



DEPARTMENT OF
ECOLOGY
State of Washington

Economic Impact Analysis

Construction Stormwater General Permit; NPDES and State Waste Discharge General Permit

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Economic Impact Analysis

Construction Stormwater General Permit; NPDES and State Waste Discharge General Permit

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Executive Summary

The Construction Stormwater General Permit (CSWGP) allows businesses to proceed with construction activity under a general permit rather than having to obtain a state or National Pollutant Discharge Elimination System (NPDES) individual permit.

WAC 173-226-120 Economic Impact Analysis requires the Department of Ecology (Ecology) to prepare an economic analysis for the CSWGP. As a general permit technically expires after five years (though entities remain covered by it until a new permit is issued), Ecology analyzes a new permit compared to a baseline of no permit and zero compliance costs. This is also consistent with the intent of the rule to address relative compliance burden.

The analysis must, by rule, include:

- A brief description of the compliance requirements of the general permit.
- The estimated costs for complying with the permit, based on existing data for facilities intended to be covered under the general permit. Costs of complying with permit requirements that are based in other state or federal regulation are not included, because permittees would be required to comply with them even in the absence of a permit.
- 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 the businesses intended to be covered under the general 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.

A small business is defined as an independent entity with 50 or fewer employees organized for the purpose of making a profit. Employment is based on the highest level of ownership, as this better reflects the abilities of a business to reallocate resources in response to compliance costs. Not-for-profit and government enterprises are excluded from this analysis.

Ecology identified and analyzed five aspects of the permit that will add costs:

- Monitoring
- Inspections
- Log books
- Training
- Records

The requirements of this permit are estimated to add costs of \$6,300 per year for sites with less than 5 acres. Sites with over five acres are estimated to have added costs of \$10,700 per year.

Ecology concluded, based on this result, that **the general permit has a disproportionate impact on small businesses**. On a cost-per-employee basis the costs are generally greater for small businesses than for large businesses. This is because most of the costs are a function of the size and topography of the job site. For each compliance area, the expected impact is disproportionate, even under the extremely conservative assumption that small businesses only have small job sites, and large businesses only have large job sites.

Ecology has included the following mitigation features in the CSWGP to reduce the burden on small businesses.

- Sites smaller than 1 acre are exempt from turbidity and transparency monitoring.
- Sites less than 5 acres are given the option to use a lower cost transparency tube for stormwater monitoring instead of a turbidity meter.
- Operators may be allowed to omit aspects of the Stormwater Pollution Prevention Plan (and not implement Best Management Practices), if site conditions render that element unnecessary. This allows qualifying small sites, or those with less complexity, to have fewer BMPs than large or complex sites. As a result, small sites should have lower SWPPP/BMP costs.
- The low rainfall erosivity waiver (permit exemption) is available for certain projects smaller than five acres. This will only affect sites that meet the waiver criteria, but should significantly lower costs.
- Some facilities may qualify for and receive an extreme hardship permit fee reduction under the Wastewater Discharge Permit Fee Rule (Chapter 173-224 WAC). Extreme hardship applies only if the annual gross revenue of goods and services produced using the processes regulated under the permit is \$100,000 or less and the fee poses an extreme hardship to the business.
- Permittees may reduce sampling frequency for temporarily stabilized, inactive sites to once every calendar month.
- Permittees may reduce site inspection frequency for temporarily stabilized, inactive sites to once every calendar month.
- High turbidity reporting may be done electronically.

Chapter 1: Introduction to the General Permit

The Construction Stormwater General Permit (CSWGP) allows businesses to proceed with construction activity under a general permit rather than having to obtain a state or National Pollutant Discharge Elimination System (NPDES) individual permit.

The CSWGP requires:

- An application packet, including a Notice of Intent form and associated public notice.
- Preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP) that describes stormwater best management practices (BMPs) to prevent erosion and sedimentation and protect water quality.
- Periodic site inspections by permittees to ensure that BMPs are properly installed and maintained. Inspections must be conducted by certified personnel (Certified Erosion and Sediment Control Leads), and be documented in a site log book.
- Monitoring and sampling by permittees of stormwater discharges for the following:
 - Turbidity and transparency.
 - If the project includes significant concrete work or engineered soils, pH monitoring is also required.
 - Monitoring for other pollutants if there is a discharge to certain types of 303(d)-listed impaired water-bodies or water-bodies with a Total Daily Maximum Load (TMDL).
- A monthly Discharge Monitoring Report submitted by permittees to the Department of Ecology (Ecology) to document compliance with the numeric and narrative effluent limitations, and to demonstrate SWPPP performance.
- A submittal by permittees of any documentation required by the permit to Ecology or the public upon request.
- The assurance by permittees that their projects do not cause or contribute to violations of state water quality standards.

1.1 Monitoring and inspections

The following table summarizes the primary monitoring requirements¹.

Table 1: Required sampling by size of project

Size of Soil Disturbance	Weekly Site Inspections	Weekly Sampling with Turbidity Meter	Weekly Sampling with Transparency Tube	Weekly pH Sampling ²
Less than 1 acre	Required	Not Required	Not Required	Not Required
1 – 5 acres	Required	Sampling Required- either method		Required
More than 5 acres	Required	Required	Not Allowed	Required

1.2 Minimum treatment technology

Minimum treatment technology is used to minimize or prevent the discharge of pollutants to waters of the state. The permit does not have a specific minimum treatment required; rather, a performance standard is used that is site specific. In accordance with 40 CFR 122.44(k) and 40 CFR 122.44(s), the CSWGP includes requirements to develop and implement Stormwater Pollution Prevention Plans (SWPPPs) including Best Management Practices (BMPs).

The BMPs in the SWPPP meet the federal requirements for Best Conventional Pollutant Control Technology (BCT), Best Available Technology Economically Achievable (BAT), and Best Practicable Technology Available (BPT) for stormwater discharges. In addition, Ecology has determined that development of a SWPPP and implementation of adequate BMPs in accordance with this permit constitutes All Known, Available, and Reasonable Methods of Prevention, Control, and Treatment (AKART).

Water treatment is based on the appropriate selection of BMPs from approved technical manuals. These BMPs are used as necessary, to achieve performance standards and prevent violations of water quality standards. Some sites will require very basic erosion and sediment control BMPs (mulch, silt fence, etc.) while others will need extensive treatment technologies (sediment ponds, filters, etc.). The applicant identifies the necessary treatment BMPs in the SWPPP prior to beginning construction activity covered by the permit. Ecology may require the permittee to make revisions (e.g., add or modify BMPs) based on site inspections and stormwater monitoring.

¹ Additional monitoring requirements may apply for: discharges to 303(d) listed waterbodies and waterbodies with applicable TMDLs for turbidity, fine sediment, high pH, or phosphorus - see Condition S8; sites required to perform additional monitoring by Ecology order – see Condition G13.

² If construction activity results in the disturbance of 1 acre or more, **and** involves significant concrete work (1,000 cubic yards of poured) or the use of recycled concrete or engineered soils (soil amendments including but not limited to Portland cement-treated base [CTB], cement kiln dust (CKD), or fly ash), **and** stormwater from the affected area drains to surface waters of the State or to a storm sewer or stormwater collection system that drains to or other surface waters of the state, the Permittee must conduct pH monitoring sampling.

1.3 Reporting and recordkeeping

Permittees must submit sampling data to Ecology on monthly Discharge Monitoring Reports (DMRs). DMRs must be submitted electronically using Ecology's WebDMR system. Permittees unable to submit electronically can request a waiver. Ecology may request additional records from permittees.

The permittee must keep the permit documents on site (or within reasonable access to the site) for use by the operator, or for on-site review by Ecology or the local jurisdiction. Permit documentation includes all monitoring information (site log book, sampling results, inspection reports/checklists, etc.), SWPPP and any other documentation of compliance with permit requirements. Records must be kept for the entire life of the construction project and for a minimum of three years after the termination of permit coverage.

1.4 SWPPP submittal

All permittees must have a SWPPP. When submitting an application to Ecology the applicant does not have to include a copy of the SWPPP unless Ecology specifically requests it. The SWPPP must be prepared and properly implemented in accordance with the requirements of the permit beginning with initial soil disturbance and until final stabilization.

1.5 Equipment

The permittees will likely buy monitoring equipment as it is likely to be less expensive than paying for a professional monitoring service. The SWPPP may call for equipment such as pumps or tanks to manage stormwater. On large complex sites the SWPPP may require the use of heavy equipment to build a retention pond or engineered structures.

1.6 Labor

The permittee must respond to the day-to-day permit requirements of protecting water quality in the site vicinity. The permittee will need to dedicate time and effort to:

- Apply for the permit.
- Write and comply with the SWPPP.
- Perform monitoring and site inspections.
- Complete reporting requirements.
- Install and maintain BMPs.

1.7 Supplies

The permittee may need pH strips and sampling supplies, paper, and a note book for the log book. The SWPPP may call for BMP materials and supplies such as silt fence, erosion control matting, grass seed, and straw mulch.

1.8 Administration

The site manager will need to ensure compliance with the SWPPP and the monitoring and reporting requirements.

Chapter 2: Overview of Analysis

This Economic Impact Analysis (EIA) estimates the costs of complying with the CSWGP. It compares the costs of complying with the permit for small businesses to the costs of compliance for the largest ten percent of businesses, to determine whether the permit disproportionately impacts small businesses.

2.1 Definition of small and large businesses

For the purpose of this EIA, a small business is an independent entity with 50 or fewer employees organized for the purpose of making a profit. Employment is based on the highest level of ownership, as this better reflects the ability of a business to bear compliance burden and reallocate resources if necessary. Not-for-profit and government enterprises are excluded.

2.2 Compliance costs excluded from the EIA

The costs associated with requirements of the CSWGP that result from compliance with federal or other state laws or regulations are not considered in this EIA. Businesses would be required to comply with other existing regulations, even in the absence of a permit.

The justification for excluding compliance costs related to these laws and rules is that permit holders cannot be exempt from these laws or rules through the permit process and, therefore, any associated cost impacts cannot be mitigated. Permit holders must comply with existing regulation independent of permit requirements.

2.3 Compliance costs included in the EIA

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

- 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.
- Any plan submittal requirements.
- The costs of equipment, supplies, labor, and any increased administrative costs.

As some costs are interconnected, a more appropriate breakdown of compliance costs that will be analyzed for this general permit (still including all of the required elements) is:

- Monitoring
- Inspections

- Training
- Log books
- Records

2.4 Data used in the analysis

Currently there are nearly 2,200 businesses³ covered under the Construction Stormwater General Permit. The CSWGP is sometimes issued to a general contractor and sometimes to the individual or company who owns and is developing the site. In any case, the permit holder must meet the definition of “operator”⁴.

The CSWGP affects a variety of individuals and industry classifications from nearly every major sector of the economy. NAICS (North American Industry Classification System) codes and descriptions used in this analysis are listed in Appendix A.

The data available regarding employment for existing permittees is limited. Most of the permittees are not listed in Workforce Explorer⁵; many projects are identified by site location rather than ownership. Ecology also cannot protect employment data gathered from any non-public source for this kind of analysis. Therefore, the use of sparse publicly available data was necessary.

Approximately half of the permits were written for sites with less than five acres of disturbed area, while the remaining permits were written for sites disturbing between five and 2 thousand acres. The largest sites were for freeway and canal projects. The average disturbed acreage is 12.8 acres.

Based on a representative sample of employment data, we used the average of **14 employees to represent employment at an average small business**. A small business is defined as a company with 50 or fewer employees.

The average large business employed over 5 thousand people, and the **largest 10 percent of businesses employed nearly 46 thousand workers** (both measures exclude a high-end outlier employing 2.2 million part-time and full-time workers worldwide).

³ PARIS (Permit and Reporting Information System) Ecology database, existing general permit coverage.

⁴ Operator means any party associated with a construction project that meets the following two criteria:

- The party has operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications; and
- The party has day-to-day operational control of those activities at a project that are necessary to ensure compliance with a SWPPP for the site or other permit conditions (for example, they are authorized to direct workers at a site to carry out activities required by the SWPPP or comply with other permit conditions).

⁵ Workforce Explorer- Labor Market and Economic Analysis. Washington State Employment Security Department <http://www.workforceexplorer.com/>. Also multiple annual reports and web pages of likely affected firms (see References, below).

Notably, nearly 40 percent of entities recorded as having been covered by the general permit were not found in the Washington State Employment Security Department database. This is likely because they were individuals or short-term business entities for only the duration of the construction project.

Also, over 14 percent of projects were performed by public entities (cities, counties, state government, school districts, etc.) and nearly 2 percent by non-profit enterprises. These are excluded from the analysis because they don't meet the definition of business in the governing rule.

Some unit costs are taken from the 2010 Economic Impact Analysis completed for the CSWGP issued in 2010. These were updated to current dollars using the Consumer Price Index.⁶

2.5 Scope of time

All of the values estimated are annual. Some sites may not require a permit for a full year. These sites may therefore have lower costs related to permit coverage. On the other hand, at these same sites, employees must still be trained to conduct inspections, resulting in additional costs.

The typical business covered under the permit has construction as their primary income source. It is expected that these businesses will simply move on to another site after finishing work at one site. Thus representing costs annually allows the "typical" construction firm to dominate the analysis and recognizes construction companies as the primary type of permittee covered by the CSWGP.

⁶ US Bureau of Labor Statistics (2015). Consumer Price Index.

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Chapter 3: Estimated Costs for Complying with the Permit

3.1 Monitoring

Monitoring costs will depend on the frequency of heavy rain, and the number of discharges, from a disturbed area at the site. Sites in Western Washington will require more monitoring and have higher costs; the number of rainfall events that are sufficient to generate discharges is greater in Western Washington than Eastern Washington.

Likewise, large sites may have more discharge points than small sites; however, the number of discharges may depend on the shape or topography as much as the size of a disturbed area. A large site with a single discharge point may require less effort than a small site with an odd topography and several discharges. Therefore, these costs are not strictly proportional to the size of the site. The cost of monitoring is also not a function of the size of the business running the site.

The following table shows the average annual number of rainfall events likely to result in a discharge from the site (half an inch/24-hour event) in a sample of major Washington cities.

Table 2: Rainfall and permits in selected areas

	Rainfall Events Per Year	Number of Permits
Western WA		
Port Angeles	13	16
Mt. Vernon	16	23
Bellingham	18	49
Seattle	21*	81
Tacoma	22	49
Vancouver	23	145
Eastern WA		
Richland	1	9
Yakima	2	16
Spokane	9	22

* Measurement at University of Washington.

Ecology estimates the monitoring costs for turbidity and pH based on:

1. There are 19.05 weeks during which there would be a discharge to monitor.⁷
2. The estimated cost of labor is \$48.28 per hour.⁸

⁷ This is a weighted average of the number of events based on the number of sites in each area.

⁸ Washington State Department of Labor and Industries- average carpentry prevailing wage across all counties in the state.

3. Sampling and entering results is expected to require an hour for turbidity for 1-5 acre sites and 2 hours for 5+ acre sites.⁹ Extra pH testing is expected to require 10 minutes.¹⁰
4. Transparency tubes are estimated to cost \$41¹¹ and the average cost per use of a turbidity meter is estimated to cost \$17.¹²
5. PH strips are estimated to cost \$16 for 80 strips including shipping and handling.

Ecology estimates monitoring costs for sites acres 1-5 at \$1,450 per year, and at \$2,370 per year for sites 5+ acres.

3.2 Inspections

Inspection costs will depend on the number of discharges from a disturbed area and the complexity of Best Management Practices (BMPs) in place to prevent stormwater contamination, and to treat stormwater when necessary. These costs vary in part based on the site characteristics, including topography, soils, and the size of the site. Thus these costs are not strictly proportional to the size of the property. The cost of inspections is also not a function of the size of the business running the site. The following table shows the total costs per year for inspections.

Table 3: Annual inspection costs

	1-5 acres	5+ acres
Time	1 hour	2 hours
Cost of Labor	\$48.28	\$48.28
Number of Inspection Events¹³	71.05	71.05
Total Cost	\$3,430	\$6,861

3.3 Training

The person performing inspections must have training as a “Certified Erosion and Sediment Control Lead” or CESCL. The cost of training is unrelated to the job site and the number of employees in the firm. The average 2010 price of the 16-hour class is offered at, on average, \$340,¹⁴ plus a labor cost for that time, plus assumed travel to and from the class of 60 miles. An 8-hour recertification course is required after 3 years and is valid for another 3 years. The average cost for the recertification course is about \$250.¹⁴

⁹ Jeff Killelea, Washington State Department of Ecology, Water Quality Program June 29, 2010.

¹⁰ Note that some jobs sites that discharge to an impaired water body may have additional monitoring.

¹¹ <http://watermonitoringequip.com/pages/stream.html>

¹² A company can also choose to buy a turbidity monitor, to avoid the per-use cost, for approximately \$840 – \$960.

¹³ There are 19.05 weeks during which there would be rain events requiring inspection, in addition to the 52 weekly inspections.

¹⁴ Certified Erosion and Sediment Control Lead- Training and Certification Programs <http://www.ecy.wa.gov/programs/wq/stormwater/cescl.html>, and linked programs.

Ecology estimates an average annual cost of \$300 based on one cycle of the class, recertification, and labor and travel time.

3.4 Log books

The results from inspections must be recorded in the log book. The log book entry is expected to take 10 minutes during each inspection. Using the wage rate of \$48.28 and 71.05 inspection events, Ecology estimates a cost of \$572 per year.

3.5 Records

Permittees must keep records for the entire length of the construction project and for a minimum of three years following the termination of permit coverage. Permittees must file Discharge Monitoring Reports (DMRs). Using the wage rate of \$48.28 per hour, Ecology estimates this requirement will cost businesses \$580 per year, for monthly, one-hour total recordkeeping activity.

3.6 Total compliance costs

This section presents the total costs to comply with the Construction Stormwater General Permit.

Table 4: Total annual compliance costs

Requirements	1-5 acres	5+ acres
Monitoring	\$1,450	\$2,370
Inspections	\$3,430	\$6,861
Training	\$300	\$300
Log Book	\$572	\$572
Records	\$579	\$579
Total	\$6,331	\$10,681

Note: Sums may be slightly off due to rounding.

3.7 Conclusion of estimated costs

The following table is a summary of estimated costs required by the CSWGP as well as the ratio for cost per employees to small and large businesses.

Table 5: Total annual compliance costs per employee

Cost per Employee Ratios			Small Businesses Average 14 employees ^{1,2}	Large Businesses Average 45,783 employees ^{1,2}
Requirements	1-5 acres	5+ acres	Cost/Employee	Cost/Employee
Monitoring	\$1,450	\$2,370	\$107	\$0.05
Inspections	\$3,430	\$6,861	\$286	\$0.15
Training	\$300	\$300	\$25	\$0.01
Log Book	\$572	\$572	\$48	\$0.01
Records	\$579	\$579	\$48	\$0.01
Total	\$6,331	\$10,681		
1 - 5 acres and small employer			\$528	
1 - 5 acres and large employer				\$0.14
5+ acres and small employer			\$789	
5+ acres and large employer				\$0.23

¹ See page 5 for discussion of average business employment.

² Note that quotients and sums may be slightly off due to rounding.

Based on these results, Ecology concludes that **the general permit has a disproportionate impact on small businesses**. For each compliance area, the expected impact is disproportionate, even if small job sites are paired with small businesses and large job sites are paired with large businesses.

Chapter 4: Mitigation of Disproportionate Impacts

If the compliance cost ratio is higher for small businesses than for large businesses, then small businesses are disproportionately impacted. Ecology concluded that this is the case for the reissued CSWGP.

The general permit rule (WAC 173-226-120) requires that disproportionate economic impacts of general permits on small businesses be reduced, when it is both legal and feasible to do so.

Legality and feasibility are determined by the legal context of existing state and federal laws and rules, such as the State Water Pollution Control Act (Chapter 90.48 RCW) and the federal Clean Water Act. Cost impacts on small businesses are reduced, where legal and feasible, by modifying the conditions of the permit.

Mitigation involves one or more of the following:

- 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.

In each of the features listed below, Ecology used the flexibility available to reduce costs. This will reduce costs for the affected small businesses but will also reduce costs for large businesses. Ecology amended the general permit to mitigate its impacts as follows.

1. Establish differing compliance or reporting requirements or time tables for small business:
 - Sites smaller than 1 acre are exempt from turbidity and transparency monitoring.
 - Sites less than 5 acres are given the option to use a lower cost transparency tube (\$40) for stormwater monitoring instead of turbidity meter (\$900).
2. Establish performance rather than design standards:
 - This allows operators to omit some requirements among the 13 elements if site conditions render the requirements unnecessary.
 - This allows small sites, or those with less complexity, to have fewer BMPs than large or complex sites. As a result, small sites should have lower SWPPP/BMP costs.

3. Exempt small businesses:

- The low rainfall erosivity waiver (permit exemption) is available for certain projects smaller than 5 acres.
- This will only affect sites that meet the waiver criteria, but should significantly lower costs.

4. Extreme hardship permit fee reduction:

- Some facilities may qualify for and receive an extreme hardship permit fee reduction under the Wastewater Discharge Permit Fee Rule (Chapter 173-224 WAC).
- Extreme hardship applies only if the annual gross revenue of goods and services produced using the processes regulated under the permit is \$100,000 or less and the fee poses an extreme hardship to the business.

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Water Monitoring Equipment & Supply Stream Equipment.
<http://watermonitoringequip.com/pages/stream.html>

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Appendix A

The following is a list of the North American Industry Classification System (NAICS) codes and descriptions, for industries with private businesses affected by this permit, based on existing general permit coverage records. Other types of business may be affected, however, as the general permit regulates construction activities, which may be performed or paid for by members of any industry during the lifetime of this general permit.

Table 6: Industry codes of existing affected businesses

NAICS code	NAICS Description
2122	Metal ore mining
2211	Electric power generation, transmission, and distribution
2213	Water, sewage, and other systems
2361	Residential building construction
2362	Nonresidential building construction
2371	Utility system construction
2372	Land subdivision
2381	Foundation, structure, and building exterior contractors
2389	Other specialty trade contractors
3115	Dairy product manufacturing
3327	Machine shops; turned product; and screw, nut, and bolt manufacturing
3345	Navigational, measuring, electromedical, and control instruments manufacturing
3364	Aerospace product and parts manufacturing
3366	Ship and boat building
4233	Lumber and other construction materials merchant wholesalers
4238	Machinery, equipment, and supplies merchant wholesalers
4239	Miscellaneous durable goods merchant wholesalers
4521	Department stores
4854	School and employee bus transportation
5221	Depository credit intermediation
5231	Securities and commodity contracts intermediation and brokerage
5242	Agencies, brokerages, and other insurance related activities
5311	Lessors of real estate
5312	Offices of real estate agents and brokers
5413	Architectural, engineering, and related services
5416	Management, scientific, and technical consulting services
5417	Scientific research and development services
5629	Remediation and other waste management services
6211	Offices of Physicians
7211	Traveler accommodation