



February 22, 2012

Spencer Harris
Thomas Mansfield
Town of Charlotte
P.O. Box 119
Charlotte, VT 05445

Re: Sawabini Property, 5 Molly Henry Rd, Charlotte, VT – Water and Wastewater Application Submittal

Dear Spencer & Tom:

The Sawabini's own a 4 bedroom seasonal residence that they are planning to totally reconstruct and convert to an all seasons residence. To accomplish this they are planning to replace their connection to the Cedar Beach seasonal water system with a fully complying drilled bedrock well, as well as replacing their marginally located and functioning greywater and blackwater systems with a "best-fix" pretreated bottomless sand filter. The sand filter is compliant with the exception of its separation from the property line adjacent to Big Dock Court. I consider the existing disposal systems failed because they are obviously discharging to the lake without the needed isolation.

A site and soil evaluation survey was conducted by myself with Spencer Harris in attendance. Six (6) test pits were evaluated on 8/1/11 in the only available area not impacted by very shallow to exposed bedrock conditions, flat terrain with no obvious outlet for shallow ground water/effluent flow or unacceptable isolation from the lake. An auger hole was later placed on 8/10/11 to further define shallow bedrock conditions. The soil profile descriptions are attached which indicate 15" of available well drained very fine sandy loams to silt loams with loose to friable consistence and strong to moderately developed fine blocky structure. A percolation test was also run of 8/10/11 with a resulting 32.3 minute/well percolation rate. The percolation test results are attached. The soil evaluation indicates a 50-50 mix of very fine sandy loams and silt loams that qualify for a hydraulic conductivity of 25 feet/day. The percolation test results nicely substantiate this.

Although the soil conditions are suitable for a performance based mound system, the site constraints (i.e shallow to exposed bedrock, limited area, the property line and the

road) demand a properly sized pretreated bottomless sand filter and effluent dispersal area.

To determine the necessary length of the bottomless sand filter, a Darcy's Law analysis ($Q=kihl$) was conducted solving for l or the system length with the following inputs: $Q=490$ gpd/or 65.5 ft^3/day , $k=25$ feet/day, $i=0.08$ feet/foot and h or an effluent mound of $0.75'$. The system length required to maintain $0.5'$ of unsaturated soil beneath the sand filter is 43.7 feet. Using a 2.0 gpd/ft^2 application rate allowed for pretreated filtrate systems, a $6' \times 45'$ bottomless sand filter is proposed with $1.5'$ of approved sand (to provide the required $2'$ of isolation from the application area and the effluent mound) and an application area of 270 ft^2 versus the required 245 ft^2 . A 6 lateral centrally distributed distribution system with $1/8"$ orifices is proposed which will be pressure distributed with pre-treated effluent from a BioMicrobics MicroFAST 0.5 treatment unit and a 500 gallon pump station. The pressure distribution details are attached and the location, layout and details of the bottomless sand filter based replacement disposal system are shown on Figure 1 and 2. The innovative alternative system approval for BioMicrobics Products is also attached for review.

To allow the property to be converted to full time use, a fully complying drilled bedrock well based water system is proposed. The well location, north of the residence is shown on Figure 1 along with its $100"$ radius isolation zone. The topography, the bedrock knob/ridge, and the presence of drainage divides supply proper isolation for the well. The required well and residential water system details are shown on Figure 2.

The Act 145 notification requirement is fulfilled by submitting a full copy of the application to all parties affected by either the well or the replacement wastewater system. The list of affected properties and a copy of the notification letter to each property owner is attached.

I believe the Sawabini's application for a State water and wastewater permit is complete with a signed application and Act 145 certification statement, a \$250.00 application fee payable to the Town of Charlotte, 2 copies of Figure 1 and 2, 1 $11" \times 17"$ copy of Figure 1 and 2, 1 copy of the water/wastewater and Act 145 attachments and a CD of the complete application. The Sawabini's and I look forward to your concurrence and issuance of the requested permit.

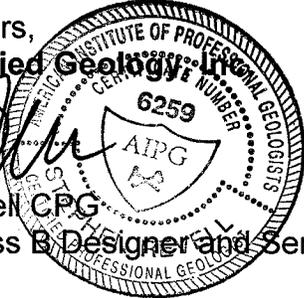
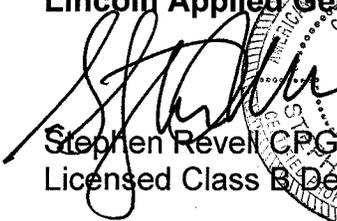


Lincoln Applied Geology, Inc.
Environmental Consultants

Spencer Harris
Thomas Mansfield
February 21, 2012
Page 3 of 3

If you have any questions, please feel free to contact me at 453-4384.

Very truly yours,
Lincoln Applied Geology, Inc.



Stephen Revell, CPG
Licensed Class B Designer and Senior Hydrogeologist

Enclosures

cc: Nicolene and Stuart Sawabini
Act 145 Notification List

F:\CLIENTS\2011\1063\Sawabini water and wastewater application letter



Lincoln Applied Geology, Inc.
Environmental Consultants

163 Revell Drive • Lincoln, VT 05443 • (802) 453-4384 • FAX (802) 453-5399

Wastewater Management Division - Permit Application Wastewater System & Potable Water Supply



For Office Use Only:

Application#	PIN#	Date Complete Application Received
<input type="text"/>	<input type="text"/>	<input type="text"/>

Authority:

10 V.S.A. Chapter 64, the Environmental Protection Rules, Chapter 1, Wastewater System & Potable Water Supply Rules, and Chapter 21, Water Supply Rules, Appendix A. Part 11 - Small Scale Water Systems.

General Information:

The organization and/or content of this form may not be altered, however, the form is designed to expand to allow additional information to be entered. Changes in the organization and/or content of the form may result in an invalid application or permit.

In most cases a licensed designer will be required for your project and to help complete this application form. There are also line-by-line instructions available to assist with completing this form.

NOTE: We strongly suggest referring to the application instructions while completing this application form.

Part I Applicant (Landowner) & Project Contact Information

Section A - Applicant Details (if Landowner is an Individual or Individuals)

1 Last Name Sawabini		2 First Name (and Middle Initial if appropriate) Nicolene & Stuart	
3 Mailing Address Line 1 163 Oenoke Lane		4 Mailing Address Line 2	
5 Town/City New Canaan	6 State/Province CT	7 Country United States	8 Zip/Postal Code 06840
9 Email Address			10 Telephone

Remove This Applicant

Add Another Applicant

Section B - Applicant Details (if Landowner is other than an Individual or Individuals, e.g. Corporations, Homeowner's Associations, etc.)

1 Registered Legal Entity or Organization Name			2 Telephone
3 Mailing Address Line 1		4 Mailing Address Line 2	
5 Town/City	6 State/Province	7 Country United States	8 Zip/Postal Code

Certifying Official

The Certifying Official must be a person who has signatory authority for the legal entity or organization that is the Applicant. A copy of the document authorizing this person to act as a signatory authority must be attached to this application.

9 Certifying Official Last Name	10 Certifying Official First Name (and MI if appropriate)
<input type="text"/>	<input type="text"/>
11 Certifying Official Title	
<input type="text"/>	
12 Certifying Official Email Address	13 Telephone
<input type="text"/>	<input type="text"/>

Remove This Applicant

Add Another Applicant

Section C - Primary Contact Information (if other than Applicant)			
1 Last Name		2 First Name (and Middle Initial if appropriate)	
<input type="text"/>		<input type="text"/>	
3 Mailing Address Line 1		4 Mailing Address Line 2	
<input type="text"/>		<input type="text"/>	
5 Town/City	6 State/Province	7 Country	8 Zip/Postal Code
<input type="text"/>	<input type="text"/>	United States	<input type="text"/>
9 Email Address			10 Telephone
<input type="text"/>			<input type="text"/>

Section D - Building/Business Owner Information			
1 Last Name		2 First Name (and Middle Initial if appropriate)	
<input type="text"/>		<input type="text"/>	
3 Mailing Address Line 1		4 Mailing Address Line 2	
<input type="text"/>		<input type="text"/>	
5 Town/City	6 State/Province	7 Country	8 Zip/Postal Code
<input type="text"/>	<input type="text"/>	United States	<input type="text"/>
9 Email Address			10 Telephone
<input type="text"/>			<input type="text"/>

Part II Certifying Designer(s) Information			
1 Designer Last Name		2 Designer First Name (and Middle Initial if appropriate)	
Revell		Stephen	
3 Designer License#	4 Company Name		
00178	Lincoln Applied Geology		
5 Mailing Address Line 1		6 Mailing Address Line 2	
163 Revell Dr.		<input type="text"/>	
7 Town/City	8 State/Province	9 Country	10 Zip/Postal Code
Lincoln	VT	United States	05443
11 Email Address			12 Telephone
srevell@lagvt.com			802-453-4384
13 Designer Role(s) (check all that apply)			
<input checked="" type="checkbox"/> Water Supply Designer			
<input checked="" type="checkbox"/> Wastewater Disposal System Designer			
Remove This Designer			

Add Another Designer

Part III Property Location Information		
Section A - Property Parcel ID#(s) and Location(s)		
1 Please provide the property location information including Town or City Parcel ID#, Town/City, and Street or Road location in the table below:		
	(a) Town/City Parcel ID#	(b) Town or City
	<input type="text"/>	<input type="text"/>
	(c) Street or Road Location	<input type="text"/>
X	000590005	Charlotte
		5 Molly Henry Rd
Add Another Property		

Section B - Center of Property GPS Coordinates	
1 Enter the approximate center of property coordinates using GPS set for NAD83 or as derived from a map (map must be based on NAD83).	
(a) Latitude <i>(in decimal degrees to five decimal places, ex. 44.38181°)</i>	(b) Longitude <i>(in decimal degrees to five decimal places, ex. -72.31392°)</i>
N <input style="width:80px;" type="text" value="44.29526"/> °	W (-) <input style="width:80px;" type="text" value="73.30141"/> °

Part IV Project Information
Section A - General Project Information & Questions

1 Project Name (if applicable) <input style="width:95%;" type="text" value="Sawabini Project"/>	2 Total Acreage of Property <input style="width:95%;" type="text" value="1.2"/>
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3 Business Name (if applicable)

4 Detailed Project Description
 The Sawabini's own a 4 bedroom seasonal residence located adjacent to Cedar Beach. The Sawabini's are converting their seasonal residence to a full-time residence by reconstructing the structure, drilling a bedrock well to replace a seasonal connection to the Cedar Beach water system and replacing their marginally functioning grey and black water disposal systems with a "best-fix" pretreated bottomless sand filter.

5 Were all buildings or structures, campgrounds, and their associated potable water supplies and wastewater systems substantially completed before January 1, 2007 and all improved and unimproved lots in existence before January 1, 2007? Yes No

6 Does this application include subdividing the property? Yes No

7 Has anyone from the Wastewater Management Division's Regional Office been to the property?..... Yes No

If Yes, enter the staff person's name and the date of the visit.

(a) Name of Staff Person <input style="width:95%;" type="text" value="Spencer Harris"/>	(b) Date of Visit <input style="width:95%;" type="text" value="08-01-2011"/>
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8 Will any construction occur within 50 feet of a wetland boundary, mapped or designated? Yes No
If Yes, contact the Wetlands Program of the Water Quality Division at (802) 241-3770.

9 Will more than one acre be disturbed during the entire course of construction, including all lots and phases? Yes No
If Yes, contact the Stormwater Program of the Water Quality Division at (802) 241-4320.

10 Will there be any stream crossings by roads, utilities, or other construction? Yes No
If Yes, contact the River Corridor Mgmt. Program of the Water Quality Division at:
 Central & Northwest Vermont (802) 879-5631
 Southern Vermont (802) 786-5906
 Northeastern Vermont (802) 751-0129

11 Is the project located in a special flood hazard area as designated on the flood insurance maps prepared for a municipality by the Federal Emergency Management Agency? Yes No
If Yes, show the special flood hazard area limits on the site plan.

12 Act 250: Has the Applicant (Landowner) subdivided any other lots of any size within a five mile radius of this subdivision, or within the environmental district within the last five years ? Yes No
If Yes, enter the town(s) and the associated number of lots in the table below:

	(a) Town	(b) Number of Lots
X	<input style="width:95%;" type="text"/>	<input style="width:95%;" type="text"/>
<input type="button" value="Add Another Town/Lot"/>		

13 Is there any prior Act 250 jurisdiction on the tract of land?..... Yes No

If Yes, enter the Act 250 permit number:

(a) Act 250 Permit Number

Section B - Project Deed Reference

1 Please provide the Town, Book, and Page reference for the current landowner's deed(s) to this property in the table below:

	(a) Town	(b) Book	(c) Page(s)
X	Charlotte	169	588-590

Add Another Deed Reference

Section C - Project Plan Reference

1 Please provide the following information for all water supply and wastewater disposal system plans being submitted.

	(a) Sheet#	(b) Title	(c) Plan Date	(d) Plan Revision Date
X	1	Site Plan w/Proposed Water/Wastewater Systems	2/20/2012	
X	2	Water & Wastewater Design Details	2/20/2012	

Add Another Plan Reference

Section D - Existing Project Lot/BuildingDetails

Please provide the existing project details. This section is used to describe what is existing for the project. For example, if you are subdividing an undeveloped 21-acre parcel, you would list the existing parcel. If you are revising the boundary lines of two commercial lots in an industrial park, and constructing an addition to an existing building you would list the existing lot numbers, existing acres, existing buildings, existing uses, construction date(s), prior permits, and answer the compliance questions.

1 Lot#	2 Lot Size (acres)	3 Existing Use of the Lot
1	1.2	Single Family Residential

4 Provide the following information for each building on the lot:

	(a) Building ID	(b) Existing Use	(c) Date Construction of Building Substantially Complete	(d) Prior Permits	(e) In compliance with existing permits?
X	1	Residential	Pre-1969	Local	<input checked="" type="radio"/> Yes <input type="radio"/> No

Add Another Building

Remove This Lot

Add Another Lot

Section E - Proposed Project Lot/BuildingDetails

This section is used to describe what you are proposing to do in this project. For example, if you were going to create 4 lots for construction of single family residences, you would list each lot, proposed acreage, proposed buildings, and proposed use.

1 Lot#	2 Lot Size (acres)	3 Proposed Use of the Lot
1	1.2	Single Family Residential

4 Is the lot being created as part of a subdivision? Yes No

5 Are you requesting that the Blood, Marriage, or Civil Union special fee be applied to this lot? Yes No

6 If the lot is exempt, please indicate the specific exemption from the Wastewater System and Potable Water Supply Rules?

7 Provide the following information for each building on the lot:

	(a) Building ID	(b) If building is exempt, indicate exemption	(c) Construction or increased flow?	(d) Proposed Use
X	1	§1-304(A)(1)	<input type="checkbox"/>	No change-4 bedroom residence

Add Another Building

Remove This Lot

Add Another Lot

Part V Water Supply Information

Section A - Water Supply Screening Questions

- 1 Are you proposing a new water supply for this project? Yes No
 - 2 Are you proposing changes to an existing water supply for this project? Yes No
 - 3 Is there a connection to an existing water supply for the project? Yes No
- If you answered No to all three of the above questions, skip to Part VI. Otherwise, proceed with Part V.*

Section B - General Water Supply Questions

- 1 Does this project involve a failed water supply? Yes No
- 2 Will any of the proposed water sources serve 25 or more people or have 15 or more service connections? Yes No
If Yes, the applicant must contact the Water Supply Division at (802) 241-3400 for source, construction and operating
- 3 Are any of the existing or proposed water sources located within a special flood hazard area? Yes No
- 4 Are any of the existing or proposed water sources located within a floodway? Yes No
- 5 Are any of the proposed water sources located within 1 mile of a hazardous waste site as designated by the Waste Management Division and identified on the Agency mapping website? Yes No
If Yes, please submit additional information on the site. The Waste Management Division can be reached at (802) 241-3888.
- 6 Does this project require an approval letter from the Water Supply Division for the construction of a public water system, municipal water line extension over 500 feet, or hydrants or sprinkler systems? Yes No
If Yes, please submit a copy of the approval letter from the Water Supply Division.
- 7 Does the proposed or existing water supply(ies) use a water treatment device to obtain compliance with the quality requirements in the Water Supply Rule? Yes No
If Yes, please submit additional information regarding the constituent(s) that exceeds the standards and plans, details, and specifications of the treatment device.
- 8 Is any portion of the proposed water supply located in or near a Water Source Protection Area as designated by the Water Supply Division? Yes No
If in areas of known interference issues, please contact the Water Supply Division at (802) 241-3400.

Section C - Individual Water Supply Details

Please provide the following information for each of the existing and proposed water supply(ies) serving a building or structure, or campground on the property.

1 Water Supply Name/Identifier Sawabini Existing Connection	2 Water Supply Owner (if not Applicant) Cedar Beach Association
3 Water Source Type Municipal/Fire District Connection	4 Type of Change to Supply No Change

5 Lots/Buildings Served by this Water Supply System

	(a) Lot#	(b) Building ID	(c) Type of Change to the Building's Supply	Design Flows (Gallons Per Day)			(g) Rule or Meter Based Flows
				(d) Existing	(e) Increase	(f) Total	
X	1	1	Connection to New System	490	0	490	Rule-based
				6 490	7 0	8 490	

Add Another Lot/Building Served by this Supply

9 Is this water supply located off-lot? Yes No

10 Is this water supply shared? Yes No
If the water supply is located off-lot or shared, submit a copy of the agreement to provide an easement prior to construction.

11 Is a variance being requested for this water supply? Yes No
If Yes, please submit additional details related to the variance request.

Remove This Water Supply

1 Water Supply Name/Identifier Sawabini Well		2 Water Supply Owner (if not Applicant)	
3 Water Source Type Non-Public Drilled Bedrock Well		4 Type of Change to Supply New System	
5 Lots/Buildings Served by this Water Supply System			
Design Flows (Gallons Per Day)			
(a) Lot#	(b) Building ID	(c) Type of Change to the Building's Supply	(g) Rule or Meter Based Flows
X 1	1	Connection to New System	Rule-based
		(d) Existing	(e) Increase
		490	0
		(f) Total	
		490	
Add Another Lot/Building Served by this Supply			
		6	7
		490	0
		8	
		490	

9 Is this water supply located off-lot? Yes No

10 Is this water supply shared? Yes No
If the water supply is located off-lot or shared, submit a copy of the agreement to provide an easement prior to construction.

11 Is a variance being requested for this water supply? Yes No
If Yes, please submit additional details related to the variance request.

Remove This Water Supply

Add Another Water Supply

Section D - Water Supply Design Flows Summary Table

1 If the project includes more than one water supply, please list each water supply system and provide the total water supply design flows for the project. **IMPORTANT:** Please don't include systems that were identified in this Part on Section C, Line 4 as a "Replacement Area Designation" in this summary table.

		Design Flows (Gallons Per Day)		
(a) Water Supply Name/Identifier	(b) Existing	(c) Increase	(d) Total	
X Sawabini Well	490		490	
Add Another Water Supply		2	3	4
		490		490

Part VI Wastewater Disposal System Information

Section A - Wastewater Disposal System Screening Questions

1 Are you proposing a new wastewater disposal system or replacement area for this project? Yes No

2 Are you proposing changes to an existing wastewater disposal system for this project? Yes No

3 Is there a connection to an existing wastewater disposal system for the project? Yes No

If you answered No to all three of the above questions, skip to Part VII. Otherwise, proceed with Part VI.

Section B - General Wastewater Disposal System Questions

1 Does this project involve a failed wastewater disposal system? Yes No

2 Do any of the systems require a curtain or dewatering drain as part of the design? Yes No

3 Is a hydrogeologic study required for this project? Yes No

4 If the project has a soil-based wastewater disposal system with design flows that exceed 1,000 GPD, is this project located in a Class A Watershed?..... Yes No NA

If Yes, indicate the Class A Watershed in which the system(s) is located:

(a) Class A Watershed Name

5 Are there any existing or proposed floor drains as part of this project?..... Yes No

If Yes, indicate where the floor drains will discharge:

(a) Floor Drain Discharge Point

6 If the project utilizes an Innovative/Alternative System or Product, has the applicant received a copy of the Wastewater Management Division's approval letter? Yes No NA

7 Is any portion of the proposed wastewater disposal system located in or near a Water Source Protection Area as designated by the Water Supply Division? Yes No

If Yes, contact the Water Supply Division at (802) 241-3400.

Section C - Individual Wastewater Disposal System Details

Please provide the following information for each of the existing and proposed wastewater disposal systems serving a building or structure, or campground on the property.

1 Wastewater Disposal System Name/Identifier <input type="text" value="Sawabini Existing System"/>	2 Wastewater Disposal System Owner (if not Applicant) <input type="text"/>
3 Wastewater Disposal System Type <input type="text" value="In-ground"/>	4 Type of Change to System <input type="text" value="Replacement of Failed System"/>

5 Lots/Buildings Served by this Wastewater Disposal System

(a) Lot#	(b) Building ID	(c) Type of Change to the Building's System	Design Flows (Gallons Per Day)				(h) Rule or Meter Based Flows
			(d) Existing	(e) Increase	(f) Infiltration	(g) Total	
X 1	1	Connection to New System	490	0	0	490	Rule-based
Add Another Lot/Building Served by this System			6 490	7 0	8 0	9 490	

10 Is this wastewater disposal system located off-lot? Yes No

11 Is this wastewater disposal system shared? Yes No

If the wastewater disposal system is located off-lot or shared, submit a copy of the agreement to provide an easement prior to initiation of construction.

12 Is a variance being requested for this wastewater disposal system? Yes No

If Yes, please submit additional details related to the variance request.

13 If this wastewater disposal system type is a connection to an Indirect Discharge System, please provide the Indirect Discharge System ID number.

Indirect Discharge System ID Number

14 If this wastewater disposal system type is a connection to a municipal system, please select the town.
 Town

15 If this wastewater disposal system is a soil-based system, please select the design approach used.
 Design Approach Used

16 For soil-based systems, please check all that apply.
 Storage and Dose Filtrate

17 If this is an Innovative/Alternative soil-based system, please select the system use type.
 Innovative/Alternative System Use Type

18 If this is an Innovative/Alternative soil-based system, please select the Innovative/Alternative system or product.
 Innovative/Alternative System or Product

Remove This Wastewater System

1 Wastewater Disposal System Name/Identifier <input type="text" value="Sawabini Proposed System"/>	2 Wastewater Disposal System Owner (if not Applicant) <input type="text"/>
3 Wastewater Disposal System Type Select Bottomless Sand Filter w/ Pre-Treatment	4 Type of Change to System <input type="text" value="New System"/>

5 Lots/Buildings Served by this Wastewater Disposal System

	Design Flows (Gallons Per Day)							(h) Rule or Meter Based Flows
	(a) Lot#	(b) Building ID	(c) Type of Change to the Building's System	(d) Existing	(e) Increase	(f) Infiltration	(g) Total	
X	<input type="text" value="1"/>	<input type="text" value="1"/>	Connection to New System	<input type="text" value="490"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text" value="490"/>	<input type="text" value="Rule-based"/>
Add Another Lot/Building Served by this System				<input type="text" value="490"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text" value="490"/>	

10 Is this wastewater disposal system located off-lot? Yes No

11 Is this wastewater disposal system shared? Yes No
If the wastewater disposal system is located off-lot or shared, submit a copy of the agreement to provide an easement prior to initiation of construction.

12 Is a variance being requested for this wastewater disposal system? Yes No
If Yes, please submit additional details related to the variance request.

13 If this wastewater disposal system type is a connection to an Indirect Discharge System, please provide the Indirect Discharge System ID number.
 Indirect Discharge System ID Number

14 If this wastewater disposal system type is a connection to a municipal system, please select the town.
 Town

15 If this wastewater disposal system is a soil-based system, please select the design approach used.
 Design Approach Used

16 For soil-based systems, please check all that apply.
 Storage and Dose Filtrate

17 If this is an Innovative/Alternative soil-based system, please select the system use type.
 Innovative/Alternative System Use Type

18 If this is an Innovative/Alternative soil-based system, please select the Innovative/Alternative system or product.
 Innovative/Alternative System or Product

Section D - Wastewater Disposal Systems Design Flows Summary Table

1 If the project includes more than one wastewater disposal system, please list each system on this page and provide the total wastewater disposal design flows for the project. **IMPORTANT:** Please don't include systems that were identified in this Part on Section C, Line 4 as a "Replacement Area Designation" in this summary table.

(a) Wastewater Disposal System Name/Identifier	Design Flows (Gallons Per Day)			
	(b) Existing	(c) Increase	(d) Infiltration	(e) Total
X Sawabini Proposed System	490		0	490
Add Another Wastewater System	2 490	3	4 0	5 490

Part VII Application Fees

1 Fee Amount

2 Fee Calculation Details

Part VIII Designer Certification & Copyright License

Section A - Certifying Designer 1 Certification & Copyright License

"I hereby certify that in the exercise of my reasonable professional judgment, the design-related information submitted with this application is true and correct, and that the design included in this application for a permit complies with the Vermont Wastewater System and Potable Water Supply Rules and the Vermont Water Supply Rules.

As the individual who prepared this application, including all documents that are marked as copyrighted, I hereby grant a non-exclusive, limited license to the State to allow the documents to be made available for public review and copying in order to properly implement and operate the permitting programs for Wastewater Systems and Potable Water Supplies, and for no other purposes. As a condition to this license, the State agrees that it will not make any changes to such documents, nor will the State delete any copyright notices on such documents."

1 Check the design(s) you are certifying. This should be the same as the Designer Role(s) you selected in Part II, Section A, Line 13.

- Water Supply Designer
- Wastewater Disposal System Designer

1 Designer 1 Name	2 Designer 1 Signature	3 Signature Date
Stephen Revell		2/22/12

Section B - Certifying Designer 2 Certification & Copyright License

"I hereby certify that in the exercise of my reasonable professional judgment, the design-related information submitted with this application is true and correct, and that the design included in this application for a permit complies with the Vermont Wastewater System and Potable Water Supply Rules and the Vermont Water Supply Rules.

As the individual who prepared this application, including all documents that are marked as copyrighted, I hereby grant a non-exclusive, limited license to the State to allow the documents to be made available for public review and copying in order to properly implement and operate the permitting programs for Wastewater Systems and Potable Water Supplies, and for no other purposes. As a condition to this license, the State agrees that it will not make any changes to such documents, nor will the State delete any copyright notices on such documents."

1 Check the design(s) you are certifying. This should be the same as the Designer Role(s) you selected in Part II, Section B, Line 13.

- Water Supply Designer
- Wastewater Disposal System Designer

1 Designer 2 Name	2 Designer 2 Signature	3 Signature Date

Part IX Applicant(s) Signature & Acknowledgements

In order to insure compliance with the requirements of the regulations administered by the Department of Environmental Conservation, Wastewater Management Division, it may be necessary to visit the property. As this would involve a Department employee entering private property, we request your approval to do so.

1 If we do visit your property, do you have any special instructions?

"As landowner of the property for which I am requesting a permit from the Department of Environmental Conservation, I understand that by signing this application I am granting permission for the Department employees to enter the property, during normal working hours, to insure compliance of the property with the applicable rules of the Department.

I also understand that I am not allowed to commence any site work or construction on this project without written approval from the Department of Environmental Conservation.

If my project utilizes an Innovative/Alternative System or Product, I have received a copy of the Wastewater Management Division's approval letter and agree to abide by the conditions of the approval.

I also certify that to the best of my knowledge and belief the information submitted above is true, accurate and complete."

<input checked="" type="checkbox"/>	2 Print Applicant Name Stuart Sawabini	3 Applicant Signature	4 Signature Date
<input checked="" type="checkbox"/>	2 Print Applicant Name Nicolene Sawabini	3 Applicant Signature	4 Signature Date

Add Applicant Signature Block

Sawabini Property
Soil Profile Descriptions
August 1, 2011 & August 10, 2011
By Stephen Revell Licensed Class B Designer
Note: Auger Hole placed on 8/10/11

Test Pits 1-4 and Auger Hole 1

- 0-12" Brown-tan very fine sandy loam to silt loam, loose to friable, strong fine blocky structure, well drained
- 12-18" Tan to yellow-brown very fine sandy loam to silt loam, friable, moderate fine blocky structure, mottled at 15 to 18"
- 18-36" Brown-gray clay loam, firm, massive to coarse platy structure, mottled, no water or ledge to 36"

Test Pits 5 & 6

- 0-12" Brown-tan very fine sandy loam to silt loam, coarse to friable, strong fine blocky structure, well drained
- 12-15" Same as 12-18" above, mottled at 12-15"
- +15" Rock



Lincoln Applied Geology, Inc.
Environmental Consultants

163 Revell Drive • Lincoln, VT 05443 • (802) 453-4384 • FAX (802) 453-5399

**Sawabini Property
Molly Henry Road
Charlotte, Vermont**

Percolation Test Results

All tests were performed on August 10, 2011 at a depth of 10" - 16"

PT-1	Drop Time (min)	Total Drop Time (min)	Total Drop (inches)	Drop Rate (min/inch)
	9.3	9.3	1	9.3
	14.6	23.9	2	12.0
	18.4	42.3	3	14.1
	20.3	62.6	4	15.6
	23.8	86.4	5	17.3
	25.1	111.5	6	18.6
	26.2	137.7	7	19.7
	---	1440.0	---	32.3

*NOTE:
Drop time includes fill time for each of the seven runs.

Sawabini Property
Molly Henry Road
Charlotte, Vermont

Percolation Test Results

All tests were performed on August 10, 2011 at a depth of 10" - 16"

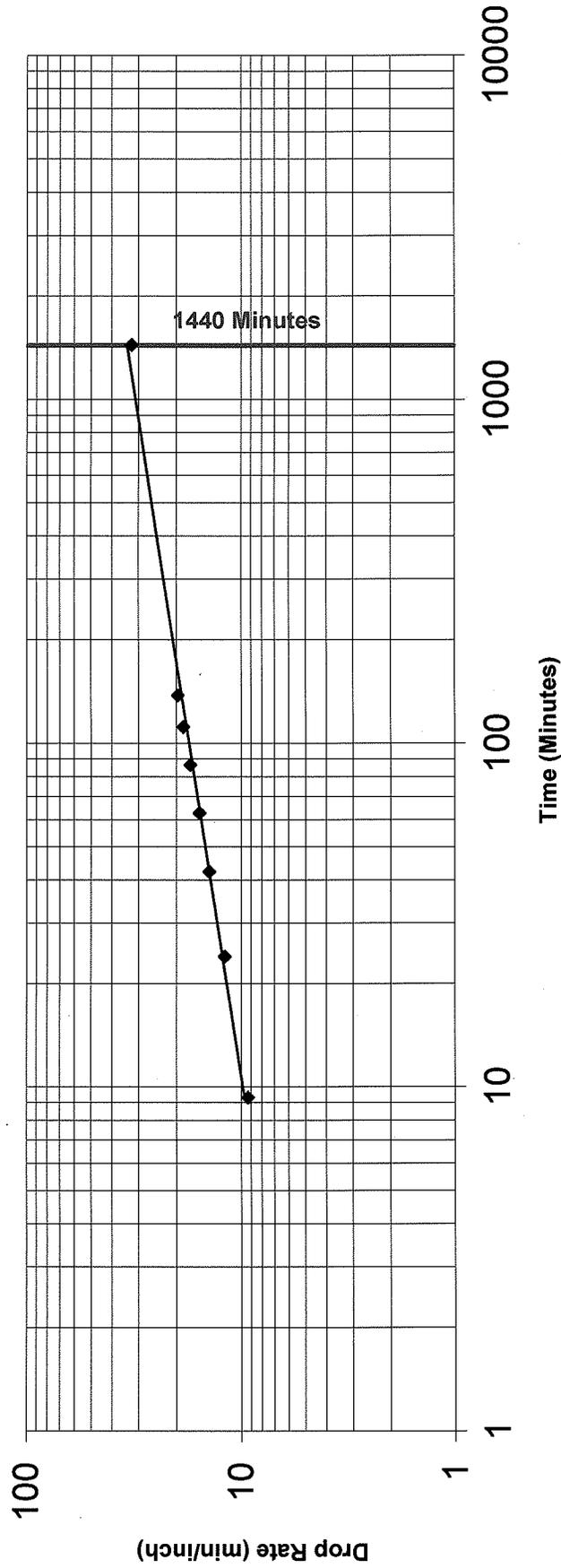


Chart 1

Time (Minutes)

◆ PT-1 — Best Fit PT-1

~~PRESSURE DISTRIBUTION & MOUND DIMENSION DETAILS~~

CLIENT'S NAME: Sawabini- Replacement Bottomless Sand Filter
 DATE: 2/18/2012 PERFORMED BY: S. Revell LAG Project #: 11063

Design Flow Rate	490	GPD
Width of Distribution Stone Bed/Trench	6	FEET
Length of Distribution Stone Bed/Trench	45	FEET
Thickness of Sand Beneath Distribution Stone Bed/Trench	1.5	FEET
Thickness of Stone Beneath Laterals	6	INCHES
Soil Cover Thickness at Edge of Level Area	12	INCHES
Front Slope of Finished Mound	33	PERCENT
Side and Rear Slope of Finished Mound	33	PERCENT
Percolation Rate	32.3	MPI
Natural Ground Slope	8	PERCENT
<hr/>		
Thickness of Sand on Upper Side of Level Area	2.17	FEET
Thickness of Sand on Lower Side of Level Area	2.81	FEET
Width of Level Area	8	FEET
Length of Level Area	47	FEET
Area of Distribution Stone Bed/Trench	270	SQUARE FT
Volume of Stone Required	6	CUBIC YARDS
Proposed Basal Area	911	SQUARE FEET
Volume of Mound Sand Required	134.6	CUBIC YARDS
<hr/>		
Number of Laterals	6	
Length of Each Lateral	21.75	FEET
Number of Orifices in the Manifold	0	
Number of Orifices in Each Lateral	15	
Distance Between Manifold and First Orifice	0.75	FEET
Distance Between Orifices (on center)	1.5	FEET
Distribution Area per Orifice	3.00	SQ. FT.
<hr/>		
Design Pressure Head	3	FEET
Diameter of Orifices (enter as fraction)	0.125	INCHES
Elevation From Pump Intake to Laterals (0 if siphon)	7	FEET
Diameter of Force Main	1.5	INCHES
Length of Force Main	125	FEET
Length of Manifold to Lateral	2	FEET
Diameter of Manifold Pipe	1.5	INCH
Diameter of Lateral Pipe	1.5	INCH
<hr/>		
Friction Loss in Force Main	8.86	FEET
Friction Loss in Manifold	0.04	FEET
Friction Loss in Section 1	0.00	FEET
Friction Loss in Entire Lateral	0.01	FEET
Discharge Rate at First Orifice	0.32	GPM
Discharge Rate at Last Orifice	0.32	GPM
Percent Difference in Flow Rate First to Last Orifice	0.22	PERCENT
<hr/>		
Total Dynamic Head Loss	18.984	FEET
Total Distribution System Flow	29.03	GPM
Volume of Distribution System	11.98	GALLONS
Pump Capacity	29.03 GPM vs	18.984 FEET OF HEAD
Volume per Dose	50	GALLONS
On/Off Float Swing (1,000 gal. Tank)	3.4	INCHES

HYDROMATIC®

SHEF40

Submersible High Head Effluent Pump

Applications

- Septic Tank Effluent
- High Head Sump
- Dewatering



HYDROMATIC®
Pentair Pump Group

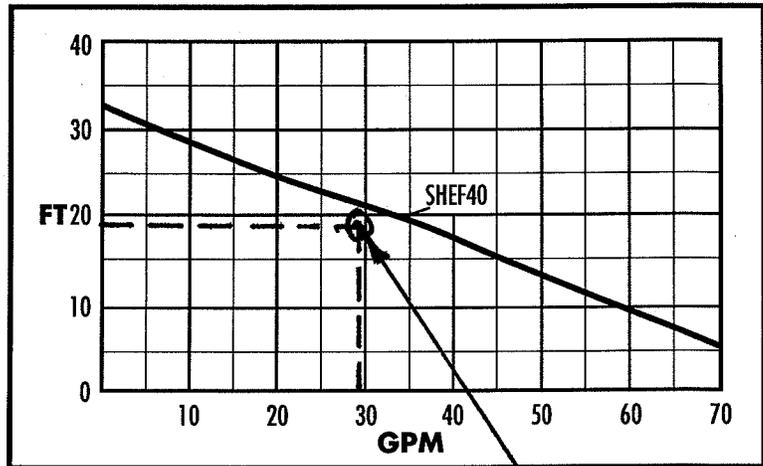
SHEF40 - Submersible Effluent Pump

DETAILS

Pump Characteristics

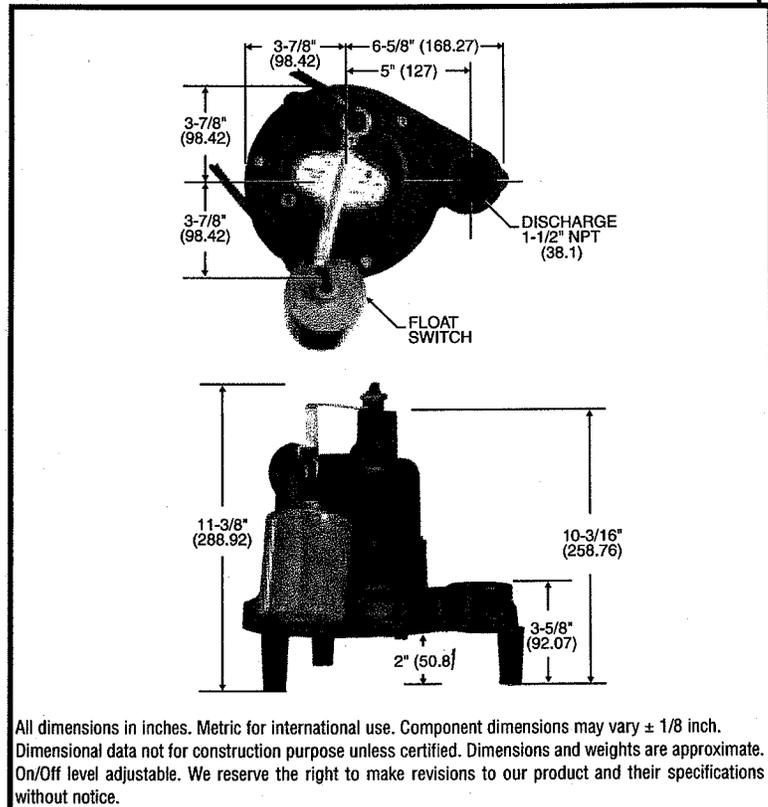
Pump/Motor Unit	Submersible	
Manual Models	SHEF40M1	SHEF40M2
Automatic Models	SHEF40A1	SHEF40A2
Horsepower	4/10	
Full Load Amps	12	6.5
Motor Type	Shaded Pole (4 Pole)	
R.P.M.	1550	
Phase	1Ø	
Voltage	115	230
Hertz	60	
Temperature	120° F Max. Fluid Temp.	
NEMA Design	A	
Insulation	Class A	
Discharge Size	1 1/2" NPT	
Solids Handling	3/4"	
Weight	28 lbs.	
Power Cord	18/3, SJTW, 20' std. (30' optional)	

Performance Data



29.03 gpm vs 18.98' TDH
Use SHEF40 or equal

Dimensional Data



All dimensions in inches. Metric for international use. Component dimensions may vary $\pm 1/8$ inch. Dimensional data not for construction purpose unless certified. Dimensions and weights are approximate. On/Off level adjustable. We reserve the right to make revisions to our product and their specifications without notice.

Materials of Construction

Handle	Stainless Steel
Lubricating Oil	Dielectric Oil
Motor Housing	Cast Iron
Pump Casing	Cast Iron
Shaft	Steel
Mechanical Shaft Seal	Seal Faces: Carbon/Ceramic Seal Body: Anodized Steel Spring: Stainless Steel Bellows: Buna-N
Impeller	Engineered Thermoplastic
Upper Bearing	Bronze Sleeve Bearing
Lower Bearing	Single Row Ball Bearing
Bottom Plate	Polyester Coated Steel
Fasteners	Stainless Steel
Legs	Engineered Thermoplastic



HYDROMATIC®
Pentair Pump Group

USA

1840 Baney Road Ashland, Ohio 44805
Tel: 419-289-3042 Fax: 419-281-4087

ISO 9001 Certified
www.hydromatic.com

CANADA

269 Trillium Drive Kitchener, Ontario, Canada N2G 4W5
Tel: 519-896-2163 Fax: 519-896-6337

Item #: W-02-6680 1/00 10M

State of Vermont
Department of Environmental Conservation
Wastewater Management Division
103 South Main St – The Sewing Bldg
Waterbury VT 05671-0405
www.anr.state.vt.us/dec/ww/wwwmd.cfm

[phone] 802-241-3822
[fax] 802-241-2596

Agency of Natural Resources

Innovative/Alternative System Approval
General Use per §1-1001 of the
Wastewater System and Potable Water Supply Rules, effective September 29, 2007
#2004-01-R2 (2010 Renewal)

Vendor Information
Bio-Microbics, Inc.
8450 Cole Parkway
Shawnee, KS 66227

Technology Names
MicroFAST®
RetroFAST®

Contact
James Bell
Executive Vice President
Bio-Microbics, Inc.
8450 Cole Parkway
Shawnee, KS 66227
Phone (913) 422-0707
Fax (913) 422-0808
Email: jbelle@biomicrobics.com
Web: www.biomicrobics.com

Technology Type
Fixed Activated Sludge
Treatment System

Expiration Date
December 1, 2012

Approval

The Bio-Microbics FAST® Model Numbers: 0.5, 0.75, 0.9, 1.0, 1.5, 3.0, 4.5, and 9.0; and RetroFAST® 0.25 and 0.375 may be used as part of a subsurface wastewater disposal system approved under the Wastewater System and Potable Water Supply Rules, effective September 29, 2007 (Rules), under the following conditions:

1. The treatment units must be installed and operated as described in the Innovative/Alternative System application package filed with the Agency of Natural Resources (Agency) on March 1, 2003 and June 5, 2003, the RetroFAST® Spec Sheet dated 2008 (located at http://biomicrobics.com/images/downloads/PDF/RTF_specsheet.pdf), the RetroFAST® Manual revised December 2009 (located at <http://biomicrobics.com/images/downloads/PDF/RetroFAST%20Manual%20-LETTER.pdf>) and with the site-specific installation and operating instructions submitted.



2. Unit sizing must be in accord with the technical information submitted with the Innovative/Alternative System application package on March 1, 2003 and June 5, 2003, and with the RetroFAST® Spec Sheet. The sizing shall be based on the calculated design flow per §1-808 of the Rules.
3. This approval is based on treatment only of domestic wastewater of low and moderate strength as specified in §1-915(a)(1)(C) & (D) of the Rules. Systems to treat higher strength wastewater may be approved on a case by case basis.
4. The system may be used for both new and replacement systems.
5. All effluent from a Bio-Microbics FAST®, or RetroFAST® unit shall be discharged to a filtrate disposal system that conforms to the requirements of §1-916 of the Rules. If the rules are revised during the term of this approval, this approval shall be revised as needed to conform to the revisions.
6. Detailed operating instructions shall be provided in writing to the owner/operator.
7. The Vendor shall have an inventory of replacement parts available locally or available for delivery within 24 hours.
8. The Vendor shall provide a copy of this approval letter to any landowner who is a prospective purchaser of a Bio-Microbics FAST®, or RetroFAST® unit prior to the sale of the unit and prior to the filing of any application for a site-specific approval by the Agency for the purchaser's property. The application filed with the Agency shall include the landowner's written acknowledgement of this approval letter. Prior to any sale of the property or completion of a sales agreement to sell the property, a copy of the site-specific permit shall be provided to the prospective purchaser. The owner of record shall notify the Vendor of the sale, and provide contact information for the new owner.
9. The owner of a property where a Bio-Microbics FAST®, or RetroFAST® unit has been installed shall have a valid maintenance contract in force at all times. The minimum length of any contract shall be for a period of two years. A copy of the initial and each succeeding contract shall be submitted to the appropriate Regional Environmental Office of the Agency and to the Vendor. Maintenance shall be performed by, or shall be supervised by, a Licensed Class 1 Designer or a Licensed Class B Designer, approved by the Vendor or their representative, who shall provide written inspection reports detailing the maintenance performed on the specific system, any problems that have occurred since the previous inspection, any modifications made to the system, the date of the inspection, and any work required to ensure the system operates in compliance with this approval.

The inspection shall be performed in accord with the manufacturer's Operation and Maintenance requirements submitted as part of the Innovative/Alternative System application package or with the RetroFAST® Manual. If at any inspection the effluent is cloudy or pungent smelling a sample shall be collected and tested for BOD and TSS. The results of any testing shall be submitted with the annual inspection report.

10. The first inspection shall be completed no later than 3 months after placing the unit in service. The second inspection shall be completed no later than 12 months after placing the unit in service. Subsequent inspections shall be completed at least once per year based on the date when the unit was first placed in service. More frequent inspections or additional testing, required by the manufacturer to ensure proper functioning of the system, shall be conducted in accordance with the manufacturer's specifications. All reports shall be filed with the appropriate Regional Environmental Office of the Agency, the Vendor and the landowner with the annual inspection report
11. The Vendor shall submit an annual report to the Agency by April 1 of each year containing the following information for the 12 month period ending December 31 of the previous year:
 - A. The number of permitted units installed in Vermont.
 - B. The address of each installation.
 - C. The name of the owner at the time of installation and any known change in ownership.
 - D. All known problems or failures, with a brief summary of the cause and remedial measures taken.
 - E. Copies of reports from an approved laboratory of all effluent quality testing conducted.
12. This approval is based on information submitted by the Vendor indicating that the specified models will routinely provide effluent with no more than 30 mg/l of BOD₅ and no more than 30 mg/l of TSS.
13. When a project is subject to the Rules, site-specific permission for the use of this product is required in the form of a Wastewater System and Potable Water Supply Permit.
14. A site-specific permit for the use of this product may be revoked if the unit fails to function properly or if the property owner fails to have a valid contract for the required maintenance and inspection of the unit. In the case of the unit failing to function properly, revocation of the permit will require that the use of the building be discontinued unless another wastewater disposal system is installed based on prior written approval by the Agency.
15. This approval is not a representation or guarantee of the effectiveness, efficiency or operation of a Bio-Microbics FAST®, or RetroFAST® unit.

Design and Review Conditions

The following conditions will be used by the Department in reviewing permit applications that include a Bio-Microbics FAST®, or RetroFAST® unit:

Equipment

- Bio-Microbics FAST® Model Numbers: 0.5, 0.75, 0.9, 1.0, 1.5, 3.0, 4.5, 9.0, and RetroFAST® 0.25 and 0.375.

Design and Application

- The treatment unit shall be installed in accordance with the approved plans and the manufacturer's recommendations. The Designer shall assure that the system will properly function in all seasons.
- The Designer must assess the structural needs of the unit for the specific application site and place the requirements on the design plans.
- The Designer must determine the type of backfill required and any necessary placement specifications.
- The Designer must assess the ventilation path for the particular application and make any necessary provisions to assure proper flow and control of odor emissions.
- The Designer shall consult with the Vendor for proper sizing and include in the design a septic tank effluent filter with easy access for inspection and cleaning.
- The Designer must assure routine access to the unit as well as the settling tank, control panel, blower, any pumps, distribution boxes (for sampling), and effluent filters.
- The Designer must address flotation issues if the SHWT will be above the bottom of any of the tanks.

Installation Inspection

- The treatment unit shall be set up under the instruction and guidance of an installer/inspector trained by the Vendor.
- The treatment unit shall be inspected by a Licensed Class 1 Designer or a Licensed Class B Designer, approved by the Vendor, after construction of the unit and installation of the tanks before backfilling, and after backfilling and grading is complete. The inspection shall include checking for an adequate structural foundation to support the unit, checking for levelness of the tanks, and inspecting for damage and proper assembly.
- Before backfilling, the unit and tankage shall be tested for watertightness by filling the unit or tank with water to a point that is above all below grade openings and holding it at a constant level for 24 hours; there shall be no measurable leakage. During the test the entire unit and tanks shall be inspected for visible leaks. Should the unit or tanks fail the test they may be repaired and retested. The testing and repairs shall be conducted under the direction and in the presence of the inspecting engineer or site technician.

- The Designer shall inspect all piping for proper installation and watertightness before backfilling.

Start-up

- Start-up of the system and initial operational checks shall be conducted by an installer/inspector trained by the Vendor, who shall submit a report to the owner, the Vendor, and to the inspecting Designer indicating any problems encountered, their resolution, and affirmation that the system is operating as intended.

Operational Maintenance and Inspection

- The owner shall have a valid maintenance contract in force at all times. The minimum length of any contract shall be for a period of two years. A copy of the initial and each succeeding contract shall be submitted to the appropriate Regional Environmental Office of the Agency and to the Vendor. Maintenance shall be performed by, or shall be supervised by, a Licensed Class 1 Designer or a Licensed Class B Designer, approved by the Vendor, who shall provide written inspection reports detailing the maintenance performed on the specific system, any problems that have occurred since the previous inspection, any modifications made to the system, the date of the inspection, the results of all testing, and any work required to ensure the system operates in compliance with this approval.

The inspection shall be performed in accord with the manufacturers Operation and Maintenance Manual submitted as part of the Innovative/Alternative System application package. If at any inspection the effluent is cloudy or pungent smelling a sample shall be collected and tested for BOD and TSS. The results of all testing shall be submitted to the Agency and to the Vendor, with the annual inspection report.

- The first inspection shall be completed no later than 3 months after placing the system in service.
- The second inspection shall be completed no later than 12 months after placing the system in service.
- Subsequent inspections shall be completed at least once per year based on the date when the system was first placed in service. More frequent inspections or additional testing, required by the manufacturer to ensure proper functioning of the system, shall be conducted in accordance with the Vendor's specifications.
- All reports shall be filed with the appropriate Regional Environmental Office of the Agency, the Vendor, and the landowner with the annual inspection report.

Permitting

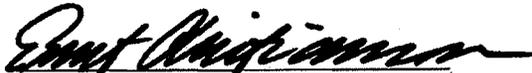
- The permit shall run with the land.

- A copy of the site-specific permit shall be provided to any prospective purchaser prior to the sale.
- Each new owner of the property shall inform the appropriate Regional Environmental Office of the Agency, and the Vendor, within 30 days of the transfer of the property and include the name and mailing address of the new owner.

Effective:

1-03-2011

by:



Ernest Christianson
Regional Office Program Manager

Sawabini Property
Act 145 Notifications
List of Affected Property Owners

1. Pease Common Inc
c/o Jane Carleton, Treasurer
343 7Th St. # 2
Brooklyn, NY 11215
2. Julie Ann Polk
58 Turtle Moon Rd.
Charlotte, VT 05145
3. Kinvin L. & Deborah B. Wroth
P.O. Box 53
South Royalton, VT 05068-0053

F:\CLIENTS\2011\11063\List of Affected Property Owners



Lincoln Applied Geology, Inc.
Environmental Consultants

163 Revell Drive • Lincoln, VT 05443 • (802) 453-4384 • FAX (802) 453-5399



February 21, 2012

Kinvin L. & Deborah B. Wroth
P.O. Box 53
South Royalton, VT 05068-0053

RE: Nicolene & Stuart Sawabini, Water and Wastewater Permitting –
5 Molly Henry Rd, Charlotte, Vermont

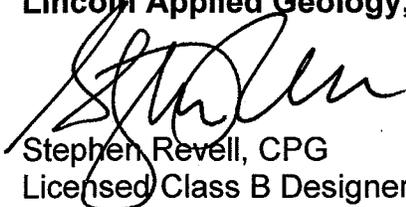
Dear Kinvin & Deborah:

I am currently preparing an application for a State of Vermont Wastewater System and Potable Water Supply Permit on behalf of your neighbors Nicolene and Stuart Sawabini. The permit application requests approval to locate a replacement well in a location adjacent to your property.

Recent changes to State Statute (Act 145) require me to notify you that the isolation zone related to the proposed well extends onto your land. Although I do not believe this affects you (because of exposed ledge and drainage), this isolation distance limits your ability to place a disposal area in this area in the future. The Statute change does not create any right other than notification.

As required by law, I have enclosed a copy of the permit application, the associated plans and all associated documents. The plans show the isolation zone on your property surrounding the proposed well. If you have any questions, please contact me at 802-453-4384.

Very truly yours,
Lincoln Applied Geology, Inc.



Stephen Revell, CPG
Licensed Class B Designer 178 and Principal Hydrogeologist

SR/ih
Enclosure

F:\CLIENTS\2011\11063\act 145 landowner letter Wroth



February 21, 2012

Pease Common Inc.
c/o Jane Carleton, Treasurer
343 7th St. #2
Brooklyn, NY 11215

RE: Nicolene & Stuart Sawabini, Water and Wastewater Permitting –
5 Molly Henry Rd, Charlotte, Vermont

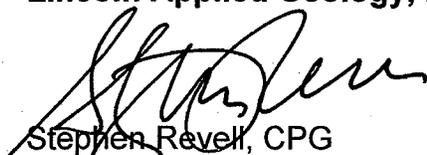
Dear Jane:

I am currently preparing an application for a State of Vermont Wastewater System and Potable Water Supply Permit on behalf of your neighbors Nicolene and Stuart Sawabini. The permit application requests approval to locate a replacement well in an area adjacent to your property.

Recent changes to State Statute (Act 145) require me to notify you that the isolation zone related to the proposed replacement well extends onto your land. Although I do not believe this affects you (because of exposed ledge and drainage), this isolation distance limits your ability to place a disposal area in this area in the future. The Statute change does not create any right other than notification.

As required by law, I have enclosed a copy of the permit application, the associated plans and all associated documents. The plans show the isolation zone on your property surrounding the proposed replacement well. If you have any questions, please contact me at 802-453-4384.

Very truly yours,
Lincoln Applied Geology, Inc.



Stephen Revell, CPG
Licensed Class B Designer 178 and Principal Hydrogeologist

SR/ih
Enclosure

F:\CLIENTS\2011\11063\act 145 landowner letter Carleton



February 21, 2012

Julie Ann Polk
58 Turtle Moon Rd.
Charlotte, VT 05145

RE: Nicolene & Stuart Sawabini, Water and Wastewater Permitting –
5 Molly Henry Rd, Charlotte, Vermont

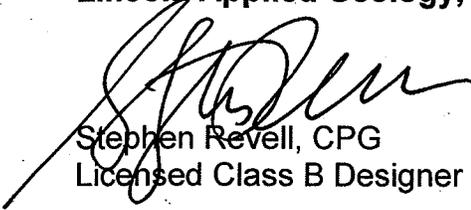
Dear Julie:

I am currently preparing an application for a State of Vermont Wastewater System and Potable Water Supply Permit on behalf of your neighbors Nicolene and Stuart Sawabini. The permit application requests approval to locate a replacement wastewater disposal area in a location adjacent to your property.

Recent changes to State Statute (Act 145) require me to notify you that the isolation zone related to the proposed replacement disposal extends onto your land. Although I do not believe this affects you (because of wet soils and drainage), this isolation distance limits your ability to place a well in this area in the future. The Statute change does not create any right other than notification.

As required by law, I have enclosed a copy of the permit application, the associated plans and all associated documents. The plans show the isolation zone on your property surrounding the proposed replacement disposal area. If you have any questions, please contact me at 802-453-4384.

Very truly yours,
Lincoln Applied Geology, Inc.



Stephen Revell, CPG
Licensed Class B Designer 178 and Principal Hydrogeologist

SR/ih
Enclosure

F:\CLIENTS\2011\11063\act 145 landowner letter Polk