STORMWATER DRAINAGE REPORT

EAGLE CREEK VILLAS

Prepared for:

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April 2022
Revised May 23, 2022
Olsson Project No. 020-2467

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I. GENERAL INFORMATION

This report is being submitted as a summary of the stormwater drainage design for Eagle Creek Villas, located west of the intersection of SW Pryor Road and SW Eagle View Drive in the City of Lee's Summit, Jackson County, Missouri in the existing Eagle Creek subdivision. This area was previously included with the Eagle Creek Development Plan, prepared in 2001, and was planned for patio homes along with townhomes. With the development plan in 2001, a stormwater study was completed and approved by the city of Lee's Summit, Missouri encompassing this area. The previously approved study determined detention requirements for the development should be waived due to the proximity of the floodplain. This report will review the previously approved 2001 layout compared to the 2022 updated layout and potential impacts to the overall drainage areas. During the pre-applicants call, the city requested treatment for the local 90% mean annual event, or water quality storm event (1.37" for a 24-hour rainfall event), to be considered.

II. EAGLE CREEK VILLAS

A. Site Description

The Eagle Creek Villas project will be constructed on 29.04 acres of the existing Eagle Creek development and includes 96 villa style single family homes on 1/5 acre lots, tracts for open space along with the public infrastructure to support those lots. The Eagle Creek development plan assumed the impervious area of the Eagle Creek Villas area would be 40% and be used for 4-unit townhomes. This proposed layout will be single family homes on 1/5 acre lots with large open space tracts. The impervious area percentage of the proposed villas layout is 35%, a 5% reduction from the approved development plan, thus reducing the runoff for the site. Further analysis of the water quality treatment is detailed below.

B. Water Quality Treatment

Per the approved storm study, detention requirements were waived; however, since the development plan was approved, water quality requirements have been adopted by the city. The city has requested with this updated development plan, consideration of a water quality basin be reviewed. In review of the layout, a water quality basin is being proposed south of SW Eagle View Drive, on the western end of the site. This basin will treat stormwater prior to discharging into the existing stream. The water quality volume required is 27,028 cubic feet. The proposed water quality basin volume shown is 28,703 cubic feet and has 14.89 acres tributary to it. The water quality volume will be held in the pond for 40 hours past the peak time. The release rate from the pond will be controlled by a 3" x 3" square orifice cut into a steel plate on the outlet control structure.

For the area north of SW Eagle View Drive, no water quality basin is proposed. The impervious area has decreased for this area due to the planned use changing from townhomes to single family villa lots, which will improve stormwater runoff. Along with the decrease of impervious area, this area has limited space and is restricted by the existing development west of the site. Placement of a water quality basin would ideally be in the western open space tract, which is adjacent to existing townhomes. The drainage areas planned for the existing storm sewer would increase if we try to get the proposed roadway area to a water quality basin located in the open space tract. The basin would discharge to an existing field inlet west of the tract causing capacity concerns in the existing storm line the basin would drain to. Taking into account the existing storm sewer impact and the basin overflow from larger rain events being contracted at the existing townhome yards, placing a basin in the tract would have a negative impact on the existing development.

Since the impervious area has decreased from the previously approved layout, the proposed layout is in compliance with the previously approved storm drainage study. We are recommending no water quality treatment for the north area, to avoid a potential negative impact on existing homeowners.

III. CONCLUSIONS AND RECOMMENDATIONS

The proposed site layout reduces the impervious area when compared to the Eagle Creek development plan and will a positive impact on drainage in the area. Due to the approved storm study for the Eagle Creek development waiving detention requirements for the site, only the water quality storm event will be detained prior to releasing into the existing creek. Based on the information provided, Olsson requests approval of this stormwater drainage report for the proposed development of Eagle Creek Villas.