

2012 FACILITY RENOVATION AND SERVICE FEE EVALUATION

NORTHWEST LAKEWOOD SANITATION DISTRICT

FEBRUARY 22, 2012

MARTIN/MARTIN CONSULTING ENGINEERS, INC.
12499 WEST COLFAX AVENUE
LAKEWOOD, COLORADO 80215

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August 16, 2005
Rev: February 22, 2006
Rev. February 22, 2012

Northwest Lakewood Sanitation District
141 Union Boulevard STE 150
Lakewood, Colorado 80228
Attn: Board of Directors

Re: NWLSD 2012 Tap Fee/Service Fee Evaluation

Dear Board,

MARTIN/MARTIN, at the Board's request, has updated the estimated future potential District wide infrastructure replacement costs from the Facility Renovation and Service Fee Fund presented to the Board of Directors during the January 2010 Board Meeting and compared those costs to current NWLSD's revenues associated with the Preferred Non-Uniform Fee being charged within the District (\$150 to \$800 per SFRE).

Updated SFRE Amount

In 2006, a potential future SFRE was estimated from aerial photography and current zoning information on file with Jefferson County. At that time, a conservative development density was applied to the open areas to estimate the total existing SFRE of 6,310 located within the District. This original SFRE amount used in 2006 Tap Service Fee Evaluation was updated in 2010 to 5,453.8 after the determination of calculating commercial properties was revised.

Updated Present and Future Worth Amounts

In 2010, The District had approximately 345,646 feet of sewer main infrastructure including approximately 310,785 feet of clay main (89% of the District). The total opinion of estimated cost for entire replacement was determined to be approximately \$35.52M in 2010. From 2010 to 2012, approximately 8,000 feet of pipe (2 % of the District) was either replaced with PVC pipe or repaired by insitu-method (lining the entire sanitary main from manhole to manhole).

Assuming the clay main will continue to require entire replacement in the future by one of aforementioned methods, the 2012 Present and Future Worth of the 6"-24" pipe located within the District have been updated to show the inflation cost for construction as well as interest revenue from investment dollars. The worths have been revised accordingly. (An approximate 20% increase is shown from 2010 to 2012 for the Present Worth of pipe located within the District, an approximate 10% increase is shown from 2010 to 2012 for the Future Worth of pipe located within the District.)

Updated Percent of Pipe Replaced

In the 2012 Report, the Percent of Pipe to be replaced has been revised. From 2012 to 2030, it is estimated approximately 9.8% of the District will be repaired. It is still expected that a large portion of the clay piping installed during the first few years that the District began will come to the end of its design life in 2030. Table 4 shows from year 2031 to 2033, approximately 34.7% of the clay piping will require replacement with a descending distribution ending with approximately 1% replaced in year 2050. Although this uneven distribution generates more capital expenditure in a short time period, it reflects a more realistic approach to allow for the required funds to be generated by the Preferred Non-Uniform Fee charged per SFRE.

If the Board has any questions or comments, please call our office.

Sincerely,



Patrick Roberts
E.I.T. II

Cc: Bill Willis, P.E. - Martin/Martin Inc.
Lisa Johnson – SDMS, Inc.
Tim Flynn – District Attorney

NWLSD - Facility Renovation and Service Fee (FRSF) - Capital Improvements - 75 year life - February 22, 2012

Data - District Tap/Service Fee Evaluation - All information has been updated to reflect increase from 2010 to 2012 Construction Bid Prices received, which are shown in bold - (Original information provided in January 2010 also shown)

Total Length of Pipe in District (6" - 24" in size) - 345,646 LF, Total Length of Clay Material (6" - 24" in size) - **302,880 LF** - (310,785 LF-2010)
Clay Pipe remaining in District of Total Pipe - **88.0%** - (89.9%), Installation years - 1955 to 1975

Using a Design Life of 75 years = **2031 to 2050 (Non-Uniform Increase, actual replacement years - Beginning 2012, Ending 2050)**

Factor used for interest rate, escalation and increasing value of money=4%, Existing total SFRE (Single Family Residential Equivalent) = **5,453.8**

Total Estimated Cost of Clay Piping Infrastructure Improvement

Present Worth (6"-24" in size) @ 145.00/LF = **\$43,863,435** - (Previous Value @ 115.00/LF = \$34,524,575)

Future Worth (6"-24" in size) @ 145.00/LF = **\$107,075,944** - (Previous Value @ 115.00/LF = \$96,261,888)

Grand Total (6"-24" in size) = **\$111,439,513** - Includes \$50,000 Annual Point Repair Cost (2012 to 2050 - **\$4,363,569**)

Required funds for Capital Improvements - (Updated from 2010 to 2012)

Preferred Method - Non-Uniform Increase

Timeframe: **Starting in 2012, Finishing in 2050, Non-Uniform Fee required = \$150 to \$800 per SFRE**

Alternate Method - Uniform Annual Fee

Timeframe: **Starting in 2012, Finishing in 2050, Annual Fee per SFRE required = \$410 (\$355 - 2010)**

(A non-uniform increase of the FRSF was used. The attached has been updated from the presented FRSF report to the Board of Directors during the January Board Meeting in 2010)

Attached Tables and Appendices

Table 1 - Preferred - Non-Uniform Fee Structure Table - Table shows graduated increase in fees with current \$150 charge for 2012 shown.

Table 2 - Alternate - Annual \$410 - Table shows enough capital funds would be collected annually per SFRE/year

Table 3 - A breakdown of present day cash amount required for future repairs. A graduated fee structure option.

Table 4 - Facility Renovation Service Fee - 75 year - 2012 - Complete Table

Appendix 1 - January 2010 Board Meeting - Facility Renovation Presentation

Appendix 2 - 2006 Tap Fee/Service Fee Evaluation

NWLSD Preferred - Facility Renovation and Service Fee - Capital Improvements - 75 year life - Non-Uniform Increase

February 2/22/2012

Existing SFRE #	5453.8
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Increasing Value	1.04
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* - Actual Costs of Improvements

Year	Percent of Pipe Replaced Each Year	Annual Set Up Cost (per/SFRE)	Income (\$) Annual *SFRE	Total Available Income Forward (\$)	Est. - Total Improvement* Cost Amount(\$)	NET Value (\$)	Increasing Value of Money (4%)
2010	1	\$150	\$818,070	\$818,070	\$798,750	\$19,320	\$20,092.80
2011	1	\$150	\$818,070	\$838,163	\$1,223,443	-\$385,280	-\$400,691.70
2012	0.8	\$150	\$818,070	\$417,378	\$400,907	\$16,471	\$17,129.65
2013	0.5	\$225	\$1,227,105	\$1,244,235	\$280,090	\$964,145	\$1,002,710.58
2014	0.5	\$225	\$1,227,105	\$2,229,816	\$291,293	\$1,938,522	\$2,016,063.01
2015	0.5	\$225	\$1,227,105	\$3,243,168	\$302,945	\$2,940,223	\$3,057,831.73
2016	0.5	\$225	\$1,227,105	\$4,284,937	\$315,063	\$3,969,874	\$4,128,668.68
2017	0.5	\$300	\$1,636,140	\$5,764,809	\$327,666	\$5,437,143	\$5,654,628.88
2018	0.5	\$300	\$1,636,140	\$7,290,769	\$340,772	\$6,949,997	\$7,227,996.61
2019	0.5	\$300	\$1,636,140	\$8,864,137	\$354,403	\$8,509,734	\$8,850,122.92
2020	0.5	\$400	\$2,181,520	\$11,031,643	\$368,579	\$10,663,064	\$11,089,586.32
2021	0.5	\$400	\$2,181,520	\$13,271,106	\$383,322	\$12,887,784	\$13,403,295.36
2022	0.5	\$500	\$2,726,900	\$16,130,195	\$398,655	\$15,731,540	\$16,360,801.76
2023	0.5	\$500	\$2,726,900	\$19,087,702	\$414,601	\$18,673,100	\$19,420,024.36
2024	0.5	\$600	\$3,272,280	\$22,692,304	\$431,185	\$22,261,119	\$23,151,563.64
2025	0.5	\$600	\$3,272,280	\$26,423,844	\$448,433	\$25,975,411	\$27,014,427.17
2026	0.5	\$725	\$3,954,005	\$30,968,432	\$466,370	\$30,502,062	\$31,722,144.44
2027	0.5	\$725	\$3,954,005	\$35,676,149	\$485,025	\$35,191,124	\$36,598,769.40
2028	0.5	\$800	\$4,363,040	\$40,961,809	\$504,426	\$40,457,383	\$42,075,678.72
2029	0.5	\$800	\$4,363,040	\$46,438,719	\$524,603	\$45,914,116	\$47,750,680.29
2030	0.5	\$725	\$3,954,005	\$51,704,685	\$545,587	\$51,159,098	\$53,205,462.03
2031	12.9	\$725	\$3,954,005	\$57,159,467	\$12,026,702.26	\$45,132,765	\$46,938,075.36
2032	11.9	\$600	\$3,272,280	\$50,210,355	\$11,546,668.48	\$38,663,687	\$40,210,234.36
2033	9.9	\$600	\$3,272,280	\$43,482,514	\$10,009,443.31	\$33,473,071	\$34,811,993.89
2034	9	\$500	\$2,726,900	\$37,538,894	\$9,474,246.04	\$28,064,648	\$29,187,233.76
2035	8	\$500	\$2,726,900	\$31,914,134	\$8,772,106.98	\$23,142,027	\$24,067,707.86
2036	7	\$500	\$2,726,900	\$26,794,608	\$7,998,638.00	\$18,795,970	\$19,547,808.65
2037	6	\$400	\$2,181,520	\$21,729,329	\$7,149,256.14	\$14,580,073	\$15,163,275.41
2038	4	\$400	\$2,181,520	\$17,344,795	\$5,003,025.42	\$12,341,770	\$12,835,440.80
2039	3	\$350	\$1,908,830	\$14,744,271	\$3,938,401.93	\$10,805,869	\$11,238,103.62
2040	2	\$350	\$1,908,830	\$13,146,934	\$2,780,603.73	\$10,366,330	\$10,780,983.09
2041	1.9	\$350	\$1,908,830	\$12,689,813	\$2,755,033.11	\$9,934,780	\$10,332,171.17
2042	1.8	\$250	\$1,363,450	\$11,695,621	\$2,722,967.88	\$8,972,653	\$9,331,559.42
2043	1.7	\$250	\$1,363,450	\$10,695,009	\$2,683,929.38	\$8,011,080	\$8,331,523.25
2044	1.6	\$250	\$1,363,450	\$9,694,973	\$2,637,411.05	\$7,057,562	\$7,339,864.69
2045	1.5	\$250	\$1,363,450	\$8,703,315	\$2,582,876.96	\$6,120,438	\$6,365,255.24
2046	1.4	\$250	\$1,363,450	\$7,728,705	\$2,519,760.29	\$5,208,945	\$5,417,302.74
2047	1.3	\$175	\$954,415	\$6,371,718	\$2,447,461.69	\$3,924,256	\$4,081,226.30
2048	1.2	\$175	\$954,415	\$5,035,641	\$2,365,347.57	\$2,670,294	\$2,777,105.48
2049	1.1	\$175	\$954,415	\$3,731,520	\$2,272,748.39	\$1,458,772	\$1,517,122.96
2050	1	\$150	\$818,070	\$2,335,193	\$2,168,956.73	\$166,236	\$172,885.69
Totals	100				\$113,461,706		

NWLSD Alternate - Facility Renovation and Service Fee - Capital Improvements - 75 year life - Annual \$410 charge (\$355-2010)

February 2/22/2012

Existing SFRE #	5453.8
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Increasing Value	1.04
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Year	Percent of Pipe Replaced Each Year	Annual Set Up Cost (per/SFRE)	Income (\$) Annual *SFRE	Total Value Income Forward (\$)	Est. - Total Improvement Cost Amount(\$)	NET Value Forward (\$)	Increasing Value of Money (4%)
2010	1	\$150	\$818,070	\$818,070	\$798,750	\$19,320	\$20,092.80
2011	1	\$150	\$818,070	\$838,163	\$1,223,443	-\$385,280	-\$400,691.70
2012	0.8	\$410	\$2,236,058	\$1,835,366	\$400,907	\$1,434,459	\$1,491,837.17
2013	0.5	\$410	\$2,236,058	\$3,727,895	\$280,090	\$3,447,805	\$3,585,717.52
2014	0.5	\$410	\$2,236,058	\$5,821,776	\$291,293	\$5,530,482	\$5,751,701.35
2015	0.5	\$410	\$2,236,058	\$7,987,759	\$302,945	\$7,684,814	\$7,992,206.72
2016	0.5	\$410	\$2,236,058	\$10,228,265	\$315,063	\$9,913,202	\$10,309,729.79
2017	0.5	\$410	\$2,236,058	\$12,545,788	\$327,666	\$12,218,122	\$12,706,847.16
2018	0.5	\$410	\$2,236,058	\$14,942,905	\$340,772	\$14,602,133	\$15,186,218.33
2019	0.5	\$410	\$2,236,058	\$17,422,276	\$354,403	\$17,067,873	\$17,750,588.24
2020	0.5	\$410	\$2,236,058	\$19,986,646	\$368,579	\$19,618,067	\$20,402,789.77
2021	0.5	\$410	\$2,236,058	\$22,638,848	\$383,322	\$22,255,525	\$23,145,746.47
2022	0.5	\$410	\$2,236,058	\$25,381,804	\$398,655	\$24,983,149	\$25,982,475.23
2023	0.5	\$410	\$2,236,058	\$28,218,533	\$414,601	\$27,803,932	\$28,916,089.09
2024	0.5	\$410	\$2,236,058	\$31,152,147	\$431,185	\$30,720,962	\$31,949,800.08
2025	0.5	\$410	\$2,236,058	\$34,185,858	\$448,433	\$33,737,425	\$35,086,922.19
2026	0.5	\$410	\$2,236,058	\$37,322,980	\$466,370	\$36,856,610	\$38,330,874.38
2027	0.5	\$410	\$2,236,058	\$40,566,932	\$485,025	\$40,081,907	\$41,685,183.66
2028	0.5	\$410	\$2,236,058	\$43,921,242	\$504,426	\$43,416,816	\$45,153,488.27
2029	0.5	\$410	\$2,236,058	\$47,389,546	\$524,603	\$46,864,943	\$48,739,540.94
2030	0.5	\$410	\$2,236,058	\$50,975,599	\$545,587	\$50,430,012	\$52,447,212.23
2031	12.9	\$410	\$2,236,058	\$54,683,270	\$12,026,702.26	\$42,656,568	\$44,362,830.68
2032	11.9	\$410	\$2,236,058	\$46,598,889	\$11,546,668.48	\$35,052,220	\$36,454,309.01
2033	9.9	\$410	\$2,236,058	\$38,690,367	\$10,009,443.31	\$28,680,924	\$29,828,160.65
2034	9	\$410	\$2,236,058	\$32,064,219	\$9,474,246.04	\$22,589,973	\$23,493,571.51
2035	8	\$410	\$2,236,058	\$25,729,630	\$8,772,106.98	\$16,957,523	\$17,635,823.44
2036	7	\$410	\$2,236,058	\$19,871,881	\$7,998,638.00	\$11,873,243	\$12,348,173.17
2037	6	\$410	\$2,236,058	\$14,584,231	\$7,149,256.14	\$7,434,975	\$7,732,374.04
2038	4	\$410	\$2,236,058	\$9,968,432	\$5,003,025.42	\$4,965,407	\$5,164,022.89
2039	3	\$410	\$2,236,058	\$7,400,081	\$3,938,401.93	\$3,461,679	\$3,600,146.11
2040	2	\$410	\$2,236,058	\$5,836,204	\$2,780,603.73	\$3,055,600	\$3,177,824.40
2041	1.9	\$410	\$2,236,058	\$5,413,882	\$2,755,033.11	\$2,658,849	\$2,765,203.26
2042	1.8	\$410	\$2,236,058	\$5,001,261	\$2,722,967.88	\$2,278,293	\$2,369,425.11
2043	1.7	\$410	\$2,236,058	\$4,605,483	\$2,683,929.38	\$1,921,554	\$1,998,415.88
2044	1.6	\$410	\$2,236,058	\$4,234,474	\$2,637,411.05	\$1,597,063	\$1,660,945.35
2045	1.5	\$410	\$2,236,058	\$3,897,003	\$2,582,876.96	\$1,314,126	\$1,366,691.44
2046	1.4	\$410	\$2,236,058	\$3,602,749	\$2,519,760.29	\$1,082,989	\$1,126,308.72
2047	1.3	\$410	\$2,236,058	\$3,362,367	\$2,447,461.69	\$914,905	\$951,501.23
2048	1.2	\$410	\$2,236,058	\$3,187,559	\$2,365,347.57	\$822,212	\$855,100.13
2049	1.1	\$410	\$2,236,058	\$3,091,158	\$2,272,748.39	\$818,410	\$851,146.12
2050	1	\$410	\$2,236,058	\$3,087,204	\$2,168,956.73	\$918,247	\$954,977.29
Totals	100				\$113,461,706		

NWLSD - Facility Renovation and Service Fee - Capital Improvements - 75 year life - February 22, 2012

Data - District Tap/Service Fee Evaluation

Total Length of Pipe in District (6" - 24" in size) - **345,646 LF**
 Total Length of Clay Material (6"-24" in size) - **302,880 LF (310,785 LF)**
 Percentage of Clay Pipe remaining in District - **(88.0%) 89.9%**

Year of Improvement - 2	% of Pipe to be Replaced Each Year - 3	Actual Replacement*	Capital Reserve Fund Calculations		
		Total Cost of Replacement Plus Repairs (Annual) - 4	Required Annual Cash Flow Amount- PMT - 5	Present Worth Cost/SFRE (Annually) - 6	Cost/SFRE (Annually-Cumulative) - 7
*2010-2011	2	\$2,022,193.00			
2012	0.8	\$400,907.48	\$400,907.48	\$73.51	\$671.94
2013	0.5	\$280,089.86	\$137,298.95	\$25.17	\$598.43
2014	0.5	\$291,293.46	\$93,315.43	\$17.11	\$573.26
2015	0.5	\$302,945.19	\$71,340.58	\$13.08	\$556.15
2016	0.5	\$315,063.00	\$58,169.17	\$10.67	\$543.06
2017	0.5	\$327,665.52	\$49,399.48	\$9.06	\$532.40
2018	0.5	\$340,772.14	\$43,145.03	\$7.91	\$523.34
2019	0.5	\$354,403.03	\$38,462.59	\$7.05	\$515.43
2020	0.5	\$368,579.15	\$34,828.15	\$6.39	\$508.38
2021	0.5	\$383,322.32	\$31,927.28	\$5.85	\$501.99
2022	0.5	\$398,655.21	\$29,559.90	\$5.42	\$496.14
2023	0.5	\$414,601.42	\$27,592.63	\$5.06	\$490.72
2024	0.5	\$431,185.47	\$25,933.10	\$4.76	\$485.66
2025	0.5	\$448,432.89	\$24,515.37	\$4.50	\$480.90
2026	0.5	\$466,370.21	\$23,291.04	\$4.27	\$476.41
2027	0.5	\$485,025.02	\$22,223.85	\$4.07	\$472.14
2028	0.5	\$504,426.02	\$21,286.03	\$3.90	\$468.06
2029	0.5	\$524,603.06	\$20,456.02	\$3.75	\$464.16
2030	0.5	\$545,587.18	\$19,716.77	\$3.62	\$460.41
2031	12.9	\$12,026,702.26	\$403,877.71	\$74.05	\$456.79
2032	11.9	\$11,546,668.48	\$361,181.01	\$66.23	\$382.74
2033	9.9	\$10,009,443.31	\$292,263.84	\$53.59	\$316.51
2034	9	\$9,474,246.04	\$258,732.72	\$47.44	\$262.92
2035	8	\$8,772,106.98	\$224,450.42	\$41.15	\$215.48
2036	7	\$7,998,638.00	\$192,063.00	\$35.22	\$174.33
2037	6	\$7,149,256.14	\$161,339.98	\$29.58	\$139.11
2038	4	\$5,003,025.42	\$106,256.96	\$19.48	\$109.53
2039	3	\$3,938,401.93	\$78,819.14	\$14.45	\$90.05
2040	2	\$2,780,603.73	\$52,497.62	\$9.63	\$75.59
2041	1.9	\$2,755,033.11	\$49,122.51	\$9.01	\$65.97
2042	1.8	\$2,722,967.88	\$45,896.58	\$8.42	\$56.96
2043	1.7	\$2,683,929.38	\$42,804.89	\$7.85	\$48.55
2044	1.6	\$2,637,411.05	\$39,834.31	\$7.30	\$40.70
2045	1.5	\$2,582,876.96	\$36,973.29	\$6.78	\$33.39
2046	1.4	\$2,519,760.29	\$34,211.60	\$6.27	\$26.61
2047	1.3	\$2,447,461.69	\$31,540.14	\$5.78	\$20.34
2048	1.2	\$2,365,347.57	\$28,950.83	\$5.31	\$14.56
2049	1.1	\$2,272,748.39	\$26,436.43	\$4.85	\$9.25
2050	1	\$2,168,956.73	\$23,990.46	\$4.40	\$4.40
Totals	100	\$113,461,706		Total	\$4.40

Number Representations

- 1.) System Replacement Cost - \$34,524,575 - **(\$43,863,435)**
- 2.) Using a VCP lifespan = 75 years. Installation years = 1955-1975, Replacement years = 2012-2050.
- 3.) Percent of District to be replaced with corresponding year. (e.g.) 2031 = 12.9% District replacement. (Uneven distribution used due to a majority of pipe installed at end of its design life - 2031 to 2035).
- 4.) Cost Anticipated for Replacement with 4% escalation per year, representing the future value of pipe.
- 5.) PMT-Required Annual Present Day Cash Flow Amount - Annual cash income future pipe cost.
- 6.) Cost/SFRE (Annually) - Amount required to be collected cumulatively per SFRE for corresponding year.
- 7.) Cost/SFRE (Annually Cumulative) - What would be required to be collected per SFRE annually until 2050 to obtain enough to complete future replacement.

Example - Year 2012 (Red numbers below correlate to red numbers above.)

- (3) - In 2012, 0.8% of the District is estimated to be at the end of its design life
- (4) - In 2012, future cost for 0.8% replacement of the system - \$400,907.00
- (5) - In 2012, present day cash flow amount required collection for 2031 repairs - \$403,877.71
- (6) - In 2012, annual amount required per SFRE to complete the 2031 repairs- \$74.05.
- (7) - In 2012, annual cumulative amount required per SFRE - \$671.94

In 2013, the 2012 expense of \$73.51 would be removed to leave the annual cumulative amount required per SFRE for total completion - **\$598.43**

NWLSD - Facility Renovation Service Fee Calculation - 75 year life - 2012

NWLS Pipe Totals										EXISTING SFRE 5453.8											
Size (inches)	6"	8"	10"	12"	15"	18"	21"	24"													
Total Length (feet)	3,052	254,836	8,861	36,664	4,185	10,839	8,293	18,916					345,646								
Total Length of Clay Material	3,052	236,854	8,668	31,593	3,390	6,482	1,434	11,407			302,880										
Lump Sum Estimate																					
Estimate of Replacement (\$/LF) ⁵	\$120	\$140	\$145	\$155	\$160	\$170	\$180	\$200			1										
Total Estimate of Clay Piping Infrastructure Replacement	\$366,240	\$33,159,560	\$1,256,860	\$4,896,915	\$542,400	\$1,101,940	\$258,120	\$2,281,400			\$43,863,435										
38 Year Projection (Irregular Distribution) Estimate- 4% Cost Increase per Year										Capital Calculations											
Year of Improvement - 2	% of Pipe to be Replaced Each Year - 3	Capital - 6" Cost	Capital - 8" Cost	Capital - 10" Cost	Capital - 12" Cost	Capital - 15" Cost	Capital - 18" Cost	Capital - 21" Cost	Capital - 24" Cost	Annual Point Repair Improvement - 50,000	Total Future Worth Improvements Plus Point Repairs - 4	Required Annual Cash Flow Amount- PMT - 5	Cost/SFRE (Annually) 6	Cost/SFRE (Annually Cumulative) 7	Cash Balance Forward	Annual Income From SFRE	Total Cumulative Cash Available	Net Cash After Annual Improvement	Cash Balance		
2012	0.8	\$2,930	\$265,276	\$10,055	\$39,175	\$4,339	\$8,816	\$2,065	\$18,251	\$50,000	\$400,907	\$400,907.48	\$73.51	\$671.94	\$0.00	\$3,664,626.37	\$3,664,626.37	\$3,263,718.89	\$3,338,668.89		
2013	0.5	\$1,904	\$172,430	\$6,536	\$25,464	\$2,820	\$5,730	\$1,342	\$11,863	\$52,000	\$280,090	\$137,298.95	\$25.17	\$598.43	\$3,394,267.65	\$3,263,718.89	\$6,657,986.54	\$6,377,896.68	\$6,663,438.68		
2014	0.5	\$1,981	\$179,327	\$6,797	\$26,483	\$2,933	\$5,959	\$1,396	\$12,338	\$54,080	\$291,293	\$93,315.43	\$17.11	\$573.26	\$6,633,012.54	\$3,126,419.94	\$9,759,432.48	\$9,468,139.03	\$9,848,668.03		
2015	0.5	\$2,060	\$186,500	\$7,069	\$27,542	\$3,051	\$6,198	\$1,452	\$12,831	\$56,243	\$302,945	\$71,340.58	\$13.08	\$556.15	\$9,846,864.59	\$3,033,104.51	\$12,879,969.10	\$12,577,023.90	\$13,033,104.51		
2016	0.5	\$2,142	\$193,960	\$7,352	\$28,643	\$3,173	\$6,446	\$1,510	\$13,345	\$58,493	\$315,063	\$58,169.17	\$10.67	\$543.06	\$13,080,104.86	\$2,961,763.93	\$16,041,868.79	\$15,726,805.78	\$16,338,668.78		
2017	0.5	\$2,228	\$201,718	\$7,646	\$29,789	\$3,300	\$6,703	\$1,570	\$13,878	\$60,833	\$327,666	\$49,399.48	\$9.06	\$532.40	\$16,355,878.02	\$2,903,594.76	\$19,259,472.77	\$18,931,807.25	\$19,638,668.25		
2018	0.5	\$2,317	\$209,787	\$7,952	\$30,981	\$3,432	\$6,972	\$1,633	\$14,433	\$63,266	\$340,772	\$43,145.03	\$7.91	\$523.34	\$19,689,079.54	\$2,854,195.28	\$22,543,274.82	\$22,202,502.67	\$23,033,668.67		
2019	0.5	\$2,410	\$218,179	\$8,270	\$32,220	\$3,569	\$7,250	\$1,698	\$15,011	\$65,797	\$354,403	\$38,462.59	\$7.05	\$515.43	\$23,090,602.78	\$2,811,050.25	\$25,901,653.03	\$25,547,250.00	\$26,533,668.00		
2020	0.5	\$2,506	\$226,906	\$8,600	\$33,509	\$3,712	\$7,540	\$1,766	\$15,611	\$68,428	\$368,579	\$34,828.15	\$6.39	\$508.38	\$26,569,140.00	\$2,772,587.66	\$29,341,727.66	\$28,973,148.51	\$30,133,668.51		
2021	0.5	\$2,606	\$235,982	\$8,945	\$34,849	\$3,860	\$7,842	\$1,837	\$16,236	\$71,166	\$383,322	\$31,927.28	\$5.85	\$501.99	\$30,132,074.45	\$2,737,759.51	\$32,869,833.96	\$32,486,511.64	\$33,733,668.64		
2022	0.5	\$2,711	\$245,421	\$9,302	\$36,243	\$4,014	\$8,156	\$1,910	\$16,885	\$74,012	\$398,655	\$29,559.90	\$5.42	\$496.14	\$33,785,972.11	\$2,705,832.23	\$36,491,804.34	\$36,093,149.13	\$37,533,668.13		
2023	0.5	\$2,819	\$255,238	\$9,674	\$37,693	\$4,175	\$8,482	\$1,987	\$17,561	\$76,973	\$414,601	\$27,592.63	\$5.06	\$490.72	\$37,536,875.10	\$2,676,272.33	\$40,213,147.43	\$39,798,546.01	\$41,333,668.01		
2024	0.5	\$2,932	\$265,448	\$10,061	\$39,201	\$4,342	\$8,821	\$2,066	\$18,263	\$80,052	\$431,185	\$25,933.10	\$4.76	\$485.66	\$41,390,487.85	\$2,648,679.71	\$44,039,167.56	\$43,607,982.09	\$45,333,668.09		
2025	0.5	\$3,049	\$276,066	\$10,464	\$40,769	\$4,516	\$9,174	\$2,149	\$18,993	\$83,254	\$448,433	\$24,515.37	\$4.50	\$480.90	\$45,352,301.37	\$2,622,746.61	\$47,975,047.97	\$47,526,615.08	\$49,433,668.08		
2026	0.5	\$3,171	\$287,108	\$10,882	\$42,399	\$4,696	\$9,541	\$2,235	\$19,753	\$86,584	\$466,370	\$23,291.04	\$4.27	\$476.41	\$49,427,679.69	\$2,598,231.24	\$52,025,910.92	\$51,559,540.72	\$53,633,668.72		
2027	0.5	\$3,298	\$298,592	\$11,318	\$44,095	\$4,884	\$9,923	\$2,324	\$20,543	\$90,047	\$485,025	\$22,223.85	\$4.07	\$472.14	\$53,621,922.34	\$2,574,940.20	\$56,196,862.54	\$55,711,837.52	\$57,933,668.52		
2028	0.5	\$3,430	\$310,536	\$11,770	\$45,859	\$5,080	\$10,320	\$2,417	\$21,365	\$93,649	\$504,426	\$21,286.03	\$3.90	\$468.06	\$57,940,311.03	\$2,552,716.35	\$60,493,027.38	\$59,988,601.36	\$62,333,668.36		
2029	0.5	\$3,567	\$322,958	\$12,241	\$47,694	\$5,283	\$10,732	\$2,514	\$22,220	\$97,395	\$524,603	\$20,456.02	\$3.75	\$464.16	\$62,388,145.41	\$2,531,430.32	\$64,919,575.73	\$64,394,972.68	\$66,933,668.68		
2030	0.5	\$3,710	\$335,876	\$12,731	\$49,601	\$5,494	\$11,162	\$2,615	\$23,108	\$101,291	\$545,587	\$19,716.77	\$3.62	\$460.41	\$66,970,771.58	\$2,510,974.30	\$69,481,745.88	\$68,936,158.70	\$71,633,668.70		
2031	12.9	\$99,538	\$9,012,223	\$341,594	\$1,330,901	\$147,415	\$299,489	\$70,153	\$620,047	\$105,342	\$12,026,702	\$403,877.71	\$74.05	\$456.79	\$71,693,605.05	\$2,491,257.53	\$74,184,862.58	\$62,158,160.32	\$64,633,668.32		
2032	11.9	\$95,495	\$8,646,145	\$327,718	\$1,276,840	\$141,427	\$287,324	\$67,303	\$594,861	\$109,556	\$11,546,668	\$361,181.01	\$66.23	\$382.74	\$64,644,486.73	\$2,087,379.82	\$66,731,866.55	\$55,185,198.08	\$57,333,668.08		
2033	9.9	\$82,623	\$7,480,732	\$283,545	\$1,104,734	\$122,364	\$248,596	\$58,231	\$514,679	\$113,938	\$10,009,443	\$292,263.84	\$53.59	\$316.51	\$57,392,606.00	\$1,726,198.81	\$59,118,804.81	\$49,109,361.50	\$51,033,668.50		
2034	9	\$78,116	\$7,072,692	\$268,079	\$1,044,476	\$115,690	\$235,036	\$55,055	\$486,606	\$118,496	\$9,474,246	\$258,732.72	\$47.44	\$262.92	\$51,073,735.96	\$1,433,934.97	\$52,507,670.93	\$43,033,424.89	\$44,733,668.89		
2035	8	\$72,214	\$6,538,311	\$247,824	\$965,560	\$106,949	\$217,277	\$50,895	\$449,840	\$123,236	\$8,772,107	\$224,450.42	\$41.15	\$215.48	\$44,754,761.89	\$1,175,202.25	\$45,929,964.13	\$37,157,857.15	\$38,633,668.15		
2036	7	\$65,715	\$5,949,863	\$225,520	\$878,660	\$97,324	\$197,723	\$46,315	\$409,355	\$128,165	\$7,998,638	\$192,063.00	\$35.22	\$174.33	\$38,644,171.44	\$950,751.82	\$39,594,923.26	\$31,596,285.26	\$32,833,668.26		
2037	6	\$58,580	\$5,303,878	\$201,035	\$783,262	\$86,757	\$176,256	\$41,286	\$364,910	\$133,292	\$7,149,256	\$161,339.98	\$29.58	\$139.11	\$32,860,136.67	\$758,688.83	\$33,618,825.50	\$26,469,569.36	\$27,533,668.36		
2038	4	\$40,616	\$3,677,355	\$139,384	\$543,062	\$60,152	\$122,204	\$28,625	\$253,005	\$138,623	\$5,003,025	\$106,256.96	\$19.48	\$109.53	\$27,528,352.14	\$597,348.84	\$28,125,700.98	\$23,122,675.56	\$24,033,668.56		
2039	3	\$31,680	\$2,868,337	\$108,720	\$423,588	\$46,918	\$95,319	\$22,328	\$197,344	\$144,168	\$3,938,402	\$78,819.14	\$14.45	\$90.05	\$24,047,682.59	\$491,091.88	\$24,538,674.47	\$20,600,272.54	\$21,433,668.54		
2040	2	\$21,965	\$1,988,714	\$75,379	\$293,688	\$32,530	\$66,088	\$15,481	\$136,825	\$149,935	\$2,780,604	\$52,497.62	\$9.63	\$75.59	\$21,424,283.44	\$412,272.74	\$21,836,556.18	\$19,055,952.45	\$19,833,668.45		
2041	1.9	\$21,701	\$1,964,849	\$74,474	\$290,164	\$32,140	\$65,295	\$15,295	\$135,183	\$155,933	\$2,755,033	\$49,122.51	\$9.01	\$65.97	\$19,818,190.55	\$359,775.13	\$20,177,965.68	\$17,422,932.57	\$18,133,668.57		
2042	1.8	\$21,382	\$1,935,893	\$73,377	\$285,888	\$31,666	\$64,333	\$15,069	\$133,191	\$162,170	\$2,722,968	\$45,896.58	\$8.42	\$56.96	\$18,119,849.87	\$310,652.61	\$18,430,502.49	\$15,707,534.61	\$16,333,668.61		
2043	1.7	\$21,001	\$1,901,478	\$72,072	\$280,805	\$31,103	\$63,189	\$14,801	\$130,823	\$168,657	\$2,683,929	\$42,804.89	\$7.85	\$48.55	\$16,335,835.99	\$264,756.03	\$16,600,592.02	\$13,916,662.64	\$14,433,668.64		
2044	1.6	\$20,557	\$1,861,211	\$70,546	\$274,859	\$30,444	\$61,851	\$14,488	\$128,053	\$175,403	\$2,637,411	\$39,834.31	\$7.30	\$40.70	\$14,473,329.15	\$221,951.14	\$14,695,280.29	\$12,057,869.25	\$12,533,668.25		
2045	1.5	\$20,043	\$1,814,681	\$68,783	\$267,987	\$29,683	\$60,304	\$14,126	\$124,851	\$182,419	\$2,582,877	\$36,973.29	\$6.78	\$33.39	\$12,540,184.01	\$182,116.83	\$12,722,300.84	\$10,139,423.88	\$10,533,668.88		
2046	1.4	\$19,455	\$1,761,450	\$66,765	\$260,126	\$28,813	\$58,536	\$13,711	\$121,189	\$189,716	\$2,519,760	\$34,211.60	\$6.27	\$26.61	\$10,545,000.84	\$145,143.54	\$10,690,144.38	\$8,170,384.08	\$8,493,668.08		
2047	1.3	\$18,788	\$1,701,057	\$64,476	\$251,208	\$27,825	\$56,529	\$13,241	\$117,034	\$197,304	\$2,447,462	\$31,540.14	\$5.78	\$20.34	\$8,497,199.45	\$110,931.94	\$8,608,131.39	\$6,160,669.70	\$6,403,668.70		
2048	1.2	\$18,036	\$1,633,015	\$61,897	\$241,159	\$26,712	\$54,267	\$12,712	\$112,353	\$205,197	\$2,365,348	\$28,950.83	\$5.31	\$14.56	\$6,407,096.49	\$79,391.80	\$6,486,488.29	\$4,121,140.71	\$4,283,668.71		
2049	1.1	\$17,195	\$1,556,808	\$59,008	\$229,905	\$25,465	\$51,735	\$12,118	\$107,109	\$213,404	\$2,272,748	\$26,436.43	\$4.85	\$9.25	\$4,285,986.34	\$50,440.97	\$4,336,427.31	\$2,063,678.92	\$2,143,668.92		
2050	1	\$16,257	\$1,471,891	\$55,790	\$217,365	\$24,076	\$48,913	\$11,457	\$101,267	\$221,941	\$2,168,957	\$23,990.46	\$4.40	\$4.40	\$2,146,226.08	\$24,004.55	\$2,170,230.62	\$1,273.90	\$1,333,668.90		
Total	98%									Total	\$111,439,513		\$671.94	Total							

Number Representations

- 1.) System Replacement Cost - \$43,863,435 (\$34,524,575)
- 2.) Using a VCP lifespan = 75 years. Installation years = 1955-1975, Replacement years = 2012-2050.
- 3.) Percent of District to be replaced with corresponding year. (e.g.) 2031 = 12.9% District replacement. (Uneven distribution used due to a majority of pipe installed at end of its design life - 2031 to 2035).
- 4.) Cost Anticipated for Replacement in given year with 4% escalation per year, representing the future value of pipe.
- 5.) PMT - Required Incremental Annual Cash Flow Required Amount - Annual cash income necessary for future pipe cost.
- 6.) Cost/SFRE (Annually) - Amount required to be collected incrementally per SFRE for corresponding year.
- 7.) Cost/SFRE (Annually Cumulative) - Cumulatively, what would be required to be collected per SFRE annually until 2050 to obtain enough to pay for future replacement.

Example - Year 2012 (Red numbers below correlate to red numbers noted above.)

- (3) - In 2012, 0.8% of the District is estimated to be at the end of its design life
- (4) - In 2012, future cost for 0.8% replacement of the system - \$400,907.00
- (5) - In 2012, present day cash flow amount required to be collected for only the 2031 repairs - \$403,877.71.
- (6) - In 2012, annual amount required per SFRE to complete the repairs- \$74.05.
- (7) - In 2012, annual cumulative amount required per SFRE - \$671.94

In 2013, the 2012 expense of \$73.51 would be removed to leave the annual cumulative amount required per SFRE for total completion - \$598.43

Appendix 1

January 2010 Board Meeting – FRSF 2010 Report

NWLSD - Reserve Fund - Capital Improvements - 75 year life - 2010

Data - District Tap/Service Fee Evaluation

Total Length of Pipe in District (6" - 24" in size) - 345,646 LF
Total Length of Clay Material (6" - 24" in size) - **310,785 LF**
Percentage of Clay Pipe remaining in District - 89.9%
Installation years - 1955 to 1975
Using a **Design Life of 75 years**, Replacement years = **2031 to 2050**
Factor used for escalation and increasing value of money = **4%**
The existing total SFRE (Single Family Residential Equivalent) = **5,453.8**

Total Estimated Cost of Clay Piping Infrastructure Improvement

Present Worth (6"-24" in size) = \$35,520,745
Future Worth (6"-24" in size) = \$96,261,888

In order to secure the required funds for Capital Improvements

Timeframe: **Starting in 2010, Finishing in 2050**
Annual Fee per SFRE required = **\$355**

Attached Tables

Table 1 - Annual \$355 Charge - Table shows enough capital funds would be collected if \$355 was charged per SFRE.

Table 2 - Graduated Fee Structure Table - Table shows uniform increase in fees with current \$150 charge for 2010 shown.

Table 3 - A breakdown of present day cash amount required for future repairs. A graduated fee structure option, which would entail a larger upfront fee that would gradually lessen after the year 2031.

*** Data for Pipe Lengths, Estimated Cost, and % of the District piping to be replaced are based upon information from M/M's "District Tap/Service Fee Evaluation" dated February 22, 2006.**

NWLSD - Reserve Fund - Capital Improvements - 75 year life

Data - District Tap/Service Fee Evaluation - 2006*

Total Length of Pipe in District (6" - 24" in size) - **345,646 LF**

Total Length of Clay Material (6" - 24" in size) - **310,785 LF**

Percentage of Clay Pipe remaining in District - **89.9%**

1 - Total Estimated Cost of Clay Piping Infrastructure Replacement (6"-24" in size) = **\$35,520,745**

* Data for Pipe Lengths, Estimated Cost, and % of the District piping to be replaced are based upon information from M/M's "District Tap/Service Fee Evaluation" dated February 22, 2006.

Year of Improvement - 2	% of Pipe to be Replaced Each Year -3	Total Cost of Replacement (Annual) - 4	Capital Reserve Fund Calculations		
			Required Annual Cash Flow Amount- PMT - 5	Cost/SFRE (Annually) 6	Cost/SFRE (Annually-Cumulative) - 7
2031	20	\$16,188,707.90	\$506,384.49	\$88.30	\$398.50
2032	16	\$13,469,004.97	\$393,278.93	\$68.57	\$310.20
2033	13.5	\$11,819,051.86	\$322,767.16	\$56.28	\$241.63
2034	9	\$8,194,542.62	\$209,672.38	\$36.56	\$185.35
2035	7	\$6,628,474.48	\$159,162.68	\$27.75	\$148.79
2036	6	\$5,908,811.53	\$133,346.40	\$23.25	\$121.04
2037	5	\$5,120,970.00	\$108,761.93	\$18.96	\$97.79
2038	4	\$4,260,647.04	\$85,268.22	\$14.87	\$78.82
2039	3	\$3,323,304.69	\$62,743.77	\$10.94	\$63.95
2040	2	\$2,304,157.92	\$41,083.36	\$7.16	\$53.01
2041	1.9	\$2,276,508.02	\$38,371.35	\$6.69	\$45.85
2042	1.8	\$2,242,959.48	\$35,772.04	\$6.24	\$39.16
2043	1.7	\$2,203,084.65	\$33,274.44	\$5.80	\$32.92
2044	1.6	\$2,156,431.09	\$30,868.82	\$5.38	\$27.12
2045	1.5	\$2,102,520.31	\$28,546.60	\$4.98	\$21.74
2046	1.4	\$2,040,846.38	\$26,300.14	\$4.59	\$16.76
2047	1.3	\$1,970,874.51	\$24,122.65	\$4.21	\$12.17
2048	1.2	\$1,892,039.53	\$22,008.05	\$3.84	\$7.97
2049	1.1	\$1,803,744.35	\$19,950.90	\$3.48	\$4.13
2050	1	\$355,207.45	\$3,738.02	\$0.65	\$0.65
Totals	100	\$96,261,888.79			

Number Representations

- 1.) System Replacement Cost - \$35,520,745
- 2.) Using a VCP lifespan = 75 years. Installation years = 1955-1975, Replacement years = 2031-2050.
- 3.) Percent of District to be replaced with corresponding year. (e.g.) 2031= 20% District replacement. (Uneven distribution used due to a majority of pipe installed in first five years of existence.)
- 4.) Cost Anticipated for Replacement in given year with 4% escalation per year, representing the future value of pipe.
- 5.) PMT - Required Annual Present Day Cash Flow Amount - Annual cash income necessary for future pipe cost.
- 6.) Cost/SFRE (Annually) - Amount required to be collected cumulatively per SFRE for corresponding year.
- 7.) Cost/SFRE (Annually Cumulative) - Cumulatively, \$398.50 would be required to be collected per SFRE annually until 2031 to obtain enough to complete future replacement, In 2032, \$310.02 would be required to be collected per SFRE.

Example - Year 2031 (Red numbers below correlate to red numbers denoted above.)

- (3) - In 2031, 20% of the District is estimated to be at the end of its design life
 - (4) - In 2031, future cost for 20% replacement of the system - \$16,188,708.
 - (5) - In 2010, present day cash flow amount required to be collected for only the 2031 repairs - \$506,384.49.
 - (6) - In 2010, annual amount required per SFRE to complete the 20% future repairs for 2031- \$88.30.
 - (7) - In 2010, annual cumulative amount required per SFRE for total repair completion - **\$398.50**.
- In 2032, the 2031 expense of \$88.30 would be removed to leave the annual cumulative amount required per SFRE for total completion - **\$310.02**

* - Actual lifespan of piping will vary depending on construction, soil type, ground water, capacity, etc.

NWLSD - Reserve Fund - Capital Improvements - 75 year life - Uniform Increase

SFRE #

5453.8

Increasing Value

1.04

Year	Percent of Pipe Replaced Each Year	Annual Set Up Cost (per/SFRE)	Income (\$) Annual *SFRE	Total Value Income Forward (\$)	Est. - Total Improvement Cost Amount(\$)	NET Value Forward (\$)	Increasing Value of Money (4%)
2010	1	\$150	\$818,070	\$818,070	\$750,000	\$68,070	\$70,792.80
2011	1	\$150	\$818,070	\$888,863	\$750,000	\$138,863	\$144,417.31
2012	1	\$150	\$818,070	\$962,487	\$750,000	\$212,487	\$220,986.80
2013	1	\$150	\$818,070	\$1,039,057	\$750,000	\$289,057	\$300,619.08
2014	1	\$250	\$1,363,450	\$1,664,069	\$750,000	\$914,069	\$950,631.84
2015	1	\$250	\$1,363,450	\$2,314,082	\$750,000	\$1,564,082	\$1,626,645.11
2016	1	\$250	\$1,363,450	\$2,990,095	\$750,000	\$2,240,095	\$2,329,698.92
2017	1	\$250	\$1,363,450	\$3,693,149	\$750,000	\$2,943,149	\$3,060,874.87
2018	1	\$350	\$1,908,830	\$4,969,705	\$750,000	\$4,219,705	\$4,388,493.07
2019	1	\$350	\$1,908,830	\$6,297,323	\$750,000	\$5,547,323	\$5,769,215.99
2020	1	\$350	\$1,908,830	\$7,678,046	\$750,000	\$6,928,046	\$7,205,167.83
2021	1	\$350	\$1,908,830	\$9,113,998	\$750,000	\$8,363,998	\$8,698,557.75
2022	1	\$450	\$2,454,210	\$11,152,768	\$750,000	\$10,402,768	\$10,818,878.46
2023	1	\$450	\$2,454,210	\$13,273,088	\$750,000	\$12,523,088	\$13,024,011.99
2024	1	\$450	\$2,454,210	\$15,478,222	\$750,000	\$14,728,222	\$15,317,350.87
2025	1	\$450	\$2,454,210	\$17,771,561	\$750,000	\$17,021,561	\$17,702,423.31
2026	1	\$550	\$2,999,590	\$20,702,013	\$750,000	\$19,952,013	\$20,750,093.84
2027	1	\$550	\$2,999,590	\$23,749,684	\$750,000	\$22,999,684	\$23,919,671.19
2028	1	\$550	\$2,999,590	\$26,919,261	\$750,000	\$26,169,261	\$27,216,031.64
2029	1	\$650	\$3,544,970	\$30,761,002	\$750,000	\$30,011,002	\$31,211,441.71
2030	1	\$700	\$3,817,660	\$35,029,102	\$750,000	\$34,279,102	\$35,650,265.78
2031	11	\$650	\$3,544,970	\$39,195,236	\$10,938,707.90	\$28,256,528	\$29,386,788.99
2032	9	\$550	\$2,999,590	\$32,386,379	\$8,219,005.00	\$24,167,374	\$25,134,068.95
2033	7	\$550	\$2,999,590	\$28,133,659	\$6,569,051.86	\$21,564,607	\$22,427,191.37
2034	9	\$550	\$2,999,590	\$25,426,781	\$8,194,542.62	\$17,232,239	\$17,921,528.30
2035	7	\$450	\$2,454,210	\$20,375,738	\$6,628,474.48	\$13,747,264	\$14,297,154.37
2036	6	\$450	\$2,454,210	\$16,751,364	\$5,908,811.53	\$10,842,553	\$11,276,254.95
2037	5	\$450	\$2,454,210	\$13,730,465	\$5,120,970.00	\$8,609,495	\$8,953,874.76
2038	4	\$450	\$2,454,210	\$11,408,085	\$4,260,647.04	\$7,147,438	\$7,433,335.23
2039	3	\$350	\$1,908,830	\$9,342,165	\$3,323,304.69	\$6,018,861	\$6,259,614.96
2040	2	\$350	\$1,908,830	\$8,168,445	\$2,304,157.92	\$5,864,287	\$6,098,858.52
2041	1.9	\$350	\$1,908,830	\$8,007,689	\$2,276,508.02	\$5,731,181	\$5,960,427.72
2042	1.8	\$350	\$1,908,830	\$7,869,258	\$2,242,959.48	\$5,626,298	\$5,851,350.17
2043	1.7	\$250	\$1,363,450	\$7,214,800	\$2,203,084.65	\$5,011,716	\$5,212,184.14
2044	1.6	\$250	\$1,363,450	\$6,575,634	\$2,156,431.09	\$4,419,203	\$4,595,971.17
2045	1.5	\$250	\$1,363,450	\$5,959,421	\$2,102,520.31	\$3,856,901	\$4,011,176.89
2046	1.4	\$250	\$1,363,450	\$5,374,627	\$2,040,846.38	\$3,333,781	\$3,467,131.73
2047	1.3	\$150	\$818,070	\$4,285,202	\$1,970,874.51	\$2,314,327	\$2,406,900.31
2048	1.2	\$150	\$818,070	\$3,224,970	\$1,892,039.53	\$1,332,931	\$1,386,248.01
2049	1.1	\$150	\$818,070	\$2,204,318	\$1,803,744.35	\$400,574	\$416,596.61
2050	1	\$150	\$818,070	\$1,234,667	\$355,207.45	\$879,459	\$914,637.52
Totals	100				\$96,261,889		

NWLSD - Reserve Fund - Capital Improvements - 75 year life - Annual \$355 charge

SFRE #

5453.8

Increasing Value

1.04

Year	Percent of Pipe Replaced Each Year	Annual Set Up Cost (per/SFRE)	Income (\$) Annual *SFRE	Total Value Income Forward (\$)	Est. - Total Improvement Cost Amount(\$)	NET Value Forward (\$)	Increasing Value of Money (4%)
2010	1	\$355	\$1,936,099	\$1,936,099	\$750,000	\$1,186,099	\$1,233,542.96
2011	1	\$355	\$1,936,099	\$3,169,642	\$750,000	\$2,419,642	\$2,516,427.64
2012	1	\$355	\$1,936,099	\$4,452,527	\$750,000	\$3,702,527	\$3,850,627.70
2013	1	\$355	\$1,936,099	\$5,786,727	\$750,000	\$5,036,727	\$5,238,195.77
2014	1	\$355	\$1,936,099	\$7,174,295	\$750,000	\$6,424,295	\$6,681,266.56
2015	1	\$355	\$1,936,099	\$8,617,366	\$750,000	\$7,867,366	\$8,182,060.19
2016	1	\$355	\$1,936,099	\$10,118,159	\$750,000	\$9,368,159	\$9,742,885.55
2017	1	\$355	\$1,936,099	\$11,678,985	\$750,000	\$10,928,985	\$11,366,143.94
2018	1	\$355	\$1,936,099	\$13,302,243	\$750,000	\$12,552,243	\$13,054,332.65
2019	1	\$355	\$1,936,099	\$14,990,432	\$750,000	\$14,240,432	\$14,810,048.92
2020	1	\$355	\$1,936,099	\$16,746,148	\$750,000	\$15,996,148	\$16,635,993.84
2021	1	\$355	\$1,936,099	\$18,572,093	\$750,000	\$17,822,093	\$18,534,976.55
2022	1	\$355	\$1,936,099	\$20,471,076	\$750,000	\$19,721,076	\$20,509,918.57
2023	1	\$355	\$1,936,099	\$22,446,018	\$750,000	\$21,696,018	\$22,563,858.27
2024	1	\$355	\$1,936,099	\$24,499,957	\$750,000	\$23,749,957	\$24,699,955.56
2025	1	\$355	\$1,936,099	\$26,636,055	\$750,000	\$25,886,055	\$26,921,496.75
2026	1	\$355	\$1,936,099	\$28,857,596	\$750,000	\$28,107,596	\$29,231,899.58
2027	1	\$355	\$1,936,099	\$31,167,999	\$750,000	\$30,417,999	\$31,634,718.52
2028	1	\$355	\$1,936,099	\$33,570,818	\$750,000	\$32,820,818	\$34,133,650.22
2029	1	\$355	\$1,936,099	\$36,069,749	\$750,000	\$35,319,749	\$36,732,539.19
2030	1	\$355	\$1,936,099	\$38,668,638	\$750,000	\$37,918,638	\$39,435,383.72
2031	11	\$355	\$1,936,099	\$41,371,483	\$10,938,707.90	\$30,432,775	\$31,650,085.81
2032	9	\$355	\$1,936,099	\$33,586,185	\$8,219,005.00	\$25,367,180	\$26,381,867.00
2033	7	\$355	\$1,936,099	\$28,317,966	\$6,569,051.86	\$21,748,914	\$22,618,870.71
2034	9	\$355	\$1,936,099	\$24,554,970	\$8,194,542.62	\$16,360,427	\$17,014,844.17
2035	7	\$355	\$1,936,099	\$18,950,943	\$6,628,474.48	\$12,322,469	\$12,815,367.44
2036	6	\$355	\$1,936,099	\$14,751,466	\$5,908,811.53	\$8,842,655	\$9,196,361.10
2037	5	\$355	\$1,936,099	\$11,132,460	\$5,120,970.00	\$6,011,490	\$6,251,949.71
2038	4	\$355	\$1,936,099	\$8,188,049	\$4,260,647.04	\$3,927,402	\$4,084,497.74
2039	3	\$355	\$1,936,099	\$6,020,597	\$3,323,304.69	\$2,697,292	\$2,805,183.73
2040	2	\$355	\$1,936,099	\$4,741,283	\$2,304,157.92	\$2,437,125	\$2,534,609.80
2041	1.9	\$355	\$1,936,099	\$4,470,709	\$2,276,508.02	\$2,194,201	\$2,281,968.81
2042	1.8	\$355	\$1,936,099	\$4,218,068	\$2,242,959.48	\$1,975,108	\$2,054,112.66
2043	1.7	\$355	\$1,936,099	\$3,990,212	\$2,203,084.65	\$1,787,127	\$1,858,612.09
2044	1.6	\$355	\$1,936,099	\$3,794,711	\$2,156,431.09	\$1,638,280	\$1,703,811.20
2045	1.5	\$355	\$1,936,099	\$3,639,910	\$2,102,520.31	\$1,537,390	\$1,598,885.48
2046	1.4	\$355	\$1,936,099	\$3,534,984	\$2,040,846.38	\$1,494,138	\$1,553,903.62
2047	1.3	\$355	\$1,936,099	\$3,490,003	\$1,970,874.51	\$1,519,128	\$1,579,893.24
2048	1.2	\$355	\$1,936,099	\$3,515,992	\$1,892,039.53	\$1,623,953	\$1,688,910.82
2049	1.1	\$355	\$1,936,099	\$3,625,010	\$1,803,744.35	\$1,821,265	\$1,894,116.09
2050	1	\$355	\$1,936,099	\$3,830,215	\$355,207.45	\$3,475,008	\$3,614,007.94
Totals	100				\$96,261,889		

Appendix 2

2006 Tap Fee/Service Fee Evaluation Report



August 16, 2005
Rev: February 22, 2006

Northwest Lakewood Sanitation District
141 Union Boulevard STE 150
Lakewood, Colorado 80228
Attn: Board of Directors

Re: NWLSD 2006 Tap Fee/Service Fee Evaluation

Dear Board,

MARTIN/MARTIN, at the Board's request, has estimated future potential District wide infrastructure replacement costs and compared those costs to current NWLSD's revenues associated with tap fees, development fees and service fees. We additionally compared these revenue streams to other sanitation District's as a means of general comparison to the current market place. However, it should be recognized that a direct comparison to revenues by other Districts can not be made due to demographics, size and age of the Districts, to list a few. The ultimate goal of the District is to understand what revenues will be needed in the future to offset future infrastructure replacement costs. Following is a description of the procedure used to evaluate the aforementioned costs and revenue streams. Several tables are attached demonstrating the information evaluated. Please refer to notes on individual tables for more detailed descriptions.

Flow and Total Single Family Equivalents: An estimated flow of 345 gallons per Single Family Resident Equivalent (SFRE) was determined by assigning an average of 100 gallons of daily water use per person times 2.3 people per one single family residence (one SFRE) times a 1.5 peak day factor. The peak day use of 345 gal/SFRE was assigned to the number of SFRE's for multiple types of developments/establishments to yield a total estimated peak day use per type of development. For example, a commercial development having a 1.5-inch water tap has 11 SFREs; therefore 11 SFRE times 345 gallons yields a peak day use of 3,795 gallons.

Potential future SFRE's were estimated from aerial photography and current zoning information on file with Jefferson County. Following identification of open areas and elimination of areas that are anticipated to remain open, a conservative development density was applied to the open areas to estimate potential future SFRE's. Combining the potential future SFRE's of 240 with the Districts total existing SFREs of 6,310 yields a potential District total of 6550 SFREs. Using 345 gallons per SFRE times 6550 SFREs yields an approximate estimated peak day flow of 2,259,750 gallons contributing to the District upon full build-out. Please note that this quantity does not account for infiltration or illicit storm drainage.

Estimate Cost of Infrastructure Replacement: The District currently has approximately 345,646 feet of sewer main infrastructure including approximately 310,785 feet of clay main. Assuming that the clay main will require replacement in the future, the footage of clay main was sorted by size of pipe and assigned an estimated cost per foot for replacement, yielding a total opinion of estimated cost to be approximately \$35.52M in 2006 dollars. Consideration will need to be given for inflation cost for construction as well as interest revenue from investment dollars.

Understanding that the clay piping was installed over a number of years instead of all within the first year of District inception, the cost of replacement has been spread out over a number of years. Since the District began in 1955, it is assumed that the clay piping was installed over the next 20 years until 1975. This is the estimated year that clay piping was replaced with PVC piping. Table 4A spreads the clay piping replacement equally over 20 years yielding a 5% replacement each year for 20 years. However, it is expected that a large portion of the clay piping was installed during the first few years that the District began. Table 4B shows that 20% of the clay piping will require replacement the first year with a descending distribution having 1% replaced in year 20. Although this uneven distribution generates more capital expenditure in the earlier years of the 20 year evaluation, it reflects a more realistic approach for fee evaluation.

Each type of distribution applies a 4% inflation factor to today dollars for replacement costs throughout the subsequent years. In addition, each Table (4A and 4B) averages the Cost/SFRE for replacement costs in groups of 5 years to reflect a tap fee that the District may apply without an increase each year.

Current Revenue: The District's current development charges (tap fee) and mill levy were compared to eleven other sanitation Districts. Many of the other Districts have service fees billed in varying time increments but all were equated to an annual estimate of service fee revenue. For mill levy comparisons, a taxable value of \$300,000 was assigned to one SFRE times the mill levy to equate mill levy revenues for a one year period. The mill levy revenue was added to the annual service fee to summate the total annual revenue for each of the eleven Districts (based on a \$300,000 house). As a result (Table 6) indicates the estimated annual revenue of the twelve Districts.

Estimated Required Revenue: Using the District's estimated future 6,310 SFREs, a comparison to the estimated cost of \$35.52M for replacement of the clay pipe infrastructure is made. A time frame to replace the infrastructure of 20 years has been used. Please refer to Tables 4A and 4B for evaluation of Cost/SFRE to facilitate replacement of the District's clay pipe infrastructure.

Following is a list and description of the tables attached.

Table 1 – Flow Per SFRE Calculation

Estimated peak day usage per SFRE to be 345 gallons.

Table 2 – Total Flow per Usage

Total estimated peak day use per type of development/establishment.

Table 3 – NWLSD Existing and Potential Future SFREs with Estimated Daily Flows

Shows NWLSD's existing and potential future SFREs with corresponding estimated total peak day flows.

Table 4A – NWLSD Pipe Length Totals and Estimate of Replacement Costs
SFRE Comparison to Estimated Cost of District Clay Piping Infrastructure Replacement (Even
Distribution)

Shows the District's pipe footages sorted by size with corresponding estimated replacement costs for the clay mains.

Table 4B – NWLSD Pipe Length Totals and Estimate of Replacement Costs
SFRE Comparison to Estimated Cost of District Clay Piping Infrastructure Replacement (Descending
Distribution)

Shows the District's pipe footages sorted by size with corresponding estimated replacement costs for the clay mains.

Table 5 – Existing NWLSD Development Charges

Shows the District's current development charges for multiple types of developments/establishments.

Table 6 – Other District Development Charges

Compares NWLSD development fees with other District's development fees and mill levy's on a per SFRE and annualized basis.

If the Board has any questions or comments, please call our office.

Sincerely,

Britton Evans, P.E.
Project Engineer

Cc: Bill Willis, P.E. - Martin/Martin Inc.
Kammy Tinney – SDMS, Inc. FAX: (303) 987-2032
Tim Flynn – Collins, Cockrel and Cole, P.C. FAX: (303) 986-1755

Table 1 - Flow per SFRE Calculation

SFRE*(Capita/SFR)*(Gal/Capita/Day)*(Peak Day Factor)=	TOTAL Gal/SFRE/Day
1*2.3*100*1.5	345

One SFRE (single family residential equivalent) defines one single family resident. There is approximately 2.3 people per one single family residence. On average, one person consumes approximately 100 gallons per day. A daily peaking factor or 1.5 (150% of average consumption) is applied to achieve a daily peak use. All aforementioned multiplied results in approximately 345 gallons of water consumption (sewage waste) per SFRE.

Table 2 - Total Flow per Usage		
Residential	SFRE	Total Flow (Gal/Day)
Single Family Dwelling	1	345
Duplex	2	690
Mobile Home	1	345
Commercial/MultiDwelling Water Tap	SFRE	Total Flow (Gal/Day)
3/4	1.9	656
1	4.5	1,553
1 1/2	11	3,795
2	20	6,900
3	42	14,490
4	76	26,220

For residential development, each type of residential establishment has a single family residential equivalent (SFRE). For commercial or multidwelling development, the SFRE is equated to the potable water tap size servicing the establishment. The SFRE is multiplied by the peak daily consumption per SFRE to estimate the total peak daily sewage flow for each type of establishment.

Table 3 - NWLSD Existing and Potential Future SFRE's with Estimated Daily Flow				
	Residential SFRE's	Multi-Dwelling / Commercial SFRE's	Total SFRE's	Total Daily Flow @ 345 gal/SFRE/Day
Existing SFRE's ¹	4,158	2,153	6,310	2,176,950
Potential Future SFRE's ²	150	90	240	82,800
Percent of Existing (F/P)	3.6%	4.2%	3.8%	3.8%
Potential Total SFRE's	4,308	2,243	6,550	2,259,750

¹ Existing SFRE information obtained from NWLSD Permit Database Access file.

² Potential SFRE information obtained from aerial photography and Jefferson County website mapping.

The estimated potential future SFRE's based on aerial photography and Jefferson County website mapping equate to approximately 3.8% of the existing District SFRE's. The actual future SFRE's will vary dependent on scrape-offs and alternate establishments being developed at the same location.

Table 4 - NWLSD Pipe Totals and Estimate of Replacement Costs

NWLSD Pipe Totals ³									Total
Size (inches)	6"	8"	10"	12"	15"	18"	21"	24"	
Total Length (feet)	3,052	254,836	8,861	40,349	4,185	10,839	4,608	18,916	345,646
Total Length of Clay Material (feet) ⁴	3,052	237,606	8,668	37,221	3,730	7,282	1,434	11,792	310,785
Estimate of Replacement (\$/LF) ⁵	\$85	\$100	\$105	\$115	\$120	\$130	\$135	\$140	
Total Estimate of Clay Piping Infrastructure Replacement	\$259,420	\$23,760,600	\$910,140	\$4,280,415	\$447,600	\$946,660	\$193,590	\$1,650,880	\$32,449,305

³Pipe totals obtained from NWLSD maintenance program information on file. The accuracy of information has not been verified.

⁴For estimating purposes, it is assumed that the cost of infrastructure replacement should include clay material piping only.

⁵Cost of replacement is an average estimate. Costs will vary dependent on the specific project location and involvement.

The existing infrastructure consisting of PVC piping was not included within the estimated cost of infrastructure replacement. The above estimated total cost of clay piping infrastructure replacement cost does not include operation and maintenance costs. The above estimated total cost of clay piping infrastructure replacement cost is expected to be partially the responsibility of developers that may develop establishments that the existing adjacent and downstream NWLSD infrastructure cannot convey; therefore the developer will be responsible for providing NWLSD infrastructure to support the proposed development.

Table 5 - Existing NWLSD Development Charges

	NWLSD Fee	Metro Fee	Total
Charge per SFRE	\$2,020.00	\$1,980.00	\$4,000.00

Residential Dwelling

Type of Residential Structure	SFRE	NWLSD Fee	Metro Fee	Total
Single Family Dwelling	1	\$2,020.00	\$1,980.00	\$4,000.00
Duplex	2	\$4,040.00	\$3,960.00	\$8,000.00
Qualifying multiple dwelling (Each Unit)	1	\$2,020.00	\$1,980.00	\$4,000.00
Mobile Home	1	\$2,020.00	\$1,980.00	\$4,000.00

Commercial/Non-Qualifying Multiple Dwelling

Water Service Tap - Inches	SFRE	NWLSD Fee	Metro Fee	Total
3/4	1.9	\$3,838.00	\$3,762.00	\$7,600.00
1	4.5	\$9,090.00	\$8,910.00	\$18,000.00
1 1/2	11	\$22,220.00	\$21,780.00	\$44,000.00
2	20	\$40,400.00	\$39,600.00	\$80,000.00
3	42	\$84,840.00	\$83,160.00	\$168,000.00
4	76	\$153,520.00	\$150,480.00	\$304,000.00

Table 6 - Other District Development Charges

District	Metro Fee / SFRE	Inspection Fee	Tap/Permit Fee / SFRE	Service Fee Annual Estimate ¹	Mill Levy	Annual Mill Levy Revenue per One \$300,000 Actual Value Residential SFRE (7.96% or \$23,880 Assessed Value)	Total Annual Revenue/SFRE from Service Fee and Mill Levy
Northwest Lakewood	\$1,820.00	\$0.00	\$1,650.00	\$0.00	7.696	\$183.78	\$183.78
Daniels	\$1,820.00	\$25.00	\$1,740.00	\$715.00	0.542	\$12.94	\$727.94
North Table Mountain	\$1,820.00	\$25.00	\$2,000.00	\$266.00	0	\$0.00	\$266.00
Westridge	\$1,820.00	\$100.00	\$1,100.00	\$49.44	8.028	\$191.71	\$241.15
Bancroft-Clover	\$1,820.00	\$60.00	\$2,530.00	\$123.60	1.703	\$40.67	\$164.27
College Park	\$1,820.00	\$0.00	\$5,500.00	\$0.00	6.798	\$162.34	\$162.34
Pleasant View	\$1,820.00	\$0.00	\$2,960.00	\$132.00	0.552	\$13.18	\$145.18
Wheat Ridge	\$1,820.00	\$100.00	\$1,500.00	\$96.00	0.618	\$14.76	\$110.76
Green Mountain	\$1,820.00	\$125.00	\$2,464.00	\$108.00	0	\$0.00	\$108.00
Applewood	\$1,820.00	\$100.00	\$1,750.00	\$0.00	3.86	\$92.18	\$92.18
Berkeley	\$1,820.00	\$50.00	\$1,400.00	\$0.00	3.353	\$80.07	\$80.07
Lakewood	\$1,820.00	\$0.00	\$1,550.00	\$43.20	0	\$0.00	\$43.20
Average			\$2,226.73			\$65.97	\$193.74

Information above is related to one SFRE for a single family residential development. Most Districts evaluate non-single family development charges differently and cannot be equated across all Districts.

¹If District service fees are based on water usage, the peak day usage of 345 gal/SFRE was used to estimate the service fee.

Table 7 - SFRE Comparison to Estimated Cost of District Clay Piping Infrastructure Replacement

	SFRE's	Total Cost of Clay Piping Infrastructure Replacement	Cost per SFRE for 100% of Clay Infrastructure Replacement
Existing Residential SFRE's	4,158	\$32,449,305	\$5,143
Existing Non-Residential SFRE's	2,153		
Total Existing SFRE's	6,310		
Potential Future Residential SFRE's	150	\$32,449,305	\$4,954
Potential Future Non-Residential SFRE's	90		
Total Potential Future SFRE's	240		
Potential Total SFRE's	6,550	\$32,449,305	\$4,954

Replacement Cost per SFRE	\$4,954
Number of Years to Obtain Cost	20
Cost per SFRE per Month Over # of Years	\$20.64

The above table compares the existing NWLSD SFRE's and the potential total number of NWLSD SFRE's to the total estimated cost of replacing the existing clay piping infrastructure.