R10/8 Area-Wide Optimization Program
Remote Meeting February 11-12, 2020

Oregon AWOP Update

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Drinking Water Services

OFFICE OF ENVIRONMENTAL PUBLIC HEALTH
Drinking Water Services
# Oregon 2020 AWOP Work Plan

<table>
<thead>
<tr>
<th>Activities</th>
<th>Details</th>
<th>Activity Lead</th>
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<tbody>
<tr>
<td><strong>Identify applicable goals</strong></td>
<td>Optimization goals are available for conventional, direct, slow sand, and membrane filtration. Goals are available for disinfection, DBPs, arsenic, etc. 0.1 NTU – CF/DF, 1 NTU – SSF, 0.05 NTU – MF, 0.2 mg/l dist CL2, Avg LRAA for TTHM/HAA5 &lt; 60/40 and LRAA TTHM/HAA5 ≤ 70/50 ppb.</td>
<td>All</td>
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<tr>
<td><strong>Identify applicable water systems</strong></td>
<td>List of systems depends upon optimization goals and available data to determine if objectives are met.</td>
<td>All</td>
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<td><strong>Direct mail</strong></td>
<td>Send targeted mailing to determine what goals systems have adopted and how.</td>
<td>EH</td>
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<td><strong>HFLR</strong></td>
<td>High Filter Loading Rate – Finish evaluations and determine resolution Updated survey forms to better capture data</td>
<td>JN</td>
</tr>
<tr>
<td><strong>Offer training classes</strong></td>
<td>Conduct: 1 Slow Sand Filtration 1 Conventional/Direct Filtration 1 Essentials of Surface Water Treatment Explore options for on-line training</td>
<td>EH</td>
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<td><strong>Conduct PBT or CPE</strong></td>
<td>Conduct 1 PBT or CPE at a system with the highest 95th percentile turbidity. Coquille in March 2020.</td>
<td>RT</td>
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<td><strong>R10 Host Mtg</strong></td>
<td>May 2020 – HABS workshop – Detroit/Salem/Joint Water Commission</td>
<td>JN</td>
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<td><strong>Conduct 5 “Strike Team” Visits</strong></td>
<td>“Strike Team” visits are to be conducted on systems with the highest 95th percentile turbidity and could include: Data integrity audits, Filter evaluations, OAS data set-up, Other activities depending upon the needs of the plant</td>
<td>RT</td>
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<td><strong>Outreach</strong></td>
<td>Conference presentations 1 CCtoC short school and 1 OAWU – presentations – Oregon and WA efforts Optimization ppt that James developed for Albany (April 2019), ETSW – 2 presentations at each – JMacpherson Clackamas Waterworks School (EHofeld – Who’s Optimized and Membrane Optimization) Direct mailing of goals to ~ 110 conventional and direct filtration plants Maintain website</td>
<td>JN</td>
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<tr>
<td><strong>Promote/Facilitate Place-Based Planning</strong></td>
<td>Participate in place-based planning effort for a community water system (Mid-Coast Partners – a coalition of PWSs and other agencies/entities in Lincoln County) and encourage formal adoption of optimization goals/concepts. Involves participation in partner and sub-committee meetings and provide document review. Similar effort is underway in Harney County, John Day area and at least 1 other area in NE Oregon – this ties into Capacity Development.</td>
<td>JM</td>
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<td><strong>SRF efforts –</strong></td>
<td>Continue implementation of small system equipment assistance through SRF Loan program. We could follow-up with loan recipients regarding establishing optimization goals and setting up process controls to meet the goals (e.g. recommend alarm set-points to ensure they meet the goals). implementation on hold due to resource limitations</td>
<td>DL</td>
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<tr>
<td><strong>Track objectives</strong></td>
<td>Use the data provided for the National Turbidity Graph to illustrate progress. Develop additional queries needed to determine compliance with other goals.</td>
<td>EH</td>
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Water System Survey Improvements

_Turbidity Alarm Set-Points_

_High Filter Loading Rates_

_Membrane Filtration LRV ambient_

Announced to Oregon Staff on February 4, 2020 at DWS Technical Services Unit Meeting
What did we learn from Washington’s efforts?

40% of Bottom Performers had no auto-shutdown set point for high turbidity

- Optimized Plants (Cat 1)
  - Auto Shutdown Provided 82%
  - No A.S. but operator always on-site 18%

- Nearly Optimized (Cat 2)
  - Auto Shutdown Provided 83%
  - No Auto Shutdown 9%
  - No A.S. but operator always on-site 8%

- Bottom Performers (Cat 3)
  - No Auto Shutdown 40%
  - No A.S. but operator always on-site 10%
  - Auto Shutdown Provided 50%

Category 1 - 95th % CFE ≤ 0.10 NTU and Max CFE ≤ 0.30 NTU
Category 2 - 95th % CFE ≤ 0.20 NTU and Max CFE = 0.31 - 0.80 NTU or 95th % CFE = 0.11 - 0.20 NTU and Max CFE ≤ 0.80 NTU
Category 3 - 95th % CFE > 0.20 NTU or Max CFE > 0.80 NTU
Survey forms updated…

- Document High NTU Alarm Set-Points
- Opportunity to discuss optimization goals

- High turbidity shut-down alarms required in OAR 333-061-0076 when plant operates unstaffed.
WesTech membrane plant (Arch Cape)
High Filter Loading Rate

Don’t overload like this!
High Filter Loading Rate – Now What!

Filters are different sizes, but FLR should be the same!
Survey forms updated...

- Survey forms updated to document FLR when one filter is taken off-line for backwashing.
- Use comments to describe filter loading rates when filters are different sizes.
**LRV_{ambient} for membrane filtration**

- **LRV_{ambient}** now required (eff. 1/1/20) for all membranes
  - Existing installations will take time to get programming done
- Updating survey forms to capture data

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**LT2ESWTR compliant challenge tested modules in use?**

- Yes
- No

*Note: Check list of verified models and refer to plan review coordinator if non-LT2 compliant modules are in use.*

**Indicate the following:**

- Max allowed TMP [psi]:
- Max allowed flux [gfd]:
- Minimum DIT test pressure [psi]:
- Allowed DIT decay rate [psi/min]:

**LT2ESWTR compliant modules in use?**

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- No

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- Allowed DIT decay rate [psi/min]:

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**When was the most recent passing DIT (refer to SCADA and record DIT results for 1 rack/skid/unit)?**

- Date: ___

**Latest DIT results for the following membrane unit (indicate rack/skid/unit ID# or name):**

- Beginning DIT test pressure: ___ psi
- Ending DIT test pressure: ___ psi
- Duration of DIT = ___ minutes (2-5 minutes is typical)
- Pressure decay rate (PDR) = ___ psi/min

**PDR = (start pressure - end pressure)/duration of DIT**

- Ambient LRV (LRV_{ambient}) = ___ log
- DIT sensitivity (LRV_{DIT}) = ___ log

**When were pressure sensors (used in determining the decay rate) last verified or calibrated?**

*Recommend annually and per manufacturer’s instructions*

**Comments:** ___
NSF 419 - 2018 …Currently under review!
(last rev. March 2019, © 2019)
Challenge Testing for Membranes (incl. cartridge filters)

- Annex C – Data tables & LRV equations for modules tested
- Annex F – Information on calculating LRV
- Annex G – Information on plan review and commissioning
Questions?

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www.healthoregon.org/swt
Water System Operations => Surface Water Treatment