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GEOLOGY, INC.

June 7, 2011

Tom Mansfield
Spencer Harris
Town of Charlotte
PO Box 119
Charlotte, VT 05445

RE: Servin Property, 66 Ashe Road, Charlotte, VT –
Replacement Disposal System Permit Submittal

Dear Tom and Spencer:

Kimberly and John Servin own a 4 bedroom residence with a failed in-ground disposal area and a connection to a complying/functioning 3 residence shared drilled bedrock well. The property, the existing shared well, the failed disposal area, the replacement disposal system, and the associated topographic detail are shown on Plan Sheet 1. The site and soil evaluation was conducted on May 16, 2011 with Spencer in attendance. An attempt was made to locate the replacement disposal area in a front area where a gravity Presby type mound could be located. Unfortunately between a downgradient drilled well, difficult topography, and soil conditions requiring a performance based mound, we were unable to do so. Instead, an area was identified northwest of the residence which could support a prescriptive mound with a 30" deep curtain drain.

The description of the soil profile associated with seven (7) test pits is attached. The soil profile in the proposed replacement area is composed of slightly stony to stony fine sandy loams with mottling identified at a depth of 20 to 22" which is related to a perched seasonal shallow water table. The proposed area is suitable for a prescriptive mound disposal area (with 12" of sand) and an upgradient curtain drain placed at a depth of 30". The percolation data is also attached which indicates a design percolation rate of 28.3 minutes per inch. The design basis for the mound is an application rate of 1.0 gallons per day/ft^2 and a basal application rate of 0.74 gpd/ft^2.

The mound dimension and pressure distribution details are attached. An 8.2' X 60' (490 ft^2) application area is proposed with 1 on 3 toe slopes and a basal area of 1715 ft^2 (compared to the required 662 ft^2). A four (4) lateral pressure distribution system is proposed that will require an effluent pump capable of pumping 19.5 gpm against 23.7' of total dynamic head. A pump specification meeting this requirement is attached for your review. The details of the overall replacement disposal system are presented on Plan Sheet 2.

Nothing is changing relative to the Servin water supply. They utilize the 3 residence shared well that is shown on Plan Sheet 1. The well has supplied the 3 residences with adequate quantity and quality since the 3 residential properties were developed.

Relative to Act 145 notification requirements, there are none because the replacement system must be installed. In this regard, the Servin's are exempt from this requirement and have signed the Act 145 notification form indicating such.

I believe the application is complete with a signed application and Act 145 Notification form, a $250.00 application fee, 2 copies of Plan Sheets 1 and 2, 1 – 11" X 17" copy of the Plan Sheets, 1 copy of this letter and the attachments, and 1 CD of the complete application package.

If you have any questions, please do not hesitate to contact me at 802-453-4384.

Very truly yours,
Lincoln Applied Geology, Inc.

Stephen Revell, CPG
Licensed Class B Designer #178

SR/SK:kg

Enclosures

Cc: John & Kimberly Servin

F:\CLIENTS\2011\11025\Servin Permit Submittal Town of Charlotte.docx

Lincoln Applied Geology, Inc.
Environmental Consultants

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

Wastewater Management Division - Permit Application

Wastewater System & Potable Water Supply

VERMONT
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

For Office Use Only:

Application#	PIN#	Date Complete Application Received

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)
Servin	John & Kimberly

3 Mailing Address Line 1	4 Mailing Address Line 2
66 Ashe Road	

5 Town/City	6 State/Province	7 Country	8 Zip/Postal Code
Charlotte	VT	United States	05445

9 Email Address	10 Telephone
	802-425-4253

Remove This Applicant

Add Another Applicant

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

1 Registered Legal Entity or Organization Name	2 Telephone

3 Mailing Address Line 1	4 Mailing Address Line 2

5 Town/City	6 State/Province	7 Country	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. A copy of the document authorizing this person to act as a signatory authority must be attached to this application.

9 Certifying Official Last Name	10 Certifying Official First Name (and MI if appropriate)

11 Certifying Official Title

12 Certifying Official Email Address	13 Telephone

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)

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

Section D - Building/Business Owner Information

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
00178	Lincoln Applied Geology

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	Vermont	United States	05443

11 Email Address	12 Telephone
srevell@lagvt.com	(802) 453-4384

13 Designer Role(s) (check all that apply)

- [x] Water Supply Designer
- [x] Wastewater Disposal System Designer

Remove This Designer

Add Another Designer

Part III Property Location Information

Section A - Property Parcel ID#(s) and Location(s)

1 Please provide the property location information including Town or City Parcel ID#, Town/City, and Street or Road location in the table below:

	(a) Town/City Parcel ID#	(b) Town or City	(c) Street or Road Location
X	00116-0066	Charlotte	66 Ashe Road

Add Another Property

Section B - Center of Property GPS Coordinates

1 Enter the approximate center of property coordinates using GPS set for NAD83 or as derived from a map (map must be based on NAD83).

(a) Latitude
(in decimal degrees to five decimal places, ex. 44.38181°)

N 44.29217 °

(b) Longitude
(in decimal degrees to five decimal places, ex. -72.31392 °)

W (-) 73.18332 °

Part IV Project Information

Section A - General Project Information & Questions

1 Project Name (if applicable)

2 Total Acreage of Property: 5.56

3 Business Name (if applicable)

4 Detailed Project Description

Failed in-ground disposal system needs replacement prescriptive mound disposal area with curtain drain.

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

6 Does this application include subdividing the property? ..... ( ) Yes (●) No

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

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

(a) Name of Staff Person: Spencer Harris

(b) Date of Visit: 05-16-2011

8 Will any construction occur within 50 feet of a wetland boundary, mapped or designated? ..... ( ) Yes (●) No

If Yes, contact the Wetlands Program of the Water Quality Division at (802) 241-3770.

9 Will more than one acre be disturbed during the entire course of construction, including all lots and phases? ..... ( ) Yes (●) No

If Yes, contact the Stormwater Program of the Water Quality Division at (802) 241-4320.

10 Will there be any stream crossings by roads, utilities, or other construction? ..... ( ) Yes (●) No

If Yes, contact the River Corridor Mgmt. Program of the Water Quality Division at:

Central & Northwest Vermont ..... (802) 879-5631
Southern Vermont ..... (802) 786-5906
Northeastern Vermont ..... (802) 751-0129

11 Is the project located in a special flood hazard area as designated on the flood insurance maps prepared for a municipality by the Federal Emergency Management Agency? ..... ( ) Yes (●) No

If Yes, show the special flood hazard area limits on the site plan.

12 Act 250: Has the Applicant (Landowner) subdivided any other lots of any size within a five mile radius of this subdivision, or within the environmental district within the last five years ? ..... ( ) Yes (●) No

If Yes, enter the town(s) and the associated number of lots in the table below:

	(a) Town	(b) Number of Lots
X	Select	

Add Another Town/Lot

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

If Yes, enter the Act 250 permit number:

(a) Act 250 Permit Number

Section B - Project Deed Reference

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

	(a) Town	(b) Book	(c) Page(s)
X	Charlotte	180	271-272

Add Another Deed Reference

Section C - Project Plan Reference

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

	(a) Sheet#	(b) Title	(c) Plan Date	(d) Plan Revision Date
X	1	Site plan with replacement wastewater system	6-6-11	
X	2	Replacement wastewater system details	6-6-11	

Add Another Plan Reference

Section D - Existing Project Lot/BuildingDetails

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

1 Lot#	2 Lot Size (acres)	3 Existing Use of the Lot
1	5.56	Single Family Residential

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

	(a) Building ID	(b) Existing Use	(c) Date Construction of Building Substantially Complete	(d) Prior Permits	(e) In compliance with with existing permits?
X	1	Residential	Pre 1-1-07	Local	◉ Yes ○ No

Add Another Building

Remove This Lot

Add Another Lot

Section E - Proposed Project Lot/BuildingDetails

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

1 Lot#	2 Lot Size (acres)	3 Proposed Use of the Lot
1	5.56	No Change

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		☐	No Change 4 Bedroom SFR

Add Another Building

Remove This Lot

Add Another Lot

Part V Water Supply Information

Section A - Water Supply Screening Questions

1 Are you proposing a new water supply for this project? ○ Yes ◉ No

2 Are you proposing changes to an existing water supply for this project? ○ Yes ◉ No

3 Is there a connection to an existing water supply for the project? ◉ Yes ○ No

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

Section B - General Water Supply Questions

1 Does this project involve a failed water supply? ○ Yes ◉ No

2 Will any of the proposed water sources serve 25 or more people or have 15 or more service connections? ○ Yes ◉ No

If Yes, the applicant must contact the Water Supply Division at (802) 241-3400 for source, construction and operating

3 Are any of the existing or proposed water sources located within a special flood hazard area? ○ Yes ◉ No

4 Are any of the existing or proposed water sources located within a floodway? ○ Yes ◉ No

5 Are any of the proposed water sources located within 1 mile of a hazardous waste site as designated by the Waste Management Division and identified on the Agency mapping website? ○ Yes ◉ No

If Yes, please submit additional information on the site. The Waste Management Division can be reached at (802) 241-3888.

6 Does this project require an approval letter from the Water Supply Division for the construction of a public water system, municipal water line extension over 500 feet, or hydrants or sprinkler systems? ○ Yes ◉ No

If Yes, please submit a copy of the approval letter from the Water Supply Division.

7 Does the proposed or existing water supply(ies) use a water treatment device to obtain compliance with the quality requirements in the Water Supply Rule? ○ Yes ◉ No

If Yes, please submit additional information regarding the constituent(s) that exceeds the standards and plans, details, and specifications of the treatment device.

8 Is any portion of the proposed water supply located in or near a Water Source Protection Area as designated by the Water Supply Division? ○ Yes ◉ No

If in areas of known interference issues, please contact the Water Supply Division at (802) 241-3400.

Section C - Individual Water Supply Details

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

1 Water Supply Name/Identifier	2 Water Supply Owner (if not Applicant)
Parcel 8, 8-1, and 9 Shared Well	
3 Water Source Type	**4 Type of Change to Supply**
Non-Public Drilled Bedrock Well	No Change

5 Lots/Buildings Served by this Water Supply System

	(a) Lot#	(b) Building ID	(c) Type of Change to the Building's Supply	Design Flows (Gallons Per Day) (d) Existing	(e) Increase	(f) Total	(g) Rule or Meter Based Flows
X	1	1	No Change	490	0	490	Rule-based
				6: 490	7: 0	8: 490	

Add Another Lot/Building Served by this Supply

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

10 Is this water supply shared? ◉ Yes ○ No

If the water supply is located off-lot or shared, submit a copy of the agreement to provide an easement prior to construction.

11 Is a variance being requested for this water supply? ○ Yes ◉ No

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

Remove This Water Supply

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) Increase	(d) Total
X	Parcel 8, 8-1 & 9 Shared Well	490		490
		2	3	4
		490		490

Add Another Water Supply

Part VI Wastewater Disposal System Information

Section A - Wastewater Disposal System Screening Questions

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

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

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

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

Section B - General Wastewater Disposal System Questions

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

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

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

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

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

(a) Class A Watershed Name

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

If Yes, indicate where the floor drains will discharge:

(a) Floor Drain Discharge Point

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

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

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

Section C - Individual Wastewater Disposal System Details

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

1 Wastewater Disposal System Name/Identifier	2 Wastewater Disposal System Owner (if not Applicant)
Servin Replacement	
3 Wastewater Disposal System Type	**4 Type of Change to System**
Mound	Replacement of Failed System

5 Lots/Buildings Served by this Wastewater Disposal System

	(a) Lot#	(b) Building ID	(c) Type of Change to the Building's System	Design Flows (Gallons Per Day) (d) Existing	(e) Increase	(f) Infiltration	(g) Total	(h) Rule or Meter Based Flows
X	1	1	No Change	490			490	Rule-based
				6	7	8	9	
				490			490	

Add Another Lot/Building Served by this System

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

Prescriptive

16 For soil-based systems, please check all that apply.

☐ Storage and Dose ☐ Filtrate

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

Innovative/Alternative System Use Type

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

Innovative/Alternative System or Product

Remove This Wastewater System

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) Increase	(d) Infiltration	(e) Total
X	Servin Replacement	490	0	0	490
	Add Another Wastewater System	2	3	4	5
		490	0	0	490

Part VII Application Fees

1 Fee Amount $250.00

2 Fee Calculation Details

Replacement Wastewater Permit = $250.00

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		6/6/17

Section B - Certifying Designer 2 Certification & Copyright License

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

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

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

- ☐ Water Supply Designer
- ☐ Wastewater Disposal System Designer

1 Designer 2 Name	2 Designer 2 Signature	3 Signature Date

Part IX Applicant(s) Signature & Acknowledgements

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

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

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

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

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

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

	2 Print Applicant Name	3 Applicant Signature	4 Signature Date
X	John Servin		
X	Kimberly Servin		

Add Applicant Signature Block

First Revision Issued 6-18-2010

Certification Statement for use in compliance with Act 145 of the 2010 Legislative Session

One of the two following certification statements shall be included with any application for a Wastewater System and Potable Water Supply Permit that is filed on or after June 2, 2010

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

When there are affected property owners, the applicant shall use this statement:

I hereby certify that the attached list of names and addresses includes all those whose property may be affected by the proposed water and wastewater systems, and their associated isolation distances and zones, and that all those listed have been sent a copy of the application and any associated plans.

Signature _____

Name (Printed)_____

Date of this certification _____

Note: It will be helpful for future property transfer work if the physical address of the property or property tax ID number is included with the certification.

When there are no affected landowners, the applicant shall use this statement:

I hereby certify that notification is not required either because there is an exemption or there are no landowners who may be affected by the proposed water and wastewater systems.

Signature _____

Name (Printed)_____

Date of this certification _____

Servin Property
Soil Profile Descriptions
May 16, 2011
By Stephen Revell, LCBD #178

Test Pit #1 (TP-1)

0-12"	Brown slightly stony fine sandy loam, loose, strong granular, well drained
12-18"	Red-brown slightly stony fine sandy loam, loose to friable, moderate granular to blocky, well drained
18-42"	Brown-olive stony fine sandy loam to silt loam, friable, weak blocky, mottled, no water at ledge to depth

Test Pit #2 (TP-2)

0-12"	Brown slightly stony fine sandy loam, loose, strong granular, well drained
12-18"	Red-brown slightly stony fine sandy loam, loose to friable, moderate granular to blocky, well drained
18-42"	Brown-olive stony fine sandy loam to silt loam, friable, weak blocky, mottled, no water at ledge to depth

Test Pit #3 (TP-3)

0-12"	Brown slightly stony fine sandy loam, loose, strong granular, well drained
12-24"	Red-brown slightly stony fine sandy loam, loose to friable, moderate granular to blocky, mottled with water inflow at 12"
24-36"	Brown-olive stony fine sandy loam to silt loam, friable, weak blocky, mottled, no water at ledge to depth

Test Pit #4 (TP-4)

0-12"	Brown slightly stony fine sandy loam, loose, strong granular, well drained
12-24"	Red-brown to orange brown slightly stony fine sandy loam, loose, strong fine blocky, mottled at 20"

24-42" Brown-gray to olive fine sandy loam to silt loam, friable, moderate to weak fine blocky structure, mottled, perching layer, no water or ledge to depth, suitable for a drain and prescriptive mound

Test Pit #5 (TP-5)

0-14" Brown slightly stony fine sandy loam, loose, strong granular, well drained

14-22" Red-brown to orange brown slightly stony fine sandy loam, loose, strong fine blocky, well drained

22-38" Brown-gray to olive fine sandy loam to silt loam, friable, moderate to weak fine blocky structure, mottled, perching layer, no water or ledge to depth, suitable for a drain and prescriptive mound

Test Pit #6 (TP-6)

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

12-24" Red-brown to orange brown slightly stony fine sandy loam, loose, strong fine blocky, mottled at 22"

24-40" Brown-gray to olive fine sandy loam to silt loam, friable, moderate to weak fine blocky structure, mottled, perching layer, no water or ledge to depth, suitable for a drain and prescriptive mound, mottled

Test Pit #7 (TP-7)

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

12-24" Red-brown to orange brown slightly stony fine sandy loam, loose, strong fine blocky, mottled at 20"

24-40" Brown-gray to olive fine sandy loam to silt loam, friable, moderate to weak fine blocky structure, mottled, perching layer, no water or ledge to depth, suitable for a drain and prescriptive mound, mottled

F:\CLIENTS\2011\11025\Servin Property Test Pit Descriptions.docx

Lincoln Applied Geology, Inc.
Environmental Consultants

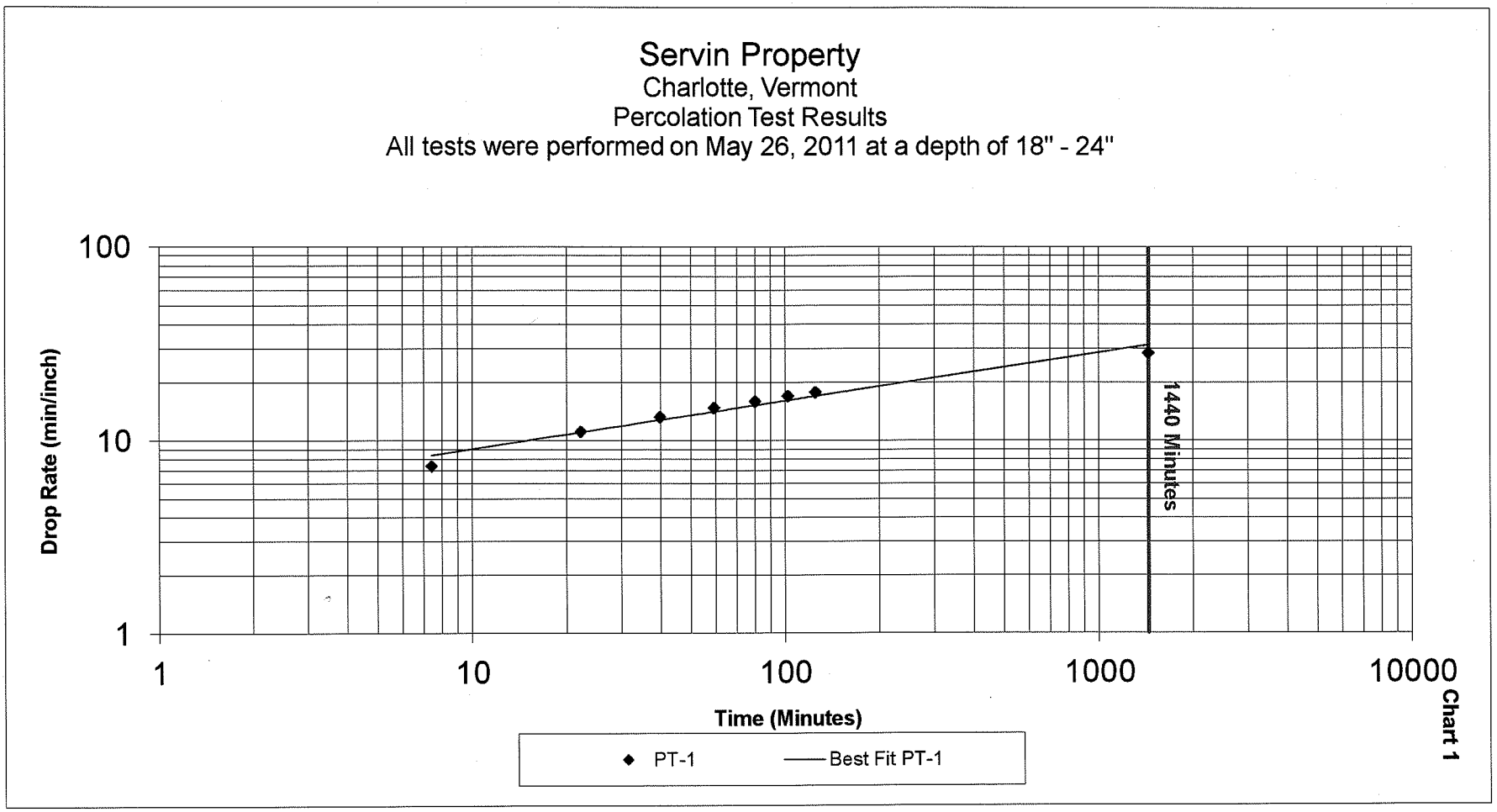
163 Revell Drive • Lincoln, VT 05443 • (802) 453-4384 • FAX (802) 453-5399

Servin Property
Charlotte, Vermont
Percolation Test Results
All tests were performed on May 26, 2011 at a depth of 18" - 24"

PT-1	Drop Time (min)	Total Drop Time (min)	Total Drop (inches)	Drop Rate (min/inch)
	7.4	7.4	1	7.4
	14.8	22.2	2	11.1
	17.6	39.7	3	13.2
	19.4	59.1	4	14.8
	20.7	79.8	5	16.0
	21.8	101.6	6	16.9
	22.7	124.2	7	17.7
	---	**1440.0**	---	**28.3**

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

Table 1


Servin Property
Charlotte, Vermont
Percolation Test Results
All tests were performed on May 26, 2011 at a depth of 18" - 24"
100
10
1
Drop Rate (min/inch)
1
10
100
1000
10000
Time (Minutes)
1440 Minutes
PT-1
Best Fit PT-1
Chart 1

PRESSURE DISTRIBUTION & MOUND DIMENSION DETAILS

CLIENT'S NAME: Servin Replacement
DATE: 6/2/2011 PERFORMED BY: S. Revell LAG Project #: 11025

Design Flow Rate	490	GPD
Width of Distribution Stone Bed/Trench	8.2	FEET
Length of Distribution Stone Bed/Trench	60	FEET
Thickness of Sand Beneath Distribution Stone Bed/Trench	1	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	20	MPI
Natural Ground Slope	15	PERCENT
Thickness of Sand on Upper Side of Level Area	1.60	FEET
Thickness of Sand on Lower Side of Level Area	3.13	FEET
Width of Level Area	10.2	FEET
Length of Level Area	62	FEET
Area of Distribution Stone Bed/Trench	492	SQUARE FT
Volume of Stone Required	11	CUBIC YARDS
Proposed Basal Area	1715	SQUARE FEET
Volume of Mound Sand Required	227.3	CUBIC YARDS
Number of Laterals	4	
Length of Each Lateral	27.5	FEET
Number of Orifices in the Manifold	0	
Number of Orifices in Each Lateral	6	
Distance Between Manifold and First Orifice	2.5	FEET
Distance Between Orifices (on center)	5	FEET
Distribution Area per Orifice	20.50	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	2	INCHES
Length of Force Main	260	FEET
Length of Manifold to Lateral	2	FEET
Diameter of Manifold Pipe	2	INCH
Diameter of Lateral Pipe	1.5	INCH
Friction Loss in Force Main	2.62	FEET
Friction Loss in Manifold	0.01	FEET
Friction Loss in Section 1	0.01	FEET
Friction Loss in Entire Lateral	0.03	FEET
Discharge Rate at First Orifice	0.93	GPM
Discharge Rate at Last Orifice	0.92	GPM
Percent Difference in Flow Rate First to Last Orifice	0.20	PERCENT
Total Dynamic Head Loss	23.737	FEET
Total Distribution System Flow	19.46	GPM
Volume of Distribution System	10.10	GALLONS
Pump Capacity 19.46 GPM vs	23.737	FEET OF HEAD
Volume per Dose	122.5	GALLONS
On/Off Float Swing (1,000 gal. Tank)	4.1	INCHES

PRESSURE DISTRIBUTION & MOUND DIMENSION DETAILS

CLIENT'S NAME: Servin Replacement
DATE: 6/2/2011 PERFORMED BY: S. Revell LAG Project #: 11025

DIMENSIONS OF MOUND SYSTEM

Dimensions of Mound Sand

3.3 feet from level area to uphill sand toe

4.7 ft corner of level area to upper toe corner

10.2 ft wide level area

4.8 ft to side toe from upper edge of level area

8.2 ft wide stone bed/trench
60 ft long stone bed/trench

9.5 ft to side toe from lower edge of level area

62 ft long level area

24.6 ft corner of level area to lower toe corner

17.4 feet from level area to downhill sand toe

Dimensions of Final Cover

5.4 feet from level area to uphill toe

7.7 ft corner of level area to upper fill toe

7.9 ft to side toe from upper edge of level area

10.2 ft wide level area

62 ft long level area

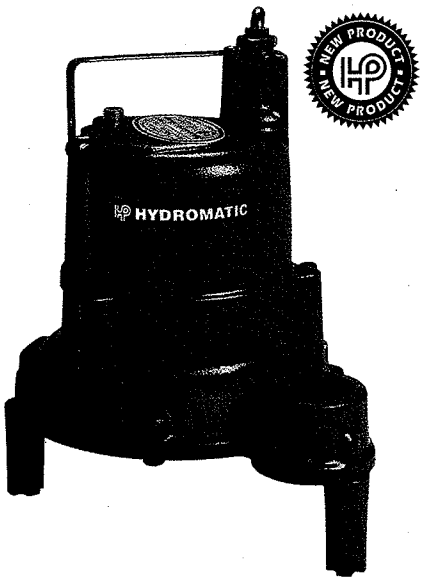
12.5 ft to side toe from lower edge of level area

32.4 ft corner of level area to lower fill toe

22.9 feet from level area to downhill toe

PLOW AREA LAYOUT MEASUREMENTS

Center of Bed/Trench to Downslope Toe	60.8 feet
End of Level Area @ Midpoint to Downslope Toe	36.2 feet
Center of Bed/Trench to Upslope Toe	37.9 feet
End of Level Area @ Midpoint to Upslope Toe	11.8 feet

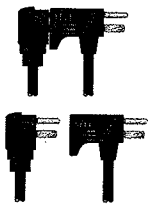
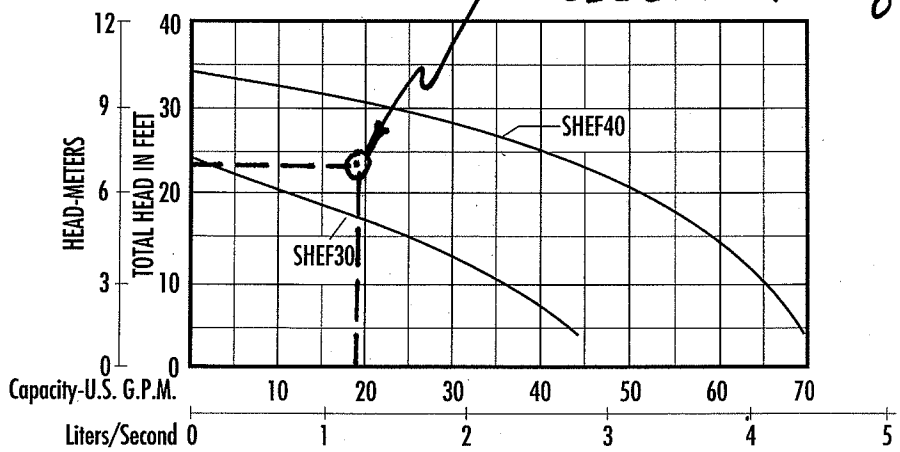


SHEF30

Typical Application*	Sump/Effluent pump
Capacities	to 44 GPM (2.8 l/s)
Heads	to 24 ft (7.3 m)
Electrical	115V, 1ø, 8.0FLA, 60Hz
Motor	.30 HP shaded pole w/thermal overload 1550 RPM
Minimum Recommended Sump Diameter	Simplex = 18" (457mm) Duplex = 30" (762mm)
Automatic Operation	Wide angle float switch
Materials of Construction	Class 30 cast iron and engineered thermoplastic
Impeller	Thermoplastic vortex
Discharge Size	1-1/2" NPT(38.1mm)
Solids Handling	3/4" (19.1 mm)
Power Cord	20', SJTW
Superior Features	• Carbon/Ceramic mechanical seal • Oil filled motor w/automatic reset thermal overload • Uses single row ball bearing construction • Piggy-back plug available for easy maintenance and replacement

SHEF40

Typical Application*	High Head Effluent and Dewatering
Capacities	to 70 GPM (4.4 l/s)
Heads	to 35 ft (10.7m)
Electrical	115V, 1ø, 12FLA, 60Hz 230V, 1ø, 6.5FLA, 60Hz
Motor	4/10 HP shaded pole w/thermal overload protection,1550 RPM
Minimum Recommended Sump Diameter	Simplex = 18" (457mm) Duplex = 30" (762mm)
Automatic Operation	Wide-angle float switch (manual available)
Materials of Construction	Class 30 cast iron
Impeller	Thermoplastic vortex
Discharge Size	1-1/2" (38.1mm)
Solids Handling	3/4" (19.1 mm)
Power Cord	20', SJTW, (30' optional)
Superior Features	• Carbon/Ceramic mechanical seal • Oil filled motor w/automatic reset thermal overload for maximum protection • Ball bearing construction • Piggy-back plug available for easy maintenance and replacement • Patented inlet design for better solids handling

19.5 gpm vs 23.7' TDH
Use SHEF40 or equal

Piggyback Switch Plug