

STORMWATER MANAGEMENT PLAN

FOR
Hotel Ruby – Site Expansion
477255 Highway 95
PONDERAY, IDAHO

March 5, 2021

PROJECT DESCRIPTION: GVD Commercial Properties, Inc. owns and operates Hotel Ruby. The company is making improvements to the business by extending the north/south travel way up to GVD's northern parcels and developing those two northern parcels. The extension and improvements to the area presently developed around the Hotel will require eliminating 8 parking stalls to the north by the spa. The Hotel will have 93 stalls adjacent to the building where only 69 are required. The change in impervious surfaces for the present Hotel site is an increase of 1,275.7 sf and will be included with the required treatment and detention for the northern parcels.

The two northern parcels will be developed in 3 Phases.

- Phase 1 will be the construction and paving of the western parking lot, the pavilion, the restroom, site grading including east parking lot, ponds, some utilities and the trail system.
- Phase 2 will be the addition of 6 cabins with associated utilities and the paving of the eastern parking lot.
- Phase 3 will be 2 additional cabins and 9 tent sites.

The assumed cabin footprints will be 252 sf and 180 sf, 4 of each.

The assumed tent footprints will be 100 sf each.

SOIL TYPE: The Soil Conservation Service's Soil Survey of the Bonner County Area lists soils in this area as Mission Silt Loam. This soil type is generally mildly sloping with somewhat poorly draining soils.

STORMWATER CRITERIA: Ponderay 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 new impermeable surfaces must, also, be treated. Existing impermeable surface square footage was included in pre-development flow rates to better depict the change in runoff.

Grassed Infiltration Areas (GIAs) were initially constructed on site during the building of the Microtel Motel in 1996. The addition of a spa to the hotel in 2014 required the expansion of the GIA to the northeast. Development of the properties will continue to route runoff as it has historically to the existing two most northern GIAs. There is a small area that presently drains to Piehl Road ditches, also. The attached New Site Plans shows the relationship of the new impervious surfaces to the stormwater features.

EROSION/SEDIMENTATION: Temporary erosion and sedimentation control will be accomplished through the use of silt fencing 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. All disturbed areas will be vegetated, graveled or paved according to the plans.

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 owner, GVD Commercial Properties, Inc., will be responsible for maintenance of the system.

CONSTRUCTION SCHEDULE: Erosion control measures are to be installed in the Spring of 2021 followed by site grading, installation of some utilities, construction of the extended travel way and new parking areas, and then the construction of the pavilion and restroom. The trail system and ponds will be completed next. Phase 2 may be accomplished in the Fall 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)= 4.40 ac

Ex. Home, Garage, Storage Units = 8,478.77 sf = 0.195 ac

Ex. Gravel Driveways = 14,321.77 sf = 0.329 ac

Ex. Natural Vegetation = 3.876 ac

Composite Runoff Coefficient (C) = $[(0.195)(0.9)+(0.329)(0.8)+(3.876)(0.25)]/4.40$

C= 0.320

Rainfall Intensity (I) = 1.05 in. /hr (25 yr – 37 minute return period)

Peak Flow = CIA= 1.478cfs

Post-Development Requirements-Includes All 3 Phases

Area (A)= 4.40 ac

Ex. Home, Garage, Storage Units = 8,478.77 sf = 0.195 ac

Additional Impervious Surfaces (pavement, structures) = 30,297.57 sf = 0.627 ac

New Impervious Area Total = 0.195 + 0.627 = 0.822 ac

Ex. Gravel Driveways = 14,321.77 sf = 0.329 ac

Additional Gravel Paths = 13,256.5 = 0.304 ac

New Gravel Area Total = 0.329 + 0.304 = 0.633ac

Lawn, GIAs and Landscaping = 4.40 - 0.822 – 0.633 = 2.945 ac

Composite Runoff Coefficient (C) = $[(0.822)(0.9)+(0.633)(0.8)+(2.945)(0.3)]/4.40$

C = 0.484

Rainfall Intensity (I) = 1.35 in. /hr (25 yr – 24 minute return period)

Peak Flow (CIA) = 2.875 cfs

Difference in Peak Flows = 2.875- 1.478 = 1.397 cfs

Required Detention = 1.397 cfs X 37 min X 60 sec/min = 3,101.55 cf

GIA #1; 155' length, 3:1 side slopes, 8" depth, 2' base = 416 cf
GIA #2; 78' length, 3:1 side slopes, 8" depth, 2' base = 210 cf
GIA #3; 238' length, 3:1 side slopes, 8" depth, 2' base = 639 cf
GIA #4; 142' length, 3:1 side slopes, 8" depth, 2' base = 382 cf
GIA #5; 3:1 side slopes, 8" depth, 1267 sf base = 888 cf
GIA #6; 3:1 side slopes, 8" depth, 384 sf base = 283 cf
GIA #7; 110' length, 3:1 side slopes, 8" depth, 2' base = 296 cf
GIA #8; 316' length, 3:1 side slopes, 8" depth, 2' base = 849 cf

Total detention = 3,963 cf > 3,101.55 cf

Post-Development Impermeable surfaces = 30,298+ 13,257= 43,555 sf
Required Vol. to be treated (1st 1/2") = (43,555 sf) X 0.5in X 1/12 ft/in = 1,814.79 c.f < 3,101.55 cf

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

CLEARWATER ENGINEERING
Debra M. Van Dyk, P.E., Principal
P.O. Box 251; Sandpoint, Idaho 83864



A handwritten signature in cursive script that reads "Debra M. Van Dyk".

3/5/2021