NPDES – Drainage Improvements
Standard Operating Procedure

WASTE REDUCTION & DISPOSAL DIVISION

Inactive Landfill Maintenance

The inactive landfills have an industrial permit under the National Pollution Discharge Elimination System (NPDES). As such, we are required to monitor and control the quality of the runoff from each site. A Storm Water Pollution Plan (SWPP) has been developed for each site that shows sampling points and site specific Best Management Practices (BMPs) to achieve the required goals. Below are some general rules that will help in this ongoing endeavor (**Refer to the permit application for a detailed plan on specific requirements**).

Guidelines:

1. Generally, all exposed soils on the top deck and slopes are covered with mulch to prevent erosion. As the mulch decomposes, the surfaces of the landfill are periodically disked and fresh mulch is reapplied. Seeding and planting of drought resistant vegetation, soil stabilizers and erosion control mats are also used as erosion control measures.

2. Silt fences and or rock berms are to be used in the drainage areas of five (5) acres or less. Brow ditches are used on slopes greater than 10 feet in height and slopes steep enough to allow erosion to occur. Down drains and channels are used to collect concentrated flows and deliver them to flatter areas and/or adjacent streams and creeks. They are to be sized according to current engineering standards, typically installed above ground with some sort of energy dissipation at the outlet.

3. Collect storm water samples at the designated sampling locations (refer to appropriate SWPP) during the first hour of discharge from (1) the first storm event of the rainy season, and (2) at least one other qualifying storm event of the rainy season. Rain events must be proceeded by **three** days of dry weather and be significant enough to produce runoff. This runoff must occur during working hours. If conditions are dangerous, then a sampling point may by skipped. Background samples are also taken to compare upstream and downstream conditions and determine if there are any impacts from our landfills.

4. Samples are taken following standard sampling protocols. Samples are to be packed in ice after they are taken and delivered to the lab as soon as practical. Samples are to be turned in at the counter accessed via the back of the building. A Chain of Custody form **must be** completed before turning samples over to the lab.

5. See attached generic laboratory facts sheets

Benefit of Compliance to Instruction:

- Protection of public health and safety
- Less silt and contaminants in runoff

- Integrity of cover material protected

Consequence of Non-Compliance to Instruction:

- Violations and/or fines from Regulatory Agency(s)
- Destruction of endangered habitat
- Loss of integrity of cover material
- Refuse migrating off site
- Disciplinary action

Environmental Management System (EMS) – ISO 14001 *Process Map #: SM-1.0*

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*****Technical Fact Sheet*****
Storm water Sampling and Analysis

Pursuant to the federal Clean Water Act, most industries, construction sites, and municipalities in the United States are now required to obtain coverage under a National Pollutant Discharge Elimination System (NPDES) Permit for discharges of storm water runoff. The State Water Resources Control Board (SWRCB) issues industrial and construction NPDES permits. Under the California Water Code, state regulatory agencies prevent pollution and protect the quality of surface and ground waters in California by regulating storm water discharge.

1 For what analytes should my storm water samples be tested?

Dischargers are required to collect and analyze samples for pH, TSS, Specific Conductance, and either Oil & Grease or TOC. Depending on your industry, you may be required to analyze for toxic chemicals and other pollutants that are likely to be present in significant quantities at your site.

2 When do I collect storm water samples?

During the storm water season (October 1st – May 31st), dischargers are required to collect and analyze samples of storm water runoff from at least two storm events per year. Each storm event must be one that produces significant storm water discharge and is preceded by at least three working days of dry weather. The grab sample should be collected during the first 30 minutes of a storm event and should be brought to the laboratory for analysis as soon as possible after sampling.

3 Is timing really important?

Timing is very important because many analyses have short holding times (some as short as a few hours), the samples should be maintained at a cold temperature and brought to a lab as soon as possible after collection. Some frequently requested analyses with short holding times are PH, residual chlorine, hexavalent chromium (Cr+6), MBAS, nitrate, and settleable solids.

4 Why are sample preservatives important?

We provide our clients with pre-preserved, labeled sample containers for storm water sampling. The few drops of preservative added to your sample containers are important for maintaining sample integrity as well as compliance with correct sampling procedures as specified by EPA regulations. **Caution: Many preservatives are strong acids or bases. Personal protective equipment including gloves and safety glasses should be worn. Pre-preserved containers should be stored away from direct sunlight, upright, and should NOT be pre-rinsed prior to sample collection.**

Collecting samples is costly. How you handle samples following their collection is critical to ensure the analytical results are technically valid and legally defensible. The temperature and condition of the samples upon receipt at the laboratory is vital information. After the samples are collected, it is important that the samples be handled correctly and in accordance with EPA guidelines. Below are some suggestions for packaging and handling your samples for the best results.

*****Technical Fact Sheet*****
Tips For Successful Sample Packaging
And Transport To The Laboratory

1 Place all samples in a cooler. Use plenty of ice or blue ice. The temperature of the cooler should be maintained at ≤ 4°C until it is opened at the laboratory. If you use ice, seal the ice in zip-lock type bags. You can prepare your own ice blocks by filling zip-lock bags with water, sealing, and freezing overnight. It is often a good idea to place the frozen ice bag inside a second zip-lock bag to avoid leaks.

2 You need to package the ice and samples in a fashion so that when the ice melts, it doesn't contact the samples. This will prevent sample labels from detaching, potential cross contamination, and a leaking cooler.

3 If required make sure you are using sample preservatives (for groundwater, wastewater, drinking water, etc.) The lab should provide pre-preserved sample containers.

4 Seal any associated paperwork, such as a chain-of-custody form in a double zip-lock bag. This will keep the chain-of-custody dry, legible, and intact.

5 Always place glass containers upright, do not pack tightly, and use plenty of packing material (bubble wrap works best). This helps prevent breakage during cooler transport and handling.

6 Collect (2) 40-ml VOA samples for each volatile analysis per location when sampling for volatiles. Place the VOAs in zip-lock type bags. Use one zip-lock per sampling location, (2) samples in case of breakage.

7 A number of the tests performed at a lab must be completed within very short holding times from the time of sample collection (hexavalent chromium must be performed in 24 hours, pH the same day, and coliforms within 6 hours!).

The best policy is to deliver the samples to the laboratory a soon as possible following sample collection. This allows adequate time for analysis of your samples. It also prevents expedited turn-around time charges to maintain holding times.

One of the most concerns associated with sample collection and analysis is the possibility of sample contamination, either in the field or the laboratory. Laboratories are frequently requested to report data at the lowest possible detection limit, i.e, parts per billion or even in parts per trillion. It doesn't take much to contaminate a sample at this level. Having a good sampling strategy can often eliminate unforeseen headaches.

The laboratory does not oversee the sample collection process. What the laboratory received in the sample bottle from the client is what they are going to analyze. It is client's responsibility to use proper sampling techniques to avoid the possibility of sample contamination in the field. The following describes the sources and ways to prevent sample contamination.

*****Technical Fact Sheet*****
Understanding Types and Sources of Sample Contamination

Sample Bottles: The containers you use to collect samples may contain trace amounts of analytes if obtained from an unreliable source. All sample bottles provided by a lab should be certified clean of all analytes of concern. The lab should also perform secondary analysis to verify that there are no contaminants in the pre-preserved containers provided to clients.

Sample Collection: Consider anything that touches the inside of the bottle other than the sample itself, a possible contaminant. This includes fingers, gloves, sampling devices, faucets, bailers or hoses. If you must use a sampling device to obtain the sample, ensure that it has been properly decontaminated by washing with phosphate free soapy water, rinsing with tap or de-ionized water, and then a final rinse with de-ionized water. Do not dry off the device with paper towels as this may introduce artificial contamination.

For volatile organic samples, never expose to equipment exhaust fumes during sampling or transit to the lab. It is best to use trip and field blanks if this is a concern. In addition, samples that contain high and low level concentrations should not be sent in the same shipping container or cooler. Volatile compounds present in high concentrations have been show to contaminate low-level samples during transport. Never use electrical or duct tape to sea VOA containers and minimize the use of indelible ink markers.

For metals sampling, always consider using non-metallic sampling devices. Also consider where the sample is being collected and take field notes to document blowing dust, rusty metal structures, or the type of sampling device used. For metals analysis, it has been shown that even microscopic flakes of a metal can greatly elevate metals results. Even latex gloves and kim wipes have been shown to cause zinc contamination of samples.

At The Lab: Sample contamination of volatile samples is a big concern at the laboratory due to the frequent use of extraction solvents for various methods. The solvents of concern include either, Freon-113, acetone, and methylene chloride. Seldom do volatile or semi-volatile samples become contaminated at the lab.

At The Lab (Continued): Strict sample contamination controls should be employed as well as requiring that a method blank be analyzed in every analytical batch. If an analyte is detected in the method blank, the value is reported and the data should be flagged appropriately.

The lab should also analyze refrigerator blanks to verify that volatiles are not being cross-contaminated during sample storage.

It is very uncommon that samples for inorganic analyses to become contaminated at or above our method detection limit. However, contaminate on concerns do tend to elevate when clients request extremely low detection limits. The most common low-level metal contaminants in decreasing order are zinc, followed by barium and then copper. As previously stated, if an analyte is detected in the method blank, the value is reported and the data is flagged appropriately.