

December 11, 2002

File: 4216601.7

Lacombe County
R.R. #3
Lacombe, Alberta
T0C 1S0

Attention: Allan Williams

RE: WESTEND LANDING STORMWATER MANAGEMENT

The purpose of this letter is to present the preliminary design concept and considerations for the Westend Landing stormwater management system.

The proposed development of this area includes paved roads and residences for each lot. As stated in the development plan, the majority of the site will remain in its natural state including heavily treed areas and wetland low areas. The overall increase in impervious area is approximately 6%, which does not create a significant increase in the runoff. For comparison, an average urban development has impervious areas greater than 50% of the site and major drainage is conveyed by impervious surfaces such as roadways and concrete swales. Therefore, the increase in the quantity of stormwater runoff from this site due to development is negligible.

The drainage concept for Westend Landing maintains the current overall drainage patterns with the majority of runoff directed to the central wetland low area and the remainder contained by the berm along the shoreline, adjacent to the lake. Due to this berm, runoff is not discharged directly to the lake except in extreme events. Runoff dissipates through infiltration and evaporation. Based on the road layout, runoff will be directed to these areas through a series of ditches, culverts and overland routes. Several important features of this system are noted on the attached plan.

1. Off-site drainage enters the site at the northwest corner through an existing gully. A culvert under the roadway will maintain the natural drainage path to the wetland low area. This culvert must be adequately sized to handle upstream flow. A more detailed analysis of the upstream catchment area is required during detailed design to quantify this flow. Other roadway culverts will be sized accordingly for road drainage during detailed design. Driveway culverts are to be a minimum of 450 mm in diameter.

2. The majority of drainage is directed to a central wetland low area, which is best described as a treed marsh. This area will remain undisturbed and will continue to service the current catchment. It is important to maintain the drainage patterns that contribute to this area in order to preserve the current ecosystem.
3. Culverts may be required at several locations to direct flow from the roadside ditches to the wetland low area. This will avoid surface conveyance along pathways and walking trails. In areas where concentrated flows discharge to the ground, riprap aprons will be necessary to avoid erosion.
4. Due to the steep grades along the roadway, rock check dams must be installed to slow the velocity of the runoff in the ditches and prevent erosion. Synthetic equivalents such as Georidge may also be used. Spacing of these structures will be determined at detailed design based on the road grades and ditch profile.
5. A natural drainage course runs through Lots 24 and 13. This provides the overland spill for the wetland low area in extreme runoff events. A drainage easement may be required on Lots 23/24 and 14 to maintain a route to the lake. If possible, the natural contours should be followed to minimize the grading on the lots. This also represents a low point in the roadway profile. Runoff from the roadway parallel to the lake will collect in the ditches. In this area, infiltration trenches will be built to promote seepage into the ground. In an extreme event, this ponding area will flow to the lake through the overland escape routes.

The residences for this development will be elevated above the surrounding grades to ensure positive drainage away from the foundations. The remainder of runoff on the lots will follow natural drainage paths to the areas summarized above.

Several Best Management Practices (BMPs) including riprap aprons and rock check dams have been noted above. Other BMPs are required during construction including silt fences and dust control. Silt fences must be installed and maintained around construction activity and along overland flow paths until vegetation provides sufficient coverage of disturbed areas.

The majority of this site will continue to function as per current conditions with no significant increase in runoff volumes. Stormwater will be dissipated through infiltration and evaporation in the existing central wetland and rear east lots adjacent to the lake. Structures such as culverts and ditches will safely convey runoff to these areas, and BMPs such as riprap aprons and check dams will prevent erosion.

We trust this information is sufficient to provide an overview of the proposed stormwater management system for Westend Landing. If you have any further questions or concerns, please contact either Martin Grady or myself at 291-1193.

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Yours truly,

URBAN SYSTEMS LTD.

Craig Dickie, P.Eng.

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Enclosure