



CITY OF PORTLAND ENVIRONMENTAL SERVICES



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M E M O R A N D U M

August 2, 2021

TO: Barry Manning-BPS

COPY TO: Jane Bacchieri-BES, Kristin Acock-BES

FROM: Kate Hibsichman-BES, Marie Walkiewicz-BES, Andrey Nikolayev-BES

RE: Montgomery Park to Hollywood Study – Proposed Upzoning Model Results

BES performed a computer modeling analysis of BPS' upzoning proposal for the Montgomery Park to Hollywood (MP2H) west side project area to understand how the proposed zoning changes would impact the storm, sanitary and combined pipe systems. With portions of the study area proposed to change from Industrial (heavy industrial and general industrial) to Central Employment zoning (urban density employment, commercial and/or housing uses), sanitary flows would increase with the higher occupancy. The sanitary system's capacity to handle increased flows was the primary concern prompting BES to model the proposal.

The project area is served by separated sanitary and stormwater pipes in the NE portion of the site and combined sanitary-storm system in most of the rest of the site. Stormwater from the separated system is discharged to the Westside Willamette River Combined Sewer Overflow (CSO) Tunnel at the Nicolai Shaft. All three systems (sanitary, storm and combined) discharge to the Willamette River CSO Tunnel system during low to moderate storm events. During high volume storm events, the tunnel system overflows and discharges to the river, resulting in a CSO.

BES modelers assessed the change in sanitary flows for both a middle and maximum buildout scenario using estimated occupancy information that BPS provided. The assumed change in flows are summarized in Table 1a (below). For each lot that could potentially redevelop, sanitary pipe connections were assumed to enter the system either where it currently does or at the closest obvious connection point.

Table 1a. Summary of Sanitary Flow Rates for the Redevelopment Site

| Condition/Scenario | Sanitary Flow Rate (gpd) |
|--------------------------|--------------------------|
| Base Condition | 331 ¹ |
| Max Development Scenario | 1,523,598 |
| Mid Development Scenario | 995,598 |

Note, gpd - gallons per day

With limited ability to forecast the details of how redevelopment of the project area will unfold, stormwater inputs to the pipe system were assumed to remain the same as current conditions. If additional impervious area is created through the area's development, the increase in stormwater runoff would trigger implementation of the Stormwater Management Manual (SWMM) required treatments, which could include new detention systems.

The modeling results of both the mid and max development scenarios show increased sanitary flow to the NW Nicolai St combined sewer, which is predicted to cause new flooding risk at 3 maintenance holes (MH) between NW 28th and 27th Ave. Additional system-specific comments are included below.

Combined System:

The combined sewer pipe located in NW Nicolai St between NW 26th and NW 29th and Ave currently lacks sufficient capacity to convey the 25-year design storm without pipe surcharging that leads to basement sewer backup risk (BSBR) and MH flooding risk, based on existing conditions. The projected increase in sanitary flow exacerbates the existing risk, adding the risk of flooding at the 3 MHs between NW 28th and 27th Ave. Other combined pipes in the area lack sufficient capacity or have almost no remaining capacity to manage additional combined sanitary and stormwater flows. To reduce this projected risk, BES will need to consider requiring tools to reduce the amount of stormwater currently entering the pipes in this area. We may also need to consider requiring future sanitary connections to enter the Wayward St or NW Wilson combined pipes, which have remaining capacity to handle additional flow, instead of connecting to Nicolai St. BES does not currently have a capital project planned to address the capacity issues in the combined system in this area. It typically takes several years to complete the planning, design and construction processes to implement these types of improvements.

Separated Sanitary System:

The sanitary sewer pipe located in NW Nicolai St between NW 26th and NW 23rd Ave. currently has sufficient capacity based on existing conditions. The projected upzoning can be accommodated within the existing sanitary system.

¹ The sanitary flows used in the model built in yr-2021 are low due to decreased office buildings usage due to pandemic

Separated Stormwater System:

Under existing conditions the storm sewer pipe located in NW Nicolai St between NW 26th and NW 23rd Ave. lacks sufficient capacity to convey the 10-year design storm without pipe surcharging that leads to MH flooding risk. The projected upzoning does not increase the risk of this occurring because it is assumed that the volume of stormwater inputs will not change when the site is upzoned, given the high coverage of impervious area currently and the anticipated on-site stormwater management measures that will be required by the SWMM. It is important to note that BES assumes that while on-site stormwater detention will be required, on-site infiltration is likely to be infeasible and/or undesirable due to the types of soils in the area and the likelihood of contaminants in the soil. BES does not currently have a capital project planned to address storm system issues in this area.

The sanitary, storm, and combined systems in the MP2H west side project area are generally old and subject to failures. While the overall likelihood of failure in these systems due to the upzoning is projected to be relatively isolated, the consequences of these failures will be significantly greater if this area is upzoned. We will continue to work with BPS to identify issues and recommendations as the MP2H project evolves and our analyses progress. Please note that the modeling analysis is only a projection, with only so much certainty. We don't yet know how climate change will impact peak flows to create risks that aren't projected using our current modeling assumptions about the volume, intensity and duration of storms. Our design storms used in both the SWMM and our modeling analysis may need to be updated as new climate change data becomes available.

We look forward to reviewing the MP2H Discussion Draft and continuing to partner with BPS on future planning efforts.