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546.02.20

City of Lakeport

Pavement Management Program Update
Final Report

Submitted to:

City of Lakeport
Public Works Department
225 Park St.
Lakeport, CA 95453

December 2011

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Background

Nichols Consulting Engineers, Chtd. (NCE) was selected by the Lake County City Area Planning Council to update the City of Lakeport's pavement management program in 2011. The network is comprised of approximately 29.5 centerline miles, of which 6.6 miles are arterials, 9 miles are collectors, and 13.7 miles are residential/local streets.

The unit costs of the pavement maintenance strategies were also updated based on recent bid tabs from 2010/2011. Then, a budget needs analysis was performed. In addition, three budgetary scenarios were analyzed. This report presents an executive summary of our analyses.

Purpose

The purpose of this report is to assist decision makers in utilizing the results of the Metropolitan Transportation Commission (MTC) StreetSaver Program. Specifically, this report links the recommended repair program costs to the City of Lakeport's current and projected budget alternatives to improve overall maintenance and rehabilitation strategies. This report assesses the adequacy of ideal and projected revenues to meet the maintenance needs recommended by the PMP program. It also maximizes the return from expenditures by:

(1) implementing a multi-year road rehabilitation and maintenance program;
(2) developing a preventative maintenance program; and
(3) selecting the most cost effective repairs.

This report assists the City of Lakeport with identifying maintenance priorities specific to its needs. This study examines the overall condition of the road network and highlights options for improving the current network-level pavement condition index (PCI). These options are developed by conducting "what-if" analyses using the City of Lakeport pavement management system database. By varying the budget amounts available for pavement maintenance and repair, one can show how different funding strategies can impact the City's roads over the next five years.

Network Description

The City of Lakeport is responsible for the management, repair and maintenance of approximately 29.5 centerline miles, or 202 sections. The table below summarizes the lengths of the roads in the network by functional class.

TABLE 1. Network Summary Statistics for the City of Lakeport.

Functional Class	Sections	Centerline Miles	Lane Miles
Arterial	28	6.7	13.4
Collector	45	9.0	18.05
Residential/Local	129	13.7	24.5
Total	**202**	**29.5**	**58.9**

The network replacement Cost is defined as the reconstruction of all the pavement sections in the City. **The network replacement cost of the City's pavements is estimated at $51.8 million.** This is approximately $6.2 million less than replacement cost estimated in 2008 due to lower unit prices in 2011 when compared to 2008. Details of the network inventory can be found in Section 1 of this report

Pavement Current Condition

The pavement condition index, or PCI, is a measurement of pavement grade or condition and ranges from 0 to 100. A newly constructed road would have a PCI of 100, while a failed road would have a PCI of 10 or less. The average 2011 PCI of the street network of the City is 37, which is in "poor" condition. There was no significant change in network PCI between 2008 and 2011 surveys. The average PCI improved slightly from 35 to 37 due to the maintenance and rehabilitation work (approximately 2 miles) performed in the past three years. Figure 1 illustrates the definitions of the pavement condition categories.

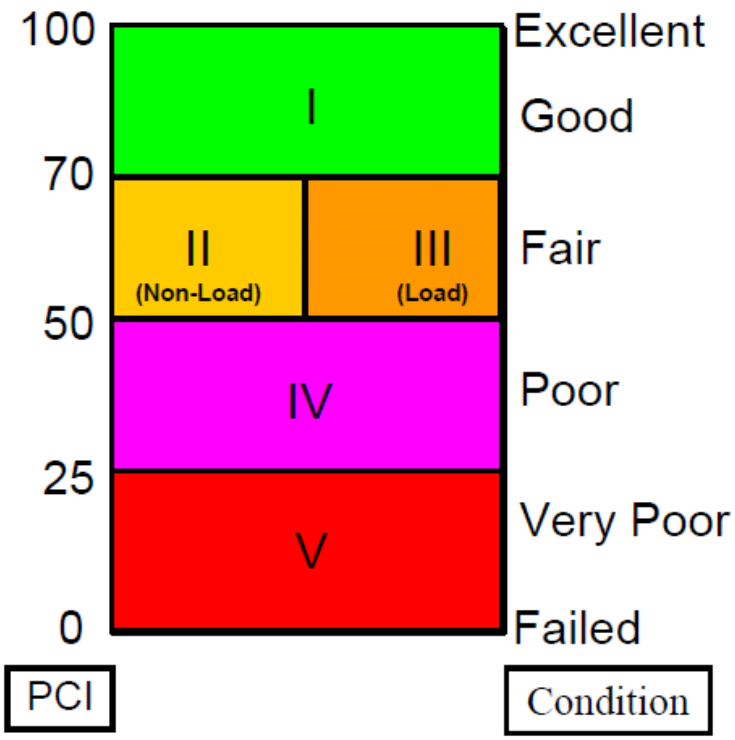

FIGURE 1. Pavement Condition Categories by PCI

The City has been utilizing surface treatments such as scrub seals, chip seals and cape seals as means of preventive maintenance when the pavements are in “fair” condition or above. When the pavement condition deteriorates, cold-in-place recycling, mill and overlays and full depth reclamation have been performed. Deep patching is commonly used as preparation prior to overlays. These treatments are formalized in the maintenance and rehabilitation decision tree as shown in Section 2.

Table 2 below, summarizes the average condition of the road network by functional class. Detailed section condition can be found in Section 2 of this report.

TABLE 2. Pavement Condition Summary by Functional Classification (2011)

Functional Class	Average PCI (weighted by area)
Arterial	57
Collector	31
Residential/Local	25
All	**37**

Approximately 22.5% of the City's pavement area is in the "good" or "excellent" condition category, and approximately 9.0% is in fair condition. Even though there is an improvement in the percent of streets that are above fair condition, 31 % against 15% in 2008, approximately 68 % of the pavement area is still in "poor" condition or below (Figure 2 summarizes the percent of pavement area by condition category).

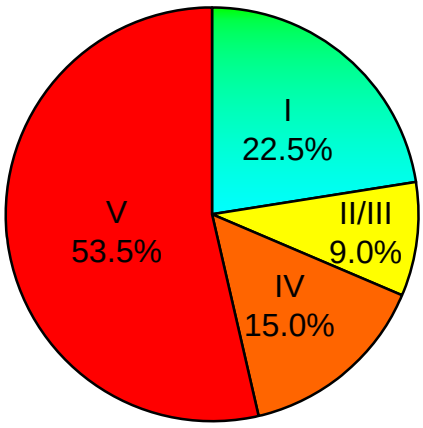

FIGURE 2. Pavement Condition Summary by Condition Category (2011)

Budget Needs

Based on the principle that it costs less to maintain roads in good condition than those in bad conditions, StreetSaver strives to develop a maintenance strategy that will improve the overall condition of the network to an optimal PCI and then sustain it at that level. The **average 2011 PCI of the network is 37**, which corresponds to the "poor" condition category, meaning that a significant portion of the network suffers from load related distresses. In order to correct these deficiencies, a cost-effective funding and maintenance and rehabilitation strategy must be implemented.

The first step in developing a cost-effective maintenance and rehabilitation strategy is to determine the maintenance "needs" of the roadway network. Using the StreetSaver budget needs module, maintenance needs over the next five years were estimated at approximately $20.3 million for the City. If the City of Lakeport follows the strategy recommended by the program, the average network PCI will increase to 86. The results of the budget needs analysis are summarized in the table below. These results were calculated based on updated unit costs provided by the City.

TABLE 3. Summary of Results from Needs Analysis

Year	2012	2013	2014	2015	2016	Total
PCI Treated	86	84	86	88	86	NA
PCI Untreated	37	33	30	28	25	NA
Preventive Maint. ($M)	0.07	0.00	0.03	0.03	0.01	0.14
Rehab.($M)	15.9	1.0	1.8	1.3	0.2	20.1
Total Needs ($M)	16.0	1.0	1.8	1.3	0.24	20.3

Table 3 illustrates the level of expenditures required to raise the pavement condition to a network PCI goal of 86 and eliminate the current maintenance backlog. The results of the budget needs analysis represent the ideal funding strategy recommended by the StreetSaver program. Out of the $20.3 million in maintenance needs shown, approximately $140,000 (0.7 percent) is earmarked for preventative maintenance or life-extending treatments, while all the rest (99.3 percent) is allocated for the more costly rehabilitation and reconstruction treatments. When compared to 2008 PMS analysis (for five year period from 2008 to 2012), the total maintenance needs for 2011 has reduced from $46.9 million to $20.3 million. This is primarily due to the more cost effective rehabilitation options, full depth reclamation and cold-in-place recycling, that the City has adopted for the current analysis period against conventional and more costly reconstruction methods used in 2008. Furthermore, a decrease in construction prices over the last 3 years has also contributed to the decrease in maintenance and rehabilitation needs.

Figure 3, below, demonstrates that pavement maintenance follows the old colloquial saying of "pay me now, or pay me more later". History has shown that it costs much less to maintain roads in good condition than to repair roads that have failed. By allowing pavements to deteriorate, roads that once cost $2.00 per square yard ($/sy) to scrub seal may soon cost $30.00/sy for recycling or $65.50/sy for full depth reclamation. In other words, delays in repairs can result in costs increasing as much as 30-fold. Again, due to the reasons detailed in the previous paragraph, the unit costs for individual rehabilitation treatments has reduced significantly from 2008 PMS analysis (from $5.00 per square yard ($/sy) for chip seal, $59.00/sy for overlays and $146.00/sy for reconstruction to unit costs values detailed in Figure 3). With the new rehabilitation options, the City will be able to stretch the value of the available dollars and better take care of the pavement network with the limited funds available.

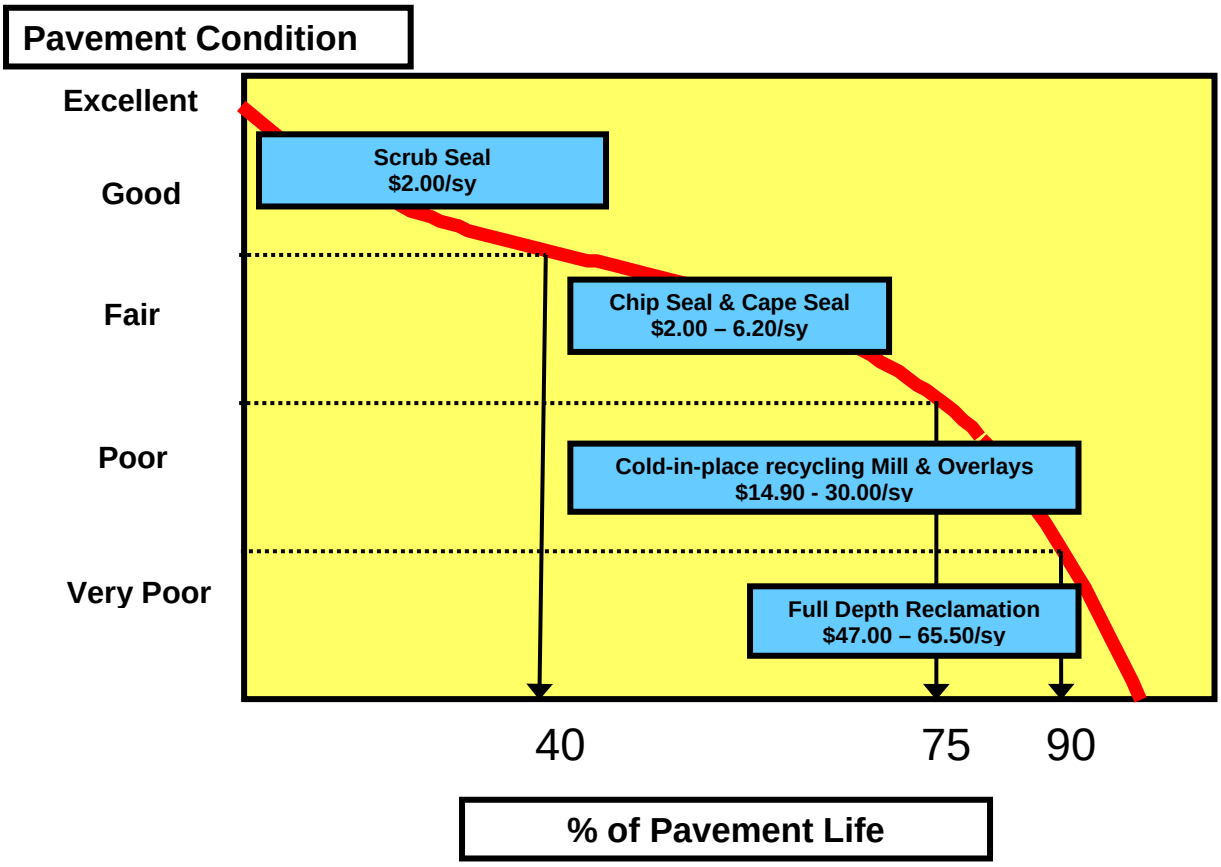

FIGURE 3. Costs of Maintaining Pavements Over Time

Budget Scenarios

Having determined the maintenance needs of the road network, the next step in developing a cost-effective maintenance and rehabilitation strategy is to conduct several “what-if” analyses. Using the StreetSaver budget scenario module, the impacts of various budget "scenarios" can be evaluated. The program projects the effects of the different scenarios on pavement condition index (PCI) and deferred maintenance (backlog). By examining the effects on these indicators, the advantages and disadvantages of different funding levels and maintenance strategies become clear. The following scenarios were performed for the purposes of this report.

Scenario 1. $300,000 Per Year (City Budget) – This scenario shows how the network changes under the current funding level. The condition of the network will continue to deteriorate from a PCI of 37 to 31 by 2016 and the deferred maintenance backlog will increase to $18.5 million.

Scenario 2. $700,000 Per Year (Maintain PCI) - In this scenario, the City would require an annual budget of $700,000 in order to maintain the current City network PCI of 37. A deferred maintenance backlog of $16.9 million would remain at the end of the next five years.

Scenario 3. $1.25 Million Per Year (Improve PCI by 10 points) - In this scenario, the City would require an annual budget of $1.25 million in order to improve the City’s PCI from 37 to 47. A deferred maintenance backlog of $14.2 million would remain at the end of the next five years.

Note: Deferred maintenance consists of pavement maintenance that is needed, but can not be performed due to lack of funding. Shrinking budgets have forced many cities and counties to defer much-needed road maintenance. By deferring maintenance, not only does the frequency of citizens' complaints about the condition of the network increase, but the cost to repair these streets rises as well.

More detailed results of the budget needs scenarios can be found in Section 3 of this report.

Scenario 1: $300,000 Per Year (City Budget)

This scenario assumes a city budget of $300,000 per year over the next five years, of which $100,000 is for preventive maintenance and $200,000 is for rehabilitation. Any excess preventive maintenance funds were allocated for rehabilitation to minimize surplus money. The results of this scenario indicate that the network PCI will decrease from 37 to 31 and 61.7% of the network will fall in the very poor or failed condition category by 2016. The backlog of work will increase to about $18.5 million by 2016.

TABLE 4. Summary of Results for Scenario 1

Year	2012	2013	2014	2015	2016	Total
Budget ($-Millions)	0.3	0.3	0.3	0.3	0.3	1.5
Rehabilitation ($-Millions)	0.2	0.22	0.25	0.24	0.28	1.2
Preventive Maint. ($-Millions)	0.00	0.07	0.03	0.03	0.01	0.14
Deferred Maint. ($-Millions)	15.8	16.4	17.8	18.9	18.5	--
PCI	38	36	34	32	31	--

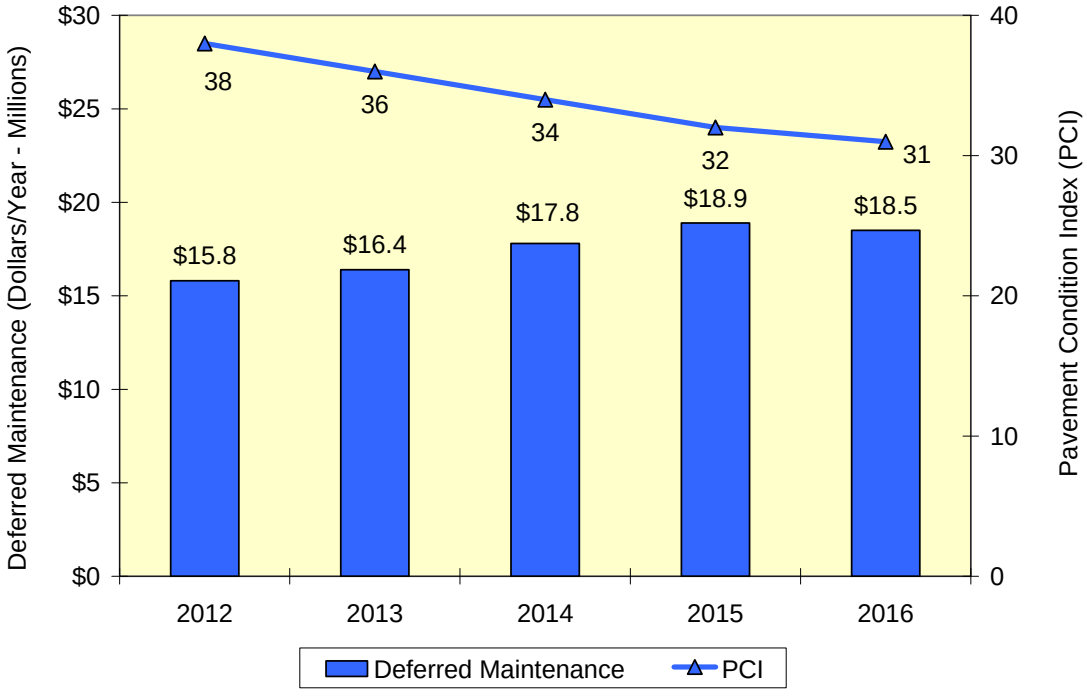

FIGURE 4. PCI vs. Deferred Maintenance for $300,000 Per Year

Scenario 2: $700,000 Per Year (Maintain PCI at 37)

For this scenario, the City's PCI will be maintained at its current value of 37 for the next five years. This requires an annual budget of $700,000. However, the backlog of work will still increase from $15.3 million to $16.9 million by the year 2016. By 2016, 42.3% of the network will fall into the good or excellent condition category, but 57.7% will still fall in the very poor or failed condition category.

TABLE 5. Summary of Results for Scenario 2

Year	2012	2013	2014	2015	2016	Total
Budget ($-Millions)	0.7	0.7	0.7	0.7	0.7	3.5
Rehabilitation ($-Millions)	0.68	0.68	0.69	0.68	0.68	3.42
Preventive Maint. ($-Millions)	0.00	0.00	0.00	0.00	0.01	0.01
Deferred Maint. ($-Millions)	15.3	15.6	16.7	17.4	16.9	--
PCI	40	39	38	37	37	--

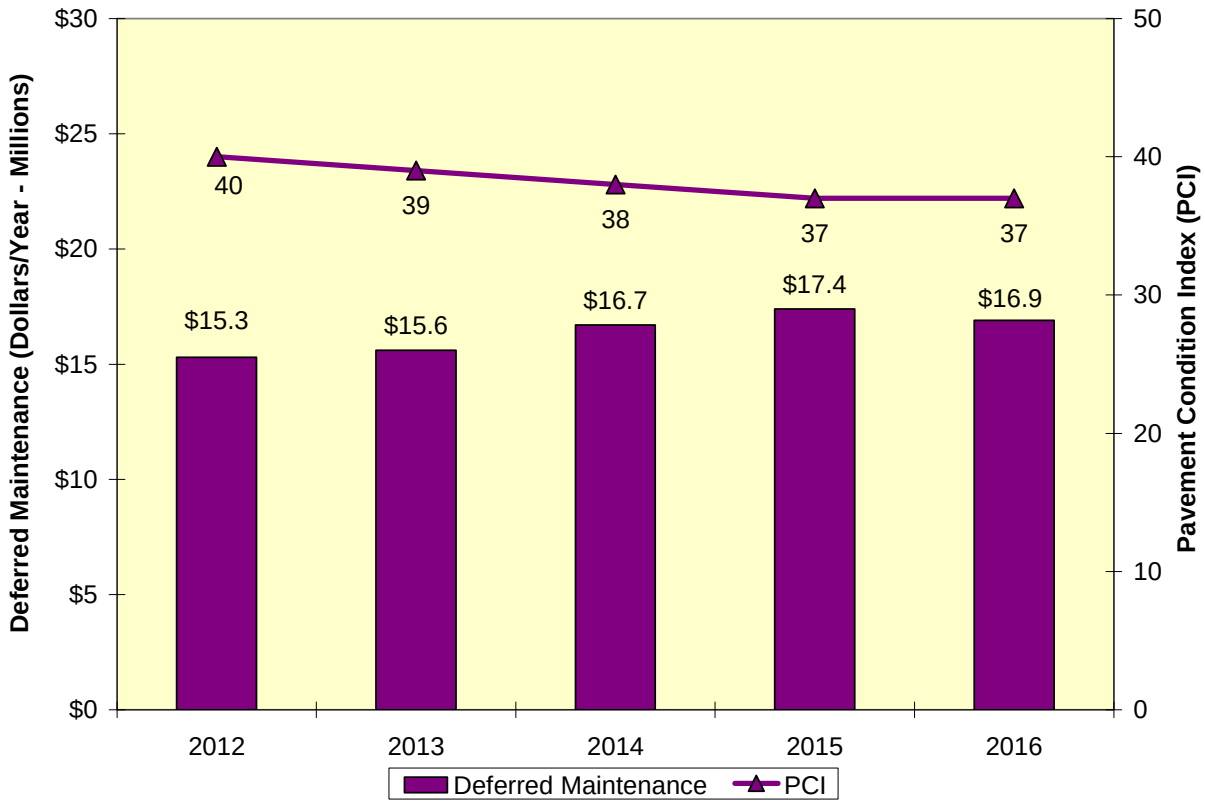

FIGURE 5. PCI vs. Deferred Maintenance for $700 K Per Year

Scenario 3: $1.25 Million Per Year (Improve PCI by 10 Points)

For this scenario, the City's PCI will be increased from its current value of 37 to 47 after five years. This requires an annual budget of $1.25 million. However, a backlog of work of $14.2 million would still remain by the year 2016. By 2016, 52.8% of the network will fall into the good or excellent condition category, but 46,7% will still fall in the very poor or failed condition category.

TABLE 6. Summary of Results for Scenario 3

Year	2012	2013	2014	2015	2016	Total
Budget ($-Millions)	1.25	1.25	1.25	1.25	1.25	6.25
Rehabilitation ($-Millions)	1.22	1.22	1.22	1.23	1.24	6.13
Preventive Maint. ($-Millions)	0.00	0.02	0.00	0.00	0.01	0.03
Deferred Maint. ($-Millions)	14.8	14.5	15.1	15.2	14.2	--
PCI	42	42	43	45	47	--

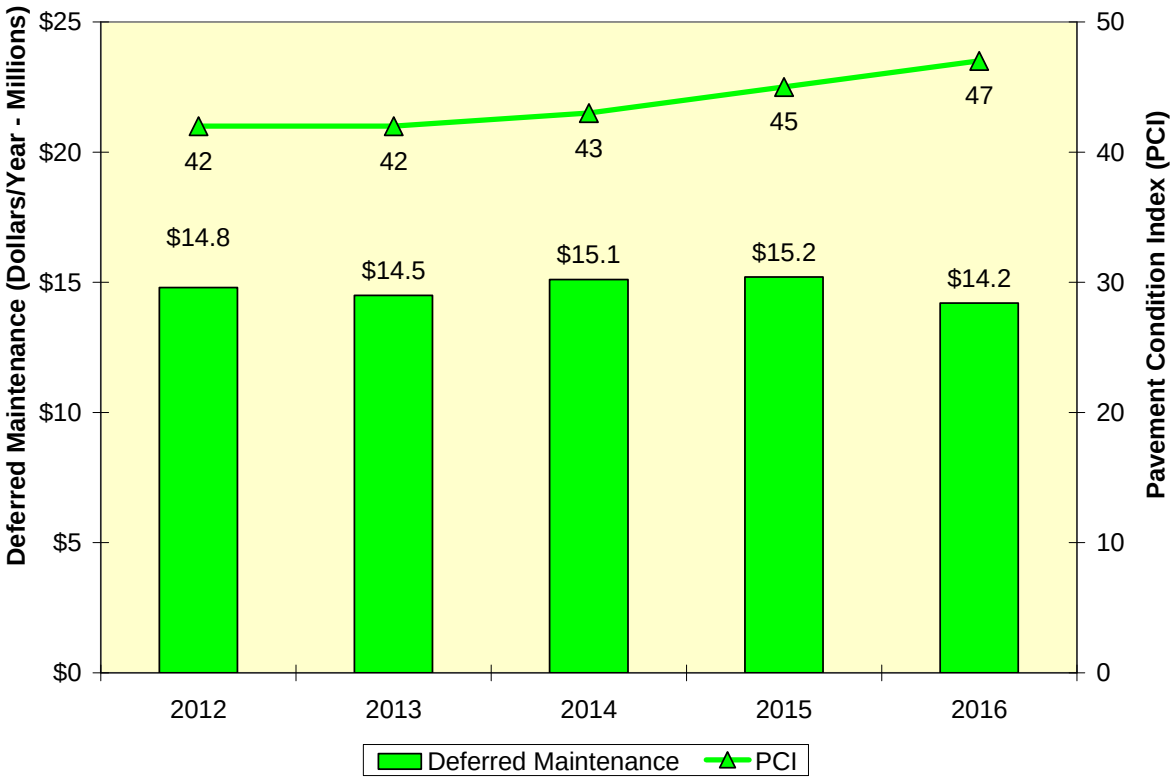

FIGURE 6. PCI vs. Deferred Maintenance for $1.25 Million Per Year

The following two figures graphically illustrate the annual changes in PCI and deferred maintenance as outlined in each scenario.

Figure 7 (below) illustrates the change in PCI over time for the different budget scenarios. Scenario 1 (Current City Budget) lowers the current network PCI of 37 to 31 in ten years, Scenario 2 ($700K Per Year) will approximately maintain the current network PCI of 37, and Scenario 3 ($1.25 Million Per Year) will improve the network PCI by 10 points.

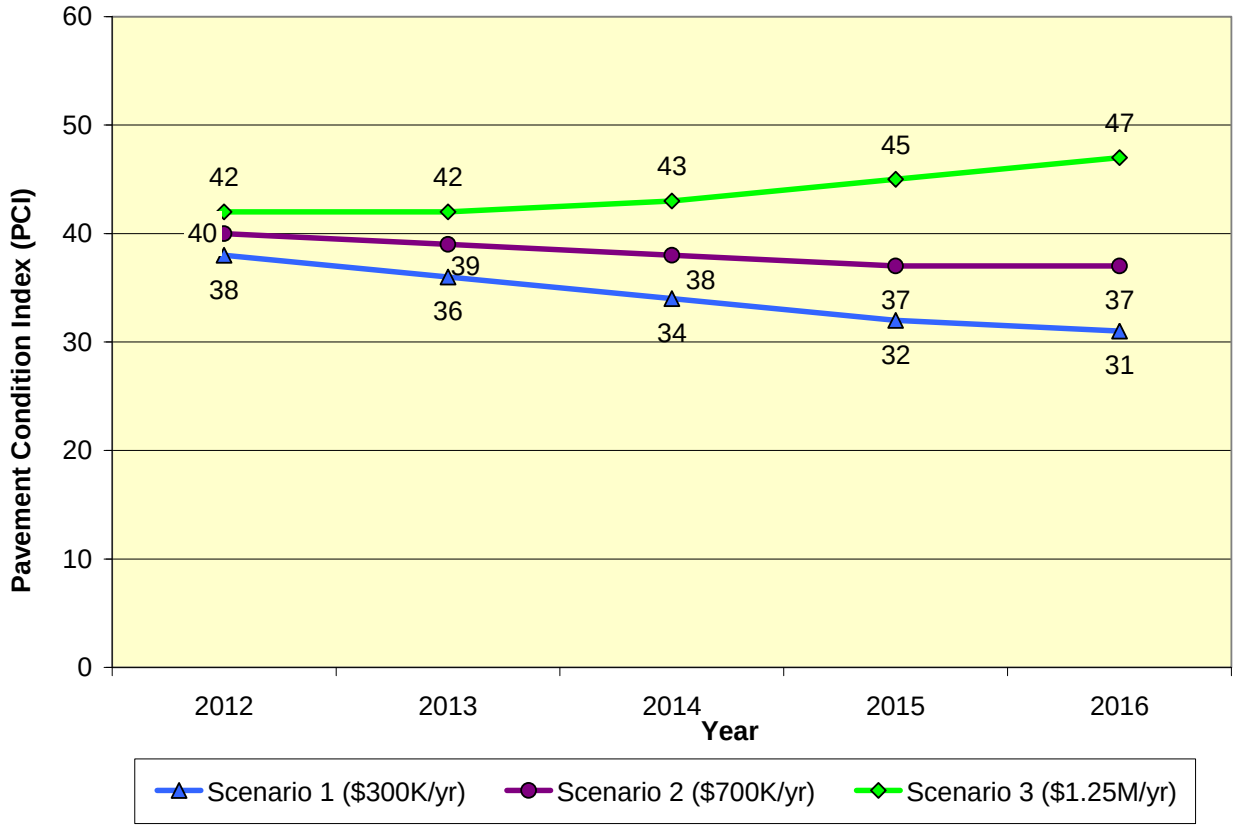

FIGURE 7. Pavement Condition Index by Scenario by Year

Figure 8 illustrates the change in deferred maintenance over time for the different budget scenarios. Note that in all cases the amount of deferred maintenance continues to increase significantly over time.

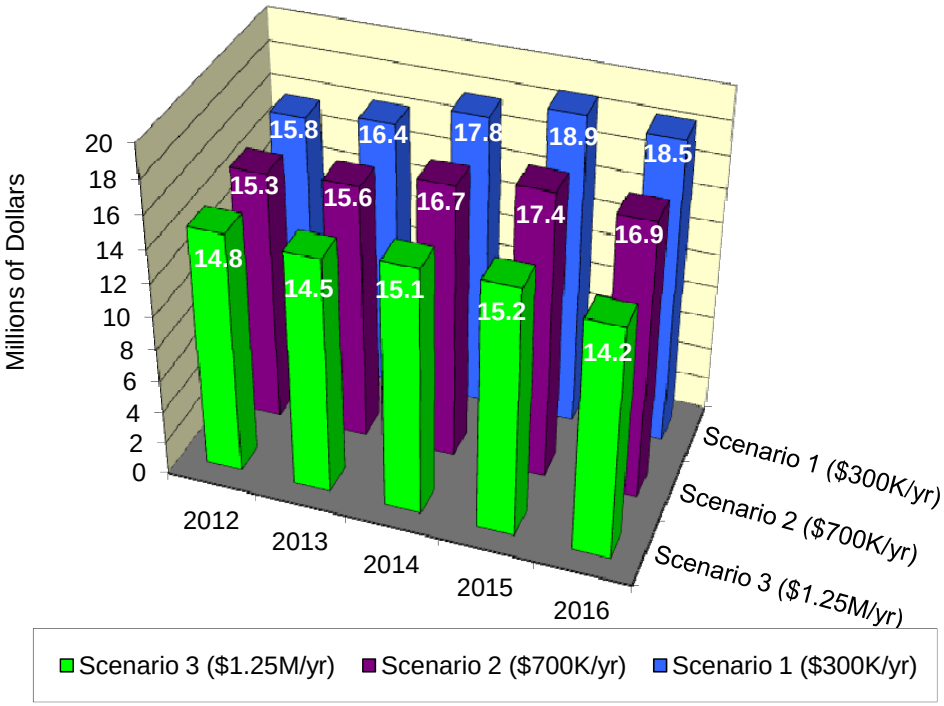

FIGURE 8. Deferred Maintenance by Scenario by Year

Summary

There is very little good news to present in this report. The average network PCI is 37; approximately 68% of the network is in poor or failed condition; and only 22% is in good to excellent condition. With the available City budget of $300,000 per year, the network average PCI is projected to decrease from 37 to 31 in the next five years.

A significant amount of money is needed to bring the network streets into the “good to excellent” condition category. It will require at least $700,000 per year to maintain the current PCI level, and significantly more ($1.25 million per year) is needed to improve the network condition by as little as 10 points.

Recommendations

It is recommended that the City of Lakeport increase its current funding level to at least $700,000 per year so that it can maintain the current PCI conditions. The new maintenance and rehabilitation strategies adopted by the City provide significant cost savings when compared to traditional methods and can stretch the value of available dollars. However, the cost estimates and the needs analysis provided in the report does not account for inflation (2011 dollars). We encourage the City to carefully monitor the fluctuations in construction costs and also account for inflation when preparing projected cost estimates for funding purposes.

In order to keep the data up to date, it is also recommended that arterial and collector streets be inspected every two years and residential streets every four to five years. Since the pavement treatment costs vary and the pavement maintenance technique develops, the decision tree and the associated unit costs should be reviewed and modified (if necessary) when the database is updated.

Section 4 provides a list of sections selected for treatment for Scenario 2.

Financing Alternatives

In light of the substantial financial commitment that is required to significantly maintain or even improve city wide road conditions, and the increase in construction and raw material costs, it is relevant to discuss the various possible financing alternatives to help fund pavement rehabilitation and preventative maintenance for the City. The following alternatives are some of the possible ways that the City should consider to generate additional revenue to fund needed rehabilitation and maintenance of City streets.

1) Truck Route Permit Fee – Leverages a surcharge fee on trucks for use of City roads to help recoup the costs of heavy wheel loads imposed by truck traffic.
2) Residential Waste Collection Fee – Surcharge is leveraged on waste companies to account for damage to pavement incurred by heavy waste collection trucks.
3) Development Repairs – Fees assessed to new developments to account for increased traffic associated with new residential and commercial tenants.

4) Establish Utility Cut Impact Fee – Fee is leveraged against utility to provide compensation for reduced pavement life due to utility cuts and patches.
5) Pursue Local Transportation Sales Tax Measures
6) Devote More Local Sales Tax/Revenues to Road Maintenance
7) Establish Downtown and Business Improvement Districts
8) Establish Citywide Assessment Districts

Glossary

Deferred Maintenance	This is maintenance work that is deferred to a future budget cycle, or postponed until funds are available. The failure to perform needed repair, maintenance, and renewal by normal maintenance management creates deferred maintenance, also called "Backlog".
Functional Class	Defines the primary function of a particular pavement section. The four classes are: A (Arterial), C (Collector), R (Residential), and O (Other).
Network	All the roads in the county that includes arterial, collector, and residential roads.
PCI	Pavement Condition Index - measured on a scale of 0 (failed) to 100 (excellent), PCIs can be calculated from inspection units and applied maintenance treatments.
PMP	Pavement Management Program
PM%	Percentage of each year's budget that has been set aside for preventive maintenance activities such as slurry seals.
Preventative Maintenance	These are treatments that are applied to pavements with a PCI greater than 70. They include treatments such as crack seals or slurry seals and are intended to preserve the pavement. However, it does not extend the structural service life of the pavement.
Rehabilitation	These are treatments that are applied for pavements with a PCI less than 70. Typically, they include overlays and reconstruction and are intended to extend the structural life of the pavement.
Replacement Cost	Cost to replace the entire pavement structure *e.g.* asphalt concrete and aggregate base.
Treatment	Repair activities that are applied to restore either the functional or structural deficiencies of the pavement.

Appendix A: Inventory & PCI Summary

CITY OF LAKEPORT
STREET INVENTORY AND PCI REPORT
(Sorted Alphabetically)

Road Name	Street ID	Section ID	Begin Location	End Location	Lanes	Length	Width	Area	FC	ST	PCI Date	PCI
ADAMS STREET	ADAMSS	010	WILL-O-VIEW CIRCLE	END	2	461	20	9220	R	A	7/7/2011	36
ALDEN AVENUE	ALDENA	010	TWENTIETH AVENUE	END	2	307	47	14429	C	A	6/27/2011	69
ALDEN AVENUE	ALDENA	020	400 FT S/PAGE DR	260 FT N/PAGE DR	2	660	24	15840	C	A	6/28/2011	92
ANASTASIA DRIVE	ANASTA	010	HARTLEY ROAD	END	2	700	29	20300	R	A	6/27/2011	16
ARMSTRONG ST	ARMSTR	012	RUSSELL STREET	POLK STREET	2	540	40	21600	C	A	7/5/2011	14
ARMSTRONG ST	ARMSTR	015	POLK STREET	FORBES STREET	2	1650	40	66000	C	A	7/5/2011	88
ARMSTRONG ST	ARMSTR	017	FORBES STREET	MAIN STREET	2	260	40	10400	C	A	7/5/2011	8
ASHE STREET	ASHEST	010	JONES STREET	LAKESHORE BLVD	2	615	28	17220	R	A	7/5/2011	15
BANASZECK DRIVE	BANZDR	010	ORCHARD ST	SMITH ST	2	440	10	4400	R	A	7/5/2011	7
BEACH COURT	BEACCT	010	BEACH LANE	END	2	175	28	4900	R	A	6/28/2011	12
BEACH LANE	BEACLN	010	LAKESHORE BLVD	CITY LIMITS	2	360	22	7920	R	A	6/28/2011	37
BEACH STREET	BEACHS	010	CENTRAL PARK	SIXTH STREET	2	192	18	3456	R	A	7/6/2011	13
BERRY STREET	BERRYS	010	SPURR STREET	ARMSTRONG STREET	2	624	20	12480	R	A	7/6/2011	5
BEVINS COURT	BEVINC	010	BEVINS STREET	END	2	777	36	27972	R	A	7/5/2011	15
BEVINS STREET	BEVINS	010	LAKEPORT BLVD (V110)	TRANSFER STATION	2	1200	30	36000	C	A	7/5/2011	3
BEVINS STREET	BEVINS	020	TRANSFER STATION	MARTIN ST (V111)	2	1076	31	33356	C	A	7/5/2011	6
BOGGS LANE	BOGGSA	010	WILL-O-VIEW CIRCLE	HARTLEY LANE	2	1750	29	50750	C	A	6/27/2011	33
BOGGS LANE	BOGGSA	020	Will-o-View Circle	20th Street	2	850	24	20400	C	A	6/28/2011	43
BROTEN CT	BROTCT	010	TODD RD EXTENSION	END	2	770	10	7700	R	G		0
BRUSH STREET	BRUSHS	020	ARMSTRONG ST	MARTIN ST	2	322	24	7728	R	A	7/5/2011	44
BRUSH STREET	BRUSHS	012	CLEARLAKE AVE	THIRD STREET	2	2200	24	52800	R	A	7/5/2011	26
BRUSH STREET	BRUSHS	015	THIRD STREET	SECOND STREET	2	280	24	6720	R	A	7/5/2011	84
BRUSH STREET	BRUSHS	017	SECOND STREET	FIRST STREET	2	320	24	7680	R	A	7/5/2011	50
BRYCE COURT	BRYCEC	010	SPURR STREET	END	2	192	37	7104	R	A	7/6/2011	81
C STREET	CSTR	010	MAIN STREET	FAIRGROUNDS	2	400	50	20000	R	A	6/23/2011	23
C STREET	CSTR	020	SOUTH MAIN ST	EAST END (LAKE)	2	345	50	17250	R	A	7/5/2011	14
CAMDEN AVENUE	CAMDEN	010	WRIGLEY STREET	FINWAY	2	300	30	9000	R	A	12/5/2011	90
CENTRAL PARK AVENUE	CENPAK	010	POOL ST	SHADY OAK ST	2	361	24	8664	C	A	7/6/2011	49
CENTRAL PARK AVENUE	CENPAK	020	SHADY OAK ST	ELEVENTH ST	2	2327	24	55848	C	A	7/6/2011	22
CHERRY STREET	CHERST	010	SIXTH ST	END	2	100	18	1800	R	A	6/28/2011	15
CLEAR LAKE AVENUE	CLEARL	030	MAIN ST	EAST END (LAKE)	2	600	40	24000	R	A	7/5/2011	7
CLEAR LAKE AVENUE	CLEARL	010	MAIN ST	HIGH ST	2	528	51	26928	A	A	7/6/2011	27
CLEAR LAKE AVENUE	CLEARL	020	HIGH STREET	POOL STREET	2	1248	32	39936	C	A	7/6/2011	13
COMPTON STREET	COMPTO	010	SPURR STREET	RUSSELL STREET	2	700	27	18900	C	A	7/6/2011	34
CRAIG AVENUE	CRAIGA	010	PARALLEL DRIVE	PACIFIC REGENCY WAY	2	451	38	17138	C	A	7/6/2011	23
CRAWFORD STREET	CRAWFO	010	SECOND STREET	FIFTH STREET	2	605	18	10890	R	A	6/27/2011	8

CITY OF LAKEPORT
STREET INVENTORY AND PCI REPORT
(Sorted Alphabetically)

Road Name	Street ID	Section ID	Begin Location	End Location	Lanes	Length	Width	Area	FC	ST	PCI Date	PCI
D STREET	DSTR	010	MAIN STREET	FORBES STREET	2	250	32	8000	R	A	7/5/2011	5
E STREET	EST	010	ESPLANDE STREET	MAIN STREET	2	288	18	5184	R	A	7/5/2011	3
EIGHTH STREET	EIGHTH	010	FORBES STREET	BRUSH STREET	2	556	24	13344	R	A	7/5/2011	33
ELEVENTH STREET	ELEVEN	020	POOL STREET	CITY LIMITS	2	2640	44	116160	A	A	7/6/2011	83
ELEVENTH STREET	ELEVEN	010	MAIN ST	POOL ST	2	2450	31	75950	A	A	7/6/2011	85
ESPLANADE	ESPLAN	010	K STREET	MAIN STREET	2	2000	25	50000	R	A	7/5/2011	17
ESTEP STREET	ESTEPS	012	MARTIN STREET	FIRST STREET	2	660	22	14520	R	A	7/5/2011	56
ESTEP STREET	ESTEPS	015	FIRST STREET	FIFTH STREET	2	722	22	15884	R	A	7/5/2011	13
FAIRVIEW WAY	FAIRWY	010	GREEN ST	HILLCREST DR	2	1335	22	29370	R	A	7/5/2011	28
FIFTEENTH STREET	FIFTEE	010	MAIN STREET	HIGH STREET	2	432	33	14256	R	A	7/5/2011	13
FIFTEENTH STREET	FIFTEE	020	PALM STREET	MELLOR DRIVE	2	576	28	16128	R	A	6/22/2011	27
FIFTH STREET	FIFTHS	050	HARRY ST	SPURR ST	2	350	24	8400	R	A	6/28/2011	24
FIFTH STREET	FIFTHS	010	END	ESTEP STREET	2	530	27	14310	R	A	7/5/2011	1
FIFTH STREET	FIFTHS	020	ESTEP STREET	FORBES STREET	2	1055	26	27430	R	A	6/24/2011	13
FIFTH STREET	FIFTHS	030	FORBES STREET	MAIN STREET	2	250	24	6000	R	A	7/5/2011	63
FIFTH STREET	FIFTHS	040	MAIN STREET	THE LAKE	2	300	28	8400	R	A	7/5/2011	44
FINWAY STREET	FINWAY	010	WEST SIDE PARK	END OF STREET	2	250	30	7500	R	A	12/5/2011	90
FIRST STREET	FIRSTS	010	MAIN STREET	THE LAKE	2	500	24	12000	C	A	7/5/2011	7
FIRST STREET	FIRSTS	040	LAKEVIEW ST	BRUSH ST	2	734	18	13212	R	A	6/23/2011	12
FIRST STREET	FIRSTS	050	BRUSH ST	MAIN ST	2	846	24	20304	R	A	7/5/2011	4
FIRST STREET	FIRSTS	020	RUSSELL ST	STARR ST	2	315	36	11340	R	A	7/5/2011	15
FIRST STREET	FIRSTS	030	POLK ST	100 FT W/POLK ST	2	100	18	1800	R	A	7/5/2011	69
FORBES STREET	FORBES	021	11th STREET	9th STREET	2	260	42	10920	A	O	7/5/2011	96
FORBES STREET	FORBES	022	9th STREET	7th STREET	2	394	42	16548	A	O	7/5/2011	96
FORBES STREET	FORBES	023	7th STREET	5th STREET	2	446	42	18732	A	O	7/5/2011	96
FORBES STREET	FORBES	031	5th STREET	3rd STREET	2	518	45	81000	A	O	7/5/2011	96
FORBES STREET	FORBES	032	3rd STREET	2nd STREET	2	262	45	81000	A	O	7/5/2011	96
FORBES STREET	FORBES	050	16TH ST	CLEARLAKE AVE	2	1050	34	35700	A	A	6/28/2011	16
FORBES STREET	FORBES	010	CLEARLAKE AVENUE	11th STREET	2	350	42	14700	A	O	7/5/2011	96
FORBES STREET	FORBES	040	MARTIN STREET	D STREET	2	700	34	23800	R	A	6/23/2011	12
FORBES STREET	FORBES	034	SECOND STREET	FIRST STREET	2	330	37	12210	A	O	7/5/2011	96
FORBES STREET	FORBES	038	FIRST STREET	MARTIN STREET	2	690	37	25530	A	O	7/5/2011	96
FOREST DRIVE	FOREST	010	TERRACE DRIVE	LANGE STREET	2	1056	24	25344	R	A	7/6/2011	94
FOREST DRIVE	FOREST	020	HILLCREST DR	TERRACE DR	2	654	24	15696	R	A	7/6/2011	95
FOURTEENTH STREET	FOURTE	020	HIGH STREET	FORBES STREET	2	240	34	8160	R	A	7/6/2011	17
FOURTEENTH STREET	FOURTE	010	PALM DRIVE	HARTLEY STREET	2	1250	27	33750	R	A	7/6/2011	25

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FOURTH STREET	FOURTH	020	MAIN ST	EAST END (LAKE)	2	428	24	10272	R	A	7/6/2011	14
FOURTH STREET	FOURTH	010	MAIN STREET	THIRD STREET	2	2140	24	51360	R	A	6/24/2011	16
GISELMAN STREET	GISELM	010	LANGE STREET	LAKESHORE BOULEVARD	2	1220	40	48800	C	A	7/6/2011	7
GRACE LANE	GRACLN	010	SOUTH MAIN STREET	END	2	441	14	6174	O	A	7/6/2011	4
GREEN STREET	GREENS	010	HILLCREST DRIVE	LAKESHORE BOULEVARD	2	750	37	27750	C	A	7/6/2011	7
HARRY STREET	HARRYS	010	CENTRAL PARK	FIFTH STREET	2	460	20	9200	R	A	7/6/2011	16
HARTLEY STREET	HARLTE	010	CLEAR LAKE AVENUE	TWENTIETH STREET	2	2200	32	70400	C	A	7/6/2011	13
HARTLEY STREET	HARLTE	020	TWENTIETH STREET	CITY LIMITS	2	2640	36	95040	C	A	7/6/2011	14
HEALTON CIRCLE	HEALTC	010	BOGGS LANE	END	2	275	12	3300	R	A	6/27/2011	78
HELENA AVENUE	HELEAN	010	ESPLANDE	MAIN STREET	2	451	23	10373	R	A	6/23/2011	6
HIGH STREET	HIGH	020	CLEARLAKE AVE	11 TH ST	1	350	30	10500	A	A	7/6/2011	69
HIGH STREET	HIGH	030	11 TH ST	4TH ST	2	1588	24	38112	R	A	7/6/2011	25
HIGH STREET	HIGH	040	4TH ST	3RD ST	2	272	26	7072	R	A	7/6/2011	34
HIGH STREET	HIGH	012	CLEARLAKE AVE	SIXTEENTH STREET	2	1010	37	37370	A	A	7/6/2011	81
HIGH STREET	HIGH	015	SIXTEENTH STREET	LAKESHORE BLVD	2	1102	37	40774	A	A	7/6/2011	78
HIGH STREET	HIGH	052	SECOND STREET	FIRST STREET	2	320	37	11840	R	A	7/6/2011	13
HIGH STREET	HIGH	055	FIRST STREET	MARTIN STREET	2	685	37	25345	R	A	6/27/2011	34
HILLCREST DRIVE	HICRDR	020	HARTLEY DR	TERRACE DR	2	500	20	10000	R	A	6/22/2011	79
HILLCREST DRIVE	HICRDR	010	TERRACE DRIVE	GISELMAN STREET	2	1530	18	27540	R	A	7/6/2011	23
HOWARD AVENUE	HOWAAV	010	CITY LIMITS	SOUTH END	2	170	24	4080	C	A	6/28/2011	18
INDUSTRIAL AVENUE	INDUSA	010	SOUTH MAIN STREET	END	2	864	40	34560	C	A	7/6/2011	6
JERRY DRIVE	JERRYD	010	HARTLEY ROAD	END	2	400	29	11600	R	A	6/27/2011	17
JONES STREET	JONEST	010	LAKESHORE BLVD	ASHE STREET	2	355	21	7455	R	A	7/6/2011	49
K STREET	KST	010	ESPLANDE	MAIN STREET	2	480	23	11040	R	A	6/23/2011	5
KELLY ROSE COURT	KLROST	010	PAGE DRIVE	END	2	165	38	6270	R	A	6/27/2011	40
KIMBERLY LANE	KIMBLN	010	SOUTH MAIN STREET	END	2	470	16	7520	C	A	7/7/2011	23
KONOCTI AVENUE	KONOAV	010	ESPLANDE	MAIN STREET	2	595	22	13090	R	A	7/6/2011	6
KONOCTI AVENUE	KONOAV	020	S.FORBES ST	LARRECOU LN	2	1085	18	19530	R	A	6/28/2011	11
LAKEPORT BLVD	LAKEPO	010	MAIN ST	BEVINS	2	2010	47	94470	A	A	6/27/2011	36
LAKEPORT BLVD	LAKEPO	020	BEVINS	TODD RD	2	1000	47	47000	A	A	7/7/2011	69
LAKESHORE BLVD	LAKEBL	015	GISELMAN ST	BEACH LN/CITY LIMITS	2	2785	37	103045	A	A	7/6/2011	20
LAKESHORE BLVD	LAKEBL	012	HIGH ST	GISELMAN ST	2	465	37	17205	A	O	7/6/2011	81
LAKEVIEW STREET	LAVIST	013	ARMSTRONG STREET	FIRST STREET	2	355	16	5680	R	A	6/28/2011	14
LAKEVIEW STREET	LAVIST	017	FIRST STREET	SECOND STREET	2	325	16	5200	R	A	6/28/2011	3
LANGE STREET	LANGES	010	FOREST DRIVE	LAKESHORE BOULEVARD	2	850	37	31450	C	A	7/6/2011	50
LARRECOU LANE	LARRLN	010	LAKEPORT BLVD	ENE	2	1015	20	20300	C	A	6/27/2011	13

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LILY COVE	LILYCO	010	ESPLANDE	MAIN STREET	2	370	18	6660	R	A	7/6/2011	12
LOCH DRIVE	LOCHDR	010	FOREST DRIVE	HILLCREST DRIVE	2	576	18	10368	R	A	7/6/2011	11
LUPOYOMA AVENUE	LUPOAV	010	ESPLANDE	MAIN STREET	2	643	18	11574	R	A	7/6/2011	2
LUPOYOMA CIRCLE	LUPOCR	010	LUPOYOMA HEIGHTS	LUPOYOMA HEIGHTS	2	600	18	10800	R	A	6/23/2011	17
LUPOYOMA HEIGHTS	LUPOHT	010	SOUTH MAIN ST	LUPOYOMA CIRCLE	2	670	26	17420	R	A	7/6/2011	11
MAIN STREET NORTH	NMAIN	030	CLEARLAKE AVE	16TH ST	2	1030	40	41200	A	P	12/5/2007	25
MAIN STREET NORTH	NMAIN	020	CLEARLAKE AVE	16TH ST	2	1030	26	26780	A	A	6/22/2011	22
MAIN STREET NORTH	NMAIN	010	FIRST ST	CLEAR LAKE AVE	2	3000	58	174000	A	A	7/6/2011	55
MAIN STREET SOUTH (CITY)	SMAIN	010	CITY LIMITS	LAKEPORT BLVD	2	3642	38	138396	A	O	7/6/2011	81
MAIN STREET SOUTH (CITY)	SMAIN	020	LAKEPORT BLVD	FIRST ST	2	2640	54	142560	A	A	6/22/2011	54
MANZANITA STREET	MANZST	010	SIXTH STREET	NINTH STREET	2	630	20	12600	R	A	7/6/2011	18
MARIAH WAY	MARIAH	010	MAIN STREET	WEST END	2	440	29	12760	R	A	6/28/2011	4
MARTIN STREET	MARTIN	010	BEVINS ST	MAIN ST	2	2429	37	89873	A	A	7/6/2011	25
MARTIN STREET	MARTIN	020	BEVINS ST	CITY LIMITS	2	1860	28	52080	A	A	7/6/2011	6
MELLOR DRIVE	MELLOR	020	19TH ST	20TH ST	2	238	33	7854	C	A	6/28/2011	43
MELLOR DRIVE	MELLOR	010	PAGE DRIVE	11th STREET	2	1700	37	62900	C	A	6/27/2011	26
MIKES WAY	MIKEWY	010	PAGE DRIVE	END	2	105	37	3885	R	A	6/27/2011	47
MONTANA VISTA	MONVIS	010	VIA DEL LAGO	MARIAH WAY	2	412	30	12360	R	A	6/27/2011	11
NINTEENTH STREET	NINTEE	010	MELLOR DRIVE	HARTLEY ROAD	2	864	24	20736	R	A	7/7/2011	26
NINTH STREET	NINTHS	010	POOL STREET	BRUSH STREET	2	998	24	23952	R	A	7/6/2011	23
NINTH STREET	NINTHS	020	BRUSH STREET	MAIN STREET	2	835	35	29225	R	A	7/6/2011	19
NORTH STREET	NORST	010	CLEARLAKE AVENUE	NINTH STREET	2	624	24	14976	R	A	7/6/2011	14
OAK KNOLL	OAKKNL	010	ESPLANDE	MAIN STREET	2	307	28	8596	R	A	6/23/2011	2
OAKCREST DRIVE	OAKCDR	010	BOGGS LANE	END	2	432	36	15552	R	A	6/28/2011	63
ORCHARD STREET	ORCHST	010	ARMSTRONG ST	MARTIN ST	2	320	18	5760	R	A	6/23/2011	4
ORCHID WAY	ORCHID	020	17TH ST	16TH ST	2	230	27	6210	R	A	7/6/2011	25
ORCHID WAY	ORCHID	010	16th STREET	14th STREET	2	600	27	16200	R	A	6/23/2011	22
PAGE DRIVE	PAGEDR	010	MELLOR DRIVE	ALDEN AVE	2	1400	36	50400	C	A	6/28/2011	25
PALM DRIVE	PALMDR	010	16th STREET	14th STREET	2	600	27	16200	R	A	7/6/2011	23
PALM DRIVE	PALMDR	020	17TH ST	16TH ST	2	240	27	6480	R	A	7/6/2011	33
PARALLEL DRIVE	PARALL	020	CRAIG AVE	470FT N/CRAIG AVE	2	470	28	18210	C	A	7/6/2011	27
PARALLEL DRIVE	PARALL	010	CITY LIMITS	CRAIG AVENUE	2	2400	36	86400	C	A	7/6/2011	19
PARK STREET	PARKST	010	1st STREET	3rd STREET	2	650	27	17550	C	A	7/6/2011	92
PECKHAM COURT	PECKCT	010	SOUTH MAIN STREET	END	2	691	26	17966	C	A	7/6/2011	76
PIKE DRIVE	PIKEDR	010	ROYALE AVENUE	END	2	155	36	5580	R	A	6/23/2011	11
POLK STREET	POLKST	010	MARTIN STREET	ARMSTRONG STREET	2	260	18	4680	R	A	7/6/2011	5

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POLK STREET	POLKST	022	ARMSTRONG STREET	FIRST STREET	2	355	18	6390	R	A	7/6/2011	71
POLK STREET	POLKST	025	FIRST STREET	SECOND STREET	2	320	18	5760	R	A	7/6/2011	22
POOL STREET	POOLST	010	CLEAR LAKE AVENUE	PAVEMENT CHANGE	2	500	30	15000	R	A	7/6/2011	23
POOL STREET	POOLST	020	PAVEMENT CHANGE	CENTRAL PARK	2	600	30	18000	R	A	6/24/2011	30
ROBLES DRIVE	ROBLDR	010	GISELMAN DR	END	2	205	22	4510	R	A	7/6/2011	23
ROSE AVENUE	ROSEAV	010	MAIN STREET	END	2	600	24	14400	R	G		0
ROYALE AVENUE	ROYAAV	010	SOUTH MAIN STREET	END	2	800	37	29600	R	A	6/23/2011	10
RUBY DRIVE	RUBYDR	010	ARMSTRONG STREET	END	2	410	37	15170	R	A	7/6/2011	3
RUSSELL STREET	RUSSEL	012	COMPTON STREET	FIRST STREET	2	470	24	11280	R	A	7/6/2011	17
RUSSELL STREET	RUSSEL	015	FIRST STREET	MARTIN STREET	2	730	36	26280	R	A	7/5/2011	16
SAYRE STREET	SAYRST	010	GREEN STREET	ASHE STREET	2	624	24	14976	R	A	7/6/2011	24
SAYRE STREET	SAYRST	020	750FT W/GREEN ST	GREEN ST	2	750	24	18000	R	A	7/6/2011	26
SAYRE STREET	SAYRST	030	ASHE ST	LAKESHORE BLVD	2	273	24	6552	R	A	7/6/2011	25
SECOND STREET	SECOND	022	CRAWFORD STREET	BRUSH STREET	2	840	27	22680	R	A	6/24/2011	12
SECOND STREET	SECOND	025	BRUSH STREET	FORBES STREET	2	560	27	15120	R	A	7/6/2011	88
SECOND STREET	SECOND	010	RUSSELL STREET	CRAWFORD STREET	2	800	27	21600	C	A	6/24/2011	22
SECOND STREET	SECOND	030	FORBES STREET	PARK STREET	2	500	45	22500	R	A	6/27/2011	9
SECOND STREET ANNEX	SESTAX	010	RUSSEL ST	LOCAL RD	2	485	24	11640	R	A	7/6/2011	8
SEVENTEENTH STREET	SEVENT	010	HIGH STREET	HARTLEY ROAD	2	556	24	13344	R	A	6/27/2011	16
SEVENTEENTH STREET	SEVENT	020	ORCHID ST	PALM DR	2	230	28	6440	R	A	6/28/2011	26
SEVENTH STREET	SEVENS	010	MAIN STREET	POOL STREET	2	1824	24	43776	R	A	7/6/2011	18
SHADY OAK	SHADOK	010	CENTRAL PARK AVE	SIXTH ST	2	380	39	14820	R	A	7/6/2011	43
SIXTEENTH STREET	SIXTEE	020	THE LAKE	MAIN ST	2	300	30	9000	C	A	7/6/2011	5
SIXTEENTH STREET	SIXTEE	012	MELLOR DRIVE	HARTLEY STREET	2	1230	34	41820	C	A	7/6/2011	95
SIXTEENTH STREET	SIXTEE	015	HARTLEY STREET	MAIN STREET	2	1050	34	35700	C	A	7/6/2011	27
SIXTH STREET	SIXTHS	010	END	SPURR STREET	2	1350	18	24300	R	A	6/24/2011	13
SIXTH STREET	SIXTHS	020	SPURR STREET	MAIN STREET	2	3100	24	74400	C	A	7/6/2011	33
SMITH STREET	SMITST	010	ARMSTRONG ST	MARTIN ST	2	350	26	9100	C	A	7/6/2011	13
SPECHT COURT	SPECHT	010	PECKHAM CT	END	2	360	30	12546	R	A	6/28/2011	79
SPURR STREET	SPURST	010	CENTRAL PARK AVE	COMPTON ST	2	1010	30	30300	C	A	7/6/2011	20
STARR STREET	STARST	012	MARTIN STREET	FIRST STREET	2	716	30	21480	R	A	6/23/2011	37
STARR STREET	STARST	015	FIRST STREET	SECOND STREET	2	320	24	7680	R	A	7/6/2011	29
TENTH STREET	TENTHS	010	MANAZANITA STREET	MAIN STREET	2	1574	24	37776	R	A	7/6/2011	32
TERRACE DRIVE	TERRDR	010	HILLCREST DRIVE	FOREST DRIVE	2	240	20	4800	R	A	7/6/2011	94
THIRD STREET	THIRDS	020	BRUSH ST	4TH ST	2	1500	20	30000	C	A	7/6/2011	12
THIRD STREET	THIRDS	012	PARK STREET	FORBES STREET	2	535	27	14445	C	A	7/6/2011	54

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THIRD STREET	THIRDS	015	FORBES STREET	BRUSH STREET	2	565	27	15255	C	A	7/6/2011	84
THIRTEENTH STREET	THIRTE	010	HARTLEY ROAD	HIGH STREET	2	412	37	15244	R	A	7/6/2011	15
TODD ROAD EXTENSION	TORDEX	010	50 FT S/BROTEN CT	NORTH END	2	708	36	25488	A	A	7/6/2011	6
TUNIS STREET	TUNIST	020	5TH ST	4TH ST	2	245	36	8820	R	A	7/6/2011	50
TUNIS STREET	TUNIST	030	4TH ST	3RD ST	2	270	36	9720	R	A	7/6/2011	24
TUNIS STREET	TUNIST	012	CLEARLAKE AVENUE	TENTH STREET	2	595	24	14280	R	A	7/6/2011	73
TUNIS STREET	TUNIST	015	TENTH STREET	NINTH STREET	2	245	24	5880	R	A	7/6/2011	51
TUNIS STREET	TUNIST	042	THIRD STREET	FIRST STREET	2	605	24	14520	R	A	7/6/2011	35
TUNIS STREET	TUNIST	045	FIRST STREET	ARMSTRONG STREET	2	390	24	9360	R	A	7/6/2011	25
TWENTIETH STREET	TWENTI	010	LAKESHORE BLVD	PAVMENT CHANGE	2	1337	36	48132	C	A	6/27/2011	50
TWENTIETH STREET	TWENTI	020	PAVMENT CHANGE	PAVMENT CHANGE	2	700	36	25200	C	A	7/7/2011	26
TWENTIETH STREET	TWENTI	030	PAVMENT CHANGE	BOGGS AVENUE	2	1850	23	42550	C	A	6/28/2011	38
TWENTYFORTH STREET	TWEFOR	010	BOGGS LANE	END	2	537	29	15573	R	A	6/27/2011	12
VIA DEL CABANA	VIADLC	010	MARIAH WAY	VIA DEL LAGO	2	500	29	14500	R	A	6/28/2011	3
VIA DEL LAGO	VIADLL	010	HIGH STREET	VIA DEL CABANA	2	350	36	12600	R	A	6/28/2011	8
WESTSIDE PARK ROAD	WEPKRD	010	PARALLEL DR	WEST END	2	1710	37	63270	C	A	7/6/2011	95
WILD OAK COURT	WIOKST	010	ALDEN AVE	CUL-DE-SAC	2	384	37	14208	R	A	6/28/2011	47
WILL-O-VIEW CIRCLE	WOVCIR	010	TWENTIETH STREET	BOGGS LANE	2	403	37	14911	R	A	6/28/2011	4
WILL-O-VIEW COURT	WOVCT	010	TWENTIETH STREET	END	2	260	37	9620	R	A	6/28/2011	40
WINTER AVENUE	WINTER	010	CITY LIMITS	SOUTH END	2	15	18	270	R	G		0
WRIGLEY STREET	WRIGLEY	010	WEST SIDE PARK	END OF STREET	2	1100	36	39600	R	A	12/5/2011	90
YANKEE AVENUE	YANKEE	010	WRIGLEY STREET	END OF STREET	2	90	30	2700	R	A	12/5/2011	90

Abbreviations

FC = Functional Classification (A= Arterrial, C=Collector, R=Residential, O=Other)
ST = Surface Type (A= Asphalt Concrete, O=AC overlay, P=Portland Cement Concrete, C=AC over PCC, ST=surface treated, G=Gravel)
PCI = Pavement Condition Index

Appendix B: M&R Treatment Description

Brief Description of Maintenance and Rehabilitation Treatments

Crack Sealing

Crack Sealing is the placement of polymerized/rubberized asphalt materials into cracks that bond to the crack walls and move with the pavement. This technique is used to fill longitudinal and transverse cracks, including joint reflection cracks from underlying PCC slabs that are 1/8" to ½" wide. The primary purpose of crack sealing in Asphalt Concrete (AC) pavement is to prevent surface water infiltration into the substructure of pavement and to prevent the debris stay in the cracks. It is more cost effective to use this technique as preventative maintenance when the overall pavement condition is in good condition. Sealing cracks on a deteriorated pavement surface is not cost effective and will not provide any structural benefit to the road.

Fog seal

A Fog seal involves the spraying of a light coat of a bituminous material (typically 0.03 to 0.05 gallon per square yard) on the surface of an existing pavement using a distributor. It is used to reduce raveling while also improving waterproofing. Fog seals are especially good for treating pavements that carry light traffic such as parking lots.

Slurry seals

A slurry Seal consists of a graded aggregate, asphalt emulsion, mineral filler, water, and additives. It is a hard wearing surface for pavement preservation. Slurry Seals are used primarily on aged and raveled pavements, filling minor cracks, restoring skid resistance and adding aesthetic appeal. It may be used on low volume streets and parking lots. Larger cracks need to be individually treated before the application of a slurry seal. The surface is smoother than a chip seal treatment and is more "surface friendly". In general, slurry seal can be categorized into three types which depend on the maximum aggregate size in the mix. Type I slurry seals usually contain maximum aggregate size of 1/8"; Type II slurry seals usually contain maximum aggregate size of ¼"; and Type III slurry seals usually contain maximum aggregate size of 3/8".

Scrub seals

A scrub seals are a polymer modified asphalt layer applied to an asphalt pavement surface and scrubbed into the cracks and voids with a broom. A layer of sand or small aggregate is then applied over the asphalt and then scrubbed over again, forcing the mix into the cracks and voids to form a seal. It is used to fill and seal small cracks and voids, as well as to enrich hardened/oxidized asphalt. Many contractors are still unfamiliar with the scrub seal method, so tests may be needed to determine what emulsion or polymer-modified emulsion would work with the brooms.

Chip seal

Chip seals are the application of asphalt and aggregate chips rolled onto the pavement. In the United States, chip seals are typically used on rural roads carrying lower traffic volumes. It is used to seal the surface of a pavement with non-load associated cracks, and to improve surface friction. During the treatment, the roadway can be opened to low-speed traffic just after the application of the aggregate. However, it requires constant attention and frequent adjustment of aggregate application rates to minimize chip loss, loose aggregates, and bleeding. Windshields can be damaged by the loose aggregate

before the excess is removed and dust can be created during the brooming of the loose aggregate. Double chip seals are common for more high volume roads.

Cape Seals

A cape is the application of a chip seal followed by a slurry seal or microsurfacing within a few days of the initial treatment. Cape Seals are used where a chip seal is too rough and when a smooth finish is required e.g. in the residential streets. In instances where cracking is a problem, a polymer or asphalt rubber modified chip seal can alleviate cracking and the slurry provides the smooth surface. It can increase the life of a chip seal by enhancing binding of the chips and by protecting the surface.

Microsurfacing

Microsurfacing consists of graded aggregates, asphalt emulsion, mineral filler, water and other additives. Compare to slurry seal, microsurfacing uses better quality aggregates and a fast setting emulsion of higher stiffness allowing thicker layers to be placed. Thus, it is usually used in the more specialized slurry jobs of rut filling, restoring surface profiles, and for roads that sustain heavy traffic. It also has quicker cure time, but the cost is higher than a slurry or chip seal treatment.

Ultrathin Bonded Wearing Surface

An ultrathin bonded wearing surface is a specially formulated thin asphalt mix overlay. Ultra-thin bonded wearing surface is placed with a specially built machine that places a thick layer of oil and asphalt in a single pass. The heavy oil application seals small cracks in the existing pavement and helps to ensure the adhesion of the asphalt to the underlying pavement. The ultrathin mat, usually ranges from ½ to 3/4 inches thick. The treatment is primarily used to provide a durable, friction resistant surface on existing pavement, without the expense of milling the existing asphalt. But the cost for this application is high, and it needs special construction equipment.

Hot-Mix Asphalt (HMA) Overlay

This technique involves adding an HMA layer to an existing HMA or PCC pavement. It is used to correct or improve the structural capacity or functional requirements such as skid resistance and ride quality. The use of an HMA overlay is usually more economic when the existing pavement is still in good to fair condition. An overlay may be combined with other M&R methods such as cold milling, cold recycling, hot recycling, and heater scarification. The thickness of the new surface will be dependent on the type, severity and extent of the pavement surface distresses, the ride quality and the required structural improvement necessary to accommodate the design traffic.

Rubberized Hot-Mix Asphalt (RHMA)

Rubberized hot-mix asphalt concrete (RHMA) is a road paving material made by blending ground-up recycled tires with asphalt to produce a binder which is then mixed with conventional aggregate materials. This mix is then placed and compacted into a road surface. There are two primary types of binders for RHMA, asphalt-rubber and terminal blend. Asphalt-Rubber is a blend of paving grade asphalt cement, ground recycled tire rubber and other additives, as needed, for use as binder in pavement construction. The rubber shall be blended and interacted in the hot asphalt cement sufficiently to cause swelling of the rubber particles prior to use. The asphalt-rubber binder is field blended (at the hot mix plant) and requires specialized mobile mixing

equipment to produce. Typical crumb rubber modifier (CRM) content for asphalt-rubber ranges from 18-22 percent. The crumb rubber modifier used in asphalt-rubber is in the 10-16 mesh range. Terminal blends. are binder materials that use finely ground (less than 30 mesh) crumb rubber modifier and are typically blended at the asphalt refinery. Historically, terminal blend binders contained 10 percent or less crumb rubber modifier. However, in recent years the crumb rubber modifier content has been increased to 15-20 percent in some projects. The major advantages of using the RHMA are better resistance to reflective cracking and more environmental friendly which help to use recycled tires.

Reconstruction

Reconstruction, which might be considered as the ultimate or extreme rehabilitation treatment, consists of the removal of the pavement structure which can go down to the subgrade, reworking and recompacting the subgrade, and completely replacing the pavement layers with new, or recycled materials, or a combination thereof.

Cold In-Place Recycling

Cold in-place recycling involves cold milling of the pavement surface, addition of emulsified asphalt, Portland cement or other modifiers to improve the properties of the original asphalt concrete mix followed by screeding and compaction of the reprocessed material in one continuous operation. The use of cold in-place recycling can restore old pavement to the desired profile, eliminate existing wheel ruts, restore the crown and cross slope, and eliminate pothole, irregularities and rough areas. It can also eliminate transverse, reflective, and longitudinal cracks. The major advantages for the cold in-place recycling are the potential of cost savings, minimum traffic disruption, ability to retain original profile, reduction of environmental concerns, and a growing concern for depleting petroleum reserves. However, cold in-place recycled pavements require a new wearing surface to be placed as a seal and to restrict moisture intrusion.

Full Depth Reclamation

This rehabilitation technique is often used for pavements exhibiting extensive distress. It involves pulverization of the pavement surface layers and a portion of the granular base for depths of up to 7.8 inches or more. The resulting mixture of asphalt concrete materials and granular or treated (i.3., soil cement) base can then be compacted and used as a granular base or sub-base for the new pavement. It can also be stabilized using bituminous materials, Portland cement, lime and calcium chloride. New granular base material can be added to improve the structural capacity of the pavement followed by the placement of a new riding surface. Advantages of this technique include the reuse of the existing pavement materials and the elimination of potential reflection cracking from and old asphalt concrete layer through the new pavement surface layer.

Perpetual Pavement

Perpetual pavement is defined as an asphalt pavement designed and built to last longer than 50 years without requiring major structural rehabilitation or reconstruction, and needing only periodic surface renewal in response to distresses confined to the top of the pavement. The basic concept is that HMA pavements over a minimum strength are not likely to exhibit structural damage even when subjected to very high traffic flows over long periods of time. Rather, deterioration seems to initiate in the pavement surface as either top-down cracking or rutting. If surface-initiated cracking and rutting can be

detected and remedied before they impact the structural integrity of the pavement, the pavement design life could be greatly increased.

Warm Mix Asphalt

Warm mix asphalt is the same as conventional asphalt except it has lower mixing temperature (30 to 100ºF lower than hot-mix asphalt). This is achieved by various mechanical and chemical methods to reduce the shear resistance of the mix at the construction temperature while reportedly maintaining or improving pavement performance. The major advantage of warm mix asphalt includes lower fumes emissions, lower energy consumption, lower plant wear consumption, decreased binder aging, early site opening, cool weather paving, and compaction aid for stiff mixes. Currently available warm mix technologies include WAM Foam, Zeolite, Sasobit and Evotherm.

Foam Asphalt

Foamed asphalt is formed by combining hot asphalt binder with small amounts of cold water. When the cold water comes in contact with the hot asphalt binder it turns to steam, which becomes trapped in tiny asphalt binder bubbles. The result is a thin-film, high volume asphalt foam that bitumen has a very large surface area and extremely low viscosity making it ideal for mixing with aggregates. The advantages of using foam asphalt includes increases the shear strength and reduces the moisture susceptibility of granular materials, lower binder and transportation costs, saving in time, energy conservation, and wider temperature workability.

Reference:

- Ralph Haas*, Pavement Design and Management Guide,* , Transportation Association of Canada, 1997
- M. Y. Shahin*, Pavement Management for Airports, Roads, and Parking Lots*, Springer Science + Business Media, LLC, 2005
- Muthen, K.M. Foamed Asphalt Mixes-Mix Design Procedure." *Transportation Research Record* 898, pp. 290-296.
- Warm Mix Asphalt Technical Working Group, http://www.warmmixasphalt.com/AboutWma.aspx

Appendix C: M&R Decision Tree

Decision Tree

Printed: 12/16/2011

Functional Class	Surface	Condition Category	Treatment Type	Treatment	Cost/Sq Yd, except Seal Cracks in LF:	Yrs Between Crack Seals	Yrs Between Surface Seals	# of Surface Seals before Overlay
Arterial	AC	I - Very Good	Crack Treatment	DO NOTHING	$0.00	99		
			Surface Treatment	SCRUB SEAL	$2.00		7	
			Restoration Treatment	DO NOTHING	$0.00			99
		II - Good, Non-Load Related		DOUBLE CHIP SEAL	$4.50		7	
		III - Good, Load Related		CAPE SEAL W/DIGOUTS	$4.20			
		IV - Poor		CIR (3")	$30.00			
		V - Very Poor		FDR (8")	$65.50			
	AC/AC	I - Very Good	Crack Treatment	DO NOTHING	$0.00	99		
			Surface Treatment	SCRUB SEAL	$2.00		7	
			Restoration Treatment	DO NOTHING	$0.00			99
		II - Good, Non-Load Related		DOUBLE CHIP SEAL	$4.50		7	
		III - Good, Load Related		CAPE SEAL W/DIGOUTS	$4.20			
		IV - Poor		CIR (3")	$30.00			
		V - Very Poor		FDR (8")	$65.50			
	AC/PCC	I - Very Good	Crack Treatment	SEAL CRACKS	$0.60	3		
			Surface Treatment	SINGLE CHIP SEAL	$0.74		6	
			Restoration Treatment	MILL AND THICK OVERLAY	$7.23			2
		II - Good, Non-Load Related		DOUBLE CHIP SEAL	$1.52			
		III - Good, Load Related		HEATER SCARIFY & OVERLAY	$5.95			
		IV - Poor		HEATER SCARIFY & OVERLAY	$6.14			
		V - Very Poor		RECONSTRUCT SURFACE (AC)	$14.00			
	PCC	I - Very Good	Crack Treatment	DO NOTHING	$0.00	9		
			Surface Treatment	DO NOTHING	$0.00		99	
			Restoration Treatment	DO NOTHING	$0.00			99
		II - Good, Non-Load Related		DO NOTHING	$0.00			
		III - Good, Load Related		DO NOTHING	$0.00			
		IV - Poor		THICK AC OVERLAY	$49.50			
		V - Very Poor		RECONSTRUCT STRUCTURE (AC)	$146.00			

Functional Class and Surface combination not used

Decision Tree

Printed: 12/16/2011

Functional Class	Surface	Condition Category	Treatment Type	Treatment	Cost/Sq Yd, except Seal Cracks in LF:	Yrs Between Crack Seals	Yrs Between Surface Seals	# of Surface Seals before Overlay
Arterial	ST	I - Very Good	Crack Treatment	DO NOTHING	$0.00	9		
			Surface Treatment	DO NOTHING	$0.00		99	
			Restoration Treatment	DO NOTHING	$0.00			100
		II - Good, Non-Load Related		SINGLE CHIP SEAL	$2.00		7	
		III - Good, Load Related		SINGLE CHIP SEAL	$2.00			
		IV - Poor		SINGLE CHIP SEAL	$2.00			
		V - Very Poor		RECONSTRUCT STRUCTURE (AC)	$74.60			

Functional Class and Surface combination not used

Decision Tree

Printed: 12/16/2011

Functional Class	Surface	Condition Category	Treatment Type	Treatment	Cost/Sq Yd, except Seal Cracks in LF:	Yrs Between Crack Seals	Yrs Between Surface Seals	# of Surface Seals before Overlay
Collector	AC	I - Very Good	Crack Treatment	DO NOTHING	$0.00	99		
			Surface Treatment	SCRUB SEAL	$2.00		7	
			Restoration Treatment	DO NOTHING	$0.00			99
		II - Good, Non-Load Related		SINGLE CHIP SEAL	$2.00		7	
		III - Good, Load Related		CAPE SEAL W/DIGOUTS	$5.60			
		IV - Poor		MILL AND FILL (2")	$25.00			
		V - Very Poor		FDR (6")	$53.00			
	AC/AC	I - Very Good	Crack Treatment	DO NOTHING	$0.00	99		
			Surface Treatment	SCRUB SEAL	$2.00		7	
			Restoration Treatment	DO NOTHING	$0.00			99
		II - Good, Non-Load Related		SINGLE CHIP SEAL	$2.00		7	
		III - Good, Load Related		CAPE SEAL W/DIGOUTS	$5.60			
		IV - Poor		MILL AND FILL (2")	$25.00			
		V - Very Poor		FDR (6")	$53.00			
	AC/PCC	I - Very Good	Crack Treatment	SEAL CRACKS	$0.60	4		
			Surface Treatment	SINGLE CHIP SEAL	$0.74		7	
			Restoration Treatment	MILL AND THIN OVERLAY	$5.04			3
		II - Good, Non-Load Related		DOUBLE CHIP SEAL	$1.52			
		III - Good, Load Related		HEATER SCARIFY & OVERLAY	$5.95			
		IV - Poor		HEATER SCARIFY & OVERLAY	$6.14			
		V - Very Poor		RECONSTRUCT STRUCTURE (AC)	$11.38			
	PCC	I - Very Good	Crack Treatment	DO NOTHING	$0.00	9		
			Surface Treatment	DO NOTHING	$0.00		99	
			Restoration Treatment	DO NOTHING	$0.00			100
		II - Good, Non-Load Related		DO NOTHING	$1.11			
		III - Good, Load Related		DO NOTHING	$1.51			
		IV - Poor		THICK AC OVERLAY(2.5 INCHES)	$1.92			
		V - Very Poor		THIN AC OVERLAY(1.5 INCHES)	$7.47			

Functional Class and Surface combination not used

Decision Tree

Printed: 12/16/2011

Functional Class	Surface	Condition Category	Treatment Type	Treatment	Cost/Sq Yd, except Seal Cracks in LF:	Yrs Between Crack Seals	Yrs Between Surface Seals	# of Surface Seals before Overlay
Collector	ST	I - Very Good	Crack Treatment	DO NOTHING	$0.00	99		
			Surface Treatment	DO NOTHING	$0.00		99	
			Restoration Treatment	DO NOTHING	$0.00			99
		II - Good, Non-Load Related		SINGLE CHIP SEAL	$2.00		7	
		III - Good, Load Related		SINGLE CHIP SEAL	$2.00			
		IV - Poor		SINGLE CHIP SEAL	$2.00			
		V - Very Poor		RECONSTRUCT STRUCTURE (AC)	$38.60			

Functional Class and Surface combination not used

Decision Tree

Printed: 12/16/2011

Functional Class	Surface	Condition Category	Treatment Type	Treatment	Cost/Sq Yd, except Seal Cracks in LF:	Yrs Between Crack Seals	Yrs Between Surface Seals	# of Surface Seals before Overlay
Residential/Local	AC	I - Very Good	Crack Treatment	DO NOTHING	$0.00	99		
			Surface Treatment	SCRUB SEAL	$2.00		7	
			Restoration Treatment	DO NOTHING	$0.00			99
		II - Good, Non-Load Related		SINGLE CHIP SEAL	$2.00		7	
		III - Good, Load Related		CAPE SEAL W/DIGOUTS	$6.20			
		IV - Poor		THIN OVERLAY W/SAMI (NO DIGOUTS)	$14.90			
		V - Very Poor		FDR (4")	$47.00			
	AC/AC	I - Very Good	Crack Treatment	DO NOTHING	$0.00	99		
			Surface Treatment	SCRUB SEAL	$2.00		7	
			Restoration Treatment	DO NOTHING	$0.00			99
		II - Good, Non-Load Related		SINGLE CHIP SEAL	$2.00		7	
		III - Good, Load Related		CAPE SEAL W/DIGOUTS	$6.20			
		IV - Poor		THIN OVERLAY W/SAMI (NO DIGOUTS)	$14.90			
		V - Very Poor		FDR (4")	$47.00			
	AC/PCC	I - Very Good	Crack Treatment	SEAL CRACKS	$0.60	4		
			Surface Treatment	SINGLE CHIP SEAL	$0.74		8	
			Restoration Treatment	MILL AND THIN OVERLAY	$5.04			3
		II - Good, Non-Load Related		DOUBLE CHIP SEAL	$1.52			
		III - Good, Load Related		HEATER SCARIFY & OVERLAY	$5.95			
		IV - Poor		HEATER SCARIFY & OVERLAY	$6.14			
		V - Very Poor		RECONSTRUCT STRUCTURE (AC)	$8.25			
	PCC	I - Very Good	Crack Treatment	DO NOTHING	$0.00	4		
			Surface Treatment	DO NOTHING	$0.00		99	
			Restoration Treatment	DO NOTHING	$0.00			100
		II - Good, Non-Load Related		DO NOTHING	$1.11			
		III - Good, Load Related		DO NOTHING	$0.00			
		IV - Poor		THICK AC OVERLAY(2.5 INCHES)	$1.92			
		V - Very Poor		THICK AC OVERLAY(2.5 INCHES)	$7.27			

Functional Class and Surface combination not used

Decision Tree

Printed: 12/16/2011

Functional Class	Surface	Condition Category	Treatment Type	Treatment	Cost/Sq Yd, except Seal Cracks in LF:	Yrs Between Crack Seals	Yrs Between Surface Seals	# of Surface Seals before Overlay
Residential/Local	ST	I - Very Good	Crack Treatment	DO NOTHING	$0.00	9		
			Surface Treatment	DO NOTHING	$0.00		99	
			Restoration Treatment	DO NOTHING	$0.00			99
		II - Good, Non-Load Related		SINGLE CHIP SEAL	$2.00		7	
		III - Good, Load Related		SINGLE CHIP SEAL	$2.00			
		IV - Poor		SINGLE CHIP SEAL	$2.00			
		V - Very Poor		DOUBLE CHIP SEAL	$4.50			

Functional Class and Surface combination not used

Decision Tree

Printed: 12/16/2011

Functional Class	Surface	Condition Category	Treatment Type	Treatment	Cost/Sq Yd, except Seal Cracks in LF:	Yrs Between Crack Seals	Yrs Between Surface Seals	# of Surface Seals before Overlay
Other	AC	I - Very Good	Crack Treatment	DO NOTHING	$0.00	99		
			Surface Treatment	SCRUB SEAL	$2.00		7	
			Restoration Treatment	DO NOTHING	$0.00			99
		II - Good, Non-Load Related		SINGLE CHIP SEAL	$1.11			
		III - Good, Load Related		THIN AC OVERLAY(1.5 INCHES)	$3.99			
		IV - Poor		THICK AC OVERLAY(2.5 INCHES)	$5.97			
		V - Very Poor		RECONSTRUCT STRUCTURE (AC)	$8.75			
	AC/AC	I - Very Good	Crack Treatment	DO NOTHING	$0.00	99		
			Surface Treatment	SCRUB SEAL	$2.00		7	
			Restoration Treatment	DO NOTHING	$0.00			99
		II - Good, Non-Load Related		DOUBLE CHIP SEAL	$1.52			
		III - Good, Load Related		HEATER SCARIFY & OVERLAY	$5.95			
		IV - Poor		HEATER SCARIFY & OVERLAY	$6.14			
		V - Very Poor		RECONSTRUCT STRUCTURE (AC)	$8.75			
	AC/PCC	I - Very Good	Crack Treatment	SEAL CRACKS	$1.60	4		
			Surface Treatment	SINGLE CHIP SEAL	$1.74		8	
			Restoration Treatment	MILL AND THIN OVERLAY	$5.04			3
		II - Good, Non-Load Related		DOUBLE CHIP SEAL	$1.52			
		III - Good, Load Related		HEATER SCARIFY & OVERLAY	$5.95			
		IV - Poor		HEATER SCARIFY & OVERLAY	$6.14			
		V - Very Poor		RECONSTRUCT STRUCTURE (AC)	$8.75			
	PCC	I - Very Good	Crack Treatment	DO NOTHING	$0.00	9		
			Surface Treatment	DO NOTHING	$0.00		99	
			Restoration Treatment	DO NOTHING	$0.00			100
		II - Good, Non-Load Related		DO NOTHING	$1.11			
		III - Good, Load Related		DO NOTHING	$1.51			
		IV - Poor		THICK AC OVERLAY(2.5 INCHES)	$1.92			
		V - Very Poor		THICK AC OVERLAY(2.5 INCHES)	$7.27			

Functional Class and Surface combination not used

Decision Tree

Printed: 12/16/2011

Functional Class	Surface	Condition Category	Treatment Type	Treatment	Cost/Sq Yd, except Seal Cracks in LF:	Yrs Between Crack Seals	Yrs Between Surface Seals	# of Surface Seals before Overlay
Other	ST	I - Very Good	Crack Treatment	DO NOTHING	$0.00	99		
			Surface Treatment	DO NOTHING	$0.00		99	
			Restoration Treatment	DO NOTHING	$0.00			99
		II - Good, Non-Load Related		SINGLE CHIP SEAL	$1.11			
		III - Good, Load Related		SINGLE CHIP SEAL	$1.51			
		IV - Poor		SINGLE CHIP SEAL	$1.92			
		V - Very Poor		THICK AC OVERLAY(2.5 INCHES)	$7.27			

Functional Class and Surface combination not used

Appendix D: Candidate Roads for M&R

Scenario 1. City Budget ($300,000 per year)

Scenarios - Sections Selected for Treatment

Interest: .00% Inflation: .00% Printed: 12/19/2011

Scenario: City Budget

Year	Budget	PM Amt	Year	Budget	PM Amt	Year	Budget	PM Amt
2012	$300,000	$100,000	2013	$300,000	$76,000	2014	$300,000	$52,000
2015	$300,000	$43,000	2016	$300,000	$16,000			

Street Name	Begin Location	End Location	Street ID	Section ID	FC	Surface	PCI	Cost	Rating	Treatment
Year: 2012										
BRUSH STREET	SECOND STREET	FIRST STREET	BRUSHS	017	R	AC	100	$12,715	49,730	THIN OVERLAY W/SAMI (NO DIGOUTS)
BRUSH STREET	ARMSTRONG ST	MARTIN ST	BRUSHS	020	R	AC	100	$12,795	51,714	THIN OVERLAY W/SAMI (NO DIGOUTS)
FIFTH STREET	MAIN STREET	THE LAKE	FIFTHS	040	R	AC	100	$13,907	51,714	THIN OVERLAY W/SAMI (NO DIGOUTS)
JONES STREET	LAKESHORE BLVD	ASHE STREET	JONEST	010	R	AC	100	$12,343	50,103	THIN OVERLAY W/SAMI (NO DIGOUTS)
MIKES WAY	PAGE DRIVE	END	MIKEWY	010	R	AC	100	$6,432	50,830	THIN OVERLAY W/SAMI (NO DIGOUTS)
SHADY OAK	CENTRAL PARK AVE	SIXTH ST	SHADOK	010	R	AC	100	$24,536	51,986	THIN OVERLAY W/SAMI (NO DIGOUTS)
TUNIS STREET	TENTH STREET	NINTH STREET	TUNIST	015	R	AC	100	$9,735	49,309	THIN OVERLAY W/SAMI (NO DIGOUTS)
TUNIS STREET	5TH ST	4TH ST	TUNIST	020	R	AC	100	$14,602	49,728	THIN OVERLAY W/SAMI (NO DIGOUTS)
WILD OAK COURT	ALDEN AVE	CUL-DE-SAC	WIOKST	010	R	AC	100	$23,523	50,828	THIN OVERLAY W/SAMI (NO DIGOUTS)
						Treatment Total		$130,588		
MELLOR DRIVE	19TH ST	20TH ST	MELLOR	020	C	AC	100	$21,817	32,627	MILL AND FILL (2")
						Treatment Total		$21,817		
ALDEN AVENUE	TWENTIETH AVENUE	END	ALDENA	010	C	AC	76	$8,979	22,323	CAPE SEAL W/DIGOUTS
FIFTH STREET	FORBES STREET	MAIN STREET	FIFTHS	030	R	AC	72	$4,134	22,146	CAPE SEAL W/DIGOUTS
LAKEPORT BLVD	BEVINS	TODD RD	LAKEPO	020	A	AC	77	$21,934	47,348	CAPE SEAL W/DIGOUTS
						Treatment Total		$35,047		
FIRST STREET	POLK ST	100 FT W/POLK ST	FIRSTS	030	R	AC	77	$400	74,883	SINGLE CHIP SEAL
						Treatment Total		$400		

** - Treatment from Project Selection

Scenarios Criteria:

Street Name	Begin Location	End Location	Street ID	Section ID	FC	Surface	PCI	Cost	Rating	Treatment
HIGH STREET	CLEARLAKE AVE	11 TH ST	HIGH	020	A	AC	77	$5,250	44,185	DOUBLE CHIP SEAL
						Treatment Total		$5,250		
GRACE LANE	SOUTH MAIN STREET	END	GRACLN	010	O	AC	100	$6,003	81,808	RECONSTRUCT STRUCTURE (AC)
						Treatment Total		$6,003		
						Year 2012 Total		$199,105		
Year: 2013										
CHERRY STREET	SIXTH ST	END	CHERST	010	R	AC	100	$9,400	15,230	FDR (4")
						Treatment Total		$9,400		
BRYCE COURT	SPURR STREET	END	BRYCEC	010	R	AC	86	$1,579	78,295	SCRUB SEAL
ELEVENTH STREET	MAIN ST	POOL ST	ELEVEN	010	A	AC	89	$16,878	98,985	SCRUB SEAL
ELEVENTH STREET	POOL STREET	CITY LIMITS	ELEVEN	020	A	AC	87	$25,814	103,509	SCRUB SEAL
HEALTON CIRCLE	BOGGS LANE	END	HEALTC	010	R	AC	83	$734	79,627	SCRUB SEAL
HIGH STREET	CLEARLAKE AVE	SIXTEENTH STREET	HIGH	012	A	AC	85	$8,305	105,792	SCRUB SEAL
HIGH STREET	SIXTEENTH STREET	LAKESHORE BLVD	HIGH	015	A	AC	83	$9,061	106,399	SCRUB SEAL
SPECHT COURT	PECKHAM CT	END	SPECHT	010	R	AC	84	$2,788	79,571	SCRUB SEAL
						Treatment Total		$65,159		
CENTRAL PARK AVENUE	POOL ST	SHADY OAK ST	CENPAK	010	C	AC	100	$24,067	32,388	MILL AND FILL (2")
THIRD STREET	PARK STREET	FORBES STREET	THIRDS	012	C	AC	100	$40,125	31,614	MILL AND FILL (2")
TWENTIETH STREET	LAKESHORE BLVD	PAVMENT CHANGE	TWENTI	010	C	AC	100	$133,700	32,277	MILL AND FILL (2")
						Treatment Total		$197,892		
OAKCREST DRIVE	BOGGS LANE	END	OAKCDR	010	R	AC	70	$10,714	21,548	CAPE SEAL W/DIGOUTS
POLK STREET	ARMSTRONG STREET	FIRST STREET	POLKST	022	R	AC	77	$4,402	24,266	CAPE SEAL W/DIGOUTS
						Treatment Total		$15,116		
						Year 2013 Total		$287,567		
Year: 2014										
ANASTASIA DRIVE	HARTLEY ROAD	END	ANASTA	010	R	AC	100	$106,012	15,230	FDR (4")
ASHE STREET	JONES STREET	LAKESHORE BLVD	ASHEST	010	R	AC	100	$89,927	15,230	FDR (4")
BANASZECK DRIVE	ORCHARD ST	SMITH ST	BANZDR	010	R	AC	100	$22,978	15,230	FDR (4")

Street Name	Begin Location	End Location	Street ID	Section ID	FC	Surface	PCI	Cost	Rating	Treatment
						Treatment Total		$218,917		
MAIN STREET SOUTH (CITY)	CITY LIMITS	LAKEPORT BLVD	SMAIN	010	A	AC/AC	84	$30,755	115,233	SCRUB SEAL
						Treatment Total		$30,755		
FIFTH STREET	FORBES STREET	MAIN STREET	FIFTHS	030	R	AC	78	$4,134	24,391	CAPE SEAL W/DIGOUTS
OAKCREST DRIVE	BOGGS LANE	END	OAKCDR	010	R	AC	78	$10,714	24,432	CAPE SEAL W/DIGOUTS
TUNIS STREET	CLEARLAKE AVENUE	TENTH STREET	TUNIST	012	R	AC	78	$9,838	24,342	CAPE SEAL W/DIGOUTS
						Treatment Total		$24,686		
PECKHAM COURT	SOUTH MAIN STREET	END	PECKCT	010	C	AC	78	$3,993	65,425	SINGLE CHIP SEAL
						Treatment Total		$3,993		
						Year 2014 Total		$278,351		

Year: 2015

Street Name	Begin Location	End Location	Street ID	Section ID	FC	Surface	PCI	Cost	Rating	Treatment
BEACH COURT	BEACH LANE	END	BEACCT	010	R	AC	100	$25,589	15,230	FDR (4")
BEACH STREET	CENTRAL PARK	SIXTH STREET	BEACHS	010	R	AC	100	$18,048	15,230	FDR (4")
BERRY STREET	SPURR STREET	ARMSTRONG STREET	BERRYS	010	R	AC	100	$65,174	15,230	FDR (4")
CRAWFORD STREET	SECOND STREET	FIFTH STREET	CRAWFO	010	R	AC	100	$56,870	15,230	FDR (4")
D STREET	MAIN STREET	FORBES STREET	DSTR	010	R	AC	100	$41,778	15,230	FDR (4")
						Treatment Total		$207,459		
ESTEP STREET	MARTIN STREET	FIRST STREET	ESTEPS	012	R	AC	100	$24,039	49,890	THIN OVERLAY W/SAMI (NO DIGOUTS)
						Treatment Total		$24,039		
ARMSTRONG ST	POLK STREET	FORBES STREET	ARMSTR	015	C	AC	88	$14,667	80,162	SCRUB SEAL
BRUSH STREET	THIRD STREET	SECOND STREET	BRUSHS	015	R	AC	86	$1,494	78,443	SCRUB SEAL
HILLCREST DRIVE	HARTLEY DR	TERRACE DR	HICRDR	020	R	AC	82	$2,223	79,099	SCRUB SEAL
SECOND STREET	BRUSH STREET	FORBES STREET	SECOND	025	R	AC	89	$3,360	71,820	SCRUB SEAL
THIRD STREET	FORBES STREET	BRUSH STREET	THIRDS	015	C	AC	84	$3,390	75,553	SCRUB SEAL
						Treatment Total		$25,134		
ALDEN AVENUE	TWENTIETH AVENUE	END	ALDENA	010	C	AC	78	$8,979	23,203	CAPE SEAL W/DIGOUTS
						Treatment Total		$8,979		
						Year 2015 Total		$265,611		

Street Name	Begin Location	End Location	Street ID	Section ID	FC	Surface	PCI	Cost	Rating	Treatment
Year: 2016										
ADAMS STREET	WILL-O-VIEW CIRCLE	END	ADAMSS	010	R	AC	100	$48,149	15,230	FDR (4")
BEACH LANE	LAKESHORE BLVD	CITY LIMITS	BEACLN	010	R	AC	100	$41,360	15,230	FDR (4")
BEVINS COURT	BEVINS STREET	END	BEVINC	010	R	AC	100	$146,076	15,230	FDR (4")
POLK STREET	MARTIN STREET	ARMSTRONG STREET	POLKST	010	R	AC	100	$24,440	15,230	FDR (4")
						Treatment Total		$260,025		
ALDEN AVENUE	400 FT S/PAGE DR	260 FT N/PAGE DR	ALDENA	020	C	AC	90	$3,520	80,332	SCRUB SEAL
FOREST DRIVE	TERRACE DRIVE	LANGE STREET	FOREST	010	R	AC	91	$5,632	62,976	SCRUB SEAL
PARK STREET	1st STREET	3rd STREET	PARKST	010	C	AC	90	$3,900	80,291	SCRUB SEAL
TERRACE DRIVE	HILLCREST DRIVE	FOREST DRIVE	TERRDR	010	R	AC	91	$1,067	62,976	SCRUB SEAL
						Treatment Total		$14,119		
LAKEPORT BLVD	BEVINS	TODD RD	LAKEPO	020	A	AC	77	$21,934	47,717	CAPE SEAL W/DIGOUTS
						Treatment Total		$21,934		
						Year 2016 Total		$296,078		
						Grand Total		$1,326,712		

Scenario 2. Maintain Current PCI ($700,000 per year)

Scenarios - Sections Selected for Treatment

Interest: .00% Inflation: .00% Printed: 12/19/2011

Scenario: Maintain Current PCI

Year	Budget	PM Amt	Year	Budget	PM Amt	Year	Budget	PM Amt
2012	$700,000	1%	2013	$700,000	1%	2014	$700,000	1%
2015	$700,000	1%	2016	$700,000	1%			

Street Name	Begin Location	End Location	Street ID	Section ID	FC	Surface	PCI	Cost	Rating	Treatment
Year: 2012										
ANASTASIA DRIVE	HARTLEY ROAD	END	ANASTA	010	R	AC	100	$106,012	15,230	FDR (4")
BANASZECK DRIVE	ORCHARD ST	SMITH ST	BANZDR	010	R	AC	100	$22,978	15,230	FDR (4")
BEACH COURT	BEACH LANE	END	BEACCT	010	R	AC	100	$25,589	15,230	FDR (4")
BEACH STREET	CENTRAL PARK	SIXTH STREET	BEACHS	010	R	AC	100	$18,048	15,230	FDR (4")
					Treatment Total			$172,627		
BRUSH STREET	SECOND STREET	FIRST STREET	BRUSHS	017	R	AC	100	$12,715	49,730	THIN OVERLAY W/SAMI (NO DIGOUTS)
BRUSH STREET	ARMSTRONG ST	MARTIN ST	BRUSHS	020	R	AC	100	$12,795	51,714	THIN OVERLAY W/SAMI (NO DIGOUTS)
FIFTH STREET	MAIN STREET	THE LAKE	FIFTHS	040	R	AC	100	$13,907	51,714	THIN OVERLAY W/SAMI (NO DIGOUTS)
JONES STREET	LAKESHORE BLVD	ASHE STREET	JONEST	010	R	AC	100	$12,343	50,103	THIN OVERLAY W/SAMI (NO DIGOUTS)
MIKES WAY	PAGE DRIVE	END	MIKEWY	010	R	AC	100	$6,432	50,830	THIN OVERLAY W/SAMI (NO DIGOUTS)
SHADY OAK	CENTRAL PARK AVE	SIXTH ST	SHADOK	010	R	AC	100	$24,536	51,986	THIN OVERLAY W/SAMI (NO DIGOUTS)
TUNIS STREET	TENTH STREET	NINTH STREET	TUNIST	015	R	AC	100	$9,735	49,309	THIN OVERLAY W/SAMI (NO DIGOUTS)
TUNIS STREET	5TH ST	4TH ST	TUNIST	020	R	AC	100	$14,602	49,728	THIN OVERLAY W/SAMI (NO DIGOUTS)
WILD OAK COURT	ALDEN AVE	CUL-DE-SAC	WIOKST	010	R	AC	100	$23,523	50,828	THIN OVERLAY W/SAMI (NO DIGOUTS)
					Treatment Total			$130,588		
BOGGS LANE	Will-o-View Circle	20th Street	BOGGSA	020	C	AC	100	$56,667	32,627	MILL AND FILL (2")
CENTRAL PARK AVENUE	POOL ST	SHADY OAK ST	CENPAK	010	C	AC	100	$24,067	31,813	MILL AND FILL (2")
LANGE STREET	FOREST DRIVE	LAKESHORE BOULEVARD	LANGES	010	C	AC	100	$87,362	31,659	MILL AND FILL (2")

** - Treatment from Project Selection

Scenarios Criteria:

Street Name	Begin Location	End Location	Street ID	Section ID	FC	Surface	PCI	Cost	Rating	Treatment
MELLOR DRIVE	19TH ST	20TH ST	MELLOR	020	C	AC	100	$21,817	32,627	MILL AND FILL (2")
TWENTIETH STREET	LAKESHORE BLVD	PAVMENT CHANGE	TWENTI	010	C	AC	100	$133,700	31,674	MILL AND FILL (2")
						Treatment Total		$323,613		
ALDEN AVENUE	TWENTIETH AVENUE	END	ALDENA	010	C	AC	76	$8,979	22,323	CAPE SEAL W/DIGOUTS
FIFTH STREET	FORBES STREET	MAIN STREET	FIFTHS	030	R	AC	72	$4,134	22,146	CAPE SEAL W/DIGOUTS
LAKEPORT BLVD	BEVINS	TODD RD	LAKEPO	020	A	AC	77	$21,934	47,348	CAPE SEAL W/DIGOUTS
OAKCREST DRIVE	BOGGS LANE	END	OAKCDR	010	R	AC	72	$10,714	22,134	CAPE SEAL W/DIGOUTS
						Treatment Total		$45,761		
FIRST STREET	POLK ST	100 FT W/POLK ST	FIRSTS	030	R	AC	77	$400	74,883	SINGLE CHIP SEAL
						Treatment Total		$400		
HIGH STREET	CLEARLAKE AVE	11 TH ST	HIGH	020	A	AC	77	$5,250	44,185	DOUBLE CHIP SEAL
						Treatment Total		$5,250		
GRACE LANE	SOUTH MAIN STREET	END	GRACLN	010	O	AC	100	$6,003	81,808	RECONSTRUCT STRUCTURE (AC)
						Treatment Total		$6,003		
						Year 2012 Total		$684,242		

Year: 2013

ASHE STREET	JONES STREET	LAKESHORE BLVD	ASHEST	010	R	AC	100	$89,927	15,230	FDR (4")
BERRY STREET	SPURR STREET	ARMSTRONG STREET	BERRYS	010	R	AC	100	$65,174	15,230	FDR (4")
CHERRY STREET	SIXTH ST	END	CHERST	010	R	AC	100	$9,400	15,230	FDR (4")
						Treatment Total		$164,501		
THIRD STREET	PARK STREET	FORBES STREET	THIRDS	012	C	AC	100	$40,125	31,614	MILL AND FILL (2")
						Treatment Total		$40,125		
MAIN STREET SOUTH (CITY)	LAKEPORT BLVD	FIRST ST	SMAIN	020	A	AC	100	$475,200	35,491	CIR (3")
						Treatment Total		$475,200		
POLK STREET	ARMSTRONG STREET	FIRST STREET	POLKST	022	R	AC	77	$4,402	24,266	CAPE SEAL W/DIGOUTS
						Treatment Total		$4,402		
						Year 2013 Total		$684,228		

Street Name	Begin Location	End Location	Street ID	Section ID	FC	Surface	PCI	Cost	Rating	Treatment
Year: 2014										
CRAWFORD STREET	SECOND STREET	FIFTH STREET	CRAWFO	010	R	AC	100	$56,870	15,230	FDR (4")
E STREET	ESPLANDE STREET	MAIN STREET	EST	010	R	AC	100	$27,072	15,230	FDR (4")
						Treatment Total		$83,942		
MAIN STREET NORTH	FIRST ST	CLEAR LAKE AVE	NMAIN	010	A	AC	100	$580,000	35,955	CIR (3")
						Treatment Total		$580,000		
FIFTH STREET	FORBES STREET	MAIN STREET	FIFTHS	030	R	AC	78	$4,134	24,391	CAPE SEAL W/DIGOUTS
OAKCREST DRIVE	BOGGS LANE	END	OAKCDR	010	R	AC	78	$10,714	24,381	CAPE SEAL W/DIGOUTS
TUNIS STREET	CLEARLAKE AVENUE	TENTH STREET	TUNIST	012	R	AC	78	$9,838	24,342	CAPE SEAL W/DIGOUTS
						Treatment Total		$24,686		
PECKHAM COURT	SOUTH MAIN STREET	END	PECKCT	010	C	AC	78	$3,993	65,425	SINGLE CHIP SEAL
						Treatment Total		$3,993		
						Year 2014 Total		$692,621		
Year: 2015										
BEVINS COURT	BEVINS STREET	END	BEVINC	010	R	AC	100	$146,076	15,230	FDR (4")
BRUSH STREET	CLEARLAKE AVE	THIRD STREET	BRUSHS	012	R	AC	100	$275,734	15,230	FDR (4")
CLEAR LAKE AVENUE	MAIN ST	EAST END (LAKE)	CLEARL	030	R	AC	100	$125,334	15,230	FDR (4")
C STREET	MAIN STREET	FAIRGROUNDS	CSTR	010	R	AC	100	$104,445	15,230	FDR (4")
						Treatment Total		$651,589		
ESTEP STREET	MARTIN STREET	FIRST STREET	ESTEPS	012	R	AC	100	$24,039	49,890	THIN OVERLAY W/SAMI (NO DIGOUTS)
						Treatment Total		$24,039		
ALDEN AVENUE	TWENTIETH AVENUE	END	ALDENA	010	C	AC	78	$8,979	23,203	CAPE SEAL W/DIGOUTS
						Treatment Total		$8,979		
						Year 2015 Total		$684,607		
Year: 2016										
ADAMS STREET	WILL-O-VIEW CIRCLE	END	ADAMSS	010	R	AC	100	$48,149	15,230	FDR (4")
BEACH LANE	LAKESHORE BLVD	CITY LIMITS	BEACLN	010	R	AC	100	$41,360	15,230	FDR (4")
C STREET	SOUTH MAIN ST	EAST END (LAKE)	CSTR	020	R	AC	100	$90,084	15,230	FDR (4")

Street Name	Begin Location	End Location	Street ID	Section ID	FC	Surface	PCI	Cost	Rating	Treatment
D STREET	MAIN STREET	FORBES STREET	DSTR	010	R	AC	100	$41,778	15,230	FDR (4")
EIGHTH STREET	FORBES STREET	BRUSH STREET	EIGHTH	010	R	AC	100	$69,686	15,230	FDR (4")
ESPLANADE	K STREET	MAIN STREET	ESPLAN	010	R	AC	100	$261,112	15,230	FDR (4")
ESTEP STREET	FIRST STREET	FIFTH STREET	ESTEPS	015	R	AC	100	$82,950	15,230	FDR (4")
						Treatment Total		$635,119		
ALDEN AVENUE	400 FT S/PAGE DR	260 FT N/PAGE DR	ALDENA	020	C	AC	90	$3,520	80,332	SCRUB SEAL
BRUSH STREET	THIRD STREET	SECOND STREET	BRUSHS	015	R	AC	85	$1,494	79,452	SCRUB SEAL
						Treatment Total		$5,014		
LAKEPORT BLVD	BEVINS	TODD RD	LAKEPO	020	A	AC	77	$21,934	47,717	CAPE SEAL W/DIGOUTS
						Treatment Total		$21,934		
HIGH STREET	SIXTEENTH STREET	LAKESHORE BLVD	HIGH	015	A	AC	77	$20,387	44,299	DOUBLE CHIP SEAL
						Treatment Total		$20,387		
						Year 2016 Total		$682,454		
						Grand Total		$3,428,152		

Scenario 3. Improve PCI by 10 Points ($1.25 million per year)

Scenarios - Sections Selected for Treatment

Interest: .00% Inflation: .00% Printed: 12/19/2011

Scenario: Improve PCI by 10 Points

Year	Budget	PM Amt	Year	Budget	PM Amt	Year	Budget	PM Amt
2012	$1,250,000	1%	2013	$1,250,000	1%	2014	$1,250,000	1%
2015	$1,250,000	1%	2016	$1,250,000	1%			

Street Name	Begin Location	End Location	Street ID	Section ID	FC	Surface	PCI	Cost	Rating	Treatment
Year: 2012										
ANASTASIA DRIVE	HARTLEY ROAD	END	ANASTA	010	R	AC	100	$106,012	15,230	FDR (4")
ASHE STREET	JONES STREET	LAKESHORE BLVD	ASHEST	010	R	AC	100	$89,927	15,230	FDR (4")
BANASZECK DRIVE	ORCHARD ST	SMITH ST	BANZDR	010	R	AC	100	$22,978	15,230	FDR (4")
BEACH COURT	BEACH LANE	END	BEACCT	010	R	AC	100	$25,589	15,230	FDR (4")
BEACH STREET	CENTRAL PARK	SIXTH STREET	BEACHS	010	R	AC	100	$18,048	15,230	FDR (4")
BERRY STREET	SPURR STREET	ARMSTRONG STREET	BERRYS	010	R	AC	100	$65,174	15,230	FDR (4")
BEVINS COURT	BEVINS STREET	END	BEVINC	010	R	AC	100	$146,076	15,230	FDR (4")
CHERRY STREET	SIXTH ST	END	CHERST	010	R	AC	100	$9,400	15,230	FDR (4")
CLEAR LAKE AVENUE	MAIN ST	EAST END (LAKE)	CLEARL	030	R	AC	100	$125,334	15,230	FDR (4")
CRAWFORD STREET	SECOND STREET	FIFTH STREET	CRAWFO	010	R	AC	100	$56,870	15,230	FDR (4")
D STREET	MAIN STREET	FORBES STREET	DSTR	010	R	AC	100	$41,778	15,230	FDR (4")
						Treatment Total		$707,186		
BRUSH STREET	SECOND STREET	FIRST STREET	BRUSHS	017	R	AC	100	$12,715	49,730	THIN OVERLAY W/SAMI (NO DIGOUTS)
BRUSH STREET	ARMSTRONG ST	MARTIN ST	BRUSHS	020	R	AC	100	$12,795	51,714	THIN OVERLAY W/SAMI (NO DIGOUTS)
FIFTH STREET	MAIN STREET	THE LAKE	FIFTHS	040	R	AC	100	$13,907	51,714	THIN OVERLAY W/SAMI (NO DIGOUTS)
JONES STREET	LAKESHORE BLVD	ASHE STREET	JONEST	010	R	AC	100	$12,343	50,103	THIN OVERLAY W/SAMI (NO DIGOUTS)
MIKES WAY	PAGE DRIVE	END	MIKEWY	010	R	AC	100	$6,432	50,830	THIN OVERLAY W/SAMI (NO DIGOUTS)
SHADY OAK	CENTRAL PARK AVE	SIXTH ST	SHADOK	010	R	AC	100	$24,536	51,986	THIN OVERLAY W/SAMI (NO DIGOUTS)
TUNIS STREET	TENTH STREET	NINTH STREET	TUNIST	015	R	AC	100	$9,735	49,309	THIN OVERLAY W/SAMI (NO DIGOUTS)

** - Treatment from Project Selection

Scenarios Criteria:

Street Name	Begin Location	End Location	Street ID	Section ID	FC	Surface	PCI	Cost	Rating	Treatment
TUNIS STREET	5TH ST	4TH ST	TUNIST	020	R	AC	100	$14,602	49,728	THIN OVERLAY W/SAMI (NO DIGOUTS)
WILD OAK COURT	ALDEN AVE	CUL-DE-SAC	WIOKST	010	R	AC	100	$23,523	50,828	THIN OVERLAY W/SAMI (NO DIGOUTS)
						Treatment Total		$130,588		
BOGGS LANE	Will-o-View Circle	20th Street	BOGGSA	020	C	AC	100	$56,667	32,627	MILL AND FILL (2")
CENTRAL PARK AVENUE	POOL ST	SHADY OAK ST	CENPAK	010	C	AC	100	$24,067	31,813	MILL AND FILL (2")
LANGE STREET	FOREST DRIVE	LAKESHORE BOULEVARD	LANGES	010	C	AC	100	$87,362	31,659	MILL AND FILL (2")
MELLOR DRIVE	19TH ST	20TH ST	MELLOR	020	C	AC	100	$21,817	32,627	MILL AND FILL (2")
TWENTIETH STREET	LAKESHORE BLVD	PAVMENT CHANGE	TWENTI	010	C	AC	100	$133,700	31,674	MILL AND FILL (2")
						Treatment Total		$323,613		
ALDEN AVENUE	TWENTIETH AVENUE	END	ALDENA	010	C	AC	76	$8,979	22,323	CAPE SEAL W/DIGOUTS
FIFTH STREET	FORBES STREET	MAIN STREET	FIFTHS	030	R	AC	72	$4,134	22,146	CAPE SEAL W/DIGOUTS
LAKEPORT BLVD	BEVINS	TODD RD	LAKEPO	020	A	AC	77	$21,934	47,348	CAPE SEAL W/DIGOUTS
OAKCREST DRIVE	BOGGS LANE	END	OAKCDR	010	R	AC	72	$10,714	22,134	CAPE SEAL W/DIGOUTS
						Treatment Total		$45,761		
FIRST STREET	POLK ST	100 FT W/POLK ST	FIRSTS	030	R	AC	77	$400	74,883	SINGLE CHIP SEAL
						Treatment Total		$400		
HIGH STREET	CLEARLAKE AVE	11 TH ST	HIGH	020	A	AC	77	$5,250	44,185	DOUBLE CHIP SEAL
						Treatment Total		$5,250		
GRACE LANE	SOUTH MAIN STREET	END	GRACLN	010	O	AC	100	$6,003	81,808	RECONSTRUCT STRUCTURE (AC)
						Treatment Total		$6,003		
						Year 2012 Total		$1,218,801		

Year: 2013

BRUSH STREET	CLEARLAKE AVE	THIRD STREET	BRUSHS	012	R	AC	100	$275,734	15,230	FDR (4")
C STREET	MAIN STREET	FAIRGROUNDS	CSTR	010	R	AC	100	$104,445	15,230	FDR (4")
C STREET	SOUTH MAIN ST	EAST END (LAKE)	CSTR	020	R	AC	100	$90,084	15,230	FDR (4")
E STREET	ESPLANDE STREET	MAIN STREET	EST	010	R	AC	100	$27,072	15,230	FDR (4")
ESTEP STREET	FIRST STREET	FIFTH STREET	ESTEPS	015	R	AC	100	$82,950	15,230	FDR (4")
FIFTEENTH STREET	MAIN STREET	HIGH STREET	FIFTEE	010	R	AC	100	$74,448	15,230	FDR (4")

Street Name	Begin Location	End Location	Street ID	Section ID	FC	Surface	PCI	Cost	Rating	Treatment
FIFTH STREET	HARRY ST	SPURR ST	FIFTHS	050	R	AC	100	$43,867	15,230	FDR (4")
						Treatment Total		$698,600		
BRYCE COURT	SPURR STREET	END	BRYCEC	010	R	AC	86	$1,579	78,295	SCRUB SEAL
HEALTON CIRCLE	BOGGS LANE	END	HEALTC	010	R	AC	83	$734	79,627	SCRUB SEAL
HIGH STREET	CLEARLAKE AVE	SIXTEENTH STREET	HIGH	012	A	AC	85	$8,305	105,792	SCRUB SEAL
HIGH STREET	SIXTEENTH STREET	LAKESHORE BLVD	HIGH	015	A	AC	83	$9,061	106,399	SCRUB SEAL
SPECHT COURT	PECKHAM CT	END	SPECHT	010	R	AC	84	$2,788	79,571	SCRUB SEAL
						Treatment Total		$22,467		
THIRD STREET	PARK STREET	FORBES STREET	THIRDS	012	C	AC	100	$40,125	31,614	MILL AND FILL (2")
						Treatment Total		$40,125		
MAIN STREET SOUTH (CITY)	LAKEPORT BLVD	FIRST ST	SMAIN	020	A	AC	100	$475,200	35,491	CIR (3")
						Treatment Total		$475,200		
POLK STREET	ARMSTRONG STREET	FIRST STREET	POLKST	022	R	AC	77	$4,402	24,266	CAPE SEAL W/DIGOUTS
						Treatment Total		$4,402		
						Year 2013 Total		$1,240,794		

Year: 2014

ESPLANADE	K STREET	MAIN STREET	ESPLAN	010	R	AC	100	$261,112	15,230	FDR (4")
FAIRVIEW WAY	GREEN ST	HILLCREST DR	FAIRWY	010	R	AC	100	$153,377	15,230	FDR (4")
FIFTEENTH STREET	PALM STREET	MELLOR DRIVE	FIFTEE	020	R	AC	100	$84,224	15,230	FDR (4")
FIFTH STREET	END	ESTEP STREET	FIFTHS	010	R	AC	100	$74,730	15,230	FDR (4")
FOURTEENTH STREET	HIGH STREET	FORBES STREET	FOURTE	020	R	AC	100	$42,614	15,230	FDR (4")
						Treatment Total		$616,057		
MAIN STREET NORTH	FIRST ST	CLEAR LAKE AVE	NMAIN	010	A	AC	100	$580,000	35,955	CIR (3")
						Treatment Total		$580,000		
FIFTH STREET	FORBES STREET	MAIN STREET	FIFTHS	030	R	AC	78	$4,134	24,391	CAPE SEAL W/DIGOUTS
OAKCREST DRIVE	BOGGS LANE	END	OAKCDR	010	R	AC	78	$10,714	24,381	CAPE SEAL W/DIGOUTS
TUNIS STREET	CLEARLAKE AVENUE	TENTH STREET	TUNIST	012	R	AC	78	$9,838	24,342	CAPE SEAL W/DIGOUTS
						Treatment Total		$24,686		
PECKHAM COURT	SOUTH MAIN STREET	END	PECKCT	010	C	AC	78	$3,993	65,425	SINGLE CHIP SEAL

Street Name	Begin Location	End Location	Street ID	Section ID	FC	Surface	PCI	Cost	Rating	Treatment
						Treatment Total		$3,993		
						Year 2014 Total		$1,224,736		
Year: 2015										
EIGHTH STREET	FORBES STREET	BRUSH STREET	EIGHTH	010	R	AC	100	$69,686	15,230	FDR (4")
FIFTH STREET	ESTEP STREET	FORBES STREET	FIFTHS	020	R	AC	100	$143,246	15,230	FDR (4")
FIRST STREET	RUSSELL ST	STARR ST	FIRSTS	020	R	AC	100	$59,220	15,230	FDR (4")
FIRST STREET	LAKEVIEW ST	BRUSH ST	FIRSTS	040	R	AC	100	$68,996	15,230	FDR (4")
FIRST STREET	BRUSH ST	MAIN ST	FIRSTS	050	R	AC	100	$106,032	15,230	FDR (4")
FORBES STREET	MARTIN STREET	D STREET	FORBES	040	R	AC	100	$124,289	15,230	FDR (4")
FOURTEENTH STREET	PALM DRIVE	HARTLEY STREET	FOURTE	010	R	AC	100	$176,250	15,230	FDR (4")
FOURTH STREET	MAIN STREET	THIRD STREET	FOURTH	010	R	AC	100	$268,214	15,230	FDR (4")
FOURTH STREET	MAIN ST	EAST END (LAKE)	FOURTH	020	R	AC	100	$53,643	15,230	FDR (4")
HARRY STREET	CENTRAL PARK	FIFTH STREET	HARRYS	010	R	AC	100	$48,045	15,230	FDR (4")
HELENA AVENUE	ESPLANDE	MAIN STREET	HELEAN	010	R	AC	100	$54,171	15,230	FDR (4")
LAKEVIEW STREET	ARMSTRONG STREET	FIRST STREET	LAVIST	013	R	AC	100	$29,663	15,230	FDR (4")
						Treatment Total		$1,201,455		
ESTEP STREET	MARTIN STREET	FIRST STREET	ESTEPS	012	R	AC	100	$24,039	49,890	THIN OVERLAY W/SAMI (NO DIGOUTS)
						Treatment Total		$24,039		
ALDEN AVENUE	TWENTIETH AVENUE	END	ALDENA	010	C	AC	78	$8,979	23,203	CAPE SEAL W/DIGOUTS
						Treatment Total		$8,979		
						Year 2015 Total		$1,234,473		
Year: 2016										
ADAMS STREET	WILL-O-VIEW CIRCLE	END	ADAMSS	010	R	AC	100	$48,149	15,230	FDR (4")
BEACH LANE	LAKESHORE BLVD	CITY LIMITS	BEACLN	010	R	AC	100	$41,360	15,230	FDR (4")
HILLCREST DRIVE	TERRACE DRIVE	GISELMAN STREET	HICRDR	010	R	AC	100	$143,820	15,230	FDR (4")
HIGH STREET	11 TH ST	4TH ST	HIGH	030	R	AC	100	$199,030	15,230	FDR (4")
HIGH STREET	4TH ST	3RD ST	HIGH	040	R	AC	100	$36,932	15,230	FDR (4")
HIGH STREET	SECOND STREET	FIRST STREET	HIGH	052	R	AC	100	$61,832	15,230	FDR (4")
HIGH STREET	FIRST STREET	MARTIN STREET	HIGH	055	R	AC	100	$132,358	15,230	FDR (4")

Street Name	Begin Location	End Location	Street ID	Section ID	FC	Surface	PCI	Cost	Rating	Treatment
JERRY DRIVE	HARTLEY ROAD	END	JERRYD	010	R	AC	100	$60,578	15,230	FDR (4")
KONOCTI AVENUE	ESPLANDE	MAIN STREET	KONOAV	010	R	AC	100	$68,359	15,230	FDR (4")
KONOCTI AVENUE	S.FORBES ST	LARRECOU LN	KONOAV	020	R	AC	100	$101,990	15,230	FDR (4")
K STREET	ESPLANDE	MAIN STREET	KST	010	R	AC	100	$57,654	15,230	FDR (4")
LAKEVIEW STREET	FIRST STREET	SECOND STREET	LAVIST	017	R	AC	100	$27,156	15,230	FDR (4")
LILY COVE	ESPLANDE	MAIN STREET	LILYCO	010	R	AC	100	$34,780	15,230	FDR (4")
LOCH DRIVE	FOREST DRIVE	HILLCREST DRIVE	LOCHDR	010	R	AC	100	$54,144	15,230	FDR (4")
LUPOYOMA AVENUE	ESPLANDE	MAIN STREET	LUPOAV	010	R	AC	100	$60,442	15,230	FDR (4")
LUPOYOMA CIRCLE	LUPOYOMA HEIGHTS	LUPOYOMA HEIGHTS	LUPOCR	010	R	AC	100	$56,400	15,230	FDR (4")
ORCHARD STREET	ARMSTRONG ST	MARTIN ST	ORCHST	010	R	AC	100	$30,080	15,230	FDR (4")
						Treatment Total		$1,215,064		
ALDEN AVENUE	400 FT S/PAGE DR	260 FT N/PAGE DR	ALDENA	020	C	AC	90	$3,520	80,332	SCRUB SEAL
BRUSH STREET	THIRD STREET	SECOND STREET	BRUSHS	015	R	AC	85	$1,494	79,452	SCRUB SEAL
HILLCREST DRIVE	HARTLEY DR	TERRACE DR	HICRDR	020	R	AC	80	$2,223	78,090	SCRUB SEAL
PARK STREET	1st STREET	3rd STREET	PARKST	010	C	AC	90	$3,900	80,291	SCRUB SEAL
						Treatment Total		$11,137		
LAKEPORT BLVD	BEVINS	TODD RD	LAKEPO	020	A	AC	77	$21,934	47,717	CAPE SEAL W/DIGOUTS
						Treatment Total		$21,934		
						Year 2016 Total		$1,248,135		
						Grand Total		$6,166,939		