

**California Regional Water Quality Control Board
North Coast Region**

Monitoring and Reporting Program No. R1-2016-0028

FOR THE

**CITY OF HEALDSBURG
RECYCLED WATER PROGRAM
WDID NO. 1B15092RSON**

SONOMA COUNTY

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The City of Healdsburg (hereafter Administrator) has applied for and received coverage for its recycled water system that is subject to the notice of applicability (NOA) of enrollment under Water Quality Order 2014-0090-DWQ, General Waste Discharge Requirements for Recycled Water Use (General Order), or subsequent revisions. The details of the enrollment are described in NOA No. WQ-2014-0090-R1001-MOD dated [DATE], issued by the North Coast Regional Water Quality Control Board (Regional Water Board) Executive Officer.

This monitoring and reporting program (MRP) replaces the MRP in Order WQ-2014-0090-DWQ and serves as a project-specific MRP to address use area specific water quality concerns. In addition, water recycling specifications and requirements, including monitoring requirements that apply to the production of recycled water are established in Order No. R1-2016-0015, Waste Discharge Requirements (WDR) and Water Recycling Requirements (WRR) for the City of Healdsburg Wastewater Treatment, Recycling, and Disposal Facility, Sonoma County (NPDES No. CA0025135 and WDID No. 1B820460SON).

This MRP describes requirements for monitoring a recycled water system. This MRP is issued pursuant to Water Code section 13267 and establishes monitoring and reporting requirements that implement California regulations. The Administrator shall not implement any changes to this MRP unless and until a revised MRP is issued by the Regional Water Board Executive Officer. The Administrator shall implement this monitoring and reporting program.

I. GENERAL MONITORING PROVISIONS

- A. **Wastewater Monitoring Provision.** Composite samples may be taken by a proportional sampling device approved by the Executive Officer or by grab samples composited in proportion to flow. In compositing grab samples, the sampling interval shall not exceed 1 hour.
- B. **Supplemental Monitoring Provision.** If the Administrator monitors any pollutant more frequently than required by this Order, using test procedures approved by 40 C.F.R. part 136 or as specified in this Order, the results of such monitoring shall be included in the calculation and reporting of the data submitted in the monthly and annual discharge monitoring reports.
- C. **Data Quality Assurance Provision.** Laboratories analyzing monitoring samples shall be certified by the State Water Resources Control Board (State Water Board), Division of Drinking Water (DDW) in accordance with the provisions of Water Code section 13176, and must include quality assurance/quality control data with their analytical reports.
- D. **Sample Documentation.** All samples shall be representative of the volume and nature of the discharge or matrix of material sampled. The name of the sampler, sample type (grab or composite), time, date, location, bottle type, and any preservative used for each sample shall be recorded on the sample chain of custody form. The chain of custody form must also contain all custody information including date, time, and to whom samples were relinquished. If composite samples are collected, the basis for sampling (time or flow weighted) shall be approved by Regional Water Board staff.
- E. **Instrumental and Calibration Provision.** All monitoring instruments and devices used by the Administrator to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary to ensure their continued accuracy. All flow measurement devices shall be calibrated no less than the manufacturer's recommended intervals or one year intervals, (whichever comes first) to ensure continued accuracy of the devices.

- F. Field test Instruments.** Field test instruments (such as those used to test pH, dissolved oxygen, and electrical conductivity) may be used provided that they are used by a California Environmental laboratory Program (ELAP) certified laboratory or:
 1. The user is trained in proper use and maintenance of the instruments;
 2. The instruments are field calibrated prior to monitoring events at the frequency recommended by the manufacturer;
 3. Instruments are serviced by the manufacturer or authorized representative at the recommended frequency; and
 4. Field calibration reports are maintained and available for at least three years.
- G. Minimum Levels (ML) and Reporting Levels (RL).** Compliance monitoring analyses shall be conducted using detection limits that are lower than the applicable effluent limitations and/or water quality criteria. If no Minimum Level (ML) value is below these levels, the lowest ML shall be selected as the Reporting Level (RL).
- H. Duplicative Monitoring Requirements.** If monitoring requirements listed below duplicate existing monitoring requirements under other orders including WDRs or waivers of WDRs, then duplication of sampling and monitoring activities are not required if the monitoring activity satisfies the requirements of this Order. In addition to submitting the results under another order, the results shall be submitted in the reports required by the General Order and this MRP.
- I. Approved Test Methods.** All monitoring must be conducted using approved test methods or other test methods specified in this MRP.
- J. Sampling Method.** Collecting composite samples is acceptable in most cases. Due to short holding times, bacteriological samples collected to verify disinfection effectiveness must be grab samples.

Order No. R1-2016-0015 establishes Monitoring Location REC-001 as the location for monitoring the production of recycled water from the WWTF. REC-001 samples are collected at a point following disinfection but prior to discharge to a 25 million gallon recycled water storage pond operated and maintained by the Administrator. This MRP establishes Monitoring Location REC-002 as the location for monitoring the quality of the recycled water distributed to recycled water users. REC-002 samples are to be collected at a location where a representative sample of recycled water to be distributed can be collected following all treatment and storage in the 25 million gallon recycled water storage pond and immediately before the distribution system.

II. RECYCLED WATER MONITORING REQUIREMENTS

- A. Monitoring Location REC-001 and INT-001B.** The Administrator currently monitors treated, disinfected wastewater that will be recycled prior to discharge to the 25 million gallon recycled water storage pond at Monitoring Locations INT-001B and REC-001 and submits monitoring results pursuant to reporting requirements established in WDR/WRR Order no. R1-2016-0015, as detailed in Table 1 below. These requirements are included in this MRP for informational purposes. Under this MRP, the Administrator will be required to conduct additional monitoring at location REC-002 as detailed in Provision II.B of this MRP.

Table 1. Recycled Water Monitoring¹

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method ²
Effluent Flow ³	mgd	Meter	Continuous	--

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method ²
Biochemical Oxygen Demand 5-day @ 20°C (BOD ₅)	mg/L	Grab	Weekly	Standard Methods ²
Total Suspended Solids (TSS)	mg/L	Grab	Weekly	Standard Methods
pH	s.u.	Grab	Weekly	Standard Methods
Total Coliform Bacteria	MPN/100 mL	Grab	Daily	Standard Methods
Turbidity	NTU	Meter	Continuous	---

Table Notes:

- Recycled water monitoring occurs at REC-001, with the exception of turbidity which is monitored at INT-001B. These monitoring locations are defined in WDR Order No. R1-2016-0015 as:
 - REC-001 follows disinfection, but prior to discharge to recycled water storage pond.
 - INT-001B is immediately following the tertiary filters and is used for continuous monitoring of turbidity.
- In accordance with the current edition of *Standard Methods for Examination of Water and Wastewater* (American Public Health Administration) or current test procedures specified in 40 C.F.R. part 136.
- Each month, the Administrator shall report the daily average and monthly average flows.

B. Monitoring Location REC-002. The Administrator shall monitor treated, disinfected wastewater that will be recycled after storage in the 25 million gallon recycled water storage pond and prior to distribution at Monitoring Location REC-002 as follows:

Table 2. Recycled Water Monitoring Requirements – Monitoring Location REC-002

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method ¹
Effluent Flow ²	mgd	Meter	Continuous	--
Total Chlorine Residual	mg/L	Grab	Daily ³	Standard Methods
Ammonia Nitrogen (as N)	mg/L	Grab	Monthly	Standard Methods ²
Nitrate Nitrogen (as N)	mg/L	Grab	Monthly	Standard Methods
Nitrite Nitrogen (as N)	mg/L	Grab	Monthly	Standard Methods
Organic Nitrogen (as N)	mg/L	Grab	Monthly	Standard Methods
Total Dissolved Solids	mg/L	Grab	Monthly	Standard Methods
Sodium	mg/L	Grab	Monthly	Standard Methods
Chloride	mg/L	Grab	Monthly	Standard Methods
Boron	mg/L	Grab	Monthly	Standard Methods
Priority Pollutants ⁴	µg/L	Grab or 24-hour composite ⁵	Annually	Standard Methods

Table Notes:

- In accordance with the current edition of *Standard Methods for Examination of Water and Wastewater* (American Public Health Administration) or current test procedures specified in 40 C.F.R. part 136.
- Each month, the Administrator shall report the daily average and monthly average flows.
- Chlorine residual monitoring required daily when providing recycled water for urban use.
- Priority pollutants are listed in Appendix A of 40 Code of Federal Regulations (CFR) Part 423.
- 24-hour composite sampling shall be used for all priority pollutants, except for those that are volatile. If samples are collected from recycled water storage pond, grab samples are acceptable. This requirement may be satisfied with the priority pollutant analysis that is required pursuant to Monitoring and Reporting Program No. R1-2016-0015 (or revisions thereto) at Monitoring Location EFF-001.

C. Recycled Water Compliance Reporting

The Administrator shall submit the following records regarding the recycled water system with its monitoring reports:

1. A summary of any operational problems, equipment or process malfunctions, including incidents of delivering recycled water that does not meet all recycled water quality requirements as established in WDR Order No. R1-2016-0015; and
2. A detailed description of any corrective or preventative actions taken.

III. RECEIVING WATER MONITORING REQUIREMENTS – GROUNDWATER

A. Groundwater Monitoring

1. The Administrator shall monitor groundwater at approved groundwater monitoring locations in agricultural irrigation and storage areas as follows:

Table 3. Groundwater Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method ¹
Depth to Groundwater	0.1 feet	Measurement	Quarterly	--
Groundwater Elevation	0.1 feet MSL	Measurement	Quarterly	--
Nitrate (as N)	mg/L	Grab	Quarterly	Standard Methods
Nitrogen, Total (as N)	mg/L	Grab	Quarterly	Standard Methods
Total Dissolved Solids	mg/L	Grab	Quarterly	Standard Methods
Chloride	mg/L	Grab	Quarterly	Standard Methods
Boron	mg/L	Grab	Quarterly	Standard Methods
Sodium	mg/L	Grab	Quarterly	Standard Methods

Table Notes:

1. In accordance with the current edition of *Standard Methods for Examination of Water and Wastewater* (American Public Health Administration) or current test procedures specified in 40 C.F.R. part 136.

In new agricultural irrigation and storage areas, groundwater monitoring shall occur prior to beginning recycled water use in order to establish baseline groundwater quality.

2. The Administrator shall submit a written plan that identifies groundwater monitoring locations in existing and proposed recycled water irrigation areas. At a minimum, there should be a set of 3 or more groundwater monitoring wells representing one or more vineyard sites. For each monitoring site, there shall be at least one up-gradient well and two down-gradient wells designed to collect groundwater from an appropriate depth to represent groundwater that may be affected if infiltrated recycled water reaches groundwater.
 - a. If existing wells are proposed for use, the plan shall provide detailed information about the existing wells, including well construction details, including, but not limited to, well depth, screened interval, date of construction, and well log.
 - b. Prior to installing new groundwater monitoring wells, a well installation work plan shall be submitted to the Regional Water Board Executive Officer for review and approval. The well installation work plan shall include:
 - i. A scope of work;

- ii. Well drilling and development methods;
 - iii. Proposed well construction diagrams; and
 - iv. Proposed well locations.
- c. After installing new groundwater monitoring wells, a written report shall be submitted within 60 days of completing construction that includes:
- i. Relevant subsurface stratigraphy and lithology;
 - ii. A diagram of each well showing total drilled depth, well installation depth and construction details including screened interval and top of casing elevation; and
 - iii. A location map of all installed wells.

IV. OTHER MONITORING REQUIREMENTS

A. Visual Monitoring (All Recycled Water Use Areas)

1. Visual observations of the vineyard and industrial use areas shall be recorded a minimum of monthly during periods of recycled water use in order to verify compliance with recycled water requirements in the General Order and NOA and shall confirm proper operation of the recycled water system and associated best management practices (BMPs) and include a record of any malfunctions or findings of improper operation, including, but not limited to, observations for evidence of ponding that exceeds 24 hours, runoff, odors, vectors, leaks or breaks in equipment, proper identification of recycled water infrastructure, proper signage, etc. Visual observations may be performed by the recycled water users in accordance with the Administrator’s user agreements. Visual observations shall be recorded and included in the Administrator’s Annual Recycled Water Report. .
2. The Annual Recycled Water Report shall include the daily volume of recycled water used by each user and any observations indicating non-compliance with the provisions of the General Order or NOA.

B. Recycled Water Production and Use

1. The Administrator shall monitor use area(s) at a frequency appropriate to determine compliance with the General Order and the Administrator’s recycled water use program requirements. An Administrator may assign monitoring responsibilities to a User as part of the Water Recycling Use Permit program; however the Administrator retains responsibility to ensure the data is collected, as well as prepare and submit the annual report.
2. The following shall be recorded for each user with additional reporting for use areas as appropriate. The frequency of use area inspections shall be based on the complexity and risk of each use area. Use areas may be aggregated to combine acreage for calculation or observation purposes. Use area monitoring shall include the following parameters:

Table 4. Recycled Water Production and Use Area Requirements¹

Parameter	Units	Sample Type	Minimum Sampling/Observation Frequency ²	
Recycled Water User	---	---	---	
Recycled Water Flow	gpd ³	Meter ⁴	Monthly	
Acreage Applied ^{5, 6}	Acres	Calculated	Monthly	
Application Rate (hydraulic)	Inches/acre/year	Calculated	Monthly	

Parameter	Units	Sample Type	Minimum Sampling/Observation Frequency ²
Total Nitrogen Application Rate ^{7,8}	Lbs/acre/month	Calculated	Monthly
Soil Saturation/Ponding	---	Observation	Monthly
Runoff	---	Observation	Monthly
Nuisance Odors/Vectors	---	Observation	Monthly
Notification Signs ⁹	---	Observation	Monthly
Rainfall	Inches	Gage	Daily
ETo/ETc	Inches	Gage/Calculation	Daily

Table Notes:

1. Recycled water production and use area monitoring shall be reported with the annual report (section V.B of this MRP). Non-compliance incidents shall be reported as specified in section V.C of this MRP.
2. Or less frequently if approved by the Regional Water Board Executive Officer.
3. gpd denotes gallons per day.
4. Meter requires meter reading, a pump run time meter, or other approved method of flow monitoring.
5. Acreage applied denotes the acreage to which recycled water is applied.
6. Estimation of recycled water shall not include other potable or non-potable "make-up" water used in conjunction with recycled water.
7. Nitrogen application rate shall consider nitrogen content of recycled water at REC-002.
8. Nitrogen concentrations shall be calculated and reported "as N". For example, nitrate-nitrogen = 27 mg/L as NO₃ shall be converted and reported as nitrate-nitrogen = 6.1 mg/L as N using a conversion factor of 14.067 (N)/62.0049 (NO₃).
9. Notification signs shall be consistent with the requirements of title 22.

C. Industrial/Other Uses of Recycled Water

1. The potential for cross-connections and backflow prevention devices shall be monitored as listed, below, or more frequently if specified by DDW.

Table 5. Cross-Connection and Backflow Monitoring Requirements

Requirement	Sampling Frequency	Reporting Frequency
Cross-connection testing	Four Years ¹	30 days/Annually ²
Backflow Incident	Continuous	24 hours from discovery
Backflow Prevention Device Testing and Maintenance	Annually ³	Annually

Table Notes:

1. Testing shall be performed at least every four years, or more frequently at the discretion of DDW.
2. Cross-connection testing shall be reported pursuant to title 22 section 60314. The report shall be submitted to DDW within 30 days and included in the annual report to the Regional Water Board.
3. Backflow prevention device maintenance shall be tested by a qualified person as described in title 17, section 7605.

V. REPORTING REQUIREMENTS

A. General Monitoring and Reporting Requirements

1. **Standard Provision and Reporting Requirements.** The Administrator shall comply with all Standard Provisions and Reporting Requirements (Attachment C to the General Order) related to monitoring, reporting, and recordkeeping. General Order Attachment C is attached to this MRP.

2. **Electronic Reporting.** The Administrator shall submit electronic Self-Monitoring Reports (eSMRs) using the State Water Board's California Integrated Water Quality System (CIWQS) Program Web site (<http://www.waterboards.ca.gov/ciwqs/index.html>). The CIWQS Web site will provide additional directions for SMR submittal in the event there will be service interruption for electronic submittal. The Administrator shall maintain sufficient staffing and resources to ensure it submits eSMRs that are complete and timely. This includes provision of training and supervision of individuals (e.g., Administrator's personnel or consultant) on how to prepare and submit eSMRs.

The Administrator shall also submit all groundwater monitoring data to the State Water Board's Geographic Environmental Information Management System database (GeoTracker) at http://www.waterboards.ca.gov/ust/electronic_submittal/index.shtml.

In the event that an alternate method for submittal of electronic self-monitoring reports is required, the Administrator shall submit electronically via email to NorthCoast@waterboards.ca.gov or on disk (CD or DVD) in Portable Document Format (PDF) file in lieu of paper-sourced documents. The guidelines for electronic submittal of documents can be found on the Regional Water Board website at <http://waterboards.ca.gov/northcoast>.

3. **Complete Reporting.** All monitoring results reported shall be supported by the inclusion of the complete analytical report from the laboratory that conducted the analyses.
4. **Reporting Protocols.** The Administrator shall report with each sample result the applicable ML, the RL, and the current Method Detection Limit (MDL), as determined by the procedure in 40 C.F.R. part 136.

The Administrator shall report the results of analytical determinations for the presence of chemical constituents in a sample using the following reporting protocols:

- a. Sample results greater than or equal to the reported ML shall be reported as measured by the laboratory (i.e., the measured chemical concentration in the sample).
- b. Sample results less than the reported ML, but greater than or equal to the laboratory's MDL, shall be reported as "Detected, but Not Quantified," or DNQ. The estimated chemical concentration of the sample shall also be reported.

For the purposes of data collection, the laboratory shall write the estimated chemical concentration next to DNQ as well as the words "Estimated Concentration" (may be shortened to "Est. Conc."). The laboratory may, if such information is available, include numerical estimates of the data quality for the reported result. Numerical estimates of data quality may be percent accuracy (\pm a percentage of the reported value), numerical ranges (low to high), or any other means considered appropriate by the laboratory.

- c. Sample results less than the laboratory's MDL shall be reported as "Not Detected," or ND.
- d. The Administrator is to instruct laboratories to establish calibration standards so that the ML value (or its equivalent if there is differential treatment of samples relative to calibration standards) is the lowest calibration standard. At no time is the Administrator to use analytical data derived from extrapolation beyond the lowest point of the calibration curve.

B. Annual Report

The Administrator shall submit an annual report to the Regional Water Board for each calendar year through the CIWQS Program Web site. The annual report shall be submitted by March 1st following the monitoring year. The annual report shall, at a minimum, include the following:

1. A cover letter, included as an electronic attachment in CIWQS. The cover letter shall clearly identify whether the facility is operating in compliance with the General Order. The information contained in the cover letter shall clearly identify:
 - a. Facility name and address;
 - b. WDID number;
 - c. Applicable period of monitoring and reporting;
 - d. Violations of the General Order, NOA, and this MRP, including a description of the requirement that was violated, and a description of and the severity of each violation;
 - e. Actions taken or planned to correct the violations and prevent future violations; and
 - f. The proposed time schedule for corrective actions.
 - g. The transmittal letter shall contain the following penalty of perjury statement and shall be signed by the Administrator or the Administrator's authorized agent:

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."
2. All monitoring specified in this MRP under sections II through IV. When CIWQS does not provide for entry into a tabular format within the system, the Administrator shall electronically submit the data in a tabular format as an attachment. If the Administrator monitors any pollutant more frequently than required by this MRP, the results of this monitoring shall be included in the calculations and reporting of the data.
3. A summary table of all recycled water users, date and term of recycled water user agreements, and use areas. Maps may be included to identify use areas. Newly permitted recycled water Users and use areas shall be clearly identified. The Administrator shall maintain all Recycled Water User Agreements on file.
4. A summary table of all inspections and enforcement activities initiated by the Administrator. Include a discussion of compliance and the correction action(s) taken, as well as any planned or proposed actions needed to bring the discharge into compliance with the NOA, this MRP, and/or General Order. Copies of any enforcement actions taken by the Administrator shall be provided.
5. An evaluation of the performance of the recycled water treatment facility, including a discussion of capacity issues, system problems, and a forecast of the flows anticipated in the next year.
6. The name and contact information for the recycled water operator responsible for operation, maintenance, and system monitoring.

7. A statement certifying when the flow meter(s) and other monitoring instruments and devices were last calibrated, including identification of who performed the calibration.

C. Non-compliance Reporting

The Administrator shall notify the Regional Water Board within one (1) business day of determining that delivery of off-specification recycled water has taken place. In circumstances where the emergency requires termination of delivery to Users, the Regional Water Board shall be copied on any correspondence concerning non-compliance between the Administrator and User. This requirement does not supersede notification requirements contained within Waste Discharge Requirements/Water Recycling Requirements Order No. R1-2016-0015 for the City of Healdsburg Wastewater Treatment, Recycling, and Disposal Facility (or future revisions) which contains requirements for the production of recycled water.

D. Recycled Water Spills

Notification and reporting of spills and unauthorized discharges of recycled water discharged in or on any waters of the state, as defined in Water Code section 13050, shall be conducted in accordance with the following:

1. Tertiary Recycled Water¹

- a. For unauthorized discharges of 50,000 gallons or more of tertiary recycled water, the Administrator shall immediately notify the Regional Water Board as soon as (a) the Administrator has knowledge of the discharge or probable discharge, (b) notification is possible, and (c) notification can be provided without substantially impeding cleanup or other emergency measures.
- b. For unauthorized discharges of more than 1,000 gallons, but less than 50,000 gallons of tertiary recycled water, the Administrator shall notify the Regional Water Board as soon as possible, but no longer than 3 days after becoming aware of the discharge.

Ordered By: _____
Matthias St. John
Executive Officer

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¹ Tertiary Recycled Water means “disinfected tertiary 2.2 recycled water” as defined by DDW or wastewater receiving advanced treatment beyond disinfected tertiary 2.2 recycled water.