



Office of the City Manager

## TO BE DELIVERED AGENDA MATERIAL

**Meeting Date:** April 25, 2006

**Item Number:** 23

**Item Description:** Presentation: Storm Water Improvements



Office of the City Manager

PRESENTATION

April 25, 2006

To: Honorable Mayor and  
Members of the City Council

From: *PK* Phil Kamlarz, City Manager

Submitted by: Claudette Ford, Acting Public Works Director

Subject: Storm Drain Improvements

INTRODUCTION

Recent winter storms heightened public awareness and concern about the condition of our storm drain system. In December 2005 we experienced a series of storm events that resulted in flooding and hillside failures, which strained the City's ability to respond effectively. Staff studied the issues and provides the following in this report:

1. A current assessment of the condition of our storm drain system; and
2. An estimate of what improvements the current and proposed capital budget can provide in the short term.

SUMMARY

The City's storm drain system, which is over 80 years old, includes approximately 100 miles of underground pipes, 1,200 manholes, 2,800 catch basins, 2,300 cross-culverts (an inlet on one side of an intersection and an outlet on the other), and 467 drain inlets. Many portions of the system are severely overdue for rehabilitation. Because of the system's age and deterioration, moderate to heavy rainstorms, as recently experienced, cause flooding and blockages in hundreds of trouble spots throughout the city.

In order to address all current known system deficiencies, it is estimated that a total capital outlay of \$50 million, or about \$5 million per year for the next ten years, would be needed for repairs and replacement. To address this problem, staff has developed a plan to address small- to mid-sized problems. Beyond that, capacity improvements to the storm drain system, estimated in 1994 to cost approximately \$34 million (in 1994 dollars), would require new and substantial funding sources. These potential long-term projects are addressed below under the Background section. To summarize, an estimated \$84 million would be required to repair the system and improve its capacity.

CURRENT SITUATION AND ITS EFFECTS

The City experienced especially heavy localized flooding in December 2003, February 2004, and in December 2005. The December 2003 and February 2004 storm events were a 10-year and a 25-year storm event, respectively, while the December 2005 storm event was a 15-year event. Certain areas in West Berkeley were especially hard hit this past December. Heavy rains, combined with a high tide of

5.8 feet when the outfall (where water collects prior to entering the Bay) was under water, caused disastrous effects. The water quickly overwhelmed the storm drain's capacity. Furthermore, the City's storm drain system is old and seriously in need of repair and in many areas is at or over capacity. Finally, leaves and other debris clogged many catch basins and inlets requiring added maintenance. These conditions placed an extreme burden on the system. In its current deteriorated form the system is unable to meet demands placed on it by heavy storm waters.

### BACKGROUND

Approximately \$1.9 million a year is allocated to Public Works for both personnel (primarily maintenance staff) and capital projects for the storm water program. The Clean Storm Water Fund revenues are supported by fees and capped at 1996 levels by Proposition 218, which allows increases only by approval of 2/3 vote of Berkeley citizens. Because these revenues have remained flat through these years, our maintenance levels tend to drop as a result of inflationary pressures.

The following is a breakdown of short- and long-term capital improvements needed to improve the storm drain infrastructure, and a discussion on our maintenance efforts.

**Short-Term Capital Improvements.** Funding for the short-term projects include \$1.4 million and \$292,000 (one-time allocation for FY 2007) in Capital Improvement Funds (610), and \$200,000 per year from the UC Agreement starting in FY 2007 (for 15 years). The agreement with the Berkeley Unified School District provides another one-time \$300,000. The budget for FY 2008 allocates \$500,000 in General funds and \$200,000 from the UC Agreement for a total of \$700,000.

Attachment 1, Table 1, provides a list of sites prioritized for repair and maintenance work for the next two fiscal years. The fund amounts include the allocation for FY 2006, but these monies cannot be encumbered until FY 2007.

**Long-Term Capital Improvements.** There are two categories of long-term projects:

1. Current Storm Drain System and Public Creek Culvert Repairs – Estimated \$50 million. There are locations in the storm drain system and public creek culverts which are known to need repairs (See Attachment 1, Table 2). There are approximately 462 sites, varying in degree of needed and costly repairs.
2. Potter Street and Strawberry Systems Capacity Improvements – Estimated \$34 million (in 1994 dollars). Storm drain lines at or near capacity will continue to flood. Of particular concern are the Potter Street line (the San Pablo Avenue line connecting to Potter), and the Strawberry storm drain line. Capacity related improvements for these two systems are costed out in Attachment 1, Table 3. The source of information is the 1994 report prepared by CH2M Hill. Staff recommends that the 1994 modeling be updated in the near future to determine which capacity improvements would be cost effective to implement, and to revise the estimate of the costs.

Flooding is also occurring on the lower section of Codornices Creek. The Cities of Berkeley and Albany are working with Caltrans to have additional culverts placed under I-80 to increase its capacity.

## Maintenance Issues

**Current Maintenance Needs.** The City has approximately 2,800 catch basins, 2,300 cross culverts, and 467 inlets/outlets. To prevent or reduce localized flooding, maintenance crews regularly clean these areas by removing leaves and litter from streets. The following tables show what maintenance crews can accomplish daily during dry and wet periods.

### Dry Periods (approximately 36 weeks/year) – One Crew (2 persons)

<u>Maintenance Item</u>	<u>Per Day</u>	<u>Per Week</u>	<u>Per Year*</u>
Inlets/outlets	16	80	2,880
Catch basins	16	80	2,880
Junction boxes	3	15	540
Culvert feet	240	1,200	43,200

### Wet Periods (approximately 14 weeks/year)– Four Crews (8 persons)

<u>Maintenance Item</u>	<u>Per Day</u>	<u>Per Week</u>	<u>Per Year*</u>
Inlets/outlets	20	100	1,400
Catch basins	10	50	700
Junction boxes	4	20	280
Culvert feet**	183	915	12,810

\*These numbers may represent multiple visits to the same problematic sites.

\*\*Harder to service during rain due to breakdowns.

In years with normal precipitation with dry periods averaging 36 weeks, current staff are able to maintain these tasks. In normal years prior to and during the rainy season, Corporation Yard staff increase storm drain maintenance and monitoring to reduce the number of blockages and back ups. This is accomplished by shifting resources from dry weather operations to wet storm drain maintenance operations.

However, it is during unusual rain events, such as occurred this past winter, that current staff have difficulty maintaining storm drains to prevent flooding. It is important to note that the maintenance crews who attend to storm drainage problems during heavy rains sometimes find that the physical structures are in such disrepair that maintenance is difficult or impossible. In other words, unless the physical infrastructure is in fair to good condition, maintenance cannot be done. Capital improvements are essential to good maintenance.

On-Call Emergency Contract. Due to the heavy flooding experienced this past winter, the City hired an on-call contractor to help City crews clean drain pipes. The \$24,000 contract runs through the end of this fiscal year. This is in addition to the maintenance activities of the Corporation Yard.

Street Sweeping Issues. The most cost effective way to remove leaves and debris from the streets is by street sweeping. Although parked cars are ticketed on street sweeping days, streets are not always swept effectively because some cars are not moved. This activity is also hampered by the long leaf-dropping season in the Bay Area. The City has numerous species of street trees that drop leaves at different times from late August through February each year.

Adopt-a-Drain Program. Another method for controlling leaves and litter to reduce localized flooding is to promote and expand the City's Adopt-a-Drain program. This program is based on volunteers clearing their adopted catch basin or inlet. The work typically involves sweeping or raking up debris and bagging it for pick up by City crews. This program started in late 2005. To date 31 volunteers have signed up for the program.

POSSIBLE FUTURE ACTION

Additional revenue sources are needed to increase the capital funding for storm drain repair work. Proposition 218, as discussed above, restricts Council from enacting fees or assessments to pay for most local services, including improvements to the storm water system. This restriction may be eliminated with the passage of ACA No. 13, a resolution being proposed to California voters to amend the State Constitution to allow local governments to enact fees and charges related to "flood control, storm water drainage, or surface water drainage as exempt" from the current procedures and approval process. This legislation is currently in committee and is expected to expire September 2006 in committee if no action is taken. The Council may consider encouraging our legislators to enact ACA No. 13 to help local governments repair and maintain deteriorating infrastructure.

FISCAL IMPACTS OF POSSIBLE FUTURE ACTION

Fiscal impacts would include the cost associated with a proposition measure on the election ballot for a bond measure or increased stormwater fee measure, or a minimum funding level of \$500,000 per year from the General Fund.

CONTACT PERSON

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Attachments:

- 1: Table 1 – FY 2007/2008 Construction Program
- Table 2 –City-Wide Storm Drain System Repair Locations
- Table 2 – Potter & Strawberry Systems Capacity Improvements (1994 CH2M Hill Report)

## ATTACHMENT 1

**Table 1**  
**Construction Program Priorities**  
**FY 2006 to FY 2008 Allocations**

<b>Site</b>	<b>Description</b>	<b>Amount</b>
1188 Cragmont	Repair creek culvert/Improve street drainage	\$55,000
9th/Heinz	Valley gutter	150,000
10th/Heinz	Valley gutter	60,000
8th/Heinz	Valley gutter	60,000
7th/Heinz	Catch basin work	30,000
Prince/Dohr	Valley gutter	45,000
<b>Total Funding FY 2006</b>	<b>General Fund</b>	<b>\$400,000</b>
10th/Grayson	Valley gutter	65,000
Ward/Fulton	Valley gutter (2)	130,000
4th/Jones	Storm line extension	145,000
4th/Virginia	Storm line extension/catch basin	55,000
Dwight/MLK	Gallery catch basins (3)	55,000
Cedar/Spruce	Valley gutter	65,000
LaLoma	Creek culvert repair	50,000
Shattuck 1200	Catch basin/pipe repair	67,000
Arch/Corona Ct	Catch basin repair	25,000
9th/Channing	Cross culvert	130,000
Oregon/Shattuck	New cross culverts (2)	155,000
Piedmont/Garber	Valley gutter	65,000
Dana/Ward	Valley gutter	65,000
10th/Carleton	Valley gutter	65,000
Ward/MLK	Cross culvert	155,000
<b>Total Funding FY 2007</b>	General Fund - \$500,000 General Fund - 292,000 (one-time mid-budget) UC Agreement- 200,000 (@year/15 years BUSD - 300,000	<b>\$1,292,000</b>
Milvia/Blake	Valley gutter	65,000
6th/Hearst	Cross culverts (2)	165,000
Curtis/Francisco	Valley gutter	65,000
Russell/Shattuck	Cross culvert	65,000
Bancroft/Bolivar	Catch basins (3) - 200 ft of pipe	135,000
Stuart/California	Cross culverts (2)	135,000
Bonita/Berkeley Way	Valley gutter	70,000
<b>Total Funding FY 2008</b>	General Fund - \$500,000 UC Agreement- 200,000	<b>\$700,000</b>

## ATTACHMENT 1

**Table 2**  
**City-Wide Storm Drain System Repair Locations**

<b>Category</b>	<b>Number of Known Sites</b>	<b>Average Estimated Cost Per Site</b>	<b>Estimated Total Construction Costs</b>
Cross Culvert Repair locations	101	65,000	\$6,565,000
Storm Drain piping point repairs	60	40,000	2,400,000
Storm Drain piping sections	21	1,000,000	21,000,000
Street Flooding Areas (Various Reasons)	168	45,000	7,560,000
Creek open channel or Creek Culvert repair locations	5	2,000,000	10,000,000
Ground Water	97	\$ 22,950	2,226,150
	<u>452</u>		<u>\$49,751,150</u>
		<b>Average Capital Budget Per Year for 10 Years</b>	<b>\$ 4,975,115</b>

**Table 3**  
**Potter & Strawberry Systems Capacity Improvements (1994 CH2M Hill Report)**

	<b>Est. Const. Costs</b>
<b>Potter System</b>	
Oregon St Relief Storm Drain Sewer	\$13,400,000
Potter Street Overflow Diversion	2,100,000
Aquatic Park Pumping Station and Force Main	4,200,000
Derby Street Improvements	700,000
Parker Street Improvements	500,000
Prince Street Bypass	400,000
<b>Potter Subtotal</b>	<u><b>21,300,000</b></u>
<b>Strawberry System</b>	
Walnut St/Hearst Av Relief Storm Drain	3,700,000
Lower Hearst Av Relief Storm Drain	4,700,000
Addison St Relief Storm Drain	3,900,000
<b>Strawberry Subtotal</b>	<u><b>12,300,000</b></u>
<b>Total Capacity Improvements</b>	<b>\$33,600,000</b>