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| CLRW Maintenance Procedure |
| **Purpose** | This document provides instructions for Clinical Laboratory Reagent Water (CLRW) MAINTENANCE PROCEDURE. The CLRW system supplies analyzers with the Clinical and Laboratory Standards Institute and College of American Pathologists (CLSI/CAP) defined, Clinical Laboratory Reagent Water. The final purified product water is low in ionic, organic, microbiological, and particulate contaminates. |
| **Principle** | The system delivers CLSI CLRW grade water up to 450 gallons per day in Minneapolis or 240 gallons per day in St. Paul. The system contains reverse osmosis (RO) modules, a water quality sensor, conditioning tank, circulation pump, deionization tanks, UV lamp, and an Ultra microfiltration filter (0.20 µm final filter) to provide water meeting the following standards:* Organics (TOC) less than 500 ppb
* Bacterial Counts less than 10 CFU/mL
* Particulate content < 0.22 µm
* Resistivity greater than 10 MΩ/cm
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| **Policy Statements** | This procedure is intended for all personnel responsible for using, operating, and maintaining the CLRW water system for laboratory systems and processes. |
| **Materials** | **Supplies** | **Equipment** | **Media** |
|  | None | None | CH 5.60.f1 CLRW Maintenance Log |
| **Special Safety Precautions** | Refer to laboratory safety policies and procedures.  |
| **Daily Maintenance**  | **Step** | **Action** |
| 1 | Daily, record the value of the Myron L Ohmmeter at the CLRW system onto the CLRW Maintenance Log. Resistivity is considered acceptable above 10 MΩ-cm, with optimal performance at 15 MΩ-cm or above. Notify TS and/or consult vendor for any sub-optimal values. |
|  | 2 | Inspect the system and valves for any signs of leaks. Notify TS and/or consult vendor if found. |
|  | 3 | Review replacement dates marked on filters and tanks. Notify TS and/or consult vendor if > 6 months. |
|  | 4 | On the CLRW Maintenance Log, record remedial actions, service visits, any abnormal values, or signs of system being out of specification. Follow up or escalate to supervisor or technical specialist as needed. Record your initials and/or date. |
| **RO Bypass**

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| **Step** | **Action1** |
| 1 | In the event of reverse osmosis membrane or pump failure, the system may be placed into bypass mode. Bypass mode will still utilize pre-filtration, final filtration, carbon tank, and mixed bed resin tanks to produce CLRW. The operational lifetime of the mixed bed resin tanks are severely limited in bypass mode and the service provider should be contacted immediately for repair.  |
| 2 | To activate/deactivate bypass, turn the bypass valve as marked (site specific) preceding the filtration system to open/close the line.  |

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| Filter & Tank Replacement | **Step** | Action |
| 1 | Filters and tanks will be replaced as scheduled by vendor service. |
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| **Limitations** | Determination of bacterial contamination will be performed as outlined in procedure [MC 8.3 Water Culture](https://starnet.childrenshc.org/References/labsop/micro/qc/mc-8.3-water-culture.pdf)Culligan Vendor service contact information: Phone: (952)933-7200 Account: 10478048  |
| **References** |  1. GEN.41500 College of American Pathologists, Laboratory General Checklist, 08.22.2018.
2. CLSI C3-A4 Vol 26 No. 22, Preparation and Testing of Reagent Water in the Clinical Laboratory; Approved Guideline – Fourth Edition
3. [Culligan Water Conditioning Specifications](https://starnet.childrenshc.org/References/labsop/chem/operator/culligan-water-conditioning-specifications.pdf)
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| **Historical Record** | **Version** | **Written/Revised by:** | **Effective Date:** | **Summary of Revisions** |
| 1 | Matt Johnson  | 8/1/2021 | New Procedure |
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