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SITE ASSESSMENT REPORT - Re. Suitability for Onsite Sewerage - Proposed Zoning Revision

Subject property:

Lot A, District Lot 116, Alberni District, Plan VIP8822
PID 005 470 056 Assessment roll 04 770 01465.000
8102 Wellham Road, Port Alberni, BC

Property Owner:

Frederick G. Boyko

Date of this report: October 19, 2022

Date of site assessment: October 17, 2022

BACKGROUND:

The owner is making application for a zoning amendment to facilitate construction of four cabins for short term rentals/temporary accommodation. The owner has requested my assessment of the property to determine the suitability for onsite sewerage systems for the proposed rental units. The existing lot is eight hectares, with potable water supply by an on-site well.

METHODOLOGY:

To determine suitability for onsite sewerage, I conducted a site and soil assessment including excavation of test pits and permeability testing. Test pit locations are depicted within the attached drawing.

My conclusions regarding the suitable locations and required area for the tanks and the dispersal system (drain field) are reported with regard to horizontal separation standards, vertical separation and other system selection and configuration standards of the BC Ministry of Health Sewerage System Standard Practice Manual. A preliminary design concept is provided to indicate suitable options for onsite sewerage systems that would comply with the BC Sewerage System Regulation.

CONCLUSIONS:

The property has suitable area and soil conditions for a primary and a reserve sewerage system in compliance with the applicable regulation (BC Sewerage System Regulation) and the applicable standards of practice (BC Sewerage System Standard Practice Manual).

Compliance with the BC Sewerage System Regulation (SSR)

The requirements of the SSR are easily met, including:

- The SSR requirement to construct systems in accordance with 'standard practice', and in a manner that does not cause or contribute to a health hazard ... with regard to the Sewerage System Standard Practice Manual.
- The SSR requirement for horizontal separation to wells (minimum 30 m).
- Additional requirements of the SSR can be easily achieved at the design and construction stage including 'construction and maintenance only by Authorized Persons' and the prescribed Filing and Certification submissions to the Health Authority.

Compliance with the BC Ministry of Health's Sewerage System Standard Practice Manual (SPM)

Soil conditions and site constraints meet the system selection and configuration standards of the SPM for simple type 1 treatment (by septic tank only) and conventional drain field with uniform dispersal. The proposed sewerage system is generally characterized as conventional, low risk and moderate cost. A raised sand mound configuration is not required ... and advanced pretreatment (type 2 or 3) is not required for SPM compliance.

Test pits indicate 60 – 75 cm depth of unsaturated and permeable native soil above glacial till and above estimated seasonal high-water table. The relevant SPM standard requires the drain field 'wetted surface' to be at least 60 cm above the shallowest limiting condition. To meet that standard, the proposed drain field is a uniform dispersal (pressure distribution) rock aggregate seepage bed with the infiltrative surface elevation approximately equivalent to original grade, resulting in cover soil approximately 45 cm above original grade.

The proposed locations comply with the SPM horizontal separation standards, including the minimum setbacks to the ponds and 'swamp'. The relevant standards are minimum 15 m from drain field and minimum 10 m from tanks to intermittent water bodies – achieved by the proposed locations.

Preliminary design concept:

- Capacity determined as per SPM Table II- 9, seasonal cottage category. Four proposed cabins, each with up to three persons typical occupancy,
3 x 250 L/person x 4 cabins = 3000 L peak flow daily design flow (DDF).
- Minimum septic tank volume as per SPM Table II- 32,
3 x 3000 L DDF = 9000 L,
Specified as a 2000 gallon (9080 L) concrete septic tank.
- Minimum pump chamber volume as per SPM Table II- 46,
1 x 3000 L DDF
Specified as a 750 gallon (3400 L) concrete pump chamber.
- Sewage transfer from four cabins to the septic tank. With two 'lift stations' (one for each pair of cabins), each with a solids-handling sewage pump, within a fiberglass pump chamber (120 cm diameter, 180 cm high) with anti-floatation flange.
- Drain field configuration as per SPM standards, with pressure dispersal, minimum 100 m² area of infiltrative surface, 3 m maximum width, 33 m minimum length. Initially proposed as a 3 m x 35 m rock aggregate bed, placed at or above original grade, finished cover soil approximately 45 – 50 cm above original grade.

A preliminary design concept sketch is attached.
Detailed test pit logs are also appended.



Jim Andersen, ASCT, ROWP



APPENDICES

Test pit logs

Test pit #1, 3, 4, 6.

0 – 10 cm	Brown. Loamy sand texture. Strong grade, granular structure, moderately hard consistence. Approximately 15% coarse fragment content. Many fine – large roots. Dry. No mottling.
10 – 60 cm	Reddish grey. Loamy sand texture. Moderate grade, blocky structure, moderately hard consistence. Approximately 20 coarse fragment content. Many fine – large roots. Dry (October 17, 2022). No mottling.
60 cm +	Restrictive clays. No roots. Mottling (redoximorphic features).
	The shallowest limiting condition is estimated seasonal high-water table at 60 cm indicated by root growth limits and mottling. With restrictive clays also at 60 cm.

Test pit #2.

0 – 20 cm	Brown. Loamy sand texture. Strong grade, granular structure, moderately hard consistence. Approximately 15% coarse fragment content. Many fine – large roots. Dry. No mottling.
20 – 75 cm	Reddish grey. Loamy sand texture. Moderate grade, blocky structure, moderately hard consistence. Approximately 20 coarse fragment content. Many fine – large roots. Dry (October 17, 2022). No mottling.
75 cm +	Restrictive clays. No roots. Mottling (redoximorphic features).
	The shallowest limiting condition is estimated seasonal high-water table at 75 cm indicated by root growth limits and mottling. With restrictive clays also at 75 cm.

Test pit #5. (Inadequate depth for the proposed dispersal configuration)

0 – 30 cm	Brown. Loam texture. Weak grade, blocky structure, soft consistence. Approximately 10% coarse fragment content. Common fine – medium roots. Dry. No mottling.
30 cm +	Restrictive clays. No roots. Mottling (redoximorphic features).
	The shallowest limiting condition is estimated seasonal high-water table at 30 cm which would require a raised sand mound. The proposed drain field and reserve area will be located in a more favorable area.

Typical Test Pit



Preliminary Design Concept Sketch

Onsite Sewerage System Preliminary Design Concept Sketch

Proposed construction and site assessment information.

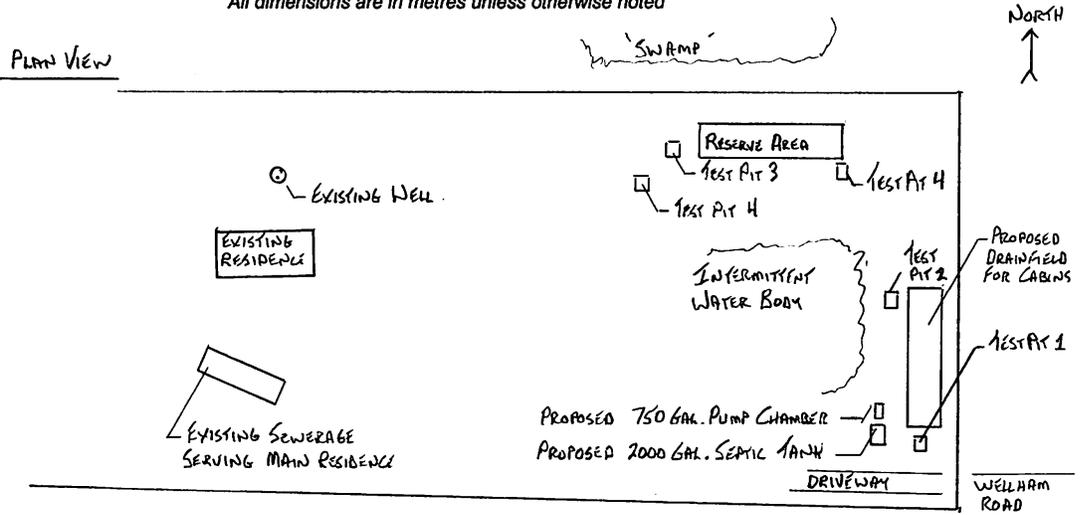
Client: Boko

Location: 8102 Wellham Road, Port Alberni, BC

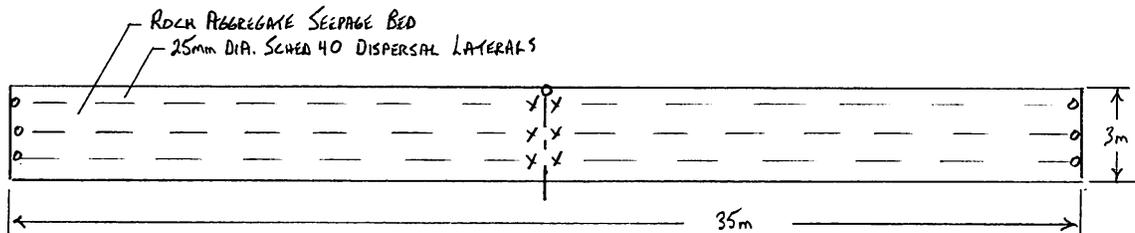
Drawn By: Jim Andersen, ASCT, ROWP

Date: October 19, 2022

All dimensions are in metres unless otherwise noted



DETAIL PLAN VIEW - PROPOSED DRAIN FIELD



DETAIL SECTION VIEW - PROPOSED DRAIN FIELD

