T&E AGENDA: 2-07-11
ITEM: C 1

CITY OF SAN JOSE
CAPITAL OF SILICON VALLEY

Memorandum

TO: TRANSPORTATION AND ENVIRONMENT COMMITTEE

FROM: David Sykes

SUBJECT: SEE BELOW

DATE: 01-21-11

Approved

Date 1/27/11

SUBJECT: SANITARY SEWER CAPACITY MASTER PLAN PHASE II AND PHASE I UPDATE

RECOMMENDATION

Accept this progress report highlighting activities to align the capacity needs of the sanitary sewer collection system with the Envision San José 2040 General Plan (referred to as General Plan 2040).

OUTCOME

Acceptance of this report will allow staff to continue with the completion of the Sanitary Sewer Capacity Master Plan in order to ensure adequate capacity within the sewer collection system. These activities include development of a dynamic computer flow model of the collection system, analysis of potential capacity constraints within the system, and proposed capacity enhancement projects to support the build out of the General Plan 2040.

BACKGROUND

Prior to this current master planning effort, the City completed its last comprehensive planning study of the sewer collection system in 1979. The Sanitary Sewer Capacity Deficiencies Report (October 1979), referred to as the "1979 Master Plan" developed wastewater generation coefficients and peaking factors to estimate flows in the collection system and analyze the capacity and deficiencies of major sewer lines in each of 10 major service areas.

The 1979 Master Plan, based on the City's 1975 General Plan, reached the limits of its planning horizon and was not developed with the benefit of today's sophisticated hydraulic analysis and modeling techniques. Other collection system planning studies completed since 1979 have focused primarily on the large diameter interceptor systems.

Since 1979, the City adopted Horizon 2000 General Plan (1984) and San José 2020 General Plan (1994). By the late 1990's, a comprehensive Sanitary Sewer System Master Plan was needed to effectively plan for and prioritize future system improvements.

Sewer Master Plan Phase I (September 2002)
In September 2002, the City retained three consultant teams to develop hydraulic models and prepare capacity-related capital improvement programs for three of the five basins of the sewer system (South, Central and North – see attached map). These basins were given priority for master planning because of the potential for near-term development and redevelopment activity. The remaining two basins (East and West) were identified for study in a Phase II project.

The Phase I Master Plan used the San José 2020 General Plan and state-of-the-art flow modeling techniques to identify existing and future sewer system capacity deficiencies and developed a prioritized list of capital improvement projects to address predicted system capacity deficiencies. A model of the three areas was developed that consisted of sewer mains 12-inch and larger in diameter. The flow data from the City's 1998-2001 Flow Monitoring Program was used to calibrate and verify simulated flows in the model.

The Phase I study was completed in October 2004 and recommended a Capital Improvement Program of 37 prioritized sewer capacity improvement projects totaling approximately $104 million.

Sewer Master Plan Phase II and Phase I Update (April 2007)
Since the completion of the Phase I Master Plan, City Council has approved the update to the North San Jose Area Development Policy for intensified development of 26.7 million square feet of industrial/office/R&D building spaces and 32,000 new dwelling units. In addition, many Planned Development and General Plan Amendments have been approved, including the Hitachi Site Mixed-Use and Riverview Mixed-Use Site within the Phase I Master Plan basins.

ANALYSIS

In 2007, the City's Planning Department initiated the General Plan 2040 Update process. General Plan 2040 has a different approach and framework for land use development from the San José 2020 General Plan. It endorses a ***Preferred Land Use Scenario*** for the City to become a regional job center and the concept of ***Growth Areas*** in which to focus new job and housing growth capacity, while the majority of the City would not be planned for additional growth or intensification. The Preferred Land Use Scenario also includes the removal of housing capacity in Coyote Valley and the South Almaden Valley Urban Reserve areas. A majority of the large development growth areas are located in the City's South, Central and North Sewer Master Planning areas.

Due to the numerous land use changes identified in the General Plan 2040, the results of the Phase I Sewer Master Plan need to be reviewed in conjunction with the Phase II project. The

City retained Raines, Melton and Carella (RMC) as the master plan consultant for this project and initiated a work plan to have City staff actively participate in developing the dynamic computer model. At every stage of the process, the consultant group integrated City staff into the analysis and provided hands-on training for City staff to do modeling work. This approach reduces consultant costs and allows City staff to become efficient with the modeling process and builds institutional knowledge of the sewer modeling system.

In Winter 2007-2008, the City deployed more than 130 flow meters in critical locations throughout the sewer collection system to collect wet weather flow monitoring data. This data was used to calibrate the flow model.

City and consultant teams conducted extensive as-built plan and record research, field investigation and sewer manhole surveying. Over 2,000 manholes along the trunk sewer system were surveyed for accurate pipe elevations. As a result, the current dynamic flow model is the most accurate representation of the sewer network to date. The current model includes all sewer mains 10-inches and larger in diameter, with some 8-inch diameter mains for connectivity purposes. Roughly 9,500 sewer mains with a total combined length of 466 miles are included in the model. This represents approximately 20% of the entire collection system.

In late 2009, the modeling teams completed the model building and calibration and developed existing sewer loads based on Census 2000 population (blocks), land use, recent developments (2000-2007) and water use data. An improved 10-year, 24-hour design storm was developed based on the Phase I Master Plan project. The hydraulic modeling analysis of the sewer system under design storm conditions was completed in early 2010, in time to run model simulations on the six land use study scenarios for Planning Department. The sewer model results of the various 2040 land use scenarios were provided to the Planning Department in April 2010, prior to the selection of the preferred General Plan 2040 Land Use Scenario.

In early August 2010, the Master Plan team provided the model results of the Preferred Land Use Scenario for the General Plan 2040, after the Preferred Scenario was approved by Council in May.

The City and consultant Master Plan teams conducted a workshop to present the capacity evaluation process and results in October 2010. There will be another workshop in the near future to present sewer project alternatives and project prioritization for the Capital Program.

EVALUATION AND FOLLOW-UP

The City and consultant Master Plan teams will prepare a Capacity Master Plan Report with a recommended Capital Program of capacity improvement projects for existing, near-term (5 to 10-year horizon) and General Plan 2040 Land Use Scenarios in May 2011. The capacity improvement projects are identified based on deficiency criteria as proposed in the Sanitary Sewer Level of Service Policy Update. The City Master Plan team has started to work with the

City's Planning Department to incorporate the results of the Master Plan study into the General Plan 2040 document.

In addition, the Master Plan team will develop incremental costs for the portion of capacity improvement that is required due to the future growth identified in General Plan 2040. This cost estimate will be used as part of the fee calculation in the Sewer Connection Fee Study.

After the completion of the Master Plan of the trunk sewer system, the City and consultant Master Plan teams will begin the implementation phase of the capacity projects recommended by the Master Plan study. The implementation phase comes before the design and construction of a capacity project and includes additional dry and wet weather flow monitoring, field surveying and investigation, and detailed sewer system modeling.

In conjunction with the implementation phase of the Master Plan recommended projects, the City and consultant teams will conduct a master plan study of the smaller diameter pipes in the General Plan 2040 Growth Areas in support of future land use development projects.

POLICY ALTERNATIVES

Not applicable (at this time).

PUBLIC OUTREACH/INTEREST

- ☐ **Criterion 1:** Requires Council action on the use of public funds equal to $1 million or greater. **(Required: Website Posting)**
- ☐ **Criterion 2:** Adoption of a new or revised policy that may have implications for public health, safety, quality of life, or financial/economic vitality of the City. **(Required: E-mail and Website Posting)**
- ☐ **Criterion 3:** Consideration of proposed changes to service delivery, programs, staffing that may have impacts to community services and have been identified by staff, Council or a Community group that requires special outreach. **(Required: E-mail, Website Posting, Community Meetings, Notice in appropriate newspapers)**

This action does not meet any of the criteria above.

COORDINATION

This report has been coordinated with the City Attorney's Office and the City Manager's Budget Office.

FISCAL/POLICY ALIGNMENT

Updating and aligning the capacity needs of the sanitary sewer collection system to reflect the current capacity and potential capacity expansion projects will enable the City to avoid sanitary sewer overflows, support economic development and the build out of the General Plan 2040.

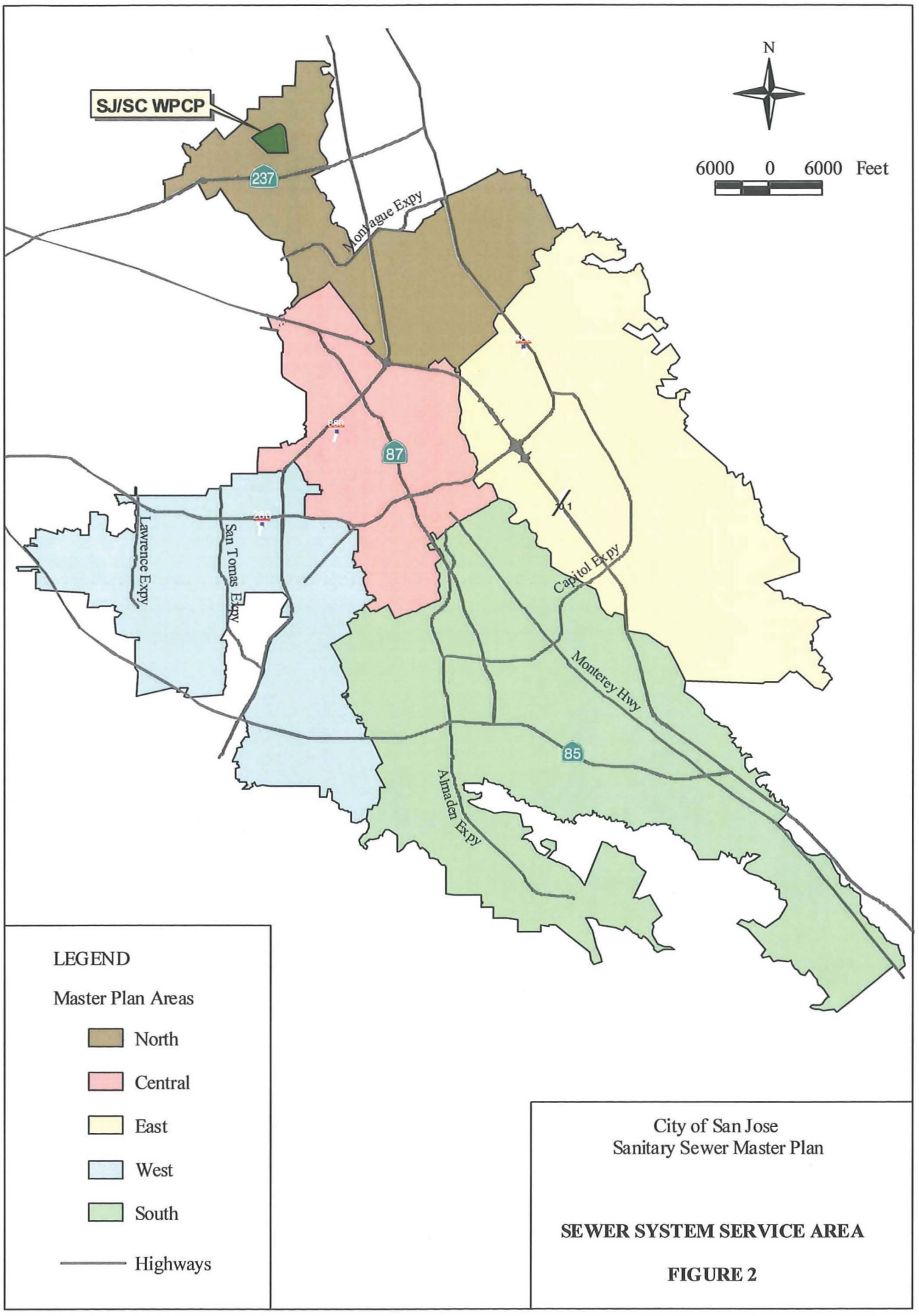
CEQA

Not a project. PP06-195, staff report requires no approvals.

/s/
DAVID SYKES
Acting Director, Public Works Department

For questions please contact MICHAEL O'CONNELL, ACTING DEPUTY DIRECTOR, Public Works Department, at 408-535-8300.

Attachment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85
Almaden Expy
LEGEND
Master Plan Areas
North
Central
East
West
South
Highways
City of San Jose
Sanitary Sewer Master Plan
SEWER SYSTEM SERVICE AREA
FIGURE 2