139871SG2025
Basecamp - Torch Lake
Sewage Flows
04.11.26

Flowrate Per REU (gpd): 300

	# units	REU /Unit	REU's	Design Flowrate (gpd)
Dockside Restaurant				
Restaurant and deck seats	200	0.13	26.00	7,800
Basecamp Condos				
4 bedroom units	18	1.00	18.00	5,400
Docksite Watersports				
Toilets	2	0.75	1.50	450
Sinks	2	0.25	0.50	150
Service Sinks	1	0.25	0.25	75
Bath and Shower	1	2.50	2.50	750
Laundry	1	0.50	0.50	150
		Total:	**49.25**	**14,775**
		USE:	**50**	**15,000**

139871SG2025
Basecamp - Torch Lake
Combined Sewage Constituents
04.11.26

Assumptions:

1. Dockside sewage constituants are from 2025 sampling resutls
2. Basecamp sewage constituants are typical domestic sewage valvues

	gpd	gpm	MGD
Dockside Flowrate	9,375	6.5	0.009
Basecamp Flowrate	5,400	3.8	0.005
Total Flowrate	14,775	10.3	0.015

	TSS	Phosphorus	TIN	Ammonia	BOD
	mg/L	mg/L	mg/L	mg/L	mg/L
Dockside	116	7.91	74	74	424
Basecamp	200	7.35	50	30	225
Combined	**146**	**7.7**	**65**	**58**	**351**

	lb/d	lb/d	lb/d	lb/d	lb/d
Dockside	9.04	0.62	5.76	5.75	33.16
Basecamp	9.01	0.33	2.25	1.35	10.13
Total:	**18.04**	**0.95**	**8.01**	**7.10**	**43.29**

Mixture Formula

Mass1 (M1) = C1 (mg/l) * Q1 (gpm)
Mass2 (M2) = C2 (mg/l) * Q2 (gpm)

Mass total = M1 + M2
Flow total = Q1 + Q2

C final = M total / Q total

C final = ((C1*Q1) + (C2 * Q2)) / (Q1 + Q2)

T final = ((M1*T1) + (M2 * T2)) / (M1 +M2)

TSS

C1 (mg/l)	116	Dockside
Q1 (gpm)	6.5	Dockside
C2 (mg/l)	200	BaseCamp
Q2 (gpm)	3.8	BaseCamp
C final (mg/l)	**146**	Combined
lbs	**18**	

Phosphorus

C1 (mg/l)	7.9	Dockside
Q1 (gpm)	6.5	Dockside
C2 (mg/l)	7.35	BaseCamp
Q2 (gpm)	3.8	BaseCamp
C final (mg/l)	**7.7**	Combined
lbs	**0.9**	

TIN

C1 (mg/l)	74	Dockside
Q1 (gpm)	6.5	Dockside
C2 (mg/l)	50	BaseCamp
Q2 (gpm)	3.8	BaseCamp
C final (mg/l)	**65.0**	Combined
lbs	**8.0**	

Ammonia

C1 (mg/l)	73.54	Dockside
Q1 (gpm)	6.5	Dockside
C2 (mg/l)	30	BaseCamp
Q2 (gpm)	3.8	BaseCamp
C final (mg/l)	**57.6**	Combined
lbs	**7.1**	

BOD

C1 (mg/l)	424	Dockside
Q1 (gpm)	6.5	Dockside
C2 (mg/l)	225	BaseCamp
Q2 (gpm)	3.8	BaseCamp
C final (mg/l)	**351**	Combined
lbs	**43.3**	

139871SG2025
Basecamp - Torch Lake
Dockside_Septic Wet Well Sampling
04.11.26

Characteristic		8/15/2025 HN2511574	8/25/2025 HN2512168	8/6/2025 HN2510995	8/15/2025 HN2511592	8/28/2025 HN2512426	8/11/2025 HN2511290	8/18/2025 HN2511730	8/28/2025 HN2512426	8/19/2025 HN251822	Dockside Average	Dockside Minimum	Dockside Maximum
TSS	mg/L	130	76	102	132	96	148	116	96	144	116	76	148
Nitrate, N	mg/L	ND	0.184	ND	0.15	0.204	0.06	ND	0.204	ND	0.160	0.060	0.204
Orthophosphate, P	mg/L	5.05	7.94	6.48	5.96	5.87	5.28	6.85	5.87	5.12	6.05	5.05	7.94
Phosphorus	mg/L	6.55	10.5	8.26	6.71	7.01	8.68	8.98	7.01	7.48	7.91	6.55	10.50
Inoraganic Nitrogen	mg/L	68.5	77.5	74.3	66.4	79.6	67.7	80.4	79.6	68.8	73.6	66.4	80.4
Alkalinity, Bicarbonate	mg/L	358	394	378	354	380	306	351	380	359	362	306	394
Alkalinity, Carbonate	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	0	0	0
Chloride	mg/L	114	120	120	115	118	154	128	118	132	124	114	154
Ammonia, N	mg/L	68.5	77.3	74.3	66.2	79.4	67.6	80.4	79.4	68.8	73.5	66.2	80.4
TKN	mg/L	87.1	107	75.8	80.7	94.5	93.5	103	94.5	113	94.3	75.8	113.0
Nitrite, N	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	0	0	0
Sulfate	mg/L	3.4	9.6	ND		8.2		7.1	8.2	5.9	7.1	3.4	9.6
BOD	mg/L	351	574	386	389	357	554	439	357	410	424	351	574
Surfactants	mg/L	1	ND	ND	ND	ND	1	ND	ND	2.5	1.5	1.0	2.5
Sodium	mg/L	76.6	83.6	88.1	79.9	80.3	76.6	85.5	80.3	86.8	82.0	76.6	88.1
Hardness, CaCO3	mg/L	200	209		212	204		213	204	218	209	200	218