New Mexico Surface Water Treatment Monthly Operating Report Instructions

The monthly operating report (MOR) must be submitted each month by all surface water treatment systems that fall under the requirements of the Safe Drinking Water Act. These instructions pertain to the electronic spreadsheet version of the MOR. A completed electronic MOR should be emailed to the Drinking Water Bureau (DWB) staff person who has oversight for your system, as well as the DWB Area Wide Optimization Program (AWOP) coordinator. The MOR should be submitted by the 10th of the following month. Failure to submit the required information contained in the MOR each month is a violation of either the Interim Enhanced Surface Water Treatment Rule (IESWTR) or the Long Term 1 Enhanced Surface Water Treatment Rule (LT1SWTR), depending on the number of customers served by the system.

The MOR is useful, not only to DWB, but also to the system for summarizing system performance from month to month. Please ensure the data is correct and accurate and take the time to review the information and assess performance trends.

Worksheet 1: Turbidity Data

The Turbidity Data Worksheet is shown below in Figures 1 and 2. Items 6, 9, 11, 12, 18, 19 are regulatory requirements. All other items should be filled in if the system has access to the data.

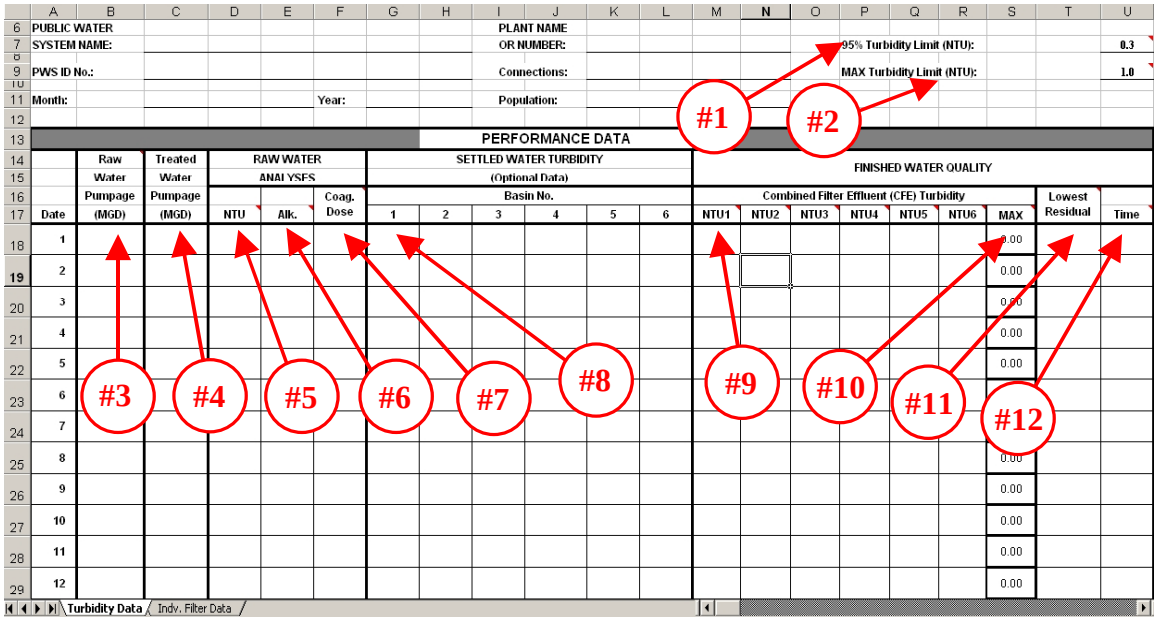

Figure 1: Turbidity Data

1. 95% Turbidity Limit. At least 95 percent of the combined filter effluent (CFE) turbidity measurements taken each month must be no greater than your 95th percentile CFE turbidity limit[i]. The 95th percentile CFE turbidity value for systems that consist of conventional or direct filtration is 0.3 NTU[ii]. If your system uses slow sand filtration you must continue to meet the combined filter effluent turbidity limit of 1 NTU[iii]. The State of New Mexico has not substituted a less stringent turbidity limit for any system using slow sand filtration. If your system uses diatomaceous earth filtration you must continue to meet the combined filter effluent turbidity limit of 1 NTU[iv]. Please contact the Drinking Water Bureau for a determination of your 95th percentile turbidity value if your system consists of alternative filtration. This value will not be greater than 1 NTU[v]. The value on the worksheet for the 95% turbidity limit is locked at .3. If you need to change this value, either unlock the cell and change it, or contact DWB.

2. MAX Turbidity Limit. The maximum combined filter effluent (CFE) turbidity limit cannot be exceeded at any time during the month[vi]. The maximum CFE turbidity value for systems that consist of conventional filtration and direct filtration is 1 NTU[vii]. The maximum CFE turbidity value for systems using slow sand filtration and for systems using diatomaceous earth is 5 NTU[viii]. The value on the worksheet for the Max turbidity limit is locked at 1. If you need to change this value, either unlock the cell and change it, or contact DWB.

3. Raw water Pumpage (MGD). The volume of raw water, in millions of gallons, pumped into the treatment system each day. If raw water is first pumped into a reservoir, do not enter the volume pumped into the reservoir.

4. Treated Water Pumpage (MGD). The volume of treated water, in millions of gallons, delivered to storage and distribution each day.

5. Daily Raw Water Turbidity (NTU). If multiple values for raw water turbidity are recorded each day, the maximum turbidity value should be reported. This data is useful for analyzing and optimizing system performance. Optimization goals for settled water are based on raw water quality. The optimization goal for settled water is less than 1 NTU 95 percent of the time when annual average raw water turbidity is less than or equal to 10 NTU. When the annual average raw water turbidity is greater than 10 NTU, the optimization goal is 2 NTU 95 percent of the time[ix].

6. Raw Water Alkalinity. Systems which use conventional filtration treatment must monitor each month for alkalinity in the raw water and in treated water at the same time samples are taken for total organic carbon (TOC)[x]. You must report the location, date and results of alkalinity taken during the last quarter[xi]. The sampling frequency can be reduced to once per quarter if the TOC in the treated water is <2.0 mg/L for two consecutive years or <1.0 mg/L for one year. The system must revert to monthly monitoring if TOC≥2.0 mg/L[xii]. The worksheet

allows for daily alkalinity measurements. If daily measurements are made, insert these values. If only a monthly value is taken, insert this value on the day when the measurement was made.

7. Coagulant Dose. The dose of coagulant should be on per day basis, such as pounds per day. This requires either that chemical feed pumps be calibrated, or that the quantity of chemical used be tracked on daily basis. Units should be included.

8. Settled Water Turbidity. It is recommended that settled water turbidity be monitored to help assess the effectiveness of the floculation/settling process. If settled water is monitored continuously or multiple times per day, enter the maximum daily settled water turbidity measurement for each settling basin. If only one measurement is taken per day, you should try to take that measurement at approximately the same time each day. Make sure to take measurements when the system is running. Settled water turbidity data is useful for optimization. The optimization goal for settled water is less than 1 NTU 95 percent of the time when annual average raw water turbidity is less than or equal to 10 NTU. When the annual average raw water turbidity is greater than 10 NTU, the optimization goal is 2 NTU 95 percent of the time[xiii].

9. Finished Water Turbidity. Turbidity measurements of combined filter effluent (CFE) must be recorded every four hours that the system serves water to the public. If the system has two filters and chooses to monitor combined filter effluent instead of individual filter effluent, finished water must be monitored continuously (at least one reading every 15 minutes). In this case, the maximum value over the 4-hour period should be entered. NTU1 represents the period from 12:00 am – 4:00 am, NTU2 represents the period 4:00 am – 8:00 am, NTU3 represents the period 8:00 am – 12:00 pm, NTUT4 represents the period from 12:00 pm – 4:00 pm, NTU5 represents the period from 4:00 pm – 8:00 pm and NTU6 represents the period from 8:00 pm – 12:00 am. The State has reduced the sampling frequency to once per day for systems serving ≤500 persons and for systems of any size that use slow sand filtration and alternative filtration[xiv].

10. MAX Finished water Turbidity. The maximum combined filter effluent (CFE) turbidity is automatically filled in by the spreadsheet. It is the largest value of NTU1 – NTU6.

11. Lowest Daily Disinfectant Residual. The residual disinfectant concentration of the water entering the distribution system must be monitored continuously[xv], and the lowest value must be recorded each day[xvi]. The residual disinfectant concentration in the distribution system, cannot be undetectable in more than 5 percent of the samples each month, for any two consecutive months that the system serves water to the public[xvii].

12. Time. Only use the "Time" column to show the length of time that the disinfectant residual entering the distribution system fell below the acceptable level. Show time in hours. The residual disinfectant concentration in the water entering the distribution system cannot be less than 0.2 mg/L for more than 4 hours[xviii].

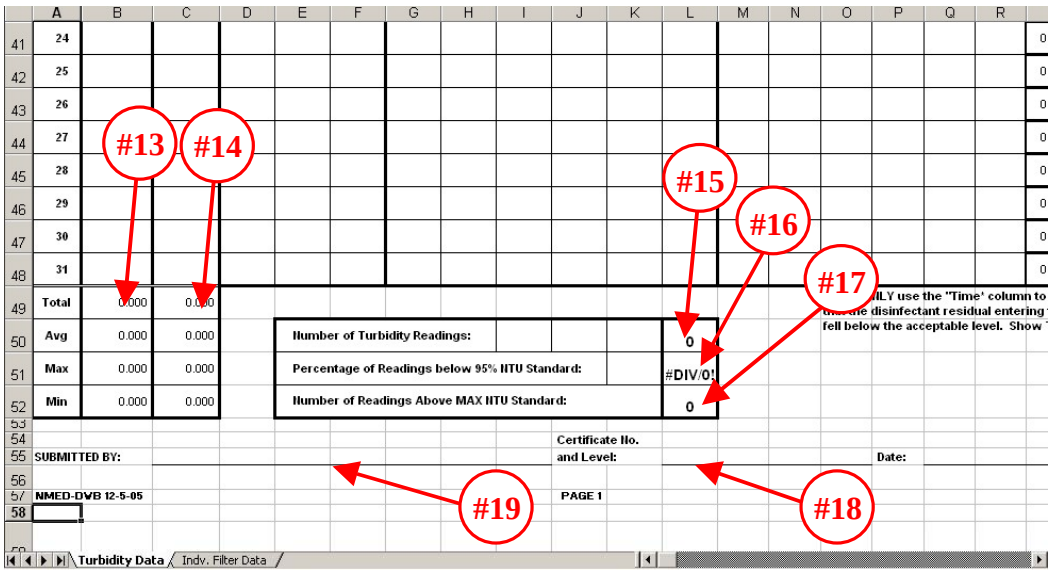

Figure 2: Turbidity Data Summary

13. Total Raw Water Pumpage (MG). The total volume of raw water pumped that month in millions of gallons. This value will automatically be filled in by the spreadsheet based on the values entered for Item #3.

14. Total Treated Water Pumpage (MG). The total volume of treated water pumped into distribution that month. This value will automatically be filled in by the spreadsheet based on the values entered for Item #4.

15. Number of Turbidity Readings. The number of turbidity values entered for combined filter effluent turbidity for the month. This value will automatically be filled in by the spreadsheet. Text entries for CFE turbidity will not be counted.

16. Percentage of Readings below 95% NTU Standard. The spreadsheet will automatically fill in the percentage of CFE turbidity values entered for Item #9 that are below the 95% NTU Standard (Item # 1). If this value is less than 95%, it is a Treatment Technique violation

17. Number of Readings Above MAX NTU Standard. The number of CFE turbidity entries taken during the month which exceed the maximum turbidity value for your filtration system[xix] (Item #2). This value will automatically be filled in by the spreadsheet.

18. Certificate No. and Level. Enter the certificate number and certification level of the head operator of the plant. Each public water system using a surface water source or a ground water source under the direct influence of surface water must be operated by qualified personnel who meet the requirements specified by the State[xx]. The State of New Mexico requires that all public water systems be operated by a certified operator[xxi].

19. Submitted By. DWB will only accept Monthly Operating Report (MOR) signed by a certified operator. For electronic copies submitted by email, type in the name of the head operator. For printed copies that are submitted, the head operator should add his/her signature.

Worksheet 2: Individual Filter Data

The second worksheet, Turbidity Data, is for individual filter data and is shown in Figures 3 and 4. Conventional and direct filtration surface water systems with 3 or more filters are required under LT1 and IESWTR to continuously monitor (at least 1 reading every 15 minutes) individual filter effluent (IFE). Small systems with 1 or 2 filters are permitted to monitor only combined filter effluent (CFE); such systems are not required to fill in the individual filter data shown in Figure 3. Two-filter systems that only monitor CFE must monitor it continuously (at least one reading every 15 minutes).

The following describes each data requirement shown and numbered in Figures 3 and 4:

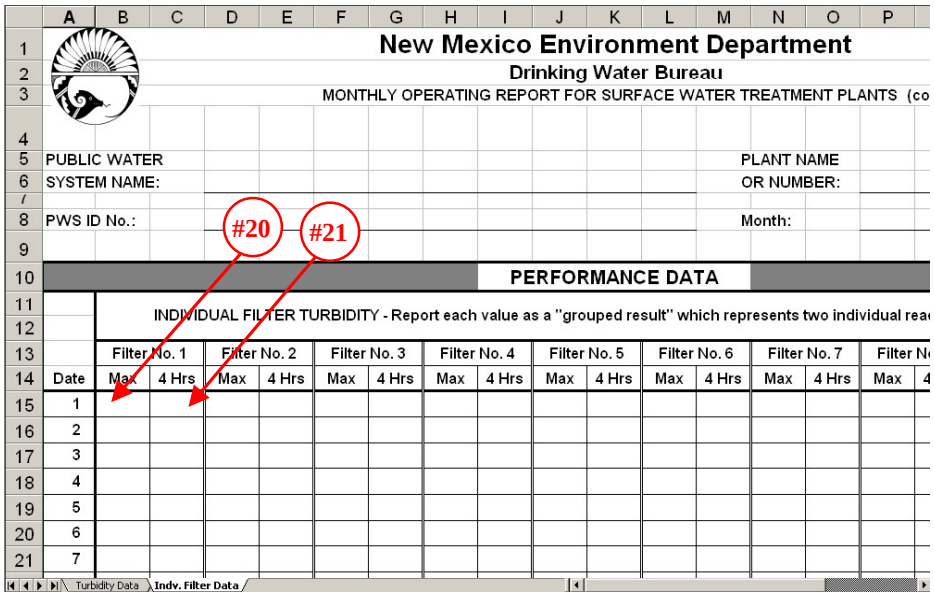

Figure 3: Individual Filter Data

20. **Max Daily Filter Turbidity** – The maximum Individual Filter Effluent (IFE) turbidity value for each filter for each day of the month is entered. The worksheet has space for up to 10 filters. The value for each filter should be obtained from the continuously monitored IFE data for each filter. If a filter is not in operation on that day, leave the entry blank. **Enter a value above 1 NTU ONLY if there were readings above 1 NTU for 2 consecutive readings (i.e. two readings 15 minutes apart[xxii]). Enter a value above 2 NTU ONLY if there were readings above 2 NTU for 2 consecutive readings[xxiii].**

    For systems utilizing conventional and direct filtration serving populations greater than or equal 10,000, if an individual filter has a measured turbidity level greater than 1.0 NTU in two consecutive measurements taken 15 minutes apart, the system must either produce a filter profile for the filter within 7 days of the exceedance (if the system is not able to identify an obvious reason for the abnormal filter performance) and report to DWB that the profile has been produced or report the obvious reason for the exceedance.

    For all systems utilizing conventional and direct filtration, if an individual filter has a measured turbidity level of greater than 1.0 NTU in two consecutive measurements taken 15 minutes apart at any time in each of three consecutive months, the system is required to conduct a self-assessment of the filter within 14 days of the exceedance and report to DWB that the assessment was conducted or report the reason for the exceedance[xxiv].

21. **4 Hour Reading** – If your system serves a population of 10,000 or more, under IESWTR you are required to record into the 4 Hours column the turbidity value from each filter at the end of four hours of continuous filter operation after the filter is returned to service from backwash or shutdown. If such an event occurs more than once for a filter during the day, enter the reading for the event with the maximum turbidity level at four hours. If no such event occurs for a filter on a specific day, leave blank. **Do not report any turbidity reading above 0.5 NTU unless a filter exceeds 0.5 NTU in two consecutive 15-minute readings at the end of four hours into a filter run.** If the turbidity level from a filter is greater than 0.5 NTU at 4 hours, report that reading only if the preceding reading, that is, the reading at 3 hours 45 minutes, or the following reading, that is, the reading at 4 hours 15 minutes, is also greater than 0.5 NTU. Otherwise, report the subsequent reading, that is, the reading at 4 hours 15 minutes.

    Should the 4 hour value exceed .5 NTU, the system must either produce a filter profile for the filter within 7 days of the exceedance (if the system is not able to identify an obvious reason for the abnormal filter performance) and report to DWB that the profile has been produced or report the obvious reason for the exceedance.

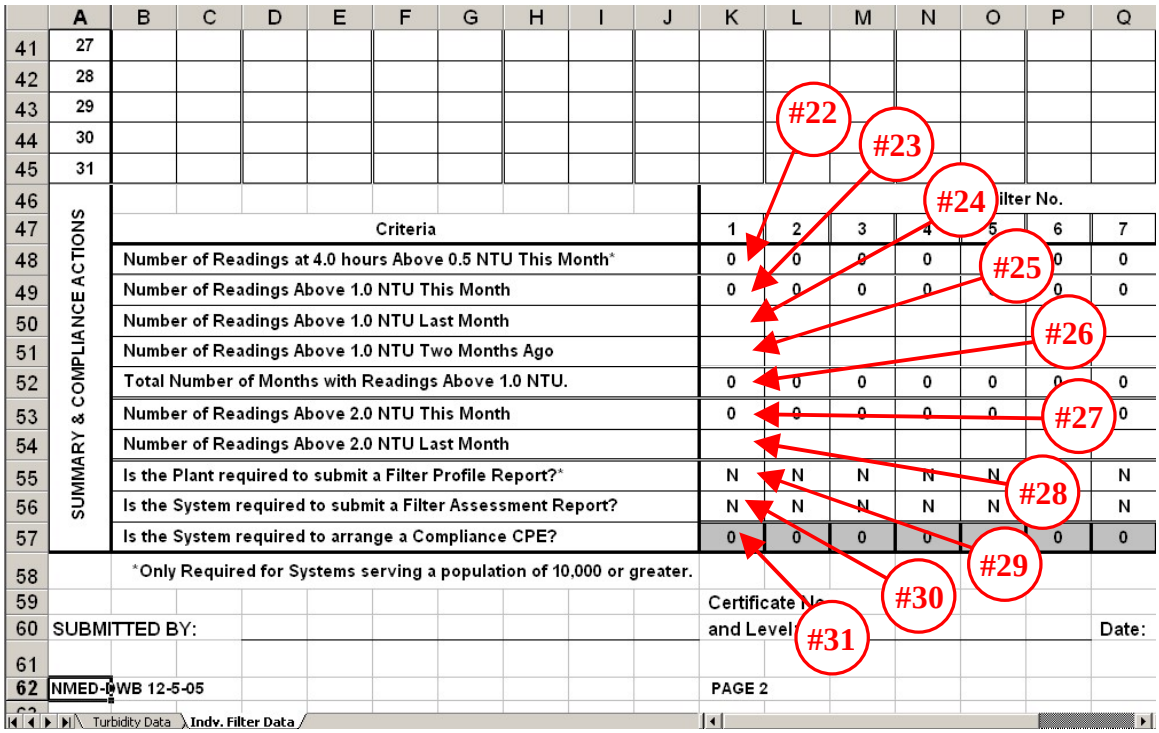

Figure 4: Summary Statistics and Required Actions

22. **Number of 4-hour Readings Above .5 NTU** – This value for each filter will be automatically filled in by the spreadsheet based on all the entries for Item #21.

23. **Number of Readings Above 1.0 NTU This Month** – This value for each filter will be automatically filled in by the spreadsheet based on all the entries for Item #20.

24. **Number of Readings Above 1.0 NTU Last Month** – Enter the number of readings above 1 NTU for the previous month (Item #23 for the same filter of that MOR).

25. **Number of Readings Above 1.0 NTU Two Months Ago** – Enter the number of readings above 1 NTU for the MOR 2 months previous to the current month (i.e., Item #23 for the same filter from the previous month's MOR).

26. **Total Number of Months With Readings Above 1.0 NTU** – This value for each filter will be entered automatically by the spreadsheet. If the value is 3 for any filter, i.e. if there were readings above 1 NTU for a particular filter for the current month, the previous month and for the month before last, a filter assessment will be required. This will be indicated in the cells described by Item #30 (discussed below).

27. **Number of Readings Above 2.0 NTU This Month** – These values for each filter will automatically be filled in by the spreadsheet. **Values greater than 2 NTU should only be entered for maximum Individual Filter Effluent if there were 2 or more consecutive readings above 2 NTU (i.e. two readings 15 minutes apart).**

28. **Number of Readings Above 2.0 NTU Last Month** – Enter the number of readings above 2 NTU for the previous month (that appear in #27 of last months MOR).

29. **Is the Plant Required to Submit a Filter Profile Report?** – For systems serving populations greater than or equal to 10,000, the value will be "Y" (for yes) if the filter exceeds 0.5 NTU in two consecutive 15-minute readings at four hours after the filter is returned to service or if the filter exceeds 1.0 NTU in two consecutive 15-minute readings at any time during the filter run. If the value is "Y", you must either identify the cause of exceedance or produce a filter profile on the filter.

    Systems serving under populations under 10,000 must report the filter number, the turbidity measurement, the date(s) on which the exceedance occurred, and cause(s), if known, if a filter exceeds 1.0 NTU in two consecutive 15-minute readings at any time during the filter run.

30. **Is the System Required to Submit a Filter Assessment Report?** – This value will be automatically populated by the spreadsheet. For a given filter, if there has been an exceedance of 1.0 NTU for 3 consecutive months for the same filter (i.e. if the value for Item #26 is 3), then the value for #30 will be "Y" for yes indicating the need for the system to complete a filter assessment on that filter. If an assessment is required, the system must report to the State that the filter self-assessment was required, the trigger date, and the date the filter self-assessment was completed. This information is due to the State by the 10th of the following month when the MOR is submitted (or 14 days after the self-assessment was triggered if the self-assessment was triggered during the last 4 days of the month). In addition, systems must report the filter number, the turbidity measurement, date on which the exceedances occurred, and reason for the exceedance (if known) in the monthly report due the 10th of the following month.

31. **Is the System Required to Arrange for a Compliance CPE?** - This value will be automatically populated by the spreadsheet. For a given filter, if the IFE turbidity exceeds 2.0 NTU for 2 consecutive moths on the same filter (i.e. the values for both Items #27 and #28 are greater than or equal to 1), then the value for Item #31 will be 1. The last column in the Summary & Compliance portion is labeled "Plant". If any of the values in Item #11 is 1, than the value in the plant column will be "Y" indicating the need for the system to have a Comprehensive Performance Evaluation (CPE) of the plant. The system must arrange for a CPE no later than 60 days following the day the filter exceeded 2.0 NTU in two

consecutive 15-minute measurements for the second straight month for systems serving less than 10,000 people, or no more than 30 days for systems serving 10,000 or more people. The CPE must be completed and submitted to the Drinking Water Bureau no later than 120 days following the day the filter exceeded 2.0 NTU in two consecutive measurements for the second straight month if the system serves less than 10,000 people, or after no more than 30 days for systems serving 10,000 or more people. A CPE is not required if the State or State-approved third party has completed a CPE of the system within 12 months prior to the exceedance or the system and State are jointly participating in an ongoing Comprehensive Technical Assistance (CTA) project.

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[i] 40CFR§141.551(a)
[ii] 40CFR§141.551(a)
[iii] 40CFR§141.550 and 40CFR§141.73(b)
[iv] 40CFR§141.550 and 40CFR§141.73(c)
[v] 40CFR§141.551(a)
[vi] 40CFR§141.551(b)
[vii] 40CFR§141.551(b)
[viii] 40CFR§141.73
[ix] EPA/625/6-91/027 Updated September 2004, ¶2.4.2
[x] 40CFR§141.132(d)(1)
[xi] 40CFR§141.134(d)(1)(ii)
[xii] 40CFR§141.132(d)(2)
[xiii] EPA/625/6-91/027 Updated September 2004, ¶2.4.2
[xiv] 40CFR§141.74(c)(1)
[xv] for system serving ≤ 3,300 or for equipment failures, see 40CFR§141.74(c)(2)
[xvi] 40CFR§141.74(c)(2)
[xvii] 40CFR§141.72(b)(3)(i)
[xviii] 40CFR§141.72(b)(2)
[xix] 40CFR§141.570(a)(3)
[xx] 40CFR§141.70(c)
[xxi] 20.7.4.20.C NMAC
[xxii] 40CFR§141.570(b)(2) and §141.563(a)
[xxiii] 40CFR§141.563(b)
[xxiv] 40CFR§141.563(b)