# A Comprehensive Pavement Management Program

For

## The City of Raymore, MO

**November 10, 2011**

*Prepared by:*

City of Raymore
Public Works Dept.

Over the past 7 years, the City has embarked on an extensive re-building of the City's street network at a cost of approximately $7M. At the start of the program, approximately half to two-thirds of the street network had a Pavement Condition Index (PCI) rating that was at or below "fair" condition and almost half of these roads were rated at or below "poor" to "very poor". See Figure 1.

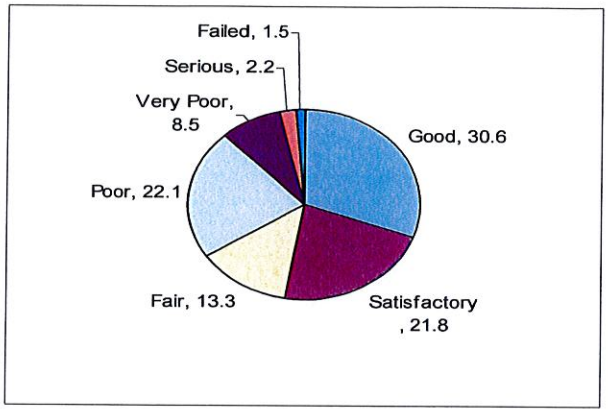



Figure 1

In 2010, the City purchased the *Micro Paver* Pavement Management System (PMS) to evaluate and rate the current condition of the street network. Road segment ratings are determined by gathering field measurements of various pavement defects and inputting this information input into the software, which then generates a rating from 100 (Good) to 0 (failed) for each road segment.

Engineering staff evaluated and rated every street segment in the city over the last several months. The results show that the City's investment in the re-building of the street network has had a significant impact. Today 75% (343 of 455 segments) of the street network is rated at an average condition of satisfactory or above. See Figure 2.

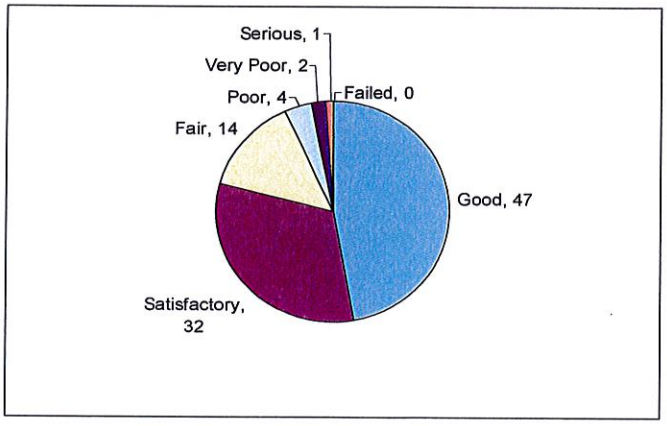



Figure 2

In addition to rating the street network, the software has the capability to model maintenance needs and costs utilizing a number of different user-defined parameters. The software determines optimum maintenance activities and timing based on the condition of individual street segments and the effect of these activities on the street network. Maintenance activities include **mill and overlay**, **micro-surfacing**, and selected **patching and crack sealing**.

**Funding Scenarios**

In looking at the system's current condition and the annual maintenance program, staff looked at two different funding scenarios.

- The "Money is No Object" Scenario; An initial scenario was run which assumed no budget constraints. It allowed the program to identify maintenance activities which would keep the average condition rating as close as possible to the current average over the next 10 years. Under this scenario the City would need to spend $1.2 million per year, or $800,000 more than budgeted in FY 2012.

- Scenario based upon current level of funding: Staff developed a second scenario based on the current funding of $400,000 per year.

  The initial software runs based on this level of funding projected a significant deterioration in the condition of the overall street network during the 10-year time frame.

  As staff looked more closely at the data and analysis under this scenario, it could be seen that a large percentage of maintenance dollars would be allocated to maintaining streets rated in very poor (rated 39 and below) condition. These roads typically have significant areas of failed pavement and are in need of significant subgrade repairs along with full depth mill and overlays to increase the structural capacity.

  The program also allocated a large amount of funding to maintain multi-lane roads such as Dean Avenue.

Annual Program Based Upon Three Road Categories

Based upon review of the data, staff would recommend optimizing maintenance dollars by breaking the street network into three categories.

- **Roads in need of reconstruction (rated 39 and below),**
- **Local roads rated 40 and higher, and**
- **Multi-lane thoroughfares such as 58 Highway, Dean Avenue and Lucy Webb Road.**

**Recommended Annual Program**

For the next several years, staff would recommend the following annual funding program, at an annual cost of **$400,000**

- Roads Rated With a Score of Less than 39

  The PMS has identified fifteen (15) roads rated very poor and below. Typically these roads will have extensive alligator cracking, rutting and other pavement defects. The repair of these roads involves pavement removal, subgrade stabilization and placement of a new pavement surface. The estimated cost to re-construct these roads is $1.3 million. The specific roads and estimated costs are shown in Appendix D.

These roads have reached the point of diminishing returns. Until they can be completely reconstructed, there is little point in spending significant dollars on maintenance activities. Staff recommends these roads be maintained as part of the Public Works annual street maintenance program until funding becomes available to reconstruct them. This would involve a capital project to accomplish the $1.3 million worth of reconstructive work.

- Local Roads (Score of more than 40)

  Based on the current funding of $400,000 per year, a 10-year maintenance program has been developed that allocates approximately $100,000 per year to preventative maintenance (patching and crack sealing), approximately $200,000 per year to micro-surfacing, and approximately $100,000 per year to mill and overlay. A road by road breakdown of asphalt overlay and micro-surface maintenance activities along with a projected network condition rating at the end of the 10-year program is shown on the spreadsheets attached as Appendix A. In addition to the asphalt overlay and micro-surfacing, approximately 45 street segments will receive routine preventative maintenance crack sealing and asphalt patch repairs annually.

  This maintenance program is financially sustainable and maintains the streets in a fair condition. Typically roads in fair condition are smooth from a driver's standpoint but may have a number of isolated patches and cracks which can be sealed through normal crack sealing operations. Examples of roads that are currently rated fair include Sunset Lane between Maple Street and Lucy Webb Road, 195th Street, and Darrowby Drive.

- Multi-Lane Roads

  Two maintenance plans have been developed for these roads.

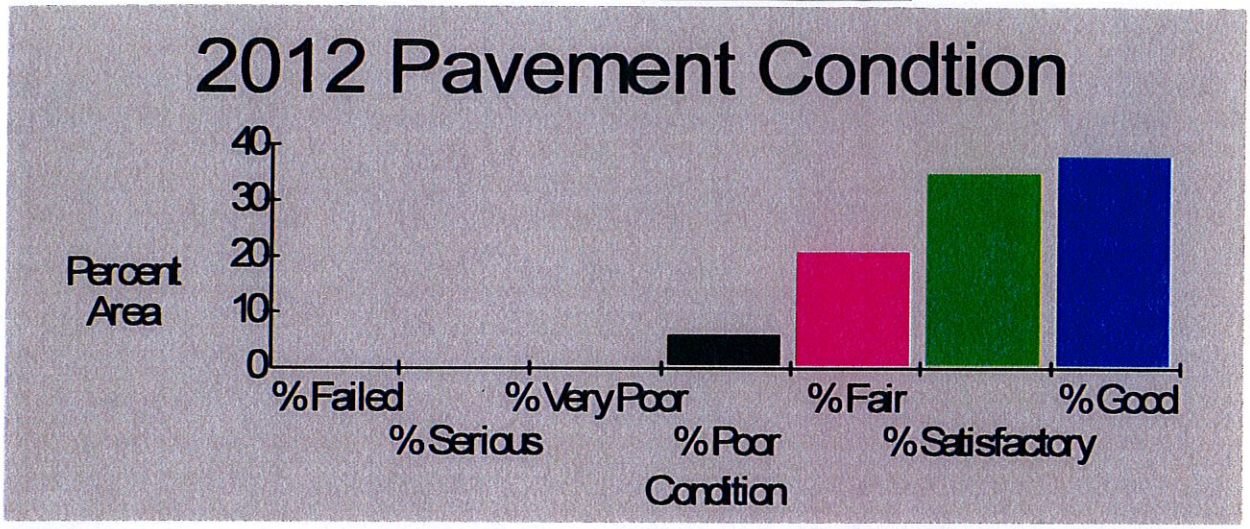
  - Plan A: This plan would include routine maintenance and micro-surfacing. Micro-surfacing would be scheduled on a 6-year interval. The PMS does not project the need for a mill and overlay for these streets during the initial 10-year maintenance period. The PMS projects that this maintenance plan would result in a slight improvement to the overall condition of the multilane roads during the 10-year maintenance period. The cost of this program averages $148,000 per year. A detailed breakdown of the maintenance recommended for each road is shown on the spreadsheets attached as Appendix B.

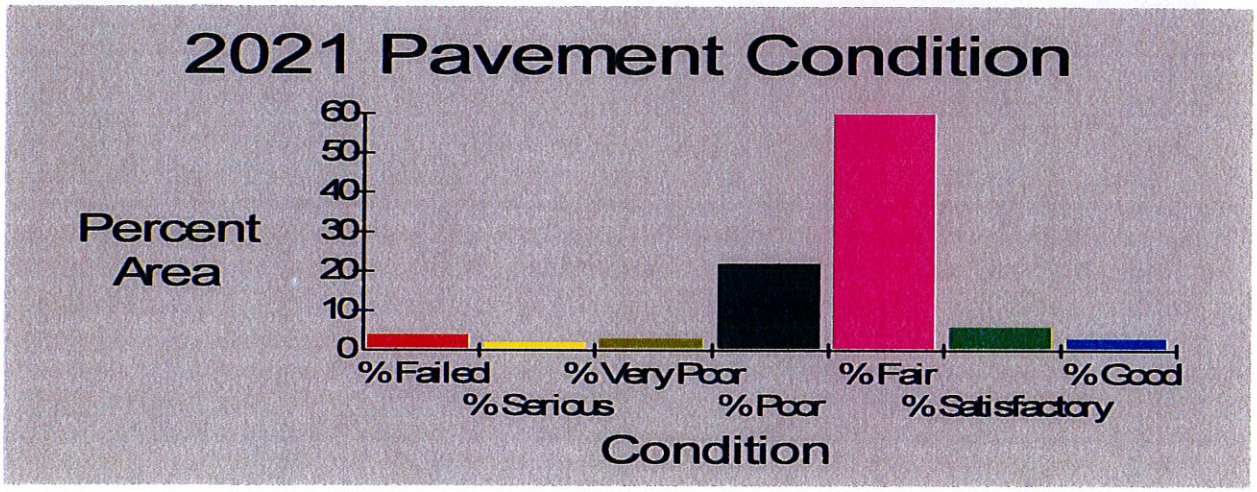
  - Plan B: This plan would include only routine maintenance (crack sealing and selected patching). The PMS projects that this plan would result in a decrease in the average condition rating of theses roads from good / satisfactory to fair during the 10-year maintenance period. A detailed breakdown of the maintenance recommended for each road is shown on the spreadsheets attached as Appendix C.

  Staff recommends proceeding with Maintenance Plan B as outlined above for the first four years (2012-2016). Maintenance during this period would be performed by Operations and Maintenance staff. During this period, the City should work to identify additional sources of funding to allow transitioning to the long term maintenance plan A as outlined above starting in 2017.

Appendix A

**$400,000 Budget to Maintain**
**Residential Streets Currently Rated "Good", "Satisfactory", "Fair" and "Poor" (a PCI above 39). *Directed Budget*.**




| Date | Maintenance on Roads Rated "Poor"and Below | Maintenance on roads rated "Good", "Satisfactory", and "Fair". | Micro-surface | Overlay | Total |
|---|---|---|---|---|---|
| 2012 | $10,129 | $89,868 | $199,550 | $94,219 | $393,766 |
| 2013 | $12,527 | $87,468 | $199,302 | $98,545 | $397,842 |
| 2014 | $16,869 | $83,130 | $198,182 | $98,232 | $396,413 |
| 2015 | $24,502 | $75,498 | $199,104 | $94,136 | $393,240 |
| 2016 | $23,066 | $76,929 | $199,670 | $99,104 | $398,769 |
| 2017 | $28,931 | $71,063 | $198,655 | $92,682 | $391,331 |
| 2018 | $40,532 | $59,464 | $199,895 | $88,030 | $387,921 |
| 2019 | $44,775 | $55,221 | $199,454 | $97,049 | $396,499 |
| 2020 | $53,582 | $46,415 | $198,649 | $99,762 | $398,409 |
| 2021 | $68,551 | $31,439 | $199,206 | $96,418 | $395,613 |
| | | | **Ten Year Budget Total** | | $3,949,804 |

| | Route | From | To | Maintenance Activity | Sched. Year |
|---|---|---|---|---|---|
| | Arabian | Palamino | Foxwood Dr | Mill & Overlay | 2012 |
| | Cindy Ln | Country Ln | South End | Mill & Overlay | 2012 |
| | Cinnabar Dr | Huntsman Blvd | to E. End | Mill & Overlay | 2012 |
| | Lakeview Dr | Sunset Ln | Park Dr | Mill & Overlay | 2012 |
| | Andy Paul Ct | North End | Culdesac | Microsurface | 2012 |
| | Asbury Ln | Avendale | Foxridge Dr | Microsurface | 2012 |
| | Canter St | 717 Canter St | Secretariat Street | Microsurface | 2012 |
| | Carlisle | Corrington Dr | Brook Parkway | Microsurface | 2012 |
| | Cedar Falls Ct (n) | Sierra Dr | End of CDS | Microsurface | 2012 |
| | Cedar Ridge Dr | East Culdesac | W Culdesac | Microsurface | 2012 |
| | Cody Dr | Pelham Path | Huntsman Blvd | Microsurface | 2012 |
| | Cove Dr | Huntsman Blvd | Pelham Path | Microsurface | 2012 |
| | Darrowby Dr | Pelham Path | Johnston Dr | Microsurface | 2012 |
| | Derby | Preakness | Belmont | Microsurface | 2012 |
| | Elder Ct | Haystack Road | End of CDS | Microsurface | 2012 |
| | Foxwood Dr | Madison | Washington St | Microsurface | 2012 |
| | Highpoint | Stratford Dr | Johnston Pkwy | Microsurface | 2012 |
| | Olive | Monroe St | Culdesac | Microsurface | 2012 |
| | Olive | Adams | Madison | Microsurface | 2012 |
| | Oxford Dr | Culdesac | Lakeshore Dr | Microsurface | 2012 |
| | Selby Ct | Haystack Road | End of CDS | Microsurface | 2012 |
| | Shelby Dr | Huntsman Blvd | Pelham Path | Microsurface | 2012 |
| | Shoreview Dr | Lakeshore Dr | Culdesac | Microsurface | 2012 |
| | Silverlake Dr | Johnston Dr | Johnston Pkwy | Microsurface | 2012 |
| | Tyler Dr | Pelham Path | Huntsman Blvd | Microsurface | 2012 |
| | Yokley Dr | Brook Parkway | Garnes | Microsurface | 2012 |

| | Route | From | To | Maintenance Activity | Sched. Year |
|---|---|---|---|---|---|
| | Wesley Ave | Hubach Hill Rd | Char-Don Av | Mill & Overlay | 2013 |
| | Aberdeen | S Westglen | Culdesac | Microsurface | 2013 |
| | Bayview Dr | Shoreview Dr | Buena Vista Dr | Microsurface | 2013 |
| | Bridlewood Ln | Foxridge Dr | Culdesac | Microsurface | 2013 |
| | Bristol Drive | Dead End | 723 Bristol | Microsurface | 2013 |
| | Brookside Dr | Johnston Dr | Silverlake Dr | Microsurface | 2013 |
| | Corrington Dr 3 | Yokley Dr | Culdesac | Microsurface | 2013 |
| | Drury Cr | Foxridge Dr | End of CDS | Microsurface | 2013 |
| | Garnes St | End of CDS | Culdesac | Microsurface | 2013 |
| | Heritage Dr 1 | Franklin St | Madison | Microsurface | 2013 |
| | Laurus Dr | Wiltshire Blvd | Hampton Drive | Microsurface | 2013 |
| | Linden Pl | Madison | Culdesac | Microsurface | 2013 |
| | Olive | Monroe St | Washington St | Microsurface | 2013 |
| | Peace Dr | Foxwood Dr | Campbell | Microsurface | 2013 |
| | Pelham Path | Huntsman Blvd | Johnston Dr | Microsurface | 2013 |
| | Pembroke Dr | Roanke Dr | Cedar Ridge Dr | Microsurface | 2013 |
| | Red Barn Rd | Old Paint Rd | Culdesac | Microsurface | 2013 |
| | Redwood Dr | Culdesac | Oak Dr | Microsurface | 2013 |
| | Regina Ct | Granada | Culdesac | Microsurface | 2013 |
| | Seminole Ct | E End | W End | Microsurface | 2013 |
| | Trailway Dr | Deerpath | Saddlebrook Rd | Microsurface | 2013 |

| | Route | From | To | Maintenance Activity | Sched. Year |
|---|---|---|---|---|---|
| | Darrowby Dr | Foxwood Dr | Pelham Path | Mill & Overlay | 2014 |
| | Furlong Dr | Secretariat Street | Sunny Ln | Mill & Overlay | 2014 |
| | Goose Creek Ct | Old Paint Rd | Culdesac | Mill & Overlay | 2014 |
| | Calico Dr | Madison St | Crest Dr | Microsurface | 2014 |
| | Clancy | Bristol Drive | Culdesac | Microsurface | 2014 |
| | Country Ln | Sunset Ln | Brook Parkway | Microsurface | 2014 |
| | Cypress Ct | Bristol Drive | End of CDS | Microsurface | 2014 |
| | Eagle Glen Drive | Foxridge Dr | Johnston Dr | Microsurface | 2014 |
| | Florence Ave | Culdesac | Hays | Microsurface | 2014 |
| | Florence Ave | Hays | Hubach Hill Rd | Microsurface | 2014 |
| | Granada Dr | Foxridge Dr | Johnston Pkwy | Microsurface | 2014 |
| | Hedgeapple Place | Haystack Road | End of CDS | Microsurface | 2014 |
| | Pelham Path | Johnston Dr | Huntsman Blvd | Microsurface | 2014 |
| | Plum St | Monroe St | Washington St | Microsurface | 2014 |
| | Secretariat Street | Derby | Dead End West | Microsurface | 2014 |
| | Shiloh | Sumpter | Shenandoah Dr | Microsurface | 2014 |

| | Route | From | To | Maintenance Activity | Sched. Year |
|---|---|---|---|---|---|
| | Belinder | N. Eastglen Dr | N. Westglen Dr | Mill & Overlay | 2015 |
| | Maple | Park Dr | Sunset Ln | Mill & Overlay | 2015 |
| | Ripley Ct (s) | Sierra Dr | End of CDS | Mill & Overlay | 2015 |
| | Washington | Sierra Dr | Laredo Trail | Mill & Overlay | 2015 |
| | Adams | Preakness | End of CDS | Microsurface | 2015 |
| | Beau Dr | Pelham Path | Huntsman Blvd | Microsurface | 2015 |
| | Blue Sky | Haystack Road | Culdesac | Microsurface | 2015 |
| | Buffalo Ct | Buffalo Dr | Culdesac | Microsurface | 2015 |
| | Forrest View Ct (n) | Sierra Dr | End of CDS | Microsurface | 2015 |
| | Garnes St | N 714 Garnes | S. End | Microsurface | 2015 |
| | Kimberwick Ct | Huntsman | Culdesac | Microsurface | 2015 |
| | Lark | Culdesac | Finch St | Microsurface | 2015 |
| | Laurus Dr | Hwy 58 | Remington Commerical Dr | Microsurface | 2015 |
| | Old Paint Rd | Lucy Webb Rd | Trevor Ct | Microsurface | 2015 |
| | Pelham Path | Huntsman Blvd | Darrowby Dr S | Microsurface | 2015 |
| | Raven St | Toucan | South End Culdesac | Microsurface | 2015 |
| | Raven St | Finch | Toucan St | Microsurface | 2015 |
| | Remington Plaza | West End | East End | Microsurface | 2015 |
| | Ripley Ct (n) | Sierra Dr | End of CDS | Microsurface | 2015 |
| | Saddlebrook Dr | E. End | Foxridge Dr | Microsurface | 2015 |
| | Shorevista Ct | Shoreview Dr | Culdesac | Microsurface | 2015 |
| | Skyline Drive | Municipal Cir | Foxwood Dr | Microsurface | 2015 |
| | Spur Ridge | Haystack Road | End | Microsurface | 2015 |
| | Verona Cr | Foxridge Dr | End of CDS | Microsurface | 2015 |
| | Washington | Mulberry | Sycamore Drive | Microsurface | 2015 |
| | Wiltshire Blvd | Heritage Dr | Buffalo Dr | Microsurface | 2015 |
| | Yokley Dr | Brook Parkway | Corrington Dr | Microsurface | 2015 |

| | Route | From | To | Maintenance Activity | Sched. Year |
|---|---|---|---|---|---|
| | Bobcat Ct | Old Paint Rd | End of CDS | Mill & Overlay | 2016 |
| | Falcon | South End | 606 Falcon N. End | Mill & Overlay | 2016 |
| | Corrington Dr 1 | S. Country Ln | Bristol | Microsurface | 2016 |
| | Corrington Dr 2 | 707 Corrington | Country Ln | Microsurface | 2016 |
| | Country Ln | Brook Parkway | Garnes St | Microsurface | 2016 |
| | Cove Dr | Foxridge Dr | Pelham Path | Microsurface | 2016 |
| | Creekside Ct | Garnes St | End of CDS | Microsurface | 2016 |
| | Hubach Hill Rd | Haystack Road | Sunset Ln | Microsurface | 2016 |
| | Kaycee Drive | Johnston Pkwy | End of CDS | Microsurface | 2016 |
| | Kodiak | Elk Dr | Archer Dr | Microsurface | 2016 |
| | Meadowlark Dr | Meadowlark Cr | Dean Ave | Microsurface | 2016 |
| | Mission | Eastglen | Westglen | Microsurface | 2016 |
| | Municipal Circle | End | End | Microsurface | 2016 |
| | Palamino | Appaloosa Dr | Madison | Microsurface | 2016 |
| | Shagbark | Meadowlark | Dean Ave | Microsurface | 2016 |
| | Tudor Dr | Culdesac | Seaton Blvd | Microsurface | 2016 |

| | Route | From | To | Maintenance Activity | Sched. Year |
|---|---|---|---|---|---|
| | Cooper Dr | N. Westglen | N. Eastglen Dr | Mill & Overlay | 2017 |
| | Wiltshire Blvd | Creekmoor | Johnston Pkwy | Mill & Overlay | 2017 |
| | Archer | Kodiak | End | Microsurface | 2017 |
| | Bradford Ct (n) | Sierra Dr | End of CDS | Microsurface | 2017 |
| | Broadmoor Dr | Johnston Pkwy | Sunset Ln | Microsurface | 2017 |
| | Brunswick | Metfield | Dunvegan | Microsurface | 2017 |
| | Carlisle | Corrington Dr | Culdesac | Microsurface | 2017 |
| | Chardonney Ave | Sierra Dr | End of CDS | Microsurface | 2017 |
| | Chardonney Ct (s) | Sierra Dr | End of CDS | Microsurface | 2017 |
| | Christi Ln | Huntsman | Pelham Path | Microsurface | 2017 |
| | Deer Path | Old Mill Rd | Trailway Dr | Microsurface | 2017 |
| | Deer Ridge | Old Mill Rd | End of Culdesac | Microsurface | 2017 |
| | Eagle Glen Drive | Johnson | Westglen | Microsurface | 2017 |
| | Eastglen Dr/Cir | S. Foxridge | End | Microsurface | 2017 |
| | Ensley Cr | Foxridge Dr | End of CDS | Microsurface | 2017 |
| | Harold Dr | Kentucky Rd | Culdesac | Microsurface | 2017 |
| | Old Mill Rd | Foxridge Dr | Deerpath | Microsurface | 2017 |
| | Redbud | Park View | End | Microsurface | 2017 |
| | Sagamore | N. Westglen | N. Eastglen Dr | Microsurface | 2017 |
| | Timbercrest | Sierra Dr | End of CDS | Microsurface | 2017 |
| | Westglen Dr (S) | Johnson | Culdesac | Microsurface | 2017 |
| | Wildwood Ct | Old Mill Rd | End | Microsurface | 2017 |
| | Willow Cr | Foxridge Dr | End of CDS | Microsurface | 2017 |

| | Route | From | To | Maintenance Activity | Sched. Year |
|---|---|---|---|---|---|
| | Crane | Toucan | Culdesac | Mill & Overlay | 2018 |
| | High Dr | Pine | Foxwood Dr | Mill & Overlay | 2018 |
| | Aspen | Elm | Lucy Webb | Microsurface | 2018 |
| | Cottonwood Drive | Adams | East End | Microsurface | 2018 |
| | Coventry Lane | Coventry Lane | Bristol Drive | Microsurface | 2018 |
| | Elm | Franklin St | Jefferson | Microsurface | 2018 |
| | Elm | Jefferson | Madison | Microsurface | 2018 |
| | Foxshire | Creekmoor Dr | End | Microsurface | 2018 |
| | Meadowlark Dr | Lucy Webb Rd | Culdesac | Microsurface | 2018 |
| | Silvertop Ln | Johnston Dr | Lucy Webb | Microsurface | 2018 |
| | Stasi | Pelham Path | Huntsman Blvd S | Microsurface | 2018 |
| | Washington | Spruce | Elm | Microsurface | 2018 |
| | Washington | Walnut St | Spruce | Microsurface | 2018 |
| | Wenoga | S Eastglen Dr | End | Microsurface | 2018 |

| | Route | From | To | Maintenance Activity | Sched. Year |
|---|---|---|---|---|---|
| | Crest (n) | Calico Cr | Sierra Dr | Mill & Overlay | 2019 |
| | Lillian Ln | Park Dr | Meadow Ln | Mill & Overlay | 2019 |
| | Old Paint Rd | Trevor Ct | Foxridge Dr | Mill & Overlay | 2019 |
| | Alexander Cr Ct | Alex Cr Drive | End | Microsurface | 2019 |
| | Allen Ct | Granada | Culdesac | Microsurface | 2019 |
| | Blue Stem Ct | Prairie Grass | End | Microsurface | 2019 |
| | Cedar Ridge Dr | South End | Cedar Ridge Cir | Microsurface | 2019 |
| | Cooper Dr | Huntsman Blvd | Pelham Path | Microsurface | 2019 |
| | Doe | Elk Dr | End | Microsurface | 2019 |
| | Foxwood Dr | Washington St | East End | Microsurface | 2019 |
| | Hays | Lincoln Rd | Florence Ave | Microsurface | 2019 |
| | Kettering | Kingsland Cir | Creekmoor Dr | Microsurface | 2019 |
| | Manse Dr | Seaton Blvd | Culdesac | Microsurface | 2019 |
| | Maple | Franklin St | Monroe | Microsurface | 2019 |
| | Parkview Drive | Sierra Dr | End of CDS | Microsurface | 2019 |
| | Pine | Park | Sunset Ln | Microsurface | 2019 |
| | Redtop Ln | Prairie Grass | End | Microsurface | 2019 |
| | Roberta Dr | Pelham Path | Huntsman Blvd | Microsurface | 2019 |
| | Shelby Dr | Darrowby Dr | W End | Microsurface | 2019 |
| | Tiffany Ter | Hubach Hill Rd | End | Microsurface | 2019 |

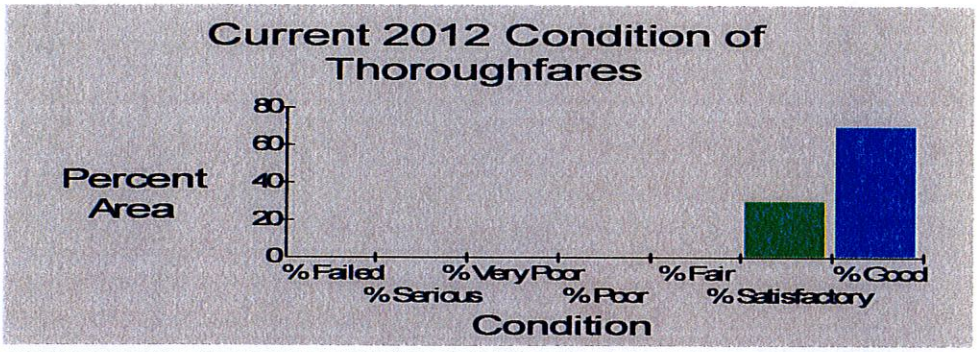
| | Route | From | To | Maintenance Activity | Sched. Year |
|---|---|---|---|---|---|
| | Universal St | Skyvue Dr | Sunrise Dr | Mill & Overlay | 2020 |
| | Walnut St | Madison | Woodson | Mill & Overlay | 2020 |
| | Washington | Elm | Lucy Webb | Mill & Overlay | 2020 |
| | 188th Ter | Hubach Hill Rd | End | Microsurface | 2020 |
| | Adams St | Elm | Walnut St (58) | Microsurface | 2020 |
| | Avondale | Foxridge Dr | End | Microsurface | 2020 |
| | Bristol Drive | 723 Bristol | Brook Parkway | Microsurface | 2020 |
| | Conway | Sunset Ln | Pine | Microsurface | 2020 |
| | Kreisel | North End | South End | Microsurface | 2020 |
| | Maple | Madison | Washington St | Microsurface | 2020 |
| | Overbrook Ln | Old Paint Rd | End | Microsurface | 2020 |
| | Seaton Blvd | Hampton Drive | Wiltshire Blvd | Microsurface | 2020 |
| | Sunny Ln | Park | Canter | Microsurface | 2020 |
| | Sunny Ln | Madison | Park Dr | Microsurface | 2020 |

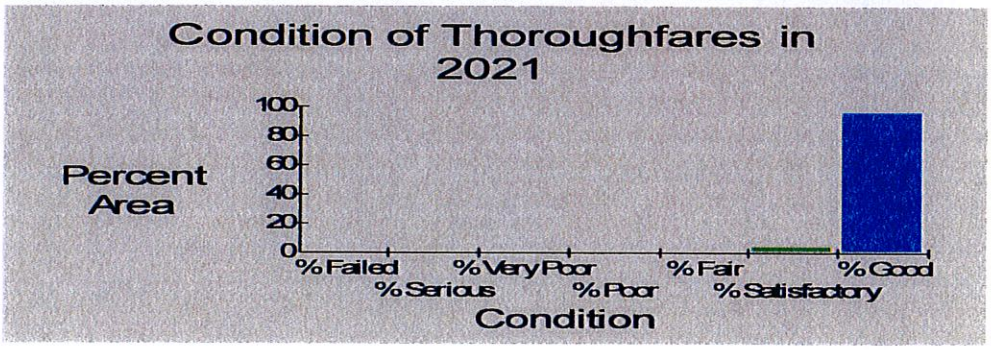
| | Route | From | To | Maintenance Activity | Sched. Year |
|---|---|---|---|---|---|
| | Brompton | Hodges | Drake | Mill & Overlay | 2021 |
| | Jackson St | Foxwood Dr | Culdesac | Mill & Overlay | 2021 |
| | Adams | Preakness | Mulberry | Microsurface | 2021 |
| | Coyote | Elk Dr | Archer Dr | Microsurface | 2021 |
| | James Creek | Creekmoor Dr | Culdesac | Microsurface | 2021 |
| | Jo Ann Dr | Old Paint Rd | End | Microsurface | 2021 |
| | Madison Creek Dr | Madison | West End | Microsurface | 2021 |
| | Overbrook Ln | Brookwood | End | Microsurface | 2021 |
| | Sequoia Dr | Meadowlark | Shagbark | Microsurface | 2021 |
| | Sycamore Drive | Franklin St | Adams | Microsurface | 2021 |
| | Wind Side Ct | Wind Side St | End | Microsurface | 2021 |
| | Wind Side St | Alexander Cr | S. End | Microsurface | 2021 |

Appendix B

## Recommended Budget to Maintain Thoroughfares

| Date | Preventative Maintenance | Micro-Surface | Overlay | Total |
|---|---|---|---|---|
| 2012 | $9,181 | $103,897 | $0 | $113,078 |
| 2013 | $7,998 | $62,962 | $0 | $70,961 |
| 2014 | $9,962 | $0 | $0 | $9,962 |
| 2015 | $14,066 | $216,676 | $0 | $230,742 |
| 2016 | $4,673 | $223,967 | $0 | $228,640 |
| 2017 | $7,392 | $154,625 | $0 | $162,017 |
| 2018 | $7,196 | $124,058 | $0 | $131,254 |
| 2019 | $9,454 | $217,948 | $0 | $227,401 |
| 2020 | $4,921 | $77,436 | $0 | $82,357 |
| 2021 | $8,954 | $214,739 | $0 | $223,693 |
| | | | **10 Year Total** | **$1,480,106** |



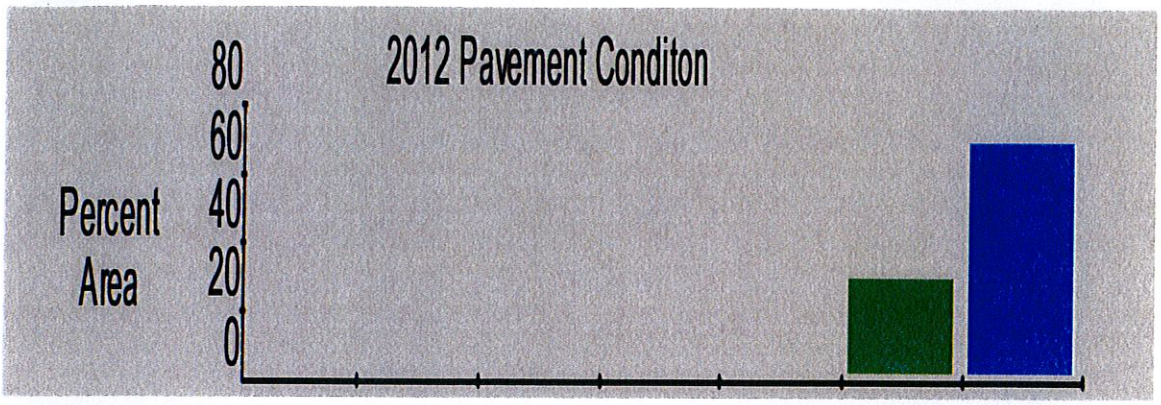

| Date | % Fair & Below | % Satisfactory | % Good |
|---|---|---|---|
| 2012 | 0 | 30 | 70 |
| 2013 | 0 | 18 | 82 |
| 2014 | 0 | 11 | 89 |
| 2015 | 0 | 20 | 80 |
| 2016 | 0 | 8 | 92 |
| 2017 | 0 | 30 | 70 |
| 2018 | 0 | 22 | 78 |
| 2019 | 0 | 32 | 68 |
| 2020 | 0 | 18 | 82 |
| 2021 | 0 | 4 | 96 |

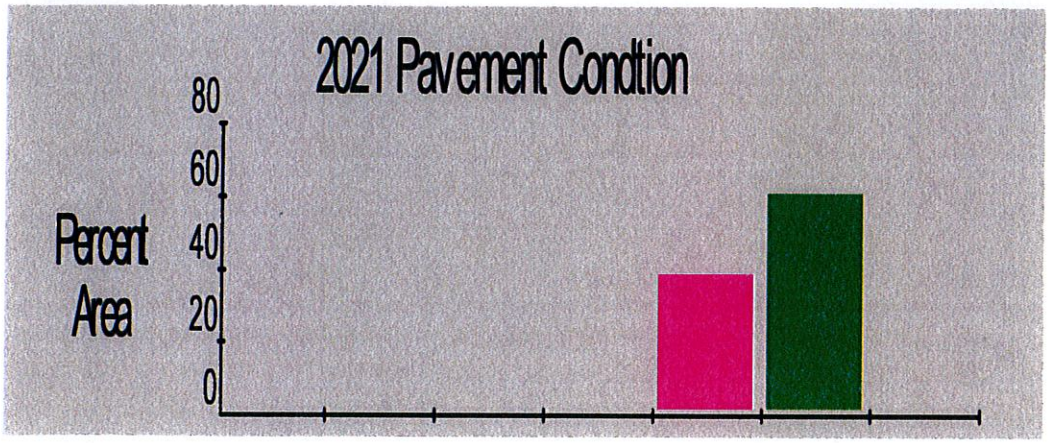
**Thoroughfares to be Micro-surfaced by year**
(on a six-year rotation)

| Year | Street Name | From | to | Cost |
|---|---|---|---|---|
| **2012** | Dean Ave. | Indian Grass | Prairie Grass | $29,808 |
| **2012** | Dean Ave. | Prairie Grass | Lucy Webb | $21,168 |
| **2012** | Dean Ave. | Lucy Webb | Shag Bark | $13,608 |
| **2012** | Dean Ave. | Hickory Leaf | 58 Highway | $39,312 |
| **2013** | Dean Ave. | Shagbark | Hickory Leaf | $62,962 |
| **2015** | Lucy Webb | Adams | Stonegate | $107,630 |
| **2015** | Hubach Hill | Haystack | Sunset | $72,211 |
| **2015** | N Cass Pkwy | Dean | Haystack | $36,836 |
| **2016** | 58 Highway W. | J Highway | Dean | $199,453 |
| **2016** | N Cass Pkwy | Hubach | East End | $24,514 |
| **2017** | Dean Ave. | Hubach Hill | Indian Grass | $70,113 |
| **2017** | Lucy Webb | Stonegate | Outer Road | $84,512 |
| **2018** | Dean Ave. | Indian Grass | Prairie Grass | $35,593 |
| **2018** | Dean Ave. | Prairie Grass | Lucy Webb | $25,276 |
| **2018** | Dean Ave. | Lucy Webb | Shag Bark | $16,249 |
| **2018** | Dean Ave. | Hickory Leaf | 58 Highway | $46,941 |
| **2019** | 58 Highway E. | J Highway | Dean Ave. | $217,948 |
| **2020** | Dean Ave. | Shagbark | Hickory Leaf | $77,436 |
| **2021** | Lucy Webb | Adams | Stonegate | $128,516 |
| **2021** | Hubach Hill | Haystack | Sunset | $86,223 |
| | | | **Total** | **$1,396,309** |

Appendix C

**Thoroughfares maintained by crack-sealing and patching only**




| Date | Preventative Maintenance | Micro-Surface | Overlay | Total |
|---|---|---|---|---|
| 2012 | $9,181 | $0 | $0 | $9,181 |
| 2013 | $14,292 | $0 | $0 | $14,292 |
| 2014 | $21,231 | $0 | $0 | $21,231 |
| 2015 | $30,378 | $0 | $0 | $30,378 |
| 2016 | $50,584 | $0 | $0 | $50,584 |
| 2017 | $74,125 | $0 | $0 | $74,125 |
| 2018 | $97,403 | $0 | $0 | $97,403 |
| 2019 | $98,242 | $0 | $0 | $98,242 |
| 2020 | $98,498 | $0 | $0 | $98,498 |
| 2021 | $98,505 | $0 | $0 | $98,505 |
| | | | **Ten year Total** | **$592,438** |

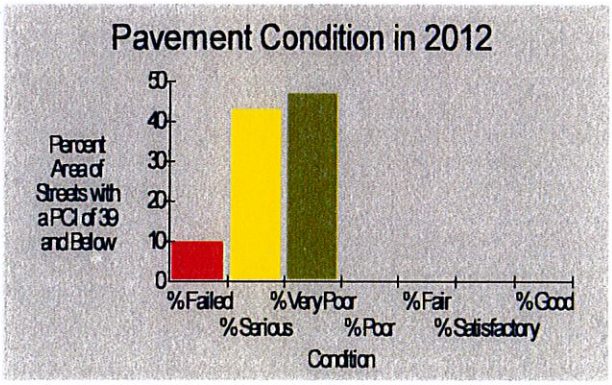
Appendix D

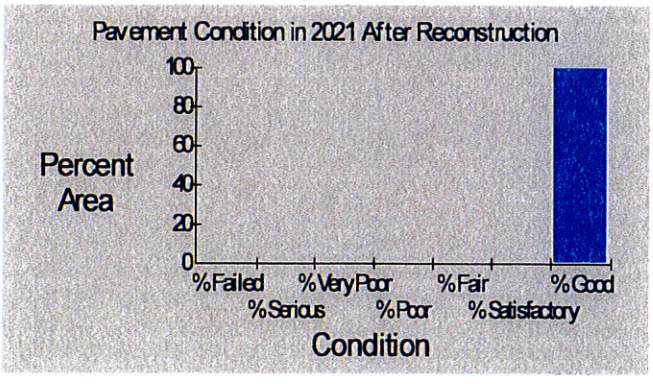
**Recommended Budget to Reconstruct Roads Currrently Rated "Very Poor", "Serious" and "Failed" (a PCI 39 and below).**

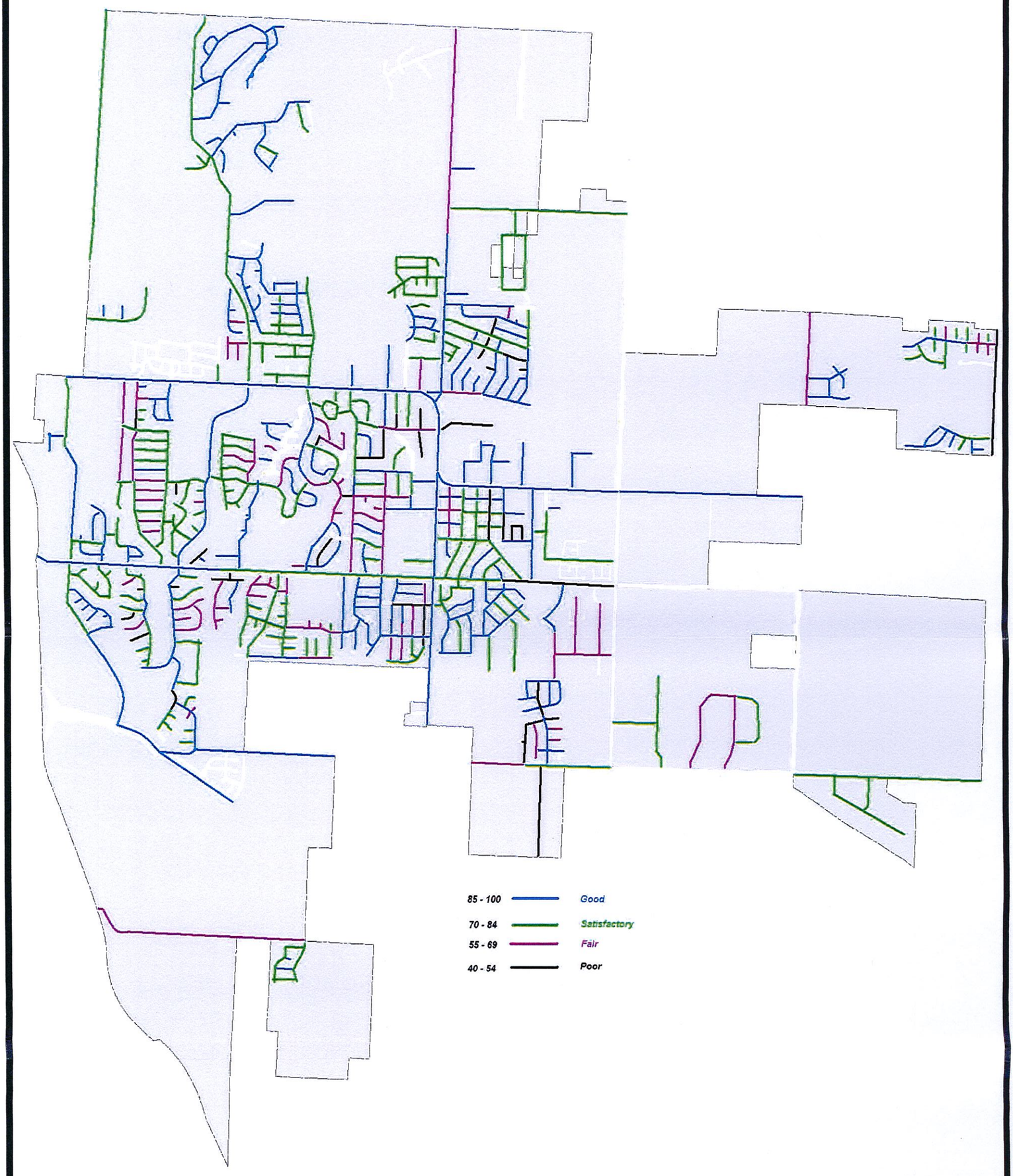
| Date | Preventative Maintenance | Micro - surface | Reconstruct | Total |
|---|---|---|---|---|
| 2012 | $0 | $0 | $459,881 | $459,881 |
| 2013 | $0 | $0 | $453,793 | $453,793 |
| 2014 | $0 | $0 | $429,375 | $429,375 |
| 2015 | $0 | $0 | $0 | $0 |
| 2016 | $0 | $0 | $0 | $0 |
| 2017 | $466 | $0 | $0 | $466 |
| 2018 | $1,305 | $78,042 | $0 | $79,347 |
| 2019 | $1,174 | $62,841 | $0 | $64,015 |
| 2020 | $849 | $71,142 | $0 | $71,991 |
| 2021 | $0 | $0 | $0 | $0 |
| | | | **10 year Budget** | **$1,558,867** |

**Reconstruction Cost/Schedule per Section by Year**

| Year | Street | From | to | Cost |
|---|---|---|---|---|
| **2012** | Appaloosa | 58 Highway | Madison Valley | $105,523 |
| **2012** | Meadow Ct | Meadow | End | $18,170 |
| **2012** | Buena Vist | Lakeshore | Sunset | $37,414 |
| **2012** | Oxford Dr | Lakeshore | Park | $28,198 |
| **2012** | Plum | Washington | Adams | $19,226 |
| **2012** | Broadmoor | Brookside | Johnston Pkwy | $135,018 |
| **2012** | Sunrise | 58 Highway | Dawn | $47,964 |
| **2012** | Woodson | Pine | 500 ft. N of Walnut | $68,368 |
| 2013 | Preakness | Park | Canter | $32,630 |
| 2013 | Sierra | Washinton | End | $88,035 |
| 2013 | Pacifiic | Lakeshore | End | $38,625 |
| 2013 | Vogt | 155th | End | $150,261 |
| 2013 | Brookside | Brookside Dr | End | $144,241 |
| **2014** | Huba Hill | Praire | J Highway | $429,375 |
| | | | **10 year total** | **$1,343,048** |






**Street Preservation**
**Capitol Improvement Program**

**Streets Rated 40 to 100 in 2011**

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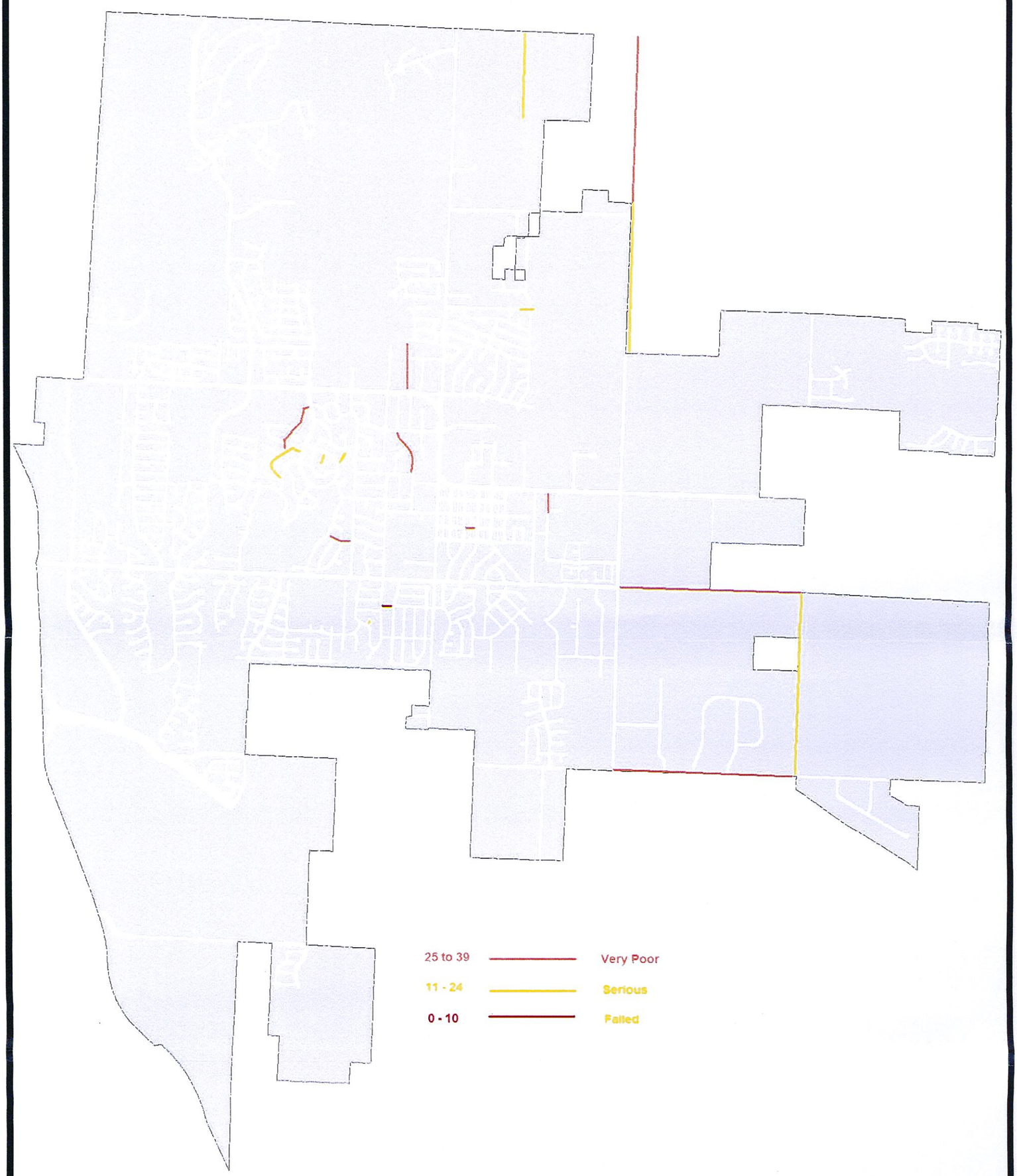
Geographic Information

Map Date: 10/07/2011




**Street Preservation**
**Capitol Improvement Program**

**Streets Rated 0 to 39 in 2011**

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**Geographic Information**

Map Date: 10/07/2011