VISUAL ASSESSMENT COMPLIANCE GUIDANCE

State of Michigan Industrial Storm Water Program

Facilities in Michigan with industrial storm water permit coverage are required to conduct visual assessments of storm water discharges from areas of industrial activity. The purpose of the visual assessment is to evaluate the effectiveness of the storm water control measures implemented by the facility and to ensure the discharge meets the conditions of the storm water permit. Facilities are required to develop written procedures, collect storm water samples, perform visual assessments, and complete a written report. This compliance guidance document will discuss the requirements in more detail.

WRITTEN PROCEDURES

The written procedures included in the Storm Water Pollution Prevention Plan (SWPPP) will describe how visual assessment activities will be performed and ensure that representative storm water discharge samples are collected from each regulated discharge point. Discharge points are the locations where storm water is discharged from the facility's property to surface waters of the state or a separate storm sewer system.

The discharge points, sampling locations, and drainage patterns are required to be clearly identified on the site map developed as part of the SWPPP.

The procedures shall list the Industrial Storm Water Certified Operator (certified operator) who will be overseeing the visual assessment activities and any qualified personnel that will be assisting with the sample collection. Qualified personnel are individuals that have been trained by the facility's certified operator to appropriately collect the samples to comply with the visual assessment requirements. Automatic sampling devices may be used to collect storm water samples but must be identified in the procedures.

If a facility has two (2) or more storm water discharge points that are believed to discharge substantially identical storm water effluents, the facility may rotate visual assessment sample collection between the identical storm water discharge points and report that the results also apply to the other substantially identical storm water discharge points. The determination of substantially identical storm water discharge points is to be based on the significant material evaluation and shall be clearly documented in the procedures.

A visual assessment does not need to be conducted for storm water discharges from unregulated areas. Unregulated areas include areas used solely for customer or employee parking, areas with no industrial activity, and areas that discharge to combined sewers, sanitary sewers, or ground water.

In addition to the information discussed above, the written procedures will need to include information related to the storm water sample collection and visual assessment activities implemented at the facility. A template is available to assist in the development of the written procedures on the Water Resource Division (WRD) Industrial Storm Water webpage both as a standalone document and in the SWPPP Template.

STORM WATER SAMPLE COLLECTION

Visual assessment sampling requires planning by the facility to ensure that it is manageable and effective. Managing an effective visual assessment program involves understanding the schedule and timing requirements of the permit as well as understanding where the samples need to be collected to ensure they are representative of the facility's storm water discharge.

Schedule: Visual assessments are required to be conducted during the facility's normal hours of operation in the following quarters: January-March, April-June, July-September, and October-December. The permit allows the permittee to request an alternate schedule for the visual assessments if the following criteria is met: full compliance with the permit, an acceptable SWPPP, the installation and implementation of structural controls, all required inspection reports are available at the facility, and there is a certified operator at the facility where the discharge occurs. If the WRD has approved an alternative schedule, the visual assessment may be conducted in accordance with the approved schedule.

Timing: The samples need to be collected within the first 30 minutes a discharge is observed from a discharge point as a result of a qualifying storm event and at least 72 hours after the previous qualifying storm event. A common misconception is that sampling must occur as soon as it begins to rain; however, it often takes a while for storm water to flow through the storm sewer system to the discharge point. If samples cannot be collected within the first 30 minutes of a discharge, they should be collected as soon thereafter as practicable. If the storm water runoff from the facility flows to a detention basin, samples need to be collected when there is a discharge from the basin. In the case of snowmelt, samples need to be collected as soon as the melting event results in a discharge at the discharge point(s).

Collection: Collecting a representative sample is important so that it can be used to effectively evaluate the storm water controls implemented onsite and permit compliance. An effort should be made to collect a sample that accounts for pollutants on the surface of the discharge and suspended in the discharge. There may be situations where the sample will be collected in a different container and then transferred to individual clear containers for visual assessment. There is no requirement regarding what type of container is used to collect the samples; however, the container used to conduct the visual assessment will need to be clear.

If adverse weather conditions or other circumstances prevent the collection of samples during a quarter, the reasoning needs to be documented and maintained with the SWPPP records. Adverse weather conditions are those that cause inaccessibility to the sampling location or conditions that would be dangerous to personnel collecting the sample. Examples include local flooding, high winds, electrical storms, or icy conditions. Adverse weather conditions may also

create conditions where there would be no discharge, such as extended dry periods or extended cold periods where there is no snowmelt.

Facilities that utilize structural controls to remove contaminants from storm water runoff need to collect samples downstream of the controls, to evaluate the effectiveness of the structural controls. Some examples of this include:

- Collecting the samples after storm water flows through catch basin filters
- Collecting samples after storm water flows through an oil water separator
- Collecting samples when storm water is being released from a detention basin

An assessment of the sampling locations needs to be done to determine if alterations need to be made to make the location safe for sample collection. Alterations may include construction of stairs down to the outfall, a sampling deck or platform, mowing high weeds and brush, or modifications to manholes to make them easier to remove.

Some facilities may need to use specialized equipment to collect storm water samples from the sampling locations. Specialized equipment may include a telescoping sample pole, transfer pumps, plastic bags, or dust pans. Note that plastic bags and dust pans have been used to effectively collect samples from concentrated sheet flow from pavement areas.

If the certified operator is not available at the time of the discharge, qualified personnel can collect the storm water discharge samples. Appropriate training must be conducted and documented annually as part of the employee training for the qualified personnel. A description of the training must be included in the written procedures and the training records need to be maintained with the SWPPP.

VISUAL ASSESSMENT ACTIVITIES

The visual assessment activities include making observations of conditions at the discharge point during sample collection, followed by visually evaluating the samples themselves. However, observations are not required from the discharge point if an automatic sampler is used.

When performing observations at the discharge points during sample collection, document any unusual characteristics in the receiving waters or storm sewer system. Staff should also note any odors at the discharge points that would suggest an illicit discharge. Odors at discharge points could indicate a hazardous situation; therefore, staff need to be aware of the appropriate safety precautions if unusual hazardous odors are detected.

Once the storm water discharge samples have been collected from the discharge points, the certified operator needs to perform the visual assessment of the samples as soon as possible. The sample must be in a clear container so that any unusual characteristics are easily observed. A color photo of the sample in front of a white background needs to be taken and maintained with the written report for three (3) years. Once the report has been completed for the sample, the sample can be discarded.

Unusual characteristics that need to be documented during the discharge point observations and the visual assessment of the water sample include the following:

- **Turbidity:** The cloudiness of the water is known as turbidity and it is a measure of how clear the water is. If the storm water discharge is more turbid than the receiving waters a distinct color variation may be observed in the receiving waters downstream of the discharge. The level of turbidity is directly related to how many particles are suspended in the discharge.
- **Color:** Note the color of the storm water discharge at the discharge point, is it clear, white, brown, black, etc. Contaminants in the discharge can cause it to be discolored. Before analyzing the water sample for this parameter, it should be gently shaken.
- **Oil films or sheens:** When performing observations at the discharge points, oil films or sheens will cause the surface of the water to look shiny or iridescent. Typically, people explain the appearance as a rainbow sheen. It should be noted that it does not take much gas, oil, diesel, or other petroleum products to cause a sheen. Sheens will be easier to notice during the discharge point observation and more difficult to identify in the water sample unless the amount of petroleum is significant.
- **Floating solids:** Some contaminants will float on the surface of the water. Plastic pieces, ground rubber, woody materials, etc. that are less dense than water will float. Often, these materials will get hung up in woody debris or vegetation downstream of an outfall.
- **Foams:** Look at the discharge for the presence of foams. Foams are formed when there are contaminants in the water which act as surfactants. The most common example is the presence of detergents, though discharges heavy in clay or other organic materials will create foam if the water is agitated.
- **Settleable Solids / Deposits:** The solid materials that are larger in size with a greater density will settle out of the water more quickly and are referred to as settleable solids. After the storm water sample is collected, the settleable solids will settle to the bottom of the sampling container in a short period of time. Discharges with significant concentrations of settleable solids may deposit significant quantities of solids downstream of an outfall or cause blockages in the storm sewer system.
- **Suspended Solids:** Suspended solids are usually smaller in size than settleable solids and stay in suspension for a longer period of time. Materials that do not settle out of the sample within a few minutes are typically referred to as suspended solids.

Unusual characteristics observed at the discharge points need to be promptly investigated to determine the source and take appropriate corrective actions. Failure to investigate and determine the source of the unusual characteristics observed during the visual assessment activities can be considered a permit violation.

There may be events observed during the visual assessment activities that require verbal and written notification to the WRD. If the permittee believes the conditions observed during the visual assessment activities may endanger public health or the environment, the Noncompliance Notification and/or Spill Notification requirements of the permit need to be initiated. This includes verbally reporting the incident to the WRD and following up with a written report detailing the incident, clean up actions, and corrective actions taken to prevent a similar incident.

WRITTEN REPORT

The visual assessment written report shall be completed by the facility's certified operator. A visual assessment report form is available on the WRD Industrial Storm Water webpage as a standalone document and in the SWPPP template. The written report shall include the following information:

- Sample location(s).
- Storm water sample collection date(s), time(s), and if applicable, an explanation as to why sample(s) were not collected within the first 30 minutes of discharge.
- Visual assessment date and time.
- Name and certification number of the Industrial Storm Water Certified Operator.
- Storm event information, including the length of event expressed in hours, approximate size of event expressed in inches of precipitation, duration of time since previous event that caused a discharge, date and time the discharge began, and nature of event (i.e., rainfall or snowmelt).
    - This information may be available on weather information websites such as the Weather Underground (wunderground.com and wunderground.com/history) and the National Weather Service (weather.gov).
    - A properly placed rain gauge will give the most accurate measure of the amount of precipitation occurring during a storm event at the facility.
- Name(s) of personnel who obtained the storm water sample(s) or document that an automatic sampling device was used.
- Any notable observations of the discharge while the storm water samples were collected. This requirement is waived if an automatic sampling device was used to collect the storm water samples.
- Sample(s) shall be observed in a colorless glass or plastic container for the following characteristics: color, oil sheen, turbidity, floating solids, suspended solids, settleable solids, foam, and any other unusual characteristics.
    - To conduct the visual assessment, the certified operator should gently shake or mix the sample before conducting the assessment.
- Unaltered, full-color photograph of the storm water sample(s) against a white background.
- A description of corrective actions taken if any unusual characteristics are identified during the visual assessment.

SUMMARY

Proper prior planning is important when implementing an efficient, effective visual assessment program. Providing safe easy access to the sampling locations, providing frequent training, and preparing sampling kits ahead of time will help ensure staff are ready to perform the visual assessment activities when a qualifying storm event occurs. Records (written report and sample photo) of the visual assessments need to be maintained onsite for three (3) years and documentation must be provided for quarters that a visual assessment could not be performed. If unusual characteristics are observed during the visual assessment activities, promptly investigate potential sources, make the necessary corrective actions, and comply with the reporting requirements of the permit.

Contact information for district industrial storm water staff is available at Michigan.gov/IndustrialStormWater.