



WOOD RODGERS

January 17, 2022

Mr. Nicholas Ponticello, PE
Ponticello Enterprises
500 Main Street, Suite 250
Woodland, California 95695

Dear Mr. Ponticello,

Subject: Farmers Central Drainage (10-year) and Woodland Research and Technical Park Development Triggers

Based on the agreed-upon amendment to the Scope of Work for the Woodland Research and Technical Park, Wood Rodgers, Inc. (Wood Rodgers) has performed hydrologic and hydraulic analyses of the Farmers Central Drainage Corridor under 10-year conditions and has re-evaluated the triggers for downstream drainage improvements as part of the South Urban Growth Area development.

10-Year Conditions

Wood Rodgers utilized the as-built data provided by Cunningham Engineering for defining the installed storm drain pipe sizes and elevations downstream of State Route 113, along the Farmers Central Corridor, to enhance the definition of the system within the city-wide InfoWorks ICM modeling, performed as part of the City's current overall Storm Drainage Facilities Master Plan (SDFMP).

The hydrology input for the city-wide model was also adjusted to evaluate the hydraulic conditions during the 10-year storm event under full build-out conditions; these conditions were defined in the 2018 SDFMP for the South Urban Growth Area and carried forward in the city-wide SDFMP effort.

The results of the 10-year analysis are shown on the attached profile (**Attachment 1**). They demonstrate that the installed storm drain has sufficient capacity during the 10-year storm event to convey runoff from all of the development within the South Urban Growth Area, including the Woodland Research and Technical Park. The hydraulic grade line during the 10-year peak flow conditions is located below the soffit of the pipe.

Downstream Drainage Improvements and Triggers

Based on the 2018 SDFMP, full buildout of development draining to the South Canal could not be completed until major downstream improvements were installed, including a dedicated 120-cfs pump station at the end of the South Canal (pumped into the City's Outfall Channel), as well as a larger outlet structure for the City's Outfall Channel, and the

North Regional Detention Pond and weir. As such, previous estimates of phasing development within the South Urban Growth Area placed a limit on the full buildout of the Woodland Research and Technical Park to approximately 80 acres until downstream improvements could be made.

The baseline conditions have been identified as spilling volume eastward over the High Line Ditch since the 2006 SDFMP. The 2018 SDFMP effort, which focused on the South Urban Growth Area only, determined that the baseline spill volume over the High Line Ditch during the 100-year 10-day event was 2,094 acre-feet. The spill volume set a limit for future conditions, forcing improvements to be made upstream of the High Line Ditch (including the major elements described above).

During the current city-wide SDFMP modeling effort, Wood Rodgers created a city-wide InfoWorks ICM model combining both the north and south portions of the City in order to re-evaluate the baseline conditions. The interplay of combined pumping and drainage between the north and south areas of the City show that more spilling would occur during baseline conditions over the High Line Ditch than previously thought. The north portion of the City has more water that takes up more of the combined pumping capacity, leaving the South area of the City to fill and spill more significantly under baseline conditions. The 100-year 10-day storm is now estimated to spill 2,802.49 acre-feet during baseline conditions over the High Line Ditch. This finding now allows for more water to spill over the High Line Ditch under future conditions as well, implying that ultimate mitigations may be oversized from previous estimates. The peak spill volume under fully mitigated buildout conditions was reported as 2,047 acre-feet in the 2018 SDFMP.

Since the time that the 2018 SDFMP was completed, the City has installed a portion of the downstream facilities previously cited. The North Regional Detention Pond and Weir have been installed, and the pump station structure at the downstream end of the South Canal has also been constructed, with a partial pumping capacity of 60 cfs. Furthermore, the City has successfully designed the outlet structure for the Outfall Channel, and construction is anticipated to begin in the near future. The City has directed Wood Rodgers to consider the Outfall Channel outlet structure as constructed for all future development and phasing.

With the implementation of these downstream facilities and the new baseline definition, it is prudent to re-evaluate the previous limitations of development. To better understand the effects of the currently installed facilities, Wood Rodgers evaluated the full buildout of the South Urban Growth Area with these facilities. With the full buildout of development upstream and only partial pumping capacity (60 cfs), the spill over the High Line Ditch during the 100-year 10-day storm is 2,647 acre-feet. This means that the ultimate design flow of 120 cfs is no longer needed. The current pumping capacity of 60 cfs is sufficient to mitigate spilling over the High Line Ditch for full development of the South Urban Growth Area.

Mr. Nicholas Ponticello
January 17, 2022
Page 3

All improvements are still needed upstream of County Road 102 as these improvements limit peak conditions through development. There are no longer any requirements for development within the Woodland Research and Technical Park to implement any downstream improvements.

Sincerely,

A handwritten signature in blue ink that reads "Michael C. Nowlan" with a horizontal flourish extending to the right.

Michael C. Nowlan, PE, CFM
Wood Rodgers, Inc.

Attachment

cc: Mr. Brent Meyer, City of Woodland

Profile Along Farmers Central Corridor

