

City of Dayton

Wastewater Treatment Plant

Permit No. WA0020729

Annual Treatment Facility Review Report (Wasteload Assessment)

Reporting Year: From: 1/1/2023

To: 12/31/2023

Design Parameters:

Max monthly design flow (dry):	0.75	mgd
Max monthly design flow (wet):	0.75	mgd
Peak daily design flow:	2.25	mgd
Ave Month Design Influent BOD loading:	850	lbs/day
Ave Month Design Influent TSS loading:	1,200	lbs/day

Design Population Equivalent:	2,720
Present Population Served:	2,750
Projected Population growth:	22%
Compliance with effluent permit limitation?	X Yes No

Table 1, Influent Monthly Average Loading & Peak Daily Flow (From Monthly DMR) Highlighted value = Max

Month	Avg flow (mgd)	Peak flow (mgd)	BOD (lbs/day)	TSS (lbs/day)
January	0.252	0.276	448	372
February	0.218	0.252	369	338
March	0.239	0.272	358	402
April	0.251	0.273	318	463
May	0.249	0.268	391	378
June	0.228	0.242	543	748
July	0.200	0.214	357	416
August	0.200	0.222	455	324
September	0.199	0.212	461	368
October	0.204	0.229	578	521
November	0.211	0.249	555	434
December	0.232	0.254	647	579

Table 2, Maximum Influent Monthly Average Loading (Highest Month)

	Month	Max Monthly Average Value	Design Capacity	% Design Capacity	Previous year Max Monthly Avg value	% Increase / Decrease
Dry Weather Flow MGD	May	0.2494	0.7500	33.25%	0.2132	16.99%
Wet Weather Flow MGD	January	0.2519	0.7500	33.59%	0.3347	-24.72%
Peak Flow MGD	January	0.2760	2.2500	12.27%	0.3347	-17.51%
BOD (lbs/day)	December	647	850	76.06%	470	37.55%
TSS (lbs/day)	June	748	1,200	62.31%	509	46.91%

Table 3, Maximum Monthly Average Data for the Last Three Years

Year	Flow (mgd)	BOD (lbs/day)	TSS (lbs/day)
2023	0.252	647	748
2022	0.326	530	482
2021	0.257	470	509

Estimated year when the design capacity is projected to be reached:

Flow = Based on last 14 year trends, 2100+

BOD = 2050

TSS = 2050

Design Capacity Graphs

Table 4: Max month Flow Data

Year	max month avg Flow, mgd	design cap, mgd
2023	0.252	0.75
2022	0.326	0.75
2021	0.257	0.75
2020	0.446	0.75
2019	0.395	0.75
2018	0.316	0.75
2017	0.403	0.75
2016	0.291	0.75
2015	0.285	0.75
2014	0.313	0.75
2013	0.444	0.75
2012	0.434	0.75
2011	0.383	0.75
2010	0.307	0.75
2009	0.466	0.75
2008	0.306	0.75
2007	0.327	0.75
2006	0.334	0.75
2005	0.364	0.75
2004	0.292	0.75
2003	0.376	0.750

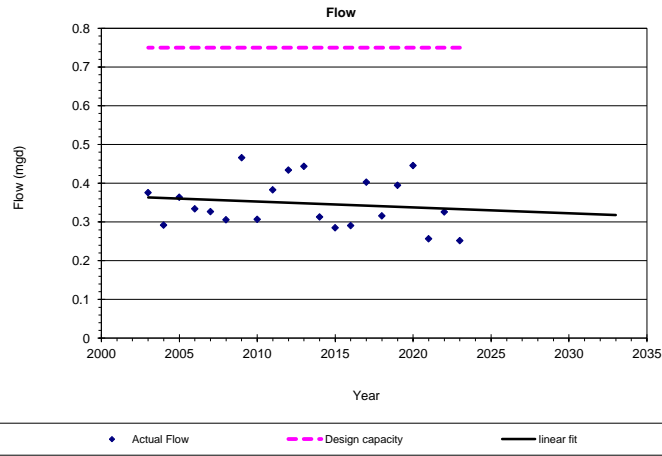


Table 5: Max month BOD Data

Year	max month avg BOD, lbs/day	design cap, lbs/day
2023	647	850
2022	530	850
2021	470	850
2020	458	850
2019	1,209	850
2018	742	850
2017	796	850
2016	662	850
2015	534	850
2014	700	850
2013	626	850
2012	590	850
2011	530	850
2010	655	850
2009	606	850
2008	632	850
2007	582	850
2006	334	850
2005	727	850
2004		850
2003	456	850

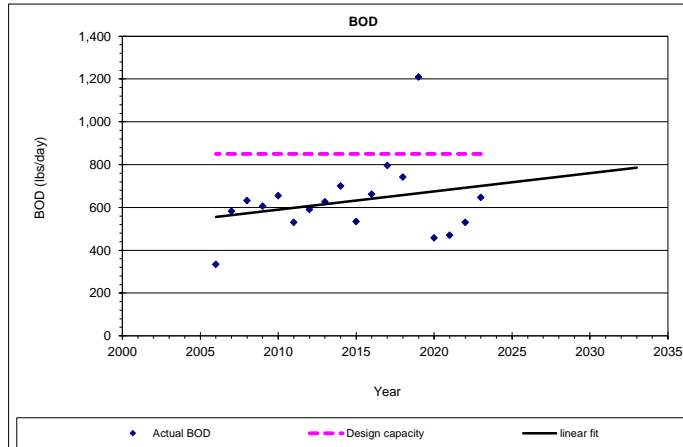
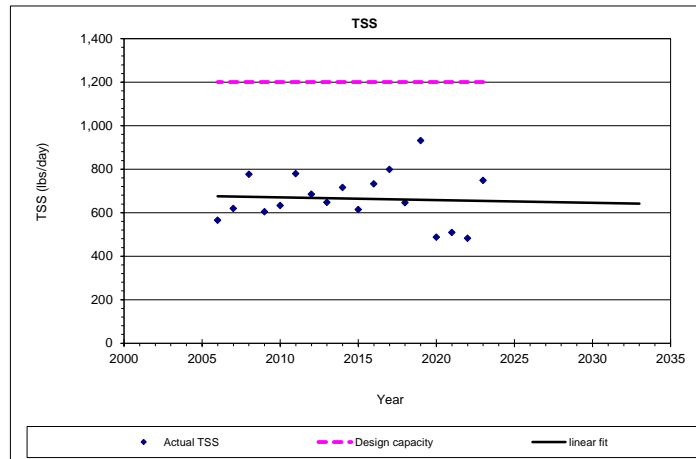


Table 6: Max month TSS Data

Year	max month avg TSS, lbs/day	design cap lbs/day
2023	748	1,200
2022	482	1,200
2021	509	1,200
2020	487	1,200
2019	931	1,200
2018	646	1,200
2017	799	1,200
2016	732	1,200
2015	614	1,200
2014	716	1,200
2013	647	1,200
2012	685	1,200
2011	779	1,200
2010	633	1,200
2009	604	1,200
2008	776	1,200
2007	619	1,200
2006	565	1,200
2005	470	1,200
2004		1,200
2003	516	1,200



EFFLUENT QUALITY SECTION--Permit Limits

Parameter	Monthly Avg. Units	Monthly Avg. Limit Lb.	Weekly Avg. Units	Weekly Avg. Limit Lb.
Flow (mgd)	0.75			
BOD, mg/L	30	173	45	259
TSS, mg/L	30	188	45	281
Fecal Coliform (cfu/100 mL)	200		400	
pH max	8.5			
pH min	6.5			
Temperature °C Max				
NH ₃ -N, mg/L	5			
Other				
Other				

Table 8: Effluent monthly AVERAGES (max/min for pH) for subject year

Month	Avg flow mgd	Effluent BOD		Effluent TSS		Total Coliform MPN/100 mL	Min pH Std. Units	Max pH Std. Units	Temp. °C	NH ₃ -N mg/L	NH ₃ -N Lb.	Other mg/L	Other mg/L
		mg/L	Lb.	mg/L	Lb.								
January	0.252	11	23	16	33	29	6.6	7.7	9.89967	1.83			
February	0.218	13	24	21	38	11	6.8	7.6	9.20833	1.96			
March	0.239	16	32	25	49	6	6.8	7.7	10.59139	3.41			
April	0.251	16	33	20	42	25	6.9	7.6	12.40000	1.70			
May	0.249	12	24	20	42	7	6.5	7.3	17.05194	1.27			
June	0.228	9	17	13	25	10	6.5	6.9	19.09628	1.49			
July	0.200	11	18	13	21	22	6.5	7.2	21.74017	1.23			
August	0.200	11	18	13	21	6	6.5	7.2	21.42294	1.56			
September	0.199	15	24	17	28	32	6.5	7.2	18.85739	2.38			
October	0.204	11	20	17	30	12	6.5	6.9	15.60394	1.26			
November	0.211	13	22	21	36	2	6.5	6.9	11.67961	1.68			
December	0.232	15	29	17	33	52	6.7	8.0	10.52689	6.00			

Table 9: Effluent monthly MAXIMUMS for subject year

Month	Max flow mgd	Effluent BOD		Effluent TSS		Total Coliform MPN/100 mL	Min pH Std. Units	Max pH Std. Units	Temp. °C	NH ₃ -N mg/L	NH ₃ -N Lb.	Other mg/L	Other mg/L
		mg/L	Lb.	mg/L	Lb.								
January	0.276	13	28	22	47	58	6.6	7.7	12.22222	4.10			
February	0.252	19	34	30	54	22	6.8	7.6	10.72222	2.96			
March	0.272	22	47	29	62	9	6.8	7.7	13.00000	5.50			
April	0.273	18	37	22	47	44	6.9	7.6	16.72222	2.48			
May	0.268	13	26	22	46	14	6.5	7.3	19.88889	2.44			
June	0.242	11	22	19	36	14	6.5	6.9	22.50000	1.71			
July	0.214	11	19	15	24	58	6.5	7.2	22.88889	1.37			
August	0.222	12	20	16	27	10	6.5	7.2	24.00000	2.24			
September	0.212	25	40	18	29	68	6.5	7.2	20.88889	5.70			
October	0.229	12	22	18	33	25	6.5	6.9	18.11111	1.49			
November	0.249	15	26	27	47	3	6.5	6.9	14.88889	4.10			
December	0.254	16	31	22	43	147	6.7	8.0	13.77778	8.30			

Table 9: Effluent monthly VIOLATIONS calculated for subject year (violations are designated by an "X")

Month	Max flow gpd	Effluent BOD		Effluent TSS		Fecal Coliform no./100 mL	pH MIN S.U.	pH MAX S.U.	Temperature °C Max	NH3-N mg/L	NH4-N Lb.	Other mg/L	Other mg/L
January		mg/L	Lb.	mg/L	Lb.								
February													
March										X			
April													
May													
June													
July													
August													
September										X			
October													
November													
December										X			

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