

# **STORMWATER DRAINAGE REPORT**

## **EAGLE CREEK VILLAS**

### **Prepared for:**

Hunt Midwest Real Estate Development, Inc.  
8300 NE Underground Drive  
Kansas City, MO 64161

### **Prepared by:**

Olsson  
1301 Burlington Street, Suite 100  
North Kansas City, MO 64116

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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 Hook 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 the area 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 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's 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 methods have been adopted by the city. The city has requested with this updated development plan, consideration for water quality basin be reviewed. In review of the layout, a water quality basin is being proposed on south of Eagle View Drive, on the western part 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 Eagle View Drive, no water quality basin is proposed. The impervious area has decreased for this area due to change from townhomes to single family villa lots, which will help with stormwater runoff. Along with the decrease of impervious area, this area has limited space and is restricted by existing development on the west side of the site. Placement of a water quality basin would ideally be in the western open space tract, which is adjacent to existing townhomes. Along with concerns of basin placement and how the overflow from larger rain events would be contracted at the existing townhome yards more than the existing conditions, the drainage areas planned for the existing storm sewer would increase if trying to get the roadway area to the water quality basin causing capacity concerns on the existing line. Since the impervious area has decreased from the previously approved layout along with still in compliance with the previously approved storm drainage study, we are recommending no water quality treatment for this area, to avoid potential negative impact on existing homeowners.

### **III. CONCLUSIONS AND RECCOMENDATIONS**

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.

# **APPENDIX A**

## Eagle Creek Villas Water Quality Calculations

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Lee's Summit, MO

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