

November 10, 2014

Jeannine McCrumb, Septic Officer  
Spencer Harris, Septic Consultant  
Town of Charlotte  
P.O. Box 119  
Charlotte, VT 05445

RE: Hunt Property, Varney Farm Project, 1297 Ethan Allen Highway, Charlotte, VT –  
Submittal of Water/Wastewater Application

Dear Jeannine & Spencer:

As you know, Tim and Martha Hunt are moving forward with the Varney Farm Project. The 5 bedroom farmhouse has been moved and the barn is being preserved and converted into a 150 person Activity Barn. The Activity Barn is to be used for weddings and receptions, community events and meetings. Although catered-in food service will be used when required (with no food preparation), the serving equipment and place settings will be cleaned and dishwashed in the barn. The farmhouse and the Activity Barn will use a community mound disposal system and they will each use an individual drilled bedrock well. The farmhouse well falls under the jurisdiction of the Town on behalf of the State of Vermont and the Activity Barn well falls under the jurisdiction of the State's Drinking Water and Groundwater Protection Division (DWGPD) because it is a Public Transient Non Community (TNC) well serving in excess of 25 people who change over time. While the complete wastewater disposal system will be constructed, as soon as possible, only the farmhouse will use it until the barn preservation and conversion is complete along with the installation of the TNC well. Because the overall project exceeds 1,350 gallons per day (gpd), the application and related designs are being done jointly by Alan Huizenga P.E. #5905 and Stephen Revell Licensed Designer #178BW. A copy of the TNC Source Water Permit Application is attached. The original is being sent directly to DWGPD for their review and approval.

Although the farmhouse was originally permitted to connect to the existing farmhouse system along Route 7, the farmhouse will now be connected to the proposed 2,360 gpd community disposal system. The farmhouse will generate 560 gpd and the 150 seat Activity Barn will generate 1,800 gpd. The barn flows are based upon 150 seats @ 12 gpd/seat to cover dish and table setting cleanup/dishwashing without food preparation. I believe 12 gpd/seat more than adequately covers the intended intermittent use of the proposed Activity Barn.

A comprehensive site and soil evaluation survey was conducted by myself on July 28, 2014 with seventeen (17) test pits and on August 5, 2014 with three (3) hand auger borings, 2 percolation tests and the site topographic survey. The site plan is presented on Figure 1 with all the testing locations identified. The soil profile descriptions and the percolation test data are attached. The soil profile in the evaluated area is acceptable for a performance based mound with well drained loose stony fine sandy loams with strong blocky structure to a minimum depth of 22". These well drained soils overly strong fine sandy loams with redoximorphic features indicating the presence of a shallow seasonal perched water table. The design basis for the mound is 22 inches of unsaturated soil.

Because a performance based mound is proposed, a site specific effluent mounding analysis was conducted. The results are attached for a 236.0' long mound handling 2,360 gpd of effluent placed on an 8% slope in soil with a hydraulic conductivity of 30 ft/day. An effluent mound of 0.56' was calculated and compared to 22" or 1.83' of unsaturated soil, indicating that 1.73' of mound sand is required to achieve 3' of separation to the induced effluent mound.

The pressure distribution and mound dimension details for the 2,360 gpd community mound are attached which indicate a 10.0' x 236.0' application area, the full dimensions of the mound, the 3/16" orifice design and spacing, and the orifice flow and head loss data. The flow and head loss data translates into the need of a pump capable of pumping 88.95 gpm versus 36.11 feet of total dynamic head. As the attached pump specification sheets indicate, a 2.0 h.p. Barnes Model 3SE2024L effluent pump with a 6.50" diameter impeller is proposed which is capable of pumping 88.95 gpm versus 36.11 feet.

The placement of the mound, its related isolation zone and all the community disposal system components are shown on Figure 1 and the design details of the overall system are presented on Figure 2. I've also attached the Vermont Land Trust (VLT) information that approves the location of the mound and its isolation zone that is totally contained on the Town of Charlotte's property. Since the VLT controls the use of the town's property, this information serves as meeting the Act 145 Notification requirement.

Water will be supplied to the 5 bedroom residence by its own drilled bedrock well. The location of the well and its related isolation zone is shown on Figure 1 and the design details of the water system are shown on Figure 3. The 100' x 200' isolation zone is totally contained on the property, so no Act 145 notification is required.

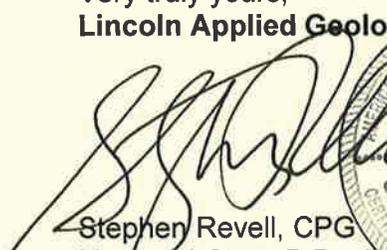
Water will be supplied to the Activity Barn by its own drilled bedrock well. The bedrock well (001) will supply the barns Public TNC water system which will be reviewed and permitted by the DWGPD under a separate application. A copy of the TNC Source Water Permit Application is attached along with the Figure 1 TNC Water System General Design Details.

I believe that the Hunt's application is complete with a signed application and ANR Form 5, an application fee payable to the Town of Charlotte, 2 signed copies of Figure 1, 2 & 3, 1 11x17 copy of Figure 1, 2 & 3, 1 copy of the attachments and the TNC Source Water Permit Application, and 1 CD of the complete application package. The Hunts and I look forward to your successful review and issuance of the permit, so at least the overall community mound disposal system can be constructed as soon as possible.

If you have any questions, please give me a call.

Very truly yours,

**Lincoln Applied Geology, Inc**



Stephen Revell, CPG  
Licensed Class B Designer #178

Enclosure

CC: Tim & Martha Hunt  
Alan Huizenga P.E.

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# 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)	
Hunt		Tim & Martha	
3 Mailing Address Line 1		4 Mailing Address Line 2	
2572 Hinesburg Road			
5 Town/City	6 State/Province	7 Country	8 Zip/Postal Code
Charlotte	VT	United States	05445
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
<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
		United States	

**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)	
<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

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

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

**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		
178	Lincoln Applied Geology, Inc.		
5 Mailing Address Line 1		6 Mailing Address Line 2	
163 Revell Drive			
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			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			
<b>Remove This Designer</b>			

1 Designer Last Name		2 Designer First Name (and Middle Initial if appropriate)	
Huizenga P.E.		Alan	
3 Designer License#	4 Company Name		
5905			
5 Mailing Address Line 1		6 Mailing Address Line 2	
1438 South Brownell Rd.		P.O. Box 159	
7 Town/City	8 State/Province	9 Country	10 Zip/Postal Code
Williston	VT	United States	05495

11 Email Address	12 Telephone
13 Designer Role(s) (check all that apply)	
<input checked="" type="checkbox"/> Water Supply Designer <input checked="" type="checkbox"/> Wastewater Disposal System Designer	
<span style="background-color: yellow; border: 1px solid black; padding: 2px 10px;">Remove This Designer</span>	

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	1297 Ethan Allen Highway

**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="44.33843"/> °	W (-) <input style="width: 80px;" type="text" value="73.23849"/> °

**Part IV Project Information**

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

1 Project Name (if applicable)	2 Total Acreage of Property
Hunt Project	11.47
3 Business Name (if applicable)	
4 Detailed Project Description	
Existing relocated residence 5 bedroom (WW-138-1410) and a proposed activities barn for 150 people with catered in food, no food preparation but cleanup and dishwashing connected to shared disposal system and each with there own well.	
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 checked="" type="radio"/> Yes <input type="radio"/> No	
If Yes, enter the staff person's name and the date of the visit.	
(a) Name of Staff Person	(b) Date of Visit (m/d/yyyy)
<input style="width: 200px;" type="text" value="Spencer Harris"/>	<input style="width: 100px;" type="text" value="7/28/2014"/>
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 type="radio"/> Yes <input checked="" 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?  Yes  No

*If Yes, contact the River Corridor Mgmt. Program of the Watershed Management 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		

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, 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	00100-1297	154	124-125

**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	Figure 1	Site Plan with Relocated Residence Activities Barn with Water/Wastewater Systems	10/13/2014	
X	Figure 2	Water & Wastewater Systems Details	10/13/2014	
X	Figure 3	Water System Details	10/13/2014	

**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
1	11.47	Residential-Agricultural

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	Historical	Local	<input checked="" type="radio"/> Yes <input type="radio"/> No

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	11.47	Residential - Commercial - Agricultural

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		<input type="checkbox"/>	Farmhouse Residence
X	2		<input type="checkbox"/>	Activities Barn

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 Residence 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

	(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	
X	1	1	Connection to New System	560		560	Rule-based
Add Another Lot/Building Served by this Supply				6	7	8	
				560		560	

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 Barn Well	2 Water Supply Owner (if not Applicant)
3 Water Source Type Public Transient Non-Community	4 Type of Change to Supply New System

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	
X	1	2	Connection to New System	0	1,800	1,800	Rule-based

Add Another Lot/Building Served by this Supply

6	7	8
0	1,800	1,800

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>	Varney Farm Well	560	1,800	2,360
		2	3	4
		560	1,800	2,360

Add Another Water Supply

**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 <input style="width: 95%; height: 20px;" type="text" value="Varney Farm Mound"/>	2 Wastewater Disposal System Owner (if not Applicant) <input style="width: 95%; height: 20px;" type="text"/>
3 Wastewater Disposal System Type <input style="width: 95%; height: 20px;" type="text" value="Mound"/>	4 Type of Change to System <input style="width: 95%; height: 20px;" type="text" value="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)			(g) Total	(h) Rule or Meter Based Flows
				(d) Existing	(e) Change	(f) Infiltration		
<b>X</b>	<input style="width: 40px;" type="text" value="1"/>	<input style="width: 40px;" type="text" value="1"/>	Connection to New System	<input style="width: 40px;" type="text" value="560"/>	<input style="width: 40px;" type="text" value="0"/>	<input style="width: 40px;" type="text" value="0"/>	<input style="width: 40px;" type="text" value="560"/>	Rule-based
<b>X</b>	<input style="width: 40px;" type="text" value="1"/>	<input style="width: 40px;" type="text" value="2"/>	Connection to New System	<input style="width: 40px;" type="text" value="0"/>	<input style="width: 40px;" type="text" value="1,800"/>	<input style="width: 40px;" type="text" value="0"/>	<input style="width: 40px;" type="text" value="1,800"/>	Rule-based
Add Another Lot/Building Served by this System								
				<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	
				<input style="width: 40px;" type="text" value="560"/>	<input style="width: 40px;" type="text" value="1,800"/>	<input style="width: 40px;" type="text" value="0"/>	<input style="width: 40px;" type="text" value="2,360"/>	

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 (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.

		Design Flows (Gallons Per Day)			
(a) Wastewater Disposal System Name/Identifier		(b) Existing	(c) Change	(d) Infiltration	(e) Total
<b>X</b>	Varney Farm Mound	560	1,800	0	2,360
	<b>Add Another Wastewater System</b>	2	3	4	5
		560	1,800	0	2,360

**Part VII Application Fees**

1 Fee Amount

2 Fee Calculation Details

Permit for existing residence and activities barn

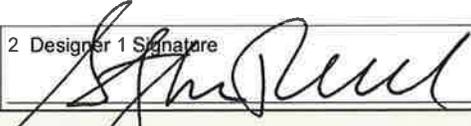
**Part VIII Designer Certification & Copyright License**

**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		11/10/14

**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
Alan Huizenga		11.10.14

**Part IX Applicant(s) Signature & Acknowledgements**

In order to insure compliance with the requirements of the regulations administered by the Department of Environmental Conservation, Drinking Water & 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.

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.

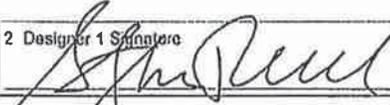
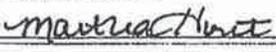
I also understand that I am not allowed to commence any site work or construction on this project without written approval from the Department of Environmental Conservation.

If my project utilizes an Innovative/Alternative System or Product, I have received a copy of the Drinking Water & Groundwater Protection 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	3 Applicant Signature	4 Signature Date
	Tim Hunt		
<input checked="" type="checkbox"/>	2 Print Applicant Name	3 Applicant Signature	4 Signature Date
	Martha Hunt		

Add Applicant Signature Block

<b>Part VIII Designer Certification &amp; Copyright License</b>			
<b>Section A - Certifying Designer 1 Certification &amp; Copyright License</b>			
<p><i>"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.</i></p> <p><i>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."</i></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	
Stephen Revell		11/10/14	
<b>Section B - Certifying Designer 2 Certification &amp; Copyright License</b>			
<p><i>"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.</i></p> <p><i>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."</i></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 checked="" type="checkbox"/> Water Supply Designer</p> <p><input checked="" type="checkbox"/> Wastewater Disposal System Designer</p>			
1 Designer 2 Name	2 Designer 2 Signature	3 Signature Date	
Alan Huizenga		11/10/14	
<b>Part IX Applicant(s) Signature &amp; Acknowledgements</b>			
<p><i>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.</i></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><i>"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></p> <p><i>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.</i></p> <p><i>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.</i></p> <p><i>I also certify that to the best of my knowledge and belief the information submitted above is true, accurate and complete."</i></p>			
<input checked="" type="checkbox"/>	2 Print Applicant Name	3 Applicant Signature	4 Signature Date
	Tim Hunt		11/11/14
<input checked="" type="checkbox"/>	2 Print Applicant Name	3 Applicant Signature	4 Signature Date
	Martha Hunt		11/11/14
<div style="border: 1px solid black; padding: 2px; display: inline-block;">Add Applicant Signature Block</div>			

**ANR Form 5: Certification Statement for Wastewater System and Potable Water Supply Permits when there is no Required Notification of Overshadowed Property Owner(s)**

A person submitting an application to the Secretary for a Wastewater System and Potable Water Supply Permit shall use this statement whenever overshadowing notification of affected landowners is not required (see guidance and instructions for examples).

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 "overshadowing" notification is not required either because there is an exemption to the notification requirement or there are no landowners whose property may be affected by the proposed water and wastewater systems.**

Signature \_\_\_\_\_

SIGN HERE

Name (Printed) \_\_\_\_\_

Tim Hunt

Property Address or Property Tax ID # \_\_\_\_\_

1297 Ethan Allen Highway

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

11/11/14

(To Comply with Act 145 and Act 117 - 8-24-12 Last Revised 9-11-12)

## Steve Revell

---

**From:** Cara Montgomery [Cara@vlt.org]  
**Sent:** Tuesday, October 14, 2014 3:15 PM  
**To:** Steve Revell  
**Cc:** Timothy Hunt  
**Subject:** RE: Septic Siting Letter

Hi Steve and Tim,  
This is great, thanks. Tim, you are all set with us to proceed with the septic.  
Cara

**\*Please note new phone number\***

Cara Montgomery  
Regional Stewardship Manager  
Vermont Land Trust  
P.O. Box 850  
Richmond, VT 05477  
802-861-6406  
[cara@vlt.org](mailto:cara@vlt.org)

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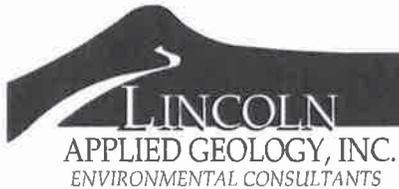
**From:** Steve Revell [mailto:SRevell@lagvt.com]  
**Sent:** Monday, October 13, 2014 11:51 AM  
**To:** Cara Montgomery  
**Cc:** Timothy Hunt  
**Subject:** Septic Siting Letter

Cara, Please find the letter that you requested. I did put a hardcopy in the mail. Thank you Steve

Stephen Revell, CPG  
Lincoln Applied Geology, Inc.  
163 Revell Drive  
Lincoln, Vermont 05443  
[srevell@lagvt.com](mailto:srevell@lagvt.com)  
(802) 453-4384

---

**From:** [scanner@lagvt.com](mailto:scanner@lagvt.com) [mailto:scanner@lagvt.com]  
**Sent:** Monday, October 13, 2014 11:45 AM  
**To:** Steve Revell  
**Subject:** Attached Image



October 13, 2014

Ms. Cara Montgomery  
Regional Stewardship Manager  
Vermont Land Trust  
P.O. Box 850  
Richmond, VT 05477

RE: Varney Farm Property, Ethan Allen Highway, Charlotte, VT-Disposal System Analysis Summary

Dear Cara:

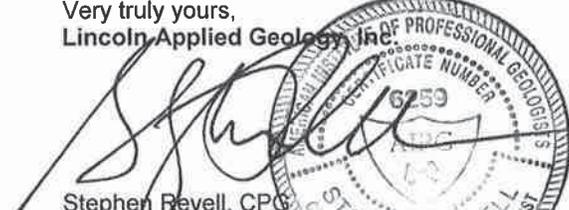
I evaluated the overall Varney Farm property and the adjoining Park property on July 28, 2014 in hopes of indentifying a sewage disposal area capable of supporting the Varney Farm residence (560 gpd) and a barn related commercial use of up to 2000 gpd for a total gallonage of 2560 gpd. Since that time, I've been advised that the commercial use was reduced to 1800 gpd for a total residential-commercial wastewater flow of 2360 gpd. Seventeen test pits, three hand auger borings, 2 percolation tests and a site specific hydrogeologic evaluation were conducted to define the most appropriate location for a performance based mound disposal area capable of handling 2360 gpd of residential-commercial flow. A significant effort was made to identify an area solely on the Varney Farm that could handle the total flow of 2360 gpd. Based upon a thorough site, soil and hydrogeologic evaluation, 2 potential disposal areas were identified associated with the ridge located on both the Varney Farm and Park properties. One area is totally contained on the west flank of the ridge on the Park property. It is the best available area from a soil, slope, position on contour below the top of the ridge, groundwater flow and effluent treatment perspective. Because of its position below the top of the ridge, it does not conflict with the proposed ADA accessible trail or the high point of the ridge for viewing purposes.

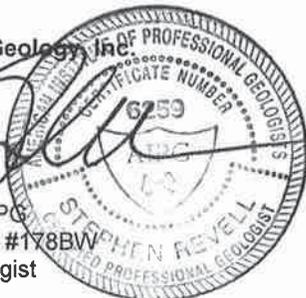
The other potential disposal area is located very high on the east side of the ridge, generally with equal parts of it on both the Varney Farm and the Park property. The 4' tall mound would visually be higher than the ridge and it would block the ADA accessible trail. Because of a rising shallow seasonal water table to the east, topographic expression, and a lower slope, the mound cannot be sited further to the east so that it is totally located on the Varney Farm property.

In summary a very reasonable attempt was made to locate a disposal area for a 2360 gpd residential-commercial use, solely located on the Varney Farm. Two areas were identified, neither of which are totally sited or contained on the Varney Farm property. Because of better site and soil conditions, no conflict with the proposed handicap use trail, and its position on the west flank of the ridge rather than at the very top of the ridge, the disposal area on the Park property is the only choice.

If you have any questions, please give me a call.

Very truly yours,  
Lincoln Applied Geology, Inc.

  
Stephen Revell, CPC  
Licensed Designer #178BW  
Senior Hydrogeologist



SR/ih

CC: Tim & Martha Hunt

F:\CLIENTS\2014\14007\Disopsal System Analysis Summary.docx

**Varney Farm Property  
Soil Profile Descriptions  
7/28/2014  
By Stephen Revell, CPG  
Licensed Designer #178B  
Senior Hydrogeologist**

**Test Pit #1 (TP-1)**

- |        |   |
|--------|---|
| 0-8"   | Brown slightly stony fine sandy loam, loose, strong blocky structure, well drained  |
| 8-18"  | Brown to red-brown stony fine sandy loam, loose, strong blocky structure, well drained  |
| 18-42" | Yellow-brown stony fine sandy loam, friable becoming denser with depth, moderate blocky structure, redoximorphic features at 22" indicating seasonal water table conditions (redox) |

**Test Pit #2 (TP-2)**

- |        |   |
|--------|---|
| 0-10"  | Brown slightly stony fine sandy loam, loose, strong blocky structure, well drained  |
| 10-20" | Brown to red-brown stony fine sandy loam, loose, strong blocky structure, well drained  |
| 20-48" | Yellow-brown stony fine sandy loam, friable becoming denser with depth, moderate blocky structure, redoximorphic features at 24" indicating seasonal water table conditions |

**Test Pit #3 (TP-3)**

- |        |   |
|--------|---|
| 0-10"  | Brown slightly stony fine sandy loam, loose, strong blocky structure, well drained  |
| 10-20" | Brown to red-brown stony fine sandy loam, loose, strong blocky structure, well drained  |
| 20-48" | Yellow-brown stony fine sandy loam, friable becoming denser with depth, moderate blocky structure, redoximorphic features at 22" indicating seasonal water table conditions |



#### **Test Pit #4 (TP-4)**

- 0-8" Brown slightly stony fine sandy loam, loose, strong blocky structure, well drained
- 8-18" Brown to red-brown stony fine sandy loam, loose, strong blocky structure, well drained
- 18-44" Yellow-brown stony fine sandy loam, friable becoming denser with depth, moderate blocky structure, redoximorphic features at 22" indicating seasonal water table conditions

#### **Test Pit #5 (TP-5)**

- 0-8" Brown slightly stony fine sandy loam, loose, strong blocky structure, well drained
- 8-20" Brown to red-brown stony fine sandy loam, loose, strong blocky structure, well drained
- 20-38" Yellow-brown stony fine sandy loam, friable becoming denser with depth, moderate blocky structure, redoximorphic features at 24" indicating seasonal water table conditions

#### **Test Pit #6 (TP-6)**

- 0-10" Brown slightly stony fine sandy loam, loose, strong blocky structure, well drained
- 10-24" Brown to red-brown stony fine sandy loam, loose, strong blocky structure, well drained
- 24-40" Yellow-brown stony fine sandy loam, friable becoming denser with depth, moderate blocky structure, redoximorphic features at 26" indicating seasonal water table conditions

#### **Test Pit #7 (TP-7)**

- 0-10" Brown slightly stony fine sandy loam, loose, strong blocky structure, well drained



- 10-24" Brown to red-brown stony fine sandy loam, loose, strong blocky structure, well drained
- 24-39" Yellow-brown stony fine sandy loam, friable becoming denser with depth, moderate blocky structure, redoximorphic features at 24" indicating seasonal water table conditions

**Test Pit #8 (TP-8)**

- 0-10" Brown slightly stony fine sandy loam, loose, strong blocky structure, well drained
- 10-22" Brown to red-brown stony fine sandy loam, loose, strong blocky structure, well drained
- 22-48" Yellow-brown stony fine sandy loam, friable becoming denser with depth, moderate blocky structure, redoximorphic features at 24" indicating seasonal water table conditions

**Test Pit #9 (TP-9)**

- 0-10" Brown slightly stony fine sandy loam, loose, strong blocky structure, well drained
- 10-24" Brown to red-brown stony fine sandy loam, loose, strong blocky structure, well drained
- 24-42" Yellow-brown stony fine sandy loam, friable becoming denser with depth, moderate blocky structure, redoximorphic features at 24" indicating seasonal water table conditions

**Test Pit #10 (TP-10)**

- 0-8 Brown slightly stony fine sandy loam, loose, strong blocky structure, well drained
- 8-24" Brown to red-brown stony fine sandy loam, loose, strong blocky structure, well drained



24-44" Yellow-brown stony fine sandy loam, friable becoming denser with depth, moderate blocky structure, redoximorphic features at 24" indicating seasonal water table conditions

**Test Pit #11 (TP-11)**

0-10" Brown slightly stony fine sandy loam, loose, strong blocky structure, well drained

10-24" Brown to red-brown stony fine sandy loam, loose, strong blocky structure, well drained

24-42" Yellow-brown stony fine sandy loam, friable becoming denser with depth, moderate blocky structure, redoximorphic features at 25" indicating seasonal water table conditions

**Test Pit #12 (TP-12)**

0-8" Brown slightly stony fine sandy loam, loose, strong blocky structure, well drained

8-24" Brown to red-brown stony fine sandy loam, loose, strong blocky structure, redoximorphic features at 22" indicating seasonal water table conditions

24-48" Yellow-brown stony fine sandy loam, friable becoming denser with depth, moderate blocky structure, redox

**Test Pit #13 (TP-13)**

0-8" Brown slightly stony fine sandy loam, loose, strong blocky structure, well drained

8-22" Brown to red-brown stony fine sandy loam, loose, strong blocky structure, well drained

22-40" Yellow-brown stony fine sandy loam, friable becoming denser with depth, moderate blocky structure, redoximorphic features at 22" indicating seasonal water table conditions



### **Test Pit #14 (TP-14)**

- 0-12" Brown slightly stony fine sandy loam, loose, strong blocky structure, well drained
- 12-28" Brown to red-brown stony fine sandy loam, loose, strong blocky structure, redoximorphic features at 24" indicating seasonal water table conditions
- 28-42" Yellow-brown stony fine sandy loam, friable becoming denser with depth, moderate blocky structure, redox

### **Test Pit #15 (TP-15)**

- 0-12" Brown slightly stony fine sandy loam, loose, strong blocky structure, well drained
- 12-26" Brown to red-brown stony fine sandy loam, loose, strong blocky structure, redoximorphic features at 24" indicating seasonal water table conditions
- 26-42" Yellow-brown stony fine sandy loam, friable becoming denser with depth, moderate blocky structure, redox

### **Test Pit #16 (TP-16)**

- 0-12" Brown slightly stony fine sandy loam, loose, strong blocky structure, well drained
- 12-25" Brown to red-brown stony fine sandy loam, loose, strong blocky structure, redoximorphic features at 22" indicating seasonal water table conditions
- 25-44" Yellow-brown stony fine sandy loam, friable becoming denser with depth, moderate blocky structure, redox

### **Test Pit #17 (TP-17)**

- 0-12" Brown slightly stony fine sandy loam, loose, strong blocky structure, well drained



- 12-24" Brown to red-brown stony fine sandy loam, loose, strong blocky structure, well drained
- 24-44" Yellow-brown stony fine sandy loam, friable becoming denser with depth, moderate blocky structure, redoximorphic features at 24" indicating seasonal water table conditions

### **Hand Auger #1 (HA-1)**

- 0-8" Brown slightly stony fine sandy loam, loose, strong blocky structure, well drained
- 8-21" Brown to red-brown stony fine sandy loam, loose, strong blocky structure, redoximorphic features at 20" indicating seasonal water table conditions
- 21-36" Yellow-brown stony fine sandy loam, friable becoming denser with depth, moderate blocky structure, redox

### **Hand Auger #2 (HA-2)**

- 0-10" Brown slightly stony fine sandy loam, loose, strong blocky structure, well drained
- 10-23" Brown to red-brown stony fine sandy loam, loose, strong blocky structure, well drained, redoximorphic features at 22" features indicating seasonal water table conditions
- 23-36" Yellow-brown stony fine sandy loam, friable becoming denser with depth, moderate blocky structure, redox

### **Hand Auger #3 (HA-3)**

- 0-9" Brown slightly stony fine sandy loam, loose, strong blocky structure, well drained
- 9-20" Brown to red-brown stony fine sandy loam, loose, strong blocky structure, well drained



20-36"

Yellow-brown stony fine sandy loam, friable becoming denser with depth, moderate blocky structure, redoximorphic features at 22" indicating seasonal water table conditions

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163 Revell Drive • Lincoln, VT 05443 • (802) 453-4384 • Fax (802) 453-5399 • [www.lagvt.com](http://www.lagvt.com)

**Varney Farm Property**  
**Charlotte, Vermont**  
**Percolation Test Results**  
 All tests were performed on August 5, 2014 at a depth of 24"

PT-1	Drop Time (min)	Total Drop Time (min)	Total Drop (inches)	Drop Rate (min/inch)
	8.6	8.6	1	8.6
	12.4	21.0	2	10.5
	14.2	35.2	3	11.7
	15.4	50.6	4	12.7
	16.2	66.8	5	13.4
	16.9	83.7	6	14.0
	17.5	101.2	7	14.5
	---	<b>1440.0</b>	---	<b>24.8</b>

PT-2	Drop Time (min)	Total Drop Time (min)	Total Drop (inches)	Drop Rate (min/inch)
	7.9	7.9	1	7.9
	13.2	21.1	2	10.6
	16.6	37.7	3	12.6
	19.3	57.0	4	14.3
	20.7	77.7	5	15.5
	23.6	101.3	6	16.9
	25.5	126.8	7	18.1
	---	<b>1440.0</b>	---	<b>35.8</b>

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

Varney Farm Property  
Charlotte, Vermont  
Percolation Test Results  
All tests were performed on August 5, 2014 at a depth of 24"

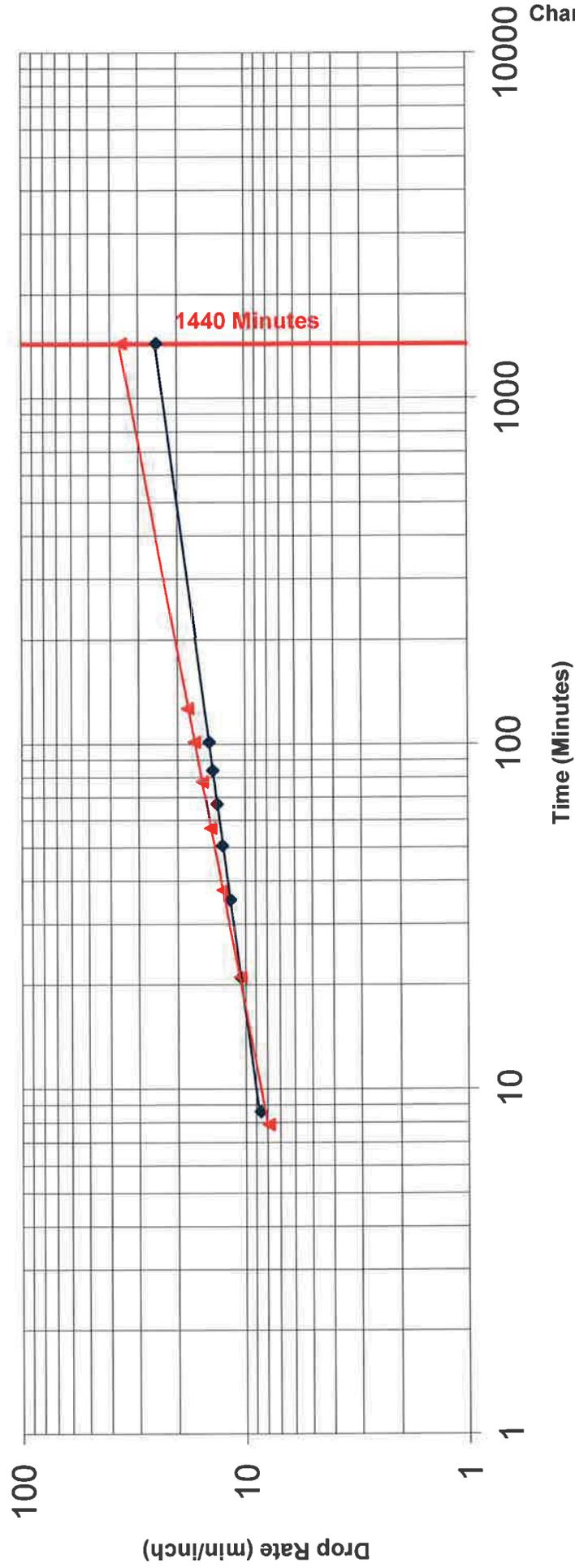


Chart 1

- ◆ PT-1
- ▲ PT-2
- Best Fit PT-1
- Best Fit PT-2

**Site Specific Effluent Mounding Analysis  
Varney Farm Property  
1297 Ethan Allen Hgwy, Charlotte, VT.**

In order to support the proposed performance based mound-type disposal system design and show that the soils can accommodate the design flow rate associated with a 2360 gpd residential/commercial flow, a site specific hydrogeologic analysis using Darcy's Law was conducted. The following formula was used to determine the ability of the soil to accept the proposed amount of wastewater and determine its impact on the shallow seasonal ground water system.

Using the equation:

$$Q = k \cdot i \cdot h \cdot l$$

Where: Q= Volume= 2360 gallons/ day = 315.5 ft<sup>3</sup>/ day;  
k= Hydraulic Conductivity = 30 ft./ day (approved k value for fine sandy loam with strong blocky structure);  
i= Gradient = 8% = 0.08 ft./ ft.;  
h= effluent mound height in feet;  
l= 236' mound length.

When solving this equation for h, an effluent mound of 0.56' was calculated. Since evidence of a seasonal high ground water system was identified at 22" or 1.83', with an induced mound of 0.56', 1.27' feet of unsaturated soil will remain. To maintain the required 3' separation to the induced mound, 3' - 1.27' or 1.73' of state approved mound sand is required beneath the application area.

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PRESSURE DISTRIBUTION & MOUND DIMENSION DETAILS

CLIENT'S NAME: Hunt 2360 gpd Mound - West  
 DATE: 11/10/2014 PERFORMED BY: S. Revell LAG Project #: 14007

Design Flow Rate	2360	GPD
Width of Distribution Stone Bed/Trench	10	FEET
Length of Distribution Stone Bed/Trench	236	FEET
Thickness of Sand Beneath Distribution Stone Bed/Trench	1.73	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	25	MPI
Natural Ground Slope	8	PERCENT
Thickness of Sand on Upper Side of Level Area	2.40	FEET
Thickness of Sand on Lower Side of Level Area	3.36	FEET
Width of Level Area	12	FEET
Length of Level Area	238	FEET
Area of Distribution Stone Bed/Trench	2360	SQUARE FT
Volume of Stone Required	55	CUBIC YARDS
Proposed Basal Area	6240	SQUARE FEET
Volume of Mound Sand Required	823.6	CUBIC YARDS
Number of Laterals	4	
Length of Each Lateral	117.5	FEET
Number of Orifices in the Manifold	0	
Number of Orifices in Each Lateral	24	
Distance Between Manifold and First Orifice	2.5	FEET
Distance Between Orifices (on center)	5	FEET
Distribution Area per Orifice	24.58	SQ. FT.
Design Pressure Head	5	FEET
Diameter of Orifices (enter as fraction)	0.188	INCHES
Elevation From Pump Intake to Laterals (0 if siphon)	16	FEET
Diameter of Force Main	3	INCHES
Length of Force Main	630	FEET
Length of Manifold to Lateral	2.5	FEET
Diameter of Manifold Pipe	2	INCH
Diameter of Lateral Pipe	2	INCH
Friction Loss in Force Main	13.40	FEET
Friction Loss in Manifold	0.10	FEET
Friction Loss in Section 1	0.03	FEET
Friction Loss in Entire Lateral	0.40	FEET
Discharge Rate at First Orifice	0.93	GPM
Discharge Rate at Last Orifice	0.89	GPM
Percent Difference in Flow Rate First to Last Orifice	3.85	PERCENT
Total Dynamic Head Loss	36.107	FEET
Total Distribution System Flow	88.95	GPM
Volume of Distribution System	76.70	GALLONS
Pump Capacity	88.95 GPM vs	36.107 FEET OF HEAD
Volume per Dose	400	GALLONS
On/Off Float Swing (3,000 gal. Tank)	8.7	INCHES

PRESSURE DISTRIBUTION & MOUND DIMENSION DETAILS

CLIENT'S NAME: Hunt 2360 gpd Mound - West  
 DATE: 11/10/2014 PERFORMED BY: S. Revell LAG Project #: 14007

DIMENSIONS OF MOUND SYSTEM

Dimensions of Mound Sand

5.9 feet from level area to uphill sand toe	8.3 ft corner of level area to upper toe corner
12 ft wide level area	7.3 ft to side toe from upper edge of level area
10 ft wide stone bed/trench	
236 ft long stone bed/trench	10.2 ft to side toe from lower edge of level area
238 ft long level area	
13.4 feet from level area to downhill sand toe	19.0 ft corner of level area to lower toe corner

Dimensions of Final Cover

8.3 feet from level area to uphill toe	11.7 ft corner of level area to upper fill toe
	10.3 ft to side toe from upper edge of level area
12 ft wide level area	
238 ft long level area	13.2 ft to side toe from lower edge of level area
	24.7 ft corner of level area to lower fill toe
17.4 feet from level area to downhill toe	

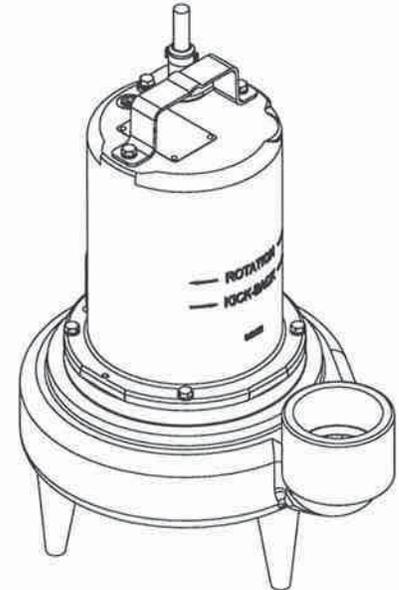
PLOW AREA LAYOUT MEASUREMENTS

Center of Bed/Trench to Downslope Toe	138.4 feet
End of Level Area @ Midpoint to Downslope Toe	29.2 feet
Center of Bed/Trench to Upslope Toe	128.1 feet
End of Level Area @ Midpoint to Upslope Toe	16.5 feet

**DISCHARGE** ..... 3" NPT, Vertical  
**LIQUID TEMPERATURE** ..... 104°F (40°C) Continuous  
**VOLUTE** ..... Cast Iron ASTM, Class 30  
**MOTOR HOUSING** ..... Cast Iron ASTM, Class 30  
**SEAL PLATE** ..... Cast Iron ASTM A-48, Class 30  
**IMPELLER: Design** ..... 2 Vane, Semi-open with pump out vanes on back side. Dynamically balanced, ISO G6.3  
                   **Material** ..... Cast Iron, Class 30  
**SHAFT** ..... 416 Stainless Steel  
**SQUARE RINGS** ..... Buna-N  
**HARDWARE** ..... 300 Series Stainless Steel  
**PAINT** ..... Air Dry Enamel  
**SEAL:**     **Design** ..... Single Mechanical  
                   **Material** ..... Carbon/Ceramic/Buna-N  
   Hardware -300 Series Stainless  
**CORD ENTRY** ..... 30 ft. (9.1m) Cord. Quick connect custom molded for sealing and strain relief  
**SPEED** ..... 1750 RPM (Nominal), 60Hz  
**UPPER BEARING** ..... Single Row, Ball, Oil lubricated  
                   **Load** ..... Radial  
**LOWER BEARING** ..... Single Row, Ball, Oil lubricated  
                   **Load** ..... Radial & Thrust  
**MOTOR: Design** ..... NEMA L -Single Phase, NEMA B -Three phase Torque Curve, Oil Filled, Squirrel Cage Induction  
                   **Insulation** ..... Class B  
**SINGLE PHASE** ..... Permanent Split Capacitor (PSC)  
   Includes Overload Protection in Motor  
**THREE PHASE** ..... 200-230/460 is Tri-Voltage. 575.  
   Requires Overload Protection to be included in control panel  
**OPTIONAL EQUIPMENT** ..... Seal Material, Impeller Trims, Additional cord. Normally closed temperature sensor with cord for 3 Phase pumps (Requires relay in control panel)

**RECOMMENDED:**

**Accessories** ..... Break Away Fitting (BAF)  
   Check Valve  
   Control Panel  
**Seal Kit PN** ..... 130181  
**Service Kit PN** ..... 130208



**Series: 3SE-L**  
**1.5 & 2HP, 1750RPM, 60Hz**



CSA 108 - File No. L16567  
 UL 778

Sample Specifications: Section 1 Page 3.

**DESCRIPTION:**

SUBMERSIBLE NON-CLOG SEWAGE PUMP  
 DESIGNED FOR TYPICAL RAW SEWAGE  
 APPLICATIONS

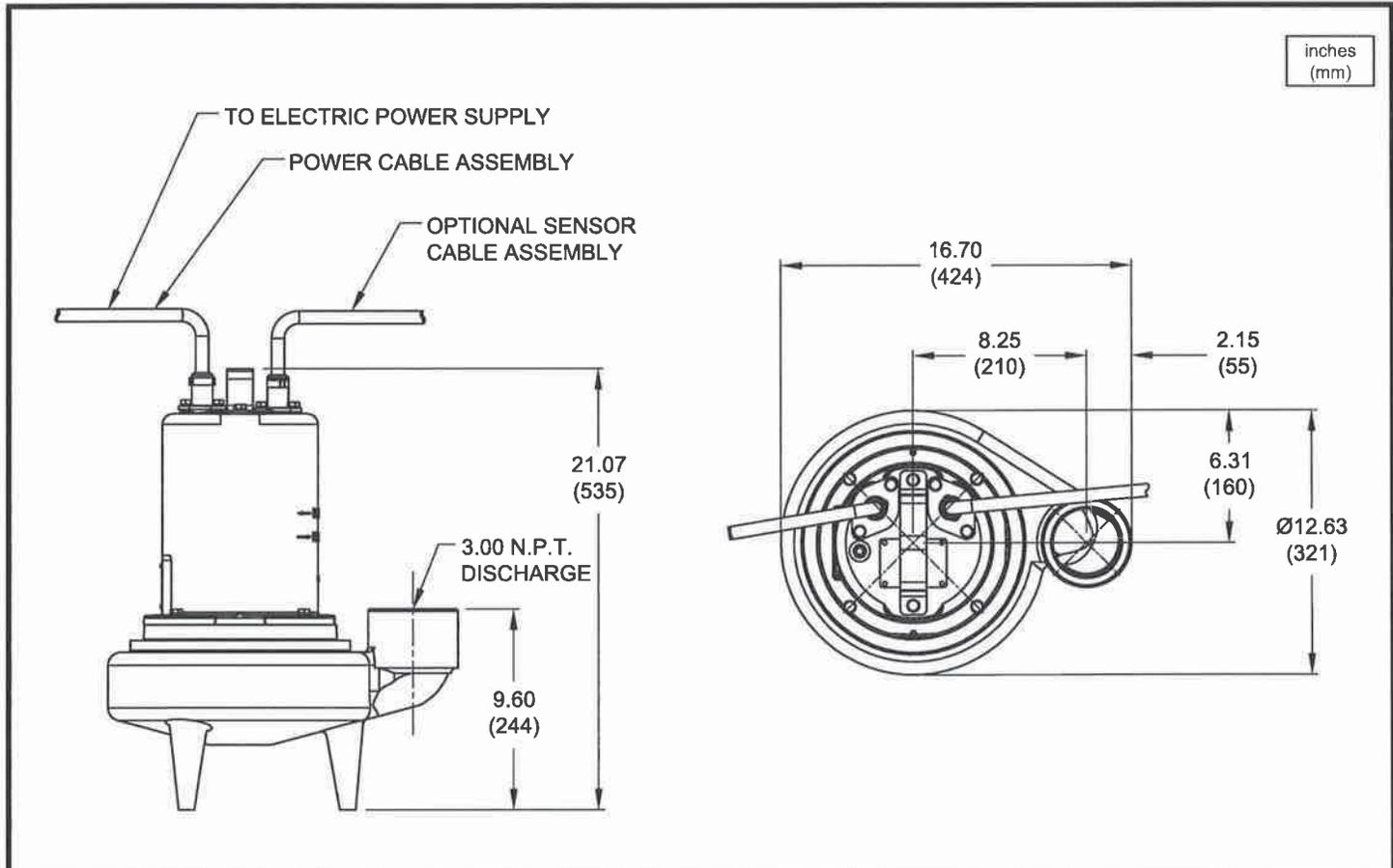
# Series 3SE-L

2½" Spherical Solids Handling  
Single Seal

# BARNES®

www.cranepumps.com

1½", 2" & 3" Discharge



MODEL NO	PART NO	HP	VOLT/PH	Hz	RPM (Nom)	NEMA START CODE	FULL LOAD AMPS	LOCKED ROTOR AMPS	CORD SIZE	CORD TYPE	CORD O.D inch (mm)
3SE1524L	132725	1.5	230/1	60	1750	C	16.0	44.6	12/3	SOOW/SOW	0.610 (15.5)
3SE1594L	132730	1.5	200-230/3	60	1750	D/G	13.3/11.6	35.8/41.2	12/4	SOOW/SOW	0.680 (17.4)
3SE1544L	132735	1.5	460/3	60	1750	G	5.8	20.6	14/4	SOOW/SOW	0.570 (14.5)
3SE1554L	132740	1.5	575/3	60	1750	G	4.6	16.4	14/4	SOOW/SOW	0.570 (14.5)
3SE2024L	132750	2.0	230/1	60	1750	A	19.0	44.6	10/3	SOOW/SOW	0.660 (16.8)
3SE2094L	132752	2.0	200-230/3	60	1750	B/D	15.2/13.2	35.8/41.2	12/4	SOOW/SOW	0.680 (17.4)
3SE2044L	132754	2.0	460/3	60	1750	D	6.6	20.6	14/4	SOOW/SOW	0.570 (14.5)
3SE2054L	132756	2.0	575/3	60	1750	D	5.2	16.4	14/4	SOOW/SOW	0.570 (14.5)

Optional - Temperature Sensor Cord for 3 Phase models are 14/3 & 18/5. SOOW / SOW, 0.530 (13.5mm) / 0.470 (11.9mm) O.D.

**IMPORTANT !**

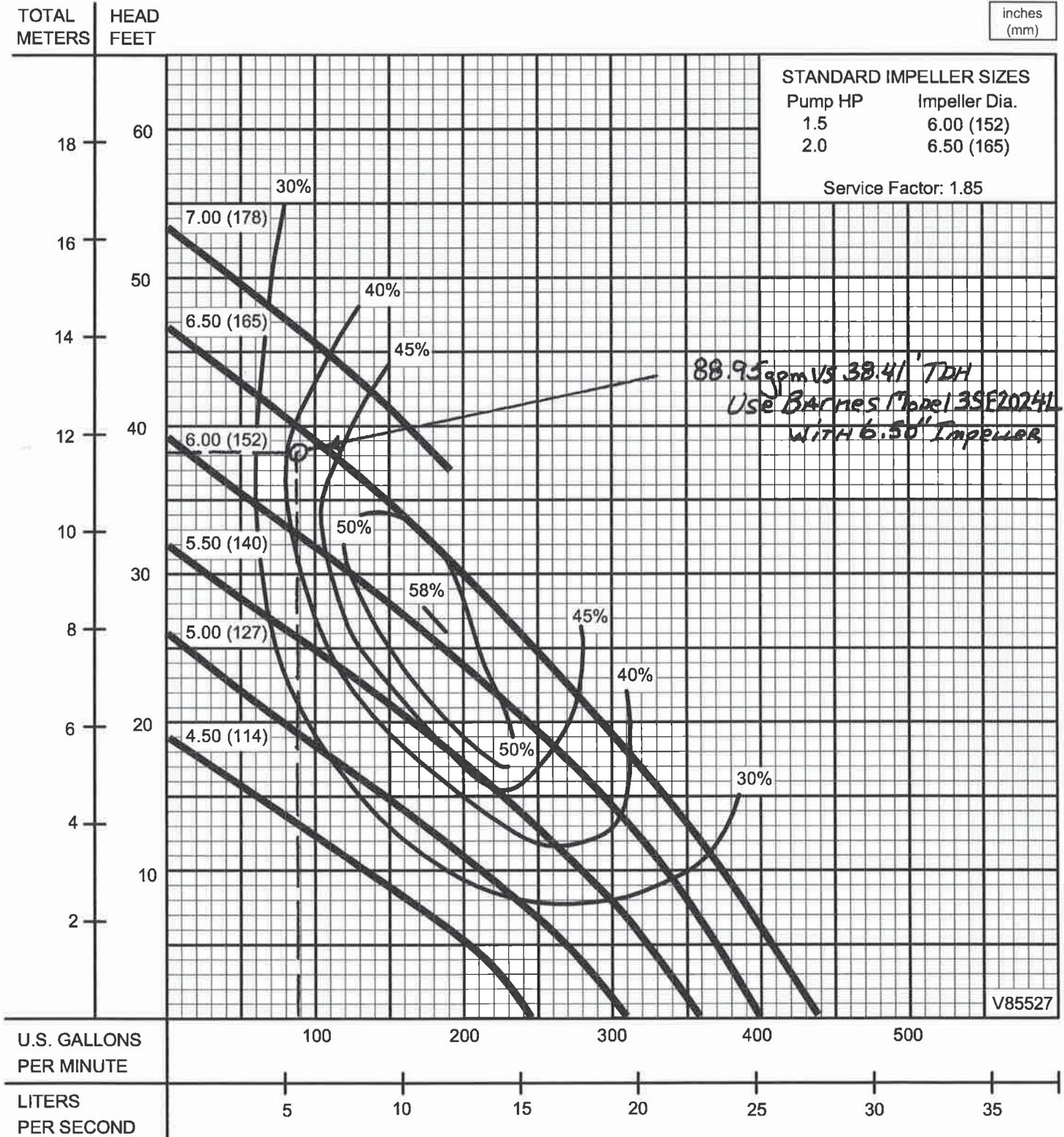
- 1.) PUMP MAY BE OPERATED "DRY" FOR EXTENDED PERIODS WITHOUT DAMAGE TO MOTOR AND/OR SEALS.
- 2.) INSTALLATIONS SUCH AS DECORATIVE FOUNTAINS OR WATER FEATURES PROVIDED FOR VISUAL ENJOYMENT MUST BE INSTALLED IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE ANSI/NFPA 70 AND/OR THE AUTHORITY HAVING JURISDICTION. THIS PUMP IS NOT INTENDED FOR USE IN SWIMMING POOLS, RECREATIONAL WATER PARKS, OR INSTALLATIONS IN WHICH HUMAN CONTACT WITH PUMPED MEDIA IS A COMMON OCCURRENCE.

SECTION 1B  
PAGE 52  
DATE 3/14

**CRANE®**  
A Crane Co. Company

**PUMPS & SYSTEMS**

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Testing is performed with water, specific gravity 1.0 @ 68° F @ (20°C), other fluids may vary performance