



# CIVIL ENGINEERING ASSOCIATES, INC.

10 Mansfield View Lane  
South Burlington, VT 05403

Phone: 802-864-2323  
Fax: 802-864-2323  
E-Mail: mail@cea-vt.com

October 3, 2016

Mr. Joe Rheame, Town Zoning Administrator  
Town of Charlotte  
P.O. Box 119  
Charlotte, Vermont 05445

**Re: Philo Ridge Farm, Philo Ridge Farm, LLC  
Wastewater Disposal and Potable Water Supply Permit Application  
2766 Mt. Philo Road, Charlotte**

Dear Joe:

The Philo Ridge Farm is proposing to construct a new wastewater disposal system and utilize an existing water supply to support its proposed farm market building to be located at 2766 Mt. Philo Road. As part of this project, the Farm is looking to discontinue the use of the historic wastewater disposal system serving the Brick House and consolidate that with the new system.

The system components include:

**Grease Traps** – to be installed at both the Brick House (2,000 Gallon) and the new Barn (2,500 gallon) to protect the long term operation of the new wastewater disposal system.

**Gravity Sewer** collection of the flows from the existing Brick House and proposed Barn via 4" SDR 35 PVC pipe. A total of 620 LF of pipe is proposed. This has been accounted for in the design infiltration portion of the design flows for the project which is set at 2,146 GPD. A copy of the break-down of design flows is attached.

**Primary Treatment** – To be provided through the installation of a 5,000 gallon septic tank.

**Disposal** – Construction of a 275-foot long mound pressurized by a duplex pump station. A hydrogeologic study for the system has been attached which demonstrates compliance with the Performance Based design criteria of the EPR's. A basis of design of the proposed pump station and disposal field are attached.

**Water Supply** – There are two wells on the property. The existing well serving the brick house will continue to be used for that purpose. This has a well driller's yield estimate of 10 GPM and a recent 3-hour yield test of 12 GPM. With a design flow of 820 GPD, this well can easily meet the peak flow and average daily demand for the building with no additional storage required.

Mr. Joe Rheume  
October 3, 2016  
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The so called Sheep Barn well on the east side of Mt. Philo Road will be utilized to service all of the remaining components of the proposed project. This well has a published well driller's yield estimate of 10 GPM, which when the 2.0 factor of safety is applied, can provide up to 3,600 GPD without further testing. A copy of the basis of design including the computation for the required storage is attached.

**Isolation Distance** – We have submitted a Time of Travel study which demonstrates that there is greater than a 2-year time of travel from the proposed mound to the proposed supply well. In this case, the aquifer benefits from 114-feet of clay and hardpan till overburden as a means of protecting the aquifer pathogen sources. As such, the normal 150' setback from the well to the downgradient toe of the mound is eligible to be reduced to 50'.

This completes our summary of the proposed wastewater system and potable water supply components for the property at 2766 Mt. Philo Road. If you should have any questions, please feel free to contact me at 864-2323 x310.

Respectfully,



David S. Marshall. P.E.  
Project Engineer

\\dsm

Enclosures

- Application Form
- Application Fee \$1,000 (\$500 for residential unit and \$500 for commercial unit)
- Act 145 Form 4 Abutter Notice Certification
- Two sets of full size plans, one set of 11x17
- Hydrostudy Report w Attachments
- Design Flows
- Wastewater Basis of Design
- Pump Cut Sheets
- Water Supply Basis of Design
- Well Time of Travel Study

CD of PDF's of application

cc: (all w enclosures) B. Harvey; CEA File 16107.00

# Drinking Water & Groundwater Protection 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		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"/>

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	
Petdia, LLC d/b/a Philo Ridge, LLC		802-735-6904	
3 Mailing Address Line 1		4 Mailing Address Line 2	
2766 Mount Philo Ridge Road		<input type="text"/>	
5 Town/City	6 State/Province	7 Country	8 Zip/Postal Code
Charlotte	Vermont	United States	05445

**Certifying Official**

The Certifying Official must be a person who has signatory authority for the legal entity or organization that is the Applicant.

9 Certifying Official Last Name		10 Certifying Official First Name (and MI if appropriate)	
McCargo		Diana	
11 Certifying Official Title			
Manager			
12 Certifying Official Email Address			13 Telephone
dianamccargo@me.com			802-735-6904

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)	
Marshall		David	
3 Designer License#	4 Company Name		
6019	Civil Engineering Associates, Inc.		
5 Mailing Address Line 1		6 Mailing Address Line 2	
10 Mansfield View Lane		<input type="text"/>	
7 Town/City	8 State/Province	9 Country	10 Zip/Postal Code
South Burlington	Vermont	United States	05403
11 Email Address			12 Telephone
dmarshall@cea-vt.com			864-2323 x310
13 Designer Role(s) (check all that apply)			
<input checked="" type="checkbox"/> Water Supply Designer <input checked="" type="checkbox"/> Wastewater Disposal System Designer			
<input type="button" value="Remove This Designer"/>			
<input type="button" value="Add Another Designer"/>			

Part III Property Location Information	
Section A - Property Location	
1 Please provide the property Town and the property address or a brief description of the location.	
(a) Town or City	(b) Street or Road Location
Charlotte	2766 Mt. Philo Road

<b>Section B - Center of Property GPS Coordinates</b>	
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 (in decimal degrees to five decimal places, ex. 44.38181°)	(b) Longitude (in decimal degrees to five decimal places, ex. -72.31392 °)
N <input style="width: 100px;" type="text" value="44.31642"/> °	W (-) <input style="width: 100px;" type="text" value="73.22398"/> °

**Part IV Project Information**

**Section A - General Project Information & Questions**

1 Project Name (if applicable) <input style="width: 95%;" type="text" value="Philo Ridge Farm"/>	2 Total Acreage of Property <input style="width: 95%;" type="text" value="214.7"/>
3 Business Name (if applicable) <input style="width: 95%;" type="text" value="Philo Ridge Farm"/>	
4 Detailed Project Description <input style="width: 95%; height: 20px;" type="text" value="Consolidation of wastewater disposal systems in one mound in for the existing brick house and the new Garen Barn food processing facility and market with an accommodation for small group gatherings (&lt;60 people)."/>	
5 (a) Were all existing buildings or structures, campgrounds, and their associated potable water supplies and wastewater systems substantially completed before January 1, 2007? ..... <input checked="" type="radio"/> Yes <input type="radio"/> No	
(b) Were all existing improved and unimproved lots in existence before January 1, 2007? ..... <input checked="" type="radio"/> Yes <input type="radio"/> No	
6 Does this application include subdividing the property? ..... <input type="radio"/> Yes <input checked="" type="radio"/> No	
7 Has anyone from the Drinking Water & Groundwater Protection Division's Regional Office been to the property?..... <input type="radio"/> Yes <input checked="" type="radio"/> No	
If Yes, enter the staff person's name and the date of the visit.	
(a) Name of Staff Person <input style="width: 200px;" type="text" value="Brian Tremback"/>	(b) Date of Visit (m/d/yyyy) <input style="width: 100px;" type="text"/>
8 Will any construction occur within 50 feet of a wetland boundary, mapped or designated? ..... <input type="radio"/> Yes <input checked="" type="radio"/> No	
<i>If Yes, contact the Wetlands Program of the Watershed Management Division at (802) 338-4835.</i>	
9 Will more than one acre be disturbed during the entire course of construction, including all lots and phases? ..... <input checked="" type="radio"/> Yes <input type="radio"/> No	
<i>If Yes, contact the Stormwater Program of the Watershed Management Division at (802) 241-4320.</i>	
10 Will there be any stream crossings by roads, utilities, or other construction? ..... <input type="radio"/> Yes <input checked="" type="radio"/> No	
<i>If Yes, contact the River Corridor Mgmt. Program of the Watershed Management Division at:</i>	
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? ..... <input type="radio"/> Yes <input checked="" type="radio"/> No	
<i>If Yes, show the special flood hazard area limits on the site plan.</i>	
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 ? ..... <input type="radio"/> Yes <input checked="" type="radio"/> No	
<i>If Yes, enter the town(s) and the associated number of lots in the table below:</i>	
(a) Town <input style="width: 150px;" type="text"/>	(b) Number of Lots <input style="width: 100px;" type="text"/>
<b>X</b>	
<input style="background-color: green; color: white; border: none;" type="button" value="Add Another Town/Lot"/>	
13 Is there any prior Act 250 jurisdiction on the tract of land?..... <input type="radio"/> Yes <input checked="" type="radio"/> No	
If Yes, enter the Act 250 permit number:	
(a) Act 250 Permit Number <input style="width: 200px;" type="text"/>	

**Section B - Project Deed Reference**

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

	(a) Town	(b) Parcel ID	(c) Book	(d) Page(s)
X	Charlotte	05-04-23.0	190	436

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	C1.0	Proposed Overall Site Plan	10/1/2016	
X	C1.2	Proposed Site Utility Plan - West	10/1/2016	
X	C1.3	Proposed Site Utility Plan - East	10/1/2016	
X	C2.2	Sewer Details	10/1/2016	
X	C2.3	Sewer Details	10/1/2016	
X	C2.4	Pump Station	10/1/2016	
X	C2.5	Pump Station Specifications	10/1/2016	
X	C2.1	Water & Storm Details	10/1/2016	
X	C4.2	Specifications	10/1/2016	
X	C4.3	Specifications	10/1/2016	
X	C4.4	Specifications	10/1/2016	

Add Another Plan Reference

**Section D - Existing Project Lot/Building Details**

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
W	78.2	Mixed Use (Commercial/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	House	Mixed Use (Comm/Res)	01-01-1900	None	<input checked="" type="radio"/> Yes <input type="radio"/> No
X	Carriage House/Office	Commercial	01-01-2000	None	<input type="radio"/> Yes <input type="radio"/> No
X	Pole Barn	Commercial	01-01-2000	None	<input type="radio"/> Yes <input type="radio"/> No

Add Another Building

Remove This Lot

1 Lot#	2 Lot Size (acres)	3 Existing Use of the Lot
SE	46	Undeveloped

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?
<b>X</b>	None	None		None	<input checked="" type="radio"/> Yes <input type="radio"/> No

Add Another Building
Remove This Lot

Add Another Lot

**Section E - Proposed Project Lot/Building Details**

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
W	78.2	Mixed Use (Residential/Commercial)

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
<b>X</b>	Brick House		<input checked="" type="checkbox"/>	Residential and Office
<b>X</b>	Carriage House/Office	§1-304(a)(20)	<input type="checkbox"/>	Office
<b>X</b>	Pole Barn	§1-304(a)(1)	<input type="checkbox"/>	Storage
<b>X</b>	Pack Barn	§1-304(a)(20)	<input type="checkbox"/>	Barn
<b>X</b>	Garen Barn		<input checked="" type="checkbox"/>	Agricultural Food Processing and Market

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 or water service line or changes to a permitted but not constructed water supply or water service line for this project? .....  Yes  No

2 Are you proposing changes to an existing water supply or water service for this project (including changes to location, design flows, or operational change)? .....  Yes  No

3 Is there an existing connection to a water supply or water service line for this project? .....  Yes  No

Complete Part V if you answered Yes to any of the above questions. A project with no existing or proposed water supply may skip to Part VI.

**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 Drinking Water & Groundwater Protection Division at (802) 241-3400 for source, construction and an operating permit.*

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 Drinking Water & Groundwater Protection 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 Drinking Water & Groundwater Protection 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 Drinking Water & Groundwater Protection Division? .....  Yes  No  
*If in areas of known interference issues, contact the Drinking Water & Groundwater Protection 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 Private Well #42294	2 Water Supply Owner (if not Applicant) Philo Ridge, LLC					
3 Water Source Type Non-Public Drilled Bedrock Well	4 Type of Change to Supply New Connection or Increased Flow					
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	(d) Existing	(e) Change	(f) Total	(g) Rule or Meter Based Flows
X W	New Garen Barn	Connection to Existing System	0	1,295	1,295	Rule-based
Add Another Lot/Building Served by this Supply			6	7	8	
			0	1,295	1,295	

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 Private Well #7363	2 Water Supply Owner (if not Applicant) Philo Ridge, LLC
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3 Water Source Type Non-Public Drilled Bedrock Well	4 Type of Change to Supply New Connection or Increased Flow
--	--

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) Change	(f) Total	
<b>X</b>	W	Brick House	Connection to Existing System	600	220	820	Rule-based
<span style="background-color: green; color: white; padding: 2px;">Add Another Lot/Building Served by this Supply</span>				6	7	8	
				600	220	820	

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.

	(a) Water Supply Name/Identifier	Design Flows (Gallons Per Day)		
		(b) Existing	(c) Change	(d) Total
<b>X</b>	Private Well #42294	0	1,295	1,295
<b>X</b>	Private Well #7363	600	220	820
<span style="background-color: green; color: white; padding: 2px;">Add Another Water Supply</span>				2
		600	1,515	2,115

**Part VI Wastewater Disposal System Information**

**Section A - Wastewater Disposal System Screening Questions**

1 Are you proposing a new or replacement wastewater disposal system, a new wastewater service line, or changes to a permitted but not constructed wastewater disposal system or wastewater service line for this project? .....  Yes  No

2 Are you proposing changes to an existing wastewater disposal system, replacement wastewater disposal system, replacement area, or wastewater service line for this project (including changes to location, design flows, or operational change)? .....  Yes  No

3 Is there an existing connection to a wastewater disposal system or wastewater service line for this project?.....  Yes  No

*Complete Part VI if you answered Yes to any of the above questions.  
A project with no existing or proposed wastewater disposal systems may skip to Part VII.*

**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 For projects using soil-based wastewater systems having a total design flow that exceeds 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 Drinking Water & Groundwater Protection 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 Drinking Water & Groundwater Protection Division? .....  Yes  No

*If Yes, contact the Drinking Water & Groundwater Protection 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 New Mound on SE Lot	2 Wastewater Disposal System Owner (if not Applicant) Philo Ridge Farm, LLC
3 Wastewater Disposal System Type Mound	4 Type of Change to System New 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) Change	(f) Infiltration	(g) Total	
X	W	Garen Barn	Connection to New System	0	1,295	141	1,436	Rule-based
X	W	Brick House	Connection to New System	490	220	0	710	Rule-based
Add Another Lot/Building Served by this System				6 490	7 1,515	8 141	9 2,146	

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

Select

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

Design Approach Used

Performance Based

16 For soil-based systems, please check all that apply (Note: Store and dose does not apply to standard pump/pump chamber systems).

- Storage and Dose     Filtrate     Constructed Wetlands

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

Add Another Wastewater System

**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.

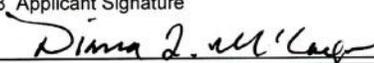
	(a) Wastewater Disposal System Name/Identifier	Design Flows (Gallons Per Day)			
		(b) Existing	(c) Change	(d) Infiltration	(e) Total
X	New Mound on SE Parcel	0	2,005	141	2,146
	Add Another Wastewater System	2	3	4	5
		0	2,005	141	2,146

**Part VII Application Fees**

1 Fee Amount \$1,000.00

2 Fee Calculation Details

Commercial Unit Fee \$500, Residential Unit Fee \$500

<b>Part VIII Designer Certification &amp; Copyright License</b>			
<b>Section A - Certifying Designer 1 Certification &amp; Copyright License</b>			
<p>"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.</p> <p>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."</p>			
<p>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.</p> <p><input checked="" type="checkbox"/> Water Supply Designer</p> <p><input checked="" type="checkbox"/> Wastewater Disposal System Designer</p>			
1 Designer 1 Name	2 Designer 1 Signature	3 Signature Date	
David S. Marshall, P.E.		9-30-16	
<b>Section B - Certifying Designer 2 Certification &amp; Copyright License</b>			
<p>"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.</p> <p>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."</p>			
<p>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.</p> <p><input type="checkbox"/> Water Supply Designer</p> <p><input type="checkbox"/> Wastewater Disposal System Designer</p>			
1 Designer 2 Name	2 Designer 2 Signature	3 Signature Date	
<b>Part IX Applicant(s) Signature &amp; Acknowledgements</b>			
<p>In order to insure compliance with the requirements of the regulations administered by the Department of Environmental Conservation, Drinking Water &amp; Groundwater Protection 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.</p>			
<p>1 If we do visit your property, do you have any special instructions?</p> <div style="border: 1px solid black; height: 30px; width: 100%;"></div>			
<p>"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.</p> <p>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.</p> <p>If my project utilizes an Innovative/Alternative System or Product, I have received a copy of the Drinking Water &amp; Groundwater Protection Division's approval letter and agree to abide by the conditions of the approval.</p> <p>I also certify that to the best of my knowledge and belief the information submitted above is true, accurate and complete."</p>			
<b>X</b>	2 Print Applicant Name	3 Applicant Signature	4 Signature Date
	Diana L. McCargo		10/3/16
<div style="background-color: #4CAF50; color: white; padding: 5px; display: inline-block;">Add Applicant Signature Block</div>			



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#### Business Information

##### Business Details

<b>Business Name:</b> PHILO RIDGE LLC	<b>Business ID:</b> 0022235
<b>Business Type:</b> Domestic Limited Liability Company	<b>Business Status:</b> Active
<b>LLC Subtype:</b> Manager Managed	<b>Did the LLC have members at the time of filing?</b> No
<b>Business Description:</b> ANYTHING LAWFUL	<b>Fiscal Year Month:</b> 12
<b>Date of Incorporation / Registration Date:</b> 05/01/2012	
<b>Designated Office Business Address:</b> 1905 MT. PHILO ROAD, CHARLOTTE, VT, 05445, USA	<b>Designated Office Mailing Address:</b> 1905 MT. PHILO ROAD, CHARLOT
<b>Citizenship / State of Incorporation:</b> Domestic/VT	<b>Last Annual Report Year:</b> 2014

##### Principals Information

Name/Title:	Physical Address:
Diana L. McCargo/Manager	1905 Mount Philo Road, Charlotte, VT, 05445, USA
PETER SWFIT/Manager	1905 MT. PHILO ROAD, CHARLOTTE

##### Registered Agent Information

**Name:** PETER SWIFT

**Physical Address:** 1905 MT PHILO ROAD, CHARLOTTE, VT, 05445, USA

**Mailing Address:** 1905 MT PHILO ROAD, CHARLOTTE, VT, 05445, USA

##### Trade Name Information

No Trade Name(s) associated to this business.

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**ANR Form 4: Certification Statement for Notification of Overshadowed Property Owner(s) pursuant to the Wastewater System and Potable Water Supply Program**

A person submitting an application to the Secretary for a Wastewater System and Potable Water Supply Permit where the proposed project has isolation distances (overshadowing) that extend onto property owned by persons other than the permit applicant shall submit the following certification with the application.

Note: When the property subject to the permit application is owned by more than one person, only one of the landowners must sign this certification statement even though all landowners must sign the permit application itself.

**I hereby certify that the individual(s) that own property that is overshadowed by my proposed project have been sent by certified mail a copy of the required notification form and the site plan(s) that accurately depicts all isolation distances. I also certify that I attached to this certification form a copy of all certified mail receipts for notifications that were sent to the affected property owners.**

Signature Diana L. McCargo

Name (Printed) **Diana L. McCargo**

Property Address or Property Tax ID # **2766 Mt. Philo Road, M05B04L23**

Date of this certification \_\_\_\_\_

Please list all of the property owners who were sent a notification by certified mail.

**Affected Property Owner(s) – (Please provide a second sheet using this format when there are more than three affected property owners)**

Name: Mr. Kenneth Denton  
2837 Mt Philo Road  
Charlotte, Vermont 05445

Ms. Sarah Scranton  
710 Hinesburg Road  
Po Box 388  
Charlotte, Vermont 05445

# Philo Rideg Farm Wastewater System 2766 Mt. Philo Road, Charlotte, Vermont

## Site: Mound Disposal Site - North End

Calculation Method: Darcy's Law

$$Q = KiA \times 7.48$$

where Q = Design Flow, or Hydrogeologic Site Capacity  
or Q/ft = Design Flow per Linear Foot  
i = Hydraulic Gradient  
A = L x h = Cross Sectional Area, Sq. Ft.  
7.48 = Conversion from Cu. Ft. to Gallons  
Assigned

Parameter	Value	Units	Notes:
K	20	ft/day	Value for Very Fine Sandy Loam
i	0.176	ft/ft	Hydraulic Gradient (Slope of Limiting Conditions)
A	1	Ft	Calculate using Linear Loading Rate
Des Q	7.80	gpd/lf	Design Flow - One 10' wide bed at 2 GPD/SF

Solve for: h = height of induced groundwater mound (IGWM)  
h = 0.30 Ft

### Trench 1 Calculate Trench Bottom Elevations to Provide 3.0 feet of Unsaturated Thickness Below Trench Bottoms.

Trench No.	Gallons per Day Q/ft	Highest Lim. Cond. Elev. Ft	Add Induced GW Mound, Ft.	Elev. SHGWT Plus IGWM, Ft.	Trench Bottom Elev. Calcs.			Unsat. Thickness Below Trench including Induced Mound, Ft.	Comment
					Inv. Elev.	Below Inv.	Bottom Elev.		
West Edge	0	340.85	0.00	340.9	344.6	0.75	343.85	3.00	Okay, 3.0' or Greater
	1.95	340.50	0.07	340.6	344.6	0.75	343.85	3.28	Okay, 3.0' or Greater
Middle	3.90	340.14	0.15	340.3	344.6	0.75	343.85	3.56	Okay, 3.0' or Greater
	5.85	339.79	0.22	340.0	344.6	0.75	343.85	3.84	Okay, 3.0' or Greater
East Edge	7.80	339.44	0.30	339.7	344.6	0.75	343.85	4.12	Okay, 3.0' or Greater

### Check on Predicted Freeboard at Toe of Mound Below Trench

Parameter	Value	Units	Notes:
K	20	ft/day	Value for Very Fine Sandy Loam
i	0.142	ft/ft	Hydraulic Gradient (Slope of Limiting Conditions)
A	1	Ft	Calculate using Linear Loading Rate
Des Q	7.80	gpd/lf	Design Flow - One 10' wide bed at 2 GPD/SF

Solve for: h = height of induced groundwater mound (IGWM)  
h = 0.37 Ft

Elev. Toe., Ft.	(B) Depth to SHGWT, Ft.	Lim. Cond. at Toe. Elev., Ft.	(D) Add Induced GW Mound, (ft.)	Elev. SHGWT Plus IGWM, Ft.	Predicted Freeboard (Col B- Col D), Ft.	Comment
336	1.42	334.58	0.37	334.9	1.05	Okay, 0.5' or Greater

### Check on Predicted Freeboard 25' downgradient of Toe of Mound

Parameter	Value	Units	Notes:
K	20	ft/day	Value for Very Fine Sandy Loam
i	0.131	ft/ft	Hydraulic Gradient (Slope of Limiting Conditions)
A	1	Ft	Calculate using Linear Loading Rate
Des Q	7.80	gpd/lf	Design Flow - One 8' wide bed at 1 GPD/SF

Solve for: 25 height of induced groundwater mound (IGWM)  
h = 0.40 Ft

Elev. Toe., Ft.	(B) Depth to SHGWT, Ft.	Lim. Cond. at Toe. Elev., Ft.	(D) Add Induced GW Mound, (ft.)	Elev. SHGWT Plus IGWM, Ft.	Predicted Freeboard (Col B- Col D), Ft.	Comment
331.9	1.5	330.4	0.40	330.8	1.10	Okay, 0.5' or Greater



# Philo Rideg Farm Wastewater System 2766 Mt. Philo Road, Charlotte, Vermont

## Site: Mound Disposal Trench - South End

Calculation Method: Darcy's Law

$$Q = KiA \times 7.48$$

where Q = Design Flow, or Hydrogeologic Site Capacity  
or Q/ft = Design Flow per Linear Foot  
i = Hydraulic Gradient  
A = L x h = Cross Sectional Area, Sq. Ft.  
7.48 = Conversion from Cu. Ft. to Gallons

### Assigned

Parameter	Value	Units	Notes:
K	20	ft/day	Value for Very Fine Sandy Loam
i	0.133	ft/ft	Hydraulic Gradient (Slope of Limiting Conditions)
A	1	Ft	Calculate using Linear Loading Rate
Des Q	7.80	gpd/lf	Design Flow - One 10' wide bed at 2 GPD/SF

Solve for: h = height of induced groundwater mound (IGWM)  
h = 0.39 Ft

### Trench 1 Calculate Trench Bottom Elevations to Provide 3.0 feet of Unsaturated Thickness Below Trench Bottoms.

Trench No.	Gallons per Day Q/ft	Highest Lim. Cond. Elev. Ft	Add Induced GW Mound, Ft.	Elev. SHGWT Plus IGWM, Ft.	Trench Bottom Elev. Calcs.			Unsat. Thickness Below Trench including Induced Mound, Ft.	Comment
					Inv. Elev.	Below Inv.	Bottom Elev.		
West Edge	0	340.8083	0.00	340.8	344.6	0.75	343.85	3.04	Okay, 3.0' or Greater
	1.95	340.54	0.10	340.6	344.6	0.75	343.85	3.21	Okay, 3.0' or Greater
Middle	3.90	340.28	0.20	340.5	344.6	0.75	343.85	3.38	Okay, 3.0' or Greater
	5.85	340.01	0.29	340.3	344.6	0.75	343.85	3.55	Okay, 3.0' or Greater
East Edge	7.80	339.74	0.39	340.1	344.6	0.75	343.85	3.72	Okay, 3.0' or Greater

### Check on Predicted Freeboard at Toe of Mound Below Trench

K	20	ft/day	Value for Very Fine Sandy Loam
i	0.133	ft/ft	Hydraulic Gradient (Slope of Limiting Conditions)
A	1	Ft	Calculate using Linear Loading Rate
Des Q	7.80	gpd/lf	Design Flow - One 10' wide bed at 2 GPD/SF

Solve for: h = height of induced groundwater mound (IGWM)  
h = 0.39 Ft

Elev. Toe., Ft.	(B) Depth to SHGWT, Ft.	Lim. Cond. at Toe. Elev., Ft.	(D) Add Induced GW Mound, (ft.)	Elev. SHGWT Plus IGWM, Ft.	Predicted Freeboard (Col B - Col D), Ft.	Comment
337.5	1.25	336.25	0.39	336.6	0.86	Okay, 0.5' or Greater

### Check on Predicted Freeboard 25' downgradient of Toe of Mound

K	20	ft/day	Value for Very Fine Sandy Loam
i	0.133	ft/ft	Hydraulic Gradient (Slope of Limiting Conditions)
A	1	Ft	Calculate using Linear Loading Rate
Des Q	7.80	gpd/lf	Design Flow - One 8' wide bed at 1 GPD/SF

Solve for: 25 height of induced groundwater mound (IGWM)  
h = 0.39 Ft

Elev. Toe., Ft.	(B) Depth to SHGWT, Ft.	Lim. Cond. at Toe. Elev., Ft.	(D) Add Induced GW Mound, (ft.)	Elev. SHGWT Plus IGWM, Ft.	Predicted Freeboard (Col B - Col D), Ft.	Comment
333.3	1.33	331.97	0.39	332.4	0.94	Okay, 0.5' or Greater

# Philo Ridge Farm

## Short Term Wastewater Disposal Design Flow

9/25/2016

<u>Use</u>	<u>Number</u>	<u>Unit</u>		<u>Flow/Unit</u>		<u>GPD</u>
<b>Brick House Office</b>						
Employees	8	Empl.	x	15	GPD/Empl =	120
Commercial Sink	1	Sinks	x	100	GPD/Sink =	100
	1	4 Bedroom	x	490	GPD/Unit =	<u>490</u>
						710
<b>Farm Barn Deli 2 - Meals/Day</b>						
Main Floor	14	Seats	x	30	GPD/Seat =	420
Assembly Area/Day	59	People	x	5	GPD/Pers =	295
Commercial Sink	4	Sinks	x	100	GPD/Sink =	400
Employees	12	Empl.	x	15	GPD/Empl =	<u>180</u>
						1,295
<b>Infiltration</b>	620	LF		4" PVC	300	GPD/ln/Mi = <u>141</u>
<b>Commercial and Residential Wastewater Design Total (GPD) =</b>						<b>2,146</b>

### Septic Tank Sizing Requirements

Q= 1125 + 75% Design Flow  
 = 2,734 Gallons  
 Use **3,000 Gallons**



# Philo Ridge Farm

## Short Term Water Supply Design Flow

9/25/2016

<u>Use</u>	<u>Number</u>	<u>Unit</u>	<u>Flow/Unit</u>	<u>GPD</u>
<b>Brick House Office</b>				
Employees	8	Empl.	x 15 GPD/Empl	= 120
Commercial Sink	1	Sinks	x 100 GPD/Sink	= 100
	4	Bedroom	x 150 GPD/Unit	= <u>600</u>
				820
<b>Farm Barn Deli 2 - Meals/Day</b>				
Main Floor	14	Seats	x 30 GPD/Seat	= 420
Assembly Area/Day	59	People	x 5 GPD/Pers	= 295
Commercial Sink	4	Sinks	x 100 GPD/Sink	= 400
Employees	12	Empl.	x 15 GPD/Empl	= <u>180</u>
			Commercial Total	= 1,295
Commercial and Residential Water Design Total (GPD)				= 2,115

**Septic Tank Sizing Requirements**

Q= 1125 + 75% Design Flow  
 = 2,711 Gallons  
 Use **3,000 Gallons**

# Philo Ridge Farm

## Mound Distribution System Design

### 2-Oct-16

1 Maximum Allowable application Rate per Square Foot (GPD/SF)  
81.0 Design Pumping Rate to Entire Field (GPM)  
2,146 Total Design Flow to Site (GPD)  
1 Number of Trenches/Beds

343.4 Invert Elevation

#### **Trench 1 (Bed)**

9 Depth of Stone (inches)  
1 Application Rate per Square Foot  
275 Length of Section  
2,146 Design Flow (GPD)  
81.00 Design Flow (GPM)  
88 Required Number of Orifices

#### **Orifice Design**

0.125 Diameter of orifice (Inches)  
0 Number of orifices  
3 Residual pressure (FT)  
0.32 Design Flow per head (GPM)  
0.00 Subtotal flow (GPM)

0.1875 Diameter of orifice (Inches)  
56 Number of orifices  
3 Residual pressure (FT)  
0.72 Design Flow per head (GPM)  
40.20 Subtotal flow (GPM)

0.25 Diameter of orifice (Inches)  
32 Number of orifices  
3 Residual pressure (FT)  
1.28 Design Flow per head (GPM)  
40.83 Subtotal flow (GPM)

88 Total # of orifices  
88 Required Number of Orifice Holes  
81.03 Total Flow  
81.00 Total Rec. Design Flow This Trench (GPM)  
0.04% Percent Delta from Design

272 Length of Distribution Pipe (FT)  
6.28 Spacing of orifice holes (FT)

# Wastewater Disposal System Design

## Philo Ridge Farm Mound Site

### 2-Oct-16

2,146 Design Flow (GPD)  
2.24 Average Daily Flow (GPM)  
  
7.8 Allowable application per linear foot (GPD/LF)  
275 Linear feet of Trench Required (FT)  
275 Equivalent Linear feet of Trench Proposed (FT)

#### Dosing Requirements

1.5 Diameter of Distribution Pipe (Inches)  
2 Number of Distribution Pipes  
542 Length of Distribution Pipe (FT)  
50 Distribution System Volume (Gallons)  
5.00 Required Dose Volume Factor  
249 Required Minimum Dose Volume (Gallons)  
4.00 Minimum Required Doses per Day  
536 Maximum Dose Allowed (Gallons)  
500.00 Chosen Dose Volume (Gallons)  
5.00 Recommended Pumping Duration per Dose (Minutes)  
100.00 Recommended Pumping Rate w/o Inflow (GPM)  
102.24 Recommended Pumping Rate with Inflow (GPM)  
81.00 Chosen Flow Rate (GPM)

#### Distribution Requirements

8 Trench width (FT)  
2,200 Total Trench Area (SF)  
25 Maximum Area per orifice Hole (SF)  
88 Required Number of Orifice Holes  
88 Number of Orifice Holes Proposed  
1.14 Avg. Flow per Orifice (GPM)

346.4 Effluent Elevation Head

#### TRENCH 1

88 Total # of orifices  
2,146 Total Design Flow (GPD)  
275 Total Length of Trench (FT)  
  
81.0 Chosen Design Flow (GPM)  
81.03 Total Actual Design Flow (GPM)  
0.04% Percent Delta from Design

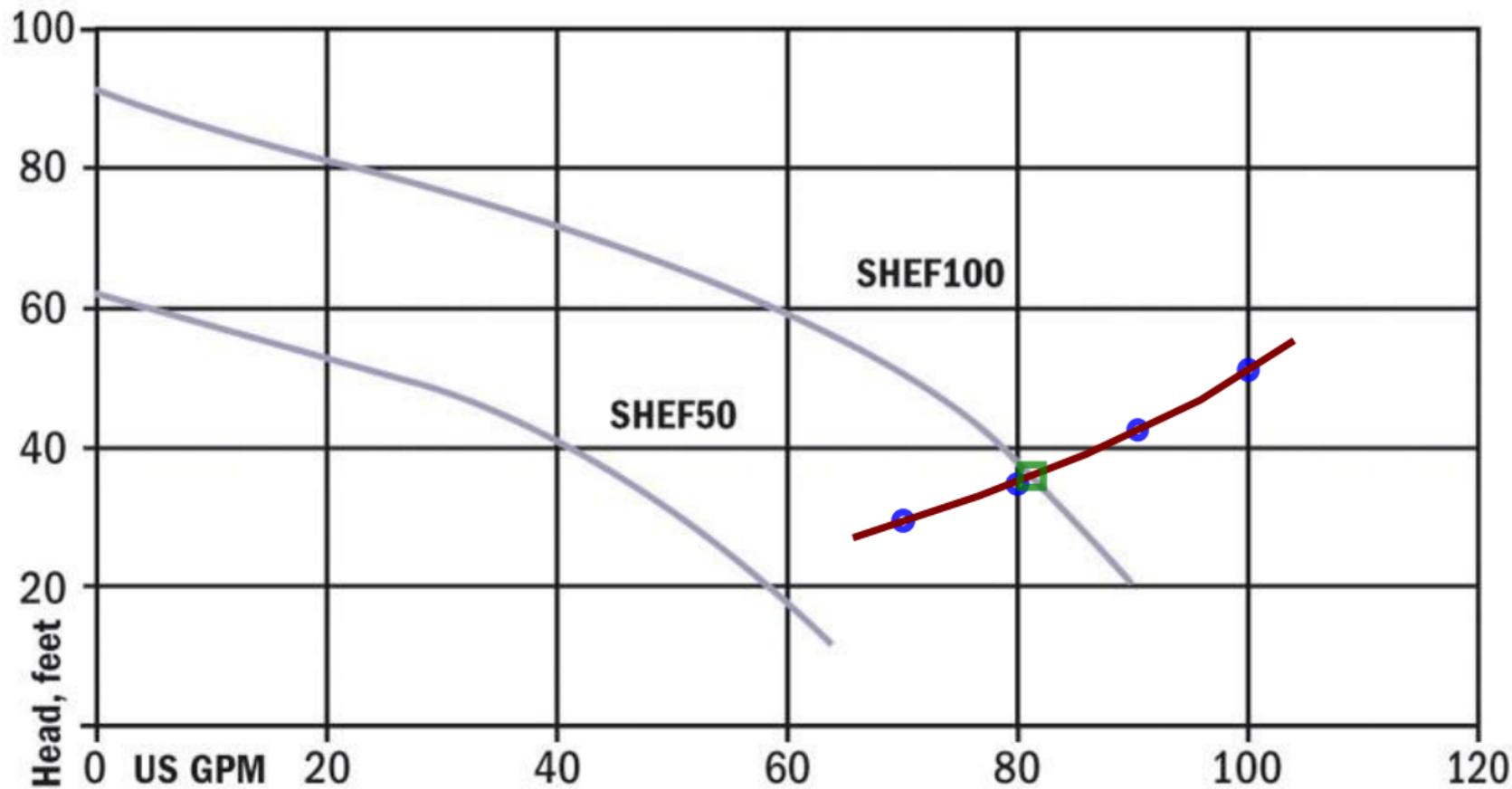
# Philo Ridge Farm Charlotte, Vermont

## Pump Station Basis of Design

Design Flow	2,146 GPD	
Infiltration	0 GPD	
20% Municipal Credit	0	
Total Design Flow	2,146 GPD	
Average Daily Flow	2.24 GPM	
Peaking Factor	5.00	
Peak Flow	11.18 GPM	
Required Storage	536 gallons	
<i>Duplex Pump Station</i>		
Storage Provided	2,068 gallons	
Force Main Dia.	1.50 Inches	
Min. Cleansing Velocity	2.00 FPS	
Min. Pumping Rate	11.01 GPM	
Chosen Pumping rate	81.00 GPM	
Length of FM to Mound	70.00 feet	
Friction Losses to Mound	32.76 feet	
High Point of FM in Mound	343.40 feet	
Low Elevation in PS	346.60 feet	
Elevation Change	-3.20 feet	
Minor headlosses	3.00 feet	
Residual	3.00 feet	
<b>TDH</b>	<b>35.56 feet</b>	
Pump Cycle Storage	150 Gallons	
Run Cycle	2.76 Minutes	
Wet Well Detention Time	67.10 Minutes	
System Curve	GPM	TDH
	50.0	16.20
	60.0	21.60
	70.0	27.80
	80.0	34.80
	90.0	42.60
	100	51.20

### Pump Selection

Hydromatic SHEF, 1.0 Ph, 230 v, 60 Hz, 1 HP



! wD9 t lt 9 { LUG 1-1/2" to 2" NPT (model dependent)

la ūa (bU5/ L) b5[ibD (LUG 3/4"

# HYDROMATIC®

## SHEF50/100

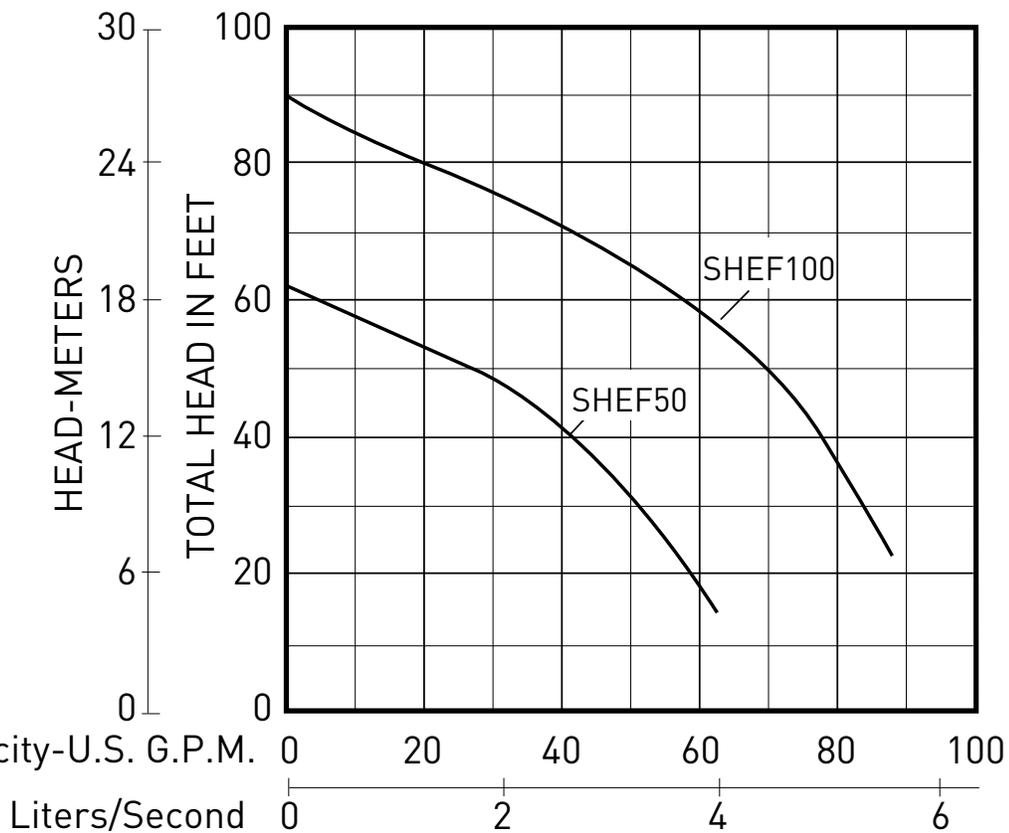
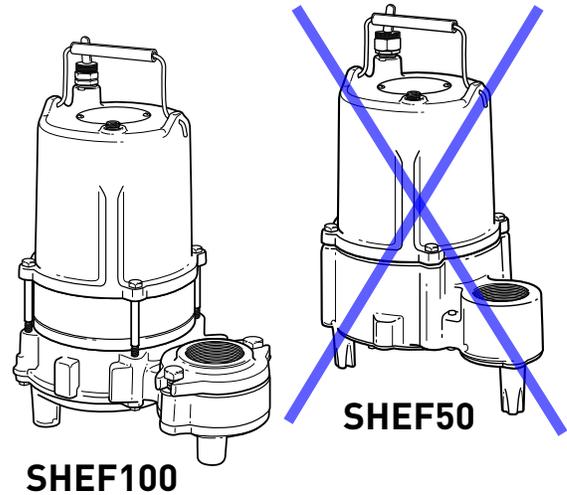
### SUBMERSIBLE HIGH HEAD EFFLUENT

#### PERFORMANCE DATA

Wholesale Products Page: 6370-1

Dated: January 2001

RPM: **3450** Discharge: **2"** Solids: **¾"**



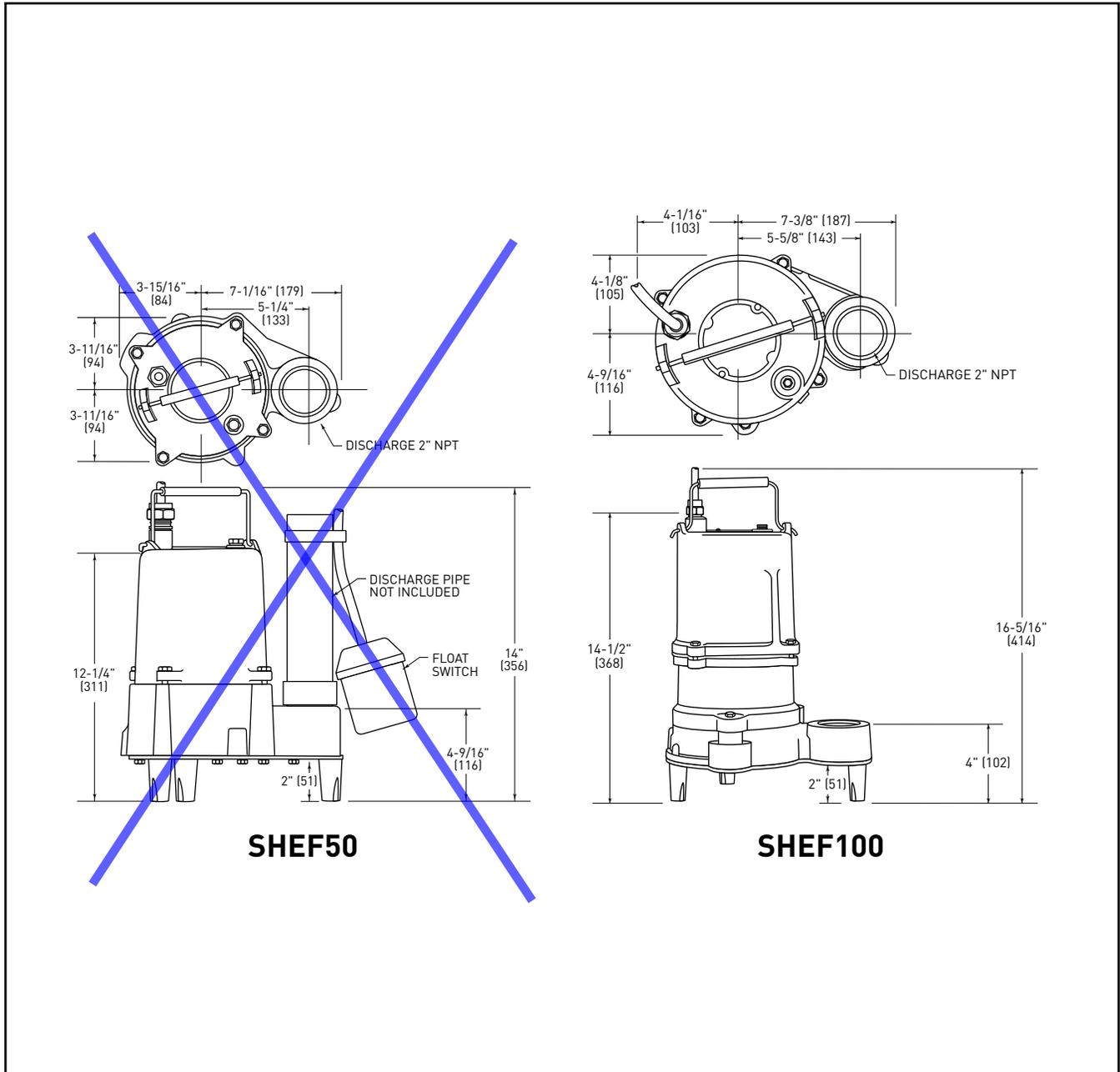
The curves reflect maximum performance characteristics without exceeding full load (Nameplate) horsepower. All pumps have a service factor of 1.2. Operation is recommended in the bounded area with operational point within the curve limit. Performance curves are based on actual tests with clear water at 70° F. and 1280 feet site elevation.

### SHEF50/100

Wholesale Products Page: 6370-2

Dated: January 2001

### SUBMERSIBLE HIGH HEAD EFFLUENT



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 (s) and the product (s) specifications without notice.

# HYDROMATIC®

## ELECTRICAL DATA

### SHEF100

Wholesale Products Page: 6370-4

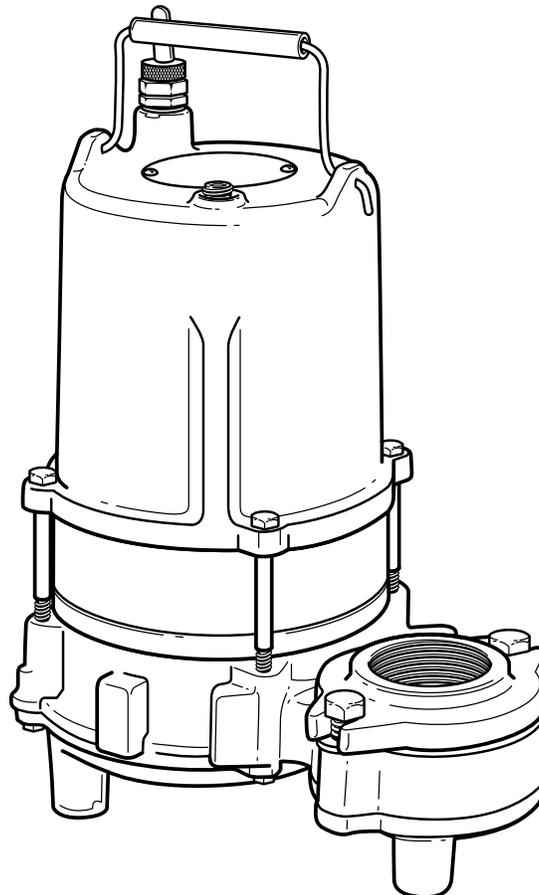
### SUBMERSIBLE HIGH HEAD EFFLUENT

Dated: January 2001

#### MODEL: SHEF100

R.P.M.	3450
MOTOR TYPE	OIL FILLED WITH AUTOMATIC RESET THERMAL OVERLOAD
MOTOR PROTECTION	AUTOMATIC RESET / THERMAL OVERLOAD

HP	VOLTAGE	PHASE	NEC CODE	SERVICE FACTOR	FULL LOAD AMPS
1	200	1			12.1
	230				12.1
	230	3	-	1	5.8
	460				2.8
	575				1.9



# SHEF100

## SUBMERSIBLE HIGH HEAD EFFLUENT

Wholesale Products Page: 6370-6

Dated: January 2001

### MODEL: SHEF100

#### Physical Data

DISCHARGE SIZE	2" NPT
SOLIDS SIZE	3/4"
IMPELLER TYPE	NON CLOG
CABLE LENGTH	20' STANDARD 30' OPTIONAL
PAINT	PAINTED AFTER ASSEMBLY, DARK GREEN, WATER REDUCIBLE ENAMEL, ONE COAT, AIR DRIED.

#### Temperature

MAXIMUM LIQUID	140°F
MAXIMUM STATOR	-
OIL FLASH POINT	-

#### Technical Data

POWER CORD TYPE	SJTW / STW-A	
MATERIALS OF CONSTRUCTION	MOTOR HOUSING	CAST IRON
	CASING	CAST IRON
	IMPELLER	THERMOPLASTIC
	MOTOR SHAFT	STAINLESS STEEL
	HARDWARE	STAINLESS STEEL
	"O" RINGS	BUNA-N
MECHANICAL SEALS Standard:	CARBON / CERAMIC	
UPPER BEARING	BALL	
LOWER BEARING	BALL	

# SHEF50/100

# SUBMERSIBLE HIGH HEAD EFFLUENT

Wholesale Products Page: 6370-7

Dated: January 2001

## MODELS: SHEF50 and SHEF100

### 1.01 GENERAL

Contractor shall furnish all labor, materials, equipment and incidentals required to provide \_\_\_\_\_ (Qty.) submersible centrifugal high head effluent pump(s) as specified herein. The pump models covered in this specification are the SHEF 50 and SHEF100. The pump furnished for this application shall be MODEL \_\_\_\_\_ as manufactured by Hydromatic Pumps.

### 2.01 DESIGN CONDITIONS

Each pump shall be rated \_\_\_\_\_ H.P., \_\_\_\_\_ volts, \_\_\_\_\_ phase, \_\_\_\_\_ hertz and operate at \_\_\_\_\_ RPM.

### 3.01 OPERATING CONDITIONS

The pump shall deliver \_\_\_\_\_ U.S. GPM/LPS at feet/meters TDH, and handle a \_\_\_\_\_ inch solid. The curve submitted for approval shall state, in addition to head and capacity performance, solid handling capability, amp rating, and design impeller diameter.

### 4.01 CONSTRUCTION

Each pump shall be of the sealed submersible type, incorporating features normally found in pumps furnished for the residential market.

These features include:

1. The pump volute, motor, and seal housing shall be high quality gray cast iron, ASTM A-48, Class 30.
2. The pump inlet shall be open and clear, without screening to provide access for effluent and septic tank solids.
3. All external mating parts shall be machined and Buna N, O-Ring sealed.
4. All fasteners exposed to the pumped liquid shall be 300 series stainless steel.
5. All power cords shall be water resistant UL or CSA approved, with double insulation, and sized as a function of Amp. draw.

### 5.01 MOTOR AND SHAFT

The stator, rotor and bearings shall be mounted in a sealed submersible type housing. Single phase motors shall be split phase with centrifugal switch and start capacitor. Three phase motors shall be Polyphase. Full Load and Locked Rotor Amps as well as Start and Run winding resistance shall be tabulated for each pump.

### 6.01 BEARINGS, SHAFT AND MECHANICAL SEAL

An upper radial and lower thrust bearing shall be required. The upper and lower bearings in the SHEF50 and SHEF100 shall be heavy duty single row ball bearings. The bearings will be permanently and continuously lubricated and cooled by the dielectric oil which fills the motor housing. The motor shaft shall be corrosion resistant steel and sealed from the pumped liquid with a carbon ceramic mechanical seal.

# SHEF50/100

# SUBMERSIBLE HIGH HEAD EFFLUENT

Wholesale Products Page: 6370-8

Dated: January 2001

## 7.01 IMPELLER

The Impeller in the SHEF50/100 shall be high capacity, two vane, high head design with four pump out vanes on the back side. These vanes wash out grit and stringy material that will damage the shaft and mechanical seal.

## 8.01 AUTOMATIC CONTROL

All single phase pumps should be capable of automatic operation.

## 9.01 FLOAT SWITCH

The SHEF50 and SHEF100 pumps are supplied with a tilt sensitive wide-angle float switch which is sealed in a non-corrosive PVC enclosure. The switch is UL listed for water and sewage and CSA certified. The float switch shall also be fitted with a piggy-back plug that allows the pump to be operated manually without removal from the sump.

## 10.01 PAINTING

All cast iron parts shall be painted before assembly with a water reducible alkyd air dried enamel. The paint shall be applied in one coat with a minimum thickness of 3 to 4 mils.

## 11.01 TESTING

All pumps shall be individually tested to include the following:

1. The pump and power cord shall be visually inspected for imperfections, cuts or nicks.
2. The pump shall have a ground continuity check and the motor chamber shall be Hi-potted to test for moisture content and/or insulation defects.
3. The motor and volute housing shall be pressurized and a 10 second air leak decay test run.
4. Oil is added, and the pump is run. Voltage and current are monitored visually, electronically, and the tester listens for any noise or malfunction.



USA  
293 WRIGHT STREET, DELAVAN, WI 53115 WWW.HYDROMATIC.COM  
PH: 888-957-8677 ORDERS FAX: 800-426-9446

CANADA  
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# Drinking Water and Groundwater Protection Division

VT DEC

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## Well Completion Report Searchable Database

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## Source Well

Date Well Was Completed: 12-11-2012

Date Report Received: 02-04-2012

Well Driller License Number: 198 = Thomas Williams , Spafford &amp; Sons of Williston VT Inc

Well Report Number: 42294

Well Number/Tag Number: 42294

Comments:

Town: Charlotte

Map Cell:

Tax Map:

E-911 Address: 2665 Mt. Philo Rd.

Sub Division:

Lot Number:

Owner's First Name: Diana

Owner's Last Name: McLarso

Purchaser's First Name:

Purchaser's Last Name:

Well Use Code: 01 = Domestic

Reason for Well Code: 2 = Replace existing supply

Drilling Equipment Code:

Total Depth of Well (in feet): 625.00

Yield (in GPM): 10.00

Yield Test Tested For (in hours): 1.00

Static Water Level (in feet):

Well Is Overflowing: N

Depth To Bedrock (in feet): 114

Total Casing Length (in feet): 122.00

Casing Diameter (in inches): 6.00

Casing Length Below Land Surface (in feet): 104.00

Casing Length Exposed (in feet): 18.00

Casing Material: 1 = Steel

Casing Weight (in lbs/foot): 17.00  
Casing Finish Code:  
Length of Liner used (in feet):  
Liner Diameter (in inches):  
Liner Material:  
Liner Weight (in lbs/foot):  
Grout Type: 0  
Seal Type:  
Diameter Drilled In Bedrock (in inches):  
Depth Drilled In Bedrock (in feet):  
Screen Make and Type:  
Screen Material:  
Screen Length (in feet):  
Screen Diameter (in inches):  
Screen Slot Size (in inches):  
Depth to top of Screen below land surface (in feet):  
Gravel Size or Type:  
Method of Sealing Casing Code: 1 = Drive shoe only  
Yield Test Method Code:  
Well Development Code:  
Not Steel Casing: N  
Has Water Been Analyzed N  
Well Has Screen: N  
AW Partial: N  
Unique GIS Name: CI42294  
Latitude: 44.31682  
Longitude: -73.22330  
Location Determination Method: 14 = GPS location  
Well Type: Bedrock  
Depth To Liner Top (in feet):  
HydroFractured: N  
Hydro Fractured Resulting Flow (GPM):  
Well Location Submitted As A Dot On A Map: N  
Abandoned Per Water Supply Rule:  
Date Of Abandonment:  
Reason For Abandonment:

Well Driller Supervising Abandonment:

Date Of Deepening or Hydrofracture:

Well Driller Deepened/Fractured:

Provided VDH Info To Owner:

Signed Form:

RecordStatus: A

UOE: Heather Campbell

DOE: 5/6/2013 1:17:00 PM

UOC: Heather Campbell

DOC: 5/6/2013 1:19:00 PM

WellReportID: 110120

	Starting Depth	Ending Depth	Water Bearing	Lithology Code	Code Description	Lithology Description
<a href="#">View</a>	0.00	23.00		C	Clay	
<a href="#">View</a>	23.00	114.00		H	Hardpan	
<a href="#">View</a>	114.00	625.00		R	Rock, bedrock, ledge, etc.	limestone

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# Drinking Water and Groundwater Protection Division

VT DEC

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## Well Completion Report Searchable Database

[Home](#)

Date Well Was Completed: 02-18-1992

Date Report Received: 04-24-1992

Well Driller License Number: 23 = Clyde (Jack) Frost , Frost Inc

Well Report Number: 602

**Well Number/Tag Number: 7-363**

Comments:

Town: Charlotte

Map Cell: 13B2

Tax Map:

E-911 Address:

Sub Division:

Lot Number:

Owner's First Name: MURRAY

Owner's Last Name: FOOTE

Purchaser's First Name:

Purchaser's Last Name:

Well Use Code: 01 = Domestic

Reason for Well Code: 2 = Replace existing supply

Drilling Equipment Code: 2 = Rotary (AP)

Total Depth of Well (in feet): 300.00

Yield (in GPM): 3.00

Yield Test Tested For (in hours): 0.00

Static Water Level (in feet): 50.00

Well Is Overflowing: N

Depth To Bedrock (in feet): 70

Total Casing Length (in feet): 80.00

Casing Diameter (in inches): 6.00

Casing Length Below Land Surface (in feet): 0.00

Casing Length Exposed (in feet): 0.00

Casing Material:

Casing Weight (in lbs/foot): 0.00

Casing Finish Code: 1 = Above ground, finished  
Length of Liner used (in feet): 0.00  
Liner Diameter (in inches): 0.00  
Liner Material:  
Liner Weight (in lbs/foot): 0.00  
Grout Type: 0  
Seal Type:  
Diameter Drilled In Bedrock (in inches): 0.00  
Depth Drilled In Bedrock (in feet): 0.00  
Screen Make and Type:  
Screen Material:  
Screen Length (in feet): 0.00  
Screen Diameter (in inches): 0.00  
Screen Slot Size (in inches): 0.000  
Depth to top of Screen below land surface (in feet): 0.00  
Gravel Size or Type:  
Method of Sealing Casing Code: 1 = Drive shoe only  
Yield Test Method Code: 3 = Compressed air  
Well Development Code:  
Not Steel Casing: N  
Has Water Been Analyzed N  
Well Has Screen: N  
AW Partial: N  
Unique GIS Name: CI602  
Latitude: 44.31580  
Longitude: -73.22390  
Location Determination Method: 13 = E911 Address  
Well Type:  
Depth To Liner Top (in feet): 0.00  
HydroFractured: N  
Hydro Fractured Resulting Flow (GPM): 0.00  
Well Location Submitted As A Dot On A Map: N  
Abandoned Per Water Supply Rule:  
Date Of Abandonment:  
Reason For Abandonment:  
Well Driller Supervising Abandonment:  
Date Of Deepening or Hydrofracture:

Well Driller Deepened/Fractured:

Provided VDH Info To Owner:

Signed Form:

RecordStatus: A

UOE:

DOE:

UOC: GISLatLongUpdater

DOC: 11/17/2009 12:00:00 AM

WellReportID: 11029

	Starting Depth	Ending Depth	Water Bearing	Lithology Code	Code Description	Lithology Description
<a href="#">View</a>	0.00	70.00		CG	Clay & gravel	BROWN GRAVEL & CLAY
<a href="#">View</a>	70.00	80.00		R	Rock, bedrock, ledge, etc.	RED DOLOMITE
<a href="#">View</a>	80.00	300.00		R	Rock, bedrock, ledge, etc.	RED & BLACK DOLOMITE-WATER



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# Time of Travel Calculation

Philo Ridge Farm, LLC

**Method: Darcy's Law**

1. Calculate vertical groundwater velocity downward through overburden.
2. Calculate vertical travel time downward through overburden, using vertical groundwater velocity.

**1. Calculate Vertical Groundwater Velocity in overburden:**

Formula:  $V = (K \times i) / n$ :

where:

V = Vertical groundwater velocity; ft/day.

K = Hydraulic conductivity; ft/day.

i = Hydraulic gradient; dimensionless.

n = Porosity; dimensionless.

Parameter	Value	Units	Notes
K	4.7E-09	m/sec	Lowest Range of estimated value for Clay, from various hydrogeo references (see attached); based on closest well logs identifying "Clay" overburden.
K	2.0E-06	m/sec	Lowest Range of estimated value for Hard Pan (Till), from various hydrogeo references (see attached); based on closest well logs identifying "Hard Pan" overburden.
i	1.0	ft/ft	Assumed maximum hydraulic gradient (conservative)
n	0.34	dimensionless	Lowest range of estimated porosity value, clay
<b>Solve for V:</b>			
Conversion	m/sec to	ft/sec x	3.048
V =	4.21E-08	ft/sec	Vertical groundwater velocity, downward through clay
V =	1.8E-05	ft/sec	Vertical groundwater velocity, downward through till

**2. Calculate vertical time-of-travel downward through overburden:**

Formula:  $T = D / V$ :

where:

T = Time of Travel; days.

D = Vertical distance of travel; ft.

V = Vertical groundwater velocity; ft/day

Parameter	Value	Units	Notes
D	23	Feet	Reported clay overburden thickness, from subject well log description for Well Tag _____)
V	4.21E-08	ft/sec	Previously calculated
<b>Solve for T:</b>			
Conversion	6318	Days	
V =	17.3	Years	

Parameter	Value	Units	Notes
D	91	Feet	Reported overburden thickness, from subject well log description for Well Tag _____)
V	1.79E-05	ft/sec	Previously calculated
<b>Solve for T:</b>			
Conversion	5,075,459	Seconds	Formula: $T = D / V$ :
V =	59	Days	
V =	0.2	Years	



Civil Engineering Assoc., Inc.  
10 Mansfield View Lane 100143  
South Burlington, VT 05403  
  
Atten: David Marshall

PROJECT: Philo Ridge Farm  
WORK ORDER: **1606-13439**  
DATE RECEIVED: June 28, 2016  
DATE REPORTED: July 14, 2016  
SAMPLER: Greg Carter

VTP

### Laboratory Report

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody. All required method quality control elements including instrument calibration were performed in accordance with method requirements and determined to be acceptable unless otherwise noted.

The column labeled Lab/Tech in the accompanying report denotes the laboratory facility where the testing was performed and the technician who conducted the assay. A "W" designates the Williston, VT lab under NELAC certification ELAP 11263; "R" designates the Lebanon, NH facility under certification NH 2037 and "N" the Plattsburgh, NY lab under certification ELAP 11892. "Sub" indicates the testing was performed by a subcontracted laboratory. The accreditation status of the subcontracted lab is referenced in the corresponding NELAC and Qual fields.

The NELAC column also denotes the accreditation status of each laboratory for each reported parameter. "A" indicates the referenced laboratory is NELAC accredited for the parameter reported. "N" indicates the laboratory is not accredited. "U" indicates that NELAC does not offer accreditation for that parameter in that specific matrix. Test results denoted with an "A" meet all National Environmental Laboratory Accreditation Program requirements except where denoted by pertinent data qualifiers. Test results are representative of the samples as they were received at the laboratory

Endyne, Inc. warrants, to the best of its knowledge and belief, the accuracy of the analytical test results contained in this report, but makes no other warranty, expressed or implied, especially no warranties of merchantability or fitness for a particular purpose.

Reviewed by:

Harry B. Locker, Ph.D.  
Laboratory Director

[www.endynelabs.com](http://www.endynelabs.com)



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Ph 802-879-4333 Fax 802-879-7103

56 Etna Road, Lebanon, NH 03766  
Ph 603-678-4891 Fax 603-678-4893



**Laboratory Report**

DATE REPORTED: 07/14/2016

CLIENT: Civil Engineering Assoc., Inc.  
PROJECT: Philo Ridge FarmWORK ORDER: 1606-13439  
DATE RECEIVED 06/28/2016

001	Site: Kitchen Sink		Date Sampled: 6/28/16		Time: 10:30				
Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.		
Total Coliform	< 1	MPN/100mls	SM20 9223B(97)	6/28/16 12:15	W CM	A			
e. coli	< 1	MPN/100mls	SM20 9223B(97)	6/28/16 12:15	W CM	A			
Uranium	4.3	ug/L	EPA 200.8	7/5/16	SWSUB	A			SPG
Chloride	< 2.5	mg/L	EPA 300.0	6/28/16	W CM	A			
Nitrate as N	0.096	mg/L	EPA 300.0	6/28/16 12:50	W CM	A			
Nitrite as N	< 0.020	mg/L	EPA 300.0	6/28/16 12:50	W CM	A			
Odor	< 1	TON	SM20 2150B (97)	6/29/16 13:51	W JSS	A			
pH	7.77	SU at 24.2C	SM 4500-H B.(97)	6/29/16 15:36	W MHM	U			
Arsenic, Total	< 0.001	mg/L	SM 3113B-04	7/13/16	W FAA	A			
Iron, Total	0.036	mg/L	EPA 200.7	7/1/16	W MGT	A			
Manganese, Total	< 0.010	mg/L	EPA 200.7	7/1/16	W MGT	A			
Sodium, Total	11	mg/L	EPA 200.7	7/1/16	W MGT	A			

**Report Summary of Qualifiers and Notes**

Samples received in this project required pH. The EPA hold time for this analysis is 15 minutes and should be performed at the time of collection. Analysis was performed as soon as possible upon arrival at the laboratory.

Listed below are EPA Maximum Contaminant Levels (MCL) for commonly tested parameters. Exceedence of Primary Contaminant MCLs is deemed a significant health risk. Secondary Contaminant MCLs are standards that may have cosmetic or aesthetic concerns.

Primary Contaminant	MCL
Total Coliform	"Absent" 100mL or "< 1" MPN/100mL
e.coli	"Absent" 100mL or "< 1" MPN/100mL
Nitrate	less than 10 mg/L
Nitrite	less than 1.0 mg/L
Arsenic	less than 0.010 mg/L
Uranium	less than 0.020 mg/L (VT DEC Water Supply Standard)

Secondary Contaminant	MCL
Odor	less than 3 T.O.N. *
pH	between 6.5-8.5
Iron	less than 0.30 mg/L
Manganese	less than 0.05 mg/L
Sodium	less than 250 mg/L
Chloride	less than 250 mg/L

\* Threshold Odor Number

Samples received in this project required pH. The EPA hold time for this analysis is 15 minutes and should be performed at the time of collection. Analysis was performed as soon as possible upon arrival at the laboratory.

SPG: Analysis performed by subcontracted laboratory, Granite State. Results are presented here for your convenience. Refer to the complete subcontracted report, which has been appended to this report, for detailed information regarding this result.

# GRANITE STATE ANALYTICAL SERVICES, LLC

22 Manchester Road, Unit 2, Derry, NH 03038

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Fax (603) 434-4837

<http://www.granitestateanalytical.com/>

## CERTIFICATE OF ANALYSIS FOR DRINKING WATER

**DATE PRINTED:** 07/06/2016  
**CLIENT NAME:** Endyne, Inc.  
**CLIENT ADDRESS:** 160 James Brown Dr.  
Williston, VT 05495

**Legend**  
Passes   
Fails EPA Primary   
Fails EPA Secondary   
Fails EPA Proposed Limit 

**SAMPLE ID#:** 1607-00062-001  
**SAMPLED BY:** Client-Customer  
**SAMPLE ADDRESS:** 1606-13439 001

**DATE AND TIME COLLECTED:** 06/28/2016 10:30 AM  
**DATE AND TIME RECEIVED:** 07/01/2016 10:55 AM  
**ANALYSIS PACKAGE:** Uranium-GSA  
**RECEIPT TEMPERATURE:** 26.0 CELSIUS  
**CLIENT JOB #** 1606-13439-w

**LOCATION:** kitchen sink 006

Test Description	Results	Test Units	Pass /Fail	DQ Flag	RL	EPA Limit	Method	Analyst	Date-Time Analyzed
Uranium*	4.3	ug/L			1	30 ug/L	EPA 200.8	BB-NH	07/05/16 8:32 PM
Uranium	2.9	pCi/L			0.67	20 pCi/L	EPA 200.8 Calc.	BB-NH	07/05/16 8:32 PM

The results presented in this report relate to the samples listed above in the condition in which they were received.  
RL: "Reporting limit" means the lowest level of an analyte that can be accurately recovered from the matrix of interest.

Data Qualifier (DQ) Flags: None

\* NELAC Accredited Analysis



Donald J. D'Anjou, Ph. D.  
Laboratory Director

This analysis meets NELAC requirements except as noted.

State Certifications: | NH 1015 | MA M-NH003 | ME NH00003 | RI 101513 | VT VT-101507 |

This certificate shall not be reproduced, except in full, without the written approval of Granite State Analytical Services, LLC



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 160 James Brown Drive  
 Williston, Vermont 05495  
 (802) 879-4333

**CHAIN-OF-CUSTODY-RECORD**

*amarshall@ceqa.com*

Special Reporting Instructions/PO#:

76064

Project Name: <b>Philo Ridge Farm</b>	Client/Contact Name: <b>Civil Engineering Assn</b>	Sampler Name: <b>Greg Carter</b>
State of Origin: <b>VT</b> <u>NY</u> <u>NH</u> <u>Other</u>	Phone #: <b>864-2323</b>	Phone #: <b>864-2323</b>
Endyne WO #	Mailing Address: <b>10 Mansfield Dr. S. Burlington, VT 05403</b>	Billing Address: <b>10 Mansfield Dr. S. Burlington, VT 05403</b>

Sample Location	Matrix	GRA B	COM P	Date/Time Sampled	Sample Containers		Sample Preservation	Analysis Required	Field Results/Remarks	Due Date
					No.	Type/Size				
Kitchen Sink				6/28/16 10:38				Tablet		



Relinquished by: <i>[Signature]</i>	Date/Time: <b>6/28/16 11:10</b>	Received by: <i>[Signature]</i>	Date/Time: <b>6/28/16 11:10</b>								
1	pH	6	TKN	11	Total Solids	16	Sulfate	21	1664 TPH/FOG	26	8270 PAH Only
2	Chloride	7	Total P	12	TSS	17	Coliform (Specify)	22	8015 GRO	27	8081 Pest
3	Ammonia N	8	Total Diss. P	13	TDS	18	COD	23	8015 DRO	28	8082 PCB
4	Nitrite N	9	BOD	14	Turbidity	19	VT PCF	24	8260B	29	PP13 Metals
5	Nitrate N	10	Alkalinity	15	Conductivity	20	VOC Halocarbons	25	8270 B/N or Acid	30	Total RCRA8
31	Metals (Total, Diss.) Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Hg, K, Mg, Mn, Mo, Na, Ni, Pb, Sb, Se, Sn, Tl, U, V, Zn										
32	TCLP (volatiles, semi-volatiles, metals, pesticides, herbicides)										
34	Corrosivity	35	Ignitability	36	Reactivity	37	Other				
38	Other										

LAB USE ONLY  
 Delivery: *Clear*  
 Temp: *0.5*  
 Comment:

# Philo Ridge Farm Well Analysis

## Brick House Well

### Storage Requirements

#### Instantaneous Peak Yield

12 GPM - Well Driller's Yield estimate - 3 Hr Test

yes Is this a qualified Test conforming to 11.8.2.2 of the WSR?

12 GPM - Instantaneous Peak Yield (Long Term yield)

1 Number of Residential Units

10 GPM - Estimated Instantaneous Peak Demand

820 GPD - Average Day Demand (Design Flow)

1.14 GPM - Maximum Day Demand (ADD/720)

Is 2/3's of the Maximum Day Demand greater than the Long Term Yield?

No

If Yes, then Storage (S) is equal to the Average Day Demand

NA = S (Gallons)

Yes Does the Long Term Yield exceed the Maximum Day Demand?

If, yes, then Storage = lessor of 55% of Average Day Demand

451 = S (Gallons)

or

Yes Does Long Term Yield Exceed the Maximum Day Demand

If, yes, then Storage = The following equation  $S = D(1-Y/P)$

820 = D (Project Average Day Demand (gallons))

10 = P (Project Instantaneous Peak Demand, GPM)

12 = Y (Water Source Yield, GPM)

-164 = S (Gallons)

**-164 Min. Required Storage (Gallons)**

#### Casing Storage

300 Depth of Well (FT)

50 Static Water Level (FT)

DD = Predicted Draw-down (FT)

73.7 DD = SE + ( TAH ( MDD/Y))

50 SE = Depth to Static water Level (FT)

250 TAH = Total Available Head (well Depth - Minus Static level)

1.14 MDD = Maximum Day Demand (GPM)

12 Y = Long Term Yield (GPM)

20 Depth of Well above bottom of Well (FT)

280 Lowest Pump Installation Depth (FT)

206.3 Available Storage (Pump Elev - DD)(VLF)

6 Diameter of Well (Inches)

0.196 Volume of water per VLF (CF)

1.47 Volume of water per VLF (gal)

**303 Available Storage Volume (Gal)**

**Yes** Is well Casing Storage > Storage Requirement?

# Philo Ridge Farm Well Analysis

## Brick House Well

### Storage Requirements

#### Instantaneous Peak Yield

12 GPM - Well Driller's Yield estimate - 3 Hr Test

yes Is this a qualified Test conforming to 11.8.2.2 of the WSR?

12 GPM - Instantaneous Peak Yield (Long Term yield)

1 Number of Residential Units

10 GPM - Estimated Instantaneous Peak Demand

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If, yes, then Storage = lessor of 55% of Average Day Demand

451 = S (Gallons)

or

Yes Does Long Term Yield Exceed the Maximum Day Demand

If, yes, then Storage = The following equation  $S = D(1-Y/P)$

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10 = P (Project Instantaneous Peak Demand, GPM)

12 = Y (Water Source Yield, GPM)

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300 Depth of Well (FT)

50 Static Water Level (FT)

DD = Predicted Draw-down (FT)

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206.3 Available Storage (Pump Elev - DD)(VLF)

6 Diameter of Well (Inches)

0.196 Volume of water per VLF (CF)

1.47 Volume of water per VLF (gal)

**303 Available Storage Volume (Gal)**

**Yes** Is well Casing Storage > Storage Requirement?

# Philo Ridge Farm - Sheep Barn Well Charlotte, Vermont

## Fixture Unit Calculation per AWWA M22 2nd Edition

**Customer** Philo Ridge Farm  
**Building Address** 2766 Mt. Philo Road  
**Town** Charlotte  
**Type of Occupancy** Food Prep/Market

Fixture	Fixture Value (60 psi)		No. of Fixtures	=	Total Fixture Value
Kitchen Sink	2.2	x	13	=	28.6
Lavatory	1.5	x	4	=	6
Utility Sink	4	x	1	=	4
Urinal (wall)	7	x	0	=	0
Urinal (flush valve)	35	x	0	=	0
Toilet (tank)	4	x	4	=	16
Toilet (flush valve)	35	x	0	=	0
Hose (50 ft. Wash Down) - 1/2"	5	x	2	=	10
Hose (50 ft. Wash Down) - 5/8"	9	x	0	=	0
Hose (50 ft. Wash Down) - 3/4"	12	x		=	0
<b>Sum</b>					<b>64.6</b>
Customer Peak Demand (gpm) from Fig. 4.2					46
Pressure Factor* 40 psi					0.80
Adjusted Peak Demand					37
Irrigation - None					0
<b>Total Peak Demand (gpm)</b>					<b>37</b>

\*Extrapolated using best fit curve of data from Table 4.1

Prepared By Civil Engineering Associates, Inc.  
October 4, 2016

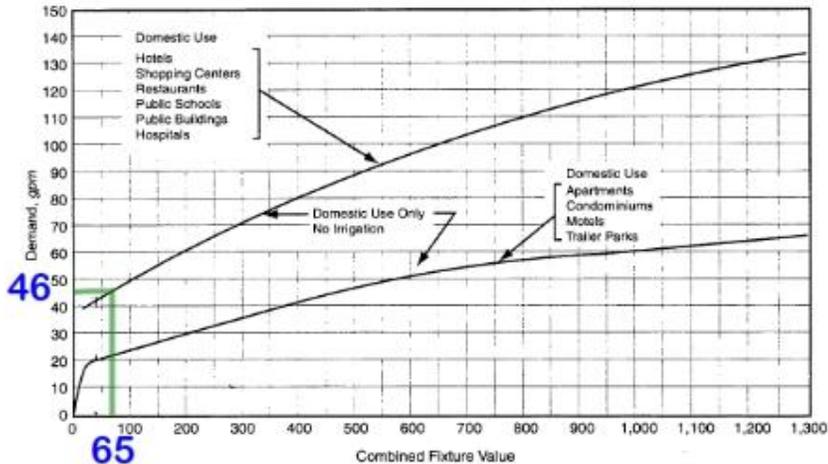


Figure 4-2 Water flow demand per fixture value—low range

Table 4-1 Pressure adjustment factors\*

Working Pressure at Meter Discharge (psi)	Average Flow from 50 ft of 5/8-in. Hose and Sprinkler (gpm)	Pressure Adjustment Factor
35	6.7	0.74
40	7.2	0.80
50	8.1	0.90
60	9.0	1.00
70	9.8	1.09
80	10.5	1.17
90	11.2	1.25
100	12.1	1.34

\*derived from Table 4-1 and 4-2 of Manual M22 (1975).