit requirements include costs of complying with:

- Facility Site Plan
- Sampling and Monitoring
- Reporting

2.1.1 Facility Site Plan

The permit requires facilities to control the discharge of pollutants into state waters. This includes developing and using a specific facility site plan. The facility site plan must contain four main components:

1. Facility Sampling Plan
2. Solid Waste Management Plan
3. Pollution Prevention Plan (PPP)
4. Spill Control Plan

To create a facility site plan, we assumed a permittee will need to contract with the equivalent of an environmental engineer to write the plan. We assumed this work would take between 60 and 80 hours depending on the scope and complexity.

The May 2019 average hourly wage for Environmental Engineers in Washington State was$48.55.[2] Adjusted for inflation to September 2020 dollars, this hourly wage becomes $49.34.[3] Adjusting this wage to include benefits yields a loaded wage of $69.61.

[2] US Bureau of Labor Statistics, 2019. May 2019 State Occupational Employment and Wage Estimates. Washington. https://www.bls.gov/oes/current/oes_wa.htm
[3] US Bureau of Labor Statistics, 2020. CPI Inflation Calculator. https://www.bls.gov/data/inflation_calculator.htm

Table 6: Estimated cost of Facility Site Plan

Range	Labor (Hours)	Wage	Total Cost
Low Range	60	$69.61	$4,176.60
High Range	80	$69.61	$5,568.80

If a facility is required to submit an SAP, we assumed this work would take an Environmental Engineer 80 hours to complete for a total cost of $5,568.80.

2.1.2 Sampling and Monitoring

Specific sampling and monitoring requirements depend on the activities being performed at the facilities at any given time.

Table 7: Sampling and Monitoring Requirements by Activity

Parameter	Frequency	Type
Parameter: Rearing Pond or Raceway Discharges	**Frequency**	**Type**
• Flow (MGD)	Coincide with SS, TSS, and nutrient parameters.	Daily total, calculated
• Settleable Solids (net mL/L)	1/week	Grab
• Total Suspended Solids (net mg/L)	1/month	Composite
Parameter: Offline Settling Basin Discharges	**Frequency**	**Type**
• Flow (Gallons)	Per discharge	Daily Total
• Settleable Solids (mL/L)	1/month	Grab
• Total Suspended Solids (mg/L)	1/month	Grab
Parameter: Rearing Pond or Raceway Drawdown for Fish Release Discharges	**Frequency**	**Type**
• Settleable Solids (mL/L)	1/drawdown	Grab

Parameter	Frequency	Type
Parameter: Rearing Pond or Raceway Discharges	**Frequency**	**Type**
• Total Suspended Solids (mg/L)	1/drawdown	Grab
Parameter: Cleaning Wastewater Discharge to Municipal Sewer System (POTW)	**Frequency**	**Type**
• Flow (GPD)	Per discharge	Daily total, calculated
• Total Suspended Solids-TSS (mg/L)	1/month	Grab
• Biochemical Oxygen Demand - BOD_5 (mg/L)	1/month	Grab
Parameter: Rearing Vessel Disinfection Water	**Frequency**	**Type**
• Total Residual Chlorine	1/Discharge	Grab
Parameter: Discharging to a Dissolved Oxygen Impaired Waterway	**Frequency**	**Type**
• total phosphorus	Twice per month	Grab
• Orthophosphate	Twice per month	Grab
• Nitrogen (total persulfate)	Twice per month	Grab
• Nitrate/Nitrite	Twice per month	Grab
• total ammonia	Twice per month	Grab
• pH	Twice per month	Grab
• dissolved organic carbon	Twice per month	Grab
• BOD_5	Twice per month	Grab
Parameter: Discharging to Temperature Impaired Waterbody	**Frequency**	**Type**
• Temperature	Continuous	-

Sampling and monitoring is assumed to be performed by laborers. The May 2019 average hourly wage for Animal Breeders in Washington State was $27.55.[4] Adjusted for inflation to September 2020 dollars, this hourly wage becomes $28.01.[5] Adjusting this wage to include benefits yields a loaded wage of $39.52. Sampling is assumed to take .5 hours per sample.

Lab costs depend on the specific analysis performed. We estimated these costs to be:

- Settleable Solids: $25
- Total Suspended Solids: $20
- BOD: $50
- Package for Temperature impaired waterway: $120

Table 8: Estimated Sampling and Monitoring Costs by Activity

Activity	Frequency	Cost
Rearing Pond or Raceway Discharges	Weekly	$ 36.44
Rearing Pond or Raceway Discharges	Monthly	$ 31.44
Offline Settling Basin Discharges	Monthly	$ 56.44
Rearing Pond or Raceway Drawdown for Fish Release Discharges	Once per Drawdown	$ 56.44
Cleaning Wastewater Discharge to Municipal Sewer System (POTW)	Monthly	$ 81.44
Rearing Vessel Disinfection Water	Once per Discharge	Minimal[6]
Discharging to a Dissolved Oxygen Impaired Waterway	Twice per month	$131.44
Discharging to a Temperature Impaired Waterbody	Continuously	Minimal

2.1.3 Reporting

Facilities are required to submit a DMR. This report is assumed to take 8 hours per quarter and be done by a supervisor. The May 2019 average hourly wage for Construction

[4] US Bureau of Labor Statistics, 2019. May 2019 State Occupational Employment and Wage Estimates. Washington. https://www.bls.gov/oes/current/oes_wa.htm
[5] US Bureau of Labor Statistics, 2020. CPI Inflation Calculator. https://www.bls.gov/data/inflation_calculator.htm
[6] 50 tests cost roughly $20. https://www.cleanwaterstore.com/chlorine-test-kits

Supervisors in Washington State was$40.98.[7] Adjusted for inflation to September 2020 dollars, this hourly wage becomes $41.65.[8] Adjusting this wage to include benefits yields a loaded wage of $58.76.

The cost of submitting a DMR is estimated to be $470.10 per quarter.

2.2 Estimated Total costs

When discussing future flows of cost, net present values must be used to account for potential inflation. This requires discounting future values by an appropriate discount rate[9].

Estimated total costs for permitted facilities are dependent on the activities performed by these facilities.

Table 9: Estimated Total Costs

Activity	Low Estimate	High Estimate
Facility Site Plan	$4,177	$5,569
Sampling and Monitoring	-	-
- Rearing Pond or Raceway Discharges	$13,473	$13,473
- Offline Settling Basin Discharges	$3,733	$3,733
- Rearing Pond or Raceway Drawdown for Fish Release Discharges[10]	-	-
- Cleaning Wastewater Discharge to Municipal Sewer System (POTW)	$5,174	$5,174
Reporting	$9,033	$9,033
Total	$35,591	$36,983

If a facility discharges to a dissolved oxygen impaired waterway, they would incur additional costs of $20,725 over the five-year period of analysis. If a facility discharges to a temperature impaired waterway, they would incur additional costs of $5,568.80 over the five-year period of analysis.

[7] US Bureau of Labor Statistics, 2019. May 2019 State Occupational Employment and Wage Estimates. Washington. https://www.bls.gov/oes/current/oes_wa.htm
[8] US Bureau of Labor Statistics, 2020. CPI Inflation Calculator. https://www.bls.gov/data/inflation_calculator.htm
[9] The historic average rate of return on US Treasury Department I Bonds, from 1998 to present, is currently 0.98 percent (0.0098). New bond rates are issued in March and November of each year. US Treasury Department (2020).
[10] Costs would depend on how many times the activity occurred over the five-year period of analysis.

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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

For the 11 private facilities currently permitted, small businesses average 7 employees each and the largest 10 percent average 3,000 employees.

3.2 Relative costs of compliance

Table 10: Cost per Employee for Small and Large Businesses

Estimate	Small Businesses	Large Businesses
Low Estimate	$5,084.38	$11.86
High Estimate	$5,283.26	$12.33

Comparing small and large businesses, we find that the permit likely imposes disproportionate costs on small businesses.

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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 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 stakeholders to best achieve environmental protection while reducing compliance burden.

Ecology considered monthly DMR reporting but retained the quarterly schedule to reduce burden. Permittees only have to submit DMRs quarterly as opposed to monthly reducing the time spent reporting to four time per year. Quarterly reporting requires aggregating three months' worth of monitoring thereby reducing time spent uploading to the Ecology's WebPortal.

By using performance standards, as opposed to mandating specific technologies which must be used, Ecology minimized the impact on permittees by allowing them to determine how best to meet limits.

In general, however, the permit's impact on facilities of any size is difficult to legally and feasibly mitigate because more significant mitigation is not possible without reducing the effectiveness of the permit that regulates the discharge of pollutants to protect surface water and ground water quality, 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.

US Bureau of Labor Statistics, 2019. May 2019 State Occupational Employment and Wage Estimates. Washington. https://www.bls.gov/oes/current/oes_wa.htm

US Bureau of Labor Statistics, 2020. CPI Inflation Calculator. https://www.bls.gov/data/inflation_calculator.htm

US Treasury Department, 2020. Fixed rate of return to inflation-indexed I-Bonds. http://www.treasurydirect.gov/indiv/research/indepth/ibonds/res_ibonds_iratesandterms.htm

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.

40 CFR 122.44

Chapter 173-200 WAC

Chapter 173-201A WAC

Chapter 173-204 WAC

Chapter 173-224 WAC

Chapter 173-226 WAC

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.

N/A

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

N/A

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

Cooke Inc. Employment. https://ca.linkedin.com/company/cookeinc

Pacific Seafood Employment. https://www.pacificseafood.com/about-us/

Surveyed prices for Chlorine testing kits. https://www.cleanwaterstore.com/chlorine-test-kits

Troutlodge Employment. https://fis.com/fis/companies/details.asp?l=e&company_id=162059

WA Ecology, 2020. Permitting and Reporting Information System (PARIS). Active permittees for the Upland Finfish Hatching and Rearing General Permit.