



CITY OF HOT SPRINGS

Utilities Department

780 Adams Street

Hot Springs, Arkansas 71901

October 26, 2022

Mr. Alan J. York, Associate Director
Ms. Leslie Allen-Daniel, Enforcement Coordinator
Arkansas Energy & Environment Office of Water
Quality 5301 Northshore Drive
North Little Rock, Arkansas 72118

RE: Permit No. AR0033880, AFIN 26-00145
Hot Springs Utilities — Request for Bacteria Sampling and a Communications Plan for
Sanitary Sewer Overflows at Manhole 1750 into Gulpha Creek and Spencer Bay

Dear Mr. York:

DEQ recently accepted Hot Springs's Bacteria Sampling and a Communications Plan for Sanitary Sewer Overflows in Hot Springs Creek. Hot Springs is asking DEQ to approve a revision of our previously submitted plan for Manhole 1750/Gulpha Creek/Spencer Bay (attached). The revised plan mirrors the plan for SSOs in Hot Springs Creek. The proposed revision drops the Water Quality Analysis by an outside laboratory. After a year of testing, the overall results do not indicate that SSO's at Manhole 1750 have a significant impact on the levels of items tested by the WQA (pH SU, Temperature C, DO ppm, Conductivity uS/cm, Turbidity NTU, Alkalinity mg/L; BOD mg/L, TSS mg/L, Ammonia mg/L, Total Phosphorus mg/L.). Fecal coliforms are also removed from the plan. The meaningful data is actually related to E coli levels.

In addition, the proposed Standard Operating Procedure for SSO's discharging into Gulpha Creek and Spencer Bay aligns with the contact periods as depicted in Rule 2.507, mirroring the accepted plan for Hot Springs Creek SSO's.

I am asking that you review and accept the revised plan. I look forward to your response. Should you have any further questions, please contact me at mledbetter@cityhs.net or by phone at 501-651-7730.

Sincerely,

Monty Ledbetter
Utilities Director

Attachments: Exhibit A – Revised Manhole 1750 Sanitary Sewer Overflow Standard Operating Procedure
Exhibit B – Sampling Sites

cc: **Arkansas Energy & Environment:** Richard Healey, HEALEYR@adeq.state.ar.us; Leslie Allen-Daniel, ALLEN-DANIEL@adeq.state.ar.us | **City of Hot Springs:** Bill Burrough, City Manager, bburrough@cityhs.net; Todd Pillier, tpiller@cityhs.net; Gary Carnahan, gcarhahan@cityhs.net; Harold Mauldin, hmauldin@cityhs.net | Crist Engineers: Craig Johnson P.E., cjohnson@cristenengineers.com


EXHIBIT A

STANDARD OPERATING PROCEDURE			
SOP Title:	Manhole 1750 Sanitary Sewer Overflow Standard Operating Procedure		
SOP CODE:	6459.662.61-2022.10	CATEGORY:	SSO RESPONSE

OBJECTIVE	To provide clear and complete instructions for responding to sanitary sewer overflows at Manhole 1750 in particular.
BACKGROUND	Manhole 1750 has a history of overflows during periods of wet weather due to the hydraulic design combined with unidentified I&I in the Gulpha Sewer Basin. Any SSO during an average to dry weather condition would likely be due to a blockage or equipment failure at the Gulpha Pump Station.
SAFETY PROCEDURES	Personnel responding to any SSO must wear appropriate personal protective equipment (PPE) to prevent contact with raw sewage. PPE may include rubber gloves, rubber boots, impermeable coveralls and protective headwear with splash shield.
POTENTIAL HAZARDS	Manhole 1750 is located (117 Catherine Heights Rd.) near Gulpha Creek, which flows into Spencer Bay and on to Lake Catherine. SSO contamination impacts the water quality of an area used for recreational activities.
RESPONSE	<p>Upon notification from remote sensing equipment, notification by the remote float auto-dialer, SCADA, other staff, or public notification, the City of Hot Springs shall respond to investigate the potential occurrence of an SSO at Manhole 1750. Personnel responding to an SSO may encounter an emergency that requires immediate action. The first responders to the site during normal business hours will be Wastewater Lift Station crews. After hours, On-Call personnel will respond and call for back up personnel as needed.</p> <p>Responding personnel will:</p> <ol style="list-style-type: none"> 1. Determine if a SSO is occurring. 2. Determine whether the spill has reached Spencer Bay. 3. Upon validation that the spill has reached Spencer Bay, notify testing laboratory to acquire testing samples*. 4. Post ADH signs at locations shown in Exhibit A for Sample Site 1, should the spill reach Spencer Bay. 5. Provide a CodeRED in accordance with Public Notification requirement in this SOP for effected area as outlined in the notification boundary shown in Exhibit A. 6. Determine the cause of the problem (blockage, equipment failure at Gulpha Pump Station, wet weather I&I) 7. Determine what additional resources may be needed (equipment and materials). 8. Document any necessary information needed for reporting requirements. 9. Take photos of the impacted area. 10. Estimate the release volume based on size of the sewer, weather conditions and the extent of the release. 11. Report spill in accordance with Office of Water Quality, DEQ reporting requirements. <p>*Should the CHS lab not be available for immediate sampling, City of Hot Springs personnel will acquire a sample and hold in accordance with testing protocol and provide a chain of custody to the testing laboratory for further handling.</p>

CONTAINMENT	<p>Containment of an overflow is the responder's first priority. The methods used will vary on a case-by-case basis. The Manager, Crew Leader and maintenance responders will:</p> <ol style="list-style-type: none"> 1. Identify and obtain the necessary equipment and materials needed to contain the overflow. 2. Take immediate steps to contain the overflow (block path toward receiving water, recover with vacuum truck). 3. Determine whether additional containment measures are needed.
CORRECTION OF OVERFLOW	<p>The time required to correct the cause of the overflow depends on the determined cause. Responding crews must begin by investigating upstream manholes and the downstream lift station for evidence of blockage or equipment failure. When necessary, contractor services may be requested as an additional resource to abate the overflow.</p>
SAMPLING AND TESTING	<p>Upon response to the spill and validation that the spill is entering Spencer Bay, the following sampling and testing will be initiated for <i>E. Coli</i>.</p> <p><u>May 1 to September 30:</u></p> <ol style="list-style-type: none"> 1. Sampling shall occur at the locations shown on Exhibit A. 2. First <i>E.Coli</i> test shall be for Sample Site 1. 3. Results shall be made available to the City of Hot Springs within three (3) calendar days of the event from the testing laboratory. 4. Should the <i>E.Coli</i> test result exceed 126 cfu/100ml at Sample Site 1 as shown on Exhibit A, ADH signs will be posted for Sample Site 2, Sample Site 3, Sample Site 4 and Sample Site 5. 5. A second series of tests will be scheduled and conducted for Sample Site 2, Sample Site 3, Sample Site 4 and Sample Site 5, until two consecutive results for <i>E.Coli</i> are equal to or less than 126 cfu/100ml are achieved, at which time the testing will cease. 6. ADH Signs shall be removed upon satisfaction of E.Coli testing at or less than 126 cfu/100ml for Sample Sites 2, Sample Site 3, Sample Site 4 and Sample Site 5. 7. City of Hot Springs shall email all test results to DEQ's Office of Water Quality, Enforcement Branch at water-enforcement-report@adeq.state.ar.us upon receipt from the testing laboratory. <p><u>October 1 to April 30:</u></p> <ol style="list-style-type: none"> 1. Sampling shall occur at the locations shown on Exhibit A. 2. First <i>E.Coli</i> test shall be for Sample Site 1. 3. Results shall be made available to the City of Hot Springs within three (3) calendar days of the event from the testing laboratory. 4. Should the <i>E.Coli</i> test result exceed 630 cfu/100ml at Sample Site 1 as shown on Exhibit A, ADH signs will be posted for Sample Site 2, Sample Site 3, Sample Site 4 and Sample Site 5. 5. A second series of tests will be scheduled and conducted for Sample Site 2, Sample Site 3, Sample Site 4 and Sample Site 5 until two consecutive results for <i>E.Coli</i> are equal to or less than 630 cfu/100ml are achieved, at which time the testing will cease. 6. ADH Signs shall be removed upon satisfaction of E.Coli testing at or less than 630 cfu/100ml for Sample Sites 2, Sample Site 3, Sample Site 4 and Sample Site 5. 7. City of Hot Springs shall email all test results to DEQ's Office of Water Quality, Enforcement Branch at water-enforcement-report@adeq.state.ar.us upon receipt from the testing laboratory. <p>E Coli testing will be performed at the Hot Springs Regional Wastewater Treatment Plant which is an approved laboratory. Should it be necessary to outsource such analysis, the testing shall be conducted at approved Department of Environmental Quality laboratory.</p>

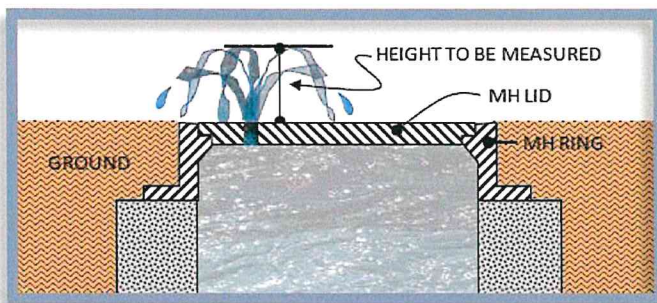
RECOVERY/CLEANUP	<p>Cleanup will be completed for all SSOs following containment and correction of the overflow. The recovery efforts will be directed at returning the affected to a pre-release condition as quickly and efficiently as possible. Cleanup activities will vary depending on the situation. Actions selected will be performed thoroughly. The general process is as follows:</p> <ol style="list-style-type: none"> 1. Response crew will use appropriate PPE during cleanup and recovery 2. Affected area will be cleaned as much as possible using rakes, shovels, hand picker tools and vacuum equipment. 3. Affected overflow area will be evaluated for appropriate disinfection. This may include applying lime to absorb liquid and raise the pH to reduce pathogens, applying a non-hazardous bio-enzymatic bacteria consuming product to reduce impact of pathogens on receiving waters. 4. Maintain, as far as possible, an appropriate buffer zone between limited areas and the waters of the state and the United States. 5. The immediate area around the overflow site will be inspected to ensure that no visual residue remains, including solids, papers, and rags, etc. 6. If flushing is warranted and ultimately performed, then all solids and debris must be collected and disposed of properly. 7. All wash-down water must be returned to the sewer system.
ADDITIONAL RESOURCES	<p>If the maintenance crew is unable to contain and clean up the affected area with typical maintenance equipment, then the next step will be to bring in contractor or other construction support. The following steps will be taken by on-call management:</p> <p>Assess and mark the boundaries of the suspected area for all utility service locations (marking materials such as white paint will be used to mark the boundaries, and "Locate" will be written to indicate the area).</p> <ol style="list-style-type: none"> 1. Call (811) CALL BEFORE YOU DIG. 2. Determine the additional resources and type of construction crew required to perform the task(s). 3. Call for the additional resources using existing approved contact lists as deemed necessary. 4. Enlist appropriate contract services. 5. Manage actions taken by the additional construction crew to clean up the affected area. 6. Ensure actions are documented following the SSO reporting procedures.
FIELD REPORTING	<p>Responding personnel will collect accurate and complete field data required to be submitted to DEQ. The following information will be documented:</p> <ol style="list-style-type: none"> 1. Date and time of notification (SCADA, Public Notification, Staff Report) 2. Date and time of dispatch 3. Date and time of arrival 4. Date and time of departure 5. Date and time of release ended (estimated as close as possible) 6. Location 7. Upstream manhole overflow status 8. Probable Cause 9. Estimated release 10. Visual impact observed 11. Actions to repair/mitigate
REGULATORY REPORTING	<p>Shawn Davis, Wastewater Collection Manager, or his designate will report the SSO to the Arkansas Energy and Environment Department, Office of Water Quality within 24 hours. The Online Sanitary Sewer Overflow (SSO) Reporting Form can be found at</p> <p style="text-align: center;">https://www.adeg.state.ar.us/water/enforcement/sso/submit.aspx</p>

<p>REGULATORY REPORTING continued...</p>	<p>This initial 24-hour report should include the following information:</p> <ol style="list-style-type: none"> 1. Permit Number 2. Location of overflow (manhole number or street address) 3. The receiving water (if applicable) 4. Cause of overflow (if known) 5. Estimated volume of overflow 6. Total duration of the overflow <p>If the "total duration of the overflow" is not known when the 24-hour SSO online report is submitted, then a follow-up report (5-day report) giving a detailed account of the overflow and the steps taken to resolve it must be submitted within 5 days of the overflow's discovery. This report can be submitted by email at ssoadeq@adeq.state.ar.us or by mail (include Attn: Water Quality Enforcement).</p> <p>A sample of the spill shall be taken prior to confluence of the receiving stream for <i>E.coli</i>. Results of the testing shall be reported to the DEQ's Office of Water Quality, Enforcement Branch within three calendar days of the event sampled. Test results will be emailed to water-enforcement-report@adeq.state.ar.us</p> <p>Sample locations are shown in Exhibit A.</p>
<p>PUBLIC NOTIFICATION</p>	<p>When SSO spill reaches Gulpha Creek and Spencer Bay, City of Hot Springs Utilities will take measures to inform those affected by the possible impact on water quality. The methods of public notification include:</p> <p>May 1 to September 30:</p> <ol style="list-style-type: none"> 1. Signs will be posted at locations as detailed in this SOP as first response to the spill advising against human contact with the affected water in accordance with this SOP. Signs will be removed when testing concludes bacteriological standards are achieved in accordance the sampling and testing section in this SOP. <p>Sign content shall be as follows:</p> <div style="text-align: center;"> <p><u>HEALTH ADVISORY</u> WATER QUALITY IN THIS AREA MAY BE UNSAFE SWIM AT YOUR OWN RISK Arkansas Department of Health</p>  <p>4815 West Markham Street • Little Rock Arkansas 72205-3867 Environmental Health (501)661-2171 Epidemiology (501)661-2893</p> </div> <ol style="list-style-type: none"> 2. A CodeRED alert will be sent to the population living near the water bodies in accordance with boundary shown on Exhibit A. <p><u>ADVISORY</u> <i>As of [date and time] a NO SWIMMING Advisory has been issued for the Spencer Bay area due to a wastewater overflow. Hot Springs Utilities will monitor the water quality in the area until it is safe for human contact. If you have any questions, you may contact Hot Springs Utilities at (501) 321-6200</i></p> <ol style="list-style-type: none"> 3. Upon satisfaction of <i>E.Coli</i> testing as outlined in Sampling and Testing section of the SOP the Recission of Advisory shall be provided. <p><u>RECISSION OF ADVISORY</u> <i>The NO SWIMMING Advisory issued on [date and time] for the Spencer Bay area has been canceled. The Bacteriological survey indicates that the water is safe for human contact. If you have any questions, you may contact Hot Springs Utilities at (501) 321-6200</i></p>

ASSOCIATED EQUIPMENT	The following equipment may be deployed for responding to any SSO:	
	<ol style="list-style-type: none"> 1. Flusher/Vac Truck 2. Backhoe 3. Dump Truck 4. Crew Trucks 5. Confined Space Entry Equipment 	<ol style="list-style-type: none"> 6. Shovels 7. Rakes 8. Trash Pickers/Grabbers 9. Trash Bags
PPE	The following personal protective equipment may be required when responding to any SSO:	
	<ol style="list-style-type: none"> 1. Hard Hats 2. Safety Glasses/Goggles 3. Face Shield 4. Ear/Noise Protection 	<ol style="list-style-type: none"> 5. Rubber gloves 6. Rubber Boots 7. Protective Body Suit 8. Respirators

The following pages are tools for responding personnel to use in estimating SSO amounts. The information is largely derived from the *Sewer Spill Estimation Guide* developed by the Orange County Area Waste Discharge Requirements Steering Committee, Orange County, CA.

LOSS FROM PICK AND VENT-HOLE SSOs



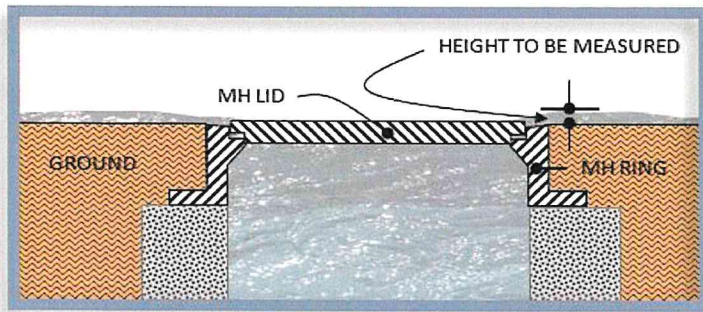
To estimate an SSO from a pick or vent-holes, measure the height of the wastewater plume exiting the hole(s). Find the height and hole diameter on the manhole pick or vent-hole chart to determine the flow rate. Multiply the flow rate time the number of holes that are discharging wastewater. Once the volume (gpm) has been determined, multiply the gpm by the duration of the SSO in minutes.

Pick and Vent Hole Estimation Chart (24" Cover)

Vent/Pick Hole Diameter (Inches)	Water Height (Inches)		Water Height (Feet)	Gallons per Minute	Gallons per Hour	Vent /Pick Hole Diameter (Inches)	Water Height (Inches)		Water Height (Feet)	Gallons per Minute	Gallons per Hour
0.50	1/16	0.063	0.005	0.23	14	0.75	1/16	0.063	0.005	0.51	31
0.50	1/8	0.125	0.010	0.33	20	0.75	1/8	0.125	0.010	0.72	43
0.50	1/4	0.250	0.021	0.47	28	0.75	1/4	0.250	0.021	1.02	61
0.50	1/2	0.500	0.042	0.66	40	0.75	1/2	0.500	0.042	1.44	86
0.50	3/4	0.750	0.063	0.81	49	0.75	3/4	0.750	0.053	1.77	106
0.50	1	1.000	0.083	0.94	56	0.75	1	1.000	0.083	2.04	122
0.50	1 1/4	1.250	0.104	1.05	63	0.75	1 1/4	1.250	0.104	2.28	137
0.50	1 3/8	1.375	0.115	1.10	66	0.75	1 3/8	1.375	0.115	2.39	143
0.50	1 1/2	1.500	0.125	1.15	69	0.75	1 1/2	1.500	0.125	2.50	150
0.50	1 5/8	1.625	0.135	1.20	72	0.75	1 5/8	1.625	0.135	2.60	156
0.50	1 3/4	1.750	0.146	1.24	74	0.75	1 3/4	1.750	0.146	2.7	162
0.50	2	2.000	0.167	1.33	80	0.75	2	2.000	0.167	2.89	173
0.50	2 1/4	2.25	0.188	1.41	85	0.75	2 1/4	2.250	0.188	3.06	184
0.50	2 1/2	2.50	0.208	1.48	89	0.75	2 1/2	2.500	0.208	3.23	194
0.50	2 3/4	2.75	0.229	1.56	94	0.75	2 3/4	2.750	0.229	3.38	203
0.50	3	3.00	0.250	1.62	97	0.75	3	3.000	0.250	3.53	212
0.50	3 1/4	3.25	0.271	1.69	101	0.75	3 1/4	3.250	0.271	3.66	220
0.50	3 1/2	3.50	0.292	1.75	105	0.75	3 1/2	3.500	0.292	3.82	229
0.50	3 3/4	3.75	0.313	1.82	109	0.75	3 3/4	3.750	0.313	3.95	237
0.50	4	4.00	0.333	1.88	113	0.75	4	4.000	0.333	4.08	245

Example: The measured height of the plume exiting the vent hole is 1 inch from a 1/2" hole and there are four vent holes. The total volume per minute would be 0.94 gpm (from chart above) or 3.76 gpm total (0.94 gpm x 4 holes). If the SSO lasted one hour, the total wastewater lost would be 226 gallons (3.76 gpm x 60 minutes = 225.6 gallons).

LOSS AROUND EDGE OF NON-VENTED COVER



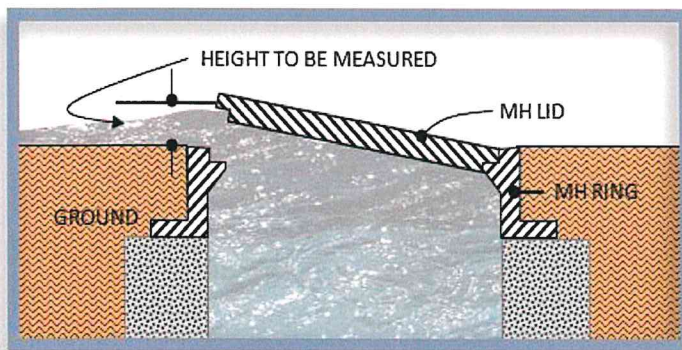
To estimate an SSO from a where wastewater is escaping from around the perimeter of the manhole cover, measure the observed height of the wastewater plume exiting the cover. Find the manhole diameter. Use the chart below to estimate volume of SSO. Wastewater escaping from vent/pick holes must be accounted for separately using Pick and Vent Hole Estimation Chart.

Estimated SSO Flow Out of Manhole with Cover in Place

24 Inch Cover							
Height of Spout above MH Rim (inches)	SSO Flow		Minimum Sewer Size in Which Flow is Possible	Height of Spout above MH Rim (inches)	SSO Flow		Minimum Sewer Size in Which Flow is Possible
	GPM	MGD			GPM	MGD	
1/4	1	0.001	6"	5	148	0.240	6"
1/2	3	0.004		5 1/4	166	0.266	
3/4	6	0.008		5 1/2	185	0.294	
1	9	0.013		5 3/4	204	0.322	
1 1/4	12	0.018		6	244	0.352	
1 1/2	16	0.024		6 1/4	265	0.382	
1 3/4	21	0.030	6 1/2	286	0.412	8"	
2	25	0.037	6 3/4	308	0.444		
2 1/4	31	0.045	7	331	0.476		
2 1/2	28	0.054	7 1/4	354	0.509		
2 3/4	45	0.065	7 1/2	377	0.543		
3	54	0.077	7 3/4	401	0.578		
3 1/4	64	0.092	8	426	0.613	8"	
3 1/2	64	0.107	8 1/4	451	0.649		
3 3/4	75	0.125	8 1/2	476	0.686		
4	87	0.145	8 3/4	502	0.723		
4 1/4	100	0.166	9	529	0.761		
4 1/2	115	0.189					
4 3/4	131	0.214					

Example: The measured height of the plume exiting a 24" manhole is 1 inch. The total volume would be 12 gpm from around the manhole cover. Calculate the total exiting from vent/pick hole(s) and add to the total lost around the ring. if the SSO lasted 1 hour (60 minutes), multiply 12 gpm x 60 minutes = 780 gallons per hour + amount lost through pick/vent holes.

LOSS FROM TILTED COVER



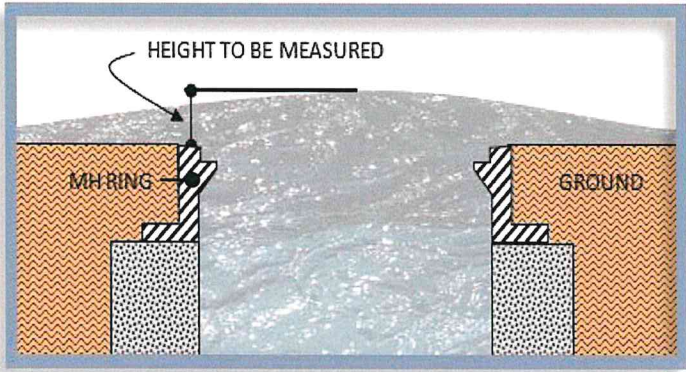
To estimate the volume of a spill that occurs when the SSO pressure only lifts one side of the cover, calculate the area (in square feet) from where the wastewater is escaping and the velocity (in square feet per second). The velocity is estimated from visual observation with 2 ft/sec or less being a small velocity, 4 to 5 ft/sec being a medium velocity and 7 ft/sec or higher being a large velocity. Velocities above 7 ft/sec may be strong enough to blow the cover off. Next, multiply the duration (in seconds) that the SSO occurred. Finally, multiply by 7.48 (gallons per cubic foot) to determine the volume of the SSO in gallons. $\text{Volume} = \text{Area (sq. ft.)} \times \text{Velocity (ft/sec)} \times \text{Time (seconds)} \times 7.48 \text{ (gal/cu. ft)}$

Area Calculation Chart	
Height of Flow (Inches)	24 Inch Manhole (Square Feet)
0.5	0.131
1	0.262
1.5	0.393
2	0.524
2.5	0.655
A3	0.786
3.5	0.917
4	1.048

Example: The measured height of the plume exiting the side or a 24-inch manhole is 2 inches. Using the above chart, a 2-inch plume from one side provides 0.524 square feet of area. The velocity is estimated at 4-feet/second (visual observation) with a duration of 1 hour. The total estimated SSO is 56,441 gallons (0.524 sq. ft x 4 ft/sec x 60 minutes x 7.48).

To estimate velocity, drop a small floating object into the flow and time how long it takes to travel a measured distance.

LOSS FROM A MANHOLE WITHOUT A LID IN PLACE



Typically, when an SSO reaches 7 cubic feet per second (approximately 3,000 gpm or about 4.32 MGD), the flow is sufficient to blow the manhole cover off. To estimate the volume, take several measurements from the surface close to the manhole ring to the top of the plume and average the findings. Find the average height of the plume on the Area Calculation Chart to determine the rate of flow exiting the manhole. Multiply the flow rate expressed in gallons per minute by the duration of the SSO in minutes to determine the total volume of the SSO.

Example: If the average height of the plume exiting a 24" manhole is 2 inches on the chart, the flow in gallons would be 3,444 gpm. If the flow lasted for 60 minutes, the amount of SSO would be estimated at 206,640 gallons (3,444 gpm x 60 min.).

24 Inch Cover									
Height of Spout above MH Rim (inches)	SSO Flow		Minimum Sewer Size in Which Flow is Possible	Height of Spout above MH Rim (inches)	SSO Flow		Minimum Sewer Size in Which Flow is Possible		
	GPM	MGD			GPM	MGD			
1/8	58	0.04	6	1 5/8	2,396	3.45	18		
1/4	62	0.09		1 3/4	2,799	4.03			
3/8	111	0.16		1 7/8	3,132	4.51			
1/2	160	0.23		2	3,444	4.96		21	
5/8	215	0.31		2 1/8	3,750	5.40			
3/4	354	0.51		8	2 1/4	3,986		5.74	
7/8	569	0.82		10	2 3/8	4,215		6.07	
1	799	1.15		12	2 1/2	4,437		6.39	
1 1/8	1,035	1.49		15	2 5/8	4,569		6.58	24
1 1/4	1,340	1.93			2 3/4	4,687		6.75	
1 3/8	1,660	2.39	2 7/8		4,799	6.91			
1 1/2	1,986	2.86	3		4,910	7.07			

PICTORIAL REFERENCE

Currently there are two pictorial charts widely used to assist with estimating SSO Volumes displayed below. To use either of these Pictorial references, select the picture that most accurately represents the SSO being estimated. Use the gpm associated with the picture multiplied by the duration of the SSO to estimate the spill volume.

Example: If the selected picture shows 300 gpm and the duration is 55 minutes, the total estimated spill volume would be 16,500 gallons (300 gpm x 55 minutes).

[Reference Sheet for Estimating Sewer Spills](#)

From the UC San Diego Overflow Emergency Response Field Guide



5 gpm



25 gpm



50 gpm



100 gpm



150 gpm



200 gpm



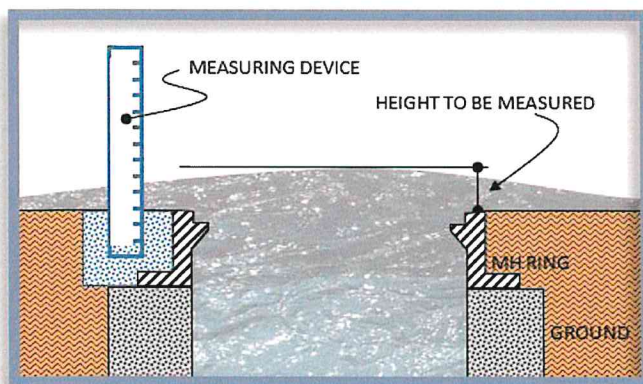
225 gpm



250 gpm

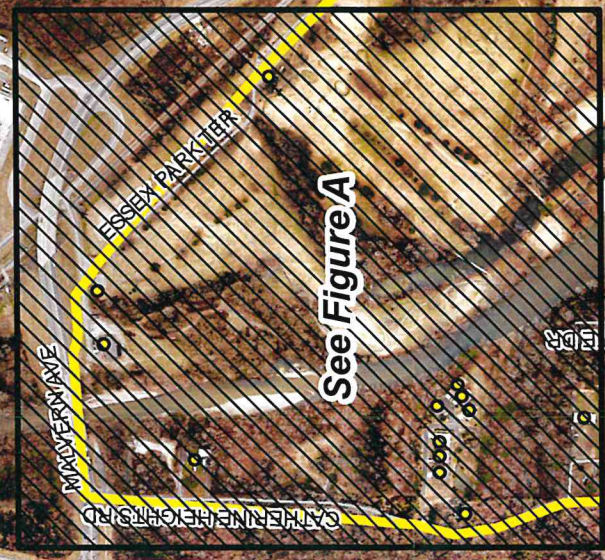
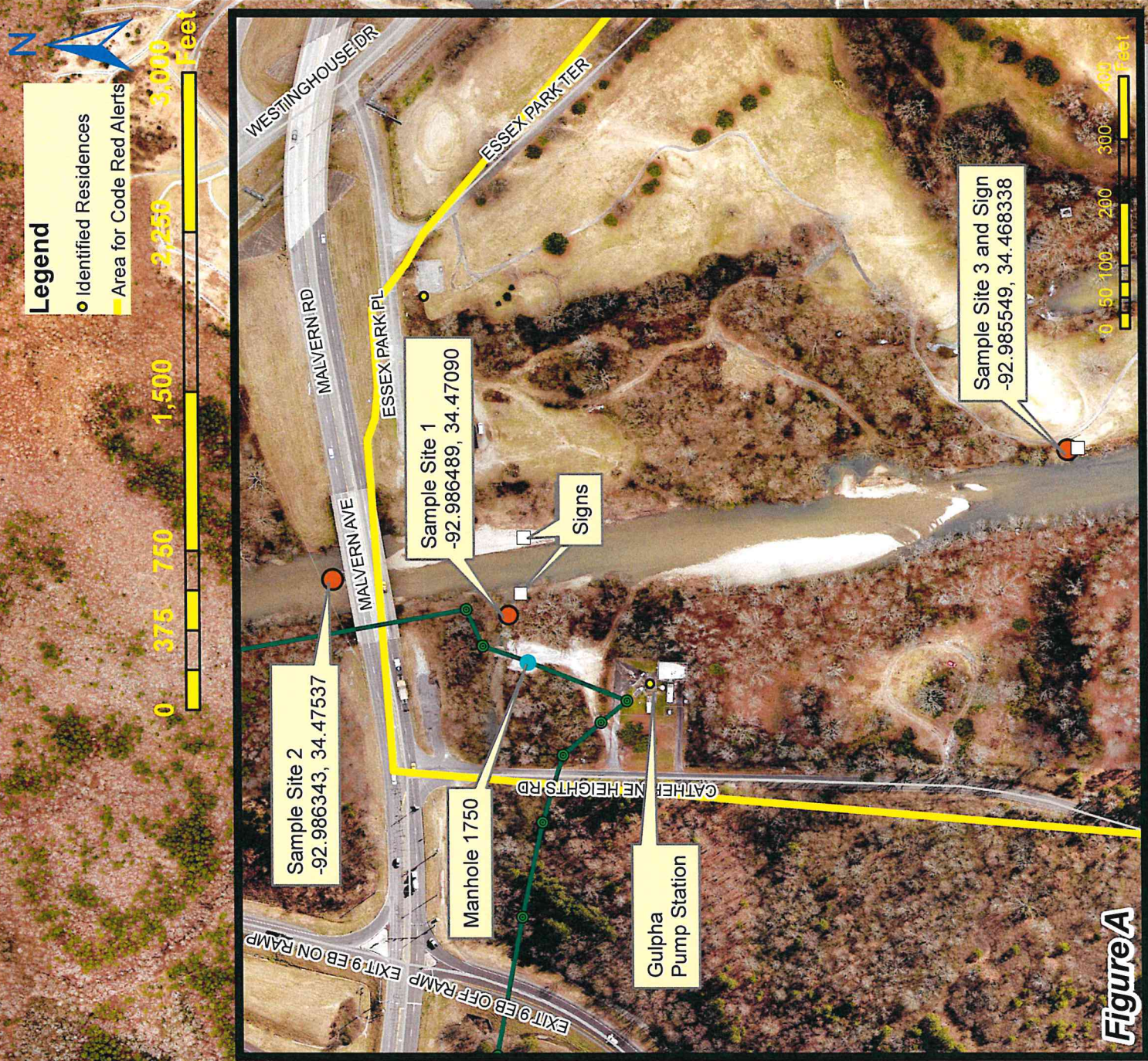


275 gpm



Hot Springs Utilities installed a measuring device at Manhole 1750 close to the rim of the manhole to assist personnel in measuring the height of the overflow plume.

Exhibit B



**Residential Areas
Around Gulpha Creek
and Spencer Bay**

THE DATA CONTAINED HEREIN WAS COMPILED FROM VARIOUS SOURCES FOR THE SOLE USE AND BENEFIT OF THE CITY OF HOT SPRINGS AND THE CITY OF HOT SPRINGS IS AT THE SOLE RISK OF THE USER AND WITH ACCEPTANCE OF THIS DATA, THE USER DOES HEREBY HOLD THE CITY OF HOT SPRINGS HARMLESS AND WITHOUT LIABILITY FROM ANY CLAIMS, COSTS OR DAMAGES OF ANY NATURE ARISING FROM IMPROPER USE OF THE DATA, OR USE BY ANOTHER PARTY ACCEPTANCE OR USE OF THIS DATA IS DONE WITHOUT ANY EXPRESSED OR IMPLIED WARRANTIES.