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State of Washington

Small Business Economic Impact Analysis

Sand and Gravel General Permit

National Pollutant Discharge Elimination System
and State Waste Discharge Permit

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For more information, contact:

Water Quality Program
P.O. Box 47600
Olympia, WA 98504-7600
Phone: 360-407-6600

Washington State Department of Ecology – www.ecology.wa.gov

- Headquarters, Olympia 360-407-6000
- Northwest Regional Office, Bellevue 425-649-7000
- Southwest Regional Office, Olympia 360-407-6300
- Central Regional Office, Yakima 509-575-2490
- Eastern Regional Office, Spokane 509-329-3400

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Small Business Economic Impact Analysis

Sand & Gravel General Permit

National Pollutant Discharge Elimination System and State Waste Discharge General Permit

by

Shon Kraley, Ph.D.

for the

Water Quality Program

Washington State Department of Ecology

Olympia, Washington

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Acronyms

BMP	Best management practice
ESCP	Erosion & Sediment Control Plan
ESD	Employment Security Department
NAICS	North American Industry Classification System
NPDES	National Pollutant Discharge Elimination System
RCW	Revised Code of Washington
SBEIA	Small Business Economic Impact Analysis
SWPPP	Stormwater Pollution Protection Plan
WAC	Washington Administrative Code

Executive Summary

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

The Sand & Gravel General Permit (permit) regulates discharges of process water, stormwater, and mine dewatering water associated with:

- Sand and gravel operations.
- Concrete batch plants.
- Asphalt plants.

This includes rock quarries, and similar mining operations, including stockpiles of mined materials

The permit requires facilities to control and reduce wastewater pollution. This includes developing and using a specific site management plan. The site management plan must contain four main components:

1. Erosion & Sediment Control Plan (ESCP)
2. Monitoring Plan
3. Stormwater Pollution Prevention Plan (SWPPP)
4. Spill Control Plan

The types and attributes of facilities that are covered by the general permit are diverse. We estimated the costs of compliance for seven representative facilities:

1. Small, inactive sand and gravel pit
2. Small, active sand and gravel pit
3. Large, active sand and gravel pit
4. Small, active sand and gravel pit with concrete and recycling
5. Large, active sand and gravel pit with concrete and recycling
6. Small, active hot-mix asphalt facility
7. Large, active hot-mix asphalt facility

For each of the seven types of facilities (new and existing), we estimated the following costs of complying with the permit:

- Developing or updating plans.

- Implementing BMPs.
- Buying necessary equipment.
- Paying for operating.

Table i: Summary of compliance costs

Facility Type	Estimated Compliance Cost (thousands of $) New	Estimated Compliance Cost (thousands of $) Existing
Small, inactive sand and gravel pit	$2	$2
Small, active sand and gravel pit	$56	$22
Large, active sand and gravel pit	$111	$54
Small, active sand and gravel pit with concrete and recycling	$101	$58
Large, active sand and gravel pit with concrete and recycling	$183	$108
Small, active hot-mix asphalt facility	$27	$14
Large, active hot-mix asphalt facility	$58	$33

The table below summarizes the cost of compliance per employee at the seven types of representative facility.

Table ii: Relative costs of compliance

Facility Type	Average number of employees	Compliance Cost per Employee (dollars) New	Compliance Cost per Employee (dollars) Existing
Small, inactive sand and gravel pit	2	$1,060	$920
Small, active sand and gravel pit	10	$5,330	$2,060
Large, active sand and gravel pit	89	$1,250	$610

Facility Type	Average number of employees	Compliance Cost per Employee (dollars) New	Compliance Cost per Employee (dollars) Existing
Small, active sand and gravel pit with concrete and recycling	10	$9,340	$5,360
Large, active sand and gravel pit with concrete and recycling	151	$1,020	$610
Small, active hot-mix asphalt facility	11	$2,600	$1,330
Large, active hot-mix asphalt facility	179	$390	$220

Comparing small and large facilities for each new or existing facility type, 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 on small business.

- Inactive sites have fewer permit requirements.
- Fee reduction for non-operating facilities.
- Sliding fee for asphalt and concrete facilities.
- Small business/extreme hardship fee reductions.

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

1.1 Scope

WAC 173-226-120 requires the 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 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 organized for the purpose of making a profit. The number of employees is typically based on the highest available level of ownership data. We excluded not-for-profit and government enterprises.

1.3 Permit Coverage

The Sand & Gravel General Permit (permit) regulates discharges of process water, stormwater, and mine dewatering water associated with:

- Sand and gravel operations.
- Concrete batch plants.
- Asphalt plants.

This includes rock quarries, and similar mining operations, including stockpiles of mined materials

The permit is required by federal and state water quality laws and controls the discharge of pollutants to protect surface water and ground water quality

There are over 900 Sand & Gravel facilities across Washington State. Approximately 80 percent of these facilities discharge to groundwater only, while three percent of permittees discharge to surface water only. Some facilities discharge to both groundwater and surface water.

Mining-related activities can include:

- Excavating
- Screening
- Washing rock
- Crushing
- Blasting
- Manufacturing asphalt
- Manufacturing concrete

When rain hits Sand & Gravel facilities, it can pick up a variety of pollutants such as oil, soil, sand, and concrete dust. These pollutants can cause water quality problems by altering pH and water clarity. This, in turn, can cause problems for aquatic animals and plants, pollute drinking water, and impair recreation.

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.

1.5 Compliance costs included in the SBEIA

The permit requires facilities to control and reduce wastewater pollution. This includes developing and using a specific site management plan. The site management plan must contain four main components:

1. Erosion & Sediment Control Plan (ESCP)
2. Monitoring Plan
3. Stormwater Pollution Prevention Plan (SWPPP)
4. Spill Control Plan

1.5.1 Erosion & Sediment Control Plan (ESCP)

Excessive turbidity is often a major stormwater/process water contaminate at many Sand & Gravel facilities. The permit requires permittees to prepare an ESCP before conducting any earth moving activities. Permittees must develop this plan to select, install, and maintain appropriate erosion and sediment control best management practices (BMPs). Such BMPs include sediment ponds, perimeter dikes, and sediment barriers.

1.5.2 Monitoring Plan

Each facility must monitor their discharges of process water and stormwater according to the effluent limits and monitoring requirements in the permit. Additionally, discharges must not cause or contribute to a violation of:

- Groundwater Quality Standards.
- Surface Water Quality Standards.
- Sediment Management Standards.

1.5.3 Stormwater Pollution Prevention Plan (SWPPP)

Each facility must create and regularly update a SWPPP. The objectives of the SWPPP include:

- Eliminating the commingling of process water and stormwater.
- Implementing runoff conveyance, treatment, innovative, and source control BMPs.
- Preventing stormwater contamination.

The permit provides specific source control BMPs that Ecology has determined to be appropriate for most Sand & Gravel facilities covered under the permit. Sand & Gravel facilities must evaluate these specific source control BMPs, include them in their SWPPP, and implement them on site if appropriate.

1.5.4 Spill Control Plan

It is typical for facilities, covered under this permit, to store chemicals that have the potential to cause water pollution if accidentally released. Additionally, spills can occur from the use of mechanical equipment and vehicles. The permit requires permittees to develop a plan to prevent, report, and minimize the damage from any spills that may occur.

Chapter 2: Costs of Compliance with the General Permit

The types and attributes of facilities that are covered by the general permit are diverse. We estimated the costs of compliance for seven representative facilities:

1. Small, inactive sand and gravel pit
2. Small, active sand and gravel pit
3. Large, active sand and gravel pit
4. Small, active sand and gravel pit with concrete and recycling
5. Large, active sand and gravel pit with concrete and recycling
6. Small, active hot-mix asphalt facility
7. Large, active hot-mix asphalt facility

For each of the seven types of facilities (new and existing), we estimated the following costs of complying with the permit:

- Developing or updating plans.
- Implementing BMPs.
- Buying necessary equipment.
- Paying for operating.

The specific assumptions we made about compliance behaviors for each new and existing type of facility can be found in Appendix A of this document.

2.1 Data used in this analysis

We used various data sources, as appropriate, for this analysis:

- We based quantities and attributes of compliance inputs (equipment, hours, operating inputs, maintenance) on:
    - Past industry and DOT estimates.
    - Ecology inspector professional experience.
    - Specific requirements in the permit.
- We based compliance input unit costs on:
    - Updated past industry and DOT estimates.
    - Current retail prices.
    - Current wages (overhead as appropriate).
    - Current lab test rates.
    - Ten percent interest rates for annualized capital cost repayments.

For the sources of the specific data we used in this analysis, see Appendix and References.

2.2 Scope of time

Ecology's economic analyses typically make estimates based on either a 20-year timeframe or the expected life of the regulation in question. In the case of a general permits, the expected life is five years. However, many of the compliance costs analyzed for general permits involve capital purchases. We therefore chose to estimate annualized costs, to account for the cost of repaying up-front capital costs such as machinery and built capital over the life of the investment. All reported total costs of compliance are annual equivalents.

2.3 Summary of compliance cost estimates

We estimated compliance costs for each of the seven types of representative facilities. Assumptions, inputs, and calculations are presented in Appendix A of this document. Estimates are in rounded thousands of current 2019-dollars.

Table 1: Summary of compliance costs

Facility Type	Estimated Compliance Cost (thousands of $) New	Estimated Compliance Cost (thousands of $) Existing
Small, inactive sand and gravel pit	$2	$2
Small, active sand and gravel pit	$56	$22
Large, active sand and gravel pit	$111	$54
Small, active sand and gravel pit with concrete and recycling	$101	$58
Large, active sand and gravel pit with concrete and recycling	$183	$108
Small, active hot-mix asphalt facility	$27	$14
Large, active hot-mix asphalt facility	$58	$33

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 10 percent of businesses covered by the permit. The governing rule (173-226-120) allows for this comparison to be made on one of the following bases:

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

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

3.1 Facility size data

Facility size distribution was based on Washington Employment Security Department (ESD) data for the number of establishments and total employment in each size class (one to four employees, five to nine employees, etc.) by the US Census Bureau's North American Industry Classification System (NAICS) code. This data was available at the 3-digit NAICS level, for facilities in the most-likely applicable industry groups.

- NAICS 212 – Mining (except Oil and Gas). Includes NAICS 21232 – Sand, Gravel, Clay, and Ceramic and Refractory Minerals Mining and Quarrying.
- NAICS 324 – Petroleum and Coal Products Manufacturing. Includes NAICS 32412 – Asphalt Paving, Roofing, and Saturated Materials Manufacturing.
- NAICS 327 - Nonmetallic Mineral Product Manufacturing. Includes NAICS 3273 - Cement and Concrete Product Manufacturing

Table 2: Average employment estimates by sector

Type of facility	Number of employees
Inactive small facility	2
Active small facilities in NAICS 212	10
Active largest ten percent of facilities in NAICS 212	89
Active small facilities in NAICS 324	10
Active largest ten percent of facilities in NAICS 324	151

Type of facility	Number of employees
Active small facilities in NAICS 327	11
Active largest ten percent of facilities in NAICS 327	179

There was no overlap between small facilities and the largest ten percent of all facilities.

3.2 Relative costs of compliance

The table below summarizes the cost of compliance per employee at the seven types of representative facility.

Table 3: Relative costs of compliance

Facility Type	Compliance Cost per Employee (dollars) New	Compliance Cost per Employee (dollars) Existing
Small, inactive sand and gravel pit	$1,060	$920
Small, active sand and gravel pit	$5,330	$2,060
Large, active sand and gravel pit	$1,250	$610
Small, active sand and gravel pit with concrete and recycling	$9,340	$5,360
Large, active sand and gravel pit with concrete and recycling	$1,020	$610
Small, active hot-mix asphalt facility	$2,600	$1,330
Large, active hot-mix asphalt facility	$390	$220

Comparing small and large facilities for each new or existing facility type, we find that the permit likely imposes disproportionate costs on small businesses. The disproportion ranges from small businesses likely paying between three and nine times as much per employee as the largest 10 percent of businesses do.

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 on small business.

- Inactive sites have fewer permit requirements.
- Fee reduction for non-operating facilities.
- Sliding fee for asphalt and concrete facilities.
- Small business/extreme hardship fee reductions.

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).

4.2.1 Fewer permit requirements at inactive sites

Inactive sites have fewer permit requirements. If they have no excavation or mining (are inactive), and no process water or mine dewatering discharge, they are not required to:

- Monitor stormwater.
- Inspect wet and dry erosion and sediment.
- Inspect equipment inspections.

4.2.2 Fee reduction for non-operating sites

For sites that operate less than 90 days in a calendar year, fees are reduced.

4.2.3 Sliding fee for asphalt and concrete facilities

Fees for concrete and asphalt facilities use a sliding scale based on production amounts.

4.2.4 Small business/extreme hardship fee reductions

A business may apply for a small business fee reduction if it meets the following criteria:

1. Be a corporation, partnership, sole proprietorship, or other legal entity formed for the purpose of making a profit;
2. Be independently owned and operated from all other businesses (that is, not a subsidiary of a parent company);
3. Have annual sales of one million ($1,000,000.00) dollars or less of the goods and services produced using the processes regulated by the wastewater discharge permit; and
4. Pay an annual wastewater discharge permit fee greater than five hundred ($500.00) dollars.

The permit fee for an eligible small business will be reduced to $128. This is 50 percent of the annual permit fee.

Appendix A: Compliance Cost Assumptions, Inputs, and Calculations

A.1: Small, inactive sand and gravel pit – new

Assumptions:

- Five acre site.
- No process water discharge.
- No mine dewatering discharge.
- No discharge to surface waters.
- No equipment operations.
- Stabilization BMPs focus on eliminating exposed soils that are exposed to stormwater.
- Five acres of disturbed area needs erosion control measures.
- No structural BMPs needed for Inactive Sites.
- Every three years a registered professional engineer must certify that the site is in compliance with permit conditions.

Table A 1: Compliance costs for small inactive sand & gravel pit -- new

Item	Quantity	Units	Unit Cost ($)	Cost ($)	Useful Life (Years)	Annualized Cost ($)	Annual O&M Cost($)	Total Annual Cost ($)
Site Management Plan (SMP)	-	-	-	-	-	-	-	-
Write SMP	18	Hours	$68	$1,230	5	$325	-	$325
Stabilization BMPs	-	-	-	-	-	-	-	-
Initial Site Stabilization	40	Hours	$17	$690	10	$112	-	$112

Item	Quantity	Units	Unit Cost ($)	Cost ($)	Useful Life (Years)	Annualized Cost ($)	Annual O&M Cost($)	Total Annual Cost ($)
Heavy Equipment	40	Hours	$31	$1,242	10	$202	-	$202
Heavy Equipment Mobilization	4	Hours	$43	$173	10	$28	-	$28
Hydromulching	5	Acres	$1,725	$8,625	10	$1,404	-	$1,404
Activities	-	-	-	-	-	-	-	-
Certification of Permit Compliance	6	Hours	$68	$410	$3	-	$165	$165
TOTAL	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**$2,236**

A.2 Small, inactive sand and gravel pit – existing

Assumptions:

- Five acre site.
- No process water discharge.
- No mine dewatering discharge.
- No discharge to surface waters.
- No equipment operations.
- Stabilization BMPs focus on eliminating exposed soils that are exposed to stormwater.
- Five acres of disturbed area needs erosion control measures.
- No structural BMPs needed for Inactive Sites.

- Every three years a registered professional engineer must certify that the site is in compliance with permit conditions.

Table A 2: Compliance costs for small inactive sand & gravel pit -- existing

Item	Quantity	Units	Unit Cost	Cost	Useful Life (Years)	Annualized Cost	Annual O&M Cost	Total Annual Cost
Site Management Plan (SMP)	-	-	-	-	-	-	-	-
Write SMP	2	Hours	$68	$137	5	$36	-	$36
Stabilization BMPs	-	-	-	-	-	-	-	-
Initial Site Stabilization	40	Hours	$17	$690	10	$112	-	$112
Heavy Equipment	40	Hours	$31	$1,242	10	$202	-	$202
Heavy Equipment Mobilization	4	Hours	$43	$173	10	$28	-	$28
Hydromulching	5	Acres	$1,725	$8,625	10	$1,404	-	$1,404
Activities	-	-	-	-	-	-	-	-
Certification of Permit Compliance	6	Hours	$68	$410	3	-	$165	$165
TOTAL	**-**	**-**	**-**	**-**	**-**	**-**	-	$1,947

A.3 Small, active sand and gravel pit – new

Assumptions:

- Three acres of disturbed area.
- Discharge to groundwater (no surface water discharge).

- 78 ft. X 85 ft. unlined wet pond. Depth 4-5 ft. with a 4:1 slope.
- Process wastewater is pretreated by a 200 foot, grass-lined biofiltration swale. Need one such swale per three acres of disturbed area.
- SMP includes site map. Plan must be reviewed and updated yearly.
- Includes wet, dry, visual inspections.
- Vehicle/equipment inspections are conducted by drivers
- Assume groundwater discharge – Erosion & Sediment Control inspections aren't required. Erosion and sediment control BMPs must be inspected once a week.
- Must compile inspection results.
- No commingling of process water and stormwater.
- All Type 3 stormwater is treated by a 200 foot, grass-lined biofiltration swale. Need one such swale per three acres of disturbed area.
- Swale installed after hydromulching of exposed areas.
- Drum spill containment with pallet.
- Mechanical push broom sweeper
- Stabilization BMPs focus on eliminating exposed soils that are exposed to stormwater. Five acres of disturbed area needs erosion control measures.
- One monitoring sample point assumed. Monitoring three quarters per year.
- Copies of all monitoring reports, laboratory data, and quality assurance and control documentation must be retained for three to five years. The cost of complying with these requirements is the cost of storing records. This cost is either very low or zero.
- Daily monitoring when discharge occurs. Discharge occurs daily. Five-day work week.

Table A 3: Compliance costs for small active sand & gravel pit **(NAICS 212321 / SIC 1442)** -- new

Item	Quantity	Units	Unit Cost ($)	Cost	Useful Life (Years)	Annualized Cost	Annual O&M Cost	Total Annual Cost
PROCESS WASTEWATER MANAGEMENT	-	-	-	-	-	-	-	-
Wet Pond	-	-	-	-	-	-	-	-
Grader	8	Hours	$31	$248	10	$40	-	$40
Front-end Loader	8	Hours	$31	$248	10	$40	-	$40
Labor	32	Hours	$24	$781	10	$127	-	$127
Heavy Equipment Mobilization	12	Hours	$43	$518	10	$84	-	$84
Biofiltration Swale		-	-	-	-	-	-	-
Grader, 4 Foot Wide	8	Hours	$31	$248	10	$40	-	$40
Support Vehicle	8	Hours	$43	$345	10	$56	-	$56
Labor	8	Hours	$24	$195	10	$32	-	$32
Supervision	2	Hours	$31	$61	10	$10	-	$10
Hydromulching of Swale	1	Unit	431	431	10	$70	-	70
Biofiltration Swale and Pond O & M	-	--	-	-	-	-	-	-
Mower	3	Hours	35	104	1	-	114	114
Support Vehicle	4	Hours	43	173	1	-	190	190
Labor	4	Hours	24.41	98	1	-	107	107

Item	Quantity	Units	Unit Cost ($)	Cost	Useful Life (Years)	Annualized Cost	Annual O&M Cost	Total Annual Cost
SITE MANAGEMENT PLAN	-	-	-	-	-	-	-	-
Write SMP	40	Hours	68.36	2,734	1	$3,008	-	3,008
Inspections	-	-	-	-	-	-	-	-
Labor	8	Hours	24.41	195	1	-	215	215
Write Insp. Rpt.—Labor	2	Hours	24.41	49	1	-	54	54
Write Insp. Rpt.—Supervision	2	Hours	30.70	61	1	-	68	68
Vehicle / Equipment Inspections	225	Hours	24.41	5,492	1	-	6,041	6,041
Sediment / Erosion Control Inspections	0	Hours	24.41	0	1	-	0	0
Recordkeeping	0	Hours	0	0	0	-	0	0
STORMWATER POLLUTION PREVENTION	-	-	-	-	-	-	-	-
Perimeter Berm and Resloping	86	Hours	155	13,352	10	$2,173	-	2,173
Biofiltration Swale	-	-	-	-	-	-	-	-
Grader, 4 Foot Wide	8	Hours	31	248	10	$40	-	40
Support Vehicle	8	Hours	43	345	10	$56	-	56
Labor	8	Hours	24	195	10	$32	-	32

Item	Quantity	Units	Unit Cost ($)	Cost	Useful Life (Years)	Annualized Cost	Annual O&M Cost	Total Annual Cost
Supervision	2	Hours	31	61	10	$10	-	10
Hydromulching of Swale	1	Unit	431	431	10	$70	-	70
Mechanical Sweeper	1	Unit	175,832	175,832	10	$28,616	-	28,616
Biofiltration Swale O & M	-	-	-	-	-	-	-	-
Mower	3	Hours	35	104	1	-	114	114
Support Vehicle	4	Hours	43.13	173	1	-	190	190
Labor	4	Hours	24.41	98	1	-	107	107
Spill Kit	1	Kit	615	615	1	-	677	677
Secondary Containment	1	Unit	568	568	1	-	624	624
Street Sweeping	90	Hours	24.41	2,197	1	-	2,417	2,417
EROSION AND SEDIMENT CONTROL	-	-	-	-	-	-	-	-
Stabilization BMPs	-	-	-	-	-	-	-	-
Initial Site Stabilization	40	Hours	16	644	5	$170	-	170
Heavy Equipment	40	Hours	29	1,159	5	$306	-	306
Heavy Equipment Mobilization	4	Hours	40	161	5	$42	-	42
Hydromulching of Exposed Areas	0.50	Acres	1,610	805	5	$212	-	212

Item	Quantity	Units	Unit Cost ($)	Cost	Useful Life (Years)	Annualized Cost	Annual O&M Cost	Total Annual Cost
MONITORING	-	-	-	-	-	-	-	-
Process Water Monitoring	1	Smpl. Pts.	$4,394	4,394	1	-	4,833	$4,833
Stormwater Monitoring	1	Smpl. Pts.	$4,394	4,394	1	-	4,833	$4,833
Recordkeeping	0	n/a	0	0	0	-	0	0
TOTAL	-	-	-	-	-	-	-	**$55,820**

A.4 Small, active sand and gravel pit – existing

Assumptions:

- Three acres of disturbed area.
- Discharge to groundwater (no surface water discharge).
- SMP includes site map. Plan must be reviewed yearly, and updated as necessary.
- Includes wet, dry, visual inspections.
- Vehicle/equipment inspections conducted by drivers
- Assume groundwater discharge – Erosion & Sediment Control inspections aren't required. Erosion and sediment control BMPs must be inspected once a week.
- Must write a report on each inspection.
- Drum spill containment with pallet.

- Mechanical pushbroom sweeper.
- Stabilization BMPs focus on eliminating exposed soils that are exposed to stormwater. Five acres of disturbed area needs erosion control measures.
- One monitoring sample points assumed. Monitoring 3 quarters per year.
- Copies of all monitoring reports, laboratory data, and quality assurance and control documentation must be retained for three to five years. The cost of complying with these requirements is the cost of storing records. This cost is either very low or zero.
- Daily monitoring when discharge occurs. Discharge occurs daily. Five day work week.

Table A 4: Monitoring costs for small active sand & gravel pit. Effluent Monitoring, Annualized Cost per Sample Point. Assume Groundwater Only Discharge. Assume Monitoring for 9 Months of a year.

Type of Discharge	Pollutant	Cost Per Test	Sampling Labor Cost	Frequency.	Freq. Units	Total Cost
NAICS 212321 Process Water to Ground	Oil Sheen	0	24.41	240	Yearly	$4,394
Total Cost	-	-	-	-	-	$4,394
NAICS 212321 Stormwater to Ground	Oil Sheen	0	24.41	240	Yearly	$4,394
Total Cost	-	-	-	-	-	$4,394
Highest Annual Cost	**-**	**-**	**-**	**-**	**-**	**$8,788**

A.5 Large, active sand and gravel pit – new

Assumptions:

- Four wet ponds. Each pond a 78 ft. X 85 ft. unlined wet pond. Depth 4-5 ft. with a 4:1 slope.
- Four grass-lined biofiltration swales.
- Process wastewater is pretreated by a 200 foot, grass-lined biofiltration swale. Need one such swale per 3 acres of disturbed area.
- SMP includes site map. Plan must be reviewed yearly, and updated as necessary.
- Oil water separator inspections 15 minutes monthly for six months plus events, plus wet & dry season inspections, plus visual surface water inspections. Environmental managers complete the wet and dry inspections at larger sites.
- Vehicle/equipment inspections conducted by drivers. 15 minutes * 5 days * 52 weeks * 9-10 per vehicle/equipment.
- Erosion and sediment control BMPs must be inspected once a week. Assume half hour per inspection.
- Must write a report on each inspection.
- No commingling of process water and stormwater.
- All Type 3 stormwater is treated by a 200 foot, grass-lined biofiltration swale. Need one such swale per 3 acres of disturbed area.
- Swale installed after hydromulching of exposed areas.
- Spill kits for fuel dock, maintenance shop, storage area.
- Vacuum or regenerative air sweeper.
- Stabilization BMPs focus on eliminating exposed soils that are exposed to stormwater. Five acres of disturbed area needs erosion control measures.
- Assume hydromulching for 1/4 to 1/2 of the site.
- Two process water monitoring sample points. Monitoring nine months per year.
- One stormwater sample point. Monitoring three quarters per year.

- Copies of all monitoring reports, laboratory data, and quality assurance and control documentation must be retained for three to five years. The cost of complying with these requirements is the cost of storing records. This cost is either very low or zero.
- Daily monitoring when discharge occurs. Discharge occurs daily. Five-day work week.

Table A 5: Compliance costs for small active sand & gravel pit – existing **(NAICS 212321 / SIC 1442)**

Item	Quantity	Units	Unit Cost	Cost	Useful Life (Years)	Annualized Cost	Annual O&M Cost	Total Annual Cost
Biofiltration Swale and Pond O & M	-	-	-	-	-	-	-	-
Mower	3	Hours	35	104	1	-	114	114
Support Vehicle	4	Hours	43	173	1	-	190	190
Labor	4	Hours	24	98	1	-	107	107
SITE MANAGEMENT PLAN	-	-	-	-	-	-	-	-
Update SMP	4	Hours	68	273	1	$301	-	301
Inspections	-	-	-	-	-	-	-	-
Labor	8	Hours	24	195	1	-	215	215
Write Insp. Rpt.--Labor	2	Hours	24	49	1	-	54	54
Write Insp. Rpt.--Supervision	2	Hours	31	61	1	-	68	68
Vehicle / Equipment Inspections	225	Hours	24	5,492	1	-	6,041	6,041
Sediment / Erosion Control Inspections	0	Hours	24	0	1	-	0	0

Item	Quantity	Units	Unit Cost	Cost	Useful Life (Years)	Annualized Cost	Annual O&M Cost	Total Annual Cost
Recordkeeping	0	Hours	0	0	0	-	0	0
Biofiltration Swale O & M	-	-	-	-	-	-	-	-
Mower	3	Hours	35	104	1	-	114	114
Support Vehicle	4	Hours	43	173	1	-	190	190
Labor	4	Hours	24	98	1	-	107	107
Spill Kit	1	Kit	615	615	1	-	677	677
Secondary Containment	1	Unit	568	568	1	-	624	624
Street Sweeping	90	Hours	24	2,197	1	-	2,417	2,417
EROSION AND SEDIMENT CONTROL	-	-	-	-	-	-	-	-
Stabilization BMPs	-	-	-	-	-	-	-	-
Initial Site Stabilization	40	Hours	16	644	5	$170	0	170
Heavy Equipment	40	Hours	29	1,159	5	$306	0	306
Heavy Equipment Mobilization	4	Hours	40	161	5	$42	0	42
Hydromulching of Exposed Areas	0.50	Acres	1,610	805	5	$212	0	212
MONITORING	-	-	-	-	-	-	-	-

Item	Quantity	Units	Unit Cost	Cost	Useful Life (Years)	Annualized Cost	Annual O&M Cost	Total Annual Cost
Process Water Monitoring	1	Smpl. Pts.	$4,394	4,394	1	-	4,833	4,833
Stormwater Monitoring	1	Smpl. Pts.	$4,394	4,394	1	-	4,833	4,833
Recordkeeping	0	n/a	0	0	0	-	0	0
TOTAL	-	-	-	-	-	-	-	21,615

Table A 6: Monitoring costs for small active sand & gravel pit. Effluent Monitoring. Annualized Cost per Sample Point. Assume Groundwater Only Discharge. Assume Monitoring for 9 Months of a year

Type of Discharge	Pollutant	Cost Per Test	Sampling Labor Cost	Freq.	Freq Units	Total Cost
NAICS 212321 Process Water to Ground	Oil Sheen	0	24.41	240	Yearly	$ 4,394
Total Cost	-	-	-	-	-	$ 4,394
NAICS 212321 Stormwater to Ground	Oil Sheen	0	24.41	240	Yearly	$ 4,394
Total Cost	-	-	-	-	-	$ 4,394
Highest Annual Cost	-	-	-	-	-	$ 8,788

Table A 7: Compliance costs for large active sand & gravel pit – new

Item	Quantity	Units	Unit Cost	Cost	Useful Life (Years)	Annualized Cost	Annual O&M Cost	Total Annual Cost
PROCESS WASTEWATER MANAGEMENT	-	-	-	-	-	-	-	-
Wet Pond	-	-	-	-	-	-	-	-
Grader	32	Hours	$31	$994	10	$162	-	$162
Front-end Loader	32	Hours	31	994	10	$162	-	162
Labor	128	Hours	24	3,124	10	$508	-	508
Heavy Equipment Mobilization	48	Hours	43	2,070	10	$337	-	337
Biofiltration Swale	-	-	-	-	-	-	-	-
Grader, 4 Foot Wide	32	Hours	31	994	10	$162	-	162
Support Vehicle	32	Hours	43	1,380	10	$225	-	225
Labor	32	Hours	24	781	10	$127	-	127
Supervision	8	Hours	31	246	10	$40	-	40
Hydromulching of Swale	4	Unit	431	1,725	10	$281	-	281
Biofiltration Swale and Pond O & M	-	-	-	-	-	-	-	-
Mower	12	Hours	35	414	1	-	455	455

Item	Quantity	Units	Unit Cost	Cost	Useful Life (Years)	Annualized Cost	Annual O&M Cost	Total Annual Cost
Support Vehicle	16	Hours	43	690	1	-	759	759
Labor	16	Hours	24.41	391	1	-	430	430
SITE MANAGEMENT PLAN	-	-	-	-	-	-	-	-
Write SMP	80	Hours	68.36	5,469	1	$6,016	-	6,016
Inspections	-	-	-	-	-	-	-	-
Labor	16	Hours	24.41	391	1	-	430	430
Write Insp. Rpt.--Labor	6	Hours	24.41	146	1	-	161	161
Write Insp. Rpt.--Supervision	2	Hours	30.7	61	1	-	68	68
Vehicle / Equipment Inspections	600	Hours	24.41	14,646	1	-	16,111	16,111
Sediment / Erosion Control Inspections	12	Hours	24.41	293	1	-	322	322
Recordkeeping	0	Hours	0	0	0	-	0	0
STORMWATER POLLUTION PREVENTION	-	-	-	-	-	-	-	-
Perimeter Berm and Resloping	172	Hours	155	26,704	10	$4,346	-	4,346
Biofiltration Swale	-	-	-	-	-	-	-	-
Grader, 4 Foot Wide	8	Hours	31	248	10	$40	-	40

Item	Quantity	Units	Unit Cost	Cost	Useful Life (Years)	Annualized Cost	Annual O&M Cost	Total Annual Cost
Support Vehicle	8	Hours	43	345	10	$56	-	56
Labor	8	Hours	24	195	10	$32	-	32
Supervision	2	Hours	31	61	10	$10	-	10
Hydromulching of Swale	1	Unit	431	431	10	$70	-	70
Wheel wash	1	Unit	54,480	54,480	10	$8,866	-	8,866
Vacuum or regenerative air sweeper	1	Unit	225,000	225,000	10	$36,618	-	36,618
Activities	-	-	-	-	-	-	-	-
Biofiltration Swale O & M	-	-	-	-	-	-	-	-
Mower	12	Hours	35	414	1	-	455	455
Support Vehicle	16	Hours	43	690	1	-	759	759
Labor	16	Hours	$24.41	391	1	-	430	430
Spill Kit	3	Kit	615	1,845	1	-	2,030	2,030
Secondary Containment	3	Units	568	1,703	1	-	1,873	1,873
Street Sweeping	130	Hours	24.41	3,173	1	-	3,491	3,491
EROSION AND SEDIMENT CONTROL	-	-	-	-	-	-	-	-

Item	Quantity	Units	Unit Cost	Cost	Useful Life (Years)	Annualized Cost	Annual O&M Cost	Total Annual Cost
Stabilization BMPs	-	-	-	-	-	-	-	-
Initial Site Stabilization	40	Hours	17	690	5	$182	-	182
Heavy Equipment	40	Hours	31	1,242	5	$328	-	328
Heavy Equipment Mobilization	4	Hours	43	173	5	$46	-	46
Hydromulching of Exposed Areas	2	Acres	1,725	3,450	5	$910	-	910
Biofiltration Swale	-	-	-	-	-	-	-	-
Grader, 4 Foot Wide	8	Hours	31	248	10	$40	-	40
Support Vehicle	8	Hours	43	345	10	$56	-	56
Labor	8	Hours	24	195	10	$32	-	32
Supervision	2	Hours	31	61	10	$10	-	10
Hydromulching of Swale	1	Unit	431	431	10	$70	-	70
Biofiltration Swale O & M	-	-	-	-	-	-	-	-
Mower	3	Hours	35	104	1	-	114	114
Support Vehicle	4	Hours	43	173	1	-	190	190
Labor	4	Hours	24.41	98	1	-	107	107
MONITORING	-	-	-	-	-	-	-	-

Item	Quantity	Units	Unit Cost	Cost	Useful Life (Years)	Annualized Cost	Annual O&M Cost	Total Annual Cost
Process Water Monitoring	2	Smpl. Pts.	$ 7,109	14,217	1	-	15,639	$15,639
Stormwater Monitoring	1	Smpl. Pts.	$ 6,924	6,924	1	-	7,617	$7,617
Recordkeeping	0	0	0	0	0	-	0	0
TOTAL	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**$111,170**

Table A 8: Monitoring costs for large active sand & gravel pit. Effluent Monitoring. Annualized Cost per Sample Point. Assume Monitoring for 12 Months of a year.

Type of Discharge	Pollutant	Cost Per Test	Sampling Labor Cost	Freq.	Freq Units	Total Cost
NAICS 212321 Process Water to Surface	Turbidity	20	24.41	24	Yearly	$1,066
NAICS 212321 Process Water to Surface	TSS	21.67	24.41	4	Yearly	$184
NAICS 212321 Process Water to Surface	Oil Sheen	0	24.41	240	Yearly	$5,858
Total Cost	-	-	-	-	-	$7,109
NAICS 212321 Process Water to Ground	Oil Sheen	0	24.41	240	Yearly	$5,858

Type of Discharge	Pollutant	Cost Per Test	Sampling Labor Cost	Freq.	Freq Units	Total Cost
Total Cost	-	-	-	-	-	$5,858
NAICS 212321 Stormwater to Surface	Turbidity	20	24.41	24	Yearly	$1,066
NAICS 212321 Stormwater to Surface	Oil Sheen	0	24.41	240	Yearly	$5,858
Total Cost	-	-	-	-	-	$6,924
NAICS 212321 Stormwater to Ground	Oil Sheen	0	24.41	240	Yearly	$5,858
Total Cost	-	-	-	-	-	$5,858
Highest Annual Cost	**-**	**-**	**-**	**-**	**-**	**$14,033**

A.6 Large, active sand and gravel pit – existing

Assumptions:

- Oil water separator inspections 15 minutes monthly for six months plus events, plus wet & dry season inspections, plus visual surface water inspections. Environmental managers complete the wet and dry inspections at larger sites.
- Vehicle/equipment inspections conducted by drivers. 15 minutes * 5 days * 52 weeks * 9-10 per vehicle/equipment
- Erosion and sediment control BMPs must be inspected once a week.
- Must write a report on each inspection.
- Spill kit for fuel dock, maintenance shop, storage area
- Vacuum or regenerative air sweeper.

- Stabilization BMPs focus on eliminating exposed soils that are exposed to stormwater. Five acres of disturbed area needs erosion control measures.
- Assume hydromulching 1/4 to 1/2 of the site.
- Two process water sample points assumed. Monitoring nine months per year.
- One stormwater sample point assumed. Monitoring three quarters per year.
- Copies of all monitoring reports, laboratory data, and quality assurance and control documentation must be retained for three to five years. The cost of complying with these requirements is the cost of storing records. This cost is either very low or zero. It is assumed to be zero.
- Only updating SMP required.
- Daily monitoring when discharge occurs. Discharge occurs daily. Five day work week.

Table A 9: Compliance costs for large active sand & gravel pit -- existing

Item	Quantity	Units	Unit Cost	Cost	Useful Life (Years)	Annualized Cost	Annual O&M Cost	Total Annual Cost
PROCESS WASTEWATER MANAGEMENT	-	-	-	-	-	-	-	-
Biofiltration Swale and Pond O & M	-	-	-	-	-	-	-	-
Mower	12	Hours	35	414	1	$0	455	455
Support Vehicle	16	Hours	43	690	1	$0	759	759
Labor	16	Hours	24	391	1	$0	430	430
SITE MANAGEMENT PLAN	-	-	-	-	-	-	-	-
Update SMP	8	Hours	68	547	1	$602	547	1,148

Item	Quantity	Units	Unit Cost	Cost	Useful Life (Years)	Annualized Cost	Annual O&M Cost	Total Annual Cost
Inspections	-	-	-	-	-	-	-	-
Labor	16	Hours	24.41	391	1	$0	430	430
Write Insp. Rpt.--Labor	6	Hours	24.41	146	1	$0	161	161
Write Insp. Rpt.--Supervision	2	Hours	30.7	61	1	$0	68	68
Vehicle / Equipment Inspections	600	Hours	24.41	14,646	1	$0	16,111	16,111
Sediment / Erosion Control Inspections	12	Hours	24.41	293	1	$0	322	322
Recordkeeping	0	Hours	0	0	0	$0	0	0
Activities	-	-	-	-	-	-	-	-
Biofiltration Swale O & M	-	-	-	-	-	-	-	-
Mower	12	Hours	35	414	1	$0	455	455
Support Vehicle	16	Hours	43	690	1	$0	759	759
Labor	16	Hours	24	391	1	$0	430	430
Spill Kit	3	Kit	615	1,845	1	$0	2,030	2,030
Secondary Containment	3	Units	568	1,703	1	$0	1,873	1,873
Street Sweeping	130	Hours	24	3,173	1	$0	3,491	3,491

Item	Quantity	Units	Unit Cost	Cost	Useful Life (Years)	Annualized Cost	Annual O&M Cost	Total Annual Cost
EROSION AND SEDIMENT CONTROL	-	-	-	-	-	-	-	-
Stabilization BMPs	-	-	-	-	-	-	-	-
Initial Site Stabilization	40	Hours	17	690	5	$182	0	182
Heavy Equipment	40	Hours	31	1,242	5	$328	0	328
Heavy Equipment Mobilization	4	Hours	43	173	5	$46	0	46
Hydromulching of Exposed Areas	2	Acres	1,725	3,450	5	$910	0	910
Biofiltration Swale O & M	-	-	-	-	-	-	-	-
Mower	3	Hours	35	104	1	$0	114	114
Support Vehicle	4	Hours	43	173	1	$0	190	190
Labor	4	Hours	24	98	1	$0	107	107
MONITORING	-	-	-	-	-	-	-	-
Process Water Monitoring	2	Smpl. Pts.	$7,109	14,217	1	$0	15,639	$15,639
Stormwater Monitoring	1	Smpl. Pts.	$6,924	6,924	1	$0	7,617	$7,617
Recordkeeping	0	0	0	0	0	$0	0	0
GRAND TOTAL	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**$54,053**

Table A 10: Monitoring costs for large active sand & gravel pit. Effluent Monitoring. Annualized Cost per Sample Point. Assume Monitoring for 12 Months of a year.

Type of Discharge	Pollutant	Cost Per Test	Sampling Labor Cost	Freq.	Freq. Units	Total Cost
NAICS 212321 Process Water to Surface	Turbidity	20	24.41	24	Yearly	$1,066
NAICS 212321 Process Water to Surface	TSS	21.67	24.41	4	Yearly	$184
NAICS 212321 Process Water to Surface	Oil Sheen	0	24.41	240	Yearly	$5,858
Total Cost	-	-	-	-		$7,109
NAICS 212321 Process Water to Ground	Oil Sheen	0	24.41	240	Yearly	$5,858
Total Cost	-	-	-	-	-	$5,858
NAICS 212321 Stormwater to Surface	Turbidity	20	24.41	24	Yearly	$1,066
NAICS 212321 Stormwater to Surface	Oil Sheen	0	24.41	240	Yearly	$ 5,858
Total Cost	-	-	-	-	-	$6,924
NAICS 212321 Stormwater to Ground	Oil Sheen	0	24.41	240	Yearly	$5,858
Total Cost	-	-	-	-	-	$5,858
Highest Annual Cost	**-**	**-**	**-**	**-**	**-**	**$14,033**

A.7 Small, active sand and gravel pit with concrete and recycling – new

Assumptions:

- Three acres of disturbed area.
- 78 ft. X 85 ft. unlined wet pond. Depth 4-5 ft. with a 4:1 slope.
- Process wastewater is pretreated by a 200 foot, grass-lined biofiltration swale. Need one such swale per three acres of disturbed area.
- Lined Impoundment (i.e. containment basin). Concrete liner.
- CO2 sparging.
- Process water BMP O&M includes O&M for pond, swale, lined impoundment, and sparging unit
- pH adjustment includes 5,000 to 10,000 gal. tank. Injectors and control panel.
- pH labor includes checking on and maintaining Carbon Dioxide Adjustments.
- Time for writing materials acceptance procedures for concrete recycling.
- SMP includes site map. Plan must be reviewed and updated yearly.
- Must conduct two stormwater inspections per year.
- Vehicle/equipment inspections conducted by drivers
- Erosion and sediment control BMPs must be inspected once a week. Assume two Hours
- Must write a report on each inspection.
- No commingling of process water and stormwater.
- All Type 3 stormwater is treated by a 200 foot, grass-lined biofiltration swale. Need one such swale per three acres of disturbed area.
- Swale installed after hydromulching of exposed areas.
- Mechanical push broom sweeper

- Stabilization BMPs focus on eliminating exposed soils that are exposed to stormwater. Five acres of disturbed area needs erosion control measures.
- Copies of all monitoring reports, laboratory data, and quality assurance and control documentation must be retained for three to five years. The cost of complying with these requirements is the cost of storing records. This cost is either very low or zero.
- Daily monitoring when discharge occurs. Discharge occurs daily. Five-day work week.

Table A 11: Compliance costs for small active sand & gravel pit with concrete Ready-Mix concrete and recycling operation -- new

Item	Quantity	Units	Unit Cost	Cost	Useful Life (Years)	Annualized Cost	Annual O&M Cost	Total Annual Cost
PROCESS WASTEWATER MANAGEMENT	-	-	-	-	-	-	-	-
Wet Pond	-	-	-	-	-	-	-	-
Grader	8	Hours	$31	$248	10	$40	$0	$40
Front-end Loader	8	Hours	31	248	10	$40	0	40
Labor	32	Hours	24	781	10	$127	0	127
Heavy Equipment Mobilization	12	Hours	43	518	10	$84	0	84
Biofiltration Swale	-	-	-	-	-	-	-	-
Grader, 4 Foot Wide	8	Hours	31	248	10	$40	0	40
Support Vehicle	8	Hours	43	345	10	$56	0	56
Labor	8	Hours	24	195	10	$32	0	32
Supervision	2	Hours	31	61	10	$10	0	10

Item	Quantity	Units	Unit Cost	Cost	Useful Life (Years)	Annualized Cost	Annual O&M Cost	Total Annual Cost
Hydromulching of Swale	1	Unit	431	431	10	$70	0	70
Lined Impoundment (Concrete Batch Plant)	1	Unit	3,795	3,795	10	$618	0	618
Carbon Dioxide pH Adjustment	1	Unit	8,625	8,625	5	$2,275	0	2,275
Process Water BMP O & M	-	-	-	-	-	-	-	-
Mower	3	Hours	35	104	1	-	114	114
Support Vehicle	4	Hours	43	173	1	-	190	190
Pond, Swale, Impoundment Labor	8	Hours	24.41	195	1	-	215	215
Carbon Dioxide Refills -- pH Adjustment	2	Tank	85	171	1	-	188	188
Labor -- pH adjustment	260	Hours	24.41	6,347	1	-	6,981	6,981
SITE MANAGEMENT PLAN	-	-	-	-	-	-	-	-
Write SMP	92	Hours	68.36	6,289	1	$6,918	-	6,918
Writing Materials Handling Procedures	8	Hours	68.36	547	5	$144	-	144
Inspections	-	-	-	-	-	-	-	-
Labor	16	Hours	24.41	391	1	-	430	430

Item	Quantity	Units	Unit Cost	Cost	Useful Life (Years)	Annualized Cost	Annual O&M Cost	Total Annual Cost
Write Insp. Rpt.--Labor	6	Hours	24.41	146	1	-	161	161
Write Insp. Rpt.--Supervision	2	Hours	30.7	61	1	-	68	68
Vehicle / Equipment Inspections	600	Hours	24.41	14,646	1	-	16,111	16,111
Sediment / Erosion Control Inspections	12	Hours	24.41	293	1	-	322	322
Recordkeeping	0	Hours	0	0	0	-	0	0
STORMWATER POLLUTION PREVENTION	-	-	-	--	-	-	-	-
Perimeter Berm and Resloping	86	Hours	155	13,352	10	$2,173		2,173
Biofiltration Swale	-	-	-	-	-	-	-	-
Grader, 4 Foot Wide	8	Hours	31	248	10	$40	-	40
Support Vehicle	8	Hours	43	345	10	$56	-	56
Labor	8	Hours	24	195	10	$32	-	32
Supervision	2	Hours	31	61	10	$10	-	10
Hydromulching of Swale	1	Unit	431	431	10	$70	-	70
Spill Kit	3	Kit	615	1,845	1	$2,030	-	2,030
Secondary Containment	3	Unit	567.55	1,703	1	$1,873	--	1,873

Item	Quantity	Units	Unit Cost	Cost	Useful Life (Years)	Annualized Cost	Annual O&M Cost	Total Annual Cost
Mechanical Sweeper	1	Unit	175,832	175,832	10	$28,616	-	28,616
Activities	-	-	-	-	-	-	-	-
Biofiltration Swale O & M	-	-	-	-	-	-	-	-
Mower	3	Hours	35	104	1	-	114	114
Support Vehicle	4	Hours	43	173	1	-	190	190
Labor	4	Hours	24.41	98	1	-	107	107
Street Sweeping	130	Hours	24.41	3,173	1	-	3,491	3,491
EROSION AND SEDIMENT CONTROL	-	-	-	-	-	-	-	-
Stabilization BMPs	-	-	-	-	-	-	-	-
Initial Site Stabilization	40	Hours	17	690	5	$182	-	182
Heavy Equipment	40	Hours	31	1,242	5	$328	-	328
Heavy Equipment Mobilization	4	Hours	43	173	5	$46	-	46
Hydromulching of Exposed Areas	3	Acres	1,725	5,175	5	$1,365	-	1,365
Biofiltration Swale	--	-	-	-	-	-	-	-
Grader, 4 Foot Wide	8	Hours	31	248	10	$40	-	40

Item	Quantity	Units	Unit Cost	Cost	Useful Life (Years)	Annualized Cost	Annual O&M Cost	Total Annual Cost
Support Vehicle	8	Hours	43	345	10	$56	-	56
Labor	8	Hours	24	195	10	$32	-	32
Supervision	2	Hours	31	61	10	$10	-	10
Hydromulching of Swale	1	Unit	431	431	10	$70	-	70
Biofiltration Swale O & M	-	-	-	--	-	-	-	-
Mower	3	Hours	35	104	1	-	114	114
Support Vehicle	4	Hours	43	173	1	-	190	190
Labor	4	Hours	24.41	98	1	-	107	107
MONITORING	-	-	-	-	-	-	-	
PIT Process Water Monitoring	1	Smpl. Pts.	$5,331	5,331	1	-	5,865	$5,865
ReadyMix / Concrete Recycling Process Water Monitoring	1	Smpl. Pts.	$5,698	5,698	1	-	6,268	$6,268
PIT Stormwater Monitoring	1	Smpl. Pts.	$5,193	5,193	1	-	5,712	$5,712
ReadyMix / Concrete Recycling Stormwater Monitoring	1	Smpl. Pts.	$5,560	5,560	1	-	6,116	$6,116
Recordkeeping	0	0	0	0	0	-	0	0

Item	Quantity	Units	Unit Cost	Cost	Useful Life (Years)	Annualized Cost	Annual O&M Cost	Total Annual Cost
TOTAL	**-**	**-**	**-**	**-**	**-**	**-**		**$100,537**

Table A 12: Monitoring costs for small active sand & gravel pit with concrete and recycling. Effluent Monitoring. Annualized Cost per Sample Point. Assume Monitoring for 9 Months of a year.

Type of Discharge	Pollutant	Cost Per Test	Sampling Labor Cost	Freq.	Freq. Units	Total Cost Adjusted for 9 Months
NAICS 212321 Process Water to Surface	Turbidity	20	24.41	24	Yearly	$799
NAICS 212321 Process Water to Surface	TSS	21.67	24.41	4	Yearly	$138
NAICS 212321 Process Water to Surface	Oil Sheen	0	24.41	240	Yearly	$4,394
Total Cost	-	-	-	-	-	$5,331
NAICS 212321 Process Water to Ground	Oil Sheen	0	24.41	240	Yearly	$4,394
Total Cost	-	-	-	-	-	$4,394
NAICS 212321 Stormwater to Surface	Turbidity	20	24.41	24	Yearly	$799
NAICS 212321 Stormwater to Surface	Oil Sheen	0	24.41	240	Yearly	$4,394

Type of Discharge	Pollutant	Cost Per Test	Sampling Labor Cost	Freq.	Freq. Units	Total Cost Adjusted for 9 Months
Total Cost	-	-	-	-	-	$5,193
NAICS 212321 Stormwater to Ground	Oil Sheen	0	24.41	240	Yearly	$4,394
Total Cost	-	-	-	-	-	$4,394
NAICS 327320 & ECY002 Process Water to Surface	pH	16.33	24.41	12	Yearly	$367
NAICS 327320 & ECY002 Process Water to Surface	Turbidity	20	24.41	24	Yearly	$799
NAICS 327320 & ECY002 Process Water to Surface	TSS	21.67	24.41	4	Yearly	$138
NAICS 327320 & ECY002 Process Water to Surface	Oil Sheen	0	24.41	240	Yearly	$4,394
Total Cost	-	-	-	-	-	$5,698
NAICS 327320 & ECY002 Process Water to Ground	pH	16.33	24.41	12	Yearly	$367
NAICS 327320 & ECY002 Process Water to Ground	Oil Sheen	0	24.41	240	Yearly	$4,394
Total Cost	-	-	-	-	-	$4,760
NAICS 327320 & ECY002 Stormwater to Surface	pH	16.33	24.41	12	Yearly	$367

Type of Discharge	Pollutant	Cost Per Test	Sampling Labor Cost	Freq.	Freq. Units	Total Cost Adjusted for 9 Months
NAICS 327320 & ECY002 Stormwater to Surface	Turbidity	20	24.41	24	Yearly	$799
NAICS 327320 & ECY002 Stormwater to Surface	Oil Sheen	0	24.41	240	Yearly	$4,394
Total Cost	-	-	-	-	-	$5,560
NAICS 327320 & ECY002 Stormwater to Ground	pH	20	24.41	12	Yearly	$400
NAICS 327320 & ECY002 Stormwater to Ground	Oil Sheen	0	24.41	240	Yearly	$4,394
Total Cost	-	-	-	-	-	$4,793

A.8 Small, active sand and gravel pit with concrete and recycling – existing

Assumptions:

- Three acres of disturbed area.
- Process water BMP O&M includes O&M for pond, swale, lined impoundment, and sparging unit.
- Sparging includes 5,000 to 10,000 gal. tank. Injectors and control panel.
- pH adjustment labor includes checking on and maintaining Carbon Dioxide Adjustments
- Time for writing materials acceptance procedures for concrete recycling.
- Must conduct two stormwater inspections per year.
- Vehicle/equipment inspections conducted by drivers

- Erosion and sediment control BMPs must be inspected once a week.
- Must write a report on each inspection.
- Mechanical push broom sweeper
- Stabilization BMPs focus on eliminating exposed soils that are exposed to stormwater. Five acres of disturbed area needs erosion control measures.
- Copies of all monitoring reports, laboratory data, and quality assurance and control documentation must be retained for three to five years. The cost of complying with these requirements is the cost of storing records. This cost is either very low or zero.
- SMP requires only updating.
- Daily monitoring when discharge occurs. Discharge occurs daily. Five-day work week.

Table A 13: Compliance costs for small active sand & gravel pit with concrete Ready-Mix and recycling operation -- existing

Item	Quantity	Units	Unit Cost	Cost	Useful Life (Years)	Annualized Cost	Annual O&M Cost	Total Annual Cost
PROCESS WASTEWATER MANAGEMENT	-	-	-	-	-	-	-	-
Process Water BMP O & M	-	-	-	-	-	-	-	-
Mower	3	Hours	35	104	1	-	114	114
Support Vehicle	4	Hours	43	173	1	-	190	190
Pond, Swale, Impoundment Labor	8	Hours	24	195	1	-	215	215
Carbon Dioxide Refills -- pH Adjustment	2	Tank	85	171	1	-	188	188
Labor -- pH adjustment	260	Hours	24	6,347	1	-	6,981	6,981
SITE MANAGEMENT PLAN	-	-	-	-	-	-	-	-

Item	Quantity	Units	Unit Cost	Cost	Useful Life (Years)	Annualized Cost	Annual O&M Cost	Total Annual Cost
Update SMP	8	Hours	68.36	547	1	$602	-	602
Writing Materials Handling Procedures	8	Hours	68.36	547	5	$144	-	144
Inspections	-	-	-	-	-	-	-	-
Labor	16	Hours	24.41	391	1	-	430	430
Write Insp. Rpt.--Labor	6	Hours	24.41	146	1	-	161	161
Write Insp. Rpt.--Supervision	2	Hours	30.7	61	1	-	68	68
Vehicle / Equipment Inspections	600	Hours	24.41	14,646	1	-	16,111	16,111
Sediment / Erosion Control Inspections	12	Hours	24.41	293	1	-	322	322
Recordkeeping	0	Hours	0	0	0	-	0	0
Spill Kit	3	Kit	615	1,845	1	$2,030	-	2,030
STORMWATER POLLUTION PREVENTION	-	-	-	-	-	-	-	-
Activities	-	-	-	-	-	-	-	-
Biofiltration Swale O & M	-	-	-	-	-	-	-	-
Mower	3	Hours	35	104	1	-	114	114
Support Vehicle	4	Hours	43	173	1	-	190	190
Labor	4	Hours	24	98	1	-	107	107

Item	Quantity	Units	Unit Cost	Cost	Useful Life (Years)	Annualized Cost	Annual O&M Cost	Total Annual Cost
Street Sweeping	130	Hours	24	3,173	1	-	3,491	3,491
EROSION AND SEDIMENT CONTROL	-	-	-	-	-	-	-	-
Stabilization BMPs	-	-	-	-	-	-	-	-
Initial Site Stabilization	40	Hours	17	690	5	$182	-	182
Heavy Equipment	40	Hours	31	1,242	5	$328	-	328
Heavy Equipment Mobilization	4	Hours	43	173	5	$46	-	46
Hydromulching of Exposed Areas	3	Acres	1,725	5,175	5	$1,365	-	1,365
Biofiltration Swale O & M	-	-	-	-	-	-	-	-
Mower	3	Hours	35	104	1	-	114	114
Support Vehicle	4	Hours	43	173	1	-	190	190
Labor	4	Hours	24	98	1	-	107	107
MONITORING	-	-	-	-	-	-	-	-
PIT Process Water Monitoring	1	Smpl. Pts.	$5,331	5,331	1	-	5,865	$5,865
ReadyMix / Concrete Recycling Process Water Monitoring	1	Smpl. Pts.	$5,698	5,698	1	-	6,268	$6,268
PIT Stormwater Monitoring	1	Smpl. Pts.	$5,193	5,193	1	-	5,712	$5,712

Item	Quantity	Units	Unit Cost	Cost	Useful Life (Years)	Annualized Cost	Annual O&M Cost	Total Annual Cost
ReadyMix / Concrete Recycling Stormwater Monitoring	1	Smpl. Pts.	$5,560	5,560	1	-	6,116	$6,116
Recordkeeping	0	0	0	0	0	-	0	0
GRAND TOTAL	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**$57,748**

Table A 14: Monitoring costs for small active sand & gravel pit with concrete and recycling. Effluent Monitoring. Annualized Cost per Sample Point. Assume Monitoring for 9 Months of a year

Type of Discharge	Pollutant	Cost Per Test	Sampling Labor Cost	Freq.	Freq. Units	Total Cost Adjusted for 9 Months
NAICS 212321 Process Water to Surface	Turbidity	20	24.41	24	Yearly	$799
NAICS 212321 Process Water to Surface	TSS	21.67	24.41	4	Yearly	$138
NAICS 212321 Process Water to Surface	Oil Sheen	0	24.41	240	Yearly	$4,394
Total Cost	-	-	-	-	-	$5,331
NAICS 212321 Process Water to Ground	Oil Sheen	0	24.41	240	Yearly	$4,394
Total Cost	-	-	-	-	-	$4,394

Type of Discharge	Pollutant	Cost Per Test	Sampling Labor Cost	Freq.	Freq. Units	Total Cost Adjusted for 9 Months
NAICS 212321 Stormwater to Surface	Turbidity	20	24.41	24	Yearly	$799
NAICS 212321 Stormwater to Surface	Oil Sheen	0	24.41	240	Yearly	$4,394
Total Cost	-	-	-	-	-	$5,193
NAICS 212321 Stormwater to Ground	Oil Sheen	0	24.41	240	Yearly	$4,394
Total Cost	-	-	-	-	-	$4,394
NAICS 327320 & ECY002 Process Water to Surface	pH	16.33	24.41	12	Yearly	$367
NAICS 327320 & ECY002 Process Water to Surface	Turbidity	20	24.41	24	Yearly	$799
NAICS 327320 & ECY002 Process Water to Surface	TSS	21.67	24.41	4	Yearly	$138
NAICS 327320 & ECY002 Process Water to Surface	Oil Sheen	0	24.41	240	Yearly	$4,394
Total Cost	-	-	-	-	-	$5,698
NAICS 327320 & ECY002 Process Water to Ground	pH	16.33	24.41	12	Yearly	$367
NAICS 327320 & ECY002 Process Water to Ground	Oil Sheen	0	24.41	240	Yearly	$4,394

Type of Discharge	Pollutant	Cost Per Test	Sampling Labor Cost	Freq.	Freq. Units	Total Cost Adjusted for 9 Months
Total Cost	-	-	-	-	-	$4,760
NAICS 327320 & ECY002 Stormwater to Surface	pH	16.33	24.41	12	Yearly	$367
NAICS 327320 & ECY002 Stormwater to Surface	Turbidity	20	24.41	24	Yearly	$799
NAICS 327320 & ECY002 Stormwater to Surface	Oil Sheen	0	24.41	240	Yearly	$4,394
Total Cost	-	-	-	-	-	$5,560
NAICS 327320 & ECY002 Stormwater to Ground	pH	20	24.41	12	Yearly	$400
NAICS 327320 & ECY002 Stormwater to Ground	Oil Sheen	0	24.41	240	Yearly	$4,394
Total Cost	-	-	-	-	-	$4,793

A.9 Large, active sand and gravel pit with concrete and recycling – new

Assumptions:

- Four wet ponds. Each pond a 78 ft. X 85 ft. unlined wet pond. Depth 4-5 ft. with a 4:1 slope.
- Four grass-lined biofiltration swales.
- Process wastewater is pretreated by a 200 foot, grass-lined biofiltration swale. Need one such swale per 3 acres of disturbed area.

- Lined Impoundment (i.e. containment basin). Assume concrete liner.
- CO2 sparging.
- Sparging includes 5,000 to 10,000 gal. tank. Injectors and control panel.
- pH adjustment includes checking on and maintaining Carbon Dioxide Adjustments
- SMP includes site map. Plan must be reviewed and updated yearly.
- Time for writing materials acceptance procedures for concrete recycling.
- Must conduct two stormwater inspections per year.
- Vehicle/equipment inspections conducted by drivers
- Erosion and sediment control BMPs must be inspected once a week. Assume two Hours
- Must write a report on each inspection.
- No commingling of process water and stormwater.
- All Type 3 stormwater is treated by a 200 foot, grass-lined biofiltration swale. Need one such swale per three acres of disturbed area.
- Swale installed after hydromulching of exposed areas.
- Secondary containment should consist of a bermed concrete pad with a roof
- Mechanical push broom sweeper
- Stabilization BMPs focus on eliminating exposed soils that are exposed to stormwater. Five acres of disturbed area needs erosion control measures.
- Four sample points assumed. Assume monitoring nine months per year.
- Copies of all monitoring reports, laboratory data, and quality assurance and control documentation must be retained for three to five years. The cost of complying with these requirements is the cost of storing records. This cost is either very low or zero.
- Daily monitoring when discharge occurs. Discharge occurs daily. Five-day work week.

Table A 15: Compliance costs for large active sand & gravel pit with concrete and recycling -- new

Item	Quantity	Units	Unit Cost	Cost	Useful Life (Years)	Annualized Cost	Annual O&M Cost	Total Annual Cost
PROCESS WASTEWATER MANAGEMENT	-	-	-	-	-	-	-	-
Wet Pond	-	-	-	-	-	-	-	-
Grader	32	Hours	$31	$994	10	$162	-	$162
Front-end Loader	32	Hours	31	994	10	$162	-	162
Labor	128	Hours	24	3,124	10	$508	-	508
Heavy Equipment Mobilization	48	Hours	43	2,070	10	$337	-	337
Biofiltration Swale	-	-	-	-	-	-	-	-
Grader, 4 Foot Wide	32	Hours	31	994	10	$162	-	162
Support Vehicle	32	Hours	43	1,380	10	$225	-	225
Labor	32	Hours	24	781	10	$127	-	127
Supervision	8	Hours	31	246	10	$40	-	40
Hydromulching of Swale	4	Unit	431	1,725	10	$281	-	281
Lined Impoundment (Concrete Batch Plant)	1	Unit	3,795	3,795	10	$618	-	618
Recycling Pond System - Concrete Batch	1	Unit	94,879	94,879	10	$15,441	-	15,441
Carbon Dioxide pH Adjustment	1	Unit	8,625	8,625	5	$2,275	-	2,275

Item	Quantity	Units	Unit Cost	Cost	Useful Life (Years)	Annualized Cost	Annual O&M Cost	Total Annual Cost
Biofiltration Swale and Pond O & M	-	-	-	--	-	-	-	-
Mower	12	Hours	35	414	1	-	455	455
Support Vehicle	16	Hours	43	690	1	-	759	759
Pond, Swale, Impoundment Labor	8	Hours	24.41	195	1	-	215	215
Carbon Dioxide Refills -- pH Adjustment	2	Tank	85.40	171	1	-	188	188
Labor -- pH adjustment	260	Hours	24.41	6,347	1	-	6,981	6,981
SITE MANAGEMENT PLAN	-	-	-	-	-	-	-	-
Write SMP	120	Hours	68.36	8,203	1	$9,023	-	9,023
Writing Materials Handling Procedures	8	Hours	68.36	547	5	$144	-	144
Inspections	-	-	-	-	-	-	-	-
Labor	24	Hours	24.41	586	1	-	644	644
Write Insp. Rpt.--Labor	8	Hours	24.41	195	1	-	215	215
Write Insp. Rpt.--Supervision	2	Hours	30.7	61	1	-	68	68
Vehicle / Equipment Inspections	900	Hours	24.41	21,969	1	-	24,166	24,166

Item	Quantity	Units	Unit Cost	Cost	Useful Life (Years)	Annualized Cost	Annual O&M Cost	Total Annual Cost
Sediment / Erosion Control Inspections	16	Hours	24.41	391	1	-	430	430
Recordkeeping	0	Hours	0	0	0	-	-	0
STORMWATER POLLUTION PREVENTION	-	-	-	-	-	-	-	-
Perimeter Berm and Resloping	172	Hours	155	26,704	10	$4,346	-	4,346
Biofiltration Swale	-	-	-	-	-	-	-	-
Grader, 4 Foot Wide	8	Hours	31	248	10	$40	-	40
Support Vehicle	8	Hours	43	345	10	$56	-	56
Labor	8	Hours	24	195	10	$32	-	32
Supervision	2	Hours	31	61	10	$10	-	10
Hydromulching of Swale	1	Unit	431	431	10	$70	-	70
Spill Kit	5	Kit	615	3,075	1	$3,383	-	3,383
Secondary Containment	1	Unit	3450.16	3,450	10	$561	-	561
Wheel Wash	1	Unit	54480.29	54,480	10	$8,866	-	8,866
Regenerative air or vacuum Sweeper	1	Unit	225,000	225,000	10	$36,618	-	36,618
Activities	-	-	-	-	-	-	-	-

Item	Quantity	Units	Unit Cost	Cost	Useful Life (Years)	Annualized Cost	Annual O&M Cost	Total Annual Cost
Biofiltration Swale O & M	-	-	-	-	-	-	-	-
Mower	12	Hours	35	414	1	-	455	455
Support Vehicle	16	Hours	43.12702429	690	1	-	759	759
Labor	16	Hours	24.41	391	1	-	430	430
Street Sweeping	130	Hours	24.41	3,173	1	-	3,491	3,491
EROSION AND SEDIMENT CONTROL	-	-	-	-	-	-	-	-
Stabilization BMPs	-	-	-	-	-	-	-	-
Initial Site Stabilization	40	Hours	17	690	5	$182	-	182
Heavy Equipment	40	Hours	31	1,242	5	$328	-	328
Heavy Equipment Mobilization	4	Hours	43	173	5	$46	-	46
Hydromulching of Exposed Areas	5	Acres	1,725	8,625	5	$2,275	-	2,275
Biofiltration Swale	-	-	-	-	-	-	-	-
Grader, 4 Foot Wide	8	Hours	31	248	10	$40	-	40
Support Vehicle	8	Hours	43	345	10	$56	-	56
Labor	8	Hours	24	195	10	$32	-	32

Item	Quantity	Units	Unit Cost	Cost	Useful Life (Years)	Annualized Cost	Annual O&M Cost	Total Annual Cost
Supervision	2	Hours	31	61	10	$10	-	10
Hydromulching of Swale	1	Unit	431	431	10	$70	-	70
Biofiltration Swale O & M	-	-	-	-	-	-	-	-
Mower	3	Hours	35	104	1	-	114	114
Support Vehicle	4	Hours	43.12702429	173	1	-	190	190
Labor	4	Hours	24.41	98	1	-	107	107
MONITORING	-	-	-	-	-	-	-	-
PIT Process Water Monitoring	2	Smpl. Pts.	$7,109	14,217	1	-	15,639	$15,639
ReadyMix / Concrete Recycling Process Water Monitoring	2	Smpl. Pts.	$7,597	15,195	1	-	16,714	$16,714
PIT Stormwater Monitoring	1	Smpl. Pts.	$6,924	6,924	1	-	7,617	$7,617
ReadyMix / Concrete Recycling Stormwater Monitoring	2	Smpl. Pts.	$7,413	14,826	1	-	16,309	$16,309
Recordkeeping	0	0	0	0	0	-	0	0
GRAND TOTAL	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**$182,472**

Table A 16: Monitoring costs for large active sand & gravel pit with concrete and recycling. Effluent Monitoring. Annualized Cost per Sample Point. Assume Monitoring for 12 Months of a year.

Type of Discharge	Pollutant	Cost Per Test	Sampling Labor Cost	Freq.	Freq. Units	Total Cost
NAICS 212321 Process Water to Surface	Turbidity	20	24.41	24	Yearly	$1,066
NAICS 212321 Process Water to Surface	TSS	21.67	24.41	4	Yearly	$184
NAICS 212321 Process Water to Surface	Oil Sheen	0	24.41	240	Yearly	$5,858
Total Cost	-	-	-	-	-	$7,109
NAICS 212321 Process Water to Ground	Oil Sheen	0	24.41	240	Yearly	$5,858
Total Cost	-	-	-	-	-	$5,858
NAICS 212321 Stormwater to Surface	Turbidity	20	24.41	24	Yearly	$1,066
NAICS 212321 Stormwater to Surface	Oil Sheen	0	24.41	240	Yearly	$5,858
Total Cost	-	-	-	-	-	$6,924
NAICS 212321 Stormwater to Ground	Oil Sheen	0	24.41	240	Yearly	$5,858
Total Cost	-	-	-	-	-	$5,858
NAICS 327320 & ECY002 Process Water to Surface	pH	16.33	24.41	12	Yearly	$489
NAICS 327320 & ECY002 Process Water to Surface	Turbidity	20.00	24.41	24	Yearly	$1,066
NAICS 327320 & ECY002 Process Water to Surface	TSS	21.67	24.41	4	Yearly	$184

Type of Discharge	Pollutant	Cost Per Test	Sampling Labor Cost	Freq.	Freq. Units	Total Cost
NAICS 327320 & ECY002 Process Water to Surface	Oil Sheen	0.00	24.41	240	Yearly	$5,858
Total Cost	-	-	-	-	-	$7,597
NAICS 327320 & ECY002 Process Water to Ground	pH	16.33	24.41	12	Yearly	$489
NAICS 327320 & ECY002 Process Water to Ground	Oil Sheen	0.00	24.41	240	Yearly	$5,858
Total Cost	-	-	-	-	-	$6,347
NAICS 327320 & ECY002 Stormwater to Surface	pH	16.33	24.41	12	Yearly	$489
NAICS 327320 & ECY002 Stormwater to Surface	Turbidity	20.00	24.41	24	Yearly	$1,066
NAICS 327320 & ECY002 Stormwater to Surface	Oil Sheen	0.00	24.41	240	Yearly	$5,858
Total Cost	-	-	-	-	-	$7,413
NAICS 327320 & ECY002 Stormwater to Ground	pH	16.33	24.41	12	Yearly	$489
NAICS 327320 & ECY002 Stormwater to Ground	Oil Sheen	0.00	24.41	240	Yearly	$5,858
Total Cost	-	-	-	-	-	$6,347

A.10 Large, active sand and gravel pit with concrete and recycling – existing

Assumptions:

- pH adjustment includes 5,000 to 10,000 gal. tank. Injectors and control panel.
- pH adjustment labor includes checking on and maintaining Carbon Dioxide Adjustments
- Time for writing materials acceptance procedures for concrete recycling.
- Must conduct two stormwater inspections per year.
- Vehicle/equipment inspections conducted by drivers
- Erosion and sediment control BMPs must be inspected once a week. Assume two Hours
- Must write a report on each inspection.
- Mechanical push broom sweeper
- Stabilization BMPs focus on eliminating exposed soils that are exposed to stormwater. Five acres of disturbed area needs erosion control measures.
- Four sample points assumed. Assume monitoring Nine months per year.
- Copies of all monitoring reports, laboratory data, and quality assurance and control documentation must be retained for three to five years. The cost of complying with these requirements is the cost of storing records. This cost is either very low or zero.
- Only updating of SMP is required.
- Daily monitoring when discharge occurs. Discharge occurs daily. Five day work week.

Table A 17: Compliance costs for large active sand & gravel pit with concrete and recycling -- existing

Item	Quantity	Units	Unit Cost	Cost	Useful Life (Years)	Annualized Cost	Annual O&M Cost	Total Annual Cost
PROCESS WASTEWATER MANAGEMENT	-	-	-	-	-	-	-	-

Item	Quantity	Units	Unit Cost	Cost	Useful Life (Years)	Annualized Cost	Annual O&M Cost	Total Annual Cost
Biofiltration Swale and Pond O & M	-	-	-	-	-	-	-	-
Mower	12	Hours	35	414	1	-	455	455
Support Vehicle	16	Hours	43	690	1	-	759	759
Pond, Swale, Impoundment Labor	8	Hours	24	195	1	-	215	215
Carbon Dioxide Refills -- pH Adjustment	2	Tank	85	171	1	-	188	188
Labor -- pH adjustment	260	Hours	24	6,347	1	-	6,981	6,981
SITE MANAGEMENT PLAN	-	-	-	-	-	-	-	-
Update SMP	8	Hours	68	547	1	$602	-	602
Writing Materials Handling Procedures	8	Hours	68	547	5	$144	-	144
Inspections	-	-	-	-	-	-	-	-
Labor	24	Hours	0	0	1	-	0	0
Write Insp. Rpt.--Labor	8	Hours	24	195	1	-	215	215
Write Insp. Rpt.--Supervision	2	Hours	24	49	1	-	54	54
Vehicle / Equipment Inspections	900	Hours	31	27,630	1	-	30,393	30,393
Sediment / Erosion Control Inspections	16	Hours	24	391	1	-	430	430
Recordkeeping	0	Hours	0	0	0	-		0

Item	Quantity	Units	Unit Cost	Cost	Useful Life (Years)	Annualized Cost	Annual O&M Cost	Total Annual Cost
STORMWATER POLLUTION PREVENTION	-	-	-	-	-	-	-	-
Biofiltration Swale O & M	-	-	-	-	-	-	-	-
Mower	12	Hours	35	414	1	-	455	455
Support Vehicle	16	Hours	43	690	1	-	759	759
Labor	16	Hours	24	391	1	-	430	430
Street Sweeping	130	Hours	24	3,173	1	-	3,491	3,491
EROSION AND SEDIMENT CONTROL	-	-	-	-	-	-	-	-
Stabilization BMPs	-	-	-	-	-	-	-	-
Initial Site Stabilization	40	Hours	17	690	5	$182		182
Heavy Equipment	40	Hours	31	1,242	5	$328		328
Heavy Equipment Mobilization	4	Hours	43	173	5	$46	-	46
Hydromulching of Exposed Areas	5	Acres	1,725	8,625	5	$2,275	-	2,275
Biofiltration Swale O & M	-	-	-	-	-	-	-	-
Mower	3	Hours	35	104	1	-	114	114
Support Vehicle	4	Hours	43	173	1	-	190	190

Item	Quantity	Units	Unit Cost	Cost	Useful Life (Years)	Annualized Cost	Annual O&M Cost	Total Annual Cost
Labor	4	Hours	24	98	1	-	107	107
Spill Kit	5	Kit	615	3,075	1	$3,383	-	3,383
MONITORING								
PIT Process Water Monitoring	2	Smpl. Pts.	$7,109	14,217	1	-	15,639	$15,639
ReadyMix / Concrete Recycling Process Water Monitoring	2	Smpl. Pts.	$7,597	15,195	1	-	16,714	$16,714
PIT Stormwater Monitoring	1	Smpl. Pts.	$6,924	6,924	1	-	7,617	$7,617
ReadyMix / Concrete Recycling Stormwater Monitoring	2	Smpl. Pts.	$7,413	14,826	1	-	16,309	$16,309
Recordkeeping	0	0	0	0	0	-	0	0
TOTAL	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**$108,473**

Table A 18: Monitoring costs for large active sand & gravel pit with concrete and recycling. Effluent Monitoring. Annualized Cost per Sample Point. Assume Monitoring for 12 Months of a year.

Type of Discharge	Pollutant	Cost Per Test	Sampling Labor Cost	Freq.	Freq. Units	Total Cost
NAICS 212321 Process Water to Surface	Turbidity	20	24.41	24	Yearly	$1,066

Type of Discharge	Pollutant	Cost Per Test	Sampling Labor Cost	Freq.	Freq. Units	Total Cost
NAICS 212321 Process Water to Surface	TSS	21.67	24.41	4	Yearly	$184
NAICS 212321 Process Water to Surface	Oil Sheen	0	24.41	240	Yearly	$5,858
Total Cost	-	-	-	-	-	$7,109
NAICS 212321 Process Water to Ground	Oil Sheen	0	24.41	240	Yearly	$5,858
Total Cost	-	-	-	-	-	$5,858
NAICS 212321 Stormwater to Surface	Turbidity	20	24.41	24	Yearly	$1,066
NAICS 212321 Stormwater to Surface	Oil Sheen	0	24.41	240	Yearly	$5,858
Total Cost	-	-	-	-	-	$6,924
NAICS 212321 Stormwater to Ground	Oil Sheen	0	24.41	240	Yearly	$5,858
Total Cost	-	-	-	-	-	$5,858
NAICS 327320 & ECY002 Process Water to Surface	pH	16.33	24.41	12	Yearly	$489
NAICS 327320 & ECY002 Process Water to Surface	Turbidity	20.00	24.41	24	Yearly	$1,066
NAICS 327320 & ECY002 Process Water to Surface	TSS	21.67	24.41	4	Yearly	$184
NAICS 327320 & ECY002 Process Water to Surface	Oil Sheen	0.00	24.41	240	Yearly	$5,858
Total Cost	-	-	-	-	-	$7,597

Type of Discharge	Pollutant	Cost Per Test	Sampling Labor Cost	Freq.	Freq. Units	Total Cost
NAICS 327320 & ECY002 Process Water to Ground	pH	16.33	24.41	12	Yearly	$489
NAICS 327320 & ECY002 Process Water to Ground	Oil Sheen	0.00	24.41	240	Yearly	$5,858
Total Cost	-	-	-	-	-	$6,347
NAICS 327320 & ECY002 Stormwater to Surface	pH	16.33	24.41	12	Yearly	$489
NAICS 327320 & ECY002 Stormwater to Surface	Turbidity	20.00	24.41	24	Yearly	$1,066
NAICS 327320 & ECY002 Stormwater to Surface	Oil Sheen	0.00	24.41	240	Yearly	$5,858
Total Cost	-	-	-	-	-	$7,413
NAICS 327320 & ECY002 Stormwater to Ground	pH	16.33	24.41	12	Yearly	$489
NAICS 327320 & ECY002 Stormwater to Ground	Oil Sheen	0.00	24.41	240	Yearly	$5,858
Total Cost	-	-	-	-	-	$6,347

A.11 Small, active hot-mix asphalt facility – new

Assumptions:

- Small asphalt batch plant
- SMP includes site map. Plan must be reviewed yearly, and updated as necessary.
- Must conduct two stormwater inspections per year.
- Vehicle/equipment inspections conducted by drivers
- Not conducting earth moving activities.
- Must write a report on each inspection.
- No commingling of process water and stormwater.
- All Type 3 stormwater is treated by a 200 foot, grass-lined biofiltration swale. Need one such swale per three acres of disturbed area.
- Swale installed after hydromulching of exposed areas.
- Asphalt release agent application area includes large concrete pad sloped to an oil water separator.
- One sample point assumed. Assume monitoring three quarters per year.
- Copies of all monitoring reports, laboratory data, and quality assurance and control documentation must be retained for three to five years. The cost of complying with these requirements is the cost of storing records. This cost is either very low or zero.
- Daily monitoring when discharge occurs. Discharge occurs daily. Five day work week.

Table A 19: Compliance costs for small active hot mix asphalt operation -- new

Item	Quantity	Units	Unit Cost	Cost	Useful Life (Years)	Annualized Cost	Annual O&M Cost	Total Annual Cost
SITE MANAGEMENT PLAN	-	-	-	-	-	-	-	-

Item	Quantity	Units	Unit Cost	Cost	Useful Life (Years)	Annualized Cost	Annual O&M Cost	Total Annual Cost
Write SMP	40	Hours	68.36	2,734	1	$3,008	-	3,008
Inspections	-	-	-	-	-	-	-	-
Labor	8	Hours	24.41	195	1	-	215	215
Write Insp. Rpt.--Labor	2	Hours	24.41	49	1	-	54	54
Write Insp. Rpt.--Supervision	2	Hours	30.7	61	1	-	68	68
Vehicle / Equipment Inspections	225	Hours	24.41	5,492	1	-	6,041	6,041
Sediment / Erosion Control Inspections	0	Hours	24.41	0	1	-	0	0
Recordkeeping	0	Hours	0	0	0	-	0	0
STORMWATER POLLUTION PREVENTION	-	-	-	-	-	-	-	-
Perimeter Berm and Resloping	86	Hours	155	13,352	10	$2,173	-	2,173
Biofiltration Swale	-	-	-	-	-	-	-	-
Grader, 4 Foot Wide	8	Hours	31	248	10	$40	-	40
Support Vehicle	8	Hours	43	345	10	$56	-	56
Labor	8	Hours	24	195	10	$32	-	32

Item	Quantity	Units	Unit Cost	Cost	Useful Life (Years)	Annualized Cost	Annual O&M Cost	Total Annual Cost
Supervision	2	Hours	31	61	10	$10	-	10
Hydromulching of Swale	1	Unit	431	431	10	$70	-	70
Spill Kit	1	Kit	615	615	1	$677	-	677
Asphalt Release Agent Application Area	1	Unit	3450	3,450	10	$561	-	561
Oil Water Separator	1	Unit	43044	43,044	10	$7,005	-	7,005
Secondary Containment	1	Unit	568	568	1	$624	-	624
Activities	-	-	-	-	-	-	-	-
Biofiltration Swale O & M	-	-	-	-	-	-	-	-
Mower	3	Hours	35	104	1	-	114	114
Support Vehicle	4	Hours	43	173	1	-	190	190
Labor	4	Hours	24.41	98	1	-	107	107
MONITORING	-	-	-	-	-	-	-	-
Stormwater Monitoring	1	Smpl. Pts.	$5,560	5,560	1	-	6,116	$6,116
Recordkeeping	0	0	0	0	0	-	0	0
GRAND TOTAL	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**$27,161**

Table A 20: Monitoring costs for small active hot mix asphalt operation. Effluent Monitoring. Annualized Cost per Sample Point. No Process Water Discharges Allowed for Hot Mix Asphalt. Assume Monitoring for 9 Months of a year.

Type of Discharge	Pollutant	Cost Per Test	Sampling Labor Cost	Freq.	Freq. Units	Total Cost Adjusted for 9 Months
NAICS 324121 Stormwater to Surface	pH	16.33	24.41	12	Yearly	$367
NAICS 324121 Stormwater to Surface	Turbidity	20.00	24.41	24	Yearly	$799
NAICS 324121 Stormwater to Surface	Oil Sheen	0.00	24.41	240	Yearly	$4,394
Total Cost	-	-	-	-	-	$5,560
NAICS 324121 Stormwater to Ground	pH	16.33	24.41	12	Yearly	$367
NAICS 324121 Stormwater to Ground	Oil Sheen	0	24.41	240	Yearly	$4,394
Total Cost	-	-	-	-	-	$4,760

A.12 Small, active hot-mix asphalt facility – existing

Assumptions:

- Small asphalt batch plant
- SMP includes site map. Plan must be reviewed yearly, and updated as necessary.
- Must conduct two stormwater inspections per year.
- Vehicle/equipment inspections conducted by drivers

- Not conducting earth moving activities.
- Must write a report on each inspection.
- One sample points assumed. Assume monitoring three quarters per year.
- Copies of all monitoring reports, laboratory data, and quality assurance and control documentation must be retained for three to five years. The cost of complying with these requirements is the cost of storing records. This cost is either very low or zero.
- Daily monitoring when discharge occurs. Discharge occurs daily. Five-day work week.

Table A 21: Compliance costs for small active hot mix asphalt operation -- existing

Item	Quantity	Units	Unit Cost	Cost	Useful Life (Years)	Annualized Cost	Annual O&M Cost	Total Annual Cost
SITE MANAGEMENT PLAN	-	-	-	-	-	-	-	-
Update SMP	4	Hours	68.36	273	1	$301	-	301
Inspections	-	-	-	-	-	-	-	-
Labor	8	Hours	24.41	195	1	-	215	215
Write Insp. Rpt.--Labor	2	Hours	24.41	49	1	-	54	54
Write Insp. Rpt.--Supervision	2	Hours	30.70	61	1	-	68	68
Vehicle / Equipment Inspections	225	Hours	24.41	5,492	1	-	6,041	6,041
Sediment / Erosion Control Inspections	0	Hours	24.41	0	1	-	0	0
Recordkeeping	0	Hours	0	0	0	-	0	0

Item	Quantity	Units	Unit Cost	Cost	Useful Life (Years)	Annualized Cost	Annual O&M Cost	Total Annual Cost
STORMWATER POLLUTION PREVENTION	-	-	-	-	-	-	-	-
Spill Kit	1	Kit	615	615	1	$677	-	677
Activities	-	-	-	-	-	-	-	-
Biofiltration Swale O & M	-	-	-	-	-	-	-	-
Mower	3	Hours	35	104	1	-	114	114
Support Vehicle	4	Hours	43	173	1	-	190	190
Labor	4	Hours	24	98	1	-	107	107
MONITORING	-	-	-	-	-	-	-	-
Stormwater Monitoring	1	Smpl. Pts.	$5,560	5,560	1	-	6,116	$6,116
Recordkeeping	0	0	0	0	0	-	0	0
GRAND TOTAL	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**$13,882**

Table A 22: Monitoring costs for small active hot mix asphalt operation. Effluent Monitoring. Annualized Cost per Sample Point. No Process Water Discharges. Allowed for Hot Mix Asphalt. Assume Monitoring for 9 Months of a year.

Type of Discharge	Pollutant	Cost Per Test	Sampling Labor Cost	Freq.	Freq. Units	Total Cost Adjusted for 9 Months
NAICS 324121 Stormwater to Surface	pH	16.33	24.41	12	Yearly	$367
NAICS 324121 Stormwater to Surface	Turbidity	20.00	24.41	24	Yearly	$799
NAICS 324121 Stormwater to Surface	Oil Sheen	0.00	24.41	240	Yearly	$4,394
Total Cost	-	-	-	-	-	$5,560
NAICS 324121 Stormwater to Ground	pH	16.33	24.41	12	Yearly	$367
NAICS 324121 Stormwater to Ground	Oil Sheen	0	24.41	240	Yearly	$4,394
Total Cost	-	-	-	-	-	$4,760

A.13 Large, active hot-mix asphalt facility – new

Assumptions:

- Large asphalt batch plant
- SMP includes site map. Plan must be reviewed yearly, and updated as necessary.
- Must conduct two stormwater inspections per year.
- Vehicle/equipment inspections conducted by drivers

- Not conducting earth moving activities.
- Must write a report on each inspection.
- No commingling of process water and stormwater.
- All Type 3 stormwater is treated by a 200 foot, grass-lined biofiltration swale. Need one such swale per three acres of disturbed area.
- Swale installed after hydromulching of exposed areas.
- Asphalt release agent application area includes large concrete pad sloped to an oil water separator.
- Secondary containment should be an impervious surface, bermed, and covered
- One sample points assumed. Assume monitoring three quarters per year.
- Copies of all monitoring reports, laboratory data, and quality assurance and control documentation must be retained for three to five years. The cost of complying with these requirements is the cost of storing records. This cost is either very low or zero.
- Daily monitoring when discharge occurs. Discharge occurs daily. Five-day work week.

Table A 23: Compliance costs for large active hot mix asphalt operation -- new

Item	Quantity	Units	Unit Cost	Cost	Useful Life (Years)	Annualized Cost	Annual O&M Cost	Total Annual Cost
SITE MANAGEMENT PLAN	-	-	-	-	-	-	-	-
Write SMP	80	Hours	$68.36	$5,469	1	$6,016	-	6,016
Inspections	-	-	-	-	-	-	-	-
Labor	16	Hours	$24.41	$391	1	-	391	391
Write Insp. Rpt.--Labor	6	Hours	$24.41	$146	1	-	146	146

Item	Quantity	Units	Unit Cost	Cost	Useful Life (Years)	Annualized Cost	Annual O&M Cost	Total Annual Cost
Write Insp. Rpt.--Supervision	2	Hours	$30.70	$61	1	-	61	61
Vehicle / Equipment Inspections	600	Hours	$24.41	$4,646	1	-	14,646	14,646
Sediment / Erosion Control Inspections	0	Hours	$24.41	$0	1	-	0	0
Recordkeeping	0	Hours	$0	$0	0	-	0	0
STORMWATER POLLUTION PREVENTION	-	-	-	-	-	-	-	-
Perimeter Berm and Resloping	172	Hours	$155.26	$26,704	10	$4,346	-	4,346
Biofiltration Swale	-	-	-	-	-	-	-	
Grader, 4 Foot Wide	8	Hours	$31.05	$248	10	$40	-	40
Support Vehicle	8	Hours	$43.13	$345	10	$56	-	56
Labor	8	Hours	$24.41	$195	10	$32	-	32
Supervision	2	Hours	$30.70	$61	10	$10	-	10
Hydromulching of Swale	1	Unit	$431.27	$431	10	$70	-	70
Spill Kit	3	Kit	$615.00	$1,845	1	$2,030	-	2,030

Item	Quantity	Units	Unit Cost	Cost	Useful Life (Years)	Annualized Cost	Annual O&M Cost	Total Annual Cost
Asphalt Release Agent Application Area	1	Unit	$3,450.16	$3,450	10	$561	-	561
Oil Water Separator	2	Unit	$43,043.87	$86,088	10	$14,010	-	14,010
Secondary Containment	1	Unit	$862.54	$863	1	$949	-	949
Activities	-	-	-	-	-	-	-	-
Biofiltration Swale O & M	-	-	-	-	-	-	-	-
Mower	3	Hours	35	104	1	-	104	104
Support Vehicle	4	Hours	43	173	1	-	173	173
Labor	4	Hours	24.41	98	1	-	98	98
MONITORING								
Stormwater Monitoring	2	Smpl. Pts.	$7,291	14,582	1	-	14,582	$14,582
Recordkeeping	0	0	0	0	0	-	0	0
GRAND TOTAL	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**$58,320**

Table A 24: Monitoring costs for large hot mix asphalt operation. Effluent Monitoring. Annualized Cost per Sample Point. No Process Water Discharges Allowed for Hot Mix Asphalt. Assume Monitoring for 12 Months of a year.

Type of Discharge	Pollutant	Cost Per Test	Sampling Labor Cost	Freq.	Freq. Units	Total Cost
NAICS 324121 Stormwater to Surface	pH	16.33	24.41	12	Yearly	$367
NAICS 324121 Stormwater to Surface	Turbidity	20	24.41	24	Yearly	$1,066
NAICS 324121 Stormwater to Surface	Oil Sheen	0	24.41	240	Yearly	$5,858
Total Cost	-	-	-	-	-	$7,291
NAICS 324121 Stormwater to Ground	pH	16.33	24.41	12	Yearly	$489
NAICS 324121 Stormwater to Ground	Oil Sheen	0	24.41	240	Yearly	$5,858
Total Cost	-	-	-	-	-	$6,347

A.14 Large, active hot-mix asphalt facility – existing

Assumptions:

- Large asphalt batch plant
- SMP includes site map. Plan must be reviewed yearly, and updated as necessary.
- Must conduct two stormwater inspections per year.
- Vehicle/equipment inspections conducted by drivers
- Not conducting earth moving activities.
- Must write a report on each inspection.
- One sample points assumed. Assume monitoring tree quarters per year.

- Copies of all monitoring reports, laboratory data, and quality assurance and control documentation must be retained for three to five years. The cost of complying with these requirements is the cost of storing records. This cost is either very low or zero.
- Daily monitoring when discharge occurs. Discharge occurs daily. Five day work week.

Table A 25: Compliance costs for large active hot mix asphalt operation -- existing

Item	Quantity	Units	Unit Cost	Cost	Useful Life (Years)	Annualized Cost	Annual O&M Cost	Total Annual Cost
SITE MANAGEMENT PLAN	-	-	-	-	-	-	-	-
Update SMP	8	Hours	68.36	547	1	$602	-	602
Inspections	-	-	-	-	-	-	-	-
Labor	16	Hours	24.41	391	1	-	391	391
Write Insp. Rpt.--Labor	6	Hours	24.41	146	1	-	146	146
Write Insp. Rpt.--Supervision	2	Hours	30.70	61	1	-	61	61
Vehicle / Equipment Inspections	600	Hours	24.41	14,646	1	-	14,646	14,646
Sediment / Erosion Control Inspections	0	Hours	24.41	0	1	-	0	0
Recordkeeping	0	Hours	0	0	0	-	0	0
STORMWATER POLLUTION PREVENTION	-	-	-	-	-	-	-	-
Spill Kit	3	Kit	615	1,845	1	$2,030	-	2,030
Activities	-	-	-	-	-	-	-	-

Item	Quantity	Units	Unit Cost	Cost	Useful Life (Years)	Annualized Cost	Annual O&M Cost	Total Annual Cost
Biofiltration Swale O & M	-	-	-	-	-	-	-	-
Mower	3	Hours	35	104	1	-	104	104
Support Vehicle	4	Hours	43	173	1	-	173	173
Labor	4	Hours	24	98	1	-	98	98
MONITORING	-	-	-	-	-	-	-	-
Stormwater Monitoring	2	Smpl. Pts.	$7,291	14,582	1	-	14,582	$14,582
Recordkeeping	0	0	0	0	0	-	0	0
GRAND TOTAL	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**$32,831**

Table A 26: Monitoring costs for large active hot mix asphalt operation. Effluent Monitoring. Annualized Cost per Sample Point. No Process Water Discharges. Allowed for Hot Mix Asphalt. Assume Monitoring for 12 Months of a year.

Type of Discharge	Pollutant	Cost Per Test	Sampling Labor Cost	Freq.	Freq. Units	Total Cost
NAICS 324121 Stormwater to Surface	pH	16.33	24.41	12	Yearly	$367
NAICS 324121 Stormwater to Surface	Turbidity	20	24.41	24	Yearly	$1,066
NAICS 324121 Stormwater to Surface	Oil Sheen	0	24.41	240	Yearly	$5,858
Total Cost	-	-	-	-	-	$7,291

Type of Discharge	Pollutant	Cost Per Test	Sampling Labor Cost	Freq.	Freq. Units	Total Cost
NAICS 324121 Stormwater to Ground	pH	16.33	24.41	12	Yearly	$489
NAICS 324121 Stormwater to Ground	Oil Sheen	0	24.41	240	Yearly	$5,858
Total Cost	-	-	-	-	-	$6,347

References

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

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

n/a

Internal peer review: Review by staff internal to Ecology.

Washington State Department of Ecology (1994). Small Business Economic Impact Statement: General Permit for Sand and Gravel Operations, Rock Quarries, and Similar Mining Facilities, Including Stockpiles of Mined Materials, Concrete Batch Operations, and Asphalt Batch Operations. April, 1994. Publication no. 94-43

Washington State Employment Security Department (2020). Labor Market and Economic Analysis. Workforce Explorer. http://www.workforceexplorer.com

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.

US Census Bureau (2020). North American Industry Classification System (NAICS) 2017. http://www.census.gov/eos/www/naics/

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.

n/a

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.

Anatek Labs, Inc. (2019). Price list for Wastewater/RCRA Analyses

Everett Environmental Laboratory (2020). 2018 Everett Environmental Laboratory Price List.

Permit and Reporting Information System (PARIS) (2020). Ecology database. http://www.ecy.wa.gov/PROgrams/wq/permits/paris/index.html

Praxair (2019). Price list – Praxair distribution.

Grainger (2020). Oil spill kits. Drum.

US Bureau of Labor Statistics (2019). May 2019 State Occupational Employment and Wage Estimates for Washington.

Washington State Employment Security Department (2019). Quarterly Census of Employment and Wages. Washington state size of establishment, March 2019.

Xerxes (2018). Oil/Water Separator Price List.

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.

Kitsap County Surface and Stormwater Management (2015). Kitsap County Public Works: Street Sweeping and Water Quality.