



Agenda Date: 3/6/2019
Agenda Placement: 8F

Napa Sanitation District Board Agenda Letter

TO: Honorable Board of Directors

FROM: Timothy Healy - General Manager
NS-Technical Services/Engineer

REPORT BY: Matthew Lemmon, Senior Civil Engineer - 707-258-6004

SUBJECT: Receive Presentation from Staff on the 66-inch Trunk Sewer Condition Assessment and Capacity Analysis

RECOMMENDATION

Receive presentation from staff on the 66-inch trunk sewer condition assessment and capacity analysis.

EXECUTIVE SUMMARY

The 66-inch trunk sewer conveys over 90 percent of the flow from the collection system to the Soscot Water Recycling Facility (SWRF). The trunk sewer is approximately three miles long and extends along the eastern bank of the Napa River from Imola Avenue to the SWRF. Observations from a partial closed-circuit television (CCTV) inspection conducted in 2017 indicated that the pipeline has deteriorated significantly since the previous inspection in 2012. After discovering that the pipeline degradation had accelerated between 2012 and 2017, NapaSan hired GHD to perform a condition assessment via manhole entries and test pits, then hired Woodard & Curran to conduct a full-length CCTV inspection and comprehensive condition assessment in 2018.

The Woodard & Curran condition assessment evaluated the pipe's integrity along the entire alignment. The report states that the southern portion of the alignment (between Kaiser Road and the SWRF) has significant structural degradation and should be repaired or replaced as soon as possible. The northern portion of the alignment (between Imola Avenue and Kaiser Road) is less deteriorated and has approximately 10-15 years of remaining useful life.

In addition to the structural integrity of the trunk sewer, hydraulic capacity is also a concern. The 2007 Collection System Master Plan (CSMP) identified that the 66-inch trunk sewer, along with other collection system assets, requires a capacity upgrade in order to convey peak wet weather flows. Because peak flows are directly related to inflow and infiltration (I/I) during storm events, the 2007 CSMP recommended a pilot program to construct I/I reduction projects with the intent of avoiding capacity upgrades, followed by a performance assessment. To

date, eight major I/I reduction projects have been completed and post-construction flow monitoring has been performed for six of the projects. However, the CSMP has not been updated since 2007 so a comprehensive performance assessment has not yet been performed to evaluate the success of the I/I reduction program versus the need for capacity upgrades.

NapaSan awarded a contract GHD in August 2018 to update the CSMP with a preliminary focus on analyzing the capacity of the 66-inch trunk. Flow monitoring data has been obtained during three significant storm events so far in 2019 and the comprehensive collection system model is currently being developed. Though the model is still being constructed and has yet to be calibrated with the new storm data, the preliminary results indicate that a rehabilitated pipe will have better flow characteristics than the existing degraded concrete and the continuation of the I/I reduction program will reduce future peak flows. In the future it may still be necessary to add capacity to the trunk sewer, but these results will be more fully developed throughout the CSMP update.

NapaSan has two primary options to fix the structural integrity of the trunk sewer. The option that is selected will depend on the final results of the capacity analysis:

- 1) Rehabilitate the pipe with a trenchless rehabilitation method if the existing capacity is sufficient
- 2) Construct a pipe with more capacity if the existing capacity is not sufficient

Trenchless rehabilitation methods are typically preferred because they are significantly less expensive but they do not fix capacity deficiencies. Staff estimates that trenchless rehabilitation of the 3-mile alignment will be approximately \$25 million whereas construction of a new trunk sewer could be \$100 million. Staff recommends including the 66-inch trunk sewer in the strategic plan due to its criticality and budgetary impacts.

FISCAL IMPACT

Is there a Fiscal Impact? No

ENVIRONMENTAL IMPACT

None.

BACKGROUND AND DISCUSSION

NapaSan last updated its CSMP in 2007. The study evaluated the condition and performance of the collection system under current and future (2030) buildout conditions. "Buildout" was based on the existing City of Napa General Plan and the General Plan update for the County of Napa that was underway at the time. Flow monitoring was conducted to evaluate peak flows during wet-weather conditions. The study found that the collection system had adequate dry-weather capacity to handle anticipated growth in the General Plans, but had inadequate capacity for peak wet-weather flows.

The 2007 CSMP estimated that \$120 million in collection system upgrades would be required to convey the existing peak wet-weather flows. This cost did not include treatment plant upgrades necessary to accommodate increased flows from the collection system. Instead of constructing \$120+ million in capacity improvement projects, the 2007 CSMP recommended a Capital Improvement Program focused on I/I reduction, followed by a performance assessment. The study anticipated that the most cost-effective solution would be a mixture of I/I reduction projects and capacity upgrades.

SUPPORTING DOCUMENTS

A . Presentation Slides

Napa Sanitation District: Approve

Reviewed By: Timothy Healy