Stage 2 D/DBPR: Surface Water Operational Evaluation Questionnaire

PWS Name:
PWS ID:

Individual Sample Site Evaluation

Provide comments or additional documentation for "yes" answers.

A. Review disinfection byproduct calculation reports for the most recent three consecutive quarters using the following questions:

Questions	Site Code(s)	Comments	N/A	YES	NO
1. Did you change sample site locations?					
2. Were the TTHM or HAA5 levels unusually high at a sample site compared to historical data?					

B. If a sample site involves customer plumbing, answer the following questions:

Questions	Site Code(s)	Comments	N/A	YES	NO
1. Did the customer have plumbing work completed?					
2. Did the customer use significantly less water than usual?					
3. Does the customer have multiple taps?					
4. Does the service line from the meter to the tap require greater than 5 minutes of flushing to clear?					

Source Water Quality Evaluation

Provide comments or additional documentation for "yes" answers.

A. Review source water data for the most recent three consecutive quarters and compare to the historical source water data using the following questions:

Questions	Comments	N/A	YES	NO
1. Was the source water temperature abnormal?				
2. Was the source water organic matter level higher than normal? *e.g. TOC, DOC, SUVA, color, chlorine demand*				
3. Was the source water turbidity or particle count abnormal?				

4. Was the source water pH or alkalinity abnormal?				
5. Was the raw water storage time longer than normal?				
6. Did you place another water source on-line?				
7. Were the river/reservoir flow rates abnormal?				
8. Did point or non-point sources in the watershed contribute to the exceedance?				
9. Did heavy rainfall occur in the watershed?				
10. Did a lake or reservoir turnover occur?				
11. Did an algae bloom occur in the source water? *If algae blooms were present describe control measure, e.g. copper sulfate addition.*				
12. Did a taste or odor incident occur?				
13. Did logging, fires, or landslides occur in the watershed?				
14. Are you experiencing a long-term drought?				
15. Did other contaminants or changes in the source water cause or contribute to the exceedance? *e.g. manganese.*				

Treatment Process Evaluation

Provide comments or additional documentation for "yes" answers.

A. Review the finished water data for the most recent three consecutive quarters and compare to the historical finished water data using the following questions:

Questions	Comments	N/A	YES	NO
1. Were DBP precursors higher than normal? *e.g. TOC, DOC, SUVA, bromide, etc.*				
2. Was finished water temperature abnormal?				
3. Was the finished water pH abnormal?				
4. Was the disinfectant concentration leaving the plant(s) higher than normal?				
5. Were the finished water TTHM/HAA5 levels higher than normal? *e.g. VOC data can be used to determine finished water TTHM levels.*				

B. If your treatment process includes predisinfection, answer the following questions for the most recent three consecutive quarters:

Questions	Comments	N/A	YES	NO
1. Was disinfected raw water stored for an unusually long time?				
2. Were treatment plant flows lower than normal?				

3. Were treatment plant flows equally distributed among different trains?				
4. Were disinfectant feed rates outside the normal range?				
5. Was a disinfectant residual present in the treatment train following predisinfection?				
6. If online instruments are used for process control, were there any failures or changes?				
7. Was there a recent change (or addition) of pre-oxidant?				
8. Was there a recent change in location for the predisinfection application?				

C. If your treatment process includes presedimentation, answer the following questions for the most recent three consecutive quarters:

Questions	Comments	N/A	YES	NO
1. Were flows abnormal?				
2. If online instrumentation is used for process control, were there any failures or changes?				
3. Was sludge removed from the presedimentation basin?				
4. Was sludge allowed to accumulate for an excessively long time?				
5. Do you add a coagulant to the presedimentation basin?				
6. Was there a problem with coagulant feed?				

D. If your treatment process includes coagulation and/or flocculation, answer the following questions for the most recent three consecutive quarters:

Questions	Comments	N/A	YES	NO
1. Were there any feed pump failures or were feed pumps operating at improper feed rates?				
2. Was the coagulant dose outside the normal range?				
3. Were there changes in the coagulant feed point?				
4. Did you change the type or manufacturer of the coagulant?				
5. Were there broken or plugged mixers?				
6. Were there changes in the mixing speed?				
7. Were flow ra tes above the design rate?				

E. If your treatment process includes sedimentation or clarification, answer the following questions for the most recent three consecutive quarters:

Questions	Comments	N/A	YES	NO
1. Were there changes in plant flow rate that may have resulted in a decrease in settling time or carryover of process solids?				
2. Were settled water turbidities higher than normal?				

3. Was there any disruption in the sludge blanket that may have resulted in carryover to the point of disinfection?				
4. Was there any maintenance in the basin that may have stirred sludge from the bottom of the basin and caused it to carry over to the point of disinfectant addition?				
5. Was sludge allowed to accumulate for an excessively long time or was there a malfunction in the sludge removal equipment?				

F. If your treatment process includes filtration, answer the following questions for the most recent three consecutive quarters:

Questions	Comments	N/A	YES	NO
1. Was there an increase in individual or combined filter effluent turbidity or particle counts?				
2. Was there an increase in turbidity or particle counts loading onto the filters?				
3. Was there an increase in flow onto the filters or malfunction of the rate of flow controllers?				
4. Were any filters taken off-line for an extended period of time that caused other filters to operate near maximum design capacity?				
5. Were any filters operated beyond their normal filter runtime?				
6. Were there any unusual spikes in individual filter effluent turbidity?				
7. If GAC filters are used, was the adsorptive capacity of the GAC bed reached before reactivation occurred? *N/A if intentionally allowed to become biologically active.*				
8. If biological filtration is used, were there any process upsets that may have resulted in the breakthrough of TOC?				

G. If your treatment process includes primary disinfection to meet log inactivation of Giardia and/or viruses, answer the following questions for the most recent three consecutive quarters:

Questions	Comments	N/A	YES	NO
1. Was there a sudden increase in the amount of disinfectant fed or an increase in the disinfectant residual?				
2. Was there an increase in CT holding time?				
3. Was the plant shut down, or was plant flow low?				
4. Was there an increase in clearwell water temperature?				
5. Did you recently change the primary disinfectant type?				
6. Did you recently change the primary disinfectant injection point?				

7. Was the inactivation of Giardia and/or viruses exceptionally high?				
8. Was there a change in clearwell level?				

H. If your plant recycles spent filter backwash or other streams, answer the following question for the most recent three consecutive quarters:

Question	Comments	N/A	YES	NO
1. Did a recycle event result in flows in excess of typical or design flows?				

I. If your treatment process included secondary disinfection, answer the following questions for the most recent three consecutive quarters:

Questions	Comments	N/A	YES	NO
1. Was there a sudden increase in the amount of disinfectant fed?				
2. Was there a switch from chloramines to free chlorine for a burnout period?				
3. If chloramines are used, was the chlorine to ammonia ratio in the proper range?				
4. Was there a problem with either chlorine or ammonia mixing?				

J. If your treatment process included aeration, answer the following questions for the most recent three consecutive quarters:

Questions	Comments	N/A	YES	NO
1. Did you have a failure of the aerator equipment?				
2. Did you bypass the aerator equipment?				
3. Have you recently inspected and/or cleaned the aerator equipment?				

Distribution System Evaluation

Provide comments or additional documentation for "yes" answers.

A. Review disinfectant residual for the monitoring location(s) or area where the exceedance occurred for the most recent three consecutive quarters and compare to the historical data using the following question:

Question	Comments	N/A	YES	NO
1. Was the disinfectant residual abnormal for that time of year at that location or area?				

B. Review maintenance records available for the most recent three consecutive quarters using the following questions:

Questions	Comments	N/A	YES	NO
1. Did any line breaks or replacements occur in the vicinity of the exceedance?				
2. Were any storage tanks taken off-line and cleaned?				
3. Did flushing or other hydraulic disturbances *(e.g. fires)* occur in the vicinity of the exceedance?				
4. Were any valves operated in the vicinity of the exceedance?				

C. If your system is metered, review water use records available for the most recent three consecutive quarters using the following questions:

Questions	Comments	N/A	YES	NO
1. Was overall water use in your system unusually low, indicating higher than normal water age?				
2. Was there a change in water use by a high volume customer?				

D. If there is a finished water storage facility hydraulically upstream of the area where the exceedance occurred, review records available for the most recent three consecutive quarters using the following questions:

Questions	Comments	N/A	YES	NO
1. Did a significant loss of disinfectant residual occur in the tank?				
2. Do you know of any mixing problems within the tank?				
3. Does the storage tank have a single inlet and outlet?				
4. Was the tank drawn down more than usual, indicating a possible discharge of stagnant water?				
5. Was there a change in water level fluctuation that would have resulted in increased water age within the tank?				

E. If your system practices booster chlorination, review records available for the most recent three consecutive quarters using the following question:

Question	Comments	N/A	YES	NO
1. Was there an increase in booster chlorination feed rates?				

F. Review customer complaint records available for the most recent three consecutive quarters using the following question:

Question	Comments	N/A	YES	NO
1. Did you have customer complaints in the vicinity of the exceedance?				

Stage 2 D/DBPR: Surface Water Operational Evaluation Summary

Complete and provide this summary with the final report.

System Name: _____ PWS ID: _____

Operation Evaluation Level Exceedance(s) Occurred:

Quarter: _____ Year: _____

Did one of the following operational factors cause or contribute to the exceedance(s)? Explain in attached documentation.

Yes	No	Possibly	
☐	☐	☐	Source Water Quality Changes
☐	☐	☐	Treatment Operational Practices
☐	☐	☐	Distribution Operational Practices
☐	☐	☐	Other: _____

Provide a written description of the steps considered to minimize future exceedances based on the conclusions drawn from the evaluation. (This is a required component of the Operational Evaluation.) Attach extra pages if necessary.

Number of Pages Including Attachments: _____

I certify that the information in this report is true and accurate to the best of my knowledge. I acknowledge that any knowingly false or misleading information may be punishable under 18 USC 1001 and other applicable laws.

Signature: _____ Date: _____

Printed Name: _____ Position: _____ License #: _____

Submit this cover page and final report to: Engineering Section, Slot 37
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Little Rock, AR 72205