

**SSMP
ELEMENT 6 – Overflow
Emergency Response Plan
APPENDIX 6.7**

Water Quality Monitoring Program



WATER QUALITY MONITORING PROGRAM

INTRODUCTION

This Water Quality Monitoring Program provides the District's response activities and standard operating procedures to be utilized in the OERP, in the event a sanitary sewer overflow (SSO) exceeds 50,000 gallons. This program is reviewed periodically and may be updated as necessary.

State Water Resources Control Board Order No. WQ 2013-0058-EXEC, **Amending Monitoring And Reporting Program For Statewide General Waste Discharge Requirements For Sanitary Sewer Systems** (Effective September 9, 2013), requires the following:

SSO WDR Section D. Water Quality Monitoring Requirements

To comply with subsection D.7(v) of the SSS WDRs, the enrollee shall develop and implement an SSO Water Quality Monitoring Program to assess impacts from SSOs to surface waters in which 50,000 gallons or greater are spilled to surface waters. The SSO Water Quality Monitoring Program, shall, at a minimum:

1. Contain protocols for water quality monitoring.
2. Account for spill travel time in the surface water and scenarios where monitoring may not be possible (e.g. safety, access restrictions, etc.).
3. Require water quality analyses for ammonia and bacterial indicators to be performed by an accredited or certified laboratory.
4. Require monitoring instruments and devices used to implement the SSO Water Quality Monitoring Program to be properly maintained and calibrated, including any records to document maintenance and calibration, as necessary, to ensure their continued accuracy.
5. Within 48 hours of the enrollee becoming aware of the SSO, require water quality sampling for, at a minimum, the following constituents:
 - i. Ammonia
 - ii. Appropriate Bacterial indicator(s) per the applicable Basin Plan water quality objective or Regional Board direction which may include total and fecal coliform, enterococcus, and e-coli.

Additionally, for spills greater than 50,000 gallons, an SSO Technical Report is required and must be submitted within 45 calendar days from the SSO end date. The SSO Technical Report requirements are described in Element VI of the OERP.

SAFETY

Be aware of safety issues and do not subject personnel to unsafe conditions in order to comply with this Water Quality Monitoring Plan. Sampling will not be conducted if there are any concerns regarding field crew safety. These concerns may include heavy rain events, which compromise access points through flooding and swift currents. Thunderstorms will also be avoided when lightning is occurring. Employ the buddy system as required to maximize employee safety when sample collection is required.

ESTIMATION OF SPILL TRAVEL TIME

The following methods are recommended to estimate spill travel time and direction:

- Method 1: **Use a velocity probe** (such as a Global Water FP111-S Flow Probe). To determine the rate of flow in the surface water or



- **Method 2: Visual ft/sec measurement.** This may be done by observing or dropping floatable debris in the surface water and timing how long it takes to travel over a measured distance (e.g., 100 feet). Include sections in the surface water where there are bends, bottlenecks, or other characteristics that may slow down the flow. If the first measurement is uncertain, this estimate may be performed three to five times, and the values averaged to determine an estimated travel time.

Either method will provide a means to estimate the distance traveled and identify where the SSO may be headed within the waterway.

WATER QUALITY SAMPLING PROCEDURES

- In the event an SSO reaches a surface water or (flowing) drainage channel tributary, take samples for spills less than 50,000 gallons as appropriate and within 48 hours for spills greater than 50,000 gallons. The purpose of water quality sampling is to determine the nature and extent of the impact of the SSO.
- When sampling an SSO, take a minimum of three separate sample sets as conditions allow. Water quality sampling should not be given precedence over stopping the spill or protection of public health. One sample shall be located 100 feet upstream of the point where sewage entered the waterway. The second sample shall be taken at the discharge location. A third sample shall be taken 100 feet downstream of the point where sewage is entering the waterway.
- Sample for Total Coliform, E. coli, enterococcus, and Ammonia as a minimum. Conduct additional sampling for pH if practical.
- Additional follow-up samples are recommended to confirm the extent that the impact reverts back to baseline levels. Follow-up samples may be used to determine if posting of warning signs should be discontinued (if signs were posted).
- Collaboration with the County Health Department should continue until closure is obtained.
- Do not forget to take into account Spill Travel Time.

WATER QUALITY SAMPLING EQUIPMENT

The following list describes equipment that should be stocked and readily available for each water quality sampling event.

- Personnel protective equipment including latex/nitrile gloves and eye protection
- 3 – 120 mL sterile plastic containers (containing a tablet of sodium thiosulfate preservative) for Bacteria sample collection.
- 3 – 120 mL sterile plastic containers for Bacteria sample collection.
- 3 – 250 mL Poly containers preserved with H₂SO₄ for Ammonia analysis.
- 3 – 250 mL Poly containers
- 1 – Sample Collection Container
- Quart plastic bags
- 1 Gallon plastic bags
- sterile funnels
- Cooler with ice packs
- Chain of Custody forms

Ensure that there are adequate quantities of sample containers-kits if there are more than three sample locations.



SAMPLE COLLECTION PROCEDURE

I. Bacteria Sample Collection – Dip sample bottle into water

- 1. One 120-mL sterile plastic sample bottle (containing a tablet of sodium thiosulfate preservative) must be filled at a point upstream of where the spill entered the receiving water, and one 120-mL bottle must be filled at a point downstream of where the spill entered the receiving water. Total coliform, *E. coli* and enterococcus can be analyzed at the lab from one sample container.
- 2. Carefully open the sample bottle without touching the inside of the lid or bottle.
- 3. Facing upstream (or upgradient), **submerge** the sample container and fill it under water, if possible, without collecting surface or bottom debris, and without losing the preservative tablet. Pour off excess sample volume so that the container is filled to the 100-mL fill line. Secure the lid and dry the outside of bottle with a paper towel.
- 4. **Use a pencil to record on the bottle label (1) the sample ID*, (2) date and (3) time of sample collection, and (4) the sampler's name.**

*Sample ID = Manhole#–UP (upstream) or Manhole#-DWN(downstream)

Example for upstream Sample ID: 431:06-UP

Example for downstream Sample ID: 431:06-DWN

- 5. Immediately place the filled & labeled sample container inside the quart bag. Then place the quart bag in the gallon bag with cold instant ice packs (Two ice packs per sample bottle). *Do not put the instant ice packs inside the quart bag with the sample.*
- 6. Repeat Steps 1 through 5 for each bacteria sample location. Proceed to Section III (after collecting ammonia samples if necessary).

II. Ammonia Sample Collection – Do NOT Dip Sample Bottle into Water Use Secondary Container

- 1. One 250-mL plastic ammonia sample bottle (containing 50% sulfuric acid as preservative) must be filled at a point upstream of where the spill entered the receiving water, and one 250-mL ammonia bottle must be filled at a point downstream of where the spill entered the receiving water. **Sampling personnel must wear gloves and safety glasses while collecting samples for ammonia because of potential contact with sulfuric acid, which is highly corrosive.**
- 2. Remove the lid from a clean / empty / unused 250-mL plastic secondary container.
- 3. Facing upstream (or upgradient), **submerge** the secondary container and fill it under water, if possible, without collecting surface or bottom debris.
- 4. Carefully open the ammonia sample bottle containing sulfuric acid.



- 5. Slowly transfer sample from the secondary container into the 250-mL ammonia sample bottle preserved with sulfuric acid. Secure the lid so that acidified sample does not leak out of the bottle, and dry the outside of bottle with a paper towel.
- 6. **Use a pencil to record on the bottle label (1) the sample ID*, (2) date and (3) time of sample collection, and (4) the sampler's name.**

*Sample ID = Manhole#-UP (upstream) or Manhole#-DWN(downstream)
Example for upstream Sample ID: 431:06-UP
Example for downstream Sample ID: 431:06-DWN

- 7. Immediately place the filled & labeled sample container inside a quart bag and insert the quart bag into a gallon bag with two cold instant ice packs.
- 8. Repeat Steps 1 through 7 for each ammonia sample location.

III. Chain-of-Custody & Sample Delivery

- 1. Complete the County Health Lab Chain-of-Custody (COC) form for all samples that will be delivered to the County Health lab at the same time; include the Sample IDs, Date & Time of Sample Collection and Sampler's Name & Signature. Note the approximate upstream and downstream distance in the "Notes" field on the COC. ***The COC is a legal document and must be complete.***
- 2. Complete **one** County Health Lab Environmental Test Request Form per sample.
- 3. Complete the Caltest Lab COC form for all samples that will be analyzed for ammonia. Include the Sample IDs, Date & Time of Sample Collection and Sampler's Name & Signature. Note the approximate upstream and downstream distance in the "Notes" field on the COC. ***The COC is a legal document and must be complete.***
- 4. Deliver bacteria samples to the San Mateo County Public Health Laboratory at 225 W. 37th Ave, Room 113. Hours of operation are Mon – Fri 8am to 5pm.*
Have the Lab Analyst sign the COC form & make a copy.
- 5. Deliver ammonia samples to the WWTP Laboratory during normal business hours (Mon – Sun 6:30 a.m. to 3 p.m.) Call Caltest for a pickup (707-258-4000).
Have the Lab Analyst sign the COC form & make a copy.
- 6. Bring the signed COC forms (or photocopies) to the yard trailer.



SAMPLING COLLECTION BEST PRACTICE

- Collect all grab samples approximately 3' - 6" below the surface (or if shallower, as close as possible to this depth) to avoid sampling debris or scum from the surface.
- Collect the sample in a safe manner in the middle of the flow, against the direction of water flow.
- Photo-document the spill locations.
- Leave approximately one inch of head space in individual sample bottles. Do not overfill.
- Once the lid is opened for the individual sample bottle, do not touch the inside surface of the bottle or lid.
- For the sample bottles that contain a preservative, take care to keep the preservation material in the container.
- Immediately place all sample bottles on ice.

SAMPLING TIME CONSTRAINTS

Bacteria samples have a 6-hour (preserved and cooled) regulatory holding time. Samples will not be analyzed if the holding time has been exceeded. The County Lab needs about 30 minutes to set up the tests.

Ammonia samples have a 28-day regulatory holding time. Samples must be maintained at ≤ 6°C (on ice or refrigerated) from the time of collection until receipt by the analytical laboratory.

***If the County Public Health lab is Closed...**

If the County Health Lab will be opening within 5 & 1/2 hours from the time the samples were collected, keep samples in a refrigerator or in the bag containing the cold packs and immediately deliver samples as soon as the County Lab opens for business.

Otherwise, call the County Health Lab's After Hours Contact List (starting with #1 – Office/Pager/Cell) and arrange to meet a lab analyst. They have agreed to meet us at the lab to receive samples during off-hours.

SSO Sampling Contact Information

Location	Contact Person	Phone Number
City of San Mateo WWTP Lab Supervisor	Pete Dalla-Betta	650-522-7388 (office) 650-823-1260 (cell)
City of San Mateo WWTP Lab Analyst	Mary Buffington Mark Burke Xiong Bing Laing	650-522-7385 (WWTP Main Number)
Collection System Contact	Ray Jackson	650-522-7359 (office) 650-867-0254 (cell)
San Mateo County Public Health Lab 225 W. 37th Ave, Room 113 LAB HOURS: MON – FRI 8am to 5pm	June Wong	650-573-2456 (office)



Location	Contact Person	Phone Number
	After Hours: Office June Wong Sangeeta Singh Ghazi Ehsani Dr. Zenda Berrada	650-632-1193 (pager) 650-339-2322 (cell) 650-594-1338 (home) 650-787-9381 (cell) 650-787-9382 (cell) 650-703-3935 (cell) 617-512-9949

CHAIN-OF-CUSTODY RECORD

City of San Mateo Dept of Public Works

1949 Pacific Blvd
San Mateo, CA 94403
Phone: [650] 522-7312 Fax: [650] 522-7351

DESTINATION LAB CONTACT INFORMATION		San Mateo County Public Health Laboratory		REQUESTED ANALYSIS	
225 West 37 th Avenue, Room #113		San Mateo, CA 94403		Total Coliform & E. coli (1:10 dilution)	
DOUG COFFMAN		[650] 573-2456 (office) 650-743-1804 (cell)		Enterococcus (1:10 dilution)	
dcoffman@co.sanmateo.ca.us					
SAMPLER NAME:					
SAMPLER SIGNATURE					
CITY COLLECTION SYSTEM CONTACT:		SARAH PARRISH [650] 522-7312			
PROJECT / P.O. #		SSO MONITORING			
Sample ID* (MH# -Up or MH#-Dwn)	Date Sampled	Time Sampled	Sample Matrix	Container #	Notes
			aqueous	Type: 100-mL HDPE Pres.: Na ₂ S ₂ O ₃	
			aqueous	Type: 100-mL HDPE Pres.: Na ₂ S ₂ O ₃	
			aqueous	Type: 100-mL HDPE Pres.: Na ₂ S ₂ O ₃	
			aqueous	Type: 100-mL HDPE Pres.: Na ₂ S ₂ O ₃	
			aqueous	Type: 100-mL HDPE Pres.: Na ₂ S ₂ O ₃	
			aqueous	Type: 100-mL HDPE Pres.: Na ₂ S ₂ O ₃	
SENDER COMMENTS:				RECEIVED BY (1)	
Please fax results to:				Signature:	
Sarah Parrish, City of San Mateo: 650-522-7351				Print Name:	
Greg Smith, County of San Mateo: 650-363-7882				Company: County of San Mateo Public Health Lab	
Shell St Clair, City of San Mateo: 650-522-7381				Date:	
RELINQUISHED BY (1)				RECEIVED BY (2)	
Signature:				Signature:	
Print Name:				Print Name:	
Company: City of San Mateo				Company: County of San Mateo Public Health Lab	
Date:				Date:	
RELINQUISHED BY (2)				RECEIVED BY (2)	
Signature:				Signature:	
Print Name:				Print Name:	
Company:				Company:	
Date:				Date:	



CITY OF SAN MATEO - SEWER MAINTENANCE
OVERFLOW EMERGENCY RESPONSE PLAN

1885 N. KELLY ROAD NAPA, CA 94558 (707) 258-4000 FAX (707) 226-1001 www.caltestlab.com
SAMPLE CHAIN OF CUSTODY



LAB ORDER # _____

P.O. NUMBER _____

CLIENT: **City of San Mateo DPW - Sewers**
 MAILING ADDRESS: **1949 Pacific Blvd San Mateo**
 BILLING ADDRESS: **Same**
 PHONE NUMBER: **650-522-7312** FAX PHONE NUMBER: **650-522-7351**

REPORT TO: **sparish@cityofsanmateo.org** STATE: **CA** ZIP: **94403**
 ATTN: **Sarah Parrish**

SAMPLER (PRINT & SIGN NAME): _____

CALTEST LAB #	DATE SAMPLED	TIME SAMPLED	SAMPLE MATRIX	CONTAINER TYPE/AMOUNT	PRESERVATIVE	SAMPLE IDENTIFICATION / SITE	CLIENT LAB #	COMP. OF GRAB	REMARKS
			WW	250-mL	H ₂ SO ₄			Grab	Please E-mail Lab Order Confirmation

TURN-AROUND TIME
 STANDARD
 RUSH
 DUE DATE: _____

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME	RECEIVED BY

FOR LAB USE ONLY

Samples: WC MICRO BIO AA SV VOA pH? Y/N TEMP: SEALED: Y/N INTACT: Y/N
 BD: BIO WC AA VOA
 CC: AA SV VOA
 SIL: HP PT QT VOA
 WPHNO, H₂SO₄, NiOH NiOH HCL
 PIL: HNO₃ H₂SO₄ NiOH HCL
 R PR M F

COMMENTS:

*MATRIX: AQ = Aqueous Nondrinking Water, Digested Metals; FE = Low R.L.s. Aqueous Nondrinking Water, Digested Metals; DW = Drinking Water; SL = Soil Sludge, Solid; FP = Free Product
****CONTAINER TYPES:** AL = Amber Liter, AHL = 500 ml Amber, PT = Pint (Plastic), QT = Quart (Plastic), HG = Half Gallon (Plastic), SJ = Soil Jar, B4 = 4oz BACT; BT = Brass Tube, VOA = 40mL VOA, OTC - Other Type Container

CITY OF SAN MATEO - SEWER MAINTENANCE
OVERFLOW EMERGENCY RESPONSE PLAN

LAB USE ONLY

County of San Mateo
Department of Health
Public Health Laboratory
225 West 37th Avenue, Room #113
San Mateo, CA 94403
(650) 573-2500

Bruce K. Fujikawa, Dr. P.H., Laboratory Director

DATE AND TIME RECEIVED INITIALS

ENVIRONMENTAL TEST REQUEST FORM

COLLECTED BY: _____ DATE COLLECTED: _____

SAMPLE ID : _____ TIME COLLECTED: _____

TEST REQUEST ORDER CHOICE:

- MULTIPLE TUBE FERMENTATION TEST
- COLILERT-18 TEST (DILUTE 1:10)
- ENTEROLERT TEST (DILUTE 1:10)
- OTHER _____

SAMPLE TYPE:

RECREATIONAL WATER

- BEACH ON MARINA LAGOON (Name of Beach: _____)
- SOIL
- MARINA LAGOON
- BAYSIDE
- CREEK (Name of Creek: _____)
- CHANNEL (Name of Channel: _____)
- MOUTH OF CHANNEL AT LAGOON (Name of Channel: _____)
- OTHER _____

SYSTEM NAME: San Mateo CS SYSTEM ID # : 2SSO10183

SAMPLE SITE/ADDRESS: 1949 Pacific Blvd

San Mateo, CA 94403

SEND REPORT TO (FULL ADDRESS):

BILL TO (NAME OF ORGANIZATION)

LOCATION: City of San Mateo CS

City of San Mateo CS

1949 Pacific Blvd

330 W. 20th Ave

San Mateo, CA 94403

San Mateo, CA 94403

ATTENTION: Ray Jackson fax: 650-522-7351