STAFF REPORT

DATE: February 5, 2013

TO: City Council

FROM: Robert A. Clarke, Interim Public Works Director
Michael Mitchell, Principal Civil Engineer

SUBJECT: Pavement Management Report

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Recommendation

Staff recommends acceptance of the attached Pavement Management Report and Council
presentation and provide feedback and questions. Council will be asked to approve a funding
strategy and pavement project at a future meeting.

1. Receive Final Report and a presentation by the consultant for information
2. Receive Staff Presentation on factors affecting future Policy decisions
3. Provide feedback on issues for staff to consider in developing detailed maintenance
   strategies and priorities
4. Direct staff to return to Council by May with proposed Policy actions related to pavement
   Maintenance

Fiscal Impact

There are no direct fiscal impacts as a result of this item. However, future decisions made as a
result of this item could have significant fiscal impacts as outlined in the Report.

Council Goal(s)

Preparation of this Report addresses the following City Council goals;

- (FS-3) Review pavement management index criteria for selection of projects.
- (I-3) Prioritize maintenance of sidewalks, bike paths and streets.
- (I-2) Examine projects and services in order to update and prioritize unmet needs. Identify
  funding mechanisms.

Background

The City's pavement infrastructure covers many different improvements, including; streets,
pathways, parking lots and playground surfaces. For the purpose of this discussion item, the
focus is on the streets and pathways. The City street network consists of approximately 163
centerline miles totaling about 353 lane miles, or more than 30 million square feet of pavement.
The pathway network described in the report is specifically the bike path network, which
consists of approximately 52 miles, or about 3 million square feet of pavement.

Since 1998, the City has utilized a pavement maintenance program that was developed to assist the San Francisco Bay Area Metropolitan Transportation Commission in managing the State/Federal transportation maintenance funds in their region. The Program has proven to be a versatile and useful tool and has subsequently become an industry standard in the SACOG Region.

As with any system used to prioritize workload, it is important to determine the key factors to be analyzed, the relative importance of these factors, and to have a comprehensive and accurate set of data to input into the system. While modeling real world systems is an extremely complex endeavor, it is necessary to strike a balance between the level of detail to be evaluated and ease of use. The pavement maintenance program the City uses focuses on a few key factors to provide "big picture" long-term (20-year) forecasts of which streets should be addressed each year, while still requiring some human judgment for refinement on a year-to-year basis.

The key factors in the Program are: the current condition of the pavement, the maintenance treatment strategy (patch repairs, surface seals, overlays and reconstruction to name a few), and the available budget to perform maintenance. As with any "three-legged" decision-making system, you can generally choose to set any two of the factors and the third falls out of the analysis. Because transportation maintenance funding has been a growing challenge for communities across the country for many years, the budget is typically one of the two factors that is "set" by policy decision. However, if the budget is too low, it may not be possible to maintain the entire pavement system to an average pavement condition, but only a portion of the system. In this case, the program tracks the pavement not meeting the condition standard as "backlog." The backlog is described as a number which represents the estimated cost to "catch up" to the defined pavement condition goal.

Historically, the City surveyed approximately one-fifth of the City's streets each year to evaluate the pavement condition and update our program. The last such survey was conducted in 2009, just before City budget conditions resulted in a 40% loss of transportation personnel, including the City's pavement maintenance engineer. Because of the five year cycle, some of the City's streets had not been surveyed since 2005. Approximately half of the City's bike path network had previously been surveyed in 2007 and the remaining half in 2008. So, a majority of the City's streets were in need of a new survey. As part of the scope of work for the Pavement Maintenance Report, the City included a survey of the entire street and bikepath network. The survey was conducted last Fall and completed in December.

Surveys of the bike paths were conducted using manual methods, as the City had previously surveyed all streets and bike paths. In this method, a person visually inspects each street (or path) segment and conducts a detailed survey of 10% of the segment considered to be representative of the segment's condition.

Surveys of the streets were conducted using a vehicle equipped with a video or digital camera. The images were then analyzed by office staff to gather condition data. This method surveys one entire lane on residential and collector streets and one lane in each direction on arterial streets.

Pavement data from this survey is stored within the City's StreetSaver Pavement Management database. Based on street survey data, the Streetsaver program assigns a Pavement Condition Index (PCI) on a scale from 0 to 100 to each segment. The PCI is an indication of the condition of the segment (a PCI of 100 would be given to a newly constructed street). Based on historic pavement material deterioration rates within the program, StreetSaver can extrapolate "current" PCI scores for each street segment based on historic surveys. Prior to the current survey, the City-wide average PCI score for the street network was 68 and that for the bicycle path network was 65. The recent survey assigns the City-wide street system an average PCI of 62 and that of the bicycle paths a PCI of 59. There are several reasons that potentially factor into the drop in score, including:

- This is the first survey of the streets done using automated methods; all previous surveys were completed manually. The automated survey is performed over the entire length of a single lane of the street segment whereas the manual survey is done at sampling locations along the street. (This wouldn't be a factor for the bike paths since the same survey method was used.)
- The previous average was based on extrapolations of older survey data (previous survey data was at least 3 years old and up to 7 years old)

The StreetSaver program is also used to develop budget strategies and maintenance plans to plan for funding to maintain the City's streets and bike paths. The Nichols report investigates the following three budget scenarios:

1. What condition will our streets be in after 20 years if we fund street maintenance at $1 million per year and bike path maintenance at $200,000 per year
2. What funding is necessary to bring the City-wide average PCI up to a PCI of 70 and maintain that PCI for 20 years. (This scenario was not feasible for the bike paths)
3. What level of funding is necessary to maintain the current backlog ($21 million for streets and $13 million for bike paths)

Scenario	Backlog in 2032		Funding (average per year)			PCI in 2032	
	Streets	Paths	Streets	Paths	Total	Streets	Paths
1. Minimal Funding	$439.4 Million	$27.7 Million	$1 Million	$200,000	$1,200,000	27	46
2. Bring PCI to 70	$119.8 Million	N/A	$8 Million	N/A		70	N/A
3. Maintain Backlog	$21 Million	$1.34 Million	$7 Million	$655,000	$7,655,000	70	69

While the City Council has recently provided additional funds for pavement maintenance, the past five budgets have contained about $1 Million per year of total funding with approximately $800,000 per year allocated to streets and $200,000 per year allocated to bike paths. Under this funding scenario, more than half our streets and approximately 26% of our bikepaths will have failed by 2032.

Attachment
A.   Pavement Management Final Report