

City of Springfield, Ohio
Wastewater Treatment Plant
Annual Summary 2009

2009	Influent				Bypass					
	Flow	Influent CBOD	Influent Suspended Solids	Influent Ammonia	Rain	Bypass Occurrence	Bypass Time	Total Bypass Flow	CB-BOD	TSS
Month	MGD	mg/L	mg/L	mg/L	Inches	Each	Hours	MG	mg/L	mg/L
	Average	Average	Average	Average	Total	Total	Total	Total	Average	Average
Jan	14.1	134	123	12.64	2.31	2	12.9	0.6		
Feb	17.3	118	99	10.53	1.70	5	25.2	9.8		
Mar	13.8	110	119	11.68	1.83	3	3.7	1.5		
Apr	16.5	107	104	10.31	3.60	8	24.4	10.4	31	20
May	16.3	111	113	10.88	3.77	6	28.2	18.9	81	160
Jun	14.0	123	149	12.45	4.53	4	11.8	10.7	131	208
Jul	13.9	118	136	13.08	5.91	5	26.4	26.6	50	113
Aug	14.5	119	140	12.31	5.11	5	17.2	15.1	127	249
Sep	15.8	138	175	11.81	3.31	6	17.2	15.8	62	253
Oct	16.0	133	156	12.00	5.18	7	29.8	25.7	84	148
Nov	14.4	126	150	11.94	0.74	1	1.8	0.7	235	422
Dec	15.8	102	103	11.00	2.60	4	16.3	8.2	54	99
Total	182.4	1438	1568	140.63	40.59	56.0	214.8	144.1	854.25	1672.40
MIN	13.8	102	99	10.31	0.74	1.0	1.8	0.6	31.00	20.00
MAX	17.3	138	175	13.08	5.91	8.0	29.8	26.6	235.00	422.00
Average	15.2	120	131	11.72	3.38	4.7	17.9	12.0	94.92	185.82

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2009 Primary Clarification										
	Tanks in Service	Detention time	Surface Overflow Rate	Weir Overflow Rate	Primary Effluent CBOD	Primary Effluent SS	Primary Effluent Ammonia	CBOD Removal	Suspended Solids Removal	Ammonia Removal
Month	ea.	hrs.	gpd/sq.ft.	gpd/ft.				Percent	Percent	Percent
	Average	Average	Average	Average	Average	Average	Average	Average	Average	Average
Jan	3.0	2.43	740	16618	77.35	30.00	12.35	40.4%	73.7%	-1.2%
Feb	3.0	2.07	908	20402	83.83	37.79	10.58	27.3%	55.1%	-1.3%
Mar	3.0	2.47	724	16271	77.05	44.09	11.58	30.5%	52.6%	1.0%
Apr	3.0	2.12	865	19441	71.50	44.82	9.66	31.1%	53.3%	4.0%
May	3.0	2.15	853	19168	62.94	38.60	9.98	39.6%	57.1%	5.2%
Jun	3.0	2.48	736	16527	63.45	32.77	11.61	48.6%	78.9%	5.8%
Jul	3.0	2.59	728	16357	61.41	30.55	13.33	43.1%	73.8%	-12.1%
Aug	3.0	2.40	761	17090	57.00	46.55	12.14	48.3%	66.1%	-4.5%
Sep	2.9	2.14	873	19620	58.81	31.71	10.82	55.3%	75.0%	8.4%
Oct	2.9	2.10	896	20130	60.19	37.82	10.68	54.1%	72.1%	8.9%
Nov	3.0	2.39	755	16966	66.00	39.67	11.74	46.6%	68.3%	2.3%
Dec	3.0	2.20	827	18575	64.19	34.10	9.39	36.7%	64.4%	11.9%
Total	35.8	27.54	9665	217167	803.73	448.46	133.85	501.60%	790.16%	28.39%
MIN	2.9	2.07	724	16271	57.00	30.00	9.39	27.26%	52.59%	-12.11%
MAX	3.0	2.59	908	20402	83.83	46.55	13.33	55.27%	78.85%	11.86%
Average	3.0	2.29	805	18097	66.98	37.37	11.15	41.80%	65.85%	2.37%

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2009	Trickling Filtration						
	Filters in service	Organic Load Rate	Hydraulic Loading Rate	Trickling Filter Effluent CBOD	Trickling Filter Effluent Ammonia	CBOD Removal	Ammonia Removal
Month	ea.	Lb/sq.ft.	gal/sq.ft			Percent	Percent
	Average	Average	Average	Average	Average	Average	Average
Jan	2.0	0.14	225	27	7.37	65.7%	40.4%
Feb	2.0	0.19	276	38	7.00	53.9%	33.1%
Mar	2.0	0.14	220	42	7.71	44.8%	33.2%
Apr	2.0	0.15	263	44	5.70	33.5%	35.7%
May	2.0	0.14	259	52	4.13	25.2%	57.8%
Jun	2.0	0.12	223	27	5.91	54.4%	48.9%
Jul	2.0	0.11	221	25	6.43	55.4%	50.7%
Aug	2.0	0.11	231	24	4.27	50.6%	65.4%
Sep	2.0	0.12	251	26	3.89	51.2%	63.8%
Oct	2.0	0.12	255	24	4.60	56.9%	57.4%
Nov	2.0	0.13	229	32	4.74	52.2%	60.1%
Dec	2.0	0.13	251	50	5.04	10.6%	47.8%
Total	24.0	1.595107	2903	410.58	66.81	554.43%	594.35%
MIN	2.0	0.108701	220	24.06	3.89	10.64%	33.13%
MAX	2.0	0.185441	276	52.47	7.71	65.71%	65.36%
Average	2.0	0.132926	242	34.22	5.57	46.20%	49.53%

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2009 Activated Sludge														
	Tanks in Service	Sludge Volume Index	MLSS 1000 M Cone Test	MLSS	MLVSS	RAS Suspended Solids	F/M Ratio	Detention Time	Solids Under Aeration	SRT	Sludge Age	CBOD Removal	Suspended Solids Removal	Ammonia Removal
Month	ea.	mL/gm		mg/L	mg/l	mg/l		hrs	Lbs	days	days	Percent	Percent	Percent
	Averag	Averag	Average	Averag	Average	Average	Average	Average	Average	Averag	Average	Average	Average	Average
Jan	4.0	107	170	1388	1087	4399	0.08	8.54	57417	10.14	23.02	82.6%	61.3%	99.0%
Feb	4.0	112	136	1195	934	3604	0.15	7.30	49433	7.34	10.37	80.1%	58.7%	98.2%
Mar	4.0	119	126	1063	842	3546	0.15	8.68	43961	6.86	9.73	83.5%	46.4%	99.5%
Apr	4.0	102	118	1161	875	3865	0.17	7.44	48038	7.00	9.51	89.0%	67.5%	99.3%
May	4.0	94	118	1281	933	3939	0.20	7.58	52970	9.06	12.37	92.6%	64.6%	99.0%
Jun	4.0	97	129	1325	975	4181	0.08	8.72	54829	15.62	17.96	88.6%	79.3%	98.7%
Jul	4.0	90	121	1332	985	4653	0.08	9.12	55093	14.66	18.57	87.9%	75.7%	97.7%
Aug	4.0	80	118	1785	1410	5246	0.07	8.44	73843	12.74	34.81	87.8%	77.9%	97.2%
Sep	4.0	97	122	1250	889	4154	0.10	7.74	51708	14.14	13.99	87.1%	82.9%	98.3%
Oct	4.0	85	121	1541	1031	4707	0.07	7.70	63761	11.74	16.72	87.2%	75.0%	98.5%
Nov	4.0	84	123	1491	1102	4911	0.08	8.40	61659	10.95	14.86	85.6%	71.5%	99.0%
Dec	4.0	100	120	1298	1001	4432	0.17	7.75	53698	9.07	14.27	85.7%	46.5%	98.5%
Total	48.0	1167	1523	16110	12062	51636	1.394964	97.41	666408	129.33	196.175	#####	807.41%	1182.96%
MIN	4.0	80	118	1063	842	3546	0.067205	7.30	43961	6.86	9.50897	80.12%	46.43%	97.19%
MAX	4.0	119	170	1785	1410	5246	0.200611	9.12	73843	15.62	34.806	92.59%	82.87%	99.52%
Average	4.0	97	127	1342	1005	4303	0.116247	8.12	55534	10.78	16.3479	86.48%	67.28%	98.58%

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2009	Final Clarification							Chlorination			
	Tanks in Service	Detention Time	Surface Overflow Rate	Weir Overflow Rate	WAS	WAS Suspended Solids	WAS Average	Tanks in Service	Chlorine Residual	Chlorine Feed Rate	Detention Time
Month	ea.	hrs	gpd/sq.ft.	gpd/ft.	total MG	mg/L	Lbs/day	ea.	mg/L	mg/day	hrs
	Average	Average	Average	Average	Total	Average	Average	Average	Average	Average	Average
Jan	2.0	5.1	360	12597	2.05	9937	5358	1.0			0.72
Feb	2.0	4.3	442	15466	1.47	11257	5618	1.0			0.62
Mar	2.0	5.1	352	12334	2.06	10373	5895	1.0		0.20	0.74
Apr	2.0	4.4	421	14737	1.10	13287	5450	1.0	0.31	1.82	0.63
May	2.0	4.5	415	14530	1.18	13217	5062	1.0	0.34	1.79	0.64
Jun	2.0	5.2	358	12528	1.13	12138	4455	1.0	0.33	2.05	0.74
Jul	2.0	5.4	354	12400	0.90	11577	4722	1.0	0.32	2.02	0.77
Aug	2.0	5.0	370	12955	1.43	12834	5974	1.0	0.31	1.94	0.71
Sep	2.0	4.6	402	14081	1.12	12897	4266	1.0	0.29	1.64	0.66
Oct	2.0	4.6	408	14280	1.12	13619	5390	1.0	0.29	1.63	0.65
Nov	2.0	5.0	367	12861	1.15	12682	5217				0.71
Dec	2.0	4.6	402	14081	1.12	10696	4472	1.0			0.66
Total	24.0	57.7	4653	162849	15.85	144513	61880	11.0	2.19	13.09	8.25
MIN	2.0	4.3	352	12334	0.90	9937	4266	1.0	0.29	0.20	0.62
MAX	2.0	5.4	442	15466	2.06	13619	5974	1.0	0.34	2.05	0.77
Average	2.0	4.8	388	13571	1.32	12043	5157	1.0	0.31	1.64	0.69

WAS gpm
was in 1 day
45.85591
1100.542
183.4236

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2009	Effluent													
	Fecal Coliform	Effluent Suspended Solids	Effluent Suspended Solids	Effluent CBOD	Effluent Ammonia	DO Min	pH Min	pH Max	Water Temp	Nitrite Plus Nitrate Total	Total Phosphorus	CBOD Removal	Suspended Solids Removal	Ammonia Removal
Month	#/100	mg/L	Lbs	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	Percent	Percent	Percent
	Average	Average	Average	Average	Average	Min	Min	Max	Average	Average	Average	Average	Average	Average
Jan		8.31	967	4.33	0.08	6.4	6.7	8.6	11.1	13.1	2.3	96.5%	92.3%	99.3%
Feb		14.47	2232	6.74	0.12	6.3	6.7	8.6	11.4	10.8	2.0	94.1%	82.0%	98.7%
Mar		18.30	2109	6.55	0.03	6.3	6.5	8.2	13.0	11.7	3.4	93.8%	82.5%	99.7%
Apr	112	13.10	1936	4.36	0.04	5.0	6.6	8.5	14.8	9.5	1.8	95.5%	85.4%	99.5%
May	121	11.70	1623	3.78	0.04	5.4	7.1	8.5	18.0	10.6	2.2	96.2%	86.6%	99.6%
Jun	114	6.05	744	2.76	0.06	6.1	6.5	8.0	20.9	10.6	2.1	97.6%	95.3%	99.5%
Jul	174	6.83	949	2.57	0.12	5.8	6.5	8.1	22.1	11.5	2.0	97.4%	93.8%	98.3%
Aug	138	4.43	575	2.43	0.10	5.7	6.6	8.3	25.1	9.8	2.2	97.4%	96.5%	99.1%
Sep	132	4.79	658	2.81	0.06	5.6	7.0	8.0	23.3	7.7	2.5	97.8%	96.6%	99.5%
Oct	209	7.51	995	2.86	0.07	6.2	7.1	8.4	20.2	11.8	2.7	97.7%	93.8%	99.4%
Nov		10.63	1320	3.62	0.05	6.4	6.7	8.5	19.2	11.2	2.4	97.0%	92.6%	99.6%
Dec		15.43	2093	5.71	0.06	6.3	6.6	8.4	16.3	8.3	2.6	94.1%	84.0%	99.4%
Total	999	121.53	16200	48.51	0.83	71.5	80.6	100.1	215.4	126.4	27.9	1155.1%	1081.5%	1192%
MIN	112	4.43	575	2.43	0.03	5.0	6.5	8.0	11.1	7.7	1.8	93.8%	82.0%	98.3%
MAX	209	18.30	2232	6.74	0.12	6.4	7.1	8.6	25.1	13.1	3.4	97.8%	96.6%	99.7%
Average	143	10.13	1350	4.04	0.07	6.0	6.7	8.3	17.9	10.5	2.3	96.3%	90.1%	99.3%

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2009 Digestion											
	Primary Digesters in service	Raw Sludge to Digesters	Raw Sludge Percent Solids	Raw Sludge Volatile Solids	Dry Solids pumped	Volatile Solids Pumped	Digesters Organic Loading Rate	Digested Volatile Solids	Hydraulic Loading Rate	Reduction of Volatile Matter	Volatile Matter Destroyed
Month	ea.	gal	percent	percent	Lbs/day	Lbs/day	lbs VS/day	percent	gal/cu.ft./	percent	Lbs/day/c
	Average	Total	Average	Average	Total	Total	Average	Average	Average	Average	Average
Jan	3.0	2225448	2.6%	79%	485761	382,867	0.0733	39%	0.43	83%	3.80
Feb	3.0	2038214	2.8%	79%	474554	375,480	0.0796	42%	0.43	81%	6.06
Mar	3.0	2437821	2.9%	76%	568466	434,830	0.0833	53%	0.47	65%	5.66
Apr	3.0	2009166	3.4%	75%	584644	435,627	0.0862	56%	0.40	54%	4.53
May	3.0	2250214	3.3%	72%	618615	438,193	0.0839	55%	0.43	55%	6.21
Jun	3.0	2255946	3.3%	68%	616145	420,028	0.0831	47%	0.45	59%	4.57
Jul	2.6	2546489	3.3%	72%	711401	506,605	0.1161	50%	0.59	60%	8.50
Aug	2.0	2879095	3.3%	69%	780742	539262	0.1549	47%	0.83	53%	8.77
Sep	2.3	3052879	3.5%	72%	903063	622278	0.1673	50%	0.82	61%	9.94
Oct	3.0	3437051	3.3%	72%	940697	680121	0.1302	50%	0.66	62%	6.38
Nov	3.0	2129541	3.0%	76%	538082	405465	0.0802	51%	0.42	73%	4.59
Dec	3.0	2097356	2.7%	77%	474640	359914	0.0689	51%	0.40	72%	4.65
Total	34.0	29359218	37.4%	887%	7696811	5600670	1.2072	590%	6.32	779%	73.66235
MIN	2.0	2009166	2.6%	68%	474554	359914	0.0689	39%	0.40	53%	3.801901
MAX	3.0	3437051	3.5%	79%	940697	680121	0.1673	56%	0.83	83%	9.943503
Average	2.8	2446602	3.1%	74%	641401	466722	0.1006	49%	0.53	65%	6.138529

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2009	Digestion								Belt Filter Press				
	VA/ Alkalinity Ratio Digester #1	VA/ Alkalinity Ratio Digester #2	VA/ Alkalinity Ratio Digester #3	Detention Time	DIG4 to Holding for BFP	System Gas Pressure	Digester 1, 2, 3 Gas Flow	Waste Gas Burner Flow	DIG4 to HOLDIN GFOR BFP % Solids	Dig 4 Volatile Solids	Holding tank to BFP	Percent Solids from Press	Volatile Solids from Press
				days	gal	in/h2o	CFH	CFH			gal		
Month	Average	Average	Average	Average	Average	Average	Total	Total	Average	Average	Total	Average	Average
Jan	0.003	0.003	0.003	17.8	24054	9.8	3,889,769	1,287,130	3.44%	59.86%	639720	16.2%	60%
Feb	0.003	0.003	0.003	17.9	21246	9.6	3,207,006	772,268	3.15%	61.28%	536100	16.9%	62%
Mar	0.016	0.017	0.016	16.8	19492	9.4	3,983,074	1,394,963	3.25%	57.90%	536700	20.7%	58%
Apr	0.023	0.025	0.023	19.3	20981	9.2	3,729,291	1,557,396	3.75%	54.93%	596880	23.1%	54%
May	0.022	0.024	0.023	17.6	17895	9.2	4,164,985	2,078,917	4.11%	53.81%	493200	23.8%	54%
Jun	0.021	0.022	0.021	17.0	26382	9.1	3,919,491	1,958,224	4.19%	52.49%	449220	24.5%	53%
Jul	0.021	0.017	0.021	16.4	27002	9.0	3,884,997	1,848,638	4.05%	52.53%		24.4%	53%
Aug	0.024	0.023		9.5	17982	9.0	3,986,906	1,835,021	3.79%	54.80%		23.1%	55%
Sep	0.023	0.025		10.9	17971	8.9	3,754,542	1,718,262	3.82%	53.31%	411300	24.3%	53%
Oct	0.021	0.019	0.021	14.8	27792	8.9	3,868,471	1,784,973	4.05%	59.19%	560160	23.6%	54%
Nov	0.023	0.022	0.022	19.2	24631	9.0	3,871,548	1,880,533	3.93%	55.57%	517560	23.0%	56%
Dec	0.027	0.026	0.023	19.3	24813	8.9	3,548,204	1,277,572	3.73%	54.16%	548700	20.9%	58%
Total	0.226	0.226	0.176	196.7	270241	109.8	45808284	19393897	45.25%	669.84%	5,289,540	264%	669%
MIN	0.003	0.003	0.003	9.5	17895	8.9	3207006	772268	3.15%	52.49%	411,300	16%	53%
MAX	0.027	0.026	0.023	19.3	27792	9.8	4164985	2078917	4.19%	61.28%	639,720	24%	62%
Average	0.019	0.019	0.018	16.4	22520	9.2	3817357	1616158	3.77%	55.82%	528,954	22%	56%