

APPENDIX B
OF
SEWER SYSTEM MANAGEMENT
PLAN (SSMP)
DRAFT
BURNEY WATER DISTRICT
SPILL EMERGENCY RESPONSE PLAN

**Reviewed/Revised for 2023 SSMP by Burney Water District Staff and
PACE Engineering, Inc.**

**Original Document: 2017 Sanitary Sewer Overflow Emergency
Response Plan completed by PACE Engineering, Inc.**



TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE</u>
SECTION I: Purpose	1
Regulatory Requirements.....	1
SECTION II: General	3
Objectives.....	3
Organization of Plan.....	3
Spill Detection and Notification.....	4
Receipt of Information regarding an SSO in the Collection System	4
Receipt of Information regarding an SSO in a Lift Station	5
SECTION III: Sanitary Sewer Overflow Response Procedure	6
Dispatch of Appropriate Crews to the Site of an SSO.....	6
Responding Party	7
Additional Resources	7
Preliminary Assessment of Damage to Private and Public Property	7
Coordination with Hazardous Material Response	8
Responsibilities of Responding Party Upon Arrival.....	8
Measures for Spill Containment	9
Additional Measures for Potentially Prolonged SSO Conditions.....	10
Emergency Response Procedures.....	10
Lift Station Failure Caused by Force-Main Break inside Dry Well, Pump Failure, or Valve Failure ...	12
Lift Station Failure Caused by Force-Main Break inside Wet Well, Pump Failure, or Valve Failure ..	14
Lift Station Failure Caused by Power Outage.....	15
Overflowing Sewer Manhole Resulting from Surcharged Sewer Main	16
Sewer Force-Main Break	17
Sewer Main Break/Collapse.....	19
Cleanup	21
Post-Cleanup Activities	21
Water Quality Monitoring.....	22
Site-Specific Monitoring	22
Receiving Water Monitoring.....	22
SSO Sampling Procedures	23
Point of Discharge Sampling/Testing:.....	23
Upstream Sampling/Testing.....	23
Downstream Sampling	23

Sanitary Sewer Overflow Field Report	24
Equipment	25
SECTION IV: Regulatory Agency Notification and Reporting Plan	26
SSOs Determination of Category	27
Category 1 SSO	27
Category 2 SSO	28
Category 3 SSO	28
Category 4 SSO	28
SSO Reporting Requirements	29
Draft Spill Report	30
Certified Spill Report	31
Spill Technical Report	32
Monthly Certified Spill Reporting	33
Annual Certified Spill Reporting	35
Annual Report	36
Private Lateral Sewage Discharge (PLSD)	37
Sanitary Sewer System Service Area Boundary Map	37
Training	37
Spill Response Drills	38
SECTION V: Distribution and Maintenance of SERP	39

ATTACHMENTS

- A SSO Field Report Form
- B SSO Volume Estimation

ABBREVIATIONS

BWD	Burney Water District
CalOES	California Office of Emergency Services
CIWQS	California Integrated Water Quality System
CWEA	California Water Environmental Association
District	Burney Water District
GPM	Gallons per Minute
LRO	Legally Responsible Official
PLSD	Private Lateral Sewage Discharge
SCADA	Supervisory Control and Data Acquisition
SERP	Spill Emergency Response Plan
SI	Sewer Inspection
SSO	Sanitary Sewer Overflow
SWRCB	State Water Resources Control Board
WDR	Waste Discharge Requirements
WWTP	Wastewater Treatment Plant

**BURNEY WATER DISTRICT
SPILL EMERGENCY RESPONSE PLAN
MAY 2023**

SECTION I: PURPOSE

Burney Water District (BWD or District) has structured this Spill Emergency Response Plan (SERP) to satisfy the requirements of the Statewide General Waste Discharge Requirements (WDRs) for Sanitary Sewer Systems, Water Quality Order No. 2022-0103-DWQ.

This SERP is intended to be a guideline and training document for BWD employees to follow in responding to, eliminating, cleaning up, documenting, and reporting sanitary sewer overflows (SSOs).

REGULATORY REQUIREMENTS

The WDRs include the following requirements regarding the SERP:

- The District shall certify, in its Annual Report, that its SERP is up to date to ensure prompt detection and response to spills, to reduce spill volumes, and to collect information for prevention of future spills. The Annual Report should review and assess the effectiveness of the SERP, and the SERP should be updated as needed. The Annual Report is due April 1 of each year.
- The SERP shall include measures to protect the public health and the environment.
- The District shall respond to spills from its system(s) in a timely manner that minimizes water quality impacts and nuisances by:
 - immediately stopping the spill and preventing/minimizing a discharge to waters of the State;
 - intercepting sewage flows to prevent/minimize spill volume discharged into waters of the State;
 - thoroughly recovering, cleaning up, and disposing of sewage and wash down water; and
 - cleaning publicly accessible areas while preventing toxic discharges to waters of the State.
- The District must provide in-house and external training on a regular basis for sanitary sewer system operations and maintenance staff and contractors. The training must cover:
 - the District's SERP procedures and practice drills;
 - skilled estimation of spill volume for field operators; and
 - electronic California Integrated Water Quality System (CIWQS) reporting procedures for staff submitting data.
- The SERP must include procedures to:
 - notify primary responders, appropriate local officials, and appropriate regulatory agencies of a spill in a timely manner;
 - notify other potentially affected entities (e.g., health agencies, water suppliers) of spills that potentially affect public health or reach waters of the State;
 - comply with the notification, monitoring, and reporting requirements of this General Order, State law and regulations, and applicable Regional Water Board Orders;
 - ensure that appropriate staff and contractors implement the SERP and are appropriately trained;

- address emergency system operations, traffic control, and other necessary response activities;
- contain a spill and prevent/minimize discharge to waters of the State or any drainage conveyance system;
- minimize and remediate public health impacts and adverse impacts on beneficial uses of waters of the State;
- remove sewage from the drainage conveyance system;
- clean the spill area and drainage conveyance system in a manner that does not inadvertently impact beneficial uses in the receiving waters;
- implement technologies, practices, equipment, and interagency coordination to expedite spill containment and recovery;
- implement pre-planned coordination and collaboration with storm drain agencies and other utility agencies/departments prior, during, and after a spill event;
- conduct post-spill assessments of spill response activities; and
- document and report spill events as required in the WDRs.

SECTION II: GENERAL

The SERP is designed to define appropriate actions by BWD upon notification of a possible SSO caused by problems within the District-owned sewer collection system. BWD shall dispatch the appropriate personnel to investigate the possible SSO, identify the responsible party(ies), and provide appropriate customer service to minimize effects of the SSO on public health and quality of surface waters. For purposes of this SERP, “confirmed sewage spill” is also sometimes referred to as “sanitary sewer overflow,” “sanitary sewage overflow,” “overflow,” or “SSO.”

OBJECTIVES

The primary objectives of the SERP are to:

- respond to SSOs in a timely and efficient manner in order to protect public health and the environment, and
- satisfy the requirements of regulatory agencies and waste discharge permits that address procedures for managing SSOs.

Additional objectives of the SERP are to:

- provide appropriate customer service;
- protect the wastewater treatment plant and collection system including all related appurtenances and personnel;
- protect property from SSOs resulting from problems within the publicly owned sanitary sewer system, and
- provide guidelines for BWD employees to follow in responding to, eliminating, cleaning up, documenting, and reporting SSOs.

ORGANIZATION OF PLAN

The key elements of the SERP are addressed individually as follows:

Section I	Purpose
Section II	General
Section III	Spill Detection and Notification
Section IV	Sanitary Sewer Overflow Response Procedure
Section V	Regulatory Agency Notification Procedure
Section VI	Distribution and Maintenance SERP
Attachment A	SSO Field Report
Attachment B	SSO Volume Estimation

SPILL DETECTION AND NOTIFICATION

Failure of any element within the BWD wastewater collection system that threatens to cause or causes an SSO will trigger a response to isolate and correct the problem. Blocked sewers, pipe failures, or mechanical malfunctions can cause an SSO. Other natural and man-made disturbances are also possible causes of SSOs.

RECEIPT OF INFORMATION REGARDING AN SSO IN THE COLLECTION SYSTEM

District employees or the public may detect an SSO. The District Office is primarily responsible for receiving phone calls from the public notifying BWD of possible SSOs from the wastewater collection system. The answering party is then responsible for forwarding the possible SSO information to the appropriate personnel within BWD. During business hours, the public can contact the District Office at (530) 335-3582. The District Office staff will then notify the Field Superintendent and/or District Manager. During afterhours, the public can call the same number and they will receive a message directing them to contact the on-call operator via an on-call cell phone number. The on-call operator is responsible for responding and then notifying the Field Superintendent and/or District Manager.

The District publishes the main telephone number in the local telephone book and on the District website at www.burneywater.org as well as posts it at the District Office.

When District staff observe an SSO during the course of their regular activities, they are instructed to notify the main office and, if possible, respond to the situation.

BWD office staff who receive a call from the public will obtain all relevant information available regarding the possible SSO including:

- time and date the call was received;
- time and date the caller first noticed the spill;
- the specific location and/or address of the possible SSO;
- a description of problem, including whether the spill has reached a drainage conveyance system or surface water; and
- the caller's name and call-back phone number.

SSOs detected by any personnel during their normal duties shall be reported to the Field Superintendent or District Manager. Dispatched personnel should record all relevant SSO information indicated above and report back information to the Field Superintendent or District Manager.

If an SSO is a result of a contractor working on the sanitary sewer system, the contractor shall be required to notify the District immediately. The contractor shall try to contain the SSO until the District arrives, at which point the District will be responsible for the SSO cleanup. The contractor may be liable for any costs and/or fines incurred as a result of the SSO if the SSO is determined to be caused by the contractor's work.

RECEIPT OF INFORMATION REGARDING AN SSO IN A LIFT STATION

All of the District's lift stations are equipped with high wet well alarms that when triggered will automatically dial the on-call operator. The operator on duty shall make note of the time and date the alarm call was received and the alarm description. In the event of an auto dialer failure, BWD staff visit the lift stations at least five to six days a week, this includes one day a weekend.

SECTION III: SANITARY SEWER OVERFLOW RESPONSE PROCEDURE

The SERP presents guidelines for BWD to mobilize labor, materials, tools, and equipment to correct or repair any condition that may cause or contribute to an un-permitted discharge from a publicly owned sanitary sewer system. A wide range of potential system failures is considered by the plan. Being prepared to respond to system failures could lessen the effect of SSOs to surface waters, land, or buildings. The objectives of these actions are to:

- determine the apparent cause of the SSO, e.g., whether the cause lies in the publicly owned sewer or private lateral;
- protect public health, the environment, and property by minimizing SSO impacts as soon as possible;
- establish perimeters with appropriate barricades and control zones with vehicles or natural topography, e.g., hills, berms;
- communicate preliminary SSO information and potential impacts as soon as practicable to the Office of Emergency Services, Regional Water Quality Control Board, and Shasta County Health Department but not more than two hours after confirming an SSO, as required; and
- contain the SSO to the maximum extent possible including preventing the discharge of sanitary sewage into surface waters.

Emergency response personnel shall be available 24 hours a day, 365 days of the year.

It is the responsibility of the Field Superintendent or the responding party(ies) to gather all spill response data and communicate this data back to the District Manager as soon as possible. Until verified, the report of a possible spill will be referred to as a “sewer inspection (SI),” not an “SSO.”

An SSO Field Report, included in Attachment A of this SERP, should be completed by the Field Superintendent within 24 hours of the responding party(ies)’s confirmation of an SSO. The District Manager is responsible for reviewing, updating, signing, and submitting the final SSO report to the State Water Resources Control Board (SWRCB) website and the CIWQS Online Sanitary Sewer Overflow Database.

DISPATCH OF APPROPRIATE CREWS TO THE SITE OF AN SSO

The Field Superintendent or District Manager shall dispatch additional response crews, equipment, or contracted services as necessary.

The crew aims to respond with the appropriate equipment to any SI/SSO location within 30 minutes of receiving the report of an SSO.

RESPONDING PARTY

Upon receipt of a report of an SSO, all response crew members shall proceed to the BWD corporate yard where they will gather all necessary equipment and resources before proceeding to the SSO site. Delays or conflicts in assignments and issues regarding equipment and resources should be reported to the Field Superintendent for resolution.

The responding party(ies) should report his/her findings, including possible damage to the public system and, if assessable, to private property, to the Field Superintendent. If the Field Superintendent has not received findings from the responding party(ies) within an appropriate time frame, they should contact the response crew leader to determine the status of the investigation.

ADDITIONAL RESOURCES

Requests for additional personnel, material, supplies, and equipment from the responding party(ies) shall be conveyed to the Field Superintendent as soon as possible.

PRELIMINARY ASSESSMENT OF DAMAGE TO PRIVATE AND PUBLIC PROPERTY

The responding party(ies) should use discretion in assisting private property owners/occupants who are affected by an SSO. Be aware that BWD could face increased liability for any further damages inflicted to private property during such assistance. Appropriate photographs and video footage, if possible, should be taken of the area of the SSO and the impacted area for thorough documentation of the nature and extent of the impact. Photographs or videos are to be forwarded to the District Manager for filing with the inspection/SSO report.

If the spill is not a result of a failure or backup/blockage in the District-owned and -maintained sewer, the responding party(ies) shall do the following:

- If the property owner/resident is not home or present, the responding party(ies) should leave a door hanger on the door notifying them of the spill and that it should be cleaned up as soon as possible.
- If the property owner/resident is home, the responding party(ies) should notify the resident that the spill is not a result of a blockage or backup in the District-owned sewer system and that the District does not have the legal authority to maintain or perform work on privately owned laterals. The responding party(ies) should recommend the property owner/resident hire a licensed contractor/plumber to clear the blockage and clean up the spill.

If the spill is a result of a failure or backup/blockage from the District-owned and -maintained sewer, the responding party(ies) shall notify the Field Superintendent as soon as possible and follow the procedures of their SERP.

COORDINATION WITH HAZARDOUS MATERIAL RESPONSE

Upon arrival at the location of an SSO, should a suspicious substance (e.g., oil sheen, foamy residue) be found on the ground surface or should a suspicious odor (e.g., gasoline) not common to the sewer system be detected, the responding party(ies) should contact the Field Superintendent for guidance before taking further action.

- The Field Superintendent will alert the local fire department if necessary. The responding party(ies) shall await the arrival of the local fire department.
- After arrival of the local fire department, responding party members will take direction from the commanding officer of the local fire department. Only when the commanding officer determines it is safe and appropriate for the responding party(ies) to proceed can containment, clean up, and corrective activities be performed in accordance with the SERP.
- **Remember that vehicle engines, portable pumps, or open flames (e.g., cigarette lighters) can provide the ignition for an explosion or fire should flammable vapors or fluids be present at the site. Maintain a safe distance and observe caution until and after assistance arrives.**
- **Hydrogen sulfide gas naturally forms in collection systems and lift stations. This gas is extremely toxic and highly flammable. If a rotten egg odor is present, it could be hydrogen sulfide gas. Evacuate the area immediately and set up a barrier to keep the public out. Notify the Field Superintendent, who will notify the proper authorities to respond.**

RESPONSIBILITIES OF RESPONDING PARTY UPON ARRIVAL

It is the responsibility of the first person who arrives at the site of an SSO to protect the health and safety of the public by mitigating the impact of the SSO to the extent possible. Should the SSO not be the responsibility of BWD but there is imminent danger to public health, public or private property, or to the waters of the United States, then prudent action should be taken until the responsible party(ies) assumes control and provides remedial actions. The responding party(ies) should have the following priorities:

- Follow safe work practices, including wearing proper personal protective equipment.
- Set up barricades as necessary to prevent the public from accessing the SSO area. Barricades should remain in place until the site has been properly cleaned. Signs shall also be posted as necessary.
- If necessary, identify and request additional resources to prevent the spread of the SSO, determine its cause, and correct the SSO.
- Dispatch appropriate personnel, materials, supplies, and/or equipment as needed. Promptly notify the appropriate personnel as indicated herein. Follow the chain of communication included in Table 1.

Table 1 – BWD Chain of Communication

Contact	Position	Office Phone Number	Work Cell Phone
David Zevely	District Manager	530-335-3582	530-238-7833
Mike Skelly	Field Superintendent	530-335-3582	530-524-4395
Keith Moore	Utility Worker	530-335-3582	530-524-4395

As part of the initial response, the responding party(ies) shall also:

- Note the time of arrival at the location of the SSO.
- Identify and assess the affected area of the spill.
 - If the SSO appears that it may impact surrounding buildings, try contacting the resident to notify them of the SSO.
- Photograph the spill and affected areas.
- Use GPS, if available, to assist in mapping the location and extent of the spill.
- Document any drainage channels the SSO reached.
- Document any bodies of water the SSO reached.
- Document the spill using the SSO Field Report included in Attachment A of this SERP.
- Take steps to recover and retain the spill to the sanitary sewer system as feasible.
- Refer to the Emergency Response Procedures section included herein for specific response procedures to certain situations.

MEASURES FOR SPILL CONTAINMENT

Following the above initial response, the responding party(ies) will:

- Take immediate steps to contain the SSO and, where possible, recover sewage that has already been discharged to minimize impact to public health or the environment.
 - Block or bag storm drains.
 - Storm drains within the District flow to either Burney Creek or a man-made storm drain detention basin.
 - Use sandbags and/or spill mats.
 - Recover spilled sewage by using a vactor truck.
 - Pump or divert spilled sewage into a downstream manhole.
 - Pump sewage from an upstream manhole to a downstream manhole in order to bypass the failed pipe or blockage.
- Determine the immediate destination of the SSO, such as storm drain, street curb gutter, creek, water body, etc.
 - Burney Creek, which is a tributary to the Pit River, flows through Burney.

- If additional materials and equipment are needed, identify and request the necessary materials and equipment to contain or isolate the SSO.
- Estimate the volume of the spill using photos and other methods as outlined in Attachment B.

All containment efforts should be properly documented on District forms.

ADDITIONAL MEASURES FOR POTENTIALLY PROLONGED SSO CONDITIONS

In the event of a prolonged sewer line blockage or a sewer line collapse, a determination should be made by the Field Superintendent to set up a portable bypass pumping operation around the obstruction/blockage.

- Appropriate measures shall be taken to effectively handle the sewage flow.
- Continuous or periodic monitoring shall be implemented as required.
- Barricades should remain in place to protect public health.
- Regulatory agency issues shall be addressed in conjunction with emergency repairs.

EMERGENCY RESPONSE PROCEDURES

The following section contains instructions for responding to the various causes of SSOs listed below:

- Wastewater lift station alarms.
- Lift station failure caused by force-main break inside the dry well, pump failure, or valve failure.
- Lift station failure caused by force-main break inside the wet well, pump failure, or valve failure.
- Lift station failure caused by a power outage.
- Overflowing sewer manhole resulting from a surcharged sewer main.
- Sewer force-main break.
- Sewer main break/collapse.

Wastewater Lift Station Alarms

General Response Actions:

1. Send an individual to the station indicating an alarm as soon as possible. If serious trouble is found, call for additional assistance and keep an individual at the station until further instructions are received.
2. Always check with the power company when an alarm goes on to see if there is/was a power outage in the area. The pole number nearest the station should be reported.

3. Personnel called to investigate lift station alarms shall respond to the station even if the alarm has cleared prior to their arrival. All alarm conditions are to be checked and logged. Use the following guidelines and follow confined space entry procedures if applicable.

Wet Well/Dry Well-Type Lift Stations:

1. Check atmosphere within dry well prior to entering with gas meter.
2. Take your time entering the dry well. Never enter a flooded dry well.
3. Note any unusual odors, e.g., burning electrical equipment or paint.
4. Listen for and note any unusual noises.
5. Lightly touch pump motors and pump bearing housing. Note any that seem unusually hot.
6. Observe every piece of equipment in the station. Note anything that looks out of place.
7. Record all gage readings, e.g., wet well level, hour meters, flow charts, on-off levels, psi gauges on pumps, and anything else significant.
8. Based on available information, troubleshoot the failure. By process of elimination, the failure will be isolated.
9. Emergency personnel should be absolutely certain that the cause of the pump station alarm or failure has been properly identified and corrected prior to leaving the station.
10. Reset all alarm feature indicator lights.

Submersible-Type Lift Stations:

1. Check atmosphere with a gas meter within the wet well prior to working over the top.
2. Note any unusual odors, e.g., burning electrical equipment or paint.
3. Listen and note if pump(s) are running and any unusual noises.
4. Observe every piece of equipment in the station, paying specific attention to the level control system. Note anything that looks out of place.
5. Record all gage readings, e.g., wet well level, hour meters, flow charts, on-off levels, psi gauges on pumps, and anything else significant.
6. Based on available information, trouble-shoot the failure. By process of elimination, the failure will be isolated. Check level controls, pump operation using manual position, and pump output. Once the problem is isolated, engage mechanical or electrical disciplines for repairs.
7. Emergency personnel should be absolutely certain that the cause of the pump station alarm or failure has been properly identified and corrected prior to leaving the station.

8. Reset all alarm feature indicator lights.
 - Various types of level sensors may be present in the lift stations, including bubbler systems, float switches, or ultrasonic transducers. Similarly, various types of controls may be present for pump cycling, including pneumatic systems, simple relays, and/or computerized processors. The responding party(ies) should be fully capable and trained in the proper function of each of these systems present within BWD. Troubleshooting these controls is specific to the unit. The O&M manual for the level sensor system and pump controls should be consulted during a failure.

Minimum Levels of Staffing: 2	
Minimum Emergency Equipment	Specialized Equipment
<ul style="list-style-type: none"> • Gas meter • Harness and lifeline • Tripod • Personal protective equipment • Ventilation blower 	<ul style="list-style-type: none"> • As applicable for troubleshooting

Lift Station Failure Caused by Force-Main Break inside Dry Well, Pump Failure, or Valve Failure

Main Lift Station:

1. Dispatch crew to the lift station immediately.
2. Upon arrival, the crew should identify if the dry well is flooded. The pumps may be still pumping if the motors are above the water level.
3. After further investigation, the crew should determine the nature of the failure, e.g., pump(s), valve(s), or force main(s), prior to entering dry well if possible.
4. Call additional personnel to bring appropriate portable pump(s) including all required lengths of suction and discharge hose to the lift station.
5. Before entering the dry well, measure atmospheric conditions for sufficient oxygen and the presence of explosive or toxic gases. Remove all hazards as appropriate, including electrical and engulfment hazards, prior to entering the station.
6. Constantly monitor the atmospheric conditions while working in the dry well of the station.
7. Upon arrival of the portable pump, connect the appropriate lengths of suction hose that will suspend into the wet well and then connect enough discharge hose to pump into bypass connection.
8. Set up an additional portable trash pump to pump out the dry well into the wet well.
9. Enter the dry well and inspect the following facilities:
 - Lighting.
 - Ventilation.
 - Sump pump operation.

- Motor control system, including air compressors.
 - Bubbler system (if applicable).
 - Pump alternator.
 - Control and instrument readings.
 - Temperature of pump motors.
 - All internal piping.
10. Isolate the failed component by valve operation. After exiting the dry well, start the auxiliary pump and motor if possible.
 11. Complete repairs to pipe, pump, or valve as per policy. If permanent materials are not readily available, install blind flanges for temporary conditions.
 12. Restore facilities to normal and inspect other components of the force main and pumping system for signs of similar failure.
 13. Shut down the bypass operation. Do not disconnect hoses until repair is checked for leaks. Operate pumps to check repair under pressure and normal operating conditions.
 14. If no leaks are observed, return pumps to normal conditions. Monitor pumps to check lead/lag operations.
 15. Proceed to wet well for inspection. Before entering the wet well, measure atmospheric conditions for sufficient oxygen and the presence of explosive or toxic gases. Check the following if applicable:
 - Wet well level.
 - Float controls/Level sensors.
 - Grease assessment.
 16. Make a report indicating the following:
 - Time of call.
 - Description of the problem.
 - How repair was made.
 - Personnel present.
 - Equipment used.
 17. If sewage overflow occurred, complete an SSO Field Report and forward to the District Manager within 24 hours.

Minimum Levels of Staffing: 2 to 4	
Minimum Emergency Equipment	Specialized Equipment
<ul style="list-style-type: none"> • Gas meter • Harness and lifeline • Tripod • Personal protective equipment • Miscellaneous tools • Portable pumps and hoses • Flashlight • Ventilation blower 	N/A

Lift Station Failure Caused by Force-Main Break inside Wet Well, Pump Failure, or Valve Failure

Bartel Lift Station:

1. Dispatch crew to the lift station immediately.
2. Upon arrival, the crew should identify the storage capacity in the wet well and collection system. This will give some indication of the time available for response.
3. Inspect the motor control circuit for failure indications. Check alternator to determine failure, if applicable. If pump failure is determined, skip to Bypass Steps.
4. Prior to working above the wet well, measure atmospheric conditions for sufficient oxygen and the presence of explosive or toxic gases. If flooded, skip to Bypass Steps.
5. Constantly monitor atmospheric conditions while working in or above the wet well. Inspect the wet well. Check the wet well floats or level control system and pump volute for clogging or other problems.

Bypass Steps:

1. If pump failure, determine if bypass pumping is necessary. If unnecessary, skip to Repair Procedures.
2. For bypass pumping, call additional crew to bring appropriate portable pump(s), including all required lengths of suction and discharge hose, to the lift station if necessary. Upon arrival of the portable pump, connect the appropriate lengths of suction hose that will suspend into the wet well and then connect enough discharge hose to pump into appropriate manhole or bypass connection (if so equipped). Go through the procedures for starting the portable pump and begin pumping.

Repair Procedures:

1. Enter wet well and inspect piping and valves for cause of failure. Monitor atmospheric conditions for sufficient oxygen and the presence of explosive or toxic gases.
2. Complete repairs to pipe, pump, or valve as per policy. If permanent materials are not readily available, install temporary repairs until permanent repairs can be completed.
3. Restore facilities to normal and inspect other components of the force main and pumping system for signs of similar failure.

4. Shut down bypass operation. Do not disconnect hoses until repair is checked for leaks. Operate pumps to check repair under pressure and normal operating conditions.
5. If no leaks are observed, return pumps to normal operating conditions. Monitor pumps to check lead/lag operations.
6. Make a report indicating the following:
 - Time of call.
 - Description of the problem.
 - How repair was made.
 - Personnel present.
 - Equipment used.
7. If sewage overflow occurred, complete an SSO Field Report and forward to the District Manager within 24 hours.

Minimum Levels of Staffing: 2 to 4	
Minimum Emergency Equipment	Specialized Equipment
<ul style="list-style-type: none"> • Gas meter • Harness and lifeline • Tripod • Personal protective equipment • Miscellaneous tools • Portable pumps and hoses • Flashlight • Ventilation blower 	N/A

Lift Station Failure Caused by Power Outage

1. Dispatch personnel to the lift station immediately. If outage is at the Bartel Lift Station, the crew needs to bring the auxiliary generator to operate the lift station until power is restored if there is not sufficient capacity in the wet well and collection system.
2. Dispatcher shall request assistance of the power company in restoring power to the station if necessary. Determine the estimated time of arrival of the power company crew and then notify the responding party(ies).
3. Operators should check overhead power lines for fuses that might have blown or downed power lines as they approach the lift station. If the operators notice a blown fuse or downed power line, they should identify the pole number(s) and notify the dispatcher to relay to the power company the location and the pole number(s).
4. Lock out and tag out the main line disconnect (if applicable).
5. Go through the specific procedures for starting the generator to supply power to the station.
6. Run station with the auxiliary generator until power is restored.

7. Make a report indicating the following:
 - Time of call.
 - Description of the problem.
 - How repair was made.
 - Personnel present.
 - Equipment used.
8. If sewage overflow occurred, complete an SSO Field Report and forward to the District Manager within 24 hours.

Minimum Levels of Staffing: 2 to 3	
Minimum Emergency Equipment	Specialized Equipment
<ul style="list-style-type: none"> • Gas meter • Harness and lifeline • Tripod • Personal protective equipment • Miscellaneous tools • Portable pumps and hoses • Portable generator • Flashlight 	<ul style="list-style-type: none"> • Power testing equipment

Overflowing Sewer Manhole Resulting from Surcharged Sewer Main

1. Refer to sewer maps for location of sewers (private lands, flow patterns, manholes, etc.) and determine if the area is served by a pump station before responding to the call.
2. Dispatch the sewer crew immediately to the problem location to assess immediate danger to the environment.
3. Determine location of the blockage by inspecting the downstream manholes until a dry manhole is found.
4. Install the proper size sand trap in the downstream invert of the manhole before clearing the blockage to capture the debris. From the debris collected, try to determine the cause of the blockage and remove the debris from the manhole.
5. Use necessary equipment to relieve the blockage, including jet flushing and/or power rodding.
6. If it is imminent that wastewater will be released into wetlands, receiving waters, or a drinking water supply watershed, the District Manager should be notified. The District Manager will notify the proper authorities and agencies. See notification charts.
7. Call additional crews to set up sandbags and flotation booms across streams, brooks, etc., as necessary. Unless special conditions exist, freeing the blockage is priority to containing the bypass.
8. Gather and remove sewage-related debris and organic matter from affected area.

9. If wastewater is in streets/roads (public or private), contain the wastewater as best as possible with sandbags or other industry-accepted alternatives to minimize any impact to public health or the environment.
10. Sandbag nearby catch basin inlets to prevent wastewater from entering the drainage system and causing potential contamination to tributary receiving waters.
11. If ponding should occur on the street or easement (public or private), cordon off the area.
12. Remove as much sewage as possible.
13. Disinfect ponding areas with an industry-standard disinfectant and notify surrounding homes.
14. If the wastewater should jeopardize a playground or park, cordon off the entire area. Close the park to the public until the issue has been remedied to the satisfaction of the local and state boards of health and the local park superintendent.
15. Make a report indicating the following:
 - Time of call.
 - Description of the problem.
 - How repair was made.
 - Personnel present.
 - Equipment used.
16. If sewage overflow occurred, complete an SSO Field Report and forward to the District Manager within 24 hours.

Minimum Levels of Staffing: 2 to 3	
Minimum Emergency Equipment	Specialized Equipment
<ul style="list-style-type: none"> • Gas meter • Harness and lifeline • Tripod • Personal protective equipment • Miscellaneous tools • Portable pumps and hoses • Portable generator • Traffic cones • High-pressure cleaner • Disinfectants • Ventilation blower 	<ul style="list-style-type: none"> • TV camera unit • Caution tape

Sewer Force-Main Break

1. Dispatch a sewer crew to the site to assess the immediate danger to the environment and to determine who and what might be affected.
2. Set up signs, barricades, and/or barrels for traffic control and public safety.

3. Reroute traffic as necessary. Deploy traffic control measures such as police or flagperson as needed.
4. Request additional manpower and equipment as needed based on initial damage assessment, e.g., excavating crew, bypass pumping equipment.
5. Bypass pumping from the pump station wet well to the force-main discharge manhole may be required. If necessary, set up bypass pumping equipment.
6. If bypass pumping is not an option, then the line may need to be repaired under pressure. Shut down the lift station only if detention time is known and can be mitigated.
7. Call additional crews to set up sandbags and flotation booms across streams, brooks, etc., as necessary. Unless special conditions exist, bypassing the broken force main is The priority before containing the bypass.
8. The crew shall initiate measures to contain the sewer overflow as best as possible, cordon off the affected area, and place absorbing booms or sandbags to collect any floatable debris.
9. Check the tributary area to determine if the discharge will affect any receiving waters.
10. If it is determined receiving water may be affected, the dispatcher should notify the proper authorities or agency.
11. If the break is on the pipe length, a repair can be made with a wrap-around sleeve. If the break is at the bell, a bell-joint clamp may be used.
12. If a repair cannot be made while the line is under pressure or bypass pumping cannot be completed, two alternatives exist:
 - Utilize a vacor truck to remove the water from the wet well. Discharge the water into a manhole in a different tributary area or at the treatment plant.
 - If the vacor truck has insufficient volume, the scenario may require the assistance of several tanker trucks.
13. Upon confirmation of adequacy of the repair, backfill the excavation, if necessary, and restore surface conditions to existing conditions.
14. While the crew is restoring the excavation, the crew leader should conduct a preliminary assessment of damage to private and public property. The crew leader should take appropriate photographs and video footage, if possible, of the outdoor area of the sewer overflow and impacted area to thoroughly document the nature and extent of the impacts.
15. Make a report indicating the following:
 - Time of call.
 - Description of the problem.
 - How repair was made.
 - Personnel present.
 - Equipment used.

16. If sewage overflow occurred, complete an SSO Field Report and forward to the District Manager within 24 hours.

Minimum Levels of Staffing: 2 to 3	
Minimum Emergency Equipment	Specialized Equipment
<ul style="list-style-type: none"> • Gas meter • Harness and lifeline • Tripod • Personal protective equipment • Miscellaneous tools • Portable pumps and hoses • Portable generator • Traffic cones • High-pressure cleaner • Disinfectants • Ventilation blower 	<ul style="list-style-type: none"> • TV camera unit • Caution tape • Backhoe • Vactor truck

Sewer Main Break/Collapse

1. Dispatch sewer crew to location of break/collapse immediately.
2. Set up signs, barricades, and/or barrels for traffic control and public safety.
3. Reroute traffic as necessary. Deploy traffic control measures, such as police or flagperson as needed.
4. Request additional manpower and equipment as needed based on initial damage assessment, e.g., excavating crew, bypass pumping equipment.
5. Bypass pumping from the upstream manhole to the downstream manhole may be required. If necessary, set up bypass pumping equipment. If not necessary, prepare for repairs while the pipe is flowing.
6. Call additional crews to set up sandbags and flotation booms across streams, brooks, etc., as necessary. Unless special conditions exist, bypassing the broken sewer main is the priority before containing the bypass.
7. Gather and remove sewage-related debris and organic matter from the affected area.
8. If wastewater is in the streets/roads (public or private), contain the wastewater as best as possible with sandbags or other industry-accepted alternatives to minimize any impact to public health or the environment.
9. Sandbag nearby catch basin inlets or paved leak-offs to prevent wastewater from entering the drainage system and causing potential contamination to tributary receiving waters.
10. If ponding should occur on the street or easement (public or private), cordon off the area.
11. Remove as much sewage as possible.
12. Disinfect ponding areas with an industry-standard disinfectant and notify surrounding homes/businesses.

13. If the wastewater should jeopardize a playground or park, cordon off the entire area. Close the park to the public until the issue has been remedied to the satisfaction of the local and state boards of health and the local park superintendent.
14. Determine the location of the break/collapse and make necessary repairs. Use repair procedures consistent with policy. If the break is on the pipe length, the repair can be made with a wrap-around sleeve. If the break is at the bell, a bell-joint clamp may be used.
15. Upon confirmation of adequacy of the repair, backfill the excavation if necessary and restore surface conditions to match existing conditions.
16. To restore the sewer line to full capacity, the crew should remove any debris that may have entered and accumulated in the sewer line downstream and upstream from the break/collapse. The crew should clean the sewer line as described below.
17. Install the proper size sand trap in the downstream invert of the downstream manhole against the flow to the upstream manhole.
18. Repeat this procedure for several upstream and downstream pipe reaches.
19. The crew leader should take appropriate photographs and video footage, if possible, of the outdoor area of the sewer overflow and impacted area to thoroughly document the nature and extent of the impacts.
20. Make a report indicating the following:
 - Time of call.
 - Description of the problem.
 - How repair was made.
 - Personnel present.
 - Equipment used.
21. If sewage overflow occurred, complete an SSO Field Report and forward to the District Manager within 24 hours.

Minimum Levels of Staffing: 2 to 3	
Minimum Emergency Equipment	Specialized Equipment
<ul style="list-style-type: none"> • Gas meter • Harness and lifeline • Tripod • Personal protective equipment • Miscellaneous tools • Portable pumps and hoses • Portable generator • Traffic cones • High-pressure cleaner • Disinfectants • Ventilation blower 	<ul style="list-style-type: none"> • TV camera unit • Caution tape • Backhoe

CLEANUP

SSO sites are to be promptly cleaned to the highest degree possible after an overflow. No readily identifiable residue is to remain in the area of the SSO.

1. The SSO site is to remain secured to prevent public access to the site until the site has been thoroughly cleaned.
2. Where practicable, the area is to be thoroughly flushed and cleaned of any sewage or wash-down water. Solids and debris are to be transported to the wastewater treatment plant (WWTP) for proper disposal.
3. Where appropriate, the SSO site is to be disinfected, and any ponds formed by the SSO will be pumped dry and residue will be transported to the WWTP for proper disposal.
4. Areas shall be allowed to dry and the above steps repeated as necessary.

Private Property: The District is responsible for an SSO cleanup on private property if the SSO originated from the District-owned sewer system. The District must receive written permission from the Property Owner prior to performing any cleanup activities on the property. Under no circumstance are District employees to enter a private residence.

Hard Surfaces, Landscaped, and/or Unimproved Natural Vegetation: The responding party(ies) shall use brooms, rakes, and other applicable means to scrape up solids and debris. The affected area should then be washed down and disinfected. Any water containing contaminants should be removed from the site by either diverting to a downstream sewer manhole or with the vacuor truck. Chlorinated water shall never be allowed to enter drainage channels or surface water. Allow the area to dry and repeat as necessary if residue is still present.

- o Special care should be taken to restore landscaped and natural vegetation areas to their pre-SSO conditions.

Natural Waterways: Follow the notification procedures indicated herein for a Category 1 spill if an SSO reaches a natural waterway or surface water. The Responsible Agency for the waterway or surface water should respond and provide further direction.

In the event an SSO occurs during a major storm event or during other wet weather conditions, the responding party(ies) shall use rakes, brooms, and other applicable tools to scrape up and remove all solids and debris. Flushing shall be omitted if there is no reasonable means to capture and remove any runoff from the flushing activities.

POST-CLEANUP ACTIVITIES

The Field Superintendent should conduct a follow-up visit to the site of the SSO, if possible, to ensure the provisions of the SERP and other directives were properly followed.

The Field Superintendent is responsible for confirming that the SSO Field Report was provided to the District Manager.

Post-cleanup photos of the site shall be taken and kept on file with the SSO Field Report.

WATER QUALITY MONITORING

Site-Specific Monitoring

For spills that require site-specific monitoring, the District shall visually assess the spill location(s) and spread using photography, GPS, and other best available tools. The following shall be documented in the critical spill locations:

- Photography and GPS coordinates for:
 - The system location where the spill originated. For multiple appearance points of a single spill event, the point closest to the spill origin.
- Photography for:
 - Drainage conveyance system entry locations.
 - The location(s) of discharge into surface waters, as applicable.
 - Extent and spread of the spill.
 - The location(s) of cleanup.
- Spill Volume Estimation:
 - Estimate the total spill volume using the spill estimation worksheets included in Attachment B.

Receiving Water Monitoring

In the event an SSO reaches Burney Creek and the estimated volume is greater than 50,000 gallons, the District will, at a minimum, perform water quality monitoring upstream and downstream of the impacted area.

- One water sample each day of the duration of the spill will be collected from:
 - the drainage conveyance systems at a point in the drainage system before it reaches the receiving water;
 - a point in the receiving water where sewage initially enters the receiving water;
 - a point in the receiving water upstream of the point of sewage discharge; and
 - a point in the receiving water downstream of the point of sewage discharge where the spill material is fully mixed with the receiving water.
- The following parameters will be analyzed in all samples using approved test methods under 40 Code of Federal Regulations Part 136:
 - Ammonia.
 - Total Coliform Bacteria.
 - Fecal Coliform Bacteria. If Fecal Coliform is present, E. coli and Enterococcus shall also be analyzed.
- Additional sampling and monitoring will be collected and analyzed as required by the Regional Water Quality Control Board.
- Notify Pace Analytical Laboratory personnel of field sampling requirement related to spills over 50,000 gallons in a waterway. In the event that the SSO occurs after hours, contact PACE Analytical Laboratory at the start of business hours the following morning.

SSO Sampling Procedures

The District wastewater collection staff will first determine whether or not the SSO has reached a receiving water by calculating travel paths, flow rates, and containment measures. If the spill is 50,000 gallons or greater and has come in contact with a receiving water, these SSO sampling procedures will be followed. The receiving water will be monitored as indicated above.

BWD staff collecting samples will follow proper sample collection, handling, and storage procedures. District staff will proceed with testing and/or sampling only when it is determined to be feasible and safe.

Point of Discharge Sampling/Testing:

1. Move to the point where the SSO entered receiving water.
2. Photograph, map, and mark the location for future reference.
3. Label the field samples with the date, time, location, and sampler's initials. Record the testing results.
4. Collect 2 bacteriological samples (Fecal Coliform and Enterococci) using the supplied containers labeled "micro."
5. Collect a 500 ml sample for ammonia using a plastic 16 oz container that contains H₂SO₄ (gold colored) preservative.
6. Keep the samples under ice or refrigeration (for example, use a cooler) until transferred to the laboratory's process refrigerator.

Upstream Sampling/Testing

1. Move at least 10 feet upstream from the point where SSO enters the receiving water to obtain a non-contaminated baseline sample.
2. Follow the procedure mentioned in "Point of Discharge Sampling/Testing" (steps 2 through 6).

Downstream Sampling

1. Determine how far the SSO has traveled downstream.
2. Estimate rate of flow of stream.
 - a. Use a floating item on the water to determine how far it travels in one minute times the estimated number of minutes since the SSO first reached the water. Then measure and record width of stream and, in the same location, measure the depth of stream in five locations from left to right.
3. Move to three locations downstream:
 - a. 50 feet downstream from the point where the SSO enters the receiving water.
 - b. 200 feet downstream from the point where the SSO enters the receiving water.
 - c. A point nearest the extent of how far the SSO traveled following the calculation in step 1.

4. Follow the directions mentioned in “Point of Discharge Sampling/Testing” (steps 2 through 6).

Notes:

1. Do not touch micro sample container’s opening rim or bottom of the lid once the lid is removed.
2. Do not overfill sample containers because they contain preservatives including concentrated acids and caustics that are dangerous and harmful if contacted with skin, eyes, etc.
3. All samples should be labeled with location, date, time, preservation, and other pertinent information. Follow-up sampling and testing will be performed if determined to be necessary.

SANITARY SEWER OVERFLOW FIELD REPORT

All SSOs shall be thoroughly investigated and documented in order to meet the SWRCB reporting requirements. An SSO report shall be completed by the responding party(ies), regardless of the spill volume and discharge location. The SSO Field Report and information required for reporting can be found in Attachment A. The information required on the SSO Reporting Form is used to develop the Spill Technical Report to be submitted to the SWRCB through the CIWQS SSO online reporting platform.

To properly complete an SSO report:

- Determine if the SSO may have impacted surface waters (Burney Creek).
- Characterize the SSO by evaluating the following:
 - Sewage overflows to storm water drainage system.
 - Preplanned or emergency maintenance jobs involving bypass pumping.
 - SSOs where observation or on-site evidence clearly indicates all sanitary sewage was retained on land and did not reach surface water and where cleanup occurs.
 - Any other pertinent information relating to each individual SSO.
- Use one of the following criteria to estimate the start date/time of the SSO:
 - Information reported to BWD and later verified by a sewer investigator.
 - Visual observation.
- Use one of the following criteria to estimate the end date/time of the SSO:
 - When the blockage is cleared or flow is controlled or contained.
 - The arrival time of the responding party(ies) if the SSO stopped between the time it was reported and the time of arrival.
- Estimate the flow rate of the SSO in gallons per minute (GPM) by any of the methods available in Attachment B.
- Estimate the volume of the SSO when the rate of overflow is known by multiplying the duration of the overflow by the overflow rate.
- Photograph the event.
- Describe any damage to the exterior areas of public/private property.

All SSO Field Reports shall be maintained by the District for a minimum of five years and shall be made available for review by the SWRCB upon request.

EQUIPMENT

The District has the following equipment readily available for use in responding to, eliminating, and cleaning up SSOs:

- Three utility trucks with tools, strobe lights, and arrow bars.
- Four-wheel drive backhoe and various buckets.
- EnviroSight closed-circuit television camera system (push camera for laterals and small-diameter mainlines).
- Shamrock SP T650-19 trailer mounted sewer jetter with various nozzles and root cutter.
- VAC-TRON trailer-mounted vacuum and hydro-excavation unit.
- Caterpillar 430D series backhoe.
- Ridgid sewer lateral snake.
- Ventis 4-Gas monitor.
- Various trailers including dump trailer.
- Two 3-inch trash pumps.
- Hand tools, lights, cones, barricades, and sandbags.

SECTION IV: REGULATORY AGENCY NOTIFICATION AND REPORTING PLAN

This Regulatory Agency Notification and Reporting Plan establishes procedures that BWD shall follow to provide formal notice to Regulatory Agency Officials as necessary in the event of SSOs. Agency notification and reporting requirements vary depending on the quantity of sewage spilled and the location the spill reaches. The following reporting criteria explains to whom various forms of notifications should be sent and lists agencies/individuals to be contacted.

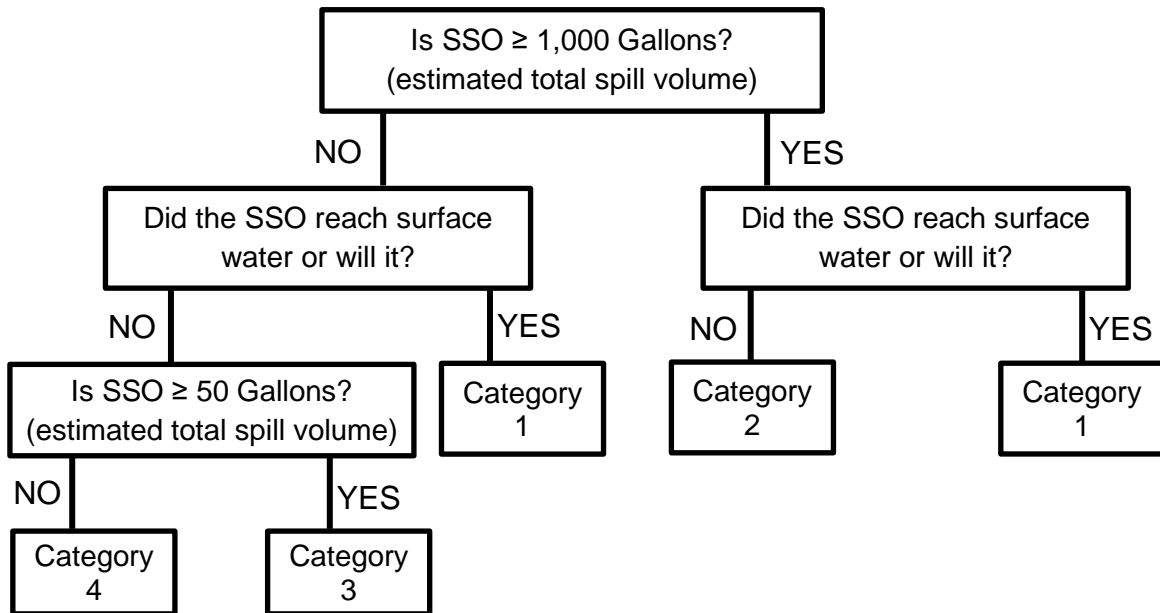
Based on information provided by the responding party(ies), the District Manager will determine the category of the spill according to the SWRCB requirements and follow the applicable notification and monitoring requirements. Contact information for the various regulatory agency officials is shown in Table 2.

Table 2 – Regulatory Agency Contacts

Name/Agency	Phone Number	Additional Phone Number	Important Notification Requirements
Valerie Rasmussen/SWRCB	530-224-6130		Must be notified within two hours of knowledge of a Category 1 or 2 spill
Shasta County Health Department	530-225-5073		
CalOES – Spill Notification	800-852-7550	916-845-8911	
Department of Fish and Game	530-225-2300		
Regional Water Quality Control Board	530-224-6130		

***Note:** When contacting OES, be prepared to give information related to the spill (e.g., spill volume, SSO description, SSO impacts). OES will supply a control number to be used when referring to the SSO. Record the control number on the SSO Reporting Form.

SSOS DETERMINATION OF CATEGORY



Category 1 SSO

Discharges of untreated or partially treated wastewater of any volume that:

- reaches surface water and/or reaches a drainage channel tributary to a surface water; or
- reaches a municipal separate storm sewer system and is not fully captured and returned to the sanitary sewer system or not otherwise captured and disposed of properly. Any volume of wastewater not recovered from the municipal separate storm sewer system is considered to have reached surface water unless the storm drain system discharges to a dedicated storm water or groundwater infiltration basin (e.g., infiltration pit, percolation pond).

Notification: Within two hours of becoming aware of any Category 1 SSO greater than or equal to 1,000 gallons discharged to a surface water or spilled in a location where it probably will be discharged to surface water, notify the California Office of Emergency Services (CalOES) and obtain a notification number.

Monitoring: Conduct spill-specific monitoring in addition to water quality sampling as indicated herein within 18 hours of initial knowledge of a spill of 50,000 gallons or greater to surface waters.

Reporting: Submit a draft Spill Report to CIWQS SSO Reporting platform within 3 business days of becoming aware of the SSO. Submit certified Spill Report Form within 15 calendar days of the spill end date.

Technical Report: Submit within 45 calendar days after the end date of any Category 1 SSO in which 50,000 gallons or greater are spilled to surface waters.

Category 2 SSO

Discharges of untreated or partially treated wastewater of 1,000 gallons or greater that does not reach surface water, a drainage channel, or a municipal separate storm sewer system unless the entire SSO discharged to the storm drain system is fully recovered and disposed of properly.

Notification: Within 2 hours of becoming aware of any Category 2 SSO greater than or equal to 1,000 gallons discharged to a surface water or spilled in a location where it probably will be discharged to surface water, notify CalOES and obtain a notification number.

Monitoring: Conduct spill-specific monitoring.

Reporting: Submit a draft Spill Technical Report to CIWQS SSO Reporting platform within 3 business days of becoming aware of the SSO. Submit certified Spill Report within 15 calendar days of the spill end date.

Category 3 SSO

Discharges of untreated or partially treated wastewater equal to or greater than 50 gallons and less than 1,000 gallons that does not discharge to surface water.

Notification: Not applicable.

Monitoring: Conduct spill-specific monitoring.

Reporting: Submit certified report to CIWQS within 30 calendar days of the end of the month in which SSO occurred. For example, if the SSO occurred on February 1, the District must certify the Category 3 SSO before March 30.

Category 4 SSO

Discharges of untreated or partially treated wastewater less than 50 gallons that does not discharge to surface waters.

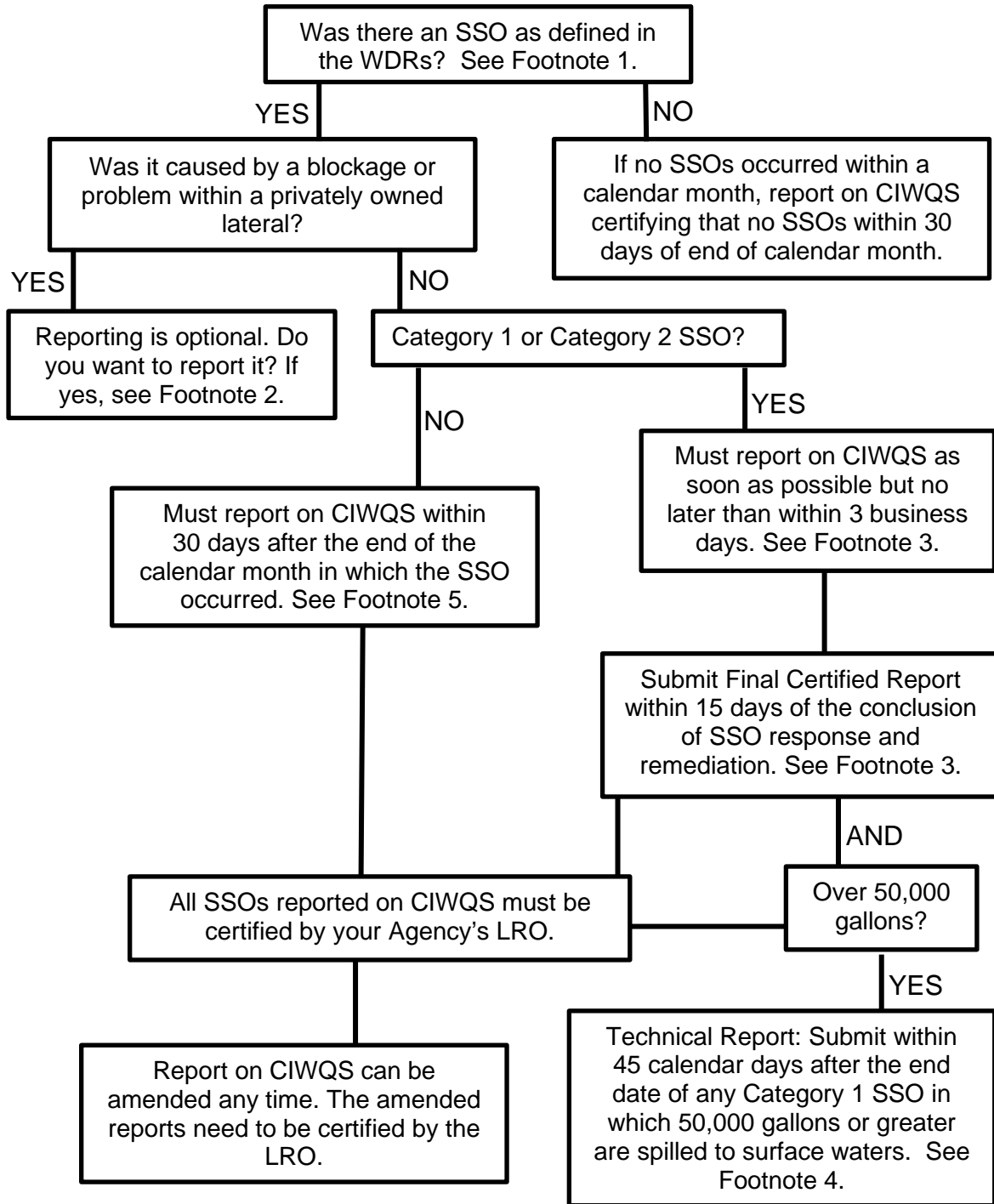
Notification: Not applicable.

Monitoring: Conduct spill-specific monitoring.

Reporting: If, during any calendar month, a Category 4 spills occur, certify monthly the estimated total spill volume exiting the sanitary sewer system and the total number of all Category 4 spills into the online CIWQS Sanitary Sewer System Database within 30 days after the end of the calendar month in which the spills occurred.

Upload and certify a report, in an acceptable digital format, of all Category 4 spills to the online CIWQS Sanitary Sewer System Database by February 1 after the end of the calendar year in which the spills occur.

SSO REPORTING REQUIREMENTS



SSO Reporting Requirements Footnotes:

1. WDR SSO: Any overflow, spill, discharge, or diversion of untreated or partially treated wastewater from a sanitary sewer system. SSOs include:
 - a. Overflows or releases of untreated or partially treated wastewater that reach waters of the United States;

- b. Overflows or releases of untreated or partially treated wastewater that do not reach waters of the United States; and
 - c. Wastewater backups into buildings and on private property that are caused by blockages or flow conditions within the publicly owned portion of a sanitary sewer system.
2. The District must identify the sewage discharge as occurring and caused by a private lateral, and a responsible party(ies) (other than the District) should be identified, if known.
 3. Category 1 and Category 2 SSOs: Report as soon as (1) the District has knowledge of the discharge, (2) reporting is possible, and (3) reporting can be provided without substantially impeding cleanup or other emergency measures. Initial reporting of Category 1 and 2 SSOs must be reported to the online SSO system as soon as possible but no later than three business days after the District is made aware of the SSO.
 4. Technical Report: Submit within 45 calendar days after the end date of any Category 1 SSO in which 50,000 gallons or greater are spilled to surface waters.
 5. Monthly Certified Spill Report: Submit within 30 calendar days after the end of the month in which the spill occurred.

At a minimum, the SSO Field Report included in Attachment A must be completely filled out prior to finalizing and certifying an SSO Spill Report for each category of SSO.

Draft Spill Report

A draft Spill Report shall be submitted to the CIWQS Online Sanitary Sewer Overflow Database within three business days of the District's knowledge of a Category 1 or Category 2 spill. The draft Spill Report must include the following:

1. Contact information, including name and telephone number of the District's contact person to respond to spill-specific question.
2. Spill location name.
3. Date and time the District was notified of or self-discovered the spill.
4. District operator arrival time.
5. Estimated spill start date and time.
6. Date and time the District notified CalOES and the assigned control number.
7. Description, photographs, and GPS coordinates of the system location where the spill originated:
 - a. If a single spill event results in multiple appearance points, provide GPS coordinates for the appearance point closest to the failure point and describe each additional appearance point in the spill appearance point explanation field.
8. Estimated total spill volume exiting the system.
9. Description and photographs of the extent of the spill and spill boundaries.

10. Did the spill reach a drainage conveyance system? If yes, include:
 - a. Description of the drainage conveyance system transporting the spill.
 - b. Photographs of the drainage conveyance system entry location(s).
 - c. Estimated spill volume fully recovered from the drainage conveyance system.
 - d. Estimated spill volume remaining within the drainage conveyance system.
11. Estimated total spill volume recovered.

In addition, a Category 1 draft Spill Report must also include:

1. Description and photographs of all discharge point(s) into the surface water.
2. Estimated spill volume that discharged to surface waters.

Certified Spill Report

A certified Spill Report shall be submitted within 15 calendar days of the spill end date for Category 1 or Category 2 spills into the CIWQS Online Sanitary Sewer Overflow Database. Upon submission of the certified Spill Report into the CIWQS Online Sanitary Sewer Overflow Database, the database will issue a final spill event identification number.

The District can update and add additional information to the certified Spill Report within 90 calendar days of the spill end date by amending the report or by adding an attachment to the Spill Report in the CIWQS Online Sanitary Sewer Overflow Database. After 90 calendar days, the District can contact the SWRCB at sanitarysewer@waterbaords.ca.gov to request to amend a Spill Report. The LRO will have to provide justification as to why the Spill Report was not amended within the original 90 days.

The LRO shall certify all Spill Reports and any amendments thereto. The certified Spill Report must include the following:

1. All of the same information that is required for the draft Spill Report.
2. Description of the spill event destination(s), including GPS coordinates, if available, that represent the full spread and reach of the spill.
3. Spill end date and time.
4. Description of how the spill volume estimations were calculated, including at a minimum:
 - a. The methodology, assumptions, and type of data relied upon, such as supervisory control and data acquisition (SCADA) records, flow monitoring, or other telemetry information used to estimate the volume of the spill discharged and the volume of the spill recovered (if any volume of the spill was recovered).
 - b. The methodology(ies), assumptions, and types of data relied upon for estimations of the spill start time and the spill end time.
5. Spill cause(s), e.g., root intrusion, grease deposition.
6. System failure location, e.g., main, lateral, pump station.
7. Description of the pipe material and estimated age of the pipe material at the failure location.
8. Description of the impact of the spill.

9. Whether or not the spill was associated with a storm event.
10. Description of spill response activities, including description of immediate spill containment and cleanup efforts.
11. Description of spill corrective action, including steps planned or taken to reduce, eliminate, and prevent reoccurrence of the spill and a schedule of major milestones for those steps.
12. Spill response completion date.
13. Detailed narrative of investigation and investigation findings of cause of spill.
14. Reasons for an ongoing investigation, as applicable, and the expected date of completion.
15. Whether or not the spill was located within 1,000 feet of a municipal surface water intake.

In addition, certified Spill Reports for Category 1 spills must also include:

1. Name and type of receiving water body(ies).
2. Description of the water body(ies), including but not limited to:
 - a. Observed impacts on aquatic life.
 - b. Public closure, restricted public access, temporary restricted use, and/or posted health warnings due to spill.
 - c. Responsible entity for closing/restricting use of water body(ies).
 - d. Number of days closed/restricted as a result of the spill.
3. If water quality samples were collected, identify sample locations and the parameters the water quality samples were analyzed for. If no samples were taken, "Not Applicable" shall be selected.

Spill Technical Report

Spill Technical Reports for Category 1 spills greater than 50,000 gallons shall be submitted within 45 calendar days of the spill end date. The Spill Technical Report must include the following:

1. Spill causes and circumstances, including at a minimum:
 - a. Complete and detailed explanation of how and when the spill was discovered.
 - b. Photographs illustrating the spill origin, the extent and reach of the spill, drainage conveyance system entrance and exit, receiving water, and post-cleanup site conditions.
 - c. Diagram showing the spill failure point, appearance point(s), the spill flow path, and ultimate destinations.
 - d. Detailed description of the methodology employed and available data used to calculate the discharge volume and, if applicable, the recovered spill volume.
 - e. Detailed description of the spill cause(s).
 - f. Description of the pipe material and estimated age of the pipe material at the failure location.
 - g. Description of the impact of the spill.
 - h. Copy of original field crew records used to document the spill.
 - i. Historical maintenance records for the failure location.

2. The District's response to the spill:
 - a. Chronological narrative description of all actions taken by the District to terminate the spill.
 - b. Explanation of how the SSMP SERP was implemented to respond to and mitigate the spill.
 - c. Final corrective action(s) completed and a schedule for planned corrective actions, including:
 - i. Local regulatory enforcement action taken against an illicit discharge in response to this spill, as applicable.
 - ii. Identifiable system modifications and operation and maintenance program modifications needed to prevent repeated spill occurrences.
 - iii. Necessary modifications to the SERP to incorporate lessons learned in responding to and mitigating the spill.
3. Water Quality Monitoring, including at minimum:
 - a. Description of all water quality sampling activities conducted.
 - b. List of pollutant and parameters monitored, sampled, and analyzed as required herein, in the WDRs, and by any other regulatory agency.
 - c. Laboratory results, including laboratory reports.
 - d. Detailed location map illustrating all water quality sampling points.
4. Evaluation of spill impact(s) including a description of short-term and long-term impact(s) to beneficial uses of the surface water.

Monthly Certified Spill Reporting

Category 3:

Category 3 spills are required to be reported to the CIWQS Online Sanitary Sewer Overflow Database within 30 calendar days after the end of the month in which the spill occurred. The Monthly Certified Spill Report should include the following:

1. Contact information, including name and telephone number of the District's contact person to respond to spill-specific questions.
2. Spill location name.
3. Date and time the District was notified of or self-discovered the spill.
4. District operator arrival time.
5. Estimated spill start date and time.
6. Description, photographs, and GPS coordinates of the system location where the spill originated:
 - a. If a single spill event results in multiple appearance points, provide GPS coordinates for the appearance point closest to the failure point and describe each additional appearance point in the spill appearance point explanation field.
7. Estimated total spill volume exiting the system.
8. Description and photographs of the extent of the spill and spill boundaries.

9. Did the spill reach a drainage conveyance system? If yes, include:
 - a. Description of the drainage conveyance system transporting the spill.
 - b. Photographs of the drainage conveyance system entry location(s).
 - c. Estimated spill volume fully recovered from the drainage conveyance system.
 - d. Estimated spill volume remaining within the drainage conveyance system.
10. Estimated total spill volume recovered.
11. Description of the spill event destination(s), including GPS coordinates, if available, that represent the full spread and reach of the spill.
12. Spill end date and time.
13. Description of how the spill volume estimations were calculated, including at a minimum:
 - a. The methodology, assumptions, and type of data relied upon, such as SCADA records, flow monitoring, or other telemetry information used to estimate the volume of the spill discharged and the volume of the spill recovered (if any volume of the spill was recovered).
 - b. The methodology(ies), assumptions, and type of data relied upon for estimations of the spill start time and the spill end time.
14. Spill cause(s), e.g., root intrusion, grease deposition.
15. System failure location, e.g., main, lateral, pump station.
16. Description of the pipe material and estimated age of the pipe material at the failure location.
17. Description of the impact of the spill.
18. Whether or not the spill was associated with a storm event.
19. Description of spill response activities including description of immediate spill containment and cleanup efforts.
20. Description of spill corrective action, including steps planned or taken to reduce, eliminate, and prevent reoccurrence of the spill and a schedule of major milestones for those steps, including at a minimum:
 - a. Local regulatory enforcement action taken against an illicit discharge in response to this spill, as applicable.
 - b. Identifiable system modifications and operation and maintenance program modifications needed to prevent repeated spill occurrences at the same spill event location, including:
 - i. Adjusted schedule/method of preventive maintenance.
 - ii. Planned rehabilitation or replacement of sanitary sewer asset.
 - iii. Inspected, repaired asset(s), or replaced defective asset(s).
 - iv. Capital improvements.
 - v. Documentation verifying immediately implemented system modifications and operating/maintenance modifications.
 - vi. Description of spill response activities.
 - vii. Spill response completion date.

- viii. Ongoing investigation efforts, and expected completion date of investigation to determine the full cause of spill.

21. Detailed narrative of investigation and investigation findings of cause of spill.

Category 4:

The District shall report and certify the estimated total spill volume exiting the sanitary sewer system and the total number of all Category 4 spills to the online CIWQS Online Sanitary Sewer Overflow Database within 30 calendar days after the end of the month in which the spills occurred.

No Spill Certification:

If either no spills occur during a calendar month or only Category 4 spills and/or District-owned and/or -operated lateral spills (that do not discharge to surface water) occur during a calendar month, the District shall certify one of the following:

- “No Spills” certification statement.
- “Category 4 Spills” and/or “Non-Category 1 Lateral Spills” certification statement.

If a spill starts in one calendar month and ends in a subsequent calendar month and the District has no further spills of any category in the subsequent calendar month, the District shall certify a “No Spills” statement for the subsequent calendar month.

If the District has no spills from its systems during a calendar month but the District voluntarily reported a spill from a private lateral or a private system, the District shall certify a “No Spills” statement for that calendar month.

If the District has spills from its owned and/or operated laterals during a calendar month, the District shall not certify a “No Spills” statement for that calendar month.

Annual Certified Spill Reporting

For all Category 4 spills and spills from its owned and/or operated laterals that are caused by a failure or blockage in the lateral and that do not discharge to a surface water, the District shall:

- maintain records for a minimum of five years;
- provide the records upon request by SWRCB or Regional Water Board staff; and
- annually upload and certify a report, in an appropriate digital format, of all recordkeeping of spills to the online CIWQS Online Sanitary Sewer Overflow Database by February 1 after the end of the calendar year in which the spills occurred.

A spill from a District-owned and/or -operated lateral that discharges to a surface water is a Category 1 spill. The Enrollee shall report all Category 1 spills as indicated herein and in the WDRs.

Annual Report

The District is required to submit an annual report by April 1 of each year beginning in 2024. The annual report must be entered directly into the CIWQS Online Sanitary Sewer Overflow Database and certified by the LRO. With the 2022 WDRs, questionnaires are no longer acceptable for the Annual Report. The Annual Report must address the following:

- Population served.
- Updated sewer system service area boundary map if the service area boundary has changed from original map submitted.
- Number of system operation and maintenance staff:
 - Entry level (less than two years of experience).
 - Journey level (greater than two years of experience).
 - Supervisory level.
 - Managerial level.
- Number of operation and maintenance staff certified as a certified collection system operator by the California Water Environmental Association (CWEA), with corresponding number of certified collection system operator grade levels (Grade I, II, III, IV, or V).
- System information:
 - Miles of system gravity and force mains.
 - Number of upper and lower service laterals connected to system.
 - Estimated number of upper and lower laterals owned and/or operated by the District.
 - Portion of laterals that is the District's responsibility.
 - Average age of the major components of the system infrastructure.
 - Number and age of pump stations.
 - Estimated total miles of the system pipeline not accessible for maintenance.
- Name and location of the treatment plant(s) receiving sanitary sewer system waste.
- Name of satellite sewer system tributaries.
- Number of gravity sewers aboveground or underground crossing a water body throughout system.
- Number of force mains (pressurized pipe) aboveground or underground crossing a water body throughout system.
- Number of siphons used to convey waste throughout the sewer system.
- Miles of sewer system cleaned.
- Miles of sewer system video inspected or comparable, e.g., video closed-circuit television or alternative inspection methods.
- System Performance Evaluation.
- Major spill causes, e.g., root intrusion, grease deposition.
- System infrastructure failure points, e.g., main, pump station, lateral.

- Ongoing spill investigations.
- Actions taken to address system deficiencies.

Private Lateral Sewage Discharge (PLSD)

Discharges of untreated or partially treated wastewater resulting from blockages or other problems within a privately owned sewer lateral connected to the District's sanitary sewer system or from other private sewer assets.

PLSDs that the District becomes aware of may be voluntarily reported to the CIWQS Online Sanitary Sewer Overflow Database. The SWRCB encourages Districts to notify CalOES for PLSDs greater than or equal to 1,000 gallons that result or may result in a discharge to surface waters.

Sanitary Sewer System Service Area Boundary Map

The District's LRO shall submit an up-to-date electronic spatial map of its sewer system service area boundary. The map must include the location of the wastewater treatment plant. The map should be updated as the District makes changes to its sanitary sewer system.

TRAINING

The District Manager and/or Field Superintendent provide training District staff upon initial hire, annually, and as needed. Any staff who may have a role in responding to, reporting, mitigating, and/or cleaning up a spill are required to attend the training. District training regarding the collection system and SSOs includes but is not limited to:

- Review of the SSMP and SERP including:
 - Response to SSOs, including practice drills.
 - SSO containment and clean-up procedures, including practice drills.
 - How to calculate/estimate SSO volume.
 - SSO Chain of Command.
 - SSO reporting procedures, including CIWQS reporting for the LRO and any data submitters.
- Water Quality Sampling Techniques, including hands on sampling.
- Work site and District safety protocols, including use of proper personal protective equipment.

Attendees at any training are required to sign in, and the District Manager and/or Field Superintendent signs off at the end of the training. All training records are kept on file at the District Office. The training record for the SSMP and SERP are included as an Attachment to the SERP in the District Office copy.

SPILL RESPONSE DRILLS

Annual training drills and field exercises are held to ensure all staff responsible for responding to, mitigating, and cleaning an SSO are thoroughly trained in District policy and procedures.

1. The Field Superintendent will simulate an SSO using potable water and/or other applicable means and methods. SSOs will be simulated either within the collection system or at a lift station. The Field Superintendent will report the SSO to the District Office.
2. The District Office staff will receive the call and follow the procedures under “Receipt of Information Regarding an SSO” section included herein. The District Office staff will dispatch the SSO to the applicable responding party(ies).
3. The responding party(ies) will respond to the simulated SSO and follow the procedures under “Sanitary Sewer Overflow Response Procedure” section included herein. The responding party(ies) will go through all of the steps starting at the initial response procedures until the SSO has been thoroughly cleaned up. The responding party(ies) will also fill out the SSO Field Report and practice estimating the spill volume.
4. The Field Superintendent will then go through the post-cleanup procedures included herein and submit the SSO Field Report to the District Manager.
5. The District Manger will review the SSO Field Report, simulate adding the SSO into the CIWQS Online Sanitary Sewer Overflow Database and then file the SSO Field Report with the training sign-in sheet.

SECTION V: DISTRIBUTION AND MAINTENANCE OF SERP

Annual updates to the SERP should be made to reflect all changes in policies and procedures that may be required to achieve its objectives. One copy of the SERP and any amendments should be distributed to each of the following departments and functional positions:

- District Office.
- District Manager.
- Field Superintendent.
- Utility Workers.
- Field Trucks.
- Treatment Plant.

All other personnel who may become incidentally involved in responding to overflows should be familiar with the SERP. Appended to the SERP copy kept at the District Office should be a sign-off sheet that states all employees and staff have read and completely understand the SERP. The sign-off sheet should be updated annually when the District performs their annual training and audit of the SERP.

ATTACHMENT A

SSO FIELD REPORT

Burney Water District SSO Field Report

SSO PLSD
Circle Category: 1, 2, 3 or 4

Document with Photographs and/or Video

Reporting party name and contact information

Date/Time Notified/Discovered the Spill _____
Estimated Arrival Date/Time _____
Estimated Spill Start Date/Time _____
Estimated Spill End Date/Time _____

SSO Location Details

Address, Location Description, and/or MH# _____
Cross Street _____
GPS coordinates (if available) _____

Spill Details

Number of Spill Appearance Points 1 to 10

Appearance Point(s) (Circle One or More)

Force Main	Clean Out (Public)	Pump Station
Gravity Main	Lateral (Private)	
Inside Building or Structure	Manhole	
Lateral Clean Out (Private)	Other Sewer System Structure	

Describe location(s) if other or multiple appearance points selected _____

Final Spill Destination (Choose all areas the wastewater flowed through and ultimately reached)

Beach	Other (specify below)	Street/Curb and Gutter
Building or Structure	Paved Surface	Surface Water
Drainage Channel	Separate Storm Drain	Unpaved Surface

Explain Final Spill Destination if Other Circled _____

Spill Cause (Circle One or More)

Air Relief Valve /Blow-Off Valve Failure	Grease Deposition (FOG)
Construction Diversion Failure	Inappropriate Discharge to CS
CS Maintenance Caused Spill/Damage	Natural Disaster
Damage by Others Not Related to CS	Non-Dispersibles
Construction/Maintenance (Specify Below)	Operator Error
Debris from Construction	Other (Specify below)
Debris from Lateral	Pipe Structural Problem/Failure
Debris – General	Pipe Structural Problem/Failure – Installation
Debris – Rags	Pump Station Failure – Controls
Flow Exceeded Capacity	Pump Station Failure – Mechanical

Describe Spill Cause _____

Where Did Failure Occur (Circle One or More)

- | | | |
|---------------------------------|----------------------------|----------------------|
| Air Relief Valve/Blow-Off Valve | Manhole | Pump Station – Power |
| Force Main | Other (Specify below) | Siphon |
| Gravity Mainline | Pump Station – Controls | |
| Lateral (Private) | Pump Station – Mechanicals | |

Describe Where Failure Occurred if Other _____

Was This Spill Associated with a Storm Event? Yes No

Pipe Diameter at Blockage or Failure? _____

Pipe Material at Blockage or Failure? _____

Estimated Age of Sewer Asset at Blockage or Failure? _____

Spill Response Activities (Circle One or More)

- | | |
|-----------------------------------|------------------------------------|
| Cleaned Up | Returned All Spill to Sewer |
| Mitigated Effects of Spill | Returned Portion of Spill to Sewer |
| Contained All or Portion of Spill | Property Owner Notified |
| Other (Specify below) | Other Enforcement Agency Notified |
| Restored Flow | |

Describe Response Activities if Other: _____

Spill Response Completion Date/Time _____

Spill Corrective Action Taken

- | | |
|---|--|
| •Adjust Schedule/Method of Preventative Maintenance | •Other (Specify below) |
| •Enforcement Action Against FOG Source | •Plan Rehabilitation or Replacement of Sewer |
| •Inspected Sewer Using CCTV to determine Cause | •Repaired Facilities or Replaced Defect |

Describe Corrective Action Taken if Other _____

Is There an Ongoing Investigation? Yes No

Reason for Ongoing Investigation _____

Visual Inspection Results from Impacted Water

(Describe observations and **take Photographs**) _____

Health Warnings Posted? Yes No

Did the Spill Result in a Beach Closure? Yes No

If Yes, Name of Closed Beach(es) _____

Name of Impacted Surface Water(s) _____

Spill Volume

Estimated Spill Volume that reached a separate storm drain that flows to a surface water body?

Gallons

Estimated Spill Volume recovered from a separate storm drain that flows to a surface water body?

Gallons

Estimated spill volume that reached a drainage channel that flows to a surface water body?

Gallons

Estimated spill volume recovered from a drainage channel that flows to surface water body?

Gallons

Estimated spill volume discharged directly to a surface water body?

Gallons

Estimated spill volume recovered from a drainage channel or surface water body?

Gallons

Estimated spill volume discharged to land or structure?

Gallons

Estimated spill volume recovered from the discharge to land?

Gallons

Volume Estimation Methods Used

A Separate Note Sheet may include Drawings, Calculations, and other details that determine Spill Volume

Please list all assumptions made in estimating spill volumes _____

Water Quality Samples Analyzed for (Circle One or More)

- Dissolved Oxygen
- Other Chemical Indicators – Specify below
- Biological Indicators – Specify below
- No Water Quality Samples Taken
- Not Applicable to this Spill
- Other – Specify below

Water Quality Samples Analyzed for _____

Water Quality Samples Reported to (Circle One or More)

- County Health Agency
- Regional Water Quality Control Board
- Other (Specify Below)
- No Water Quality Samples Taken
- Not Applicable to This Spill

If Other, Enter Agencies Reported to _____

Cal OES Control Number _____
Cal OES Called Date/Time _____

SSO Contact Information (Person Who can Answer Specific Questions about the Spill)

Name and Title _____
 Phone Number _____

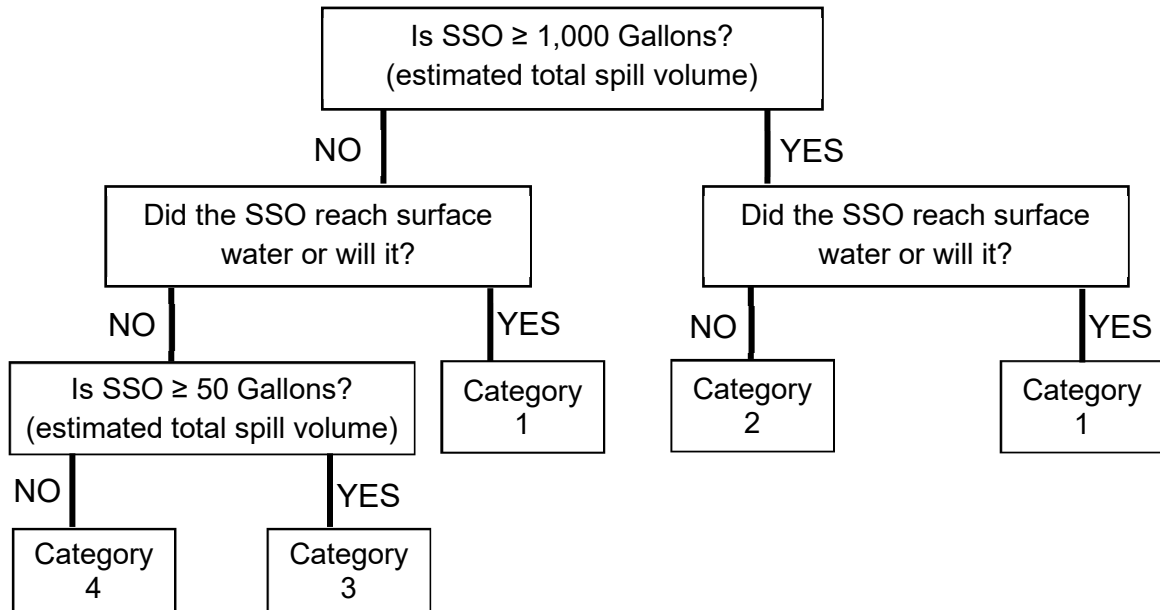
PLSD Contact Information (Person Who can Answer Specific Questions about the Spill)

Name and Phone Number (if different than RP) _____
 Address _____

Reported By/Date: _____

Submit Report to Legally Responsible Official

SSOS DETERMINATION OF CATEGORY



Category 1 SSO

Discharges of untreated or partially treated wastewater of any volume that:

- reaches surface water and/or reaches a drainage channel tributary to a surface water; or
- reaches a municipal separate storm sewer system and is not fully captured and returned to the sanitary sewer system or not otherwise captured and disposed of properly. Any volume of wastewater not recovered from the municipal separate storm sewer system is considered to have reached surface water unless the storm drain system discharges to a dedicated storm water or groundwater infiltration basin (e.g., infiltration pit, percolation pond).

Notification: Within two hours of becoming aware of any Category 1 SSO greater than or equal to 1,000 gallons discharged to a surface water or spilled in a location where it probably will be discharged to surface water, notify the California Office of Emergency Services (CalOES) and obtain a notification number.

Monitoring: Conduct spill-specific monitoring in addition to water quality sampling as indicated herein within 18 hours of initial knowledge of a spill of 50,000 gallons or greater to surface waters.

Reporting: Submit a draft Spill Report to CIWQS SSO Reporting platform within 3 business days of becoming aware of the SSO. Submit certified Spill Report Form within 15 calendar days of the spill end date.

Technical Report: Submit within 45 calendar days after the end date of any Category 1 SSO in which 50,000 gallons or greater are spilled to surface waters.

Category 2 SSO

Discharges of untreated or partially treated wastewater of 1,000 gallons or greater that does not reach surface water, a drainage channel, or a municipal separate storm sewer system unless the entire SSO discharged to the storm drain system is fully recovered and disposed of properly.

Notification: Within 2 hours of becoming aware of any Category 2 SSO greater than or equal to 1,000 gallons discharged to a surface water or spilled in a location where it probably will be discharged to surface water, notify CalOES and obtain a notification number.

Monitoring: Conduct spill-specific monitoring.

Reporting: Submit a draft Spill Technical Report to CIWQS SSO Reporting platform within 3 business days of becoming aware of the SSO. Submit certified Spill Report within 15 calendar days of the spill end date.

Category 3 SSO

Discharges of untreated or partially treated wastewater equal to or greater than 50 gallons and less than 1,000 gallons that does not discharge to surface water.

Notification: Not applicable.

Monitoring: Conduct spill-specific monitoring.

Reporting: Submit certified report to CIWQS within 30 calendar days of the end of the month in which SSO occurred. For example, if the SSO occurred on February 1, the District must certify the Category 3 SSO before March 30.

Category 4 SSO

Discharges of untreated or partially treated wastewater less than 50 gallons that does not discharge to surface waters.

Notification: Not applicable.

Monitoring: Conduct spill-specific monitoring.

Reporting: If, during any calendar month, a Category 4 spills occur, certify monthly the estimated total spill volume exiting the sanitary sewer system and the total number of all Category 4 spills into the online CIWQS Sanitary Sewer System Database within 30 days after the end of the calendar month in which the spills occurred.

Upload and certify a report, in an acceptable digital format, of all Category 4 spills to the online CIWQS Sanitary Sewer System Database by February 1 after the end of the calendar year in which the spills occur.

ATTACHMENT B

SSO VOLUME ESTIMATION

Attachment B - SSO Volume Estimation

**All SSO volume estimation methods taken from
Sewer Spill Estimation Guide developed by the
Orange County Area Waste Discharge
Requirements Steering Committee, Orange County,
CA, revised May 15, 2014.**

Disclaimer from *Sewer Spill Estimation Guide*: “Methods used for spill estimation and the estimates itself are solely the responsibility of the agency making the estimate. The authors or contributors to this Sewer Spill Estimation Guide do not accept any responsibility for the spill estimation methods used; their accuracy or any spill estimate determined through use of this guide.”

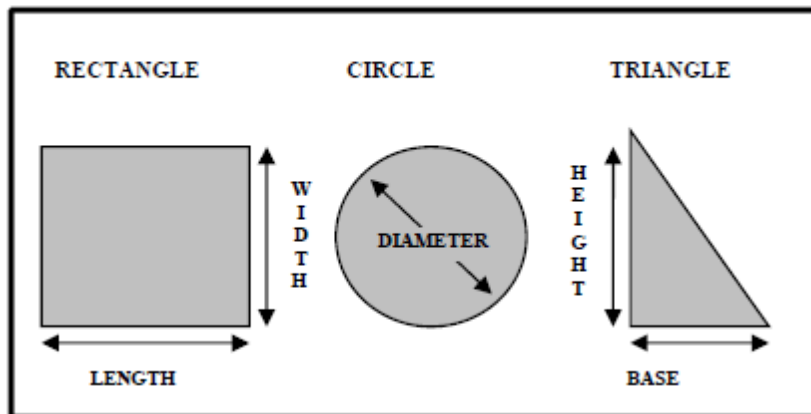
Visual or Eyeball Method

- Imagine the amount of water that would spill from a 1-gallon jug, 5-gallon bucket, or 50-gallon barrel.
- Estimate how many 1-gallon jugs, 5-gallon buckets, or 50-gallon barrels the SSO would fill.
- Use chart below to estimate total volume.

	How Many	Multiply by	Total Volume
1-gallon jug		1	
5-gallon bucket		5	
50-gallon barrel		50	

Measured Method

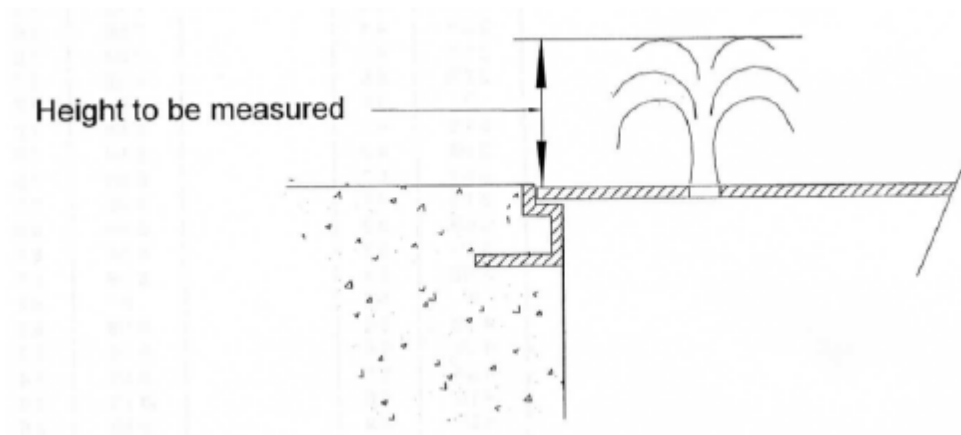
Common Shapes and Dimensions



1. Sketch the shape of the contained wastewater.
2. Measure or pace off the dimensions.
3. Measure the depth at several locations and select an average.
4. Convert the dimensions, including depth, to feet.
5. Calculate the area:
 - Rectangle: Area = length (feet) x width (feet)
 - Circle: Area = diameter (feet) x diameter (feet) x 3.14 divided by 4
 - Triangle: Area = base (feet) x height (feet) x 0.5
6. Multiply the area (square feet) times the depth (in feet) to obtain the volume in cubic feet.
7. Multiply the volume in cubic feet by 7.48 to convert to gallons.

Pick and Vent Holes in Manhole Covers

To estimate an SSO occurring from the manhole pick and vent holes, measure the height of the wastewater plume exiting the holes. Find that height and hole diameter on the manhole pick or vent hole chart to determine the flow rate escaping the pick/vent hole. Multiply the flow rate times the number of holes that are discharging wastewater. Once the total volume (gpm) has been determined, multiply the gpm by the duration of the SSO in minutes. This will result in the total estimated gallons of the SSO.



Pick and Vent Hole Estimation Chart

Estimated Flows thru Manhole Cover Vent Holes and Pick Holes for SSO estimating

Hole Dia. inches	Area sq. ft.	Coeff. of Vel. Cv	Coeff. Of Cont. Cc	C Cv x Cc	Water Ht inches	Water Ht inches	Water Ht feet	Q cfs	Q gpm	Q gph
	Formula: =0.785*A*x* A/x/144			Formula: =I*x*449			Formula: =G/x/12	Formula: =E*x*B*x*(S QRT(2*32. 2*H*x))	Formula: =I*x*449	Formula: =J*x*60
Vent Hole										
0.50	0.00136	0.945	0.70	0.662	1/16 th	0.063	0.005	0.0005	0.23	14
0.50	0.00136	0.945	0.70	0.662	1/8 th	0.125	0.010	0.0007	0.33	20
0.50	0.00136	0.945	0.70	0.662	1/4 th	0.250	0.021	0.0010	0.47	28
0.50	0.00136	0.945	0.70	0.662	one half	0.500	0.042	0.0015	0.66	40
0.50	0.00136	0.945	0.70	0.662	3/4 ths	0.750	0.063	0.0018	0.81	49
0.50	0.00136	0.945	0.70	0.662	1 inch	1.000	0.083	0.0021	0.94	56
0.50	0.00136	0.945	0.70	0.662	1 1/4 "	1.250	0.104	0.0023	1.05	63
0.50	0.00136	0.945	0.70	0.662	1 3/8"	1.375	0.115	0.0024	1.10	66
0.50	0.00136	0.945	0.70	0.662	1 1/2"	1.500	0.125	0.0026	1.16	69
0.50	0.00136	0.945	0.70	0.662	1 5/8"	1.625	0.135	0.0027	1.20	72
0.50	0.00136	0.945	0.70	0.662	1 3/4"	1.750	0.146	0.0028	1.24	74
0.50	0.00136	0.945	0.70	0.662	2 inches	2.000	0.167	0.0030	1.33	80
0.50	0.00136	0.945	0.70	0.662	2 1/4"	2.250	0.188	0.0031	1.41	84
0.50	0.00136	0.945	0.70	0.662	2 1/2"	2.500	0.208	0.0033	1.48	89
0.50	0.00136	0.945	0.70	0.662	2 3/4"	2.750	0.229	0.0035	1.56	93
0.50	0.00136	0.945	0.70	0.662	3 inches	3.000	0.250	0.0036	1.62	97
0.50	0.00136	0.945	0.70	0.662	3 1/4"	3.250	0.271	0.0038	1.69	101
0.50	0.00136	0.945	0.70	0.662	3 1/2"	3.500	0.292	0.0039	1.75	105
0.50	0.00136	0.945	0.70	0.662	3 3/4"	3.750	0.313	0.0040	1.82	109
0.50	0.00136	0.945	0.70	0.662	4.000	4.000	0.333	0.0042	1.88	113
Vent Hole										
0.75	0.00307	0.955	0.67	0.640	1/16 th	0.063	0.005	0.0011	0.51	31
0.75	0.00307	0.955	0.67	0.640	1/8 th	0.125	0.010	0.0016	0.72	43
0.75	0.00307	0.955	0.67	0.640	1/4 th	0.250	0.021	0.0023	1.02	61
0.75	0.00307	0.955	0.67	0.640	one half	0.500	0.042	0.0032	1.44	87
0.75	0.00307	0.955	0.67	0.640	3/4 ths	0.750	0.063	0.0039	1.77	106
0.75	0.00307	0.955	0.67	0.640	1 inch	1.000	0.083	0.0045	2.04	122
0.75	0.00307	0.955	0.67	0.640	1 1/4 "	1.250	0.104	0.0051	2.28	137
0.75	0.00307	0.955	0.67	0.640	1 3/8"	1.375	0.115	0.0053	2.39	144
0.75	0.00307	0.955	0.67	0.640	1 1/2"	1.500	0.125	0.0056	2.50	150
0.75	0.00307	0.955	0.67	0.640	1 5/8"	1.625	0.135	0.0058	2.60	156
0.75	0.00307	0.955	0.67	0.640	1 3/4"	1.750	0.146	0.0060	2.70	162
0.75	0.00307	0.955	0.67	0.640	2 inches	2.000	0.167	0.0064	2.89	173
0.75	0.00307	0.955	0.67	0.640	2 1/4"	2.250	0.188	0.0068	3.06	184
0.75	0.00307	0.955	0.67	0.640	2 1/2"	2.500	0.208	0.0072	3.23	194
0.75	0.00307	0.955	0.67	0.640	2 3/4"	2.750	0.229	0.0075	3.38	203
0.75	0.00307	0.955	0.67	0.640	3 inches	3.000	0.250	0.0079	3.63	212
0.75	0.00307	0.955	0.67	0.640	3 1/4"	3.250	0.271	0.0082	3.68	221
0.75	0.00307	0.955	0.67	0.640	3 1/2"	3.500	0.292	0.0085	3.82	229
0.75	0.00307	0.955	0.67	0.640	3 3/4"	3.750	0.313	0.0088	3.95	237
0.75	0.00307	0.955	0.67	0.640	4.000	4.000	0.333	0.0091	4.08	245
Vent Hole										
1.00	0.00545	0.960	0.65	0.624	1/16 th	0.063	0.005	0.0020	0.88	53
1.00	0.00545	0.960	0.65	0.624	1/8 th	0.125	0.010	0.0028	1.25	75
1.00	0.00545	0.960	0.65	0.624	1/4 th	0.250	0.021	0.0039	1.77	106
1.00	0.00545	0.960	0.65	0.624	one half	0.500	0.042	0.0056	2.50	150
1.00	0.00545	0.960	0.65	0.624	3/4 ths	0.750	0.063	0.0068	3.06	184
1.00	0.00545	0.960	0.65	0.624	1 inch	1.000	0.083	0.0079	3.54	212
1.00	0.00545	0.960	0.65	0.624	1 1/4 "	1.250	0.104	0.0088	3.96	237
1.00	0.00545	0.960	0.65	0.624	1 3/8"	1.375	0.115	0.0092	4.15	249
1.00	0.00545	0.960	0.65	0.624	1 1/2"	1.500	0.125	0.0097	4.33	260
1.00	0.00545	0.960	0.65	0.624	1 5/8"	1.625	0.135	0.0100	4.51	271
1.00	0.00545	0.960	0.65	0.624	1 3/4"	1.750	0.146	0.0104	4.68	281
1.00	0.00545	0.960	0.65	0.624	2 inches	2.000	0.167	0.0111	5.00	300
1.00	0.00545	0.960	0.65	0.624	2 1/4"	2.250	0.188	0.0118	5.31	318
1.00	0.00545	0.960	0.65	0.624	2 1/2"	2.500	0.208	0.0125	5.59	336
1.00	0.00545	0.960	0.65	0.624	2 3/4"	2.750	0.229	0.0131	5.87	352
1.00	0.00545	0.960	0.65	0.624	3 inches	3.000	0.250	0.0136	6.13	368

Pick and Vent Hole Estimation Chart - continued

Estimated Flows thru Manhole Cover Vent Holes and Pick Holes for SSO estimating

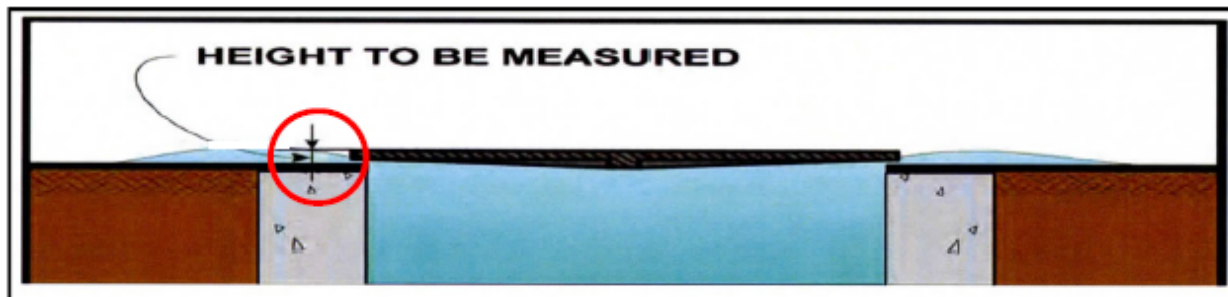
Hole Dia. Inches	Area sq. ft.	Coeff. of Vel. Cv	Coeff. Of Cont. Cc	C Cv x Cc	Water Ht Inches	Water Ht Inches	Water Ht feet	Q cfs	Q gpm	Q gph
	Formula: =0.785*A*x² Ax/144			Formula: =Ix*449			Formula: =Gx/12	Formula: =Ex*Bx*(S QRT(2*32. 2*Hx))	Formula: =Ix*449	Formula: =Jx*60
Vent Hole										
1.00	0.00545	0.960	0.65	0.624	3 1/4"	3.250	0.271	0.0142	6.38	383
1.00	0.00545	0.960	0.65	0.624	3 1/2"	3.500	0.292	0.0147	6.62	397
1.00	0.00545	0.960	0.65	0.624	3 3/4"	3.750	0.313	0.0153	6.85	411
1.00	0.00545	0.960	0.65	0.624	4.000	4.000	0.333	0.0158	7.08	425
Pick Hole semicircular area										
1.00	0.00273	0.960	0.65	0.624	1/16 th	0.063	0.005	0.0010	0.44	27
1.00	0.00273	0.960	0.65	0.624	1/8 th	0.125	0.010	0.0014	0.63	38
1.00	0.00273	0.960	0.65	0.624	1/4 th	0.250	0.021	0.0020	0.89	53
1.00	0.00273	0.960	0.65	0.624	one half	0.500	0.042	0.0028	1.25	75
1.00	0.00273	0.960	0.65	0.624	3/4 ths	0.750	0.063	0.0034	1.53	92
1.00	0.00273	0.960	0.65	0.624	1 inch	1.000	0.083	0.0039	1.77	106
1.00	0.00273	0.960	0.65	0.624	1-1/2 inch	1.500	0.125	0.0048	2.17	130
1.00	0.00273	0.960	0.65	0.624	2 inches	2.000	0.167	0.0056	2.51	150
1.00	0.00273	0.960	0.65	0.624	2 1/4"	2.250	0.188	0.0059	2.66	159
1.00	0.00273	0.960	0.65	0.624	2 1/2"	2.500	0.208	0.0062	2.80	168
1.00	0.00273	0.960	0.65	0.624	2 3/4"	2.750	0.229	0.0065	2.94	176
1.00	0.00273	0.960	0.65	0.624	3 inches	3.000	0.250	0.0068	3.07	184
1.00	0.00273	0.960	0.65	0.624	3 1/4"	3.250	0.271	0.0071	3.19	192
1.00	0.00273	0.960	0.65	0.624	3 1/2"	3.500	0.292	0.0074	3.31	199
1.00	0.00273	0.960	0.65	0.624	3 3/4"	3.750	0.313	0.0076	3.43	206
1.00	0.00273	0.960	0.65	0.624	4.000	4.000	0.333	0.0079	3.54	213

Manhole Ring

To estimate the volume in this example, measure the observed height of the wastewater plume exiting the manhole cover. Find the height and manhole diameter on the Manhole with Cover in Place to determine the flow rate escaping the manhole. (Be sure to use the appropriate chart for MH Cover in Place or MH Cover Removed). The chart has two columns, one for 24-inch-diameter covers and one for 36-inch-diameter covers.

Wastewater will also be escaping from the pick hole and must be accounted for separately by following the instructions for estimating an SSO from pick/vent hole. Multiply the flow rate times the number of holes that are discharging. The total estimated rate (gpm) is determined by adding together the rate being lost (gpm) from around the cover with the rate being lost (gpm) from the pick and/or vent hole(s). Once the total rate (gpm) has been determined, multiply the gpm by the duration of the SSO in minutes. This will result in the total estimated gallons of the SSO.

MH Cover in Place:



MH Cover Removed:



ESTIMATED SSO FLOW OUT OF MH WITH COVER IN PLACE

24" COVER

Height of spout above M/H rim H in inches	SSO FLOW Q		Min. Sewer size in which these flows are possible
	in gpm	in MGD	
1/4	1	0.001	
1/2	3	0.004	
3/4	6	0.008	
1	9	0.013	
1 1/4	12	0.018	
1 1/2	16	0.024	
1 3/4	21	0.030	
2	25	0.037	
2 1/4	31	0.045	
2 1/2	38	0.054	
2 3/4	45	0.065	
3	54	0.077	
3 1/4	64	0.092	
3 1/2	75	0.107	
3 3/4	87	0.125	
4	100	0.145	
4 1/4	115	0.166	
4 1/2	131	0.189	
4 3/4	148	0.214	
5	166	0.240	
5 1/4	185	0.266	
5 1/2	204	0.294	
5 3/4	224	0.322	
6	244	0.352	
6 1/4	265	0.382	
6 1/2	286	0.412	
6 3/4	308	0.444	
7	331	0.476	
7 1/4	354	0.509	
7 1/2	377	0.543	
7 3/4	401	0.578	
8	426	0.613	
8 1/4	451	0.649	
8 1/2	476	0.686	
8 3/4	502	0.723	
9	529	0.761	

36" COVER

Height of spout above M/H rim H in inches	SSO FLOW Q		Min. Sewer size in which these flows are possible
	in gpm	in MGD	
1/4	1	0.002	
1/2	4	0.006	
3/4	8	0.012	
1	13	0.019	
1 1/4	18	0.026	
1 1/2	24	0.035	
1 3/4	31	0.044	
2	37	0.054	
2 1/4	45	0.065	
2 1/2	55	0.079	
2 3/4	66	0.095	
3	78	0.113	
3 1/4	93	0.134	
3 1/2	109	0.157	
3 3/4	127	0.183	
4	147	0.211	
4 1/4	169	0.243	
4 1/2	192	0.276	
4 3/4	217	0.312	
5	243	0.350	
5 1/4	270	0.389	
5 1/2	299	0.430	
5 3/4	327	0.471	
6	357	0.514	
6 1/4	387	0.558	
6 1/2	419	0.603	
6 3/4	451	0.649	
7	483	0.696	
7 1/4	517	0.744	
7 1/2	551	0.794	
7 3/4	587	0.845	
8	622	0.896	
8 1/4	659	0.949	
8 1/2	697	1.003	
8 3/4	734	1.057	
9	773	1.113	

The formula used to develop Table 1 measures the maximum height of the water coming out of the maintenance manhole above the rim. The formula was taken from Hydraulics and Its Application by A.H. Gibson (Constable & Co. Limited).

ESTIMATED SSO FLOW OUT OF M/H WITH COVER REMOVED

24" FRAME

Water Height above M/H frame H in inches	SSO FLOW Q		Min. Sewer size in which these flows are possible
	in gpm	in MGD	
1/8	28	0.04	
1/4	62	0.09	
3/8	111	0.16	
1/2	160	0.23	
5/8	215	0.31	6"
3/4	354	0.51	8"
7/8	569	0.82	10"
1	799	1.15	12"
1 1/8	1,035	1.49	
1 1/4	1,340	1.93	15"
1 3/8	1,660	2.39	
1 1/2	1,986	2.86	
1 5/8	2,396	3.45	18"
1 3/4	2,799	4.03	
1 7/8	3,132	4.51	
2	3,444	4.96	21"
2 1/8	3,750	5.4	
2 1/4	3,986	5.74	
2 3/8	4,215	6.07	
2 1/2	4,437	6.39	
2 5/8	4,569	6.58	24"
2 3/4	4,687	6.75	
2 7/8	4,799	6.91	
3	4,910	7.07	

36" FRAME

Water Height above M/H frame H in inches	SSO FLOW Q		Min. Sewer size in which these flows are possible
	in gpm	in MGD	
1/8	49	0.07	
1/4	111	0.16	
3/8	187	0.27	6"
1/2	271	0.39	
5/8	361	0.52	8"
3/4	458	0.66	
7/8	556	0.8	10"
1	660	0.95	12"
1 1/8	1,035	1.49	
1 1/4	1,486	2.14	15"
1 3/8	1,951	2.81	
1 1/2	2,424	3.49	18"
1 5/8	2,903	4.18	
1 3/4	3,382	4.87	
1 7/8	3,917	5.64	21"
2	4,458	6.42	
2 1/8	5,000	7.2	24"
2 1/4	5,556	8	
2 3/8	6,118	8.81	
2 1/2	6,764	9.74	
2 5/8	7,403	10.66	
2 3/4	7,972	11.48	30"
2 7/8	8,521	12.27	
3	9,062	13.05	
3 1/8	9,604	13.83	
3 1/4	10,139	14.6	
3 3/8	10,625	15.3	36"
3 1/2	11,097	15.98	
3 5/8	11,569	16.66	
3 3/4	12,035	17.33	
3 7/8	12,486	17.98	
4	12,861	18.52	
4 1/8	13,076	18.83	
4 1/4	13,285	19.13	
4 3/8	13,486	19.42	

Pictorial Reference

City of San Diego Manhole Overflow Picture Chart



Wastewater Collection Division
(619) 654-4160



50 gpm



200 gpm



275 gpm

rv. 4/09

Reference Sheet for Estimating Sewer Spills
from Overflowing Sewer Manholes
All estimates are calculated in gallons per minute (gpm)



25 gpm



150 gpm



250 gpm



City of San Diego
Metropolitan Wastewater Department



5 gpm



100 gpm

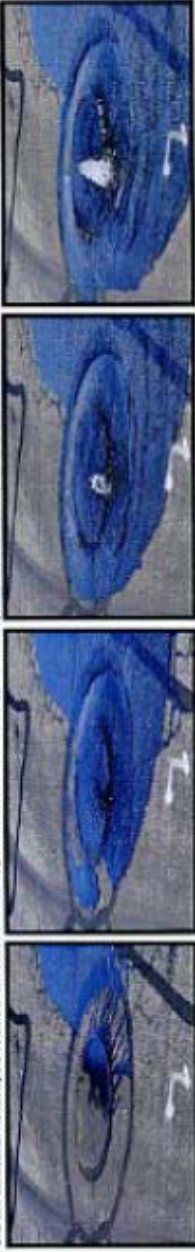


225 gpm

All photos were taken during a demonstration using metered water from a hydrant in cooperation with the City of San Diego's Water Department.

SSCSC Manhole Overflow Gauge

DISCLAIMER: This overflow simulation may appear differently from those in other systems because of the materials used in the configuration. Materials like with angle or multiple plastic tubes may appear differently during overflow conditions. However, the volume of overflow and the footprint of the well area should appear relatively the same under similar conditions.



5 gpm

25 gpm

50 gpm

100 gpm



150 gpm

200 gpm

300 gpm

400 gpm



SSCSC MANHOLE OVERFLOW GAUGE

Overflow Simulation courtesy of Eastern Municipal Water District



PROVIDING QUALITY TRAINING FOR COLLECTION SYSTEM PERSONNEL SINCE 1991

Water Matters! To continually increase the level of professional expertise, SCWA personnel are involved in the technical education, design, and construction of wastewater treatment plants, providing education and training, taking an active role in promoting certification, and recognizing proficiency in our field.

DISCLAIMER: This overflow simulation may appear differently from those in other systems because of the materials used in the configuration. Materials like with angle or multiple plastic tubes may appear differently during overflow conditions. However, the volume of overflow and the footprint of the well area should appear relatively the same under similar conditions.