

Technical Memorandum #17



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

To: Robin Krause, PE
From: Tim Kraft, PE; Andrew Stoeckinger
Copies: File
Date: May 8, 2008
Subject: Impact of the 1955 Standard on Proposed
Redevelopment Standards
Project No.: 14505

The purpose of this memo is to determine the extent or likelihood that a project would not have flow control requirements under the proposed 1955 standard. This memo does not provide a statistical analysis, but simply a brief review of randomly selected redevelopment projects that were completed in recent years.

The proposed draft of the stormwater code states that redevelopment projects within watersheds that have had less than 40% forest cover since 1955 are permitted to use the pre-developed condition that produced the least runoff from the project site since 1955. This is referred to simply as the 1955 standard. Clark County is proposing to submit a pre-development land cover requirement that is dependent on the site land cover in 1955. This land cover will be used in a hydrologic model to determine the flow control requirement for a particular project.

In general, a pre-developed land cover that is predominantly impervious will likely require a smaller detention pond volume under developed conditions than a site that is mostly pervious. The 1955 Standard creates a potential scenario where flow control would not be required for a site. Indeed, that was the case for the example redevelopment project presented to the Board during the work session on March 12, 2008.

The 1955 aerial photographs of 12 separate parcels that have recently redeveloped were reviewed. The properties reviewed for this exercise are within the current urban growth area of Vancouver. Out of the twelve parcels observed, ten were found to have less than 50% impervious area in 1955. The results of this analysis can be found in Table 1 below.

Table 1. Land Cover Types Estimated from 1955 Aerial Photographs

Parcel Number	Estimated Impervious Area in 1955 (%)	Estimated Area of Trees/Orchard in 1955 (%)	Estimated Area of Open Field in 1955 (%)	Estimate of Existing Impervious Area (%)	Detention Requirement in Comparison to Forested Predeveloped Cover
165663-000	0	15	85	80	Reduced
148041-000	85	0	15	90	Greatly Reduced
145347-000	50	0	50	90	Greatly Reduced
145256-000	20	40	40	95	Reduced
145253-000	0	5	95	90	Reduced
097855-000	15	60	25	75	Reduced
145118-000	10	15	75	90	Reduced
117907-000	40	40	20	90	Greatly Reduced
118256-140	20	65	15	70	Reduced
162608-005	35	0	65	80	Greatly Reduced
145813-000	0	10	90	85	Reduced
186540-000	0	0	100	90	Reduced

When reviewing the aerial photographs of these sites, it became apparent that there were no forested areas present on any of these sites in 1955. The distinction between a forested land cover and tree/orchard land cover is the lack of duff material on the ground under most orchards or yard trees. The primary quality of a forest that reduces runoff is interception of rainfall by the canopy and secondarily by the duff ground material, which absorbs rainwater and slows runoff. Orchards typically have bare ground cover and no leaves in the canopies during the rainy winter months; therefore, they would not have a significant runoff reduction in comparison to a true forested condition. The open field areas generally refer to a grassed ground cover, but the condition of the grass could not be determined from aerial photographs. Nevertheless, grass cover should produce more runoff than forested cover.

These assumptions were taken into account when estimating the relative detention requirement for each site. The existing redevelopments on each of these sites were estimated having from 70% to 95% impervious surface area. Sites that have more onsite impervious area are more likely to produce greater runoff rates than more pervious sites. Therefore, the estimated detention estimates listed in Table 1 are based on the difference between the impervious surface area of the site in 1955 and the existing onsite impervious surface area.

Only one of the twelve had enough impervious ground cover (85%) in 1955 to potentially eliminate the need for some level of flow control as part of the redevelopment project. All sites had a higher percentage of impervious land cover prior to redevelopment as compared to 1955 conditions.

Although exceptions do exist, most redevelopment sites will require some level of flow control when applying the 1955 standard, thereby reducing the flows leaving sites prior to redevelopment.