

Technical Memorandum



700 Washington Street
Suite 401
Vancouver, WA 98660
Phone (360) 737-9613
Fax (360) 737-9651

To: James Carothers, Wes Heigh, City of Camas

From: Tim Kraft

Prepared By: Tim Kraft, Ryan Billen

Copies:

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Subject: Review of Parkland Executive Residential
Subdivision and Parklands Business Park

Project No.: 18061

Otak has reviewed the preliminary TIR and associated documents and have provided comments in this memorandum. Note that this project is to follow the Camas Stormwater Design Standards and the 2012 Stormwater Management Manual for Western Washington.

Section E: Onsite stormwater management

The 2012 SMMWW requires on-site stormwater management to be used to the maximum extent practicable and has specific steps to be followed to determine the feasibility of using LID BMPs. Note that along with roof downspouts, Ecology considers BMP T5.13 Post-Construction Soil Quality and Depth feasible for all sites.

Section F: Runoff Treatment and Design

The TIR states “There are no pollution-generating pervious surfaces (PGPS) on this project”. Page 2-6, Volume I of the SMMWW defines PGPS as including “lawns, landscaped areas,....”.

Section G: Flow Control Analysis and Design/ Section H: Flow Control System Plan

This section states” Flow control facilities are not required for this project since the discharge is to an exempt water body – Lacamas Lake”. To use this exemption, Page 2-31, Volume I of the SMMWW states:

“The project site must be drained by a conveyance system that is comprised entirely of manmade conveyance elements (e.g. pipes, ditches, outfall protection, etc.) and extends to the ordinary high water line of the exempt receiving water, and

The conveyance system between the project site and the exempt receiving water shall have sufficient hydraulic capacity to convey discharges from future build-out condition;

The discharge from this project does not meet these two criteria; therefore, this project is not exempt from Minimum Requirement 7.

This section mentions “soil amendment or replacement to replicate HSG B soil characteristics”. It’s not clear how this being applied; however the SMWW provides criteria on how to obtain credit for the use of soil amendments for meeting Minimum Requirement 7.

This section discusses the use of bioretention systems to attenuate flows; however, it’s not clear if bioretention systems are proposed for this project.

Section I: Wetland Protection

Page 11 of the TIR references two sources for wetland protection measures:

- “Guide Sheet 1B in Appendix I-D” of the 2012 SMMWW, and
- “Section 4 Management of Freshwater Wetlands in the Central Puget Sound Basin, Chapter 13”.

The following comments have been developed after reviewing these two sources of guidance on wetland protection for the project:

- i. The Parkland TIR references “Guide Sheet 1B in Appendix I-D” of the 2012 SMMWW. In the 2012 manual, the applicable guide sheet is “Guide Sheet 3: Wetland Projection Guidelines, and is comprised of three different guide sheets: 3a, 3b, and 3c. It is anticipated that these guidelines from the 2012 manual will be applicable to the project.
- ii. Guide sheet 3B provides guidance on protecting wetlands from impacts of changes in water flows, and states:

“Use the Western Washington Hydrology Model (WWHM), or other models approved by Ecology, for estimating the increases of decreases in total flows (volume) into a wetland that can result from the development project”

Guide Sheet 3B also provides specific modeling criteria for demonstrating that monthly or daily discharge volumes associated with the project will fall within an acceptable range.

- iii. The Parkland TIR uses the 2012 WWHM to calculate volumes, but does not use the methodology outline in Guide Sheet 3B to demonstrate that daily or monthly volumes will fall within the acceptable range. The Parkland TIR also contains a single event hydrology model to demonstrate compliance with the duration standard; however, single-event models are generally not approved by Ecology for hydrologic modeling applications such as wetland hydroperiods. Furthermore, the single event model is unnecessary to show compliance with

regulatory standards since an acceptable method using WWHM is outlined in Guide Sheet 3B.

- iv. The TIR's reference to "Section 4 Management of Freshwater Wetlands in the Central Puget Sound Basin, Chapter 13" provides background on the water frequency level approach utilized in the Parkland TIR in conjunction with the single event duration model. However, Guide Sheet 3B in Appendix I-D of the 2012 SMMWW states:

It is difficult, to estimate if stormwater discharges to a wetland will meet the criteria for protection developed by the Puget Sound Wetland and Stormwater Research Program. The criteria developed by that program apply only to depressional wetlands. They are not applicable to riverine, slope, or lake-fringe wetlands.

Based on the wetland description in the TIR, it appears that the wetlands on the project site might be slope wetlands rather than depressional wetlands. In such case, the water frequency level approach outlined in Section 4 Management of Freshwater Wetlands in the Central Puget Sound Basin, Chapter 13 would not provide suitable guidance for evaluating the wetland hydroperiod on the project site.

- v. The Parkland TIR states that "The watershed area to this portion of the wetland complex had been reduced from about historically 94 acres to a current area of about 71 acres" as a rationale for using ~94 acres as the predeveloped basin area for modelling purposes, however, there was no discussion regarding how long ago the basin boundaries changed and if the wetlands have adjusted to the current basin conditions.

Appendix B

This appendix discusses how each minimum requirement is being met. For Minimum Requirement 7, the following statement is made: *"The wetland area discharges northerly through the continuation of the wetland complex to the ordinary high water line of the exempt receiving water."*

Minimum Requirement 7 states: *"The project site must be drained by a conveyance system that is **comprised entirely of manmade conveyance elements** (e.g. pipes, ditches, outfall protection, etc.) and extends to the ordinary high water line of the exempt receiving water"*.

The wetland is not a "manmade conveyance element", and the site does not discharge stormwater through manmade conveyance elements to the ordinary high water line of Lacamas Lake. Therefore, the project is not exempt from Minimum Requirement 7.

It does not appear that the wetland complex discharges to Lacamas Lake, but rather to Lacamas Creek as short distance upstream of Lacamas Lake. Lacamas Creek is not listed as a flow control exempt water body.

Appendix C

More information is needed here on the applicability of the modeling results included in this appendix to meeting MR 7 and MR 8.