

CITY OF SPOKANE, WASHINGTON

CSO FLOW MONITORING PROJECT

FLOW, FREQUENCY AND DURATION

SEWER MAINTENANCE

**Monthly Report
December 2017**

January 12, 2018
CSOMonthly2017-12.docx

OVERFLOW EVENTS

Table 1 – Flow-Frequency-Duration, provides a summary of the flow volume calculated for the overflow pipes at each site for each event recorded. The flow calculations are based on flow monitor recorded level and velocity measurements.

Table 1 – Flow-Frequency-Duration

Line No.	Regulator Location	CSO No.	Freq.	Date of event ¹	Estimated Total Flow (Gallons) ²	Event Duration (Min. of Overflow)	Comments
1	AL Parkway Storage (West)	2	None				
2	NW Blvd @ Kiernan	6	1	Total	92,321	80	
				12/19	92,321	80	
3	Columbia @ Downriver	7	None				
4	Nettleton @ York/Buckeye	10	None				
5	Nora @ Pottet	12	1	Total	370,451	255	
				12/19	370,451	255	
6	Sherwood @ Summit	14	1	Total	281	10	
				12/19	281	10	
7	Nettleton @ Ohio	15	None				
8	A @ Linton	16B	None				
9	7th @ Inland Empire	19	None				
10	3500 High Drive	20	None				
11	Main @ Oak	22B	None				Missing data 12/07 10:15 to 12/17 10:20
12	Cedar @ Ide	23	1	Total	1,185	35	
				12/19	1,185	35	
13	Riverside @ Cedar (West)	24A	2	Total	2,099,635	705	
				12/19	2,044,735	600	
				12/30	54,900	105	
14	Riverside @ Cedar (East)	24B	None				
15	Cedar @ Main	25	1	Total	65,737	295	
				12/19	65,737	295	

¹ Designation as an event means that both a level and velocity reading were recorded concurrently. Not all level and velocity readings that were coincident are included in this report, however. The level and velocity readings that appear to be “background noise” from the electronic equipment are not included in the table.

² The flows presented in this column are calculated from measurements of velocity and depth of flow by electronic devices inserted in the water stream. These measurements are subject to singular and possibly cumulative errors. These errors result from limitations inherent in the measuring devices and from the introduction of a measuring device in to the physical flow stream. Also, error in velocity and depth measurements may be and typically are introduced by the physical conditions of each site. The flow numbers presented in this table are estimates only.

Line No.	Regulator Location	CSO No.	Freq.	Date of event ¹	Estimated Total Flow (Gallons) ²	Event Duration (Min. of Overflow)	Comments
16	Riverside @ Lincoln	26	2	Total	5,521,884	965	
				12/19	5,326,311	645	
				12/29	195,573	320	
17	Arthur @ 5th	33A	1	Total	5,169	70	
				12/19	5,169	70	
18	Perry @ 3rd	33B	1	Total	420,294	145	
				12/19	420,294	145	
19	Arthur @ 3rd	33C	1	Total	438	35	Missing data 12/10 12:00 to 12/10 12:05
				12/19	438	35	
20	Sprague Ave @ Sprague Wy	33-2	None				
21	Riverside @ Napa/Crestline	34	2	Total	1,507,710	1,120	Missing data 12/06 09:35 to 12/06 09:40
				12/19	1,405,695	710	
				12/29	102,015	410	
22	S. Riverton @ Magnolia	38	None				
23	Rebecca @ Upriver	41	None				Missing data 12/08 19:05 to 12/18 19:10
24	Riverton @ Surro	42	None				
25	RPWRF CSO-Related Bypass	N/A	None				Permit Section S13.H
Monthly Total			14		10,085,105	3,715	No Dry Weather Overflows No RPWRF CSO-Related Bypasses

Table 2 – Rainfall Summary³

	1004	343	344	Shadle	Hartson	CityHall	Joe Albi	RkwdVsta	Station8	W Drive	Nora&Pet	GEG			NWS			SFF
Date	Rain	Rain	Rain	Rain	Rain	Rain	Rain	Rain	Rain	Rain	Rain	Rain	Snow	Dpth	Rain	Snow	Dpth	Rain
12/01/17	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12/02/17	0.01	0.06	0.06	0.12	0.03	0.10	0.15	0.08	0.07	0.11	0.13	0.11	T	-	0.15	T	T	0.07
12/03/17	-	0.04	0.03	0.11	0.02	0.04	0.06	0.03	0.05	0.05	0.05	0.03	-	-	T	T	-	0.05
12/04/17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12/05/17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12/06/17	-	-	-	0.01	-	-	-	-	-	-	0.01	-	-	-	-	-	-	-
12/07/17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12/08/17	-	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12/09/17	-	-	-	-	-	-	-	-	-	-	-	T	T	-	T	T	-	-
12/10/17	-	-	-	-	-	-	-	-	-	-	-	T	T	-	-	-	-	-
12/11/17	-	-	-	-	-	-	-	-	-	-	-	T	T	-	-	-	-	-
12/12/17	-	-	-	-	-	-	-	-	-	-	-	T	T	-	T	-	-	-
12/13/17	-	-	-	-	-	-	-	-	-	-	-	T	T	T	T	T	T	T
12/14/17	-	-	-	-	-	-	-	-	-	-	-	T	T	-	T	-	-	-
12/15/17	-	-	-	-	0.30	-	0.02	0.37	0.03	0.03	-	0.42	7.10	T	0.42	5.80	T	0.30
12/16/17	-	-	-	-	0.01	-	0.01	0.03	-	0.02	-	0.01	0.10	6	T	0.10	M	T
12/17/17	0.02	-	-	0.23	0.05	0.36	0.03	0.15	0.24	0.02	0.09	0.13	1.40	6	0.15	1.10	7	0.11
12/18/17	0.01P	0.45	0.59	0.19	0.02	0.16	0.47	0.03	0.29	0.54	0.42	0.03	T	5	0.03	T	5	0.04
12/19/17	E	1.25	1.09	1.03	1.19	1.25	1.13	1.73	1.29	1.25	1.14	1.12	2.90	3	1.20	3.20	4	0.96
12/20/17	E	-	-	-	-	-	-	-	-	-	-	T	T	T	-	-	1	-
12/21/17	E	-	-	-	-	-	-	-	-	-	-	T	T	T	-	-	-	-
12/22/17	E	-	-	-	-	-	-	-	-	0.01	-	0.02	0.40	T	0.01	0.10	T	0.01
12/23/17	E	-	-	-	-	-	-	-	-	-	-	T	T	T	T	T	T	-
12/24/17	E	-	-	-	-	-	-	-	-	-	-	0.02	0.30	-	T	0.10	T	0.02
12/25/17	E	-	-	-	-	-	-	0.04	-	-	-	0.08	1.50	1	0.07	1.20	1	0.07
12/26/17	E	-	-	-	-	-	-	-	-	-	-	T	0.10	2	T	T	2	T
12/27/17	E	-	-	-	-	-	-	0.03	-	-	-	0.04	0.70	2	0.02	0.80	2	0.04
12/28/17	E	-	-	-	0.07	-	-	0.11	-	-	-	0.08	0.90	2	0.04	0.40	2	0.15
12/29/17	E	-	-	0.27	0.79	0.30	0.19	1.26	0.38	0.33	0.23	0.79	1.70	3.00	0.78	3.30	3.00	0.86
12/30/17	E	0.74	0.53	0.22	0.02	0.88	0.43	0.01	0.57	0.34	0.24	T	T	3.00	-	-	4.00	-
12/31/17	E	-	-	-	-	-	-	-	-	-	-	-	-	2.00	-	-	4.00	-
Total	0.09P	2.55	2.30	2.18	2.50	3.09	2.49	3.87	2.92	2.70	2.31	2.88	17.10		2.87	16.10		2.68

- E - Erroneous data
- M - Missing data
- P - Partial missing data
- T - Trace of rain/snow
- X - Out of Service

Table 3 – Rain Gauges

1004	Airway Heights
343	23 rd & Ray
344	Div ision & Manito
Shadle	Shadle Water Tower (was 345)
Hartson	Ray & Hartson (was 346)
City Hall	City Hall (was 347)
Joe Albi	Joe Albi Stadium
RkwdVsta	Rockwood Vista
Station8	Fire Station 8, Rebecca & Mission
W Drive	West Drive Reservoir
Nora&Pet	Nora & Pettet
GEG	Spokane Airport
NWS	National Weather Service – Spokane
SFF	Spokane Felts Field

³ Some rain gauges are heated. Consequently they will tend to record snow melt immediately as rain. The rain gauges that are not heated will typically register snow melt when it actually melts.