How to Complete the Bag and Cartridge Filtration Worksheet of the SWMOR-Alt

General Information about the Spreadsheets

The Surface Water Monthly Operating Report for Alternative Technologies (SWMOR-Alt) is for public water systems that produce drinking water from surface water or groundwater under the direct influence of surface water using alternate technologies. The EPA's Long Term 2 Enhanced Surface Water Treatment Rule (LT2) defines the alternate technologies that can receive credit for removal or inactivation of pathogens.

As you work with the SWMOR-Alt spreadsheets, you will find many features that make it easier for you to use. The following general information will help you use the spreadsheets.

An Excel spreadsheet is also called a workbook which is made up of separate worksheets. After you open the workbook, you will find a series of tabs at the bottom of the screen. Each of these tabs identifies one of the worksheets in the workbook. When you click on one of these tabs, the tab will change from gray to white and the program will take you to the worksheet for the pages shown on the tab.

Because the SWMOR-Alt is an electronic file, we have been able to place many instructions and comments directly in the two spreadsheets. Those electronic comments will help you immediately while you are completing the form.

"We" and "You" in This Guide

"We" as used in this guide refers to the Texas Commission on Environmental Quality—specifically, the TCEQ's Water Supply Division.

In this guide, "you" means the person who must sign the SWMOR or SWMOR2 each month. Under the rules, this person must be the certified surface water treatment plant operator who is responsible for the daily supervision of the plant.

1.1 INTRODUCTION

The **Bag,Cartridge** worksheet of the SWMOR-Alt is used to record performance data for bags or cartridge filter assemblies, or units, that are used to meet minimum treatment requirements. If your plant uses this type of filter for pathogen removal credit, you must enter information in the **Bag,Cartridge** worksheet of the SWMOR every day.

If you indicated that your plant has this type of filtration system when you customized the SWMOR-Alt, this tab for this worksheet will be visible as shown above. If you indicated that your plant does not use bag or cartridge filters, this tab and worksheet will be hidden. If you use these types of filters and the tab is not present, you will need to close the file, reopen it, and re-customize your spreadsheet. See Chapter 2 for more information about customizing the SWMOR-Alt for your particular plant.

At the top of the **Bag,Cartridge** worksheet, there is a block of information that describes your system, plant, and reporting period. The spreadsheet copies this information from the data you entered on the **P.2-Turbidity Data** worksheet, and the data cannot be re-entered or edited on the **Bag,Cartridge** worksheet.

1.2 BAG AND CARTRIDGE FILTER DESIGN DATA

Just below the block of information at the top of the worksheet, there is a **Performance Data** table containing three data entry areas. The top area, shown in Figure 1.1, contains design information about your bag and cartridge filters and indicates:

1. whether the bags and cartridges are a primary treatment technology or a secondary treatment technology,
2. how much removal credit we allow you to claim for using bags and cartridge filters at your plant, and
3. what, if any, alternative monitoring requirements apply to each bag and cartridge assembly you use.

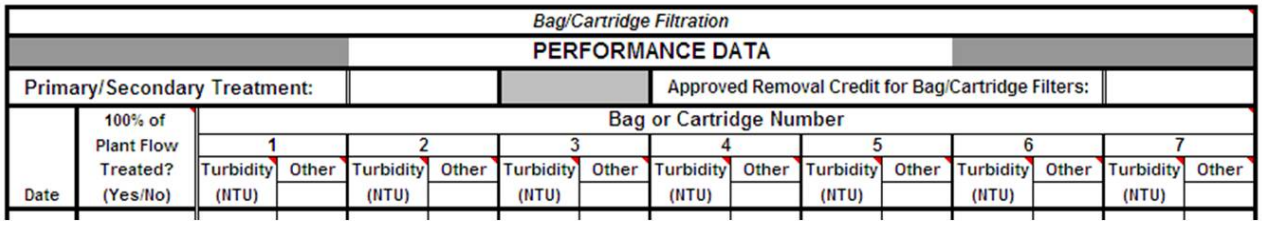


Figure 1.1. Bag/Cartridge Treatment and Credit

Before you enter any daily results for your bags or cartridge filters, you should verify that data shown in the **Primary / Secondary Treatment** and the **Approved Removal Credit** for Bag/Cartridge Filter is correct. If the information shown in this area does not match the information contained in the approval letter from TCEQ, you will need to close the spreadsheet and correct your customized spreadsheet. If corrections are needed, refer to Chapter 2 for the instructions on how to properly customize the SWMOR-Alt for your particular plant.

If your approval letter requires you to continuously monitor turbidity, the SWMOR-Alt will lock these cells and prevent you from entering data in them.

Primary / Secondary Treatment *CALC*

You may not enter any data in the **Primary / Secondary Treatment** cell. The SWMOR-Alt will use the information you provided when you created the customized spreadsheet for your plant to enter one of the following two values.

Primary

The SWMOR-Alt will indicate that your bags or cartridges provide primary treatment unless all the water that passes through the units also passes through another type of filter.

Secondary

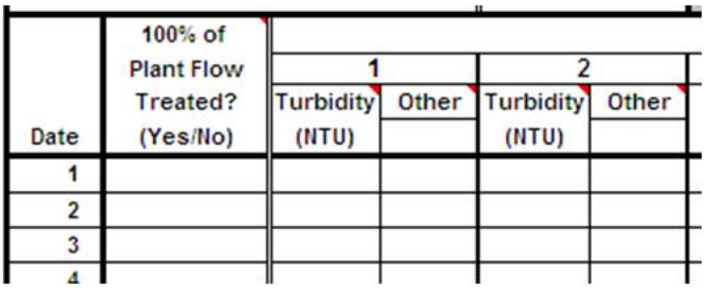
The SWMOR-Alt will indicate that your bags or cartridges provide secondary treatment if all the water that passes through the bag and cartridge units also passes through another type of filter. For example, a cartridge filter provides secondary treatment if all of the water it filters has already passed through a granular media gravity or pressure filter. However, cartridge filters are also considered to be a secondary filtration technology if all the water that passes through the units is subsequently sent to a membrane filters for primary filtration.

Approved Removal Credit for Bag / Cartridge Filters *CALC*

You may not enter any data in the **Approved Removal Credit** cell. The SWMOR-Alt will automatically complete this part of the form using the information you provided when you created the customized spreadsheet for your plant.

1.3 Daily Data for Bag and Cartridge Filters

The middle area of the **Performance Data** table area, contains daily data for each bag or cartridge assembly. Figure 1.2 shows the data entry area for the first few days of the month for filter assemblies 1 and 2.



Date	100% of Plant Flow Treated? (Yes/No)	1		2	
		Turbidity (NTU)	Other	Turbidity (NTU)	Other
1					
2					
3					
4					

Figure 1.2. Bag/Cartridge Treatment and Credit

100% of Plant Flow Treated?

Each of the cells in this column contains a drop down list which you can use to enter data. If you treated any water during the day, you must indicate whether all of the water was treated by bag or cartridge filters. Select or enter <Yes> if all of the water that was treated during the day was filtered through a bag or cartridge filter. Select or enter <No> if any of the water you treated was not filtered through the approved bag or cartridge filtration processes. If the plant was off-line for the entire day and you treated no water at all, select or enter <X>. You must enter data each day; you may not leave any of these cells blank.

Turbidity (NTU)

Most plants that use bag or cartridge filters as a primary filtration process must measure and record the turbidity of the water produced by each membrane unit at least once every 15 minutes that sends water to the clearwell. Even if you use bag and cartridge filters as a secondary treatment process or have been allowed to continuously monitor another performance parameter, you must still measure the turbidity of the water produced by each bag or cartridge filter at least once each day. Therefore, you must enter a turbidity reading each day; you may not leave any of these cells blank.

To complete this section of the report, you must:

- Enter <X> if the unit was off-line for the entire day and sent no water to the clearwell.
- Enter <ND> if the unit was used during the day, but you did not record any of

the required turbidity data.

- Enter <MD> if:
  - The unit was used during the day and you recorded some, but not all, of the required turbidity data; and
  - All of the readings you did record were 1.0 NTU or less.
- Enter the daily maximum turbidity reading of the water produced by the bag or cartridge filter if:
  - There were any confirmed readings above 1.0 NTU during the day; or
  - You recorded all of the required readings and none of them were above 1.0 NTU.

IMPORTANT

Turbidity readings above 1.0 and 2.0 NTU in the water produced by an individual bag or cartridge filter are not treatment violations. However, they can trigger mandatory special studies if they are confirmed by a consecutive reading. Consequently, these turbidity levels are known as trigger levels and the consecutive readings are referred to as confirmed readings.

<u>If you are continuously monitoring the turbidity levels of the water produced by your bag or cartridge filters.</u>

You should exclude any data that is obtained when the filter is off-line (i.e., not sending water to the clearwell). For example, you should exclude the data for a specific filter when a bag filter is being backflushed or when a cartridge is operating in a filter-to-waste mode.

Do not report any turbidity reading above 1.0 NTU or 2.0 NTU unless the filter exceeds the trigger level in two consecutive 15-minute readings. If the turbidity is greater than 2.0 NTU, report the reading only if the preceding or following 15-minute reading is also greater than 2.0 NTU. If the turbidity is greater than 1.0 NTU, report the reading only if the preceding or following 15-minute reading is also greater than 1.0 NTU. If the turbidity does not exceed either trigger level in two consecutive 15-minute readings, report the highest reading that was not greater than 1.0 NTU.

<u>If you are continuously monitoring another parameter of the water produced by your bag or cartridge filters and are using grab samples to monitor the turbidity level of the water produced by each bag or cartridge filter.</u>

You must collect your grab samples during periods when the filter is on-line (i.e., is sending water to the clearwell). You must also collect a confirmation sample if the initial sample reveals that the turbidity level of the water produced by a filter exceeds 1.0 NTU.

Do not report any turbidity reading above 1.0 NTU or 2.0 NTU unless:

a) the filter exceeds the applicable trigger level in both the initial and confirmation samples or

b) the initial reading was above 1.0 NTU and you did not collect a confirmation sample.

Other Bag/Cartridge Monitoring Parameters

Most plants that use bag or cartridge filters must continuously monitor the turbidity level of water produced by each filter unit or assembly. However, we do sometimes allow plants to continuously monitor an operational parameter other turbidity. For example, we may have allowed you to monitor the pressure of the water at the inlet of each filter or the pressure drop that occurs when water passes through the filter.

If the letter approving the use of bag or cartridge filters at your plant allows you to continuously monitor an alternative parameter, you must enter the approved alternative performance standard for each assembly in the appropriate cell at the top of each **OTHER** column. You must also measure and record the approved parameter at least once every 15 minutes that the filter assembly is sending water to the clearwell and report the highest reading of the day.

NOTE

If the SWMOR spreadsheet does not allow you to enter the **OTHER** data by your approval letter or tells you that you are required to monitor an alternative parameter when your approval letter requires you to continuously monitor turbidity, you will need to close the spreadsheet and re-customize the spreadsheet. If corrections are needed, refer to Chapter 2 for the instructions on how to properly customize the SWMOR-Alt for your particular plant.

1.4 Summary and Compliance Actions

The last section in the **Performance Data** table is the **Summary & Compliance Actions** section. Figure 1.3 shows what this section will look like for a plant that uses its bag and cartridge filters for primary treatment. If your plant uses bags and cartridges as a secondary filtration process, the spreadsheet will hide rows 49 through 60 because the additional data is not required.

		Bag/Cartridge Number							
SUMMARY & COMPLIANCE ACTIONS	Criteria	1	2	3	4	5	6	7	Plant
	Number of days with elevated readings this month								
	Number of days with elevated readings last month								
	Number of days withelevated readings two months ago								
	Total number of days with elevated readings in last three months								
	Number of days with event(s) above 2.0 NTU this month								
	Number of days with event(s) above 2.0 NTU last month								
	Does the filter/plant have an approved Corrective Action Plan?								
	Is the plant required to submit a Filter Profile Report?								
	Is the plant required to submit a Filter Assessment Report?								
	Is the plant required to submit a Request for Compliance CPE?								
	Was 100% of Daily Plant Flow Treated Each Day?		Was the max IFE turbidity reading 1.0 NTU or lower each day?		Giardia and Crypto Removal Credit Allowed this Month for Bag/Cartridge Filters				

Figure 1.2. Bag/Cartridge Summary and Compliance Actions

Number of days with events above 1.0 NTU this month *CALC*

For *each* bag/cartridge unit at the plant, the SWMOR-Alt counts the number of days this month that you reported having a turbidity reading above 1.0 NTU.

Number of days with events above 1.0 NTU last month

For *each* bag/cartridge unit at the plant, record the number of days that you reported having a turbidity reading above 1.0 NTU. last month. Pull this information from the preceding month SWMOR-Alt's **Number of days with event(s) above 1.0 NTU this month**. You may not leave this cell blank.

Number of days with events above 1.0 NTU two months ago

For *each* bag/cartridge unit at the plant, record the number of days when number of days that you reported having a turbidity reading above 1.0 NTU. two months ago. Pull this information from the preceding month SWMOR-Alt's **Number of days with event(s) above 1.0 NTU last month**. You may not leave these cells blank.

Total number of days with event(s) above 1.0 NTU in three months *CALC*

For each bag/cartridge filter unit at the plant, the SWMOR-Alt calculates the total number of days that you reported having a turbidity reading above 1.0 NTU during the last three months.

Number of days with event(s) above 2.0 NTU this month CALC

The SWMOR-Alt counts the number of days this month that you reported the turbidity level produced by any bag or cartridge filter exceeded 2.0 NTU.

Number of days with events above 2.0 NTU last month

Record the total number of days that you reported having a turbidity reading above 2.0 NTU last month. Pull this information from the preceding month SWMOR-Alt's **Number of days with event(s) above 2.0 NTU this month**. You may not leave this cell blank.

Does the filter / plant have an approved Corrective Action Plan (CAP)?

For *each* bag and cartridge unit at the plant, use the drop-down list to indicate whether the plant is in the process of completing a TCEQ-approved CAP on that unit. You must also indicate whether the plant is in the process of implementing a plant-wide TCEQ-approved CAP. You may not leave any of these cells blank.

You may only select or enter <Y> for a particular filter if you are in the process of completing an "individual filter" CAP that we have approved in writing. If the plant does not have an approved "individual filter" CAP, you must select or enter <N> in the appropriate cell.

IMPORTANT

The plant does not have an approved CAP for an individual filter until it has:

1) completed a Filter Assessment Report (FAR)
2) submitted the FAR and a proposed an "individual-filter" CAP schedule to the TCEQ for review, *and*
3) received the TCEQ's written approval of the proposal.

Similarly, you may only select or enter <Y> for in the plant cell if you are in the process of completing an "plant wide" CAP that we have approved in writing. If the plant does not have an approved plant CAP, you must select or enter <N>.

IMPORTANT

The plant cannot have an approved "plant wide" CAP until it has:

1) participated in a thorough evaluation of the design, maintenance, operation, and administration of the entire water treatment plant,
2) has submitted the evaluation report and the resulting to the TCEQ for review, and
3) has received the TCEQ's written approval of the proposed "plant wide" CAP.

In fact, this type of CAP is usually issued by TCEQ after it has completed a Comprehensive Performance Evaluation (CPE).

Is the plant required to submit a Filter Profile Report? ***CALC***

For *each* bag/cartridge filter at the plant, the SWMOR-Alt determines if the plant is required to produce a filter profile on the filter and submit a Filter Profile Report with the SWMOR.

Unless a unit has an approved corrective action schedule that waives the additional monitoring requirements, you must either identify the cause of the exceedance or produce a filter profile each time the filter exceeds 1.0 NTU in two consecutive 15-minute readings at any time during the filter run.

Is the plant required to submit a Filter Assessment Report? *CALC*

For *each* bag/cartridge filter at the plant, the SWMOR-Alt determines if the plant is required to conduct a filter assessment on the unit and submit a Filter Assessment Report with the SWMOR-Alt.

Unless the filter unit has an approved corrective action schedule that waives the additional monitoring requirements, you must conduct a filter assessment if you reported that a particular filter produced water with a turbidity level above 1.0 NTU on three or more separate occasions during the last three months.

Is the plant required to submit a Request for Compliance CPE? *CALC*

The SWMOR-Alt determines if the plant is required to participate in a third-party Comprehensive Performance Evaluation (CPE) and submit a Request for Compliance CPE with the SWMOR.

Unless the plant has an approved corrective action schedule that waives the CPE requirement, the plant must participate in a third-party CPE each time a bag/cartridge unit or any combination of filter units exceeds 2.0 NTU in two consecutive 15-minute readings during the last two months.

Was 100% of Daily Plant Flow Treated Each Day? *CALC*

The SWMOR-Alt reviews the data in the **100% of Plant Flow Treated?** column to determine if the all of the water the plant treated during the entire month passed through its bag and cartridge filters. If you indicated that all of the water produced each day passed through a bag or cartridge filter, the SWMOR-Alt will answer this question <Yes>. However, if one or more of the cells in the **100% of Plant Flow Treated?** column contains a <No> response, the SWMOR-Alt will also answer this question <No>.

Was the max IFE turbidity reading 1.0 NTU or lower each day? *CALC*

The SWMOR-Alt reviews the all the maximum daily turbidity you entered on the worksheet to determine if any of the bag or cartridge filters produced water with a turbidity levels greater than 1.0 NTU on any day. If all of the turbidity readings on the Bag/Cartridge worksheet are 1.0 NTU or lower, the SWMOR-Alt will answer this question <Yes>. However, if you reported that any of the readings were above 1.0 NTU, the SWMOR-Alt will answer this question <No>.

Removal Credit Allowed this Month for Bag/Cartridge Filters *CALC*

The spreadsheet calculates this value based on the answers to the previous two questions and design information you entered when you customized your spreadsheet. If the answers to the previous two questions were both <Yes>, the SWMOR-Alt will give the plant credit shown in the **Approved Removal Credit for Bag/Cartridge Filters** cell at the top of the **Performance Data** table.

Worksheet Notes

The message **"!error"** in any of the cells corresponding to the rows above indicates invalid entry in maximum filtered water turbidity.