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Memorandum

DATE: January 19, 2011

TO: File

CC:

FROM: Bo Butler

RE: **FRANKLIN INTEGRATED WATER RESOURCE PLAN**

Development of Sanitary Sewer Flows for the City of Franklin IWRP
SSR No. 10-41-025.0

MAYES CREEK DRAINAGE BASIN

The Mayes Creek Drainage Basin is characterized by mainly undeveloped land to the far eastern side within the city of Franklin. Approximately half of this drainage basin lies within the urban growth boundary. However, the remainder outside the UGB drains to areas within the UGB so that sanitary sewer service should take into account those areas that could drain to it. The total acreage is approximately 9,850 acres. There are approximately 640 existing single-family units within the basin. There is a total undeveloped acreage within the basin of 7,701 acres, representing an additional 6,968 lots that could be developed in the basin. The total projected number of homes within the basin is 7,608, with a projected population of approximately 19,400. The total average flow anticipated from this basin within the 20-year study period is 2.7 MGD with a total peak flow of 8.7 MGD.

Flow from the Mayes Creek Drainage Basin is routed through preliminary layouts of interceptor sewers ranging from 12” in diameter to 36” in diameter. The low point in the basin is just east of the intersection of S. Caruthers Road and Arno Road. It is anticipated that flow from this basin will be collected and transported west toward the Goose Creek Basin by either deep sanitary interceptors or pump station.

GOOSE CREEK DRAINAGE BASIN

The Goose Creek Drainage Basin lies in the southern portion of the city, essentially bisected by Interstate 65 north of S.R. 840 and south of Forrest Crossing subdivision. The Goose Creek Drainage Basin is comprised of approximately 10,300 acres, of which 5,200 are currently undeveloped. There are approximately 1,986 existing developed lots within the basin. Land development in the area could add up to 14,385 lots using current zoning densities in addition to 7,800,000 square feet of office retail space. The projected population in the area within the 20-year study period, assuming full build-out of the basin, is 41,746 residents. The average flow from the basin is anticipated to be 6.7 MGD, with a total peak flow of 22 MGD.

Preliminary routing of sanitary sewer flow within the Goose Creek Drainage Basin has been completed and utilizes interceptor sewers in the range of 10" through 36" in diameter. This pump station transports sanitary sewage through force mains around the Forrest Crossing golf course to an existing gravity sewer, behind Moore Elementary School. From this point to the Franklin Wastewater Treatment Plant, sewage flows by gravity where it is treated and disposed of.

WESTERN DRAINAGE BASIN

The Western Drainage Basin is located in the far western section of the Franklin urban growth boundary. It is essentially bisected by Highway 96 W. and includes Franklin Green, West Haven and subdivisions along Carlisle Lane. The Western Drainage Basin is comprised of approximately 5,500 acres, of which 2,500 acres are currently undeveloped. There are currently 1,231 existing developed lots. Using current zoning densities, an additional 6,195 lots, and an additional 600,000 SF of possible office/retail space are possible in the 20-year study period. The projected population within the area over the planning period would be 18,936 residents. The average sewer flow in the area is anticipated to be 2.7 MGD, with a total peak flow of 8.8 MGD. Sanitary sewer flow from the Western Drainage Basin will be routed through interceptor sewers ranging from size from 12" to 30". Sewer flow will be collected at the lower end of the basin where a pump station will deliver flow to the Franklin Wastewater Treatment Plant. An existing pump station was built a few years ago that serves essentially the southern portion of the drainage basin where flow is delivered to the wastewater plant. However, for the development to continue in the northern half of the drainage basin, that pump station will have to be moved or an additional pump station built in an area near the meeting of the waters, or the confronts of the Big Harpeth and West Harpeth rivers.

CENTRAL FRANKLIN SEWER BASIN

The Central Franklin Sewer Basin is located within the center portion of the city of Franklin, largely in an area west of the Harpeth River, east of Downs Boulevard and extending from Fieldstone Farms to the north to Winstead Hill on the south. The basin is comprised of approximately 4,000 acres and the basin is seen as essentially fully developed. However, in-field development is sure to take place over time. There are approximately 5,162 existing developed lots with an additional 102 lots currently planned according to the Franklin Planning Department. There are also 2.7 million SF of retail office space planned for the Central Franklin Drainage Basin. Over the 20-year study period, it is anticipated that the population in this area will be approximately 13,423 residents. The average daily flow is projected for this area at 1.8 MGD, with a total peak flow of 6.0 MGD.

The Central Drainage Basin is currently served by interceptor sewers and pump stations. The sewers range in size from 10" to 54", and there are currently six pump stations operating within the drainage basin. This is where the Franklin Water Management Department is currently directing their efforts toward rehabilitation of old cracked and failing pipeline, where it is felt that a substantial amount of inflow and infiltration are entering the sanitary sewer system.

WATSON BRANCH DRAINAGE BASIN

The Watson Branch Drainage Basin is located in the central eastern section of the city of Franklin. The basin is comprised of approximately 8,120 acres, of which 911 acres are undeveloped. There are currently 9,013 existing developed lots within the basin, with a number of planned lots according to the Planning Department, to be 805 units. During the study period, it is anticipated that the population in the area would reach 25,036 residents. There is currently 13,255 million SF of office/retail space planned for this drainage basin. The total average daily flow from the basin is anticipated to be approximately 7.2 MGD, with peak flows reaching 23 MGD during the study period.

This drainage basin, while essentially built out, will experience in-field development and also additional development east of Interstate 65 and south of the McEwen Drive corridor. The basin is currently served by interceptors ranging in size from 12" to 54". Sanitary sewer infrastructure at the lower end of this basin intercepts sewer flow from the Goose Creek area, the Lawton Creek interceptor area, and the Liberty Creek interceptor area.

SPENCER CREEK DRAINAGE BASIN

The Spencer Creek Drainage Basin is located in the northeastern section of the city of Franklin urban growth boundary. The basin is comprised of approximately 5,982 acres, of which 860 acres are undeveloped. There are currently 8,587 existing developed lots with approximately 3,357 additional lots possible under current zoning densities. There is additional 21 million SF of office/retail space that is planned for this area. During the study period, it is anticipated the population in the fully developed basin will reach 30,500 residents. The total average sewer flow from this basin is anticipated to be 7.7 MGD, with peak flows in excess of 25 MGD.

The basin is currently served by interceptors ranging in the size from 10" to 36". There are currently four pump stations in the outlying areas of the basin that are needed to direct flow into the gravity flow section of this interceptor system. Flow from this basin enters the Harpeth River interceptor just south of the existing Franklin Wastewater Treatment Plant.

SOUTHWEST DRAINAGE BASIN

The Southwest Drainage Basin is comprised of Four sub-basins located in the southern portion of the Franklin Urban Growth Boundary. Generally bisected by Columbia Pike, the area is largely undeveloped with the exception that a portion of Oakwood Estates and subdivisions along Henpeck Lane are located within the drainage area. There are approximately 7,900 acres in the basin, and there are approximately 880 existing single family homes in the area. During the study period, it is anticipated that a total of 7,140 single family homes will be located in the basin, representing a population of 18,200. The total average daily sewer flow from this basin is projected to be 2.5 MGD with peak flows approaching 8.25 MGD.

The basin is currently served exclusively by on-site septic systems, and no sanitary sewers have been planned for these areas. Due to the geography of these basins, pump stations will be required along with gravity sewers for future sanitary sewer service.

SUMMARY

The City of Franklin will include approximately 173,000 people and in excess of 68,000 homes in the study area according to these projections. There will be approximately 45.5 million square feet of commercial space within the Franklin Urban Growth Boundary. The total average daily sanitary sewer flow is projected to be 32.3 MGD with peak flows reaching 105 MGD.