The West Virginia Legislative Rule Title 64 Bureau for Public Health Series 4 (64CSR4) specifies adequate operator coverage requirements. The additional exceptions allowable by this policy are for Class II – IV public water systems (PWS) only and are based on proven automation. This policy covers unattended operation with or without remote monitoring and does not allow for remote treatment changes. Systems operating unattended under previous approvals based on the 1993 version of DW-36 must work towards these requirements in cooperation with the Environmental Engineering Division (EED).

To evaluate requests for automated/unattended operations, a proposal must be submitted to the EED central office for review and approval. Equipment used or to be installed to meet the requirements of this procedure must comply with the PWS design standards (64CSR77). Functionality of the automated system must also be demonstrated to EED for final approval.

In considering any proposal, the criteria listed below are to be followed:

1. Identify all critical features in the pumping and treatment facilities that will be electronically monitored and/or have alarms. These critical features will include, but are not limited to:
   a. Water storage facility’s high and low levels at the treatment plant and in the distribution system;
   b. Any instrumentation or equipment related to pH (if system is controlled by adding caustic), turbidity, chlorine residual, and required selective ions within specific ranges;
   c. Chlorine gas leaks and tank pressure changes;
   d. Distribution system pressure loss;
   e. Fire;
   f. Intrusion;
   g. Power failures;
   h. Critical pumps, motors and generator failures; and,
   i. Chemical feed tank volumes to prevent any over or underfeed situations.

2. Provide a plant flow diagram which shows the location of all critical features and automated controls.

3. Provide a description of all alarm features. These alarm features will include, but not be limited to:
   a. Alarm set points; and,
b. Automatic actions as a result of an alarm. For example, switch to back-up equipment, notify supervisor via auto-dialer, shutdown of individual equipment, and plant-wide shutdown.

4. Names, titles, and telephone numbers of individuals who will be notified in the event of an alarm/shutdown event.

5. Operation and maintenance manual available that includes description of treatment, control and pumping equipment, necessary maintenance and schedule, and a troubleshooting guide for typical problems.

6. Define the intended period(s) of unattended operations.

7. The plant must retain the capability for on-site operator intervention of all treatment plant equipment and process functions.

For surface and groundwater under the direct influence water treatment plants:

It is recommended that an operator be present at the plant at all times due to the variable nature of most surface water sources in West Virginia. However, if it is desirous to obtain an exception to operate the plant without an operator present at all times, it is mandatory that the following items be installed:

1. Dual turbidimeters and recorders on combined filter effluent. If either analyzer is outside of a specified range, automatic system shutdown shall occur. The systems shall also be equipped with provision to shutdown the plant when turbidity exceeds 70% of the applicable 95th percentile value, as per the chart below (systems may self-impose more stringent shutdown limits):

<table>
<thead>
<tr>
<th>Filtration Technology</th>
<th>95th Percentile (NTU)</th>
<th>Shutdown Trigger (NTU)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conventional</td>
<td>0.3</td>
<td>0.20</td>
</tr>
<tr>
<td>Direct</td>
<td>0.3</td>
<td>0.20</td>
</tr>
<tr>
<td>Diatomaceous Earth</td>
<td>1.0</td>
<td>0.70</td>
</tr>
<tr>
<td>Slow Sand</td>
<td>1.0</td>
<td>0.70</td>
</tr>
<tr>
<td>Membrane</td>
<td>0.15</td>
<td>0.10</td>
</tr>
<tr>
<td>Other Technologies</td>
<td>TBD</td>
<td>TBD</td>
</tr>
</tbody>
</table>

2. Dual chlorine residual analyzers and recorders on the high service pump effluent. The system shall be equipped with provisions to shut down the entire plant if either analyzer indicates the free chlorine demand increases above a predetermined level or if the free chlorine residual drops below the pre-determined set amount needed to maintain adequate disinfection (log removal) in the treatment plant and/or an active total chlorine residual in the extremes of the distribution system of 0.20 mg/L, as required by 64CSR3.

3. An alarm system/auto-dialer to immediately alert the responsible parties in the event of a system shutdown.
It will also be mandatory the system does not operate unattended for more than 8-hours in a given 24-hour period. Unattended startup of the plant is prohibited after shutdown. All laws, rules and regulations of the Department remain in effect.

**For groundwater source water treatment plants:**

It is mandatory the system is equipped with continuous chlorine analyzers, recorders, and controls as in number 2 above. A system auto-dialer (number 3 above) is also required. Maximum unattended timeframes will be determined by EED on a case-by-case basis.

In addition to the proposal, the following requirements apply to all systems:

1. To be considered for an exception, the system shall have demonstrated automated operation for a minimum of 12-months continuous operation with a properly certified operator present at all times. The system should be able to run without operational problems and without any monitoring or Maximum Contaminant Level (MCL) violations during this time and thereafter. The system must submit documentation of any deviations or occurrences [during the proposed period(s) of unattended operations as defined earlier] requiring operator intervention monthly with the system Monthly Operational Report (MOR). Any reasons for plant shutdown will be submitted to EED with the MOR, and will continue this practice after approval. This documentation will be required for each intended period of unattended operations. Any operation intervention during this period must be noted, regardless of the reason for this intervention. If no interventions or shutdowns are required for any operation period, this will need to be noted on the log that is submitted with the MOR.

2. Exceptions for automated operation will normally be valid until the next scheduled sanitary survey. Any system granted this exemption will continue to submit documentation of any deviation or occurrences that result in a system shutdown or require operation intervention with its MOR. The district office personnel will review and determine that all personnel, equipment, instrumentation and systems perform as originally approved. To be eligible for renewal, the system must be in full compliance with all regulatory requirements from the time of the original or renewed exception approval. At all times, all operators must be properly certified by the EED.

3. If the Chief Operator resigns or otherwise leaves the system, the system must immediately notify the EED. The exception for automated operation becomes null and void if the district office deems it necessary. The system may reapply with a written request to the EED when operations again meet specific criteria of this memorandum necessary for the consideration of an exception issuance.

4. The EED reserves the right to revoke an exception at any time it has been determined the automated system is not fully functional, or meeting operational, monitoring, reporting and/or MCL requirements. If an exception is revoked, reinstatement of exception would require the system to reapply for an exception for
automated operation and the district office staff would have to review operational procedures to insure that the system has rectified any and all problems resulting in revocation.

References
WV 64 CSR 3, Public Water Systems
WV 64 CSR 4, Public Water Systems Operators
WV 64 CSR 77, Public Water Systems Design Standards

History
Replaces original memo of April 12, 1993.

Attachments
DW-36 Checklist
DW-36 Checklist

This checklist was developed to assist systems with operator exception requests for automated public water systems.

Basic Information:
1. Is this an initial renewal or reinstatement request?

2. Date Proposal Received by EED Central Office: ________________________________
   EED Staff Reviewing Checklist: ________________________________

3. Does the PWS understand they must retain the capability for on-site operator intervention of all treatment plant equipment and process functions? Yes No

4. PWSID#: WV________________ PWS Classification: □ II □ III □ IV
   PWS Source Water: □ Purchased □ GW □ GWUDI □ SW
   Date of last sanitary survey: ________________________________
   Frequency of sanitary surveys for this system: □ 3 years □ 5 years
   District Office: □ Beckley □ Kearneysville □ Philippi □ St. Albans □ Wheeling
   DO Contact Person: __________________________________________

Proposal Information:
1. What are the critical features in the pumping and treatment facilities that will be electronically monitored and/or have alarms?
   ______________________________________________________________________
   ______________________________________________________________________
   ______________________________________________________________________
   ______________________________________________________________________

2. Was a plant flow diagram which shows the location of all critical features and automated controls provided? Yes No Comments:
   ______________________________________________________________________
   ______________________________________________________________________
   ______________________________________________________________________

3. Were descriptions provided for all alarm features, including set points and automatic actions? Yes No Comments:
   ______________________________________________________________________
   ______________________________________________________________________
   ______________________________________________________________________

4. Were the names, titles, and telephone numbers of individuals who will be notified in the event of an alarm/shutdown event provided? Yes No
5. Is an operation and maintenance manual available that includes description of treatment, control and pumping equipment, necessary maintenance and schedule, and a troubleshooting guide for typical problems?  □ Yes □ No

6. What are the intended period(s) of unattended operations?

__________________________________________________________

For GWUDI or SW sources only:
1. Are there dual turbidimeters & recorders on combined filter effluent? □ Yes □ No
   a. Do these have automatic system shutdown if either analyzer is outside of a specified range? □ Yes □ No

2. Are there dual chlorine residual analyzers and recorders on the high service pump effluent? □ Yes □ No
   a. Do these have automatic system shutdown if either analyzer is outside of a specified range? □ Yes □ No

3. Does an alarm system/autodialer immediately alert the responsible parties in the event of a system shutdown? □ Yes □ No

4. Does the system understand they may not operate unattended for more than 8 hours in a given 24 hour period? □ Yes □ No

For GW sources only:
1. Are there dual chlorine residual analyzers and recorders on the high service pump effluent? □ Yes □ No
   a. Do these have automatic system shutdown if either analyzer is outside of a specified range? □ Yes □ No

2. Does an alarm system/autodialer immediately alert the responsible parties in the event of a system shutdown? □ Yes □ No

3. What is the maximum unattended timeframe determined by EED? ______

Demonstration Information:
1. Did the PWS demonstrate automated operation for a minimum of 12-months continuous operation with a properly certified operator present at all times? □ Yes □ No

2. Were there operational problems during this time? □ Yes □ No
If yes, describe:

3. Were there any monitoring or MCL violations during this time?  □ Yes  □ No
If yes, describe:

4. Did the system submit the following required documentation for unattended operations with their MOR:
   a. Any deviations or occurrences requiring operator intervention?  □ Yes  □ No
   b. Any reason(s) for plant shutdown?  □ Yes  □ No
Note: If no intervention or shutdown occurs during a period of unattended operation, it must still be noted in MOR.

_Recommendation Information:_
The following EED staff recommend □ approval or □ denial of the issuance of an operator exception for an automated public water system on the date noted:

<table>
<thead>
<tr>
<th>DO Name Printed</th>
<th>Signature</th>
<th>Date</th>
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</thead>
<tbody>
<tr>
<td>EED Name Printed</td>
<td>Signature</td>
<td>Date</td>
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</tbody>
</table>

_Renewal Information:_
1. Did the DO Contact Person review and determine all personnel, equipment, instrumentation and systems perform as originally approved?  □ Yes  □ No

2. Is the PWS in full compliance with all regulatory requirements from the time of the original exception?  □ Yes  □ No  Attach any needed comments.

The following EED staff recommend □ approval or □ denial of the renewal of an operator exception for an automated public water system on the date noted:

<table>
<thead>
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</thead>
<tbody>
<tr>
<td>EED Name Printed</td>
<td>Signature</td>
<td>Date</td>
</tr>
</tbody>
</table>
**Revocation/Reinstatement Information:**

1. Does EED staff recommend revocation of an exception based on determination the automated system is not fully functional, or meeting operational, monitoring, reporting and/or MCL requirements?  □ Yes  □ No

2. Does EED staff recommend reinstatement of a revoked exception based on the system reapplication for an exception for automated operation and the district office staff review of operational procedures to insure that the system has rectified any and all problems resulting in revocation?  □ Yes  □ No

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<th>Date</th>
</tr>
</thead>
</table>

**PLEASE COMPLETE FORM THOROUGHLY & INCLUDE ANY SUPPORTING INFORMATION WITHIN OR ATTACHED**

**SUBMIT TO:**
Office of Environmental Health Services  
Environmental Engineering Division  
ATTN: Certification & Training Program Manager  
350 Capital Street Room 313  
Charleston, WV 25301  
Phone: (304) 558-2981  
Fax: (304) 558-4322