City Engineer's Report – February, 2006
City of Lemoore

A. Landscape and Lighting Maintenance

The costs to be assessed for the operation, maintenance and replacement of landscaping, lighting, parks and recreational facilities shall be allocated as follows to development within each designated zone within the District:

	Costs per:
1. Costs of medians, parkways, parkway walls	Residential parcel or equivalent
2. Costs of street lighting	Residential parcel or equivalent
3. Costs of park facilities	Residential unit

In order to equitably allocate costs it is necessary to (a) further define the basis for cost allocations and (b) estimate costs for each zone based upon unit costs of operation, maintenance and replacement.

a. Definitions

1. Costs of medians, parkways and parkway walls are not allocated solely to the parcels which they abut but to all residential parcels, or their equivalent, within the assessment zone. The costs to be allocated may be for medians, parkways, and parkway walls located within the assessment zone or immediately adjacent thereto on collector streets or arterials. Should some parcels vary more than 25% in size from the average residential parcel size in the zone, regardless of land use, the City Engineer may allocate costs thereto on a proportional basis. Lighting to be cost-allocated may be located within the assessment zone or immediately adjacent thereto on collector or arterial streets and not necessarily on the assessed parcel frontage.

2. Park facilities, including tot lots and neighborhood parks, shall be assessed based on residential units, multi-family or single-family. Such facilities need not be located within the assessment zone and may have been previously constructed. The City Engineer shall estimate the percentage of use thereof by residents within the assessment zone. No assessment therefore shall be made against non-residential parcels.

b. Unit Costs

The following unit costs shall be applied to the plans for lighting, landscaping and park facilities for each zone to determine maintenance, operation and replacement assessments therefore:

Table 1.A.
Unit Cost Analysis Detail –
Landscaping, Lighting and Park Operation and Maintenance
2006*

Cost Element	Unit (A)	Direct Labor Costs[a] (B)	Equipment Costs[b] (C)	Direct Overhead, Labor[c] (35%) (D)	Supervision (2½% of Direct Labor)[a] (E)	Indirect Overhead[d] (12% of Direct Labor) (F)	Assessment Charge[e] (5% of (B), (C), (D), (E), (F))	Total Annual Unit Costs
Turf	S.F.	$.93	$.35	$.32	$.025	$.12	$.09	$1.835
Planter	S.F.	$.93	$.35	$.32	$.025	$.12	$.09	$1.835
Trees	EA.	$125	--				$6.25	$131.25
Dump Fee	S.F.[f]	$.02	--				--	$.02
Street Lights	EA.	--	$1.20	--	--	--	$.06	$1.26[f]
Block Walls	L.F.	--	--	--	--	--	--	--
Water & Electricity	S.F.[g]	$.23	--				$.01	$.24
Tot Lot	EA.	$1040	--				$52	$1092
Rest Rooms	EA.	$1560	--				$78	$1638

[a] Parks and Facilities Superintendent
[b] See Equipment Charge Calculations
[c] Finance Department Calculation
[d] Finance Department estimate (Finance Department, Human Resources, Administration, Purchasing)
[e] City Engineer estimate
[f] Based on historic cost of materials only
[g] Square footage of turf and planter areas

* Utilizing permanent labor assignment

Table 1.B.
Unit Cost Analysis Detail –
Landscaping, Lighting and Park Operation and Maintenance
2006*

Cost Element	Unit (A)	Direct Labor Costs[a] (B)	Equipment Costs[b] (C)	Direct Overhead, Labor[c] (16.5%) (D)	Supervision (5% of Direct Labor)[a] (E)	Indirect Overhead[d] (12% of Direct Labor) (F)	Assessment Charge[e] (5% of (B), (C), (D), (E), (F))	Total Annual Unit Costs
Turf	S.F.	$.50	$.35	$.082	$.025	$.06	$.05	$1.067
Planter	S.F.	$.50	$.35	$.083	$.025	$.06	$.05	$1.067
Trees	EA.	$125	--	--	--	--	$6.25	$131.25
Dump Fee	S.F.[f]	$.02	--	--	--	--	--	$.02
Street Lights	EA.	--	$1.20	--	--	$.06	--	$1.26[f]
Block Walls	L.F.	--	--	--	--	--	--	--
Water & Electricity	S.F.[g]	$.23	--				$.01	$.24
Tot Lot	EA.	$1040	--				$52	$1092
Rest Rooms	EA.	$1560	--				$78	$1638

[a] Parks and Facilities Superintendent
[b] See Equipment Charge Calculations
[c] 2006 Budget
[d] Finance Department estimate (Finance Department, Human Resources, Administration, Purchasing)
[e] City Engineer estimate
[f] Based on historic cost of materials only
[g] Square footage of turf and planter areas

* Utilizing current temporary labor assignments

It should be noted that maintenance and operations costs include materials, equipment charges, direct labor costs, direct overhead, supervision, indirect overhead (finance department, human resources, administration, purchasing) and a five (5) percent assessment charge. Operation and maintenance costs are estimated on the basis of usage of permanent City employees, not part-time labor, and on the basis of continued employment of temporary labor, Tables 1A and 1B, respectively. Such costs have been estimated based upon actual direct City labor requirements for existing assessment zones in Landscape and Lighting Maintenance District No. 1 and upon existing City park/tot lot maintenance costs. Replacement costs are based on contract costs plus allowances for supervision and contract administration (10%) plus a 5% assessment cost.

Tables A, B and C in the Appendix to this report provide background information regarding unit cost calculations.

Table 2
Unit Cost Analysis Detail
Landscaping, Lighting and Park Replacement

Cost Element	Unit	Direct Annualized Replacement Cost	Supervision or Contract Administration (10%)	Assessment Charge (5%)	Total Annualized Cost
Turf	S.F.	$.04	$.004	$.002	$.046
Planter	S.F.	$.05	$.005	$.0025	$.0575
Trees	EA.	$5	$.50	$.25	$5.75
Street Lights	EA.	$20.83	$2.08	$1.04	$23.95
Block Walls	S.F.	$.50	$.05	$.025	$.575
Water System	S.F.	$.05	$.005	$.0025	$.0575
Tot Lot	EA.	$800	$80	$40	$920
Rest Rooms	EA.	1,000	$100	$50	$1150

Note: See Table A in Appendix for direct cost calculation

B. Paving, Curb and Gutter, and Sidewalk Maintenance

The costs to be assessed for the maintenance of these facilities on local streets (not collectors or arterials, as designated in the City's General Plan) shall be allocated as follows to development within each designated zone within the District:

> All costs, including patching and cracksealing, rejuvenation (Reclamite) sealing, asphaltic overlays, and curb, gutter, crosswalk, and sidewalk replacement.

In order to equitably allocate costs it is necessary to (a) further define the basis of cost allocation and (b) estimate costs for each zone based upon unit costs of each maintenance procedure.

a. Basis of Cost Allocation

Should some parcel frontages, such as those on cul-de-sacs, vary more than 25% from the average parcel frontage in the zone, the City Engineer may allocate costs thereto on a per-parcel proportionate basis.

b. Unit costs

The following unit costs shall be applied, in accord with improvement drawings for local street construction in each zone, to determine pavement maintenance assessments:

Table 3
Unit Costs per Year-Pavement Maintenance

Maintenance Procedure	Maintenance Unit	Maintenance Frequency, Thirty Year Cycle*	Total Annual Costs/Maintenance Unit
Rejuvenation seal (Reclamite)	S.F.[1]	4	$.0056/S.F.
Crack filling and patching	S.F.	3	$.007/S.F.
1-1/2-inch overlay	S.F.	1	$.0377/S.F.
Remix	S.F.	1	$.0753/S.F.
Curb, gutter	L.F.	(20% every	$.3307/L.F.
Sidewalk/cross gutter	S.F.	thirty years)	$.0472/S.F.

[1]Square foot
[2]Cold-planing at gutter at 15-years, asphalt remix at 30 years
[3]Linear feet
*See Table 3 for Maintenance Cycle explanation

Costs will be assessed on the basis of local street width (normally 28 feet in planned unit developments, 32 feet in other developments). These unit costs assume that pavement replacement or reconstruction will not be required. Other maintenance procedures may, if found to be more effective, be substituted for those used as a basis of cost estimation.

In further explanation of the basis for annual cost calculations, the pavement maintenance program cycle will be:

Table 4
Street Maintenance Cycle

0 + 5 years:	Reclamite
0 + 10 years:	Reclamite (+ patch/crackfill)
0 + 15 years:	1-1/2” Overlay (+ patch/crackfill)
0 + 20 years:	Reclamite
0 + 25 years:	Reclamite (+ patch/crackfill)
0 + 30 years:	Remix
(Cycle repeated thereafter)	

Unit cost estimates are based on contracted maintenance, plus direct City personnel and equipment costs, and include allowances for engineering, inspection and contract administration (10%, 10%, and 15%, respectively), plus a 5% assessment charge. Such estimates are detailed in Table D in the Appendix to this report.

An analysis of the application of the calculated unit costs for a current subdivision, Tract 817, follows (Table 5). The Appendix contains, for comparison purposes, a cost estimate prepared by a consultant for the subdivider.

Table 5A
Calculated Unit Costs and Resulting Assessments
Tract 817
(Phases One and Two)*

Item	Unit	O & M	Replacement	Annual Cost Total
Street Lights	36 EA	$1.26	$23.95	$907
Trees	260 EA	$131.25	$5.75	$35,620
Turf	13,000 S.F.	$1.835	$.046	$24,450
Planter	825 S.F.	$1.835	$.0575	$1,561
Dump Fee	13,825 S.F.	$.02	0	$277
Block Wall	770 L.F.	0	$.575	$443
Water/Electricity	13,825 S.F.	$.24	$.0575	$4,113
Tot Lot	1 EA	$1092	$920	$2,012
Restroom	0 EA	$1638	$1150	0
Reclamite	210,000 S.F.	$.0056	0	$1,176
Crack Filling	210,000 S.F.	$.007	0	$1,470
1½" Overlay	210,000 S.F.	$.0377	0	$7,917
Remix	210,000 S.F.	$.0753	0	$15,800
SW/Cross Gutter	88,500 S.F.	$.0472	0	$4,177
C & G	10,500 L.F.	$.3307	0	$3,472
			Total	$103,394
			No. of parcels	112
			Monthly assessment per parcel	$76.93

*Utilizing permanent employees for operation and maintenance.

This subdivision is not typical in that it has very limited turf and planter area to be maintained.

Table 5B
Calculated Unit Costs and Resulting Assessments
Tract 817
(Phases One and Two)*

Item	Unit	O & M	Replacement	Annual Cost Total
Street Lights	36 EA	$1.26	$23.95	$907
Trees	260 EA	$131.25	$5.75	$35,620
Turf	13,000 S.F.	$1.067	$.046	$14,469
Planter	825 S.F.	$1.067	$.0575	$927
Dump Fee	13,825 S.F.	$.02	0	$277
Block Wall	770 L.F.	0	$.575	$443
Water/Electricity	13,825 S.F.	$.24	$.0575	$4,113
Tot Lot	1 EA	$1092	$920	$2,012
Restroom	0 EA	$1638	$1150	0
Reclamite	210,000 S.F.	$.0056	0	$1,176
Crack Filling	210,000 S.F.	$.007	0	$1,470
1½" Overlay	210,000 S.F.	$.0377	0	$7,917
Remix	210,000 S.F.	$.0753	0	$15,800
SW/Cross Gutter	88,500 S.F.	$.0472	0	$4,177
C & G	10,500 L.F.	$.3307	0	$3,472
			Total	$92,780
			No. of parcels	112
			Monthly assessment per parcel	$69.03

*Utilizing mix of temporary and permanent employees

This subdivision is not typical in that it has very limited turf and planter area to be maintained.

APPENDIX

Table A
Direct Annual Costs of Maintenance and Replacement LLMD
(Lighting and Landscaping Components)
City of Lemoore*

Item	Unit	Maintenance/ Operation Cost	Replacement Cost Allotment	Total Cost
Turf	S.F.	$.93	$.04	$.97
Planter	S.F.	$.93	$.05	$.98
Trees	EA.	$125	$5	$130
Dump fee	S.F.	$.02	--	$.02
Street lights	EA.	$1.20	$20.83[(b)]	$22.03
Block Walls	L.F.		$.575	$.575
Water and Electricity	S.F.	$.23	$.05[(d)]	$.23[(e)]
Tot Lot	EA.	$1040	$800[(f)]	$1840
Restroom	EA.	$1560	$1,000	$2560

*Utilizing permanent employee assignment ($182,880/$97,600), 1.87 ratio
[(a)] Replacement every 40 years
[(b)] Historic replacement rate
[(c)] Fifty-year replacement cycle
[(d)] Forty-year replacement cycle, water system
[(e)] Current actual costs
[(f)] One "unit" per year

Table B
Direct Annual Costs of Maintenance and Replacement LLMD
(Lighting and Landscaping Components)
City of Lemoore*

Item	Unit	Maintenance/ Operation Cost	Replacement Cost Allotment	Total Cost
Turf	S.F.	$.50	$.04[(b)]	$.54
Planter	S.F.	$.50	$.05[(b)]	$.55
Trees	EA.	$125	$5[(a)]	$130
Dump fee	S.F.	$.02	--	$.02
Street lights	EA.	$1.20	$20.83[(b)]	$22.03
Block Walls	L.F.		$.575	$.575
Water and Electricity	S.F.	$.23	$.05[(d)]	$.23[(e)]
Tot Lot	EA.	$1040	$800[(f)]	$1840
Restroom	EA.	$1560	$1,000	$2560

*Utilizing current temporary labor assignments
[(a)] Replacement every 40 years
[(b)] Historic replacement rate
[(c)] Fifty-year replacement cycle
[(d)] Forty-year replacement cycle, water system
[(e)] Current actual costs
[(f)] One "unit" per year

Table C
Equipment Charge Calculations – LLMDs
City of Lemoore
(Lighting and Landscaping Components)

Vehicles*			
		Replacement costs:	$343,500
		Replacement cycle:	10 years
		Replacement cost/yr:	$34,350
Minor equipment			
		Replacement costs:	$12,917
		Replacement cycle:	2 years
		Replacement cost/yr:	$6,400
Major equipment			
	(A)**	Replacement costs:	$45,500
		Replacement cycle:	10 years
		Replacement cost/yr:	$4,500
	(B)	Replacement costs: (mowers)	$29,400
		Replacement cycle:	5 years
		Replacement cost/yr:	$5,800
Total annual replacement costs:			$51,050

*Includes 70% usage of refuse truck, .7 x $180,000
**Bobcat backhoe, Bobcat: 507 usage x ($24,000 + $67,000).

Vehicle and equipment maintenance and operation costs, annual ***:
$16,500

Total replacement and operation and maintenance costs, vehicles and equipment:
$51,050 + $16,500 = $67,550

Total direct labor costs, 2006 (not including supervision): $95,000****
($15,728 + $87,021) x .95 (5% supervision) in 2005: $97,600

Therefore, equipment costs percentage of direct labor utilizing temporary helps
$67,550/$95,000 = 71%

(If all labor were permanent employees, annual direct labor costs would be

$$(\$15{,}728 - 5{,}150) + \left(87{,}021 \times \frac{\$13.84/hr}{7.00/hr}\right) = 10{,}578 + 172{,}302 = \$182{,}880.$$

The percentage of equipment costs would then be $67,550/182,880 = 37%

*** From 2005 City records
**** From budget

Table D
Unit Cost Analysis Detail –
Local Street Maintenance Processes
January, 2006

Process	Contract Costs	Engineering, Inspection and Contract Administration (35%)	Assessment Charge (5%)	Total Unit Cost (A)	Applications Per Thirty-Year Cycle (B)	Annual Unit Cost*
Pavement seal (Reclamite)	.03 S.F.	.01	.002	.042	4	.0056/S.F
Patch and Crackfill	.05 S.F.	.017	.003	.070	3	.007/S.F.
1-1/2" Overlay	$.80 S.F.	.28	.054	1.13	1	.0377/S.F.
Remix	1.60 S.F.	.56	.108	2.27	1	.0753/S.F.
Curb and Gutter**	$35 L.F.	12.25	2.36	.4961	(.20 x 1)	.3307/L.F.
Sidewalk	$5 S.F.	1.75	.34	7.09	(.20 x 1)	.0472/S.F.

*[(A) x (B)] / 30
**Including handicapped ramps, driveway ramps. Assume 20% replacement in thirty-year cycle due to tree root damage, drainage failures.