

Spencer's Cove

Preliminary Drainage Report

May 31, 2006

I. Introduction

Bannon Auction and Realty has planned a commercial development located in Section 6 of Township 27 South, Range 1 West. The tract is located on the south side of 29th Street approximately 330 feet to 1650 feet west of Maize Road, with a depth of 600'. This project will encompass approximately 18.2 Acres. The proposed development is called Spencer's Cove for platting purposes.

The property is located in a region referred to as the Cadillac Lake Drainage Basin. Dramatic changes in the hydrology affecting the Cadillac Lake Basin and this property are in various stages of planning and implementation at this time. The reconstruction of 29th Avenue will have a significant impact on the rate and location that stormwater will enter this property, and presently a stormwater study of the Cadillac Lake basin is being performed by PEC, Inc. Subsequent improvements as a result of this study could have a substantial impact on the rate of flow and elevation that stormwater will exit this property. It is with the understanding that drainage improvements associated with the outcome of the Cadillac Lake Drainage Study could involve both lowering of the regional discharge structure which crosses Maize Road as well as lowering the channel from that structure to detention facilities west of Maize Road, including the facility proposed for the Spencer's Cove site. This report will consider these possibilities in the development plan.

A preliminary Sketch Plan for the proposed development is attached as part of this report. The Sketch Plan is in conformance with the previously submitted and approved zoning plan. This plan provides for the inflow of water onto the Spencer's Cove development through the proposed structures which would be built with the 29th Avenue improvements, and include an extension of the 2-10'x3' RCB culverts south onto the development. The flow would be channelized south into an excavated basin on the south half of the proposed Parcel 4 and all of Parcel 5. Flow exiting the property would be either unaltered from its present state or adjusted as best to accommodate neighboring property developments.

II. Detention Information

The elevation of the base flood elevation (BFE) for this area, typically referred to as the 100 year flood, has been identified as Elevation 1350 msl in various city and state approved applications and permits. A topography survey of the property prepared by the Baughman Company was utilized to determine the existing conditions. The information from this survey was used to identify that the volume of storage available on this property for stormwater below elevation 1350 msl is 31.4 Acre-Ft. It is our understanding that it is a standard practice in the Cadillac Lake Basin to provide 110% of the existing detention capacity below the BFE of 1350 msl following development, which would create a target volume of 34.5 Acre-Ft for the Spencer's Cove subdivision.

The topographic information indicates that presently the surface water evacuates the property along the eastern line at an approximate elevation of 1346.0. Based on the utilization of this elevation as the discharge elevation from a holding pond on site, the available detention would be 27.0 Acre-Ft following the sketch plan. It is estimated that it would be necessary to pump to an elevation of 1344.7 to provide the 34.5 Acre-Ft of detention being targeted. The discharge rate required to evacuate the basin from 1346 to 1344.7 would range from 1700 GPM in 24 hours to 425 GPM for a 96 hour window.

The present concept for this basin is to provide for detention to either a static water level based on pumping or to a static water level at lower than existing conditions based on an improvement tied to the outcome of the Cadillac Basin drainage study. It is conceivable that the discharge flowline from the Spencer's Cove tract could be lowered by as much as three feet if conceptual improvements being considered for the Cadillac Lake Basin progress to completion. If the static water level could be lowered to elevation 1343.0, the detention available on the property below the BFE would be increased to 44.4 Acre-Ft, an increase of over 40% from present conditions.

The Sketch Plan provides for the lots to be built up to a minimum building pad elevation of 1353.0, with the fill coming from the proposed on site basin. The proposed basin is projected to be excavated to base elevation of 1337. The total capacity of the proposed basin below the BFE at the base of the basin is 75.9 Acre-Ft.

III. Conclusions

The Spencer's Cove development will be able to provide an additional ten percent detention capacity above present conditions with pumping requirements, and potentially can provide for a substantial increase in detention should Cadillac Lake basin improvements be implemented which would lower the outflow channel. Drainage on site would be accommodated by a wet basin constructed in the development which would provide for fill requirements on site and stormwater management post development.

Respectfully Submitted,

Sid Arpin, P.E.
BG Consultants, Inc.