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DEPARTMENT OF
PUBLIC WORKS

CITY OF SACRAMENTO
CALIFORNIA

1391-35TH AVENUE
SACRAMENTO, CA
95822-2911

DIVISION OF
FLOOD CONTROL AND SEWERS

916-449-5271

November 9, 1988

Budget and Finance/
Transportation and Community Development Committees
Sacramento, California

Honorable Members In Session:

SUBJECT: REPORT ON THE CITY'S COMBINED SEWER SYSTEM

SUMMARY

The consultant report on the City's combined sewer system has been completed. The consultant report recommends that the City consider partially separating sewer and drainage flows in selected areas and retaining the combined system in the remaining areas. The estimated cost for this partial separation is approximately \$80,000,000. Should the City elect to completely separate the combined system, the estimated cost is \$320,000,000. Both alternates provide approximately the same drainage services, raising the safety of the system from a 2 year design storm to a 5 year design storm.

BACKGROUND

The combined sewer system serves approximately 11 square miles of the City with sewer and storm drainage. Construction of this system began in 1908 and proceeded, as new areas developed, until 1946 when the City began separating storm runoff and sewage into separate pipe systems.

The size of the pipes and pumping plants in the combined system is such that nuisance flooding and ponding in streets occurs once every 2 years on the average. During heavy storm conditions widespread street flooding occurs and some houses experience basement and garage flooding.

There is no single part of the system which, if improved, would significantly reduce the problem. The pipes are all too small to provide acceptable levels of storm drainage protection to the area the system serves. Recognizing the need to determine the feasibility of improving the capacity of this system, the City Council contracted with Robert E. Young and Associates to perform an in-depth study of the system to determine the feasibility and the cost of completely separating storm and sewer flows and to investigate any other feasible alternates to improve the level of service to the entire affected area.

In the course of the investigation, the consultant found that the existing system was inadequate to accommodate a 2 year frequency storm. Further investigation revealed that a 10 year frequency storm, specified in the contract as the "target" capability of a new system, could not feasibly be obtained due to the size of the needed facilities. The consultant therefore recommended that the target be changed to a 5 year frequency system, and staff agreed with that recommendation.

The consultant devised two alternate plans to separate the northerly part of the combined system and three alternate plans to separate the southern part. These alternatives were then combined into six alternate plans to effect total separation and cost estimates were prepared. These estimates place the cost of totally separating the combined system at between 365 and 317 million dollars depending on which alternate plan was chosen. The consultant recommended that the least expensive plan be chosen due to its lower cost and also due to its lesser, although major, impact on the City's existing infrastructure and traffic flow during the construction phase.

The recommended plan calls for new pipe installations ranging in size from 6 inch sewer pipe to 78" storm drain pipe, utilization of portions of the existing combined system for drainage and other parts for wastewater. Three new drainage pumping plants would be constructed and three existing pumping plants would be modified for drainage flows. One new wastewater lift station would be constructed to pump wastewater from the study area to the City sewer interceptor and thence to the Regional Treatment Plant.

In the process of determining a suitable scope of work for the study the staff determined that the cost of a complete separation plan might be prohibitive and therefore it was specified that the consultant examine possible alternatives in lieu of a complete separation plan. The consultant therefore examined a total of 17 alternatives. Some of these

alternatives provided for relatively minor changes, such as altering the operating criteria for the present system, to more costly projects such as separating selected parts of the system and leaving the remainder as a combined system. Each of these alternates was evaluated as to the benefit which the system would receive from its implementation.

In several cases the alternatives did very little or nothing to relieve flooding in the system. Other alternatives provided some relief but at an abnormally higher cost than others.

The alternate plan to complete separation recommended by the consultants involves a partial separation of the combined system. Approximately 1820 acres of the existing combined system would be separated from the total 7000 acre combined system leaving 5180 acres tributary to the existing drainage facilities. This reduction in drainage tributary to the combined system would result in the remaining 5180 acres being served by a system increased in capability from a 2 year storm to approximately a 5 year storm. The 1820 acres of separated system would also have the capability of handling a 5 year storm; thus, the partial separation would accomplish essentially the same objective as complete separation at one fourth the cost. It is possible that some reconstruction of the remaining 5180 acre combined system will be necessary due to pipe conditions and pipe size problems. No cost is given in the report for this work, but from previous studies this cost could amount to 10 million dollars.

Specifically the consultant recommended plan would construct 3 new pump stations discharging storm drainage flow to the Sacramento River and divert a small area to an existing City pumping plant (Sump 101).

The following table summarizes the recommended plan:

<u>System</u>	<u>Area Served</u>	<u>Approx. Cost (1988 \$)</u>
Alhambra	Approximately 873 acres E. of Alhambra and N. of Hwy. 50	\$32,682,000.00
26th Street	Approximately 396 acres generally bounded by 11th and 26th St. N. of F Street	\$22,151,000.00

<u>System</u>	<u>Area Served</u>	<u>Approx. Cost (1988 \$)</u>
Redding Avenue	Approximately 374 acres the Oak Park area	\$20,246,000.00
Sump 101	Approximately 175 acres N.E. of U.C. Med Ctr.	\$ 3,200,000.00
	Est. Total Incl. 30% Engr. & Contingencies (1988 Dollars)	<hr/> \$78,279,000.00

The above estimates must be regarded as preliminary due to the complicated design and construction problems which may be encountered in the finalization of these projects.

In addition it must be pointed out that the "National Pollution Discharge Elimination System program" of the National Water Quality Act requires discharge permits for all existing and new drainage outfalls, by 1992. New facilities are being required to apply for such permits now (i.e. North Natomas). The cost of compliance with any conditions imposed on the partial separation projects cannot be projected at this time but they could range from very low to substantial sums.

The enclosed sketch delineates the areas proposed by the consultant for separation from the combined system. The nature and location of the projects indicates that they could be staged into 3 or 4 separate projects, with a cost of 20 to 30 million dollars each.

FINANCIAL

The City presently has no mechanism for generating the necessary funding to execute the consultant's recommended plan. The cost per acre for these projects averages \$40,000.00. It is possible that a combination of assessment districts on the affected lands combined with general obligation financing can be utilized should the Council desire to improve drainage service to the combined system area.

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RECOMMENDATION

This report is submitted for Committee information.

Respectfully submitted,

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APPROVED FOR COMMITTEE INFORMATION:

Approved:

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November 9, 1988

Districts 1,3,4,5,6

DMD:AH:pw

COMBSYS

