Records Review at the Plant

or "How We Catch Plants That are Cooking Books"

Presented at the

2005 Annual Training for
Public Water Supply Investigators:
Surface Water Breakout Session

May 9, 2005

Presented by

Jack C. Schulze, P.E.
Texas Commission on Environmental Quality
Water Supply Division
Public Drinking Water Section

What Plant Records Do We Need to Review during the CCI?

- Flow meter calibration/verification records
- Lab Approval Form
- Monitoring Plan
- Calibration records for lab and on-line instrumentation
- Monthly Operating Reports
- Recycling Practices Report
- Other stuff

Flow Meters

- Meters that require periodic testing
  - Raw and Treated Water flow meters
  - IFE Rate-of-flow controllers and flow meters
  - Backwash water ROFCs and flow meters
- Documentation Needed
  - Method used to verify accuracy (an SOP)
  - Testing results for the last 3 years
- What's involved
  - Pick one device
  - Make sure the method makes sense and the records are complete
  - Record your findings in the field notes

Lab Approval Form

- Documentation Needed
  - Current Lab Approval Form
- What's involved
  - Compare the methods and instruments listed on the LAF with the ones used by the plant lab
  - Record any problems in your field notes
    - If the LAF is out of date, cite the problem as an **Area of Concern** and require the lab to update the form and submit a copy to the PDWS per §290.121(c)(4)

Monitoring Plan

- Documentation Needed
  - The Current CT Study Approval Letter
  - The Current Monitoring Plan
- What's involved
  - Compare the disinfectant residual monitoring locations shown in the MP with those in the CT Study Letter
  - Determine if the monitoring locations and frequency for turbidity, pH, temperature, and DBPs such as chlorite, bromate, TTHM, and HAAs meet regulatory requirements
  - Record any problems in your field notes.
    - If the MP is out-of-date, cite the problem as an **Area of Concern** and have them update the MP and send a copy to PDWS per §290.121(c)(4)

Instrument Calibration

- Documentation Needed
  - The current Lab Approval Form
  - Calibration records for the previous 3 years
- What's involved
  - Review the 3-yr calibration history for one instrument
  - Review the current calibration data for the CFE turbidimeter and at least one other laboratory instrument
  - Determine if the plant currently has:
    - the primary and secondary standards needed to calibrate each instrument used for compliance measurements,
    - that the plant has the reagents needed to run each mandatory test, and
    - that the reagents and standards are properly labeled and are not expired
  - Verify the accuracy of at least one benchtop instrument with a primary or secondary standard

Instrument Calibration (cont)

- What's involved (cont)
  - Verify the accuracy of the benchtop turbidimeter (if one is used) with a primary or secondary standard
  - Verify the accuracy of the CFE turbidimeter (if one is used) and at least one IFE turbidimeter (ditto)
    - Verify that the on-line and benchtop units give readings that are within 0.1 NTU of one another
    - Check the slope of the on-line units to determine if the calibration curves are set to the factory default. If so, check all the on-line instruments.
  - Verify the accuracy of the recorders for these two on-line turbidimeters are recording values that are within 0.1 NTU of the correct value

Instrument Calibration (cont)

- What's involved (cont)
  - Record your findings in your field notes.
    - If the calibration records are not being properly maintained, cite the **Violation** per §290.46(c)(4)
    - If the instruments do not appear to be properly calibrated, cite the problem as an **Area of Concern** and consult with the PDWS to determine if follow-up action is required.

Monthly Operational Reports

- Documentation Needed
  - The current CT Study Approval Letter (and any similar letter for a protocol that has been used within the previous 12 months)
  - All of the SWMORs, SWMOR2s, TOCMORs, and ClO2MORs for the previous 12 months
  - A description of the MOR maintenance practices of the plant (an SOP with the duration, location, etc-ation policies regarding records retention)
  - Access to all the IFE and CFE data collected during the previous 12 months

SWMOR and SWMOR2

- What's involved (generally)
  - Determining if the SWMOR/SWMOR2 for the current month is up-to-date
    - If the current report is not up to date, cite the problem as an **Area of Concern** since the system is required to notify the TCEQ by the end of the next business day (or, in some cases, consult with us within 24 hours) if a treatment technique violation occurs
  - Determining if the data contained on the SWMOR and SWMOR2 are consistent with the data recorded on the daily logs sheets or continuous recorders
  - Be sure to record the results of the review in your field notes

SWMOR and SWMOR2 (cont)

- What's involved (page 1)
  - Nothing, all of this analysis can be done in Austin
- What's involved (page 2)
  - Identify the maximum daily raw and treated water production rates for the preceding 12 months
    - The maximum daily raw water flow rate is used to evaluate the design of the treatment facilities
    - The maximum daily treated water flow rate is used to evaluate compliance with the 0.6 gpm/connection requirement
  - Identify the maximum number of connections served during the preceding 12 months
    - This information can be used to evaluate compliance with capacity requirements, establish coliform monitoring requirements, calculate annual fees, etc

SWMOR and SWMOR2 (cont)

- What's involved (page 3 of the SWMOR)
  - Select three days, including one in the current month
  - Select one filter on each of these three days
  - Determine if the maximum IFE readings reported on the SWMORs are consistent with the respective 15-minute recorder readings for that filter on that day
    - If the reported data is erroneous for any of these three days, repeat the process for two more days (for a total of 5 filter-days in the previous 12 months including at least one this month)
    - If there is only one erroneous value reported (e.g., a 20% error rate), cite the problem as an **Area of Concern** and notify the PDWS so that we can follow-up
    - If there is more than one erroneous value, copy the data and forward it to the PDWS so that we can issue Notices of Violation, conduct a Special Performance Evaluation (SPE), and initiate enforcement action if appropriate.

SWMOR and SWMOR2 (cont)

- What's involved (pages 4 & 5)
  - Select three SWMORs, including the one for the current month
  - Determine if the data recorded in the Disinfection Process Parameters boxes on the SWMORs is consistent with the information in Table 2 of the appropriate CT Study Approval Letter
    - If the reported data is erroneous for any of these three months, repeat the process for two more recent MORs (for a total of 5)
    - If there is only one erroneous report (e.g., a 20% error rate), cite the problem as an **Area of Concern** and notify the PDWS so that we can follow-up
    - If there is more than one erroneous value, copy the data and forward it to the PDWS so that we can issue Notices of Violation, conduct a Special Performance Evaluation (SPE), and initiate enforcement action if appropriate.

SWMOR and SWMOR2 (cont)

- What's involved (pages 4 & 5) (cont)
  - Select two days, including one in the current month
  - Determine if the disinfectant residuals, flow rates, pH's, and temperatures are consistent with the data recorded on the laboratory log sheets
    - If the reported data is erroneous for either of these days, repeat the process for three more recent days (for a total of 5)
    - If there is only one erroneous report (e.g., a 20% error rate), cite the problem as an **Area of Concern** and notify the PDWS so that we can follow-up
    - If there is more than one erroneous value, copy the data and forward it to the PDWS so that we can issue Notices of Violation, conduct a Special Performance Evaluation (SPE), and initiate enforcement action if appropriate.

SWMOR and SWMOR2 (cont)

- What's involved (pages 6–10 of SWMOR2)
  - This is basically the IFE analysis for plants with continuous CFE in lieu of continuous IFE
  - Pick two days, including one in the current month
  - Determine if the 15-minute CFE data reported on the SWMOR2s are consistent with the respective 15-minute historical data from the continuous recorder
    - If the reported data is erroneous for either of these two days, repeat the process for three more days (for a total of 5 days)
    - If there is only one erroneous value reported (e.g., a 20% error rate), cite the problem as an **Area of Concern** and notify the PDWS so that we can follow-up
    - If there is more than one erroneous value, copy the data and forward it to the PDWS . . . blah blah blah

TOCMOR

- Documentation Needed
  - All of the TOCMORs for the previous 12 months
  - All of the TOC and SUVA laboratory reports for the previous 12 months
- What's involved
  - Select three TOCMORs, including the one from the previous month
  - Determine if the data reported on the TOCMOR is consistent with the laboratory reports
    - If there are any errors, cite the problem as an **Area of Concern** and notify the PDWS so that we can request copies of all the laboratory reports for the 12-month period, conduct a follow-up investigation, and initiate an enforcement action, if appropriate

ClO2MOR

- Documentation Needed
  - All of the ClO2MORs for the previous 12 months
  - All of the lab results and reports for that period
    - amperometric titration results at the plant lab
    - chlorite reports from the certified lab
- What's involved
  - Select two ClO2MORs, including the one from the previous month
  - Determine if the data reported on the ClO2MOR is consistent with the amp titration results and laboratory reports
    - If there are any errors, cite the problem as an **Area of Concern** and notify the PDWS so that we can request copies of all the laboratory reports for the 12-month period, conduct a follow-up investigation, and initiate an enforcement action, if appropriate

Recycling Practices Report

- Documentation Needed
  - Current Recycling Practices Report
  - Approval Letter for Alternate Locations
- What's Involved
  - Confirming that the RPR is up-to-date by verifying that the reclaim water is recycled at the locations shown on the report
  - Verifying that the plant has recieved permission to recycle in an alternate location (or has at least requested permission to do so)
  - Record your findings in the field notes
    - If the RPR is not up-to-date, cite the problem as an **Area of Concern** per §290.46(f)(3)(C)(iii) and contact PDWS so that we can follow-up per §290.46(d)(3)

Other Stuff

- Exceptions
  - If the plant is using chloramines, verify that the lab has an ammonia test kit and that the staff is running an ammonia test on treated water at least once each week
  - If the plant is using ClO2, verify that an operator with a C license is doing the amperometric testing
  - Record your findings in your field notes
    - If the plant is not complying with the exception requirements, cite the problem as an **Area of Concern** and contact the PDWS so that we can follow-up.

Other Stuff (cont)

- Operations
  - If the plant operates without staff present, verify that the operators periodically test the alarms and shut-offs
    - If the plant does not test the equipment, cite the problem as an **Area of Concern** per §290.46(e)(6)
  - If the BSW operator is not at the plant on a daily basis, verify that the plant is complying with the requirements of §290.46(e)(6) and §290.46(f)(3)(A)(vii)
    - If there are any problems, cite them as **Violations**
  - If the plant is staffed using D operators, verify that it is complying with the requirements of §290.46(e)(6)(D)
    - If there are any problems, cite them as **Violations**

General Information

- If there are missing documents, call the PDWS so we can check our files
  - If we have the document, you have two options
    - If the problem is random, you can cite it as an **Area of Concern** per the appropriate provision of §290.46(f)
    - If the problem is pervasive, you can cite it as a **Violation** of §290.46(f)
  - If we do not have the document, you should cite it as a **Violation** of the appropriate provision of §290.46(f) because there is no record the document ever existed

General Information (cont)

- The TCEQ is in the process of revising the calibration requirements for disinfectant monitoring equipment
  - The proposed revision allows instruments to be calibrated per manufacturers instructions
    - Known chlorine solutions are best because they are primary standards
    - Other methods would be acceptable as long as the manufacturer has included written instructions in its instrumentation literature
  - It's going to be adopted because the industry has been asking for such a revision so don't go crazy if the plant is following manufacturer's recommendations when calibrating their equipment

For More Information Contact:

Jack C. Schulze, P.E.
Central Office
Phone: (512) 239-6046

or

Cindy Bronnenberg
Central Office
Phone: (512) 239-3465