

California Regional Water Quality Control Board  
North Coast Region

Monitoring and Reporting Program No. R1-2015-0030  
**(Revised July 14, 2016)**  
NPDES No. CA0025054

For

County of Sonoma, Sonoma County Water Agency, City of Santa Rosa, City of Cotati, City of Rohnert Park, City of Sebastopol, Town of Windsor, City of Cloverdale, City of Healdsburg, City of Ukiah

Discharges from Municipal Separate Storm Sewer Systems

Section 308(a) of the federal Clean Water Act and sections 122.41(h), (j-l), 122.44(i), and 122.48 of Title 40 of the Code of Federal Regulations require that all National Pollutant Discharge Elimination System (NPDES) permits specify monitoring and reporting requirements. Federal regulations applicable to large and medium Municipal Separate Sewer Systems (MS4s) also specify additional monitoring and reporting requirements pursuant to 40 CFR section 122.26(d)(2)(i)(F) & (d)(2)(iii)(D, 122.42(c)). California Water Code 13383 further authorizes the California Regional Water Quality Control Board, North Coast Region (Regional Water Board) to establish monitoring, inspection, entry, reporting, and recordkeeping requirements. This Monitoring and Reporting Program (MRP) establishes monitoring, reporting, and recordkeeping requirements that implement the federal and State laws and/or regulations.

**I. INTERIM MONITORING REQUIREMENTS**

- A.** The County of Sonoma shall continue to implement the outfall mass chemical monitoring requirements as described in Monitoring and Reporting Program Order No. R1-2009-0050, section A.1. The County of Sonoma shall sample three outfalls during wet weather sampling and three outfalls during dry weather using sampling protocols and analyses required in section A.1.
- B.** The County of Sonoma shall report data collected in compliance with Interim Monitoring Requirements as part of the annual reporting requirements.
- C.** The County of Sonoma shall continue with implementing Interim Monitoring Requirements until the Regional Water Board Executive Officer provides notification that the sampling may be discontinued.

**II. WORKPLAN**

- A.** The Co-Permittees shall develop a workplan proposing a scope of work to conduct the outfall monitoring, receiving water monitoring, chronic toxicity monitoring, and the bioassessment study as required in this MRP. The workplan shall specify the necessary details to fully implement the requirements of this MRP. The workplan shall include the following elements:

1. **Project Management:** This is to address the basic area of project management, including the project history and objectives, roles, and responsibilities of the participants. These elements are to ensure that the project has a defined goal, that the participants understand the goal and the approach to be used, and that the planning outputs have been documented.
  2. **Data Generation and Acquisition:** This is to address all aspects of project design and implementation. Implementation of these elements ensure that appropriate methods for sampling, measurement and analysis, data collection or generation, data management, and quality control activities are properly documented.
  3. **Assessment and Oversight:** This is to address associated quality assurance and quality control activities. The purpose of assessment is to ensure that the workplan is implemented as described.
  4. **Data Validation and Usability:** This is to address the quality assurance activities that occur after the data collection or generation phase of the project is completed. Implementation of these elements ensures that the data conform to the specified criteria, thus achieving the project objectives.
- B.** The workplan shall be submitted no later than one year after the effective date of this Order and shall be implemented upon Regional Water Board Executive Officer approval.

### **III. MONITORING REQUIREMENTS**

#### **A. Outfall Monitoring**

The City of Santa Rosa, the County of Sonoma, the Town of Windsor, The City of Rohnert Park, The City of Cotati and The City of Sebastopol shall develop and implement an outfall monitoring program.

##### **1. Objectives**

The outfall monitoring program shall be developed and implemented to meet the following objectives:

- a. Characterize the discharge of storm water and non-storm water from the MS4 system in both wet weather and dry weather in the Laguna de Santa Rosa Watershed.
- b. Characterize the discharge of storm water in multiple land use drainage areas.
- c. Assess compliance with water quality standards.
- d. Determine load calculations of total phosphorus and total nitrogen at each outfall where samples are collected within the MS4 system.

##### **2. Implementation**

The outfall monitoring program shall be developed and implemented to meet the following criteria:

- a. Each identified outfall shall be sampled for the following constituents at least twice a fiscal year during wet weather flows and twice a fiscal year during dry weather flows:

- i. Flow
- ii. Total Suspended Solids (TSS)
- iii. Biochemical Oxygen Demand (BOD)
- iv. Total Nitrogen
- v. Total Phosphorus
- vi. Ammonia
- vii. Lead
- viii. Copper
- ix. Zinc
- x. E. Coli
- xi. Enterococci

- b. Each outfall shall be monitored for the following constituents once during the permit term for wet weather flows and once during the permit term for dry weather flows:

**Inorganics**

Antimony	Arsenic
Beryllium	Cadmium
Chromium (total)	Cyanide
Mercury	Nickel
Selenium	Silver
Thallium	

**Pesticides**

Aldrin	Chlordane
4,4-DDD	4,4-DDE
4,4-DDT	Dieldrin
alpha-Endosulfan	Endosulfan Sulfate
Endrin	Endrin Aldehyde
Heptachlor Epoxide	Heptachlor
alpha-Hexachloro-cyclohexane	delta-Hexachloro-cyclohexane
gamma-Hexachloro-cyclohexane	Toxaphene
Bifenthrin	

- c. For every sample collected, pH and temperature shall be measured in the field.
- d. For every outfall sample collected and analyzed for copper, lead, and zinc, a representative receiving water grab sample shall be collected and analyzed for hardness (mg/L CaCO<sub>3</sub>).

- e. All chemical and bacteriological analyses shall be conducted at a laboratory certified for such analyses by an appropriate governmental regulatory agency.
- f. E. Coli and enterococci densities shall be analyzed through appropriate standard methods using the highest dilution necessary to report the Most Probable Number (MPN).

### **3. Outfall Monitoring Locations**

Outfall monitoring locations shall be selected throughout the Laguna de Santa Rosa Watershed at a variety of land use drainage areas. Land use drainage areas to be studied shall include residential, commercial, industrial, and downtown, at a minimum.

### **4. Wet Weather Monitoring Requirements**

Wet weather monitoring protocols shall be implemented as follows:

- a. Wet weather samples shall be collected from the discharge resulting from a storm event that is greater than 0.25 inches and at least 72 hours from the previously measureable (greater than 0.25 inch) storm event. A total of 0.25 inches must fall in total during a rain event to be a qualifying rain event.
- b. Outfall monitoring shall occur during wet weather conditions resulting from the first storm event and at least one additional wet weather event within the same fiscal year. Co-Permittees shall sample the first storm event of the storm year with a predicted rainfall of at least 0.25 inches at a seventy percent probability of rainfall at least 24 hours prior to the event start time.
- c. Co-Permittees shall provide a summary of precipitation characteristics during wet weather monitoring events. The summary shall include the date, time that the storm commenced and the storm duration in hours, the total storm volume (inches) and the time between the storm events sampled and the end of the previous storm event.
- d. Field measurements shall be used for pH and temperature and grab samples shall be collected for pathogen indicators.
- e. For all other pollutants, samples shall be flow weighted composites, collected within the first 24-hours of a storm or for the duration of the storm event if it is less than 24 hours.
- f. Flow-weighted composite samples for a storm water discharge may be taken with a continuous sampler, or as a combination of a minimum of three sample aliquots taken in each hour of discharge for the entire discharge or for the first three hours of the discharge, with each aliquot being separated by a minimum period of fifteen minutes within each hour of discharge.

- g. Flow may be estimated using U.S. Geological Survey methods at sites where flow measurement devices are not feasible.

## **5. Dry Weather Monitoring Requirements**

- a. Dry weather outfall sampling locations shall be selected based on outfalls which are documented as to having known dry weather flows.
- b. Dry weather outfall sampling shall be conducted at least 72 hours after a rainfall event of 0.1 inches.
- c. Grab samples shall be used for the collection of dry weather flow samples.

## **B. Receiving Water Monitoring**

The City of Santa Rosa, the County of Sonoma, the Sonoma County Water Agency, the Town of Windsor, the City of Rohnert Park, the City of Cotati and the City of Sebastopol shall develop and implement a receiving water monitoring program.

### **1. Objective**

The receiving water monitoring program shall be developed and implemented to assess if the discharge of storm water and non-storm water flows are causing or contributing to an exceedance of water quality standards within the Laguna de Santa Rosa Watershed.

### **2. Implementation**

The receiving water monitoring program shall be developed and implemented to meet the following criteria:

- a. Receiving water locations shall be sampled for the following constituents:
  - i. Total Suspended Solids (TSS)
  - ii. Biochemical Oxygen Demand (BOD)
  - iii. Total Nitrogen
  - iv. Total Phosphorus
  - v. Ammonia
  - vi. Lead
  - vii. Copper
  - viii. Zinc
  - ix. Hardness
  - x. E. Coli
  - xi. Enterococci
- b. For every sample collected in receiving water, pH, temperature, and dissolved oxygen (DO) shall be measured in the field.

- c. All chemical and Bacteriological analyses shall be conducted at a laboratory certified for such analyses by an appropriate governmental regulatory agency.
- d. E. Coli and enterococci densities shall be analyzed through appropriate standard methods using the highest dilution necessary to report the Most Probable Number (MPN).

### **3. Receiving Water Monitoring Locations**

In developing receiving water monitoring locations, the Co-Permittees shall select receiving water monitoring locations in conjunction with outfall locations as identified in the Workplan.

## **C. Chronic Toxicity Monitoring**

The City of Santa Rosa, the County of Sonoma, the Town of Windsor, The City of Rohnert Park, The City of Cotati and The City of Sebastopol shall develop and implement a chronic toxicity monitoring program.

### **1. Objective**

Determine if storm water and non-storm water flows from the MS4 are causing or contributing to chronic toxicity in receiving water within the Laguna de Santa Rosa Watershed.

### **2. Chronic Toxicity Monitoring Requirements**

Chronic Toxicity Monitoring shall be conducted according to the procedures described as follows:

- a. Samples shall be collected and analyzed from receiving water monitoring locations to evaluate toxicity in receiving waters.
- b. Chronic toxicity testing shall be conducted in receiving water within 50 feet down gradient of outfalls which discharge storm water from the following land use drainage areas:
  - Industrial
  - Downtown
  - A golf course
  - A county park
  - A nursery/landscape material retail center
- c. Samples shall be collected twice per year per location during periods of storm water runoff discharge. A sample location may be discontinued after four consecutive "pass" results.

### 3. Test Species Sensitivity Screening

To determine the most sensitive test species, the Co-Permittees shall conduct two wet weather toxicity tests with the fathead minnow, *Pimephales promelas* (larval survival and growth test), the water flea, *Ceriodaphnia dubia* (survival and reproduction test), and the green alga, *Selenastrum capricornutum* (growth test). The species that exhibits the highest "Percent Effect" at the discharge in-stream waste concentration during species sensitivity screening shall be used for routine monitoring during the term of this Order.

### 4. Test Methods

The presence of chronic toxicity shall be determined as specified in EPA's *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms* (U.S. EPA Report No. EPA-821-R-02-013, 4th edition or subsequent editions).

### 5. Quality Assurance and Additional Requirements

Chronic toxicity test biological endpoint data shall be analyzed using the Test of Significant Toxicity (TST) t-test approach specified in the *National Pollutant Discharge Elimination System Test of Significant Toxicity Implementation Document* (U.S. Environmental Protection Agency, Office of Wastewater Management, Washington, D.C. EPA 833-R-10-003, 2010). Each sample shall be subject to determination of "Pass" or "Fail" and "Percent Effect" from a single effluent concentration chronic toxicity test at the in-stream waste concentration IWC) (100% receiving water or 100% storm drain outfall, as applicable) using the TST. The null hypothesis ( $H_0$ ) for the TST approach is: Mean discharge IWC response  $0.75 \times$  Mean control response. A test result that rejects this null hypothesis is reported as "Pass". A test result that does not reject this null hypothesis is reported as "Fail". The relative "Percent (%) Effect" at the discharge IWC is defined and reported as:  $((\text{Mean control response} - \text{Mean discharge IWC response}) \div \text{Mean control response}) \times 100$ .

### 6. Toxicity Identification Plan

- a. The Co-Permittees shall develop a Toxicity Identification Plan (TIP) to address any identified toxicity in receiving water. The plan shall include the following elements:
  - i. Monitoring protocols to confirm toxicity,
  - ii. If toxicity is confirmed, protocols to evaluate the contribution of the discharge of storm water and/or non-storm water has on the identified toxicity, and
  - iii. Protocols for identifying the pollutant(s) causing the identified toxicity.
- b. The TIP shall be implemented in the event of two consecutive "fail" toxicity testing results for the same sampling location.
- c. The TIP shall be developed and submitted as part of the monitoring workplan.

## **7. Toxicity Reduction Plan**

- a.** In the event a TIP is implemented, the Co-Permittees confirm the discharge of storm water and/or non-storm water is contributing to or causing the toxicity, and the pollutant(s) causing the toxicity are identified, the Co-Permittees shall develop and implement a Toxicity Reduction Plan (TRP).
- b.** Within 60 days of identifying the pollutants causing the identified toxicity, the Co-Permittees shall submit a TRP to address reducing the pollutant(s) in storm water and/or non-storm water discharges to the maximum extent practicable. The TRP shall include an assessment of pollutant sources and a discussion of suggested BMPs recommended to reduced and/or eliminate the discharge of pollutant(s) causing or contributing to the identified toxicity.
- c.** If it can be demonstrate that the discharge from the MS4 has no contribution to the identified toxicity, the Co-Permittees will not have to submit a TRP.

## **D. Bioassessment**

### **1. Objective**

Conduct a bioassessment study to assess the physical, chemical, and biological health of creek reaches within the Laguna de Santa Rosa Watershed.

### **2. Implementation**

- a.** Bioassessment monitoring shall be conducted within the jurisdictional boundary of the County of Sonoma, the City of Cotati, the City of Rohnert Park, the Town of Windsor, and the City of Sebastopol. Bioassessment monitoring shall be conducted once during the term of this Order during dry weather, and at one creek reach, per jurisdictional boundary.
- b.** The bioassessment monitoring shall be conducted in accordance with the following standard operating procedures developed by SWAMP:
  - i.** Collecting Benthic Macroinvertebrate Sample & Associated Physical and Chemical Data for Ambient Bioassessment in California-Standard Operating Procedures Manual-February 2007 edition, or subsequent revisions.
  - ii.** Collecting Stream Algae Samples and Associated Physical Habitat and Chemical Data for Ambient Bioassessment in California-Standard Operating Procedures Manual-June 2010, or subsequent revisions.



#### IV. REPORTING REQUIREMENTS

##### A. Outfall Monitoring, Receiving Water Monitoring, and Chronic Toxicity Monitoring

###### 1. Schedule

Outfall monitoring, receiving water monitoring, and chronic toxicity monitoring reports shall be submitted to the Regional Water Board on a semi-annual basis, according to the following schedule:

- a. For monitoring conducted between October 1 and March 31, data shall be reported to the Regional Water Board no later than July 1 of that calendar year.
- b. For monitoring conducted between April 1 and September 30, data shall be reported to the Regional Water Board no later than January 1 of the following calendar year.

###### 2. Report Components

Each monitoring report shall include the following information, at a minimum:

Component	Description
Introduction	A narrative description of who conducted the monitoring, what regulatory mechanism is triggering the monitoring and the time frame the report covers.
Monitoring Program	A summary of the monitoring requirements implemented during the reporting period.
Methods	A narrative description of the field and laboratory methods used to complete monitoring activities, Quality Assurance/Quality Control procedures, laboratory analyses.
Monitoring Activities	A narrative description of the monitoring activities conducted including dates, locations, constituents analyzed.
Monitoring Results	Results reported in tabular form (see below "Monitoring Results" for more details) and a comparison to water quality standards.
Assessment	Findings, conclusions, and recommendations.
Attachments	Monitoring location map (watershed wide view and a detailed view); Outfall location sample maps, showing drainage area and land use distribution; Cumulative data in tabular form; Analytical Methods Table: constituents, sample type, EPA Method, Minimum Level (ML), Method Detection Level (MDL), units, sample preservation, and hold time; Field Logs; Chain of Custody; and Laboratory Analytical Reports.

### **3. Monitoring Results**

The monitoring report shall specify the analytical method used, the MDL and the ML for each pollutant. For the purpose of reporting compliance with numerical limitations, performance goals, and receiving water limitations, analytical data shall be reported with one of the following methods, as appropriate:

- a. An actual numerical value for sample results greater than or equal to the ML;
- b. Not-detected (ND) for sample results less than the laboratory's MDL with the MDL indicated for the analytical method used; or
- c. Detected, but Not Quantified (DNQ) if results are greater than or equal to the laboratory's MDL but less than the ML.
- d. The estimated chemical concentration of the sample shall also be reported. This is the concentration that results from the confirmed detection of the substance by the analytical method below the ML value.
- e. For priority toxic pollutants, if the Co-Permittee can demonstrate that a particular ML is not attainable, in accordance with procedures set forth in 40 Code of Federal Regulations 136, the lowest quantifiable concentration of the lowest calibration standard analyzed by a specific analytical procedure (assuming that all the method specified sample weights, volumes, and processing steps have been followed) may be used instead of the ML listed in Appendix 4 of the State Implementation Policy (SIP). The Co-Permittees must submit documentation from the laboratory to the Regional Water Board Executive Officer for approval prior to raising the ML for any constituent.

### **B. Bioassessment Reporting**

1. The bioassessment shall include the following components, at a minimum:
  - a. Narrative description of bioassessment study procedures, study locations, results, conclusions and recommendations;
  - b. Overview map,
  - c. Detailed map of each creek reach studied, including transects labeled A-K, direction of flow, and the closest upstream and downstream outfalls to the study reach;
  - d. Field logs; and
  - e. Pictures taken during the study.
2. The bioassessment monitoring report shall be submitted no later than four years after the effective date of this Order.

## **V. SPECIAL STUDIES**

### **A. Nutrient Study-Brush Creek and Lower Santa Rosa Creek**

The City of Santa Rosa shall collect a special sampling event at Brush Creek and Lower Santa Rosa Creek to assess the concern with excessive nutrients as described in the results of the City's 2012 bioassessment study. The sampling event shall meet the following criteria:

1. Samples shall be collected from Brush Creek and Lower Santa Rosa Creek within the same creek reach that was studied for the 2012 bioassessment study. Samples shall also be collected 100 feet upstream and 100 feet downstream of the reach of creek studied during the 2012 bioassessment study<sup>1</sup>.
2. Samples shall be collected as grab samples as a one-time sampling event taking place between June and August of 2016.
3. Samples shall be collected and analyzed for total phosphorus, total nitrogen, and ammonia. Samples shall be field measured for pH, temperature and DO.
4. Results from the special sampling event shall be reported during the appropriate reporting period and shall include conclusions on the results and recommendations for additional sampling, for Executive Officer approval and warranted by the results of the sampling.

### **B. Best Management Practices Effectiveness Studies**

1. The City of Santa Rosa, the County of Sonoma, and the Sonoma County Water Agency, collectively or individually, shall develop and implement three Best Management Practice (BMP) Effectiveness Studies that assess the effectiveness of the following elements of storm water management:
  - a. Lawn care and lawn watering conservation BMPs;
  - b. Permanent post-construction BMPs; and
  - c. Hydromodification Control Plan.
2. For each study the Co-Permittees shall develop a workplan with a monitoring proposal to determine the effectiveness of each storm water program element. The workplans shall include the following information, at a minimum:
  - a. A narrative description of the BMP;
  - b. A study location;
  - c. Pre-project monitoring need to assess a baseline conditions including sampling parameters, location, and frequency;

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<sup>1</sup> The City of Santa Rosa may propose an alternative location for upstream and downstream sampling to accommodate safety concerns, such as accessibility.

- d. Post-project monitoring needed to assess BMP effectiveness relative to baseline conditions; and
    - e. A project schedule.
  3. Workplans for these studies shall be submitted to the Regional Water Board no later than one year after the effective date of this Order. Co-Permittee shall implement the studies upon approval of the Regional Water Board's Executive Officer. The status of the studies shall be reported in each annual report. Upon completion of each study, the Co-Permittees shall submit a final report including the findings of the study and a conclusion on the measured effectiveness of each BMP. The duration of these studies may need to extend beyond the five year term of this permit. The workplan shall clearly outline the time frame needed to complete the study, including reporting the results.

**C. Discharge Characterization**

The City of Ukiah, the City of Cloverdale, and the City of Healdsburg shall:

1. Submit a workplan within 18 months from the effective date of this Order, to propose adequate monitoring and characterizing of outfall discharges within their respective jurisdictions. The workplan shall include a schedule of implementation.
2. Upon approval by the Executive Officer, implement the workplan.
3. Include the results in the next Annual Report.

**VI. STANDARD MONITORING PROVISIONS**

- A. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. [40 CFR 122.41(j)(1)]
- B. The Co-Permittees shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Regional Water Board Executive Officer at any time. (40 C.F.R. § 122.41(j)(2).)
- C. Records of monitoring information shall include:
  1. The date, exact place, and time of sampling or measurements (40 C.F.R. § 122.41(j)(3)(i));
  2. The individual(s) who performed the sampling or measurements (40 C.F.R. § 122.41(j)(3)(ii));
  3. The date(s) analyses were performed (40 C.F.R. § 122.41(j)(3)(iii));
  4. The individual(s) who performed the analyses (40 C.F.R. § 122.41(j)(3)(iv));
  5. The analytical techniques or methods used (40 C.F.R. § 122.41(j)(3)(v)); and

6. The results of such analyses. (40 C.F.R. § 122.41(j)(3)(vi).)
- D.** Monitoring results must be conducted according to test procedures under 40 C.F.R. part 136 or, in the case of sludge use or disposal, approved under 40 C.F.R. part 136 unless otherwise specified in 40 C.F.R. part 503 unless other test procedures have been specified in this Order. If a particular Minimum Level (ML) is not attainable in accordance with procedures set forth in 40 CFR 136, the lowest quantifiable concentration of the lowest calibration standard analyzed by a specific analytical procedure may be used instead. [40 CFR 122.21(j)(4)]
- E.** The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this Order shall, upon conviction, be punished by a fine of not more than \$10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than \$20,000 per day of violation, or by imprisonment of not more than four years, or both. [40 CFR 122.21(j)(5)]
- F.** If the Co-Permittees monitor any pollutant more frequently than required by this Order using test procedures approved under 40 CFR part 136, unless otherwise specified in the Order, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the Annual Monitoring Reports. [40 CFR 122.41(I)(4)(ii)]
- G.** Calculations for all limitations, which require averaging of measurements, shall utilize an arithmetic mean unless otherwise specified in this Order. [40 CFR 122.41(I)(4)(iii)]

Ordered by: \_\_\_\_\_  
Matthias St. John  
Executive Officer

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