



**SEWERAGE SYSTEM LETTER OF CERTIFICATION**

Filing#: DC21/213 Folio or PID#: 009 - 785 - 965 Date: December 14, 2021  
 Civic Address: 7475 Bell McKinnon Road, Duncan, BC  
 Legal Description: Section 14, Range 6, Land District 61, Portion SW 10 AC Except Plan 33002

The construction of the proposed sewerage system on the above property was completed on: December 8, 2021

This system was installed:

- By or under the supervision\* of a professional Name: n/a Registration #: \_\_\_\_\_
- By a Registered Onsite Wastewater Practitioner Installer Name: Stewart Krumm Registration #: OW0033
- By the property Owner under the supervision\* of Name: n/a Registration #: \_\_\_\_\_

I am an "Authorized Person" as defined in the Sewerage System Regulation "BC Reg. 326/2004." **The signature and seal of the undersigned on this document certifies that:**

1. The Owner has been provided with:
  - A copy of the sewerage system plans and specifications as filed with the Health Authority;
  - A maintenance plan for the sewerage system that is consistent with standard practice;
  - A copy of this Letter of Certification as filed with the Health Authority;
2. The sewerage system has been constructed in accordance with standard practice as indicated in the Sewerage System Filing Form filed on (date) October 4, 2021 ;
3. The sewerage system has been constructed substantially in accordance with the plans and specifications filed with the Health Authority;
4. The estimated daily domestic sewage flow through the sewerage system will be less than 22,700 liters;
5. If operated and maintained as set out in the maintenance plan, the sewerage system will not cause or contribute to a health hazard.

\* Where the authorized person is a professional, "supervision" means conducting field reviews of the construction of the above system that the professional in his or her professional discretion considers necessary to ascertain whether the construction substantially complies with the plans and specifications filed with the Health Authority.

**Appended to this document is a plan of the sewerage system as it was built and a copy of the maintenance plan.**

Name (please print): <u>Stewart Krumm</u>	<b>Health Authority Use Only</b>
Signature:	<b>Vancouver Island Health Authority</b> <b>Environmental Health - Duncan</b> DATE RECEIVED
<b>Authorized Person's Seal</b> 	DEC 14 2021 <b>LS</b> Received By _____ (VHA Staff Signature)

N. Cow



Office: (250) 746-4277  
Fax: (250) 746-4257

Email: skseptics@shaw.ca  
Web: www.skseptics.ca

5881 Howard Ave, Duncan B.C. V9L 3N7

## Owner's Manual

December 14, 2021

### Owner's Responsibilities

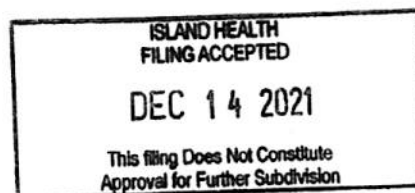
The new Sewerage System Regulations of (2005) require that an owner ensures the following:

- That the system be inspected and maintained in accordance with the maintenance plan included in this final package of documents. The frequency and scope of work are specified in the maintenance plan.
- That only Authorized Persons who are registered and certified as a Professional or a Registered Onsite Wastewater Practitioner construct, repair or maintain the sewerage system.
- That the owner maintains records of maintenance performed over the years.
- The owner does not misuse and neglect the system which will result in health hazards or risks to the environment.

### Record Keeping

The owner must keep all records including Health Authority forms, design specifications, record drawings, maintenance plans and owner's manuals. Copies of these documents have been filed with the local Health Authority as required.

- SK Septics has complete documentation pertaining to the entire design and installation process of this sewerage system
- The owner must obtain the appropriate documentation from the maintenance provider as maintenance is performed on the system.





## System Summary

**4 Bedroom house and a 2 Bedroom house** (Residential only)

**Total Living Area allowed:** 330m<sup>2</sup> & 240m<sup>2</sup> (3552 ft<sup>2</sup> & 2583 ft<sup>2</sup>)

**Daily Design Flow rate** 1600 LPD & 1000 LPD = 2600 Litres per day (352 & 220 = 572 GPD)

**Total Expected Average Daily flows (50%):** 800 LPD & 500 LPD (176 & 110 = 319 GPD)

**System:** Type 1 Treatment to C-33 sand mound discharge (not modified C-33 sand)

**Hydraulic Loading Rate (HLR) for infiltrative surface:** 35

**LLR:** 2600 LPD / 180 LLR = 14.4m (48 feet)

**Total bed size** = bed width 3m (9.8 feet) X bed length 23.6m (76 feet)

## Additional Site Information

- 4.89 acres
- The water provider is North Cowichan
- The property has easy accesses to tank and discharge area
- 10% Lot slope and 5% in the discharge area
- Equipment/aggregate delivery using the driveway

## Tanks

The tank excavation area is laid out on the site plan

9092 L (1700 gal) Concrete Two Compartment Tank

5455 L (1200 G) One Compartment Concrete Pump Tank

## Pump and Panel Settings

Rhombus IFS Simplex Electrical Panel with a transducer, high-water alarm, cycle counter, elapsed time meter, and audible / visual alarm are all part of the control panel.

The pump tank has an effluent pump controlled by a transducer set on timed dosing to help space out flow through the day and night. The timer is set to pump approximately 28.6 Gal every 2 hours and 24 minutes to the dispersal area.

The transducer is attached to a 1 ¼ inch PVC pipe.



**The alarm high water alarm is set at 26 inches.** The high water alarm activates a high level alarm to indicate failure of the pump or other problems causing the liquid level within the pump chamber to rise excessively.

This will allow approximately 340 gallons reserve space in the pump tank. At least 75% of daily design flow

**The timer override is set at 24 inches.** The override will override timer settings and activate the pump in heavy usage.

**The Timer enable float switch is set at 8 inches.** The timer enable indicates that no effluent requires pumping.

**The redundant off is set at 6 inches.** The redundant off will shut off the pump in the unlikely event that the timer enable fails to function. This will prevent the pump from burning out from continuous running.

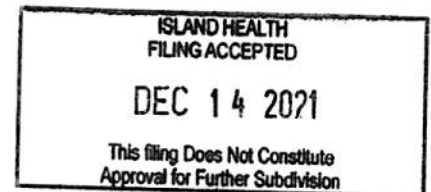
- Design flow rate per minute required is 73 gallons per minute
- Total dynamic head is 42 feet
- The Liberty FL 100 effluent pump will pump 80 gallons per minute in this application.
- Timer is set for pump to run for 22 seconds every 2 hours and 24 minutes
- 1 second = 1.333 gallons
- 22 seconds = approximately 29 gallons per cycle
- 24 hours = approximately 290 gallons per day in 10 cycles

## Discharge area

All work to follow the Standard Practice Manual.

Excavation for receiving area, sand mound and pea-gravel bed

- **Total bed size** = bed width 3m (9.8 feet) X bed length 23.6m (77 feet)
- **Scarify basal area and excavate** 13 inches into native soil and place 18 inches of C – 33 sand. Maintain a min. of 12 inches of native soil below sand mound.
- **Place** a minimum of 5 inches of clean 40mm rock on top of the sand for the rock bed area



## Rock Bed Size and Piping information

- 4 Laterals that are 77 feet long and center fed
  - 45cm from outside edge to outside laterals
  - 60cm between laterals
- Orifice spacing is 77cm on the pipe (30")
  - 5/32 orifice size
  - Orifice shields cover the drilled holes
  - 2 orifices per 0.56m<sup>2</sup>
- The manifold is 2 inch PVC
- Flush-outs are installed at the end of each line with two 45° fittings
- 32mm Ball valves to dial down each lateral
- Ensure all flush-outs and valves for the discharge area have proper valve-boxes to cover them in order to provide protection and later access
- Place 7 to 8 inches of sandy soil for cover on top of filter cloth

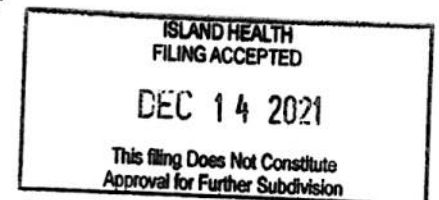
## Maintenance

The new (2005) Sewerage System Regulation requires owners to ensure their systems are maintained by authorized persons according to the maintenance plan provided. It is extremely important that regular maintenance and monitoring as specified in the maintenance plan. Potential liability, prevention of sewage backups and ensuring long life of the system to protect your investment are all great reasons to maintain your system.

- The maintenance schedule for your Type 1 System is once a year
- See Maintenance Plan for Maintenance info

## Must not overload the system

- Your septic field is designed for peak flow volume of 572 gallons per day of residential sewage. Average flows on any given day should not exceed 50% of the peak volume design flow which is approximately 286 gallons.
- The design flows are a conservative allowance for the expected flow under normal residential use of your 4 & 2 bedroom houses.
- Prolonged flows in excess of this design capacity will overload the system. This can cause premature failure of the system and can cause health hazards to humans and





harm the environment. Health regulation violations and liability can result – with the responsibility on the homeowner.

- Although you are not expected to accurately determine and monitor these flows, you are advised to use a common sense approach to avoid overloading the system. If you make changes to the house or other buildings that will increase the sewage flows then the design must be reviewed and the system enlarged to accommodate the changes. Examples include water filtration systems, additional bedrooms or washrooms, starting Bed and Breakfast operations and other home based business with significant increases to the number of people using the system.
- Introducing high strength sewage (industrial/commercial/strong chemicals) will harm bacteria and severely reduce the treatment ability of the system with potential impacts to public health and the environment. Changes to the strength and characteristics of the sewage require immediate design modifications to accommodate the sewage input change.
- Adding water softener systems, in sink garbage disposal units, operating dark rooms and wine or beer making are examples of activities that will alter the sewage flow anticipated in the original design.
- See the Do and Do Not section for more information on how to avoid misuse of the system.

## System Summary

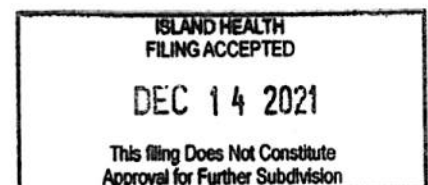
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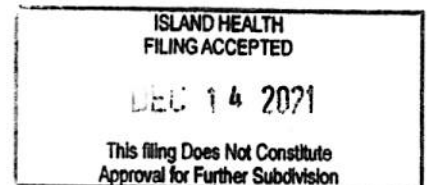
This document contains important information for the homeowner and the maintenance provider that will be inspecting and maintaining the system.



## Planned Maintenance and Inspection to include the following checks

Act in accordance to the Standard Practice Manual

- SK Septics has copies of all information pertaining to this sewerage system.
    - Contact before maintenance is performed for answers to any questions or concerns you may have.
  - No structures or heavy traffic, ensure appropriate vegetation and landscaping, no groundwater, pooling or surface flows that could interfere with the dispersal field
  - Check the security and safety of the tank accesses
  - Confirm limited solids carry over to the filter compartment
    - Note the percentage of clogging in the filter and include it in the report
    - Clean the filter thoroughly and replace it
  - Check condition and proper operation of inlet and outlet tees
  - Clean fats, oil and grease from the tees
  - Measure to confirm that tank solids and sludge are under pump out requirements
  - Recommend pump out only if required
  - Check panel
    - Check timer override count
    - Confirm settings of system start-up are still programmed
      - Use the pump and panel settings above in the document
    - Notify SK Septics immediately if flow exceeds the design flow
    - Check connections for signs of corrosion and deterioration
  - Check operation of the pump
    - Check connections corrosion and deterioration
  - Flush the lines and check squirt height with drilled end caps
    - 160cm plume at start-up
  - Check high water alarm for proper settings and function
- Provide customer with a detailed document covering all components of the system including photographs and the Authorized Persons' Seal for the customer's records.



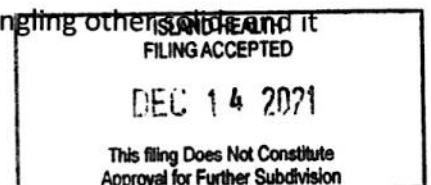
## Do and Do Not

Your sewerage system relies on treatment inside the septic tank and in the soil of the distribution field to reduce the harmful qualities of the wastewater. Longevity of the system, preventing health hazards and minimizing impacts on the environment depend on your proper use and maintenance of the system.

- Promoting bacteria growth by avoiding products and chemicals that will reduce or eliminate bacteria growth
- Minimizing non biodegradable materials, fats, oils and grease
- Not overloading the system beyond its capacity to treat the sewage
- Ensuring that regular maintenance is carried out

## Tips to Ensure Proper Treatment and Longevity of the System

- Contact SK Septics before planting trees or excavating near the discharge area
- Avoid, reduce and control the use of disinfectants, bleach and anything that kills bacteria
- Do not use Drano or Liquid Plumber style products to clear clogged plumbing because they are very damaging to bacteria
- Do not put the following into the system: lubricating oils, greases, petroleum products, antifreeze, automotive fluids, chemical waste, toxins, paints, solvents, thinners, caustic cleaners, pesticides or herbicides
- Reduce and avoid where possible fats, oils and grease from food preparation because they are very difficult to break down, cause filters to clog and drastically shorten the life of the system by clogging sand and soil in the dispersal area
- Use strategies to reduce like: collecting fat from fried foods, oil from deep fryers etc. and disposing of them in the garbage
- Do not allow non-biodegradable materials to enter the system because quicker buildup of solids will result in higher frequency of pump outs needed
- Do not allow bandages, strings, rags, cotton balls, coffee grinds, paper towels, condoms, disposable diapers, cigarette butts, plastics, metals, kitty litter, feminine products and other materials that do not compose easily
- Do not allow excessive amounts of hair and laundry lint to enter the system because it causes thickening and matting of the scum in the tank by entangling other solids and it can clog filters





- In-sink garbage disposal units increase the organic matter entering the system and should not be used unless the system has been designed and sized to accommodate it
- Do - composting to limit organics from entering
- Do not use septic tank additives as the experts consistently advise against them
- Protect the Distribution Field and the Tanks
- Keep traffic and heavy loads off the distribution area and the tanks
- Grow vegetation with shallow root systems (grass is good - willows are bad)
- Do not build structures over any part of the system
- Keep surface flows of water away from dispersal field and tanks
- Remember that maintenance, troubleshooting and repairs require quick and easy access to tank lids and distribution system valves and cleanouts

## Some Maintenance providers

New Water            250 252 2555

Save On Septic      250 474 7867

Vortech              250 746 0706

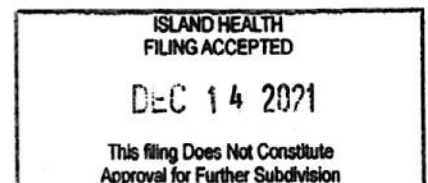
Ace Bobcat          250 709 9643



Please call me with any questions

Stewart Krumm      (250) 709-4497      [skseptics@shaw.ca](mailto:skseptics@shaw.ca)

Thank you,

Stewart Krumm



RECORD OF SEWERAGE SYSTEM				FILING # (OFFICE USE ONLY): <b>DC21/213</b>	
<b>1. PROPERTY INFORMATION</b>  	<input checked="" type="checkbox"/> NEW CONSTRUCTION	<input type="checkbox"/> ALTERATION n/a	<input type="checkbox"/> REPAIR n/a	<input type="checkbox"/> AMENDMENT - ORIGINAL FILING #:	
	TAX ASSESSMENT ROLL #: 04-315-05129.000			PID #: 009 - 785 - 965	
	LEGAL DESCRIPTION (PLAN, LOT, DISTRICT LOT, BLOCK NUMBERS): <b>Section 14, Range 6, Land District 61, Portion SW 10 AC Except Plan 33002</b>				
	STREET (CIVIC) ADDRESS OR GENERAL LOCATION: <b>7475 Bell McKinnon Road</b>			CITY: <b>Duncan</b>	
<b>2. OWNER INFORMATION</b>	NAME OF LEGAL OWNER: <b>Adam and Alicia Loewen</b>			MAILING ADDRESS: <b>7475 Bell McKinnon Road</b>	
	PHONE: <b>250 816 5260</b>		CITY: <b>Duncan</b>		PROV: <b>BC</b> POSTAL CODE: <b>V9L 6A9</b>
<b>3. AUTHORIZED PERSON INFORMATION</b>	NAME OF AUTHORIZED PERSON: <b>Stewart Krumm</b>		REGISTRATION #: <b>OW0033</b>		MAILING ADDRESS: <b>5881 Howard Ave</b>
	PHONE: <b>250 709 4497</b>	EMAIL: <b>skseptics@shaw.ca</b>		CITY: <b>Duncan</b>	PROV: <b>BC</b> POSTAL CODE: <b>V9L 3N7</b>
<b>4. STRUCTURE INFORMATION</b>	SEWERAGE SYSTEM WILL SERVE: <input checked="" type="checkbox"/> SINGLE FAMILY DWELLING <input type="checkbox"/> OTHER STRUCTURE (SPECIFY) <input checked="" type="checkbox"/> OTHER DWELLING (SPECIFY) <b>4 Bedroom house and a 2 Bedroom house</b>				
	THE DESIGN DAILY DOMESTIC SEWAGE FLOW IS (CHECK ONE): <input checked="" type="checkbox"/> LESS THAN OR EQUAL TO 9 100 LITRES <input type="checkbox"/> MORE THAN 9 100 LITRES BUT LESS THAN 22 700 LITRES				
<b>5. SITE INFORMATION</b>	DEPTH OF NATIVE SOIL TO SEASONAL HIGH WATER TABLE OR RESTRICTIVE LAYER (cm): <b>69</b>		INFORMATION RESPECTING THE TYPE, DEPTH AND POROSITY OF THE SOIL IS ATTACHED <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		
	GPS LOCATION OF SYSTEM (DECIMAL DEGREES) LATITUDE: <u>48.841037</u> LONGITUDE: <u>123.713345</u>				
	HORIZONTAL ACCURACY (m) <sup>8</sup> _____		<input checked="" type="checkbox"/> RECREATIONAL GPS <input type="checkbox"/> DIFFERENTIAL GPS		
<b>6. DRINKING WATER PROTECTION</b>	WILL THE SEWERAGE SYSTEM BE LOCATED LESS THAN 30m FROM A WELL? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO				
	IF YES, ATTACH A PROFESSIONAL'S REPORT AND SPECIFY THE INTENDED DISTANCE <u>n/a</u> (m) DISTANCE OF PROPOSED SEWERAGE SYSTEM TO THE CLOSEST SURFACE WATER <u>40 plus</u> (m)				
<b>7. SYSTEM INFORMATION</b>	SEWERAGE TREATMENT METHOD: <input checked="" type="checkbox"/> TYPE 1 <input type="checkbox"/> TYPE 2 <input type="checkbox"/> TYPE 3				
<b>8. LEGAL OR REGULATORY CONSIDERATIONS</b>	<input checked="" type="checkbox"/> CONSTRUCTION OF THE PROPOSED SEWERAGE SYSTEM WILL NOT CONFLICT WITH LEGAL INSTRUMENTS REGISTERED ON THE PROPERTY.		IS THIS FILING SUBMITTED AS THE RESULT OF AN ORDER FROM THE HEALTH AUTHORITY? <input type="checkbox"/> YES (ATTACH A COPY OF THE ORDER) <input checked="" type="checkbox"/> NO		
	<input checked="" type="checkbox"/> PLOT PLAN (TO SCALE) AND SPECIFICATIONS ARE ATTACHED <input checked="" type="checkbox"/> THE PLANS AND SPECIFICATIONS ARE CONSISTENT WITH STANDARD PRACTICE SOURCE OF STANDARD PRACTICE: <input checked="" type="checkbox"/> MINISTRY OF HEALTH STANDARD PRACTICE MANUAL <input type="checkbox"/> OTHER				
<b>10. AUTHORIZED PERSON'S SIGNATURE</b>	SIGNATURE: 		OFFICE USE ONLY FILING ACCEPTED DATE: <u>Oct 4/21</u>		
	DATE: <b>September 30, 2021</b>		RECEIPT NUMBER: <u>#200,00</u> <u>#251507</u>		

**EMailed**  
North Cow

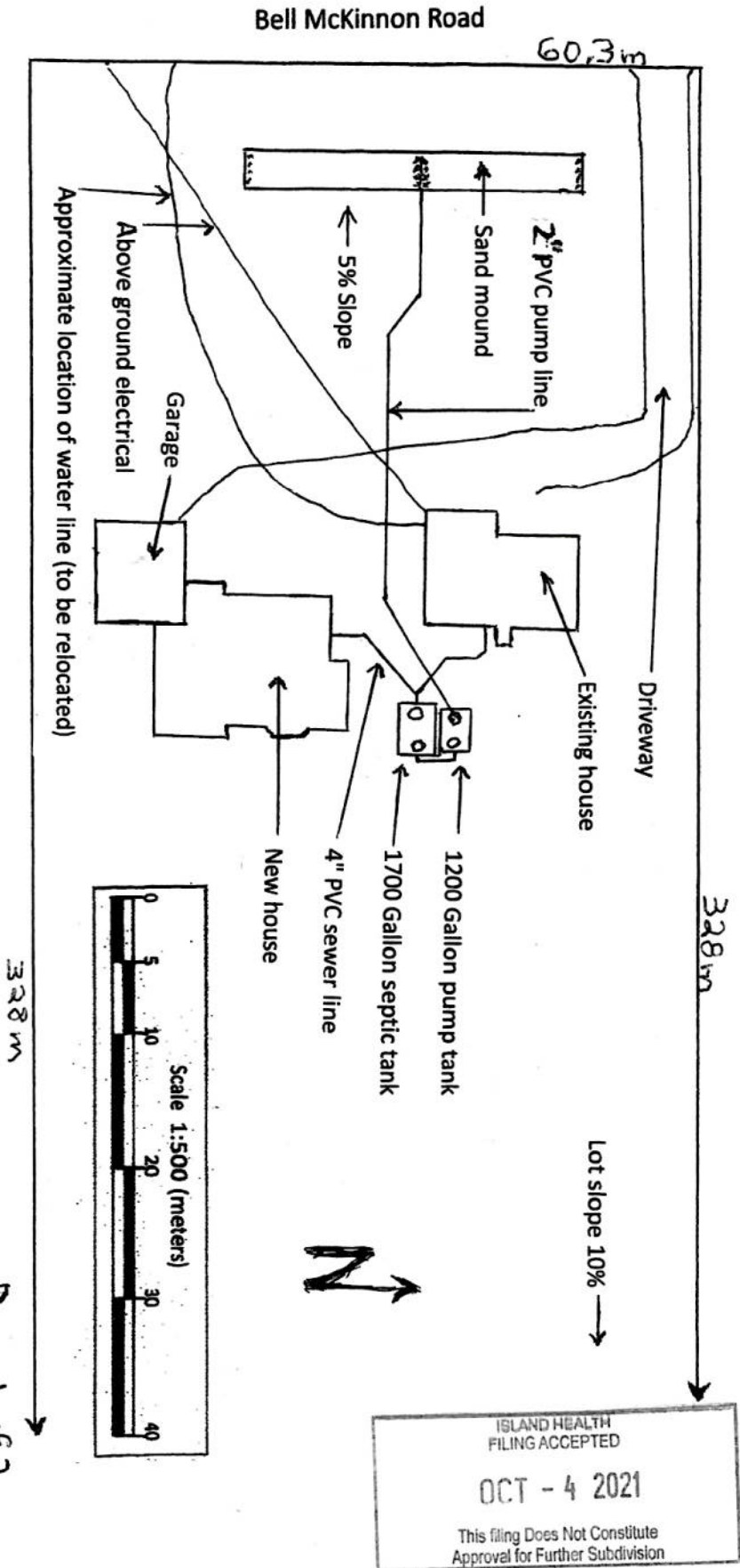
**POSTED**

Site Plan of new onsite wastewater system to be installed at

7475 Bell McKinnon Road September 30, 2021

Type 1 System

GPS: Latitude 48.841037 Longitude 123.713345



ISLAND HEALTH  
FILING ACCEPTED  
OCT - 4 2021  
This filing Does Not Constitute  
Approval for Further Subdivision

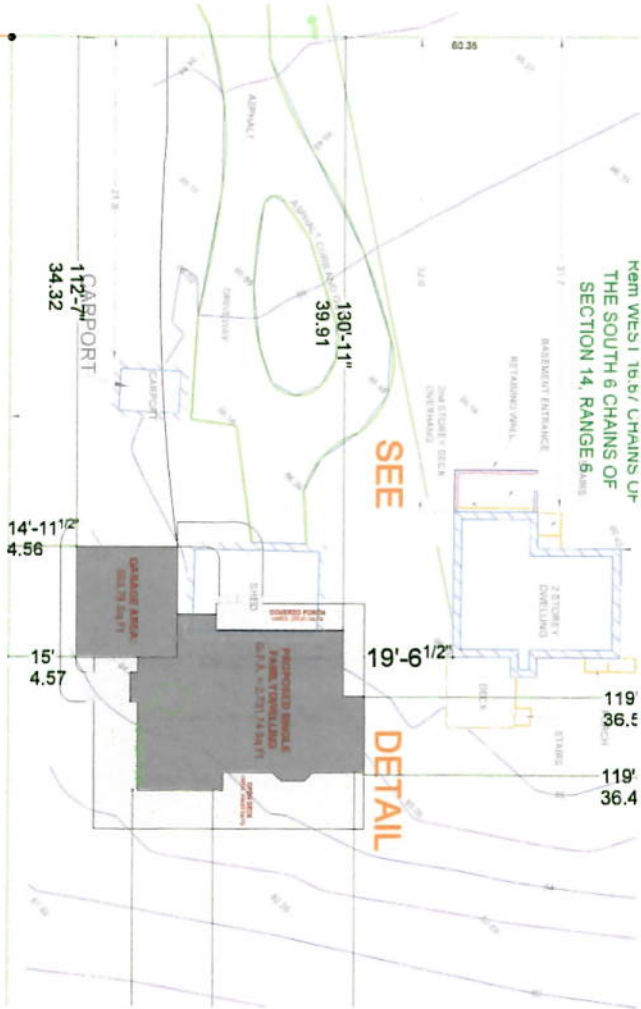
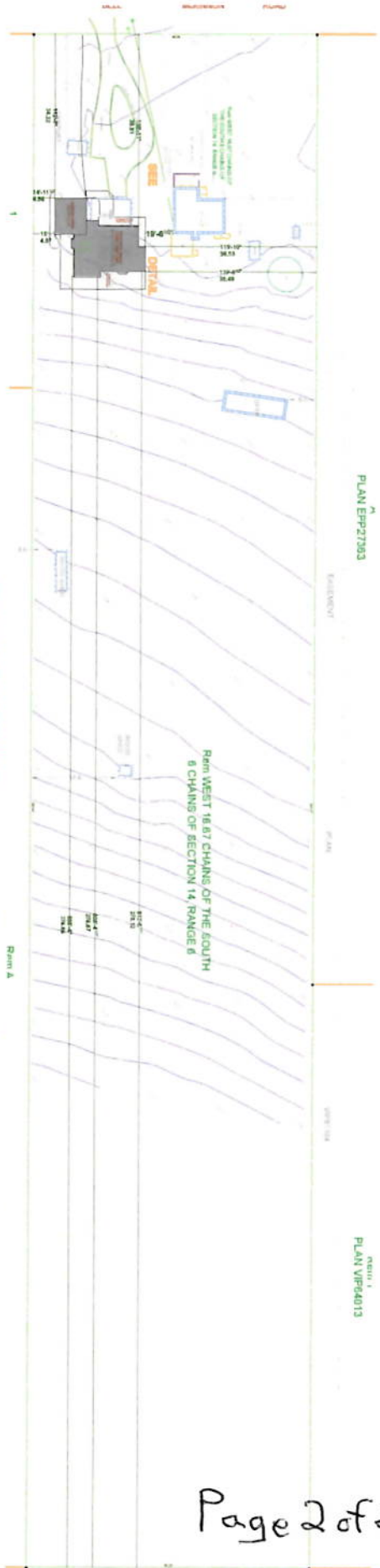


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WATER REQUIREMENTS:  
 Performance Grade of 30  
 Water Test Pressure of 260 Pa

SITE PLAN  
 SCALE 1:400

SITE PLAN  
 SCALE 1:150



PROJECT DATA TABLE - SINGLE FAMILY DWELLING			
Address	7475 Bell McKinnon Road, Duncan		
Lot Size	19,798.13 sq ft (212,769.89 sq ft)		
Zoning	A2		
Lot coverage	Proposed: 2.00 % Allowed: 4.02 %	Adjusted: 13.00 % 1,578.61 sq ft (17,782.08 sq ft)	
Lot coverage (Total)	4.02 % (46,241.97 sq ft)	21,782.08 sq ft	
Front lot front setback	270.00 m	0.00 m (0.00 ft)	
Rear lot front setback	203.00 m	0.00 m (0.00 ft)	
Left side lot front setback (Main)	36.40 m	2.00 m (6.56 ft)	
Right side lot front setback (Main)	4.56 m	2.00 m (6.56 ft)	
Building height	0.37 m (1.215 ft)	0.00 m (0.00 ft)	
Floor Area	198.28 sq ft (1,443.81 sq ft)		
Upper floor area	147.47 sq ft (1,387.23 sq ft)		
Garage	50.81 sq ft (476.58 sq ft)		

NOTES:

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SPECIFIED.

2. THE PROPOSED DEVELOPMENT IS SUBJECT TO THE APPROVAL OF THE LOCAL AUTHORITY AND THE REGIONAL COUNCIL.

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Page 2 of 2

SHEET  
 NUMBER  
 A1

WHERE LINES ON PAPER BECOME WALLS ON SITE  
 250.590.2468 250.590.4577 www.javadesigns.ca

ISSUE DATE  
 SEPT. 10 2021  
 DRAWN BY  
 STYLIE LESGNETT  
 CHECKED BY  
 KYLE LESGNETT

DRAWING NAME  
 SITE PLAN  
 DRAWING SCALE  
 SEE DRAWINGS

CUSTOMER  
 ALICIA LOEWEN  
 ADDRESS  
 7475 BELL MCKINNON ROAD, DUNCAN



Office: (250) 746-4277  
Fax: (250) 746-4257

Email: skseptics@shaw.ca  
Web: www.skseptics.ca

5881 Howard Ave, Duncan B.C. V9L 3N7

## Specifications

September 30, 2021

**Owners:** Adam and Alicia Loewen

**Site:** 7475 Bell McKinnon Road

**Phone:** 250 815 5260

**Legal Description:** Section 14, Range 6, Land District 61, Portion SW 10 AC Except Plan 33002

**Parcel Identifier:** 009 - 785 - 965

**GPS location:** Latitude – 48.841037 Longitude – 123.713345

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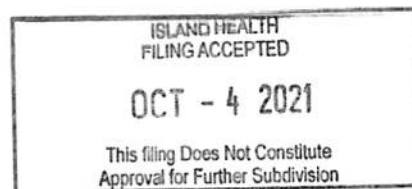
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**LLR:** 2600 LPD / 180 LLR = 14.4m (48 feet)

**Total bed size =** bed width 2.9m (9.5 feet) X bed length 25.6m (84 feet)



Specifications for proposed onsite wastewater system to be installed at 7475 Bell McKinnon Road

# Site Evaluation

System will be for a 4 bedroom house and a 2 bedroom suite. Due to limited amount of soil a sand mound will work very well on this site. Test pits were excavated and Perc tests were done within the proposed area.

## Soil Evaluation

For analyzing the soil texture I did several hand texturing tests following the soils algorithm (flow sheet), provided by Kent Watson, B.Sc, M.Sc Thompson Rivers University. It directed the soil to be Sand. I also compared its characteristics with soils in the Soil Texture Sample Kit (MSU Agronomy Club) and determined the soil to be the same texture. I tested the texture using the guidelines of the USDA for hand texturing. I am confident in my test results and feel it is not necessary to do further laboratory testing.

## Saturated Hydraulic Conductivity (Kfs)

Loading rates and (kfs) are calculated and chosen as per guidelines set forth in the Standard Practice Manual.

Kfs = 8200mm/day

Hydraulic loading rate is 35 L / m<sup>2</sup> / day for C-33 sand

### Observation Pit 1

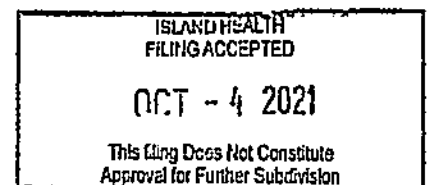
- 0 – 7cm Dark, Organic, Lawn
- 7 – 69cm Light Brown Gray , Few bigger rocks, (6cm to 12cm) weak granular, loose, many roots, no mottles, Sand
- 69cm Grey clay

### Observation Pit 2

Same as #1

## Additional Site Information

- 4.89 acres
- The water provider is North Cowichan
- The property has easy accesses to tank and discharge area
- 10% Lot slope and 5% in the discharge area
- Equipment/aggregate delivery using the driveway



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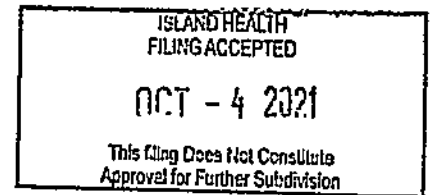


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The transducer is attached to a 1 ¼ inch PVC pipe.

The alarm high water alarm is set at 26 inches. The high water alarm activates a high level alarm to indicate failure of the pump or other problems causing the liquid level within the pump chamber to rise excessively.

This will allow approximately 340 gallons reserve space in the pump tank. At least 75% of daily design flow

The timer override is set at 24 inches. The override will override timer settings and activate the pump in heavy usage.

The Timer enable float switch is set at 8 inches. The timer enable indicates that no effluent requires pumping.

The redundant off is set at 6 inches. The redundant off will shut off the pump in the unlikely event that the timer enable fails to function. This will prevent the pump from burning out from continuous running.

- Design flow rate per minute required is 73 gallons per minute
- Total dynamic head is 42 feet
- The Liberty FL 100 effluent pump will pump 80 gallons per minute in this application.
- Timer is set for pump to run for 22 seconds every 2 hours and 24 minutes
- 1 second = 1.333 gallons
- 22 seconds = approximately 29 gallons per cycle
- 24 hours = approximately 290 gallons per day in 10 cycles

## Discharge area

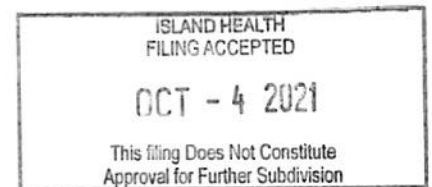
All work to follow the Standard Practice Manual.

### Excavation for receiving area, sand mound and pea-gravel bed

- **Total bed size** = bed width 2.9m (9.5 feet) X bed length 25.6m (84 feet)
- **Scarify basal area and excavate** 13 inches into native soil and place 18 inches of C – 33 sand. Maintain a min. of 12 inches of native soil below sand mound.
- **Place** a minimum of 5 inches of clean 40mm rock on top of the sand for the rock bed area

### Pea-Gravel Bed Size and Piping information

- 4 Laterals that are 84 feet long and center fed
  - 45cm from outside edge to outside laterals
  - 60cm between laterals
- Orifice spacing is 77cm on the pipe (30")
  - 5/32 orifice size
  - Orifice shields cover the drilled holes
  - 2 orifices per 0.56m<sup>2</sup>
- The manifold is 2 inch PVC
- Flush-outs are installed at the end of each line with two 45° fittings
- 32mm Ball valves to dial down each lateral
- Ensure all flush-outs and valves for the discharge area have proper valve-boxes to cover them in order to provide protection and later access
- Place 7 to 8 inches of sandy soil for cover on top of filter cloth



## Qualified Installer:

- If Installer is other than Stewart Krumm inspection fees will apply.
- Must contact Stewart Krumm for a required site meeting (contact information at the end of document)
- All work to follow the Standard Practice Manual.
- All PVC pipe must be CSA approved

For answers to any questions of concerns please contact:

Stewart Krumm      (250) 709-4497      [skseptics@shaw.ca](mailto:skseptics@shaw.ca)

Specifications for proposed onsite wastewater system to be installed at 7475 Bell McKinnon Road





### Input Parameters

Orifice Size	<input type="text" value="5/32"/>	inches
Residual Head at Last Orifice	<input type="text" value="4.0"/>	feet
Orifice Spacing	<input type="text" value="2.8"/>	feet
Number of Laterals per Cell	<input type="text" value="8"/>	
Lateral Length	<input type="text" value="41.0"/>	feet
Lateral Pipe Class/Schedule	<input type="text" value="40"/>	
Lateral Line Size	<input type="text" value="1.25"/>	inches
Distributing Valve Model	<input type="text" value="None"/>	
Manifold Length	<input type="text" value="6.0"/>	feet
Manifold Pipe Class/Schedule	<input type="text" value="40"/>	
Manifold Line Size	<input type="text" value="2.00"/>	inches
Lift to Manifold	<input type="text" value="15.0"/>	feet
Transport Length	<input type="text" value="145.0"/>	feet
Transport Pipe Class/Schedule	<input type="text" value="40"/>	
Transport Line Size	<input type="text" value="2.00"/>	inches
Discharge Assembly Size	<input type="text" value="2.00"/>	inches
Flow Meter	<input type="text" value="None"/>	inches
'Add-on' Friction Losses	<input type="text" value="0.0"/>	feet

### Calculation

Minimum Flow Rate per Orifice	<input type="text" value="0.61"/>	gpm
Number of Orifices per Zone	<input type="text" value="120"/>	
Total Flow Rate per Zone	<input type="text" value="73.0"/>	gpm
Number of Laterals per Zone	<input type="text" value="8"/>	
% Flow Differential 1st and Last Orifice	<input type="text" value="2.0"/>	%

### Size Pump For

Design Flow Rate	<input type="text" value="73.0"/>	gpm
Total Dynamic Head	<input type="text" value="41.7"/>	feet

Distance between orifices in distribution laterals. Typical values range from 2 feet for sand filters up to 6 feet for pressurized drainfields, depending upon soil types and local regulations.

### Static Heads

Lift to Manifold	<input type="text" value="15.0"/>	feet
Residual Head at Last Orifice	<input type="text" value="4.0"/>	feet

### Frictional Head Losses

Head Loss in Laterals	<input type="text" value="0.2"/>	feet
Head Loss through Distributing Valve	<input type="text" value="0.0"/>	feet
Head Loss in Manifold	<input type="text" value="0.1"/>	feet
Head Loss in Transport Pipe	<input type="text" value="11.8"/>	feet
Head Loss through Discharge	<input type="text" value="10.6"/>	feet
Head Loss through Flow Meter	<input type="text" value="0.0"/>	feet
'Add-on' Friction Losses	<input type="text" value="0.0"/>	feet

*Adam*

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 OCT - 4 2021  
 This filing Does Not Constitute  
 Approval for Further Subdivision

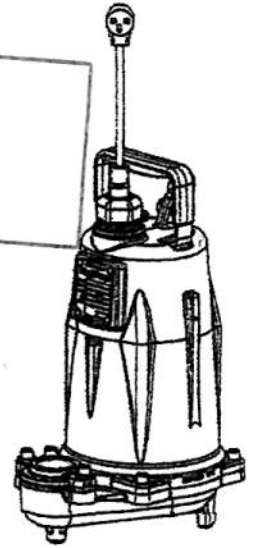


# Liberty Pumps

## Pump Specifications

### FL100 Series Submersible Effluent Pump

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Bob + Adam  
Flow (Liters Per Minute)

