



# PAVEMENT MAINTENANCE PLAN

**Fiscal Years 2017-2021**



**Public Works Department  
Transportation Division  
Pavement Maintenance Section**

# City of San Buenaventura Pavement Maintenance Plan Fiscal Years 2017 to 2021

## TABLE OF CONTENTS

Executive Summary	2
Accomplishments	3
Assessment	4
Funding	7
Projects	9
Alleys	11
Green Streets	12
Definition of Terms	13
Appendix:	15
Attachment 1:	Streets Resurfaced since 2006
Attachment 2:	Pavement Condition Index (PCI) Condition Map of City streets
Attachment 3:	Pavement Condition Index (PCI) Historical Graph
Attachment 4:	Pavement Condition Index (PCI) Comparison with Local Agencies
Attachment 5:	Proposed Projects: 2017-2021 Pavement Maintenance Plan Map
Attachment 6:	2017-2021 Slurry Schedule Map
Attachment 7:	Alley Condition Map

# **City of San Buenaventura Pavement Maintenance Plan for Fiscal Years 2017 to 2021**

## Introduction

The Transportation Division of the City's Public Works Department is pleased to present the FY 2017-2021 Pavement Maintenance Plan (Plan). This Plan is a tool that provides the City with a comprehensive approach to make significant and highly visible improvements to the City's street infrastructure. This Plan covers fiscal years 2016-17 through 2020-21 and includes accomplishments from the 15-16 fiscal year.

## Executive Summary

This Plan provides a quantitative method of evaluating the condition of the pavement using the Pavement Condition Index (PCI), an industry wide standard methodology for rating the overall condition of paved streets as a basis for priority ranking. The PCI values are based on the City's pavement condition model and shows a current overall City average of 69. Unfortunately, this continues to decline due to continued reductions in local street maintenance funding.

At our current funding levels, the PCI is expected to drop from 69 to 62 in just 5 years. Average annual potential pavement maintenance funding over the five year Plan is \$3.5 million. In order to get to and maintain a PCI of 70, we would need approximately \$10.4 million annually over the next 10 years. The loss of Federal gas tax maintenance funding and general decline of State gas tax funding provides us great challenges in the coming years.

The Plan includes alley maintenance for the second year. The City maintains over 13 miles of public alleys. A complete visual assessment of all alleys was completed in 2015. Funding for alley maintenance will continue to compete with other pavement repair funding. However, the 2016-17 annual budget now allocates \$35,200 for alley maintenance. This, combined with existing staff resources will allow the City to slightly increase this important part of the transportation system.

Rick Raives  
Public Works Director

Thomas Mericle  
City Transportation Manager

Chuck Dean  
Street Maintenance Supervisor

Heather Miller  
Engineering Technician

# Accomplishments

Major projects that were completed this past year or just finishing up include repaving Ventura Avenue from Santa Clara Street to Dakota Drive (north City limit), La Fonda Drive, and High Point Drive from Foothill Road to El Malabar Drive, as well as 26 lane miles of streets that were slurry sealed.

<b>Project</b>	<b>Lane Miles</b>	<b>Cost</b>
Ventura Avenue	6.8	\$2,300,000
La Fonda and High Point	0.8	\$ 120,000
Ermine Avenue	0.4	\$ 20,000
Slurry Maintenance	26	\$ 1,200,000
<b>TOTAL</b>	<b>34</b>	<b>\$3,640,000</b>

In addition to the above Capital Improvement Projects, the City’s Pavement Maintenance Crew performed maintenance paving on 0.2 mile of roadway; much less than in 2015-2016 due to reduced staffing. The following project was completed:

<b>Project</b>	<b>Lane Miles</b>
Hemlock Lane – Ann Street to Laurel Street	0.2
<b>TOTAL</b>	<b>0.2</b>

The City has resurfaced a large number of streets over the past several years through a combination of outside construction contracts and inhouse paving crew efforts to keep the average road condition at a “good” rating. Attachment 1 is a map showing all of the streets treated since 2006 (attachments are in the Appendix).

# **Assessment**

The Pavement Maintenance Plan has been developed using the Pavement Condition Index (PCI), an industry wide standard methodology, for rating the overall condition of paved streets.

## **Existing Conditions**

The PCI values were re-calculated this year using a pavement condition model. Periodically the model is calibrated with visual inspection of the roadways. Each City street segment is assigned a PCI number from 0 to 100 with 0 being a street that had completely failed (dirt) and 100 being a new street or a street recently repaved (asphalt overlay) or reconstructed. Attachment 2 shows the current PCI index for all of the streets in the City. This map displays each road segment in a different color, based on the condition of the road. It is clear that a vast majority of our road network is rated “good” to “excellent”, with only a minimal amount of segments rated as “poor” or “very poor”. The newly updated condition shows an average PCI score for residential streets within the City of 67 and an average PCI for non-residential streets of 71. The overall average for the City is 69.

Attachment 3 shows that average PCI over time from 1999 to 2021 (the end of this plan). Although the overall City street index average was as low as 67 in 1999, the average PCI score for residential and non-residential streets increased to a high of 78 and 83 in 2003, with an overall PCI of 78. This was due to a rise in one time State and Federal funding. It has since declined since 2003, due to a reduction in funding to maintain our street network. Unfortunately, the overall average will continue to drop dramatically due to further reduction of funding for local streets. Without additional funding sources, the current level cannot be maintained effectively to keep up with annual deterioration of the street infrastructure.

Attachment 4 displays a comparison of the City’s PCI with other local agencies. With our current funding and strategies, the City is slightly above average when compared to other local agencies. The average PCI of the 9 agencies is 66, while the City’s PCI is currently 69.

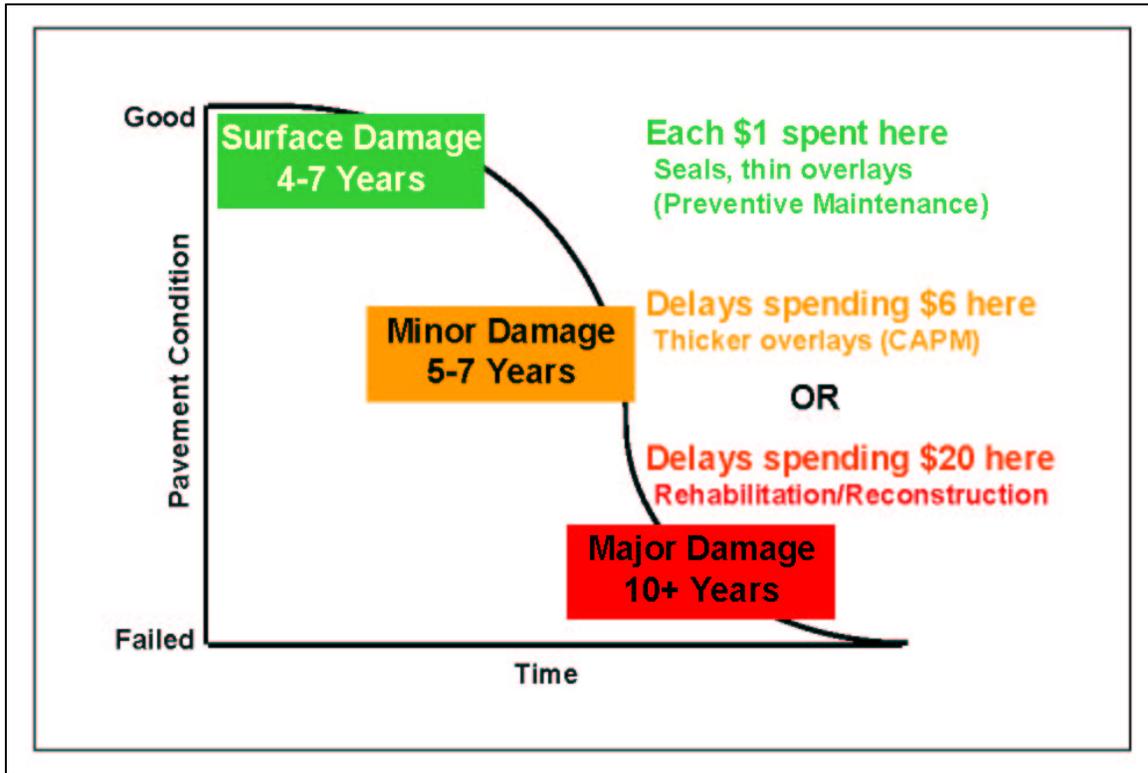
## **Street Lifecycle**

Asphalt pavements perform well, deteriorating slowly during the first ten years of the street lifecycle, and then deteriorating more rapidly. Proactive maintenance in the early years of a street lifecycle, such as repairing cracks and seal coating, is recommended as a cost effective maintenance practice. As the pavement condition deteriorates beyond 10 years and the street begins to show a significant level of stress due to traffic loading, seal coat applications are no longer recommended as the most cost effective maintenance.

Generally, a street's condition will deteriorate 40% during the first 75% of its life, and another 40% during the next 25% of its life. The condition will deteriorate quickly beyond 75% of its life, which typically occurs 15 to 20 years after a street is constructed. By protecting the road subgrade from the negative effects of water intrusion with crack sealing, pavement patching, and seal coating, additional cost savings can be realized in future lower cost reconstruction methods. If the preventative time frames are missed, the pavement deteriorates quickly and the cost of repairs increases substantially.

For example, Figure 1 below shows that spending \$1,000,000 in a certain year to slurry seal streets can prevent the expenditure of \$6,000,000 a few years later for repaving projects or \$20,000,000 in the future for street reconstruction. This is especially important now on the many streets that have been improved within the last several years.

For streets completed since 2001, the slurry seal program schedule is 7-10 years for local residential streets and 7 years on collector and arterial streets.



California State of the Pavement Report, 2004

**Figure 1**

Proactively maintaining the City's streets is a wise investment. The City road system consists of nearly 700 lane miles; equal to the distance from Ventura to Albuquerque, NM or Eugene, OR. The City's street network contains over 65,000,000 square feet of pavement, which has a replacement value of over \$390 million.

Every 5 years the City performs a physical survey of every road in the City to recalibrate the PCI index. In the years that surveys are not done, the PCI is updated using a computer model. In 2015, a visual survey of the current arterial and collector street condition was conducted. The results of the visual survey are shown in the table below, and compared with previous years:

<b>Condition</b>	<b>1999 Lane Miles</b>	<b>2003 Lane Miles</b>	<b>2008 Lane Miles</b>	<b>2015 Lane Miles</b>	<b>% of Streets</b>
Excellent	153	198	271	135	16%
Very Good	231	384	168	289	42%
Good	119	42	164	138	20%
Fair	51	22	60	80	13%
Poor	35	12	22	34	6%
Very Poor	31	20	5	13	2%
Failed	37	5	1	6	1%
<b>Average PCI</b>	<b>67</b>	<b>78</b>	<b>74</b>	<b>70</b>	
<b>Totals:</b>	<b>657</b>	<b>683</b>	<b>691</b>	<b>695</b>	<b>100%</b>

Attachment 1 is a map that identifies streets that have been resurfaced since calendar year 2006.

# **Funding**

Significant changes in street funding has occurred in the past couple of years. There has been a reduction in both state and Federal funding typically through sales of gasoline resulting in a reduction of gas taxes available for maintenance needs.

## **Federal Funding**

Funding from current and future Federal transportation acts are no longer available for local street maintenance funding as a population formula pass-through from VCTC. This decision was a part of the Transportation Commission's adoption of a new Countywide Comprehensive Transportation Plan. The Commission decided that all Federal funding was needed to address regional transportation improvement needs such as the widening of US 101. This decision has taken a significant amount of funding and, as of last year, we are no longer receiving any Federal funding for pavement maintenance. The historic average annual amount was about \$500,000, which typically funded two major arterial roadway resurfacing projects every 5 years.

## **State Funding**

Transportation Development Act (TDA) funds ( $\frac{1}{4}\text{¢}$  sales tax) have been used in past years for street maintenance projects, however the amount has decreased as the cost of transit services has risen. Gold Coast Transit now receives all TDA funds for the communities they serve. Any previously available City TDA fund balances have now been used for transportation improvement and street maintenance projects.

State Gas Tax funding has been decreasing over the past several years due to a reduction in gas taxes being collected. This is partly due to the economic downturn and partly due to a reduction in miles being driven. In the last 3 years, the City has averaged \$3.1 million per year in State Gas Tax funds, but that is expected to drop to an average of \$2.3 million per year in the next two years. The majority of these funds are allocated to street maintenance projects with some funding being used for pavement striping, minor traffic safety projects, minor transportation improvement projects, and as local matching funds for major transportation capital improvement projects.

## **Riverpark Settlement Agreement Funds**

On June 29, 2015, the City Council approved using the Riverpark funds for the following projects:

1. Pavement Maintenance Projects
  - a. Johnson Drive – Telephone to Bristol
  - b. Harbor Blvd – California to Sanjon

- c. North Bank Drive – Bristol to End
- d. W. Main Street – Ventura Ave to Bridge

- 2. Traffic Signal System Upgrade
- 3. California Street Offramp

All of these projects are identified in the City’s approved 2016-2022 CIP Plan. The four paving projects are funded with one in the design phase (North Bank Drive) and one beginning the design in summer 2016 (W. Main Street). The Johnson Drive and Harbor Boulevard projects are programmed in later years so that needed utility projects can be completed prior to the street being repaved.

**Anticipated Annual Pavement Maintenance Revenues (\$ thousands)**

<b>Fiscal Year</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>
<b>State Gas Tax</b>	\$2,300	\$2,300	\$2,300	\$2,300	\$2,300
<b>Federal Gas Tax</b>	\$0	\$0	\$0	\$0	\$0
<b>Riverpark Settlement Fee Funds *</b>	\$250	\$250	\$0	\$0	\$0
<b>General Fund Contribution (used for operation costs)</b>	\$1,200	\$1,200	\$1,200	\$1,200	\$1,200
<b>TOTAL</b>	<b>\$ 3,750</b>	<b>\$ 3,750</b>	<b>\$ 3,500</b>	<b>\$ 3,500</b>	<b>\$ 3,500</b>
<b>Operations Costs</b>	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500
<b>Set Aside for Traffic Safety and Transportation Infrastructure</b>	\$250	\$250	\$250	\$250	\$250
<b>Available for Pavement Maintenance</b>	<b>\$2,000</b>	<b>\$2,000</b>	<b>\$1,750</b>	<b>\$1,750</b>	<b>\$1,750</b>

\*Allocated by City Council for specific projects

# PROJECTS

The list of projects proposed in this Plan take into account the PCI index, benefit-cost analysis of timely pavement treatment, traffic volumes, and available funding. Table 1 below shows the projects that are proposed for the five years of the Plan. Attachment 5 is a map showing the proposed projects. A map showing the streets that will have a slurry treatment is shown in Attachment 6.

**Table 1**  
**Roadway Projects for Fiscal Years 2017 through 2021**

<b>FY</b>	<b>PROJECT</b>	<b>LANE MILES</b>	<b>EST. COST (\$)</b>
2017	North Bank Drive – Bristol to Petit	3	\$ 700,000
2017	W. Main Street – Ventura Ave to Bridge	1	\$ 675,000
2017	Proactive Maintenance (Slurry)	40	\$ 1,000,000
2017	In-house Pavement Maintenance (city forces)	4	\$ 1,200,000
	<b>2017 Total:</b>	<b>48</b>	<b>\$ 3,575,000</b>
2018	Loma Vista Road – Main to Mills	2.3	\$ 1,045,000
2018	Johnson Drive – Telephone to Bristol	2.4	\$ 900,000
2018	Proactive Maintenance (Slurry)	40	\$ 1,000,000
2018	In-house Pavement Maintenance (city forces)	4	\$ 1,200,000
	<b>2018 Total:</b>	<b>48.7</b>	<b>\$ 4,145,000</b>
2019	Harbor Blvd – California to Sanjon	1.1	\$ 575,000
2019	Telephone Road – Main to McGrath	0.7	\$ 850,000
2019	Proactive Maintenance (Slurry)	40	\$ 1,000,000
2019	In-house Pavement Maintenance (city forces)	4	\$ 1,200,000
	<b>2019 Total:</b>	<b>45.8</b>	<b>\$ 3,625,000</b>
2020	Wells Rd – Telegraph to Hwy 126	1.3	\$ 600,000
2020	Proactive Maintenance (Slurry)	40	\$ 1,000,000
2020	In-house Pavement Maintenance (city forces)	4	\$ 1,200,000
	<b>2020 Total:</b>	<b>45.3</b>	<b>\$ 2,800,000</b>
2021	Victoria Avenue – Olivas Park to 101 and Telephone to 126	4.4	\$ 1,900,000
2021	Proactive Maintenance (Slurry)	40	\$ 1,000,000
2021	In-house Pavement Maintenance (city forces)	4	\$ 1,200,000
	<b>2021 TOTAL:</b>	<b>48.4</b>	<b>\$ 4,100,000</b>
	<b>TOTAL</b>	<b>236.2</b>	<b>\$ 18,245,000</b>
	<b>ANNUAL AVERAGE (All Sources)</b>		<b>\$ 3,649,000</b>

Unfortunately, not all streets that are in need of repair can be done in a timeframe that ensures maximum lifecycle of the existing pavement.

Table 2 shows the priority of collector or arterial streets to be completed if additional funding becomes available.

**Table 2**  
**Priority List of Unfunded Roadway Projects**

<b>Priority</b>	<b>PROJECT</b>	<b>PROJECT COST (\$)</b>
1	Telegraph Road – Estates to Bryn Mawr	\$ 1,000,000
2	Johnson Drive – Northbank to Crescent	\$ 650,000
3	Olivas Park Drive – Victoria to Golf Course Dr	\$ 800,000
4	Thille Street – Victoria to bike path crossing	\$ 350,000
5	Main Street – Mills to Telegraph	\$ 350,000
6	Petit Avenue – Telephone to Northbank	\$ 630,000
7	Callens Road – Main to Market	\$ 400,000
8	Moon Drive – Walker to Victoria	\$ 640,000
9	Transport Street – Callens to Eastman	\$ 290,000
10	Bristol Road – Ramelli to Northbank	\$ 600,000
11	Harbor Boulevard – Schooner to Olivas Park	\$ 450,000
12	Spinnaker Drive – Harbor Village entrance to end	\$ 610,000
13	Victoria Avenue – Telephone Rd to Moon Dr	\$ 1,910,000

## Alleys

The City maintains 175 separate public alley segments, totaling over 13 miles (1,220,000 square feet of asphalt pavement). For FY 2016-17 the City has \$35,000 allocated for alley maintenance. Unfortunately, this is not enough and no additional alley maintenance funding is available. The Pavement Maintenance Plan will identify the highest need alleys and they will be competing with other street maintenance needs. The City does not maintain private alleys or private property adjacent to alleys.

In 2015 all of the public alleys were field surveyed for pavement conditions. A simple rating system of “good (1), fair (2), and poor (3)” was developed to analyze alley conditions.

Each alley was also surveyed for access and use by adjacent property owners. Each alley was given a score based on the condition multiplied by the number of accessed parking spaces. For example, an alley rated poor (3) serving 20 spaces would receive a score of 60. But an alley rated fair (2) serving 200 spaces would receive a score of 400. These scores provide for a weighted priority that considers both the severity and the usefulness for each alley. The results are then used when determining which alleys should be addressed as funding becomes available. The goal is to address alleys that have the highest need over the next few years using in-house staffing. However, this will reduce the availability of in-house staff to perform other street maintenance duties.

Attachment 7 shows a map of the alleys and their rating.

**Table 3**  
**Ally Projects For Fiscal Years 2017 and 2018**

<b>FY</b>	<b>PROJECT</b>
2017	Hemlock Lane – Hemlock Street to Park
2017	North of Loma Vista – East of Dos Caminos
2018	Cottage Court – Hemlock to Crimea

## Green Streets

On July 14, 2008, City Council directed staff to begin implementing a green streets program. The program consists of making additional improvements within existing city streets in an effort to:

- Reduce flooding on streets and in waterways
- Improve the water quality of storm runoff that leads to the ocean
- Provide safer, more attractive, and walkable streets
- Help contribute to reducing atmospheric carbon dioxide levels / reduce the City's carbon foot-print

The program requires green street elements to be incorporated into repaving projects whenever possible, or to at least pool funds that can be reallocated and used on separate projects throughout the City where green street improvements would be the most effective. The program requires reporting accomplishments and making any recommendations for revisions as part of the annual Pavement Maintenance Plan.

The Victoria Avenue Green Streets project was completed in May 2014. The project went into construction after the completion of the Victoria Avenue – Telegraph Road to Highway 126 Resurfacing Project and included the planting of new trees along Buena High School and attractive low maintenance median improvements that include drought tolerant plants and no irrigation.

The Green Street Program was suspended by the City Council on February 25, 2013 due to reduced funding and the increased need for street maintenance funding.

# Definitions of Terms

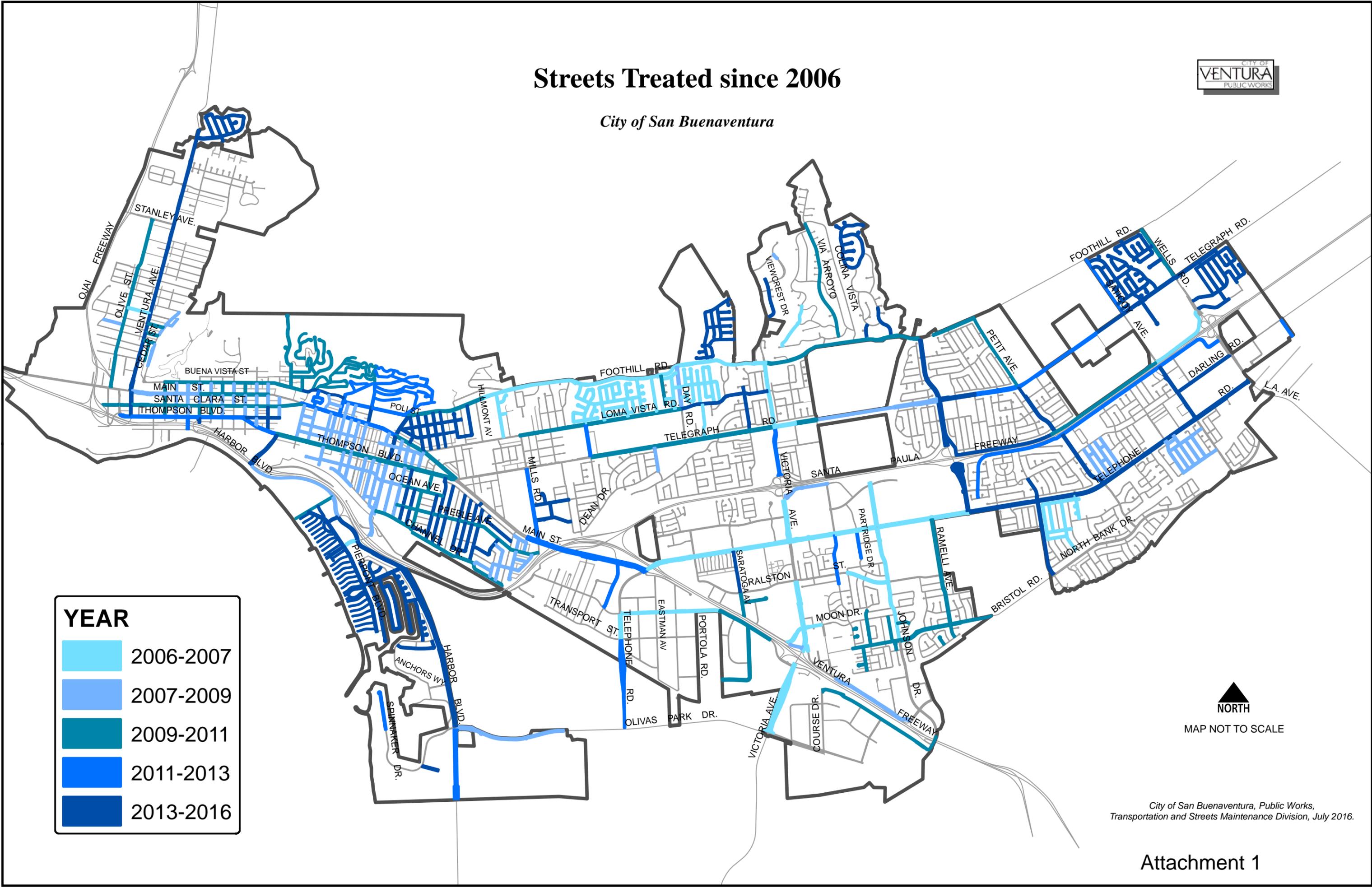
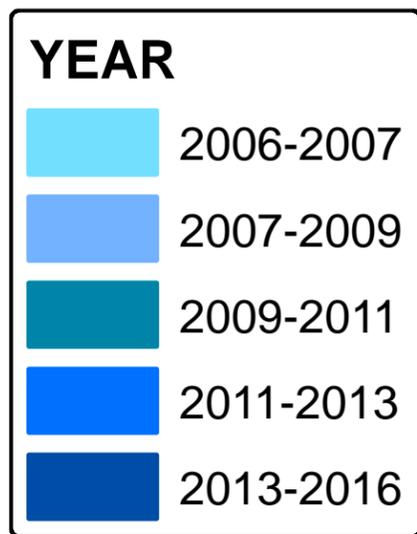
<b>IDENTIFICATION</b>	<b>DEFINITION</b>
<b>RANK:</b>	Definition for the type of street. A = Arterial B = Collector C = Commercial D = Industrial E = Residential
<b>TYPE:</b>	Type of original constructed street surface. AC = Asphalt Concrete PCC = Portland Cement Concrete
<b>AREA:</b>	Area of the street segment (in square-feet).
<b>STREET:</b>	Name of the street.
<b>FROM:</b>	Section of the street begin. N/S = north side N/O = north of
<b>TO:</b>	Section of the street end. N/S = north side N/O = north of
<b>PCI:</b>	Pavement Condition Index. 71-100 = Very Good 51-70 = Good 26-50 = Poor 0-25 = Very Poor
<b>COST ESTIMATE:</b>	The cost of the proposed pavement treatment. Overlay = \$ 2.95 per square foot Cape Seal = \$ 1.11 per square foot Slurry Seal = \$ 0.34 per square foot
<b>TREATMENT TYPE:</b>	The proposed treatment for the street for the project.  <u><b>Overlay:</b></u> Used for very deteriorated streets. Typically two inches of asphalt is placed over an existing street surface. <u><b>Cape Seal:</b></u> Used for streets with medium deterioration. A coarse layer of oil mixed with embedded rock chips is placed on the street, followed by a slurry seal treatment. <u><b>Slurry Seal:</b></u> Used as a preventive maintenance for street in reasonably good condition. A sand-and-oil mixture is applied to the existing surface.
<b>WEIGHTED PCI:</b>	Average PCI of streets receiving treatment.

## **APPENDIX:**

- Attachment 1: Streets Resurfaced since 2006**
- Attachment 2: Pavement Condition Index (PCI) Condition Map of City streets**
- Attachment 3: Pavement Condition Index (PCI) Historical Graph**
- Attachment 4: Pavement Condition Index (PCI) Comparison with Local Agencies**
- Attachment 5: Proposed Projects: 2017-2021 Pavement Maintenance Plan Map**
- Attachment 6: 2017-2021 Slurry Schedule Map**
- Attachment 7: Alley Condition Map**

# Streets Treated since 2006

City of San Buenaventura



City of San Buenaventura, Public Works,  
Transportation and Streets Maintenance Division, July 2016.

# *Pavement Condition*

City of San Buenaventura

**Current Condition (2016)**

	Very Good
	Good
	Poor
	Very Poor

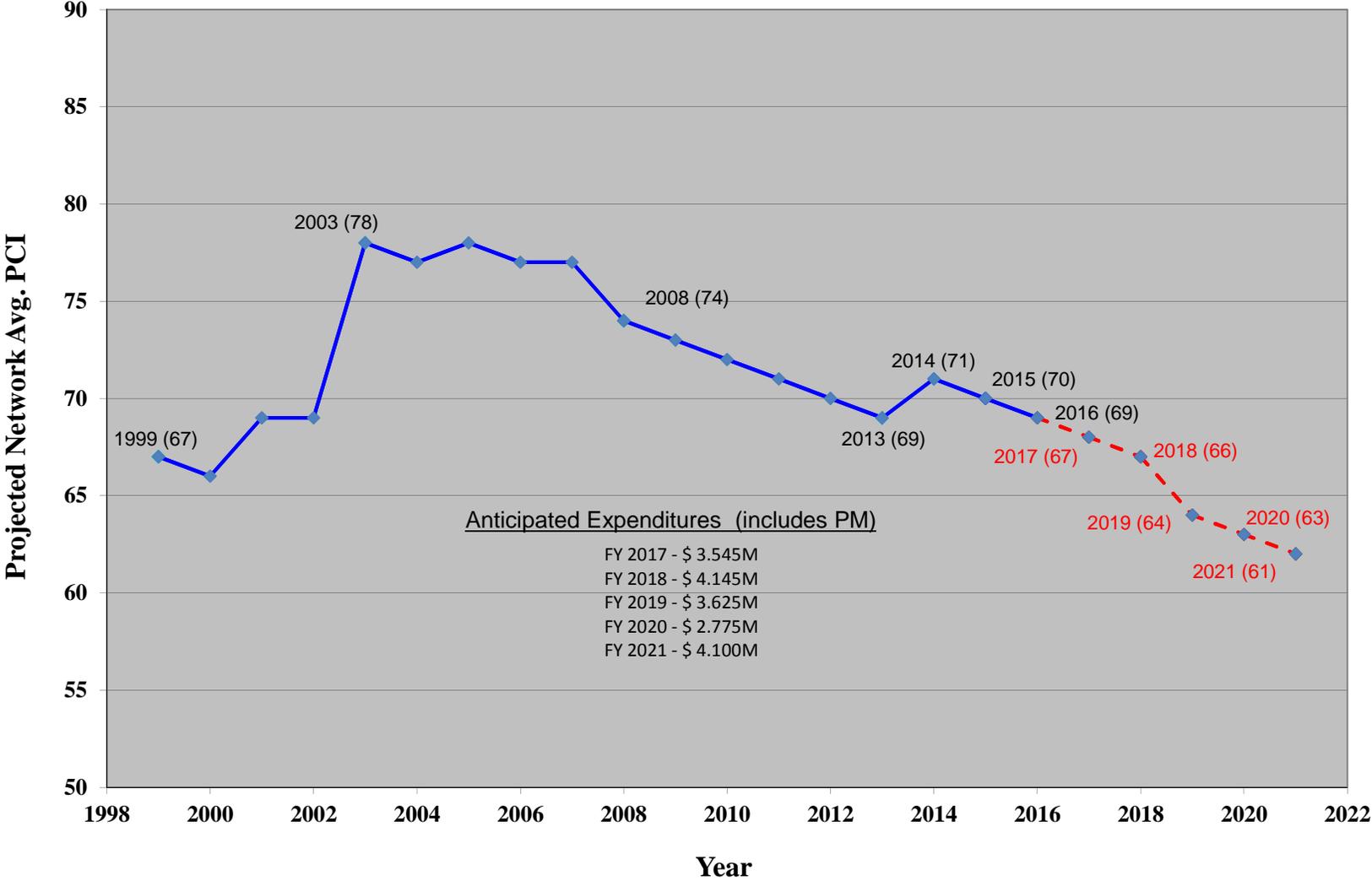
**Overall Network Average PCI = 69 "Good"**



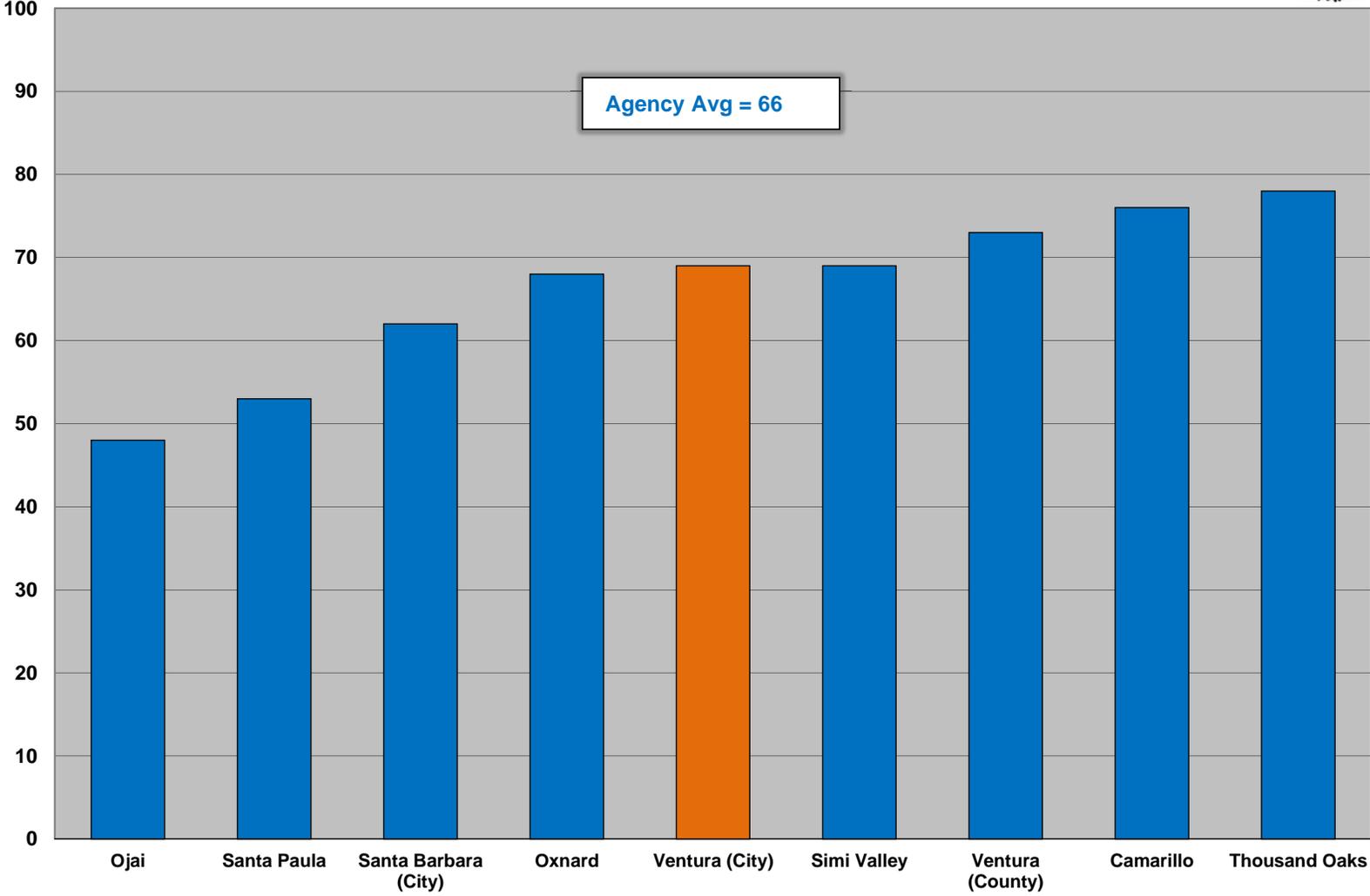
MAP NOT TO SCALE

# Pavement Condition Index (PCI) Graph

City of Ventura



### Agency Comparison Pavement Condition Index (PCI)

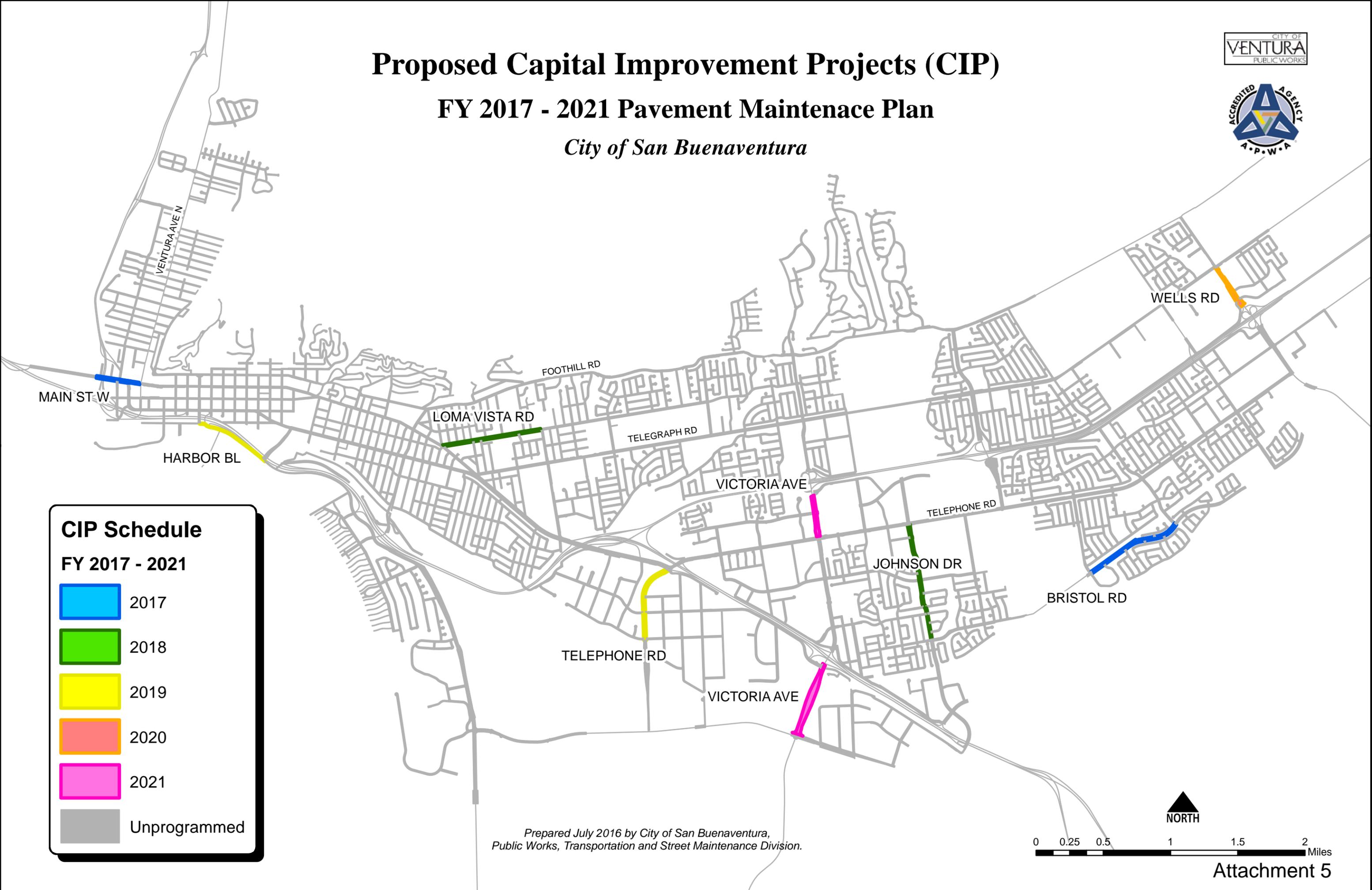


PCI based on the latest data available as of July 2016.

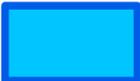
# Proposed Capital Improvement Projects (CIP)

## FY 2017 - 2021 Pavement Maintenance Plan

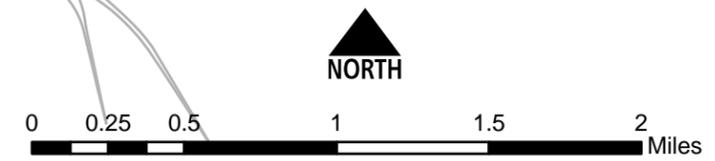
*City of San Buenaventura*



**CIP Schedule**  
**FY 2017 - 2021**

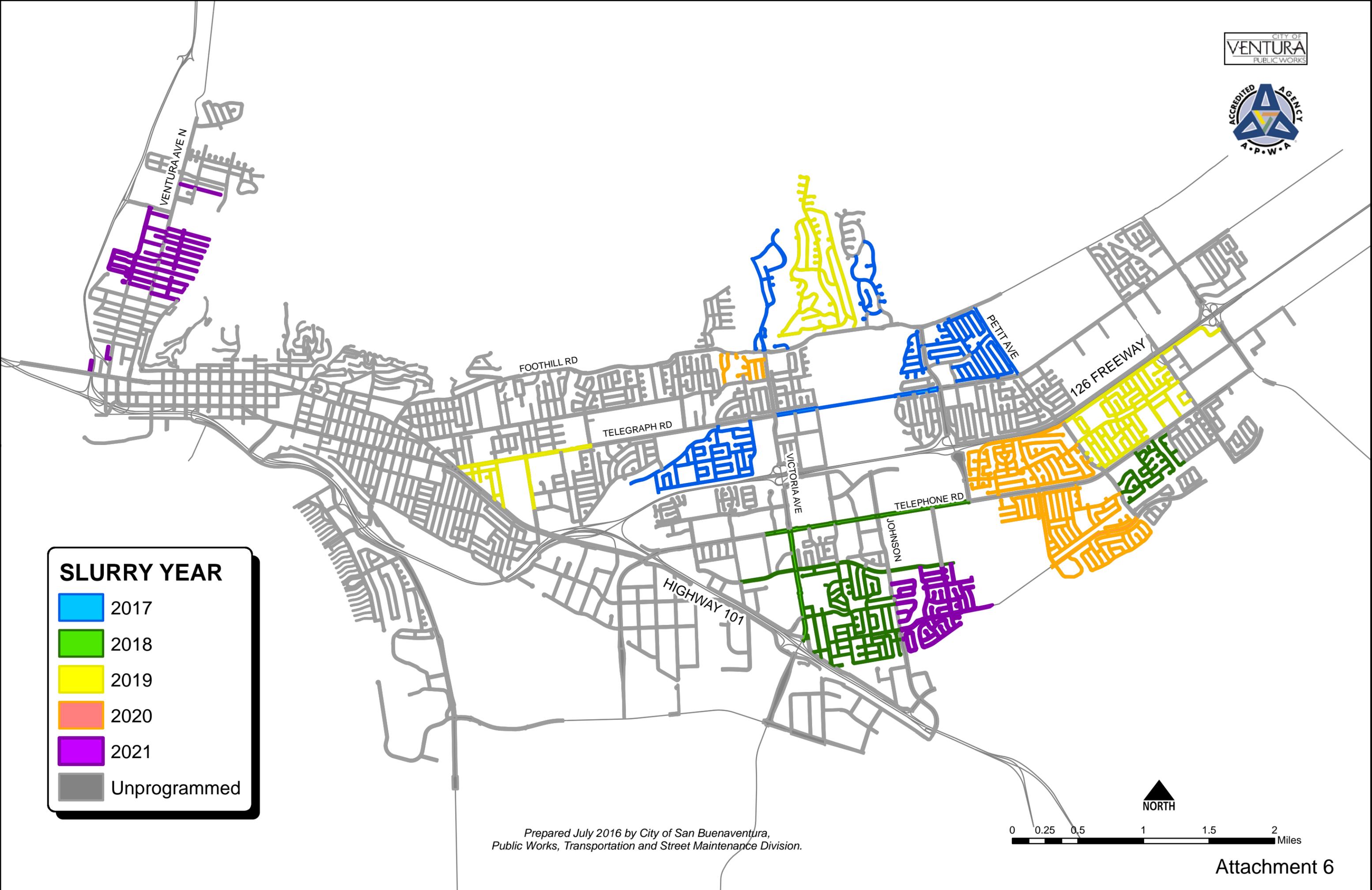
	2017
	2018
	2019
	2020
	2021
	Unprogrammed

*Prepared July 2016 by City of San Buenaventura,  
Public Works, Transportation and Street Maintenance Division.*

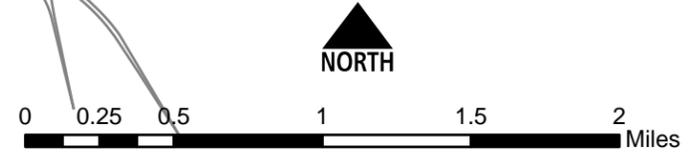


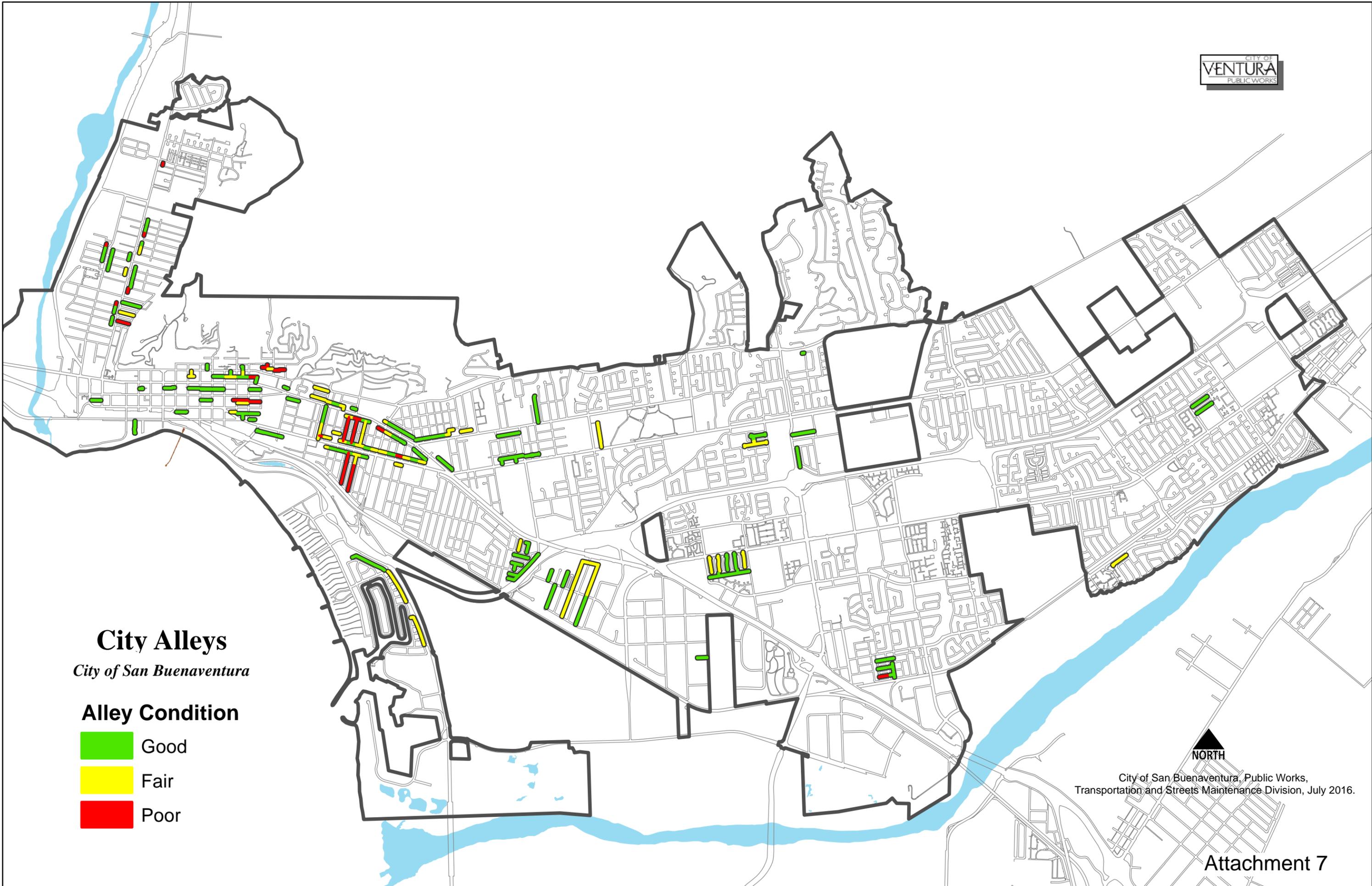
**SLURRY YEAR**

	2017
	2018
	2019
	2020
	2021
	Unprogrammed



Prepared July 2016 by City of San Buenaventura,  
Public Works, Transportation and Street Maintenance Division.





City of San Buenaventura, Public Works,  
Transportation and Streets Maintenance Division, July 2016.