C9.0 Water Plant or Facility VALUE and LIFE CYCLE Analysis

PROJECT: Treatment Plant

Annual Discount Rate: 6.00%

Initial Capital Investment: $23,600,000 | **Analysis Life Cycle Costs:** $10,562,359 | **TOTAL PROJECT CAPITAL & LIFE CYCLE COSTS:** $34,162,359

Base Year Dollars: 2005 | **Year 1 of Analysis Begins in:** 2006 | **# of Analysis or Life Cycle Years:** 21

CAPITAL IMPROVEMENT AND OPERATION AND MAINTENANCE SECTION

# of Years	YEAR	Capital Improvements / Expansions (4.00% Annual Inflation Rate / year)				Operation & Maintenance Costs (3.00% Annual Inflation Rate / year)				Manpower Costs (2.50% Annual Inflation Rate / year)				Projected Depletions or Salvage Value (3.00% Annual Inflation Rate / year)				Sub Total
		Additional Increment in 2005 $'s	Additional Increment in future $'s	Total Escalation Cash Flow $'s	Annual Present Worth $'s	Additional Increment in 2005 $'s	Additional Increment in future $'s	Total Escalation Cash Flow $'s	Annual Present Worth $'s	Additional Increment in 2005 $'s	Additional Increment in future $'s	Total Escalation Cash Flow $'s	Annual Present Worth $'s	Additional Increment in 2005 $'s	Additional Increment in future $'s	Total Escalation Cash Flow $'s	Annual Present Worth $'s	Annual Present Worth $'s
1	2006			0	0	100,000	103,000	103,000	97,170	100,000	102,500	102,500	96,698			0	0	193,868
2	2007			0	0			106,090	94,420			105,063	93,505			0	0	187,925
3	2008			0	0			109,273	91,747			107,689	90,418			0	0	182,165
4	2009			0	0			112,551	89,151			110,381	87,432	20,000	22,510	22,510	-17,830	158,753
5	2010	100,000	121,665	121,665	90,915			115,927	86,628			113,141	84,545			0	0	262,088
6	2011			0	0			119,405	84,176			115,969	81,754			0	0	165,930
7	2012			0	0			122,987	81,794	125,000	148,586	267,454	177,872			0	0	259,666
8	2013			0	0			126,677	79,479			274,141	171,999			0	0	251,478
9	2014			0	0			130,477	77,229			280,994	166,320			0	0	243,549
10	2015			0	0			134,392	75,044			288,019	160,828			0	0	235,872
11	2016			0	0			138,423	72,920			295,219	155,518	25,000	34,606	34,606	-18,230	210,208
12	2017			0	0			142,576	70,856			302,600	150,383			0	0	221,239
13	2018			0	0	180,000	264,336	411,189	192,782	150,000	206,777	516,942	242,362			0	0	435,144
14	2019	200,000	346,335	346,335	153,184			423,525	187,326			529,865	234,360			0	0	574,870
15	2020			0	0			436,231	182,024			543,112	226,622			0	0	408,645
16	2021			0	0			449,318	176,872			556,690	219,139			0	0	396,011
17	2022			0	0			462,797	171,866			570,607	211,903			0	0	383,770
18	2023			0	0			476,681	167,002			584,872	204,906			0	0	371,909
19	2024			0	0			490,982	162,276			599,494	198,141	100,000	175,351	175,351	-57,956	302,461
20	2025			0	0			505,711	157,683			614,481	191,598			0	0	349,281
21	2026			0	0	240,000	446,471	967,353	284,552	200,000	335,916	965,760	284,083	2,700	5,023	5,023	-1,477	567,158
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				0	0				0				0			0	0	0
		Expansion Net Present Value:			**244,100**			**O&M Net Present Value:**	**2,682,996**			**Manpower Net Present Value:**	**3,530,388**			**Salvage Net Present Value:**	**-95,493**	**6,361,990**

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WATER & POWER DIRECT COSTS SECTION

Beginning Flow Rate: 0.58 mgd | Average TDH: 620 feet | Pump Efficiency: 80.0%
Flow Units: mgd | Water Cost: 137 / acre-ft | Motor Efficiency: 90.0%
Energy Rate #: 6 | Energy Cost: 0.0259 $ / kW hour | Power Cost: 7.67 $ / Peak KW

# of Years	YEAR	WATER (Demand & Power Calculations) 5.00% Annual Water Use Inflation Rate					PUMPING POWER & ENERGY COSTS 1.00% Annual Power & Energy Inflation Rate						WATER PURCHASE COSTS 1.00% Annual Water Cost Inflation Rate				SUMMARY	
		Increment Additional Flow mgd	Average Annual Flow - Q mgd	Average Annual Pumping hp	Total Annual Energy kw/hr	Peak Annual Power kw	Escalated Energy Cost $/kw/hr	Pumping Energy Cost $'s	Escalated Power Cost $/kw	Pumping Power Cost $'s	Annual Power/ Energy Cost $'s	Pumping Present Worth $'s	Annual Water Consumpt acre-feet	Escalated Water Unit Cost acre-feet	Annual Water Costs $'s	Water Present Worth $'s	Water & Power Present Worth $'s	Total Analysis Present Worth $'s
1	2006		0.58	88	572,130	65	0.0259	14,818	7.67	6,011	20,829	19,650	648.46807	137.00	88,840	83,811	103,462	297,330
2	2007		0.61	92	600,737	69	0.0262	15,715	7.75	6,375	22,090	19,660	680.89148	138.37	94,215	83,851	103,511	291,436
3	2008		0.64	97	630,774	72	0.0264	16,665	7.82	6,761	23,426	19,669	714.93605	139.75	99,915	83,891	103,560	285,725
4	2009		0.67	101	662,312	76	0.0267	17,674	7.90	7,170	24,843	19,678	750.68285	141.15	105,960	83,930	103,608	262,361
5	2010		0.70	106	695,428	79	0.0270	18,743	7.98	7,603	26,346	19,688	788.21699	142.56	112,370	83,970	103,657	365,746
6	2011		0.74	112	730,199	83	0.0272	19,877	8.06	8,063	27,940	19,697	827.62784	143.99	119,169	84,009	103,706	269,636
7	2012		0.78	117	766,709	88	0.0275	21,079	8.14	8,551	29,631	19,706	869.00924	145.43	126,379	84,049	103,755	363,421
8	2013		0.82	123	805,045	92	0.0278	22,355	8.22	9,069	31,423	19,715	912.4597	146.88	134,024	84,089	103,804	355,282
9	2014		0.86	129	845,297	96	0.0280	23,707	8.31	9,617	33,324	19,725	958.08268	148.35	142,133	84,128	103,853	347,402
10	2015	1.00	1.90	287	1,873,994	214	0.0283	53,084	8.39	21,534	74,618	41,666	2124.0352	149.83	318,255	177,712	219,378	455,250
11	2016		1.99	301	1,967,693	225	0.0286	56,295	8.47	22,837	79,132	41,686	2230.237	151.33	337,509	177,796	219,481	429,689
12	2017		2.09	316	2,066,078	236	0.0289	59,701	8.56	24,219	83,920	41,706	2341.7488	152.85	357,928	177,879	219,585	440,824
13	2018		2.20	332	2,169,382	248	0.0292	63,313	8.64	25,684	88,997	41,725	2458.8363	154.38	379,583	177,963	219,689	654,833
14	2019		2.31	349	2,277,851	260	0.0295	67,143	8.73	27,238	94,381	41,745	2581.7781	155.92	402,548	178,047	219,792	794,662
15	2020		2.42	366	2,391,743	273	0.0298	71,206	8.82	28,886	100,091	41,765	2710.867	157.48	426,902	178,131	219,896	628,541
16	2021		2.55	384	2,511,331	287	0.0301	75,513	8.90	30,634	106,147	41,784	2846.4103	159.05	452,729	178,215	220,000	616,011
17	2022		2.67	404	2,636,897	301	0.0304	80,082	8.99	32,487	112,569	41,804	2988.7309	160.64	480,120	178,299	220,103	603,873
18	2023	2.00	4.81	726	4,741,605	541	0.0307	145,442	9.08	59,001	204,443	71,625	5374.2642	162.25	871,973	305,490	377,116	749,024
19	2024		5.05	762	4,978,685	568	0.0310	154,241	9.17	62,571	216,812	71,659	5642.9774	163.87	924,727	305,634	377,293	679,754
20	2025		5.30	800	5,227,620	597	0.0313	163,572	9.27	66,356	229,929	71,693	5925.1263	165.51	980,673	305,779	377,471	726,753
21	2026		5.56	840	5,489,001	627	0.0316	173,468	9.36	70,371	243,839	71,727	6221.3826	167.17	1,040,004	305,923	377,649	944,808
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		Averages:	2	325	2,125,739	243					Pumping Energy/Power Net Present Value:	797,773			Water Net Present Value:	3,402,596	4,200,370	10,562,359

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