

**CITY OF SPOKANE,
WASHINGTON**

CSO FLOW MONITORING PROJECT

FLOW, FREQUENCY AND DURATION

SEWER MAINTENANCE

**Monthly Report
December 2021**

January 5, 2022
CSOMonthly2021-12.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 Ave	6	None				
3	Columbia @ Downriver	7	None				
4	Cochran @ York	10	None				
5	Pettet Dr & Mansfield	12	None				
6	Sherwood @ Summit	14	None				
7	Nettleton @ Ohio	15	None				
8	Clarke @ Riverside	16	None				
9	7th @ Inland Empire	19	None				Data missing 12/27 13:10 to 12/27 13:15
10	Cedar St @ Summit	23-1	None				Data missing 12/28 08:25 to 12/28 08:30
11	Sprague @ Adams	24-1	None				
12	Cedar @ Main	25	None				
13	Lincoln @ Spokane Falls	26	None				
14	Liberty Park (west end)	33-1	None				
15	Sprague Ave west of Sprague Wy	33-2	None				

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 @ Crestline	34	None				
17	S. Riverton @ Magnolia	38-1	None				
18	Rebecca @ Upriver	41	None				Data missing 12/15 12:55 to 12/15 13:10
19	Surro west of Waterworks	42	None				
20	RPWRF CSO-Related Bypass	N/A	None				Permit Section S13.H
	Monthly Total		0		0	0	No Dry Weather Overflows No RPWRF CSO-Related Bypasses

Table 2 – Rainfall Summary³

Date	343 Rain	344 Rain	Shadle Rain	Hartson Rain	CityHall Rain	Joe_Albi Rain	RkwdVsta Rain	Station8 Rain	W_Drive Rain	Nora&Pet Rain	Lincoln Rain	Northeast Rain	Crest&Hoff Rain	GEG Rain	Snow	Depth	NWS Rain	Snow	Depth	SFF Rain
12/01/21	-	-	-	0P	-	0P	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12/02/21	-	-	-	0P	-	0P	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12/03/21	-	-	-	0P	-	0M	-	-	-	-	-	-	-	T	T	-	-	-	-	-
12/04/21	0.03	0.02	0.02	0P	0.02	0P	0.02	0.01	0.02	0.02	0.03	0.03	0.04	0.03	0.30	-	0.02	0.10	-	0.02
12/05/21	-	-	-	0P	-	0P	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12/06/21	-	-	-	0.01P	-	0P	-	0.06	-	-	-	-	-	0.07	1.70	2.00	0.06	1.10	1.00	0.09
12/07/21	-	-	-	0P	0.08	0P	0.04	-	0.11	-	0.05	-	-	-	-	1.00	0.02	0.10	1.00	-
12/08/21	0.04	0.11	0.03	0P	0.01	0P	0.06	-	-	0.10	0.04	0.09	0.12	-	-	1.00	-	-	T	-
12/09/21	-	-	-	0P	-	0P	-	-	-	-	-	-	-	T	0.10	-	T	0.10	T	0.01
12/10/21	0.03	-	-	0P	0.01	0M	0.01	-	0.01	0.01	-	0.01	-	0.01	T	-	T	T	T	T
12/11/21	0.14	0.09	0.04	0.01P	0.08	0.03	0.13	0.09	0.10	0.08	0.06	0.07	0.04	0.04	T	-	0.01	T	-	0.09
12/12/21	0.02	0.01	-	0P	-	-	-	-	0.01	-	-	-	-	0.01	T	-	T	T	-	0.01
12/13/21	0.08	0.08	0.06	0P	0.07	0.06	0.08	0.04	0.09	0.07	0.09	0.06	0.08	0.06	-	-	0.05	T	-	0.04
12/14/21	-	-	-	0M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12/15/21	-	-	-	0P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12/16/21	-	-	-	0P	0.01	0.05	-	0.07	0.03	-	-	-	-	0.06	1.20	T	0.07	1.00	1.00	0.10
12/17/21	-	-	-	0P	-	-	-	0P	-	-	-	-	-	-	-	1.00	-	-	1.00	-
12/18/21	0.36	0.42	0.07	0.11	0.38	0.23	0.40	0.01P	0.28	0.42	0.33	0.35	0.46	0.31	2.90	1.00	0.25	2.20	1.00	0.21
12/19/21	-	-	-	-	-	-	-	0P	0.12	-	-	-	-	-	-	1.00	-	-	T	-
12/20/21	-	-	-	0.07	-	0.03	-	0P	-	-	-	-	-	0.12	1.60	1.00	0.07	0.90	1.00	0.09
12/21/21	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01	T	2.00	0.01	0.20	1.00	T
12/22/21	0.40	0.33	0.27	0.15	0.36	0.17	0.37	0.21	0.15	0.09	0.28	-	0.08	0.20	1.40	3.00	0.07	1.70	3.00	0.21
12/23/21	0.06	0.04	0.03	0.01	0.03	0.03	0.03	0.02	0.31	0.29	0.08	-	0.30	0.02	T	1.00	T	T	2.00	0.02
12/24/21	0.03	0.01	0.01	0.05	0.08	0.06	0.06	0.02	0.08	0.03	0.03	-	0.04	0.17	3.90	T	0.16	2.90	1.00	0.03
12/25/21	-	0.01	-	-	-	-	-	-	0.01	0.02	0.01	-	-	0.01	0.30	4.00	T	0.10	4.00	T
12/26/21	-	-	-	-	-	-	-	0.01	-	-	-	-	-	T	0.30	3.00	T	0.10	3.00	0.02
12/27/21	-	-	-	-	-	-	-	0.01	-	-	-	0P	-	0.01	0.20	3.00	0.03	0.70	3.00	0.01
12/28/21	-	-	-	-	-	-	-	-	-	-	-	-	-	T	0.80	3.00	T	0.30	3.00	T
12/29/21	-	-	0P	-	-	-	-	-	-	-	-	-	-	0.04	0.40	3.00	0.02	0.60	3.00	T
12/30/21	-	-	-	-	-	-	-	0.11	-	-	-	-	-	0.18	2.60	4.00	0.16	2.60	5.00	0.11
12/31/21	-	-	-	-	-	-	-	-	-	-	-	-	-	T	T	5.00	T	T	6.00	T
Total	1.19	1.12	0.53P	0.41M	1.13	0.66M	1.20	0.66P	1.32	1.13	1.00	0.61P	1.16	1.35	17.70		1.00	14.70		1.06

E – Erroneous Data (Over/Under Count)

M – Missing Data (Whole Day)

P – Partial Missing Data (Less Than 1 Day)

T – Trace of Rain/Snow

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.

Table 3 – Rain Gauges

343	23 rd & Ray
344	Division & Manito
Shadle	Shadle Water Tower (was 345)
Hartson	Ray & Hartson (was 346)
CityHall	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
Lincoln	Lincoln Rd Lift Station
Northeast	Northeast Lift Station
Crest&Hoff	Crestline & Hoffman
GEG	Spokane Airport
NWS	National Weather Service – Spokane
SFF	Spokane Felts Field