*Large On-site Sewage System (LOSS)*

**Monitoring and Reporting Plan Manual**

August 2021



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DOH 337-132

**Introduction**

This Monitoring and Reporting Plan (MRP) template can be used to prepare an MRP to meet the requirements of WAC 246-272B-04300. All new large on-site sewage systems (LOSS) are required to have an MRP. Department of Health (DOH) may also require an MRP for an existing LOSS.

The purpose of the MRP is to ensure that monitoring results are representative of the LOSS wastewater. To obtain a representative sample, the sample must be taken at an appropriate time and place, collected with the right equipment and procedures, and analyzed by a certified laboratory. The MRP template is for influent and effluent monitoring. If groundwater monitoring is required, a separate monitoring plan must be prepared by a Washington State Licensed Hydrogeologist.

The MRP is a part of the LOSS Operation and Maintenance Manual but is written to also be a stand-alone document. DOH uses the monitoring data to determine permit compliance, evaluate impacts to health and the environment, and make future decisions concerning permit conditions.

This template includes text, instructions, and examples. The use of the MRP template is optional. Whether or not the template is used, your MRP must include similar information in a similar format to the template.

Instructions for using the MRP template:

1. Before you begin filling in the template, be sure to save it to your hard drive. If you close the template without saving it to your hard drive your changes will be lost.
2. MRP text is written in black in the template. **The text is generic and should be modified to fit your LOSS.** Instructions for the template are in red. Examples are in text boxes.
3. **Delete all the template instructions and examples when you’ve completed your MRP**.
4. Add page numbers and a header or footer identifying your LOSS name and permit number.
5. Upon completion, send the MRP to the DOH address listed on the front of this document or send electronically to wastewatermgmt@doh.wa.gov.
6. For questions on using the MRP template please contact wastewatermgmt@doh.wa.gov or call (360) 236-3330.

[***Insert Name of LOSS]***

Large On-Site Sewage System

**Monitoring and Reporting Plan**

***[Insert Date]***

***Prepared for***

**[*Insert LOSS Owner Name and Address*]**

***Prepared by***

***[Insert Name, Title, and Address]***

**1.0 General Information**

* 1. **Check One:** **[ ]  New LOSS** **[ ]  Existing LOSS**
	2. **LOSS Name and Location:**

Name of LOSS

LOSS Address

City State Zip Code County

* 1. **Name and Contact Information of Person Responsible for Sample Collection:**

Name, if different from owner (Title)

Company or organization

Daytime Phone Number Email

**1.4 LOSS Description**

Type of facility ***[Ex: school, restaurant, office, campground, etc.]***

Type of advanced treatment ***[Ex.: none, sand filter, Nibbler, etc.]***

Flow (gpd) ***[Identify if the flow is design flow or peak/average measured flow]***

**2.0 Sample Schedule**

**[*Complete Table 1. Consult DOH for your sampling schedule and add or delete parameters as needed for your LOSS.]***

**Table 1: Sampling Schedule**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter1** | **Source2 - check one**  | **Sample Frequency3** | **Time or Day Requirements4** | **Reporting Frequency5**  |
| **Influent** | **Effluent** |
| **CBOD5** |  |  |  |  |  |
| **BOD5** |  |  |  |  |  |
| **TSS** |  |  |  |  |  |
| **Nitrate/nitrate** |  |  |  |  |  |
| **TKN** |  |  |  |  |  |
| **Oils & Grease** |  |  |  |  |  |
| **COD** |  |  |  |  |  |
| **Field Parameters****[List]** |  |  |  |  |  |
|  |  |  |  |  |  |

1Table 1 should include all monitoring required in the permit. Process monitoring not required by DOH should also be listed in Table 1.

2 When testing both influent and effluent, the relationship between the LOSS’s flow variation and detention time should be considered so that analyses are performed on samples taken from the same waste.

3Sample frequency is quarterly, monthly, seasonal, event specific, or daily.

4Time or day requirements – sampling should be done when the system is being used. For some facilities such as churches and schools, this means samples should be taken on specific days and at specific times.

5Reporting Frequency – Reporting frequency is usually the same as your sampling frequency.

**MRP TIP**: Check with your lab on the best day to deliver your samples. This might affect your sample schedule. For some parameters, the day your lab receives your samples may influence the cost of analysis.

**3.0 Sample Location**

***[Describe your sample locations and insert or attach a diagram or labeled photos clearly showing the sample locations.]***

Influent samples are taken prior to treatment. Effluent samples are taken at the last practical location prior to discharge to the drainfield.

Influent samples are taken at \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Effluent samples are taken at \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**4.0 Laboratory Name and Contact Information**

Samples for analysis will be sent to the following certified laboratory:

***[*Provide *the name, address, contact name and number for the laboratory you are using to analyze your samples.]***

**MRP TIP:** A list of certified labs can be found at [www.ecy.wa.gov/programs/eap/labs/
search.html](http://www.ecy.wa.gov/programs/eap/labs/search.html). You can also contact DOH for help in finding a certified lab.

**5.0 Laboratory Test Methods**

***[Complete Table 2 – Table 2 contains the most common parameters sampled for at a LOSS. Delete or add parameters specific to your LOSS. Revise this table as needed if your lab has different detection limits, methods or holding times.]***

Table 2 - Laboratory Test Methods

|  |  |  |  |
| --- | --- | --- | --- |
| **Parameter** | **Detection Limit** | **Standard Method1 and EPA Methods2**  | **Holding Time3** |
| **CBOD5** | 2.0 mg/L | Method #5210B | 48 hrs |
| **BOD5** | 2.0 mg/L | Method #5210B | 48 hrs |
| **COD** | 50.0 mg/L | Method #5220 D | 28 days |
| **TSS** | 1.0 mg/L | Method #2540D | 7 days |
| **Oils & Grease** | N/A | Method #5520D | 28 days |
| **Nitrate + Nitrite** | 0.5 mg/L | Method #4500F | 48 hrs |
| **TKN** | 1.0 mg/L | EPA Method #351.3 | 28 days |
| **Fecal Coliform**  | TBD4 | Method #9222D | 24 hrs |
|  |  |  |  |

1Standard Methods for the Examination of Water and Wastewater, APHA, 21th ed., (2005)

2 Methods for the Chemical Analysis of Water and Wastes (EPA/600/4-79/020)

3 This is the amount of time the lab has to analyze your sample. This is not the amount of time available to submit the sample to the lab. The clock starts when you take the sample. The lab must complete its analysis within the holding time. If not delivered to the lab in a timely fashion, the sample/results will be invalid.

4 Your detection limit for Fecal Coliform will depend partly on your permit limit.

**6.0 Equipment List**

***[Include a list of equipment that will be needed in the field. Delete or add from the following list as needed for your MRP].***

6.1 General Equipment

* Copy of DOH approved Monitoring and Reporting Plan
* Tools to remove lids (pump chamber, monitoring port, etc.)
* Shovel
* Flashlight
* Tape Measure
* Rubber gloves
* Protective glasses
* Duct tape
* Field Logbook
* Sample Record Form
* Hand towel or paper towels
* Chain- of-custody forms
* Pencil
* Clear tape
* Zip Lock Bags
* Permanent Marker
* Antibacterial hand sanitizer
* Cell Phone
* First Aid Kit

6.2 Sampling Equipment

* Field Measurement Device ***[List specific devices]***
* ***[Fill in number of sample bottles]*** Lab issued sample bottles
* Labels
* Ice chest with ice
* Tool for gathering sample from LOSS ***[Describe tool - such as “container attached to dipstick”]***
* Funnel

6.3 Decontamination Equipment

* Scrub brush
* Alconox or equivalent soap
* Deionized water
* Bucket

**7.0 Field Instrument Calibration**

All field meters must be calibrated according to manufacturer’s guidelines and specification before each day of field use. A calibration log must be kept and must be provided to the Department of Health upon request. Rented equipment that comes calibrated must be noted.

***[If you will not be using field meters, delete the above wording and insert a statement that field meters will not be used].***

**8.0 Decontamination**

Sampling equipment and field measuring instruments must be decontaminated. Equipment must be cleaned prior to sampling, in between sample locations, and on completion of each sampling event. Decontamination steps include:

1. Remove gross contamination by brushing or wiping off equipment.
2. Scrub with Alconox or an equivalent soap.
3. Rinse with deionized water.
4. All gross contamination and rinse water will be rinsed back into the tank or pump chamber or contained and disposed of properly.
5. Allow equipment to air dry.

***[Add or delete steps to fit your decontamination procedure.]***

**9.0 Sample Bottles and Labels**

Sample bottles are provided by the laboratory. Sample bottles will include a preservative if needed. Do not rinse bottles prior to taking a sample.

Prepare sample labels prior to collecting a sample. Sample labels must include:

**MRP TIP:** It is best to prepare labels before you leave for the field.

* LOSS name
* Sample number
* Source (effluent or influent)
* Date and time sample was taken

A waterproof or permanent marker must be used to fill out labels. Completed labels must be affixed to sample containers with clear tape so they will not become loose and fall off.

**10.0 Sample Methods**

***[Insert your sampling protocols for laboratory samples and field measurements here or attach as an appendix. The following method is only an example to show the kind of detail that should be included in this section.]***

Example 1. Grab Sample Method for CBOD5, BOD5, TSS, Nitrogen

1. Decontaminate sample equipment prior to use per procedure in Section 8.0.
2. Prepare sample label(s).
3. Do not rinse sample bottles.
4. Locate the pump chamber per the diagram in Section 3.0.
5. Remove the pump chamber lid and set aside.
6. Use a dipstick with attached container to grab a sample.
	1. Collect samples where the wastewater appears to be well mixed.
	2. Avoid floating materials, debris, and particles larger than ¼-inch in the sample.
7. Use a funnel to pour the sample into the sample bottle. Do not overfill bottles.
8. Wipe off bottle, close, and attach completed label. Cover the label with clear tape.
9. Place the sample bottle in a ziplock bag to protect the label.
10. Immediately place samples in a cooler with ice.
11. Repeat this procedure for all samples.
12. Decontaminate sample equipment per procedure in Section 8.0.
13. When all samples are collected, put pump chamber lid back in place and secure.
14. Fill out field log book.
15. Review sample holding times and prepare for transport.

**MRP TIP:** Fecal Coliform samples are especially susceptible to contamination. If a Fecal Coliform sample is taken, care should be used at all times to avoid contamination of the inside of the sample bottle, neck of the bottle, and inside the bottle cap. Avoid touching these areas of the sample bottle.

**11.0 Sample Transport to a Certified Lab**

All samples must be transported in such a way such that the sample remains unchanged until analyzed. The cooler used for sample transport will maintain the samples at 4 degrees C (39 degrees F). Samples will be delivered to the laboratory within ***[insert hours.]***

All sample shipments will be accompanied by a chain-of-custody record. The chain-of-custody form is provided by the laboratory. The form is used to record the contents of each shipment, identify who had custody of the shipments, and record transport times. The completed chain-of-custody form will be submitted to the laboratory with the samples.

A sample chain of custody form is in Section 18. ***[Insert a blank form from your lab]***

**MRP TIP:** Some laboratories provide a courier service or drop-off location at no additional cost.

***[Describe in detail how you will package and transport your samples to the laboratory within the required holding time.]***

**12.0 Recordkeeping**

Each sampling event will be recorded in a field notebook. The field notebook will be bound with numbered, water resistant pages. A description of the collection and handling of samples will be sufficiently detailed to allow the data user to understand and evaluate the procedures if needed. All field notes will be initialed and dated.

***[Include a list of the information that will be included for each sampling event.]***

Example 2. Field Notebook Information

* LOSS name and location
* Identity of field personnel
* Site and weather conditions
* Number and types of samples collected
* Date, time, location, identification, and description for each sample including holding times and transport information
* Instrument calibration procedures
* Field measurement results
* Identity of quality control (QC) samples if any
* Unusual circumstances which may affect interpretation of the data
* Initials of recorder

**13.0 Sample Reporting**

Monitoring results must be sent to DOH according to the reporting frequency listed on page 4 of your operating permit. Copies of the original lab results must be submitted. Please include your LOSS system name and ID on all monitoring results and send electronically to wastewatermgmt@doh.wa.gov.

Or submit hardcopy sample data to:

DOH LOSS Program

PO Box 47824

Olympia, WA 98504-7824

**14.0 Response Plan for an Elevated Result**

An elevated result is defined as a single laboratory result that is 50% higher than an average of the three previous results or one that exceeds a permit limit or permit early warning value. If an elevated result is found, the operator will submit another sample to the laboratory within 5 days of receiving the original result. If the second sample is elevated, notify DOH within 10 days of receiving the second sample results. Within that same time, the operator will investigate the cause and report to DOH what actions are being taken to address the elevated result.

**15.0 Quality Assurance and Quality Control (QA/QC)**

The QA/QC program for the MRP is three-part: 1) Field notebook 2) Chain of Custody Form and 3) laboratory QA/QC. The field notebook records details of each sampling event and documents that samples were taken and shipped consistent with methods and requirements listed in this MRP. The completed Chain of Custody Form documents whom had custody of the samples from the time they were taken through delivery at the laboratory. Laboratory QA/QC are internal procedures the laboratory uses to ensure the samples are analyzed properly. Laboratory QA/QC results will be included with the monitoring results that are sent to DOH.

***[Add or delete QA/QC information as needed for your LOSS].***

**16.0 Training**

All persons implementing the MRP must have read the MRP and must be trained on sampling methods, transport, and chain of custody prior to taking samples.Training must be documented and submitted with the annual report.

***[Include additional information as needed for your LOSS.]***

**17.0 Chain of Custody Form**

***[Insert a copy of your lab’s chain of custody form]***