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MEMORANDUM

TO: Laura Terway, AICP
FROM: Mike Towle, PE
DATE: November 27, 2018
SUBJECT: The Cove Waterfront Residences – Flood Plain Analysis

The following is a summary of The Cove Waterfront Residences and the impact on the floodplain. The proposed project will construct Multi-family and mixed-use buildings in existing Lots 3 through 7 (proposed Lots 3 through 10) located directly east of and adjacent to the Clackamette Cove. The project will also construct the required public improvements across the project frontage, including a new multi-use esplanade, and a new Agnes Avenue. In order to construct the Residences, fill is required to be placed on Existing Lots 3-7 and Agnes Ave in order to bring the buildings, parking, and emergency access above the floodplain elevation. The Residences will also include an underground parking garage that will be located below the floodplain elevation, and will act as floodplain storage during a flood event.

Flood Plain Impact Requirements:

In order to raise the Existing Lots 3-7 site as well as Agnes Ave, a large amount of fill is required to be placed within the flood plain. Per the code, the impact to the floodplain volume created by the fill needs to be offset by cutting the same amount of volume elsewhere within the flood plain.

Phase 2 Floodplain Capacity Analysis

The following data summarizes the floodplain capacity by detailing the amount of earthwork completed within the floodplain. The data was calculated by comparing the existing ground surface within the project limits to the floodplain elevation of 50.7 and analyzing the volume located between the two surfaces (represented as the cut volume shown on the supplemental Volume Reports attached).

The same calculation was completed for the Final Grade surface by comparing the final grades to the flood plain elevation of 50.7 and looking at the volume between the surfaces. The final volume was then compared to the existing volume to determine if a positive or negative impact was created. A final grade showing more “fill” volume than the existing grade comparison would mean that an increase in floodplain storage was created by the grading activity (Tract A, North Park, and Esplanade). A decrease in capacity is represented by a final grade volume showing a smaller “fill” value meaning that there is less volume beneath the floodplain after the grading activity is completed (Existing Lots 3-7 and Agnes Ave).

When looking at the Supplemental volume reports, volume noted as Cut represents volume above the floodplain elevation and for the purposes of this analysis does not have any positive or negative impact on storage volumes.

Floodplain Capacity Analysis Results

The following analysis was calculated using the final grade surfaces after all improvements have been completed.

North Park Amphitheatre creates 750 CY of surplus floodplain capacity.

Esplanade bike path and bank grading creates 67,450 CY of surplus floodplain capacity.

Waterfront Residences create 52,600 CY of floodplain impact.

Agnes Ave road construction creates 11,300 CY of floodplain impact.

Tract A grading creates 2,450 CY of surplus floodplain capacity.

Total volume created within the floodplain from all cut activities is ~70,650 CY. The total impact to the floodplain from all fill activities is ~63,900 CY. Since the volume created is greater than the volume impacted, the project will generate an increase in the floodplain capacity. Tract A grading may be increased, decreased, or removed depending on the final floodplain balance between the other sites above.

Interim Floodplain Capacity Analysis

As part of the Waterfront Residences project, a considerable amount of “Mass Grading” is being completed prior to the final stabilization of the project. As part of this process, excavation will occur at the Tract A, North Park, and Esplanade cut sites and will be placed onto the Waterfront Residences and Agnes Ave fill sites in preparation of the final grading and building construction. A separate Mass Grading permit will be obtained from the City to complete this work.

Prior to the placement of the final grades, an interim “subgrade elevation” will be created along the site. This elevation varies from 1’ to 3’ below the final grades shown on the plans. This drop in elevation will account for the placement of fill required for pavement sections, building pads, topsoil, etc. Because the surface will be left below the ultimate grades on Existing Lots 3-7, the Esplanade, and Agnes Ave, the interim floodplain capacity will be greater than the final volume.

A subgrade surface was designed in AutoCAD for the Waterfront Residences, Agnes Ave, and the Esplanade. A comparison between this subgrade surface and the floodplain surface shows that the subgrade surface will provide an additional 54,000 CY of floodplain storage when compared to the existing condition, and an additional 47,250 CY of floodplain storage when compared to the finished grade surface.

Summary

The Cove Waterfront Residences project is required to balance the impacts created on the floodplain storage. In order to offset the large fill volume that is placed on the Existing Lots 3-7 site, excavation will occur on Tract A, North Park, and Esplanade sites. These three sites together will be able to provide enough surplus floodplain capacity to offset the amount of floodplain impact caused by the Waterfront Residences and Agnes Ave construction, and provide an additional floodplain surplus capacity of ~6,750 CY. Tract A grading may be increased, decreased, or removed depending on the final floodplain balance between the other grading sites.

As part of the project, interim conditions will be left on the site after the mass grading is completed. This mass grading effort will leave the grades on Existing Lots 3-7 one to three feet below the final grades. This drop in the final grades will create ~54,000 CY of excess storage in the interim condition when compared to the existing grade.

Based on the interim and final analysis, The Cove Garden Apartment project meets the requirements of the balance cut/fill within the floodplain.