Reset Form

STAGE 2 OPERATIONAL EVALUATION – TREATMENT PROCESS

State Form 55262 (4-13)
Indiana Department of Environmental Management
Office of Water Quality – Drinking Water Branch – Compliance Section

IDEM – Drinking Water Branch
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INSTRUCTIONS:
1. *Complete this form.*
2. *Complete the Stage 2 Operational Evaluation - Distribution System.*
3. *Complete the Stage 2 Operational Evaluation - Source Water.*
4. *Complete the Stage 2 Operational Evaluation - Summary.*
5. *Submit all 4 forms to IDEM.*

PWSID: IN_____ **Water System Name:** _____

Address *(number and street)*: _____

City: _____ **State:** _____ **ZIP:** _____

Report Prepared By: _____ **Date *(month/day/year)*:** _____

Telephone Number: _____ **Fax Number:** _____

Email: _____

Q1. Review finished water data for the time period prior to the OEL exceedance(s) and compare to historical finished water data using the following questions:

Were DBP precursors (TOC, DOC, SUVA, bromide, etc.) higher than normal?	☐ Yes	☐ No
Was finished water pH higher or lower than normal?	☐ Yes	☐ No
Was finished water turbidity higher than normal?	☐ Yes	☐ No
Was the disinfectant concentration leaving the plant(s) higher than normal?	☐ Yes	☐ No
Were finished water THM/HAA levels higher than normal?	☐ Yes	☐ No
Were operational and water quality data available to the system operator for effective decision making?	☐ Yes	☐ No

PREDISINFECTION

Q2. Does the treatment process including predisinfection? ☐ Yes ☐ No

If NO, proceed to Q3. If YES, answer the following questions for the period in which an OEL exceedance occurred:

Was disinfected raw water stored for an unusually long time?	☐ Yes	☐ No	
Were treatment plant flows lower than normal?	☐ Yes	☐ No	
Were treatment plant flows equally distributed among different treatment trains?	☐ Yes	☐ No	☐ N/A
Were water temperatures higher than usual?	☐ Yes	☐ No	
Were chlorine feed rates outside the normal range?	☐ Yes	☐ No	
Was a disinfectant residual present in the treatment train following predisinfection?	☐ Yes	☐ No	
Were online instruments utilized for process control?	☐ Yes	☐ No	

Did you switch to free chlorine as the oxidant (if using something other than free chlorine)? ☐ Yes ☐ No ☐ N/A

Was a there a recent change (or addition) of pre-oxidant? ☐ Yes ☐ No

Did you change the location of the predisinfection application? ☐ Yes ☐ No

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PRESEDIMENTATION

Q3. Does your treatment process include presedimentation? ☐ Yes ☐ No

If NO, proceed to Q4. If YES, answer the following questions for the period in which an OEL exceedance occurred:

Were flows low? ☐ Yes ☐ No

Were flows high? ☐ Yes ☐ No

Were online instruments utilized for process control? ☐ Yes ☐ No

Was sludge removed from the presedimentation basin? ☐ Yes ☐ No

Was sludge allowed to accumulate for an excessively long time? ☐ Yes ☐ No

Do you add a coagulant to your presedimentation basin? ☐ Yes ☐ No

Was there a problem with the coagulant feed? ☐ Yes ☐ No ☐ N/A

COAGULATION/FLOCCULATION

Q4. Does your treatment process include coagulation/flocculation? ☐ Yes ☐ No

If NO, proceed to Q5. If YES, answer the following questions for the period in which an OEL exceedance occurred:

Were there any feed pump failures or were feed pumps operating at improper feed rates? ☐ Yes ☐ No

Were chemical feed systems controlled by flow pacing? ☐ Yes ☐ No

Were there changes in coagulation practices or the feed point? ☐ Yes ☐ No

Did you change the type or manufacturer or the coagulant? ☐ Yes ☐ No

Do you suspect that the coagulant in use at the time of the OEL exceedance did not meet industry standards? ☐ Yes ☐ No

Did the pH or alkalinity change at the point of coagulant addition? ☐ Yes ☐ No

Were there broken or plugged mixers? ☐ Yes ☐ No

Were flow rates above the design rate or was there short-circuiting? ☐ Yes ☐ No

SEDIMENTATION/CLARIFICATION

Q5. Does your treatment process include sedimentation/clarification? ☐ Yes ☐ No

If NO, proceed to Q6. If YES, answer the following questions for the period in which an OEL exceedance occurred:

Were there changes in plant flow rate that may have resulted in a decrease in settling time or carry-over of process solids? ☐ Yes ☐ No

Were settled water turbidities higher than normal? ☐ Yes ☐ No

Was there any disruption in the sludge blanket that may have resulted in carryover to the point of disinfection? ☐ Yes ☐ No

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? ☐ Yes ☐ No

Was sludge allowed to accumulate for an excessively long time or was there a malfunction in the sludge removal equipment? ☐ Yes ☐ No

FILTRATION

Q6. Does your treatment process include filtration? ☐ Yes ☐ No

If NO, proceed to Q7. If YES, answer the following questions for the period in which an OEL exceedance occurred:

Was there an increase in individual or combined filter effluent turbidity or particle counts? ☐ Yes ☐ No

Was there an increase in turbidity or particle loading onto the filters? ☐ Yes ☐ No

Was there an increase in flow onto the filters or malfunction of the rate of flow controllers? ☐ Yes ☐ No

Were any filters taken off-line for an extended period of time that caused the other filters to operate near maximum design capacity and created the conditions for possible breakthrough? ☐ Yes ☐ No

Were any filters operated beyond their normal filter run times? ☐ Yes ☐ No

Were there any unusual spikes in individual filter effluent turbidity (which may indicate particulate or colloidal TOC breakthrough) in the days leading to the OEL exceedance? ☐ Yes ☐ No

Were all filters run in a filter-to-waste mode during initial filter ripening? ☐ Yes ☐ No

If GAC filters are used, is it possible the adsorptive capacity of the GAC bed was reached before reactivation occurred? ☐ Yes ☐ No ☐ N/A

If biological filtration is used, were there any process upsets that may have resulted in the breakthrough of TOC? ☐ Yes ☐ No ☐ N/A

DISINFECTION BEFORE CLEARWELL

Q7. Does your treatment process include primary disinfection by injecting chlorine prior to a clearwell? ☐ Yes ☐ No

If NO, proceed to Q8. If YES, answer the following questions for the period in which an OEL exceedance occurred:

Was there a sudden increase in the amount of chlorine fed or an increase in the chlorine residual? ☐ Yes ☐ No

Was there an increase in clearwell holding time? ☐ Yes ☐ No

Was the plant shut down or were plant flows low? ☐ Yes ☐ No

Was there an increase in clearwell water temperature? ☐ Yes ☐ No

Did you switch to free chlorine recently as a primary disinfectant? ☐ Yes ☐ No

Was the inactivation of *Giardia* and/or viruses exceptionally high? ☐ Yes ☐ No

Was there a change in the mixing strategy (e.g. mixers not used, adjustment of tank level)? ☐ Yes ☐ No

RECYCLE

Q8. Does your plant recycle spent filter backwash or other streams? ☐ Yes ☐ No

If NO, proceed to Q9. If YES, answer the following questions for the period in which an OEL exceedance occurred:

Did a change in the recycle stream quality contribute to increased DBP precursor loading that was not addressed by treatment plant processes? ☐ Yes ☐ No

Did a recycle event result in flows in excess of typical or design flows? ☐ Yes ☐ No

DISINFECTION AFTER CLEARWELL

Q9. Do you inject a disinfectant after your clearwell to maintain a distribution system residual? ☐ Yes ☐ No

If NO, proceed to Q10. If YES, answer the following questions for the period in which an OEL exceedance occurred:

Was there a sudden increase in the amount of chlorine fed? ☐ Yes ☐ No

If using chloramines, was there a switch to free chlorine for a burnout period? ☐ Yes ☐ No ☐ N/A

If using chloramines, was the chlorine to ammonia ratio in the proper range? ☐ Yes ☐ No ☐ N/A

Was there a problem with either chlorine or ammonia (if applicable) mixing? ☐ Yes ☐ No

Q10. Did concern about complying with a rule other than the Stage 2 DBP Rule, such as the Lead and Copper rule, the Total Coliform Rule, or any other rule constrain your options to reduce the DBP levels at this site? For example, is your ability to control DBP precursors in coagulation/flocculation limited by other treatment targets/requirements?

☐ Yes ☐ No

If NO, proceed to Q11. If YES, explain in further detail *(attach additional sheets if necessary)* and consult EPA's *Simultaneous Compliance Guidance Manual* for alternative compliance approaches:

_____

_____

_____

CONCLUSION

Q11. Did treatment factors and/or variations in the plant performance cause or contribute to the OEL exceedance(s)?

☐ Yes ☐ No

☐ Possibly

If YES or POSSIBLY, explain in further detail:

_____

_____

_____

_____

_____

_____

Total number of pages (including attachments) submitted: _____