



**Bureau of Land and Water Quality  
Division of Watershed Management  
Industrial Stormwater Program**

**Standard Operating Procedure for Numeric Effluent Monitoring subject to Maine's MSGP**

1. **APPLICABILITY.** This Standard Operating Procedure (SOP) applies to specific industrial activities covered under Maine's 2011 Multi-Sector General Permit (MSGP) for Stormwater Discharges Associated with Industrial Activity. Discharges from industrial sites with specific activities classified under Sector Codes C, D, E, K, L, & O listed in Maine's 2011 MSGP are subject to analytical numeric effluent monitoring for discharges not already subject to an existing individual MPDES discharge permit. Sectors A, B, & J are also subject to numeric monitoring for activity based non-stormwater discharges. Additionally, any facility which has a discharge of stormwater from coal storage piles must comply with the limitations and monitoring requirements for coal pile runoff set forth in Part VI (C) of Maine's MSGP. (See Also Table 1 in this SOP)
2. **PURPOSE.** To establish standardized methods of data collection and record keeping of all analytical numeric effluent monitoring data as described in Parts VI (F) and VIII of Maine's MSGP.
3. **DEFINITIONS.**
  - 3.1. **GRAB SAMPLE.** Discharge sample collected as a single uninterrupted event from a single stormwater outfall or activity from the industrial facility. Samples may be collected manually or with an automatic sampler.
  - 3.2. **HOLD TIME.** The maximum amount of time after collection that a sample is considered to suitable for laboratory analysis. Hold times are specified in the EPA test methods listed in 40 CFR Part 136 and vary greatly depending on the pollutant parameters to be analyzed.
  - 3.3. **QUALIFYING STORM EVENT.** A storm event that is precipitation, ice or snow melt that produces a measurable discharge at an outfall that occurs at least 72 hours from a previous qualifying storm event.
  - 3.4. **MULTI-SECTOR GENERAL PERMIT ("MSGP").** A General Permit which authorizes the direct discharge or point source discharge of stormwater associated with industrial activity to waters of the State or to a MS4 that discharges to waters of the State, provided the discharge meets the requirements stated within the permit. This permit does not regulate discharges to groundwater. This permit is effective from April 26, 2011, and expires April 25, 2016, and replaces Maine's 2005 MSGP for Industrial Activities issued October 11, 2005. The Department plans subsequent re-issuances of this permit.
  - 3.5. **OUTFALL.** Any direct discharge from an area of industrial activity to waters of the State or to a MS4 that discharges to waters of the State. Examples include: discharges from ditches, swales, catch basins, culverts or pipes, rills, boat ramps or treatment systems such as detention ponds where the discharge is a shallow concentrated flow that leaves the property or enters waters of



the State. The Permittee shall collect a discharge sample post BMP treatment, or at the property line (if the discharge is in a ditch), pipe or catch basin, before it discharges into waters of the State.

- 3.6. STORMWATER POLLUTION PREVENTION PLAN (“SWPPP”). A written plan developed and implemented by each permittee. This Plan evaluates potential pollutant sources, and when properly implemented, reduces or eliminates pollutants that may come in contact with stormwater.

#### 4. RESPONSIBILITIES.

- 4.1. MONITORING PROGRAM IMPLEMENTATION. The Permittee shall prepare and document a numeric monitoring schedule in the facility’s SWPPP.
- 4.2. OUTFALL IDENTIFICATION. The permittee shall identify each outfall subject to effluent monitoring at the facility. All outfalls must be uniquely identified on the facility’s site map. The mapped outfalls must correspond with the written text of the SWPPP.
- 4.3. EMPLOYEE TRAINING. The permittee is responsible for ensuring that all facility personnel involved in sampling are properly trained in sample collection procedures. Staff involved in sampling shall be familiar with the site map, physical outfall locations, and the approximate amount of time it takes each basin/drainage area to produce a measurable discharge based on storm intensity. Personnel involved in sampling should also be trained in all facility safety procedures as they apply to sampling. The same individual should carry out the collection of discharge samples for the entire permit term. Written documentation certifying that all personnel involved in sampling have been properly trained must be maintained onsite with the SWPPP.
- 4.4. SAMPLE COLLECTION FREQUENCY FOR ALL SECTORS. The permittee shall collect two quarterly samples, and calculate the average value for each parameter from the quarterly samples. This will yield an average monitoring value for each parameter. If the average of the two quarterly samples for any parameter does not exceed the effluent limitation, the numeric effluent monitoring requirements are fulfilled for those parameters for the permit year. If the average of the two quarterly samples exceeds the numeric effluent limit for any parameter the permittee shall submit the results to the Department within 14 days of receiving the results. Additional samples must be collected as well as an evaluation of BMPs affecting the discharge. If the average effluent limits continue to exceed permit limits after additional samples have been calculated into the average value, the Department must be notified in a corrective action report of proposed measures to achieve permit compliance. Numeric monitoring schedules for Sectors A, B, and J are outlined in each Sector. All other time specific sampling requirements must be performed in accordance with the procedures outlined in section 5.1 of this document. All Corrective Action Reports, laboratory results, and chain of custody forms must be kept with the SWPPP.

January 1- March 31  
April 1- June 30  
July 1 – September 30  
October 1 – December 31



- 4.5. **SAMPLE COLLECTION FREQUENCY FOR SECTORS WITH MONTHLY AVERAGE REQUIREMENTS.** Some industrial sectors are subject to monthly average effluent limitations as well as daily maximum effluent limits. The average monitoring value of two quarterly samples is acceptable for demonstrating compliance with the monthly or daily average effluent limits. If the average of the two quarterly samples exceeds the numeric effluent limit(s) for any parameter the permittee shall submit the results to the Department within 14 days of receiving the results. Additional samples must be collected as well as an evaluation of BMPs affecting the discharge. If the average effluent limits continue to exceed permit limits after additional samples have been calculated into the average value, the Department must be notified in a corrective action report of proposed measures to achieve permit compliance.
- 4.6. For sectors requiring benchmark analysis for Total Petroleum Hydrocarbons, the permit holder may use US EPA Method 8015 or US EPA method 1664.
- 4.7. **RECORD KEEPING AND REPORTING.** The permittee shall maintain records of all analytical effluent monitoring information in accordance with the requirements set forth in Part VIII (L) of Maine's MSGP. In addition to the laboratory analyses, chain of custody copies must be maintained on site with the SWPPP.

## 5. PROCEDURES

- 5.1. **SAMPLE COLLECTION TIMING.** A grab sample must be collected from each outfall subject to numeric effluent monitoring during a qualifying storm event. Collect the grab sample during the first **sixty (60) minutes** of the discharge if possible. For log watering and mine de-watering samples must be collected within thirty (30) minutes of the discharge activity. Samples must be collected no later than 2.25 hours after runoff begins discharging from an outfall. The permittee and designated SWPPP team member shall know the approximate amount of time, based on storm intensity, that it takes each outfall's drainage area/basin to produce a measurable discharge from the outfall. For log watering or mine dewatering activities, effluent samples must be collected at the point of discharge within the **first thirty (30) minutes** from the time of discharge.
- 5.2. **SAMPLE CONTAINER CLEANING AND PREPARATION.** The facility must have an adequate supply of containers prepared for sample collection. Most certified laboratories can provide clean sample containers, preservatives, sealing, chain of custody and can provide further advice on sample preservation, hold time shipping and handling.
- 5.3. **SAMPLE COLLECTION.** Samples for numeric effluent monitoring must be collected and preserved in containers specified by a certified laboratory or in method consistent with 40 CFR Part 136. Minimum sample volumes, preservation techniques, and hold times vary depending on the pollutant parameter to be measured; therefore familiarity with 40 CFR Part 136 is essential to ensure correct collection, preservation, and timely analysis. For Total Petroleum Hydrocarbons (TPH) analysis, you may use US EPA Method 8015 or US EPA Method 1664. It is also important to verify that the preservation technique for one parameter does not affect the analytical results of another in the same sample. If this is the case, a sufficient number of samples for all required analyses should be collected from the same outfall and preserved accordingly. Addition-



ally, the required number of de-ionized water blanks shall be collected if required by the appropriate EPA test method(s) used to measure the required pollutant parameters.

5.3.1. **REPRESENTATIVE OUTFALLS.** If the facility has two (2) or more outfalls that discharge substantially identical effluents, based on similar industrial activity(s), practices, or significant materials occurring within the outfalls' drainage area, the permittee may test the effluent of just one of the outfalls during a sampling period, provided that subsequent samples are taken from a different substantially identical outfall(s) during each successive monitoring event or period. For this to be permissible the permittee must follow the instructions for sampling from representative outfalls set forth in Part VI (I) of Maine's MSGP.

5.3.2. **GRAB SAMPLE COLLECTION.** Grab samples must be collected by inserting a container under or downstream of a discharge with the container opening facing upstream. In most cases the sample container may be hand held while the sample is collected. Less accessible outfalls may require the use of poles or buckets to collect grab samples. Collect the grab from the horizontal and vertical center of the outfall. If sampling in a channel, (e.g., ditch, trench, rill) avoid stirring up bottom sediments. Avoid touching the inside of the container to prevent contamination. Transfer sample to the approved laboratory container.

5.4. **SAMPLE IDENTIFICATION AND LABELING.** Prior to shipping samples for analysis, a Water-proof, gummed sample identification label or tag should be attached to the sample collection container. This label should contain the following information.

- Facility name
- Name of the sample collector
- Sample identification number and outfall
- Date and time of sample collection
- Type of analysis required
- Location of sample collection
- Preservatives used
- Type of sample (grab or composite)

5.5. **CHAIN OF CUSTODY PROCEDURES.** Once samples have been collected, the permittee or designated responsible party shall create a chain of custody. The chain of custody documents the following information for all samples collected.

- Sample identification number(s)
- Date and time of sample collection
- Source of sample and location of sample collection
- Name of sampling personnel
- Sample type (composite or grab)
- Preservation used
- Analysis required
- Name and signatures of all persons handling the samples in the field and laboratory.



The chain of custody must be included with the samples during shipment to the laboratory. When transferring possession of samples, the transferee shall sign and record the date and time on the chain of custody. Each person who takes custody of the samples shall fill in the appropriate section of the chain of custody record.

- 5.6. **SAMPLE PACKING AND SHIPPING.** All samples collected must be packed and shipped in accordance procedures outlined with a certified laboratory. See also 40 CFR Part 136 and 49 CFR Parts 171-177.
- 5.7. **SOLUTIONS TO SAMPLE LOCATION PROBLEMS.** Contact your Industrial Stormwater Inspector for solutions to sample location problems.

## **6. REFERENCES**

- 6.1. **STATE OF MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION MULTI-SECTOR GENERAL PERMIT for Stormwater DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY** Maine Department of Environmental Protection, Bureau of Land and Water Quality, Waste Discharge License # W-008227-5Y-B-R (April 26, 2011)



**Table 1: Required Parameters and Numeric Limitations for Facilities Subject to Effluent Monitoring under the Maine MSGP Please see individual Sectors for further guidance.**

| MSGP Sector | SIC/Activity Code(s) | Regulated Activities  | Required Parameters  | Numeric Limitation   |
|-------------|----------------------|---|--|--|
| A           | 2411                 | Wet decking discharges at log storage & handling facilities   | pH<br>Debris (woody material such as bark, twigs, branches, heartwood, or sapwood) | 6.0-9.0 s.u.<br>No debris that can pass through a (1") diameter round opening                |
| B           |                      | Wet decking discharges at log storage & handling facilities   | pH<br>Debris (woody material such as bark, twigs, branches, heartwood, or sapwood) | 6.0-9.0 s.u.<br>Debris (woody material such as bark, twigs, branches, heartwood, or sapwood) |
| C           | 2874                 | Stormwater from phosphate fertilizer manufacturing facilities that during manufacturing or processing, comes into contact with any raw materials, intermediate products, finished produce, by-products or waste product | Total Phosphorus (as P)<br>Fluoride  | 105.0 mg/L daily max<br>35 mg/L 30-day avg.<br>75.0 mg/L daily max<br>25.0 mg/L 30-day avg.  |
| D           | 2951-2952            | Discharges from areas where production of asphalt paving and roofing emulsions occurs   | TSS<br>Oil and Grease<br>pH  | 100.0 mg/L daily max<br>15.0 mg/L daily max<br>6.0-9.0 s.u.                                  |
| E           | 3272                 | Discharges from material storage piles at cement manufacturing facilities, including raw & waste materials, intermediate products, finished products, used or derived from manufacturing cement                         | TSS<br>pH  | 50.0 mg/L daily max<br>6.0-9.0 s.u.  |
| J           | 1422-1429            | Mine dewatering activities from crushed and broken stone facilities   | TSS<br>pH  | 100.0 mg/L daily max<br>6.0-9.0 s.u.   |
| J           | 1442, 1446           | Mine dewatering activities from   | TSS  | 45 mg/L, daily max   |



|   |    |  |                  |   |
|---|----|--|------------------|---|
|   |    | sand and gravel mining facilities  | pH               | 6.0-9.0 s.u.  |
| K | HZ | All industrial activity code "HZ" subject to the provisions of 40 CFR Part 445 Subpart A | BOD <sub>5</sub> | 220 mg/L daily max<br>56 mg/L monthly avg. max      |
|   |    |  | TSS              | 88 mg/L daily max<br>27 mg/L monthly avg. max       |
|   |    |  | Ammonia          | 10 mg/L daily max<br>4.9 mg/L monthly avg. max      |
|   |    |  | Alpha Terpineol  | 0.024 mg/L daily max<br>0.019 mg/L monthly avg. max |
|   |    |  | Aniline          | 0.024 mg/L daily max<br>0.015 mg/L monthly avg. max |
|   |    |  | Benzoic Acid     | 0.119 mg/L daily max<br>0.073 mg/L monthly avg. max |
|   |    |  | Naphthalene      | 0.059 mg/L daily max<br>0.022 mg/L monthly avg. max |
|   |    |  | p-Cresol         | 0.024 mg/L daily max<br>0.015 mg/L monthly avg. max |
|   |    |  | Phenol           | 0.048 mg/L daily max<br>0.029 mg/L monthly avg. max |
|   |    |  | Pyridine         | 0.072 mg/L daily max<br>0.025 mg/L monthly avg. max |
|   |    |  | Arsenic (Total)  | 1.1 mg/L daily max<br>0.46 mg/L monthly avg. max    |
|   |    |  | Chromium (Total) | 1.1 mg/L daily max<br>0.46 mg/L monthly             |



|                |      |  |                  |   |
|----------------|------|--|------------------|---|
|                |      |  | Zinc (Total)     | avg. max<br>0.535 mg/L daily max<br>0.296 mg/L monthly avg. max |
|                |      |  | pH               | 6.0-9.0 s.u.  |
| L              | LF   | All landfills which are subject to the requirements of 40 CFR Part 445 Subpart B | BOD <sub>5</sub> | 140 mg/L daily max<br>37 mg/L monthly avg. max                  |
|                |      |  | TSS              | 88 mg/L daily max<br>27 mg/L monthly avg. max                   |
|                |      |  | Ammonia          | 10 mg/L daily max<br>4.9 mg/L monthly avg. max                  |
|                |      |  | Alpha Terpineol  | 0.033 mg/L daily max<br>0.016 mg/L monthly avg. max             |
|                |      |  | Benzoic Acid     | 0.12 mg/L daily max<br>0.071 mg/L monthly avg. max              |
|                |      |  | p-Cresol         | 0.025 mg/L daily max<br>0.014 mg/L monthly avg. max             |
|                |      |  | Phenol           | 0.026 mg/L daily max<br>0.015 mg/L monthly avg. max             |
|                |      |  | Zinc (Total)     | 0.20 mg/L daily max<br>0.11 mg/L monthly avg. max               |
|                |      |  | pH               | 6.0-9.0 s.u.  |
| O              | 4911 | Coal pile runoff from steam electric generating facilities                       | TSS              | 50 mg/L max   |
|                |      |  | pH               | 6.0-9.0 s.u.  |
| All Facilities |      | Stormwater runoff from coal piles greater than 30 cubic yards                    | TSS              | 50 mg/L max   |
|                |      |  | pH               | 6.0-9.0 s.u.  |