

**Operating & Maintenance Cost Summary  
Munster Hamlet Wastewater Treatment Facility  
CMS Treatment Technology**

Year	Operating Labour (1) \$/yr	Environmental Requirements (1) \$/yr	Elect. Power (2,3) \$/yr	Utilities Water (3) \$/yr	Alum + polymer(3) \$/yr	Solids Treatment (3) \$/yr	O&M Munster Pumping Station (1) \$/yr	Maintenance Labour/Material Allowance (1) \$/yr	Site Maintenance (1) \$/yr	Total Annual O&M \$/yr	Total PW Annual O&M (4) \$/yr
1	45,000	26,400	12,125	1,000	11,000	11,500	20,000.00	41,000	5,000	173,025	173,025
2	45,675	26,796	12,186	1,005	11,055	11,558	20,300	41,615	5,075	175,264	163,798
3	46,360	27,198	12,247	1,010	11,110	11,615	20,605	42,239	5,151	177,535	155,066
4	47,056	27,606	12,308	1,015	11,166	11,673	20,914	42,873	5,228	179,838	146,802
5	47,761	28,020	12,369	1,020	11,222	11,732	21,227	43,516	5,307	182,174	138,980
6	48,478	28,440	12,431	1,025	11,278	11,790	21,546	44,169	5,386	184,543	131,577
7	49,205	28,867	12,493	1,030	11,334	11,849	21,869	44,831	5,467	186,946	124,570
8	49,943	29,300	12,556	1,036	11,391	11,909	22,197	45,504	5,549	189,383	117,938
9	50,692	29,739	12,619	1,041	11,448	11,968	22,530	46,186	5,632	191,855	111,662
10	51,453	30,185	12,682	1,046	11,505	12,028	22,868	46,879	5,717	194,362	105,720
11	52,224	30,638	12,745	1,051	11,563	12,088	23,211	47,582	5,803	196,905	100,097
12	53,008	31,098	12,809	1,056	11,620	12,149	23,559	48,296	5,890	199,484	94,774
13	53,803	31,564	12,873	1,062	11,678	12,209	23,912	49,020	5,978	202,100	89,735
14	54,610	32,038	12,937	1,067	11,737	12,270	24,271	49,756	6,068	204,753	84,965
15	55,429	32,518	13,002	1,072	11,796	12,332	24,635	50,502	6,159	207,445	80,451
16	56,260	33,006	13,067	1,078	11,855	12,393	25,005	51,260	6,251	210,174	76,177
17	57,104	33,501	13,132	1,083	11,914	12,455	25,380	52,028	6,345	212,943	72,131
18	57,961	34,004	13,198	1,088	11,973	12,518	25,760	52,809	6,440	215,751	68,301
19	58,830	34,514	13,264	1,094	12,033	12,580	26,147	53,601	6,537	218,600	64,676
20	59,713	35,031	13,330	1,099	12,093	12,643	26,539	54,405	6,635	221,489	61,244
21	60,608	35,557	13,397	1,105	12,154	12,706	26,937	55,221	6,734	224,420	57,994
22	61,518	36,090	13,464	1,110	12,215	12,770	27,341	56,049	6,835	227,392	54,918
23	62,440	36,632	13,531	1,116	12,276	12,834	27,751	56,890	6,938	230,408	52,006
24	63,377	37,181	13,599	1,122	12,337	12,898	28,168	57,743	7,042	233,466	49,249
25	64,328	37,739	13,667	1,127	12,399	12,962	28,590	58,610	7,148	236,569	46,639
26	65,293	38,305	13,735	1,133	12,461	13,027	29,019	59,489	7,255	239,716	44,167
27	66,272	38,880	13,804	1,138	12,523	13,092	29,454	60,381	7,364	242,908	41,828
28	67,266	39,463	13,873	1,144	12,586	13,158	29,896	61,287	7,474	246,146	39,612
29	68,275	40,055	13,942	1,150	12,649	13,224	30,344	62,206	7,586	249,431	37,515
30	69,299	40,655	14,012	1,156	12,712	13,290	30,800	63,139	7,700	252,762	35,529
31	70,339	41,265	14,082	1,161	12,775	13,356	31,262	64,086	7,815	256,142	33,649
32	71,394	41,884	14,152	1,167	12,839	13,423	31,731	65,048	7,933	259,570	31,868
33	72,465	42,513	14,223	1,173	12,903	13,490	32,206	66,023	8,052	263,048	30,182
34	73,552	43,150	14,294	1,179	12,968	13,557	32,690	67,014	8,172	266,576	28,586
35	74,655	43,798	14,366	1,185	13,033	13,625	33,180	68,019	8,295	270,155	27,075
36	75,775	44,454	14,438	1,191	13,098	13,693	33,678	69,039	8,419	273,785	25,644

37	76,911	45,121	14,510	1,197	13,163	13,762	34,183	70,075	8,546	277,468	24,288
38	78,065	45,798	14,582	1,203	13,229	13,831	34,696	71,126	8,674	281,203	23,005
39	79,236	46,485	14,655	1,209	13,295	13,900	35,216	72,193	8,804	284,993	21,790
40	80,424	47,182	14,728	1,215	13,362	13,969	35,744	73,276	8,936	288,837	20,639
41	81,631	47,890	14,802	1,221	13,429	14,039	36,280	74,375	9,070	292,737	19,549
42	82,855	48,608	14,876	1,227	13,496	14,109	36,825	75,490	9,206	296,693	18,517
43	84,098	49,338	14,951	1,233	13,563	14,180	37,377	76,623	9,344	300,706	17,540
44	85,360	50,078	15,025	1,239	13,631	14,251	37,938	77,772	9,484	304,778	16,614
45	86,640	50,829	15,100	1,245	13,699	14,322	38,507	78,939	9,627	308,908	15,738
46	87,940	51,591	15,176	1,252	13,768	14,394	39,084	80,123	9,771	313,098	14,908
47	89,259	52,365	15,252	1,258	13,837	14,466	39,671	81,325	9,918	317,348	14,122
48	90,598	53,151	15,328	1,264	13,906	14,538	40,266	82,544	10,066	321,661	13,377
49	91,957	53,948	15,405	1,270	13,975	14,611	40,870	83,783	10,217	326,035	12,672
50	93,336	54,757	15,482	1,277	14,045	14,684	41,483	85,039	10,371	330,473	12,004
51	94,736	55,578	15,559	1,283	14,115	14,757	42,105	86,315	10,526	334,975	11,372
52	96,157	56,412	15,637	1,290	14,186	14,831	42,736	87,610	10,684	339,543	10,773
53	97,599	57,258	15,715	1,296	14,257	14,905	43,377	88,924	10,844	344,176	10,205
54	99,063	58,117	15,794	1,303	14,328	14,980	44,028	90,258	11,007	348,877	9,668
55	100,549	58,989	15,873	1,309	14,400	15,054	44,689	91,612	11,172	353,646	9,159
56	102,057	59,874	15,952	1,316	14,472	15,130	45,359	92,986	11,340	358,485	8,677
57	103,588	60,772	16,032	1,322	14,544	15,205	46,039	94,380	11,510	363,393	8,220
58	105,142	61,683	16,112	1,329	14,617	15,281	46,730	95,796	11,682	368,373	7,788
59	106,719	62,609	16,192	1,335	14,690	15,358	47,431	97,233	11,858	373,425	7,378
60	108,320	63,548	16,273	1,342	14,764	15,435	48,142	98,692	12,036	378,551	6,990
61	109,945	64,501	16,355	1,349	14,837	15,512	48,864	100,172	12,216	383,751	6,623
62	111,594	65,469	16,437	1,356	14,912	15,589	49,597	101,675	12,399	389,027	6,274
63	113,268	66,451	16,519	1,362	14,986	15,667	50,341	103,200	12,585	394,379	5,945
64	114,967	67,447	16,601	1,369	15,061	15,746	51,096	104,748	12,774	399,810	5,632
65	116,691	68,459	16,684	1,376	15,136	15,824	51,863	106,319	12,966	405,319	5,336
66	118,442	69,486	16,768	1,383	15,212	15,903	52,641	107,914	13,160	410,909	5,056
67	120,218	70,528	16,852	1,390	15,288	15,983	53,430	109,532	13,358	416,580	4,790
68	122,022	71,586	16,936	1,397	15,365	16,063	54,232	111,175	13,558	422,333	4,539
69	123,852	72,660	17,021	1,404	15,441	16,143	55,045	112,843	13,761	428,171	4,301
70	125,710	73,750	17,106	1,411	15,519	16,224	55,871	114,536	13,968	434,093	4,075
71	127,596	74,856	17,191	1,418	15,596	16,305	56,709	116,254	14,177	440,102	3,861
72	129,509	75,979	17,277	1,425	15,674	16,387	57,560	117,998	14,390	446,198	3,658
73	131,452	77,119	17,364	1,432	15,752	16,469	58,423	119,767	14,606	452,384	3,466
74	133,424	78,275	17,450	1,439	15,831	16,551	59,300	121,564	14,825	458,659	3,285
75	135,425	79,449	17,538	1,446	15,910	16,634	60,189	123,387	15,047	465,026	3,112
76	137,457	80,641	17,625	1,454	15,990	16,717	61,092	125,238	15,273	471,487	2,949
77	139,518	81,851	17,713	1,461	16,070	16,800	62,008	127,117	15,502	478,041	2,794
78	141,611	83,079	17,802	1,468	16,150	16,884	62,938	129,024	15,735	484,691	2,648
79	143,735	84,325	17,891	1,476	16,231	16,969	63,882	130,959	15,971	491,438	2,509
80	145,891	85,590	17,980	1,483	16,312	17,054	64,841	132,923	16,210	498,284	2,378
81	148,080	86,873	18,070	1,490	16,394	17,139	65,813	134,917	16,453	505,230	2,253
82	150,301	88,177	18,161	1,498	16,476	17,225	66,800	136,941	16,700	512,278	2,135

83	152,556	89,499	18,252	1,505	16,558	17,311	67,802	138,995	16,951	519,428	2,023
84	154,844	90,842	18,343	1,513	16,641	17,397	68,819	141,080	17,205	526,684	1,917
85	157,167	92,204	18,434	1,520	16,724	17,484	69,852	143,196	17,463	534,045	1,817
86	159,524	93,587	18,527	1,528	16,808	17,572	70,900	145,344	17,725	541,514	1,722
87	161,917	94,991	18,619	1,536	16,892	17,660	71,963	147,524	17,991	549,092	1,632
88	164,346	96,416	18,712	1,543	16,976	17,748	73,043	149,737	18,261	556,782	1,546
89	166,811	97,862	18,806	1,551	17,061	17,837	74,138	151,983	18,535	564,584	1,465
90	169,313	99,330	18,900	1,559	17,146	17,926	75,250	154,263	18,813	572,500	1,389

948,070	Total 30 year Present Worth:	2,621,146
	Total 60 year Present Worth:	3,133,141
	Total 90 year Present Worth:	3,234,272

Notes:

- 1 Inflation costs assumed at 1.5%
- 2 Electrical Power cost was estimated to be \$0.0844 per kWh
- 3 Inflation costs assumed at 0.5%
- 4 Present worth calculation used 7% interest rate