



City of Spokane

Wastewater Management



Combined Sewer Overflow Annual Report – FY 2000

June 4, 2001

City of Spokane
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 Wastewater Management Department

1) **Introduction:** There are 24 outfalls associated with the City of Spokane’s combined sewer collection system. These are identified in the City’s NPDES Permit No. WA-002447-3 and are listed as follows:

OUTFALL NUMBER	OVERFLOW STRUCTURE DESCRIPTION	OUTFALL DESCRIPTION
Discharges to Spokane River (North Bank)		
002	Hartley @ NW Blvd.	0.5 miles downstream of WWTP
003	Assembly @ NW Blvd Albi Assembly @ NW Blvd – Royal Ct	0.2 miles downstream of WWTP
006	Kiernan @ NW Blvd	0.25 miles upstream of WWTP
007	Columbia Circle @ NW Blvd	0.4 miles upstream of WWTP
010	Cochran @ Buckeye	At Downriver Bridge
012	Nora @ Pettet Dr	0.55 miles upstream of Bridge
014	Sherwood @ Summit	2.0 miles upstream of Bridge
015	Ohio @ Nettleton	2.5 miles upstream of Bridge
Discharges to Spokane River (South Bank)		
016	'A' @ Linton – Westgrove 'A' @ Linton - Geiger	1.45 miles downstream of Monroe St Dam
018	'A' @ Linton - Federal	1.45 miles downstream of Dam
Discharges to Latah Creek		
019	Seventh @ Cannon	At High Bridge (East Side)
020	S.Manito Relief Sewer	2.65 miles upstream of High Bridge
Discharges to Spokane River (South Bank)		
022	Main @ Oak	0.7 miles downstream at Monroe St Dam
Discharges to Spokane River (North Bank)		
023	Cedar @ Ide	0.3 miles downstream at Monroe St Dam
Discharges to Spokane River (South Bank)		
024	Cedar @ Riverside Cedar @ Riverside	0.3 miles downstream at Monroe St Dam
025	Cedar @ Main	0.3 miles downstream at Monroe St Dam
026	Lincoln @ Spokane Falls Blvd	At Monroe St Dam
033	Fifth @ Arthur Third @ Perry Third @ Arthur First @ Arthur	0.15 miles upstream of J. Keefe Bridge
034	Crestline @ Riverside	At Trent Bridge
038	Magnolia @ S. Riverton	0.15 miles upstream of Mission
039	Altamont @ S. Riverton	0.5 miles downstream of Greene
040	Regal @ S. Riverton	0.25 miles downstream of Greene
Discharges to Spokane River (North Bank)		
041	Rebecca @ Upriver Dr	0.5 miles upstream of Greene
Discharges to Spokane River (South Bank)		
042	Surro Dr	0.5 miles downstream of Upriver Dam

The combined sewer system is comprised of approximately 400 miles of sewers. The system has 30 combined sewer overflow regulating structures, which periodically overflow, to the 24 outfalls listed previously. Figure 1 shows the locations of the 24 permitted outfalls and their tributary basins. The regulators that overflow to a common outfall are 3b & 3c; 16a & 16b; 24a& 24b; and 33a thru 33d.

The interceptor system has two inline pump stations, which are located downstream from CSO regulators. Regulators 16a, 16b, 18, and 19 are located upstream from the Clarke Street Pump Station. Similarly, Regulator 22 is located upstream of the Elm Street Pump Station.

The NPDES Permit requires the City to submit a Combined Sewer Overflow Report on an annual basis. This report is to detail the past year's frequency and volume of combined sewage from each CSO outfall. Field monitoring is required to determine these parameters. The monitors will also determine the duration of the overflow. The City has developed a report format to summarize this information.

In addition to flow monitoring, the City collects rainfall data from five (5) gauges distributed throughout the City and also utilizes records from the Spokane International Airport weather station. Overflow and rainfall data are collected, analyzed, and archived for future use.

2) Baseline Conditions: The 1979 CSO Abatement Plan, the 1994 CSO Reduction Plan, or subsequent analyses, did not establish a combined sewer overflow baseline for frequency of occurrence or volume of discharge from each CSO regulator. Consequently, a baseline condition is not available to assess the status of system performance in comparison with the past. The methodology for identifying the base line conditions for each CSO outfall will be developed as part of the CSO program efforts currently underway.

The 1994 CSO Reduction Plan provides an average annual volume and frequency, which can be used as a benchmark to compare or evaluate the current outfall performance. These values are presented on the following table:

Average Annual CSO Volumes and Frequencies¹

CSO No.	CSO Location	Annual Overflow Volume (MG) ²	Annual Frequency of Overflows ²
2	NW Blvd. @ Hartley	1.72	40
3b	NW Blvd. @ Assembly	0.00	1
3c	NW Blvd. @ Assembly	1.94	51
6	Kiernan @ NW Blvd.	14.12	34
7	Columbia Circle	0.81	13
10	Cochran @ Buckeye	0.27	7
12	Nora @ Pettet	9.65	35
14	Sherwood @ Summit	0.86	17
15	Nettleton @ Ohio	4.47	34
16a	"A" St. @ Linton	0.01	0
16b	"A" St. @ Linton	0.50	12
18	1 st St. @ "A" St.	0.00	1
19	Under FW Bridge	0.00	0
20	High Dr. near 33 rd	0.55	3
22	Main @ Oak St.	0.00	0
23	Cedar @ Ide	1.69	18
24a	Cedar @ Riverside	2.12	3
24b	Cedar @ Riverside	0.00	0
25	Cedar @ Main	0.35	19
26	Lincoln @ Spokane Falls	19.73	15
33a	5 th @ Arthur	0.00	0
33b	3 rd @ Perry	2.30	5
33c	3 rd @ Arthur	0.12	11
33d	1 st @ Arthur	2.03	42
34	Riverside @ Napa/Crestline	11.78	13
38	Magnolia @ S. Riverton	0.28	10
39	Altamont @ S. Riverton	1.06	34
40	Regal @ S. Riverton	1.45	32
41	Rebecca @ Upriver Dr.	0.52	11
42	Surro @ S. Riverton	0.31	7
Total		78.64	468

1 From 1994 Combined Sewer Overflow Reduction Plan, City Project No. 13918, Table 7-1.

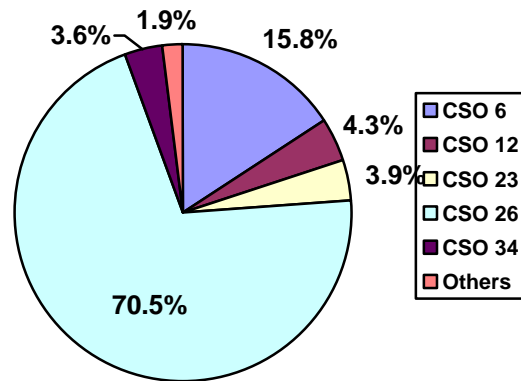
2 With Snow Melt.

The annual frequency and volume depicted on this table is based upon a simulation of actual rainfall data over a ten-year period (1979 thru 1988). Precipitation data was used to calibrate the model to the monitored flows recorded for the 1994 Plan.

3) Combined Sewer Overflows:

In accordance with the requirements of the City of Spokane's NPDES Permit for combined sewer overflow discharges, summarized below are the frequencies, volumes and durations of CSO events recorded between September 2000 and December 2000. It is estimated that a total of 1.75 million gallons of wet weather induced combined sewage discharged to local receiving waters in these four months. These discharges were associated with eighteen (18) rain events and were distributed across eleven (11) permitted CSO outfalls. However, discharges at CSO's 6 and 26 accounted for 86 percent of the total overflow volume measured. Detailed information on individual CSO events is provided in an Appendix "A" to this report.

It should be noted that flow monitoring instrumentation was installed at the ten (10) priority CSO sites by July 1, 2000 in accordance with NPDES permit requirements and the City of Spokane's Flow Monitoring Plan. However, successful data collection did not occur at these installations until after September 1, 2000 due to recurring hardware failures that prevented the collection of either flow velocity data or flow depth data. Hence, estimates of CSO flow rates and volumes could not be confidently determined. Through close coordination between the City of Spokane and the flow monitoring equipment manufacturer, specific hardware issues have been resolved at these ten (10) priority CSO outfalls.



In response to public inquiries of potential CSO events during dry weather, the City responded to two (2) separate events, one in September and one in October in the year 2000 at CSO outfalls #10 and #26 respectively. As shown in copies of the resulting fecal coliform testing by the City's lab (Appendix "B"), flows were tested and the results clearly indicate that the flow was stormwater, not sanitary sewage. In addition, visual inspection of the CSO regulators resulted in the same confirmation. Both of these CSO outfalls have adjoining separated stormwater basins that use the same outfall for directing flows to the river.

**Summary of Monitored
CSO Frequencies & Volumes**

September 2000 through December 2000¹

CSO OUTFALL	UPSTREAM REGULATOR ID²	MONITORED CSO VOLUME (gallons)	MONITORED CSO FREQUENCY (No. of Occurrences)	MONITORED CSO DURATION (minutes)
02	02	0	0	0
03	03B	Not monitored in 2000 – See Note #3		
	03C	0	0	0
	Total:	0	0	
06	06	276,267	3	550
07	07	Not monitored in 2000 – See Note #3		
10	10	0	0	0
12	12	74,464	10	815
14	14	Not monitored in 2000 – See Note #3		
15	15	51	1	25
16	16A	Not monitored in 2000 – See Note #3		
	16B	Not monitored in 2000 – See Note #3		
	Total:	0	0	
18	18	Not monitored in 2000 – See Note #3		
19	19	Not monitored in 2000 – See Note #3		
20	20	Not monitored in 2000 – See Note #3		
22	22B	0	0	0
23	23	67,802	3	240
24	24A	7,589	3	280
	24B	269	2	55
	Total:	7,858	5	
25	25	Not monitored in 2000 – See Note #3		

CSO OUTFALL	UPSTREAM REGULATOR ID ²	MONITORED CSO VOLUME (gallons)	MONITORED CSO FREQUENCY (No. of Occurrences)	MONITORED CSO DURATION (minutes)
26	26	1,234,239	4	505
33	33A	0	0	0
	33B	2,282	1	175
	33C	9,093	5	195
	33D	10,496	5	900
	Total:	21,871	7	
34	34	63,333	2	130
38	38	86	1	40
39	39	41	1	25
40	40	3,524	5	570
41	41	Not monitored in 2000 – See Note #3		
42	42	0	0	0
TOTAL:		1,749,536	18	

1. Tabulated information compiled from flow monitoring data collected between September 2000 and December 2000. Although flow monitoring equipment was installed at ten (10) priority CSO sites by July 1, 2000 in accordance with NPDES Permit requirements and Ecology-approved flow monitoring plan, equipment failures prevented collection of data necessary to calculate flow values until after September 1, 2000 at many monitoring sites.
2. Ten (10) priority flow monitoring sites identified in **BOLDFACE** type.
3. In accordance with flow monitoring plan (dated April 28, 2000), installation of flow monitoring equipment at this site not scheduled for 2000. The remaining 20 CSO regulators will begin to generate data upon installation of flow monitoring equipment in 2001.

4) CSO Control Projects Completed in 2000:

The City of Spokane has completed nearly \$50 million in capital improvements to reduce combined overflows to the Spokane River since 1983. This has reduced combined sewer overflows on average by an estimated 491 million gallons per year. This represents an 86% reduction of volume. The City's current efforts are detailed as follows:

Table list of Controls completed in 2000:

CSO NPDES BASIN NO.	LOCATION OF IMPROVEMENT	WATER BODY	CONTROL METHOD
3C	A.L. White Parkway West of AWWTP	Spokane River	System Reconfiguration – Weir modification & Alignment
6	Kiernan @ N.W. Blvd.	Spokane River	System Reconfiguration – Weir modification
26	4 th Avenue – Between Stevens & Howard St.	Spokane River	Flow Control – Storm retention/detention tank
26	Emily Court	Spokane River	Flow Control – Storm separation
26	Lincoln @ Spokane Falls Blvd.	Spokane River	Reconstruct CSO regulator for flow & floatable control
26	Cowley Creek @ 7 th & Division – Preliminary Design	Spokane River	System Reconfiguration – inflow reduction
33D	Interceptor Line Cleaning	Spokane River	Transport – Remove line debris
34	East of Lacey @ 25 th Avenue – Design	Spokane River	Flow Control – Retention/Detention Pond Control
34	33 rd @ Pittsburg Street	Spokane River	I/I – MH Seal
34	40 th @ Ray Street	Spokane River	I/I – MH Seal
38	Magnolia @ South Riverton	Spokane River	Transport – Repair Line

This table lists the CSO Control projects for 2001:

CSO NPDES BASIN NO.	LOCATION OF IMPROVEMENT	WATER BODY	CONTROL METHOD
26	Central Business District	Spokane River	I/I – Line repair and seal
15 –16	Interceptor Line Cleaning	Spokane River	Transport – Remove line debris and inspect
26	Cowley Creek @ 7 th & Division – Construction Begin	Spokane River	System Reconfiguration – Inflow Reduction
26	PAML – Grand Blvd. & 9 th Ave.	Spokane River	Flow Control – Storm detention & retention tank
34	Lincoln Hts. Sub-basin – 25 th to 34 th Ave. & Ray St. to S.E. Blvd.	Spokane River	Flow Control – Storm separation and connection to Retention/Detention Pond

Appendix “A”

Detailed CSO Event Information
September through December - FY 2000

Appendix “B”

Fecal Coliform Testing Results
September & October - FY 2000