

APPENDIX U

***RICHMOND MUNICIPAL SEWER DISTRICT WASTEWATER
INFRASTRUCTURE ANALYSIS***

December 11, 2019

Bibiana Alvarez
AES Environmental
1801 7th Street, Suite 100
Sacramento, CA 95811

Subject: Evaluation of Point Molate Site Development Flows

Dear Ms. Alvarez:

V.W. Housen & Associates has reviewed whether the existing Richmond Municipal Sewer District (RMSD) wastewater collection system can accommodate new flows from the development of the former Point Molate Navy Fuel Depot and Winehaven Historic District. The following information was provided by BKF about the proposed project:

- The Point Molate site stretches 413-acres, of which 271 are above water. The site is located on the San Pablo Peninsula and is bounded by the San Francisco Bay to the west and the Chevron Richmond refinery to the east.
- The project proposes to develop 80 of the 271 above-water acres available and will include residential, commercial, and retail uses (1,474 residential units and 394,572 square feet of office/retail/commercial/restaurant space).
- The project site is not currently connected to RMSD's wastewater collection system.
- Assuming 95% of the water used will return as wastewater, BKF initially estimated that the project would generate an average dry-weather flow (ADWF) of 259,692 gallons per day. This estimate was subsequently adjusted by BKF to 275,672 gallons per day.
- Rainfall dependent infiltration and inflow is expected to be negligible since the Project plans to install all new piping. The City's standards do not specify a wet weather peaking factor. However, following Central Contra Costa Sanitary District standards, which provide best management practices for other agencies within the County, the appropriate wet weather peaking factor for new systems is 2.6. VWHA has assigned this wet weather peaking factor to the projected average dry weather flow.
- The Project's collection system would connect to the City's system near the intersection of Tewksbury Avenue and Contra Costa Street.

VWHA reviewed the latest GIS data provided by Veolia to identify the point of connection between the proposed development's collection system and the City's existing network. Based on the information and maps provided by BKF, the proposed collection system was assumed to connect to the pipeline that runs along Tewksbury Avenue near Marine Street, at Sewer Fitting Number H6SF15. H6SF15 would need to be replaced with a standard manhole in order to facilitate the connection.

The proposed development project was incorporated to the City's hydraulic model by adding the

estimated peak wet weather flow (ADWF * WWPF) of 716,747 gallons per day as a point load to the pipe. This point load was distributed throughout a 24-hour period based on the diurnal pattern that has been recorded at the closest downstream manhole. The network was then evaluated under the current design storm scenario. In the design storm scenario, additional flow from the design rainfall event was added to the remainder of the RMSD sewer system, but not to the Project area.

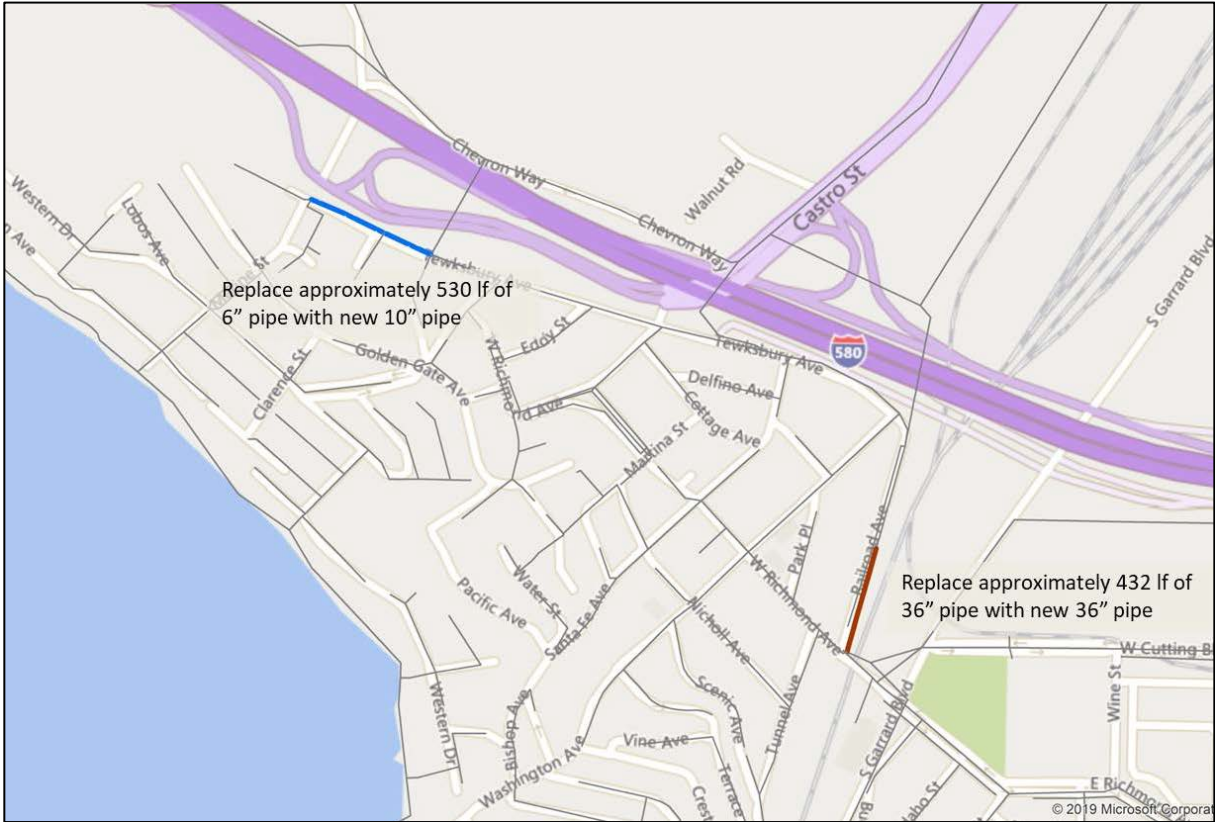
The City's hydraulic model is calibrated to current flows. The City's General Plan 2030 identifies three key corridors that will undergo densification in the future, potentially adding new dry weather flow to the system: Downtown/Macdonald Avenue, Hilltop, and Ford Peninsula in Marina Bay. Although the Hilltop corridor is located within City limits, associated wastewater flows are managed by the West County Wastewater District to the north. Although dry weather flows from the two remaining areas are likely to increase, capacity needs for the Downtown/Macdonald Avenue and Ford Peninsula in Marina Bay areas are dictated by wet weather flows. Wet weather flows are not projected to increase significantly in the buildout scenario. Therefore, the existing system model also sufficiently predicts capacity needs in the buildout scenario.

The hydraulic analysis determined that the existing sewer pipelines from Sewer Fitting H6SF15 to the Wastewater Treatment Plant do not have sufficient capacity to carry the added flows from the proposed project. The hydraulic model predicts a sanitary sewer overflow on Tewksbury Avenue during the design storm event. In order to alleviate this capacity constraint, upsizing 530 lineal feet of existing 6-inch diameter pipeline to a 10-inch diameter pipe on Tewksbury Avenue between Marine Street and Clarence and Vacca Streets is required, as shown in Figure 1.

The City's Wastewater Treatment Plant (WWTP) and wet weather storage facility have sufficient capacity to convey the added flows. The WWTP is designed to treat up to 42 million gallons per day of wastewater during wet weather events. The WWTP is also equipped with an influent bypass pumping station and 5 million-gallon storage tank. Together, these facilities are designed to receive up to 68 million gallons per day of peak hourly wet weather flow without sanitary sewer overflows.

In addition to reviewing capacity, VWHA reviewed the condition of existing pipelines from the point of connection to the nearest trunk interceptor located west of Cutting Blvd. Eighteen pipe segments ranging in diameter from 6 to 36 inches, with a total length of 3,810 lineal feet were reviewed. One of these pipe segments has numerous National Association of Sewer Service Companies Pipeline Assessment Certification Program (NASSCO PACP) Structural Grade 4 defects and must be replaced prior to increasing flow through the pipe. This pipe segment, G7MH339_G7MH2887, is also shown in Figure 1. The existing 36-inch diameter pipe would be replaced with a new 36-inch diameter high density polyethylene pipe.

Figure 1. Pipes Requiring Replacement with Added Pt. Molate Flows



Please let me know if you have questions or need additional information.

Sincerely,
V. W. Housen & Associates

Vivian Housen, P.E.
Principal