March 21, 2019

PROJECT DESCRIPTION: This site was previously the location of Grandview Lodge and Resort and consisted of eight cabins, three condominiums, a lodge with a boat ramp and dock, maintenance and storage buildings and a mobile home. Attached is a Previous Site Plan Map showing the relationship of these structures to adjacent parcels and Reeder Bay Road. This plan was part of a preliminary survey by J. A. Sewell and Associates around July 2015 and defines the area as +/- 4 acres with the boundary defined by the previous Warranty Deed Inst. # 855598. When weather permits, this boundary and acreage will be verified by survey.

The Proposed Site Plan Map shows a revised access to Reeder Bay Road and a change in use to a large scale residential P.U.D. Two different styles of duplex condominiums are being proposed. There will be four duplexes utilizing the Unit A design and seven duplexes utilizing the Unit B design.

PROJECT ACCESS: Access to the site from Nordman is via Reeder Bay Road.

SOIL TYPE: The Web Soil Survey list site soils of the Caribouridge-Stien families having a shallow silt loam layer with underlying very cobbly, coarse sandy loam. It is considered a well draining soil with rapid runoff. The surface is covered with a mat of leaves, twigs and needles amongst gravelly, sandy soil. These surface conditions were confirmed on site.

STORMWATER CRITERIA: Bonner County requires that stormwater not leave any site faster than the pre-development peak flow rate for a 25-year storm event. The first ½” of runoff from the difference in impermeable surfaces must also be treated.

The site presently drains to Priest Lake to the south. Development of the property will continue to route runoff as it has historically. The attached Site/Stormwater Management plan shows the relationship of the new impervious surfaces to the site. The attached
calculations show a decrease in peak flow of 0.02cfs and a decrease in impermeable surfaces of 0.18 acres.

EROSION/SEDIMENTATION: Temporary erosion and sedimentation control will be accomplished through the use of silt fencing and straw waddles constructed and maintained before the point of discharge as described on the plans. All barriers will be installed prior to construction, placed perpendicular to the line of flow and inspected and maintained by the contractor until vegetation has been reestablished and the stormwater system is in place. Disturbed areas will be vegetated or paved according to the plans. Existing native plant vegetation and tree canopy below the residences will be preserved to maximize the treatment available from established vegetation. Staging areas and stock piles are to be covered and have straw waddles placed below them when not in use. Washing off of vehicles and washout of concrete trucks is to occur off-site.

OPERATION AND MAINTENANCE PLAN: To keep erosion to a minimum, areas to be vegetated will be seeded and mulched upon final grading. Newly planted areas will be inspected after large storms for erosion until well established. Eroded areas will be replaced.

Inspection schedule and timing: At a minimum, inspection is to take place once every 7 days, within 24 hours of an anticipated storm event of 0.5 inches or greater, and within 24 hours of the end of a storm event of 0.5 inches or greater.

The Contractor will be responsible for maintenance of the system until the HOA has authority.

CONSTRUCTION SCHEDULE: Erosion control measures are to be installed in the Spring of 2019. Construction on site is proposed to follow with the revitalization of the existing well on site. A second well will be developed subsequently if required. Infrastructure will follow including the development of all roadways and the water distribution system. Building of each condominium unit will begin shortly thereafter. The expected time frame to complete all units is in the Spring of 2021.
STORMWATER SYSTEM CALCULATIONS SUMMARY

The Rational Method with a 25-year return period was used for calculations in conjunction with the ITD intensity-duration-frequency curve.

Pre-Development Peak Flows
Area (A) = 4.0 +/- ac
Existing Structures, sidewalks, concrete pads and walls = 41,729 sf = 0.96 ac
Paved Roadway = 2,800sf = 0.06 ac
Graveled Roadway = 35,389sf = 0.81 ac
Remaining Natural Vegetation / sandy soils = 2.17 ac
Composite Runoff Coefficient (C) = 
\[ ((1.02)(0.9) + (0.81)(0.85) + (2.17)(0.15))/4 \]
Runoff Coefficient (C) = 0.48
Rainfall Intensity (I) = 0.51 in./hr (25 yr – 2 hour return period)
Peak Flow = CIA= 0.98 cfs

Post-Development Requirements
New structures, Paths = 57,864 s.f = 1.33 ac
New Paved Roadway = 18,404 sf = 0.42 ac
Remaining Natural Vegetation = 2.25 ac
Area (A) = 4.0 +/- ac
Composite Runoff Coefficient (C) = 
\[ ((1.75)(0.9) + (2.25)(0.15))/4 \]
C = 0.48
Rainfall Intensity (I) = 0.51 in./hr (25 yr – 2 hour return period)
Peak Flow = 0.98 cfs
Difference in Impervious surfaces = 1.83 – 1.75 = 0.08 ac
With no change in peak flows and less impermeable surfaces, no further detention or treatment is required.

The attached plan and this document were prepared by the undersigned, whose seal as a licensed professional engineer, is affixed below.

CLEARWATER ENGINEERING
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