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August 21, 2015

Town of Charlotte
Planning and Zoning Department
Attn: Jeannine McCrumb
159 Ferry Road
Charlotte, Vermont 05445

Subject: Nancy J. Faulkner, 30.7+/- Acre Parcel, 283 Higbee Road, Charlotte, VT -
Wastewater System and Potable Water Supply Permit Application

Dear Jeannine:

Enclosed you will find two (2) copies of the Nancy J. Faulkner full size design drawings, two (2) copies of the 11" x 17" design drawings, electronic copies of the design drawings in PDF format, and the required supporting documents (paper and electronic copies) relative to a 30.7+/- acre parcel (total of two parcels = 36.6+/- acre) residential property located at 283 Higbee Road in Charlotte. The subject property is improved with a 3-bedroom single-family residence that is provided water by on-site drilled water supply well and is served by on-site in-ground wastewater disposal system. The in-ground wastewater system that serves the 3-bedroom single-family residence is starting to fail (effluent is backing up into the septic tank from the in-ground leach field) and therefore the existing system needs to be replaced.

For this reason, Nancy J. Faulkner is applying for a State of Vermont Wastewater System and Potable Water Supply Permit so that a "best fix" replacement mound wastewater system can be installed that will serve the 3-bedroom single-family residence. Due to site limitations and limited suitable area for wastewater disposal within 500 feet of the existing residential structure, it is necessary to install a "best fix" replacement mound-type wastewater disposal system with 24 inches of State of Vermont approved mound sand beneath the absorption bed. Since the effluent mounding analysis shows that induced groundwater mounding will occur within six (6) inches of the existing ground surface under high ground water conditions and because the "best fix" replacement mound system is being proposed with 2.31 feet of vertical separation to induced groundwater mounding, a variance is being requested in accordance with Subsection 1-806 of the Environmental Protection Rules (EPRs) Chapter 1 "Wastewater System and Potable Water Supply Rules" effective September 29, 2007. Results of the hydrogeologic effluent mounding analysis show the proposed "best fix" replacement wastewater system will maintain the effluent plume below ground surface under normal wastewater loading rates and typical seasonal high groundwater conditions. Based on my review of the property, the identified replacement mound system area is the most suitable location for wastewater disposal that is located within a reasonable distance (i.e. within 500 feet) from the existing residential structure. Further, the proposed "best fix" replacement system is a significant improvement over the existing in-ground system and provides better protection to the existing drilled well and the environment.

Included to facilitate your review of this permit application are the following:

1. Check made payable to the Town of Charlotte for the amount of two hundred and fifty dollars (\$250.00).
2. State of Vermont, Agency of Natural Resources, Potable Water Supply and Wastewater System Permit Application.
3. Landowner Notification Exemption Form.
4. Test Pit and Soil Boring Logs.
5. Percolation Tests.
6. Effluent Mounding Analysis.
7. "Best Fix" Replacement Mound System Basis of Design.
8. Replacement Mound System Pressure Distribution Details.
9. Required Effluent Pump Specifications.
10. High Water Level Alarm Specifications.
11. Mound System Construction Instructions.
12. Mound Sand Specifications.
13. Polylok PL-122 Effluent Filter Specification Sheet.
14. Design Drawings No. 1, No. 2 and No. 3 dated August 20, 2015.

Should you have any questions or comments relative to the information submitted herein, please do not hesitate to call me at (802) 453-2597.

Sincerely,



Jason S. Barnard
Licensed Designer #430-B

c: James and Nancy Faulkner

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)	
Faulkner		Nancy J.	
3 Mailing Address Line 1		4 Mailing Address Line 2	
283 Higbee Road			
5 Town/City	6 State/Province	7 Country	8 Zip/Postal Code
Charlotte	Vermont	United States	05445
9 Email Address			10 Telephone
<input type="text"/>			207-468-3129
<input type="button" value="Remove This 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
<input type="text"/>	<input type="text"/>	United States	<input type="text"/>

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"/>
<input type="button" value="Remove This 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)	
Barnard		Jason S.	
3 Designer License#	4 Company Name		
430	Jason Barnard Consulting, LLC		
5 Mailing Address Line 1		6 Mailing Address Line 2	
4400 VT Route 17			
7 Town/City	8 State/Province	9 Country	10 Zip/Postal Code
Starksboro	Vermont	United States	05487
11 Email Address			12 Telephone
jbsitotech@hotmail.com			802-453-2597
13 Designer Role(s) (check all that apply)			
<input type="checkbox"/> Water Supply Designer <input checked="" type="checkbox"/> Wastewater Disposal System Designer			
<div style="background-color: yellow; padding: 2px; display: inline-block;">Remove This Designer</div>			
<div style="background-color: green; color: white; padding: 2px; display: inline-block;">Add Another Designer</div>			

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	283 Higbee Road

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

N ° W (-) °

Part IV Project Information

Section A - General Project Information & Questions

1 Project Name (if applicable) 2 Total Acreage of Property

3 Business Name (if applicable)

4 Detailed Project Description

Nancy J. Faulkner owns a 30.7+/- acre parcel of land (36.6+/- acres total of two lots) located at 283 Higbee Road in Charlotte. The property is improved with a 3-bedroom single-family residence that is served by an on-site in-ground wastewater disposal system and is provided water by an on-site drilled water supply well. The existing in-ground wastewater system has failed (wastewater is backing up into the septic tank from the leach field) and therefore the system needs to be replaced. For this reason, Mrs. Faulkner is applying for a Wastewater System and Potable Water Supply Permit to replace the existing in-ground disposal system. A "best fix" replacement mound wastewater system is proposed as the replacement wastewater disposal system.

5 (a) Were all existing buildings or structures, campgrounds, and their associated potable water supplies and wastewater systems substantially completed before January 1, 2007? Yes No

(b) Were all existing 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 Drinking Water & Groundwater Protection 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 (b) Date of Visit (m/d/yyyy)

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 Watershed Management Division at (802) 338-4835. A wetland delineation has NOT BEEN performed.

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 Watershed Management 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 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	<input type="text"/>	<input type="text"/>
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, 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	M09B02L05	218	621-623

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	Overall Site Plan	8/20/2015	
X	2	Site Plan	8/20/2015	
X	3	Replacement Wastewater System Details and Notes	8/20/2015	

Add Another Plan Reference

Section D - Existing Project Lot/Building Details

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

1 Lot#	2 Lot Size (acres)	3 Existing Use of the Lot
1	30.7	Residential

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

(a) Building ID	(b) Existing Use	(c) Date Construction of Building Substantially Complete	(d) Prior Permits	(e) In compliance with existing permits?	
X	Lot 1 House	Residential	Before 2000	None Found	<input checked="" type="radio"/> Yes <input type="radio"/> No

Add Another Building

Remove This Lot

Add Another Lot

Section E - Proposed Project Lot/Building Details

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

1 Lot#	2 Lot Size (acres)	3 Proposed Use of the Lot
1	30.7	3-Bedroom Single-Family Residence

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	Lot 1 House		<input type="checkbox"/>	3-Bedroom Single-Family Residence
<input type="button" value="Add Another Building"/>				
<input type="button" value="Remove This Lot"/>				
<input type="button" value="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 Faulkner Drilled Well	2 Water Supply Owner (if not Applicant)
3 Water Source Type Non-Public Drilled Bedrock Well	4 Type of Change to Supply No Change
5 Lots/Buildings Served by this Water Supply System	

	(a) Lot#	(b) Building ID	(c) Type of Change to the Building's Supply	Design Flows (Gallons Per Day)			(g) Rule or Meter Based Flows
				(d) Existing	(e) Change	(f) Total	
X	1	Lot 1 House	No Change	420	0	420	Rule-based
<input type="button" value="Add Another Lot/Building Served by this Supply"/>				6	7	8	
				420	0	420	

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.

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
X	Faulkner Drilled Well	420	0	420
<input type="button" value="Add Another Water Supply"/>		2	3	4
		420	0	420

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 Faulkner Replacement System	2 Wastewater Disposal System Owner (if not Applicant)
3 Wastewater Disposal System Type Mound	4 Type of Change to System Replacement of Failed System

5 Lots/Buildings Served by this Wastewater Disposal System

(a) Lot#	(b) Building ID	(c) Type of Change to the Building's System	Design Flows (Gallons Per Day)				(h) Rule or Meter Based Flows
			(d) Existing	(e) Change	(f) Infiltration	(g) Total	
X 1	Lot 1 House	Replacement of Failed System	420	0	0	420	Rule-based
Add Another Lot/Building Served by this System			6 420	7 0	8 0	9 420	

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.

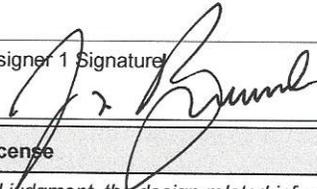
		Design Flows (Gallons Per Day)			
(a) Wastewater Disposal System Name/Identifier	(b) Existing	(c) Change	(d) Infiltration	(e) Total	
X Faulkner Replacement System	420	0	0	420	
Add Another Wastewater System	2	3	4	5	
	420	0	0	420	

Part VII Application Fees

1 Fee Amount \$250.00

2 Fee Calculation Details

In accordance with the Town of Charlotte permit fee schedule, the application fee for a replacement system is \$250.00.

Part VIII Designer Certification & Copyright License			
Section A - Certifying Designer 1 Certification & Copyright License			
<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 type="checkbox"/> Water Supply Designer</p> <p><input checked="" type="checkbox"/> Wastewater Disposal System Designer</p>			
<p>1 Designer 1 Name</p> <p>Jason S. Barnard</p>	<p>2 Designer 1 Signature</p> 	<p>3 Signature Date</p> <p>8-21-15</p>	
Section B - Certifying Designer 2 Certification & Copyright License			
<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 type="checkbox"/> Water Supply Designer</p> <p><input type="checkbox"/> Wastewater Disposal System Designer</p>			
<p>1 Designer 2 Name</p>	<p>2 Designer 2 Signature</p>	<p>3 Signature Date</p>	
Part IX Applicant(s) Signature & Acknowledgements			
<p><i>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.</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 & 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>			
<p><input checked="" type="checkbox"/> 2 Print Applicant Name</p> <p>Nancy J. Faulkner</p>	<p>3 Applicant Signature</p>	<p>4 Signature Date</p>	
<p style="background-color: #4CAF50; color: white; text-align: center; padding: 2px;">Add Applicant Signature Block</p>			

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 _____

Name (Printed) Nancy J. Faulkner

Property Address or Property Tax ID # 283 Higbee Road, Charlotte, Vermont

Date of this certification _____

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

TEST PIT LOG

Client: Nancy J. Faulkner Date: July 20, 2015 Location: 283 Higbee Road, Charlotte, Vermont

Project Description: "Best Fix" Replacement Wastewater Disposal System Design and Permitting

Logged By: Jason Barnard, Licensed Designer #430-B Topographic Setting: Gently Sloping to Level Wooded Area

Current/Historic Land Use: Residential Slope: 4.2% Vegetation: Wooded

Weather Conditions: 65° Mostly Sunny Method of Excavation: Rubber Tired Backhoe

Test Pit #	Depth (inches)	Dominant Color	Soil Texture	Soil Structure	Consistency	Mottles	Comments
01	0-10"	Brown	Very fine sandy loam (topsoil)	Granular	Loose	No	Very well drained
	10-16"	Orange-brown	Very fine sandy loam to loamy fine sand	Granular	Loose	Fine, faint, few at 16"	Well drained, SHWT estimated at 16"
	16-25"	Light gray	Very fine sandy loam	Granular	Loose	Prominent, common and distinct at 18"	
	25-44"	Brown	Very fine sandy loam	Weak sub-angular blocky	Friable	Prominent, common and distinct	No ledge or groundwater to 44"

Client: Nancy J. Faulkner Date: July 20, 2015 Location: 283 Higbee Road, Charlotte, Vermont

Test Pit #	Depth (inches)	Dominant Color	Soil Texture	Soil Structure	Consistency	Mottles	Comments
02	0-11"	Brown	Very fine sandy loam (topsoil)	Granular	Loose	No	Very well drained
	11-16"	Orange-brown	Very fine sandy loam to loamy fine sand	Granular	Loose	Fine, faint, few at 16"	Well drained, SHWT estimated at 16"
	17-22"	Light gray	Very fine sandy loam	Granular	Loose	Prominent, common and distinct	
	22-40"	Brown	Very fine sandy loam	Weak sub-angular blocky	Friable	Prominent, common and distinct	No ledge or groundwater to 40"
03	0-12"	Brown	Very fine sandy loam (topsoil)	Granular	Loose	No	Very well drained
	12-16"	Orange-brown	Very fine sandy loam to loamy fine sand	Granular	Loose	Fine, faint, few at 18"	Well drained, SHWT estimated at 18"
	12-22"	Light gray	Very fine sandy loam	Granular	Loose	Prominent, common and distinct at 20"	
	22-36"	Light gray	Very fine sandy loam	Weak sub-angular blocky	Friable	Prominent, common and distinct	No ledge or groundwater to 36"

TEST PIT AND SOIL BORING LOG

Client: Nancy J. Faulkner

Date: August 5, 2015

Location: 283 Higbee Road, Charlotte, Vermont

Project Description: "Best Fix" Replacement Wastewater Disposal System Design and Permitting

Logged By: Jason Barnard, Licensed Designer #430-B

Topographic Setting: Moderately Sloping Wooded Area

Current/Historic Land Use: Residential

Slope: 15%

Vegetation: Wooded

Weather Conditions: 65° Mostly Sunny

Method of Excavation: Rubber Tired Backhoe and Hand Auger

Test Pit #	Depth (inches)	Dominant Color	Soil Texture	Soil Structure	Consistency	Mottles	Comments
101	0-6"	Brown	Very fine sandy loam (topsoil)	Granular	Loose	No	Well drained, SHWT estimated at 16"
	6-18"	Tan-brown	Very fine sandy loam	Weak sub-angular blocky	Friable	Prominent, common and distinct at 16"	Well drained, SHWT estimated at 16"
	18-60"	Tan-brown	Sandy clay loam	Sub-angular blocky	Friable	Prominent, common and distinct	No ledge or groundwater to 60"
102	0-3"	Brown	Very fine sandy loam (topsoil)	Granular	Loose	No	Well drained
	3-16"	Tan-brown	Very fine sandy loam	Granular	Loose	Fine, faint, few at 16"	Well drained, SHWT estimated at 16"
	16-48"	Brown	Clay	Sub-angular blocky	Firm	Prominent, common and distinct	No ledge or groundwater to 48"

Client: Nancy J. Faulkner Date: August 5, 2015 Location: 283 Higbee Road, Charlotte, Vermont

Soil Boring #	Depth (inches)	Dominant Color	Soil Texture	Soil Structure	Consistency	Mottles	Comments
SB-01	0-10"	Dark brown	Very fine sandy loam (topsoil)	Granular	Loose	No	Fairly well drained
	10-14"	Brown	Silty clay	Sub-angular blocky	Firm	Prominent, common and distinct at 12"	Poorly drained, SHWT estimated at 12"
	14-30"	Tan-brown	Clay	Sub-angular blocky	Firm	Prominent, common and distinct	No ledge or groundwater to 30"

Nancy J. Faulkner
Replacement Wastewater Diposal System
283 Higbee Road, Charlotte, Vermont
Percolation Tests of August 5, 2015

Table 1

P-01	Drop Time (min)	Total Drop Time (min)	Total Drop (inches)	Drop Rate (min/inch)
	3.00	3.00	1	3.00
	3.25	6.25	2	3.13
	4.00	10.25	3	3.42
	4.45	14.70	4	3.68
	5.00	19.70	5	3.94
	5.30	25.00	6	4.17
	5.50	30.50	7	4.36
	---	1440.00	---	8.13

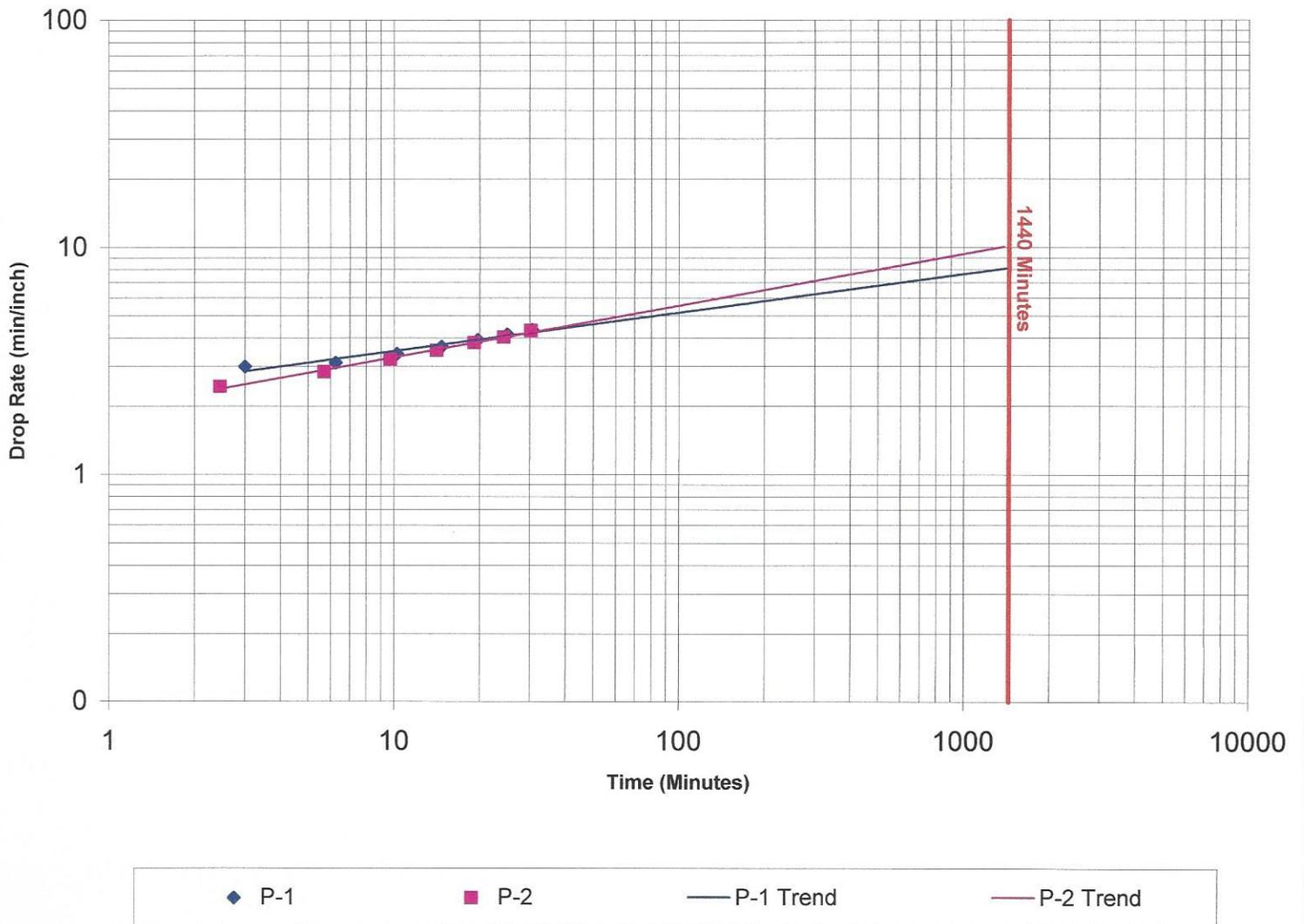
P-02	Drop Time (min)	Total Drop Time (min)	Total Drop (inches)	Drop Rate (min/inch)
	2.45	2.45	1	2.45
	3.25	5.70	2	2.85
	4.01	9.71	3	3.24
	4.40	14.11	4	3.53
	5.00	19.11	5	3.82
	5.15	24.26	6	4.04
	6.00	30.26	7	4.32
	---	1440.00	---	10.19

NOTES:

1. Percolation tests performed at 10 to 20 inches below ground surface.

Nancy J. Faulkner
Replacement Wastewater Disposal System
283 Higbee Road, Charlotte, Vermont
Percolation Tests of August 5, 2015

Chart 1



Nancy J. Faulkner
Replacement Wastewater
Disposal System
283 Higbee Road
Charlotte, Vermont

**“Best Fix” Replacement Mound System
Desktop Effluent Mounding Analysis**

“Best Fix” Replacement Mound:

- Soils present in the vicinity of the “best fix” replacement mound system consist of very fine sandy loam topsoil that has a loose consistency with a granular structure and extends to between 10” and 12” below ground surface. Beneath the very fine sand loam topsoil is well drained very fine sandy loam to loamy fine sand that has a loose consistency with a granular structure and extends to 16” below ground surface. Beneath the well drained very fine sandy loam, is a very fine sandy loam that is friable with a granular to weak sub-angular blocky structure. The very fine sandy loam was used in the effluent mounding analysis.
- The estimated depth to the seasonal high water table (SHWT) is 16” (1.33’) below ground surface, based on the presence of redoximorphic features (soil mottles) in test pits TP-01, TP-02 and TP-03.
- The average ground surface slope is estimated at approximately 4.2% in the vicinity and down slope of the “best fix” replacement mound wastewater disposal system.

The following equation is used from the ANR “Simplified Procedure for Prescriptive Desktop Mounding Analysis”, dated January 30, 2003:

$$LLR = (f)(b)$$

where:

LLR = linear loading rate, gpd/ft.

h = soil thickness available for groundwater mounding in feet.

f = the LLR factor from Table 1 of the January 30, 2003 ANR document, which is based on soil texture and slope.

from Table 1:

Very fine sandy loam with a slope of 4.2%, therefore $f = 7.5$

$SHWT = 1.33' (16'') - 0.083' (1'') = 1.25' (15'') = b$ (available for mounding)

Using the formula above, the linear loading rate and minimum mound size is determined as follows:

- $LLR = (1.25)(7.5) = 9.38$ gpd/linear foot.
- $420 \text{ gpd} / 9.38 \text{ gpd/linear feet} = 44.78$ feet minimum mound length.
- Loading at 1.0 gpd/ft^2 , $420 \text{ gpd} / 1.0 \text{ gpd/ft}^2 = 420 \text{ ft}^2$ of infiltration area is required.
- 440 ft^2 of infiltration area is supplied via one 8 foot by 55 foot absorption bed.
- The actual linear loading rate (ALLR) is: $420 \text{ gpd} / 55 \text{ ft} = 7.64$ gpd/linear foot.
- The actual effluent mounding (AEM) is determined by dividing the actual linear loading rate (ALLR) by the linear loading rate factor (f) = $AEM = (ALLR/f) = (7.64/7.5) = 1.02'$ or $12.2''$.
- Then, the amount of unsaturated soil (“freeboard”) between the top of the induced groundwater mound and the ground surface is determined by subtracting the AEM from the highest SHWT = $1.33' (16'') - 1.02' = 0.31'$ or $3.73''$ +/-

Conclusions

The “best fix” replacement mound system, if constructed with an 8 foot wide by 55 foot long absorption bed with 2 feet (24 inches) of mound sand beneath the absorption bed will maintain the effluent plume below existing ground surface under normal wastewater loading rates and typical seasonal high groundwater conditions. Further, since the “best fix” replacement mound is being proposed with a minimum of two (2) feet of mound sand beneath the absorption bed, the system will provide greater than 36 inches (3 feet) of unsaturated soil (1.33 feet to SHWT + 2 feet of mound sand = 3.33 feet) between the SHWT and the bottom of the absorption bed. Since the replacement mound system is being proposed as a “best fix”, a variance is being requested to reduce the separation to the induced groundwater mounding to 2.31 feet (0.31' of freeboard + 2 feet of mound sand = 2.31' +/- of separation to the induced groundwater mounding). The proposed “best fix replacement mound system is a significant improvement over the existing in-ground system and will provide much better protection to human health and the environment than the previous in-ground system. Additionally, with two (2) feet of mound sand beneath the absorption bed and at least 3 feet (36 inches) to bedrock in the test pits that were excavated in the vicinity of the “best fix” replacement mound system area, there is greater than 4 feet (48 inches) of vertical separation between the bottom of the mound system’s absorption bed and any underlying bedrock that may be present.

MOUND WASTEWATER DISPOSAL SYSTEM BASIS OF DESIGN

Nancy J. Faulkner
Replacement Wastewater Disposal System
283 Higbee Road, Charlotte, Vermont
August 18, 2015

Prepared By: Jason Barnard Licensed Designer #430-B

"Best Fix" Replacement Mound Wastewater Disposal System

I. WASTEWATER FLOWS AND MOUND SYSTEM SIZING

A. WASTEWATER FLOWS (Q)

3	Bedrooms	140	gpd/bedroom=	420	gpd	
				Total Flows =	420	gpd

B. REQUIRED SEPTIC TANK

Required Septic Tank Capacity = **1,000 gallons** for a **3-bedroom** single-family residence. The existing tank shall be pumped out, inspected and if in good condition the tank shall be retrofitted with a Polylok PI-122 effluent filter or equal. If the existing septic tank is in poor condition or does not appear to be water-tight, it shall be replaced with a new 1,000-gallon water-proof concrete septic tank with an approved effluent filter.

C. PERCOLATION RATE (PR)

Percolation tests were all less than 60 min/inch. Therefore, a basal area application rate of 0.74 gallons per day (gpd) per square foot (sf) is used.

D. MOUND SYSTEM APPLICATION RATE (AR)

AR = Application rate for sizing the mound system leachfield area (LA)
Ra maximum = 1.0 gpd/sf for Mounds
Selected Ra = **1.0** gpd/sf

E. REQUIRED LEACHFIELD AREA (RLA)

RLA = Q / AR
RLA = 420 / 1.0
RLA = **420** sf

F. PROPOSED LEACHFIELD AREA (PLA)

PLA = LENGTH (L) x WIDTH (W) x NUMBER OF TRENCHES or BEDS (N)

L =	55	ft
W =	8	ft
N =	1	Absorption Bed

PLA = **440** sf

PLA > RLA therefore PLA is acceptable

G. MOUND SYSTEM BASAL AREA (BA)

G1. BASAL AREA APPLICATION RATE (BAAR)

BAAR = Application rate for sizing basal area (BA)

BAAR = 0.74 gpd/sf for PR < 60 min/inch

BAAR = 0.24 gpd/sf for 60 min/inch < PR < 120 min/inch

Selected BAAR = **0.74** gpd/sf

G2. REQUIRED BASAL AREA (RBA)

RBA = Q / BAAR

RBA = 420 / 0.74

RBA = **568** sf

G3. PROPOSED BASAL AREA (PBA)

PBA = Trench or Seepage Bed Length (L) x Distance from uphill side of the bed to downhill mound toe (MT).

L =	55	ft
MT =	16	ft

PBA = **880**

PBA > RBA, therefore the PBA is acceptable

MOUND WASTEWATER DISPOSAL SYSTEM BASIS OF DESIGN

Nancy J. Faulkner
Replacement Wastewater Disposal System
283 Higbee Road, Charlotte, Vermont
August 18, 2015
Prepared By: Jason Barnard Licensed Designer #430-B

"Best Fix" Replacement Mound Wastewater Disposal System

II. MOUND SYSTEM PRESSURE DISTRIBUTION DETAILS

A. PROPOSED MOUND SYSTEM DISTRIBUTION SYSTEM

SEE THE ATTACHED ORENCO SYSTEMS, INC. PUMP SELECT SPREAD SHEET FOR THE PROPOSED MOUND SYSTEM PRESSURE DISTRIBUTION DETAILS.

B. TOTAL NUMBER OF ORIFICES IN THE DISTRIBUTION SYSTEM

Number of Orifices = **22** orifices

C. LEACHFIELD AREA (LA) PER ORIFICE

LA/Orifice = LA / Total Number of Orifices

LA/Orifice = **20.0** sf

LA/Orifice is less than 25 sf per Orifice, therefore the proposed number of orifices is in accordance with the current State of Vermont, EPRs.

III. PROPOSED PUMP STATION DESIGN

A. REQUIRED PUMP STATION

Required Pump Station Capacity = **800 gallons** for a **3-bedroom** single-family residence.

B. REQUIRED MOUND SYSTEM DOSE

Required Dose Volume = **135** Gallons

Pump Station Dimensions: On-Site Septic Solutions 800 Gallon Pump Station = 4.83 ft x 7.5 ft

Area of Pump Station = **36.2** sf

Volume per Inch of depth = **22.6** gallons / vertical inch

Pump on/off switch difference setting required for dose: **6.0** inches

C. REQUIRED PUMP STATION STORAGE

Storage Required = **420** gallons (1 day's flow)

D. PUMP STATION STORAGE

Pump alarm to overflow point height difference = **19.0** inches

Storage Provided = **429** gallons

Storage provided is greater than 1 day's flow, therefore the proposed pump station is adequately sized.

E. PROPOSED EFFLUENT PUMP

Champion Model Number **CPE4A-12** 4/10 hp 115 volt 1 phase

F. PROPOSED PUMP STATION EFFLUENT PUMP

See Attached Effluent Pump Curve

*Nancy J. Feutkner, 283 Higbee Rd.
CHARLOTTA - Replacement Mand
System Required Effluent Pump
or Equal*

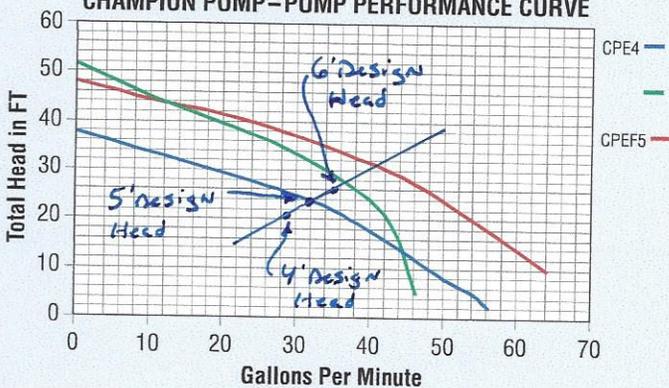
FEATURES/BENEFITS

- High Efficient Motor With Upper & Lower Ball Bearings/Runs Cooler & Last Longer
- Cast Iron Vortex Impeller/Helps Prevent Clogging
- Inboard Seal-Rotating Components Of Seal Are In The Motor Housing, Lubricated By The Motor Oil/Seal Will Last Longer If Pump Runs Dry, Hair And Debris Cannot Wrap Around Seal Components
- Secondary Exclusion Seal/Keeps Debris From Entering Seal Cavity
- Sealed Entry-Replaceable Power Cord/Easy To Replace In The Field, Prevents Water From Entering The Motor Housing Through A Cut Power Cord (Up To 50' Available)
- Piggy-Back Switch Design/Defective Switches Can Be Diagnosed By Phone; Pump Can Be Operated Manually by Overriding The Switch
- Every Pump Is Tested In Water/Ensures That The Pump Meets Head & Flow Requirements

APPLICATIONS

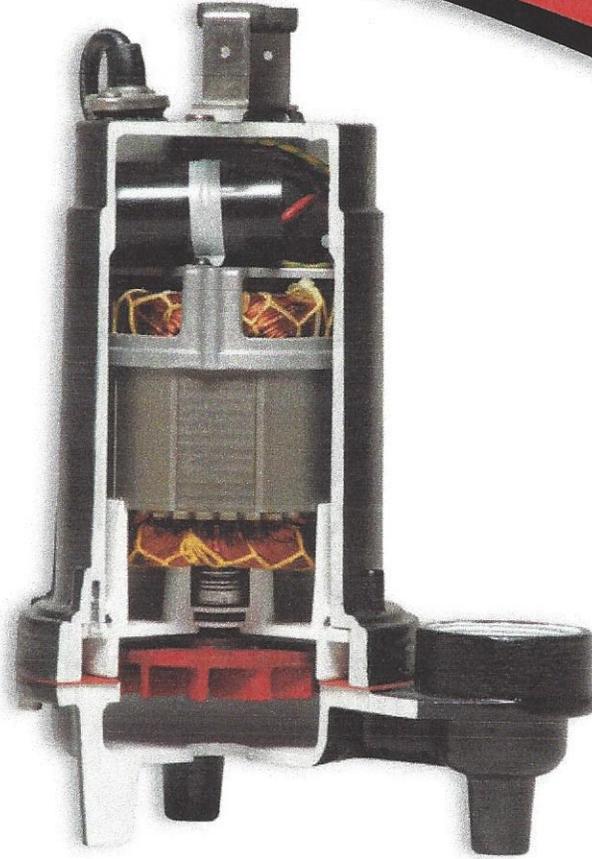
- Dewatering, Elevator Pits, Septic Systems

CHAMPION PUMP - PUMP PERFORMANCE CURVE



Distributed by:

On-site Septic Solutions, LLC
802-644-5500



CPE5V-12



CPE5A-12

Champion Pump

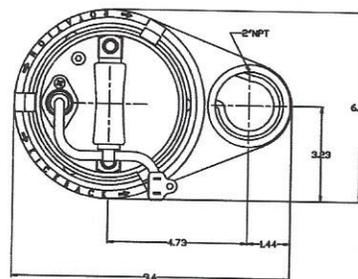
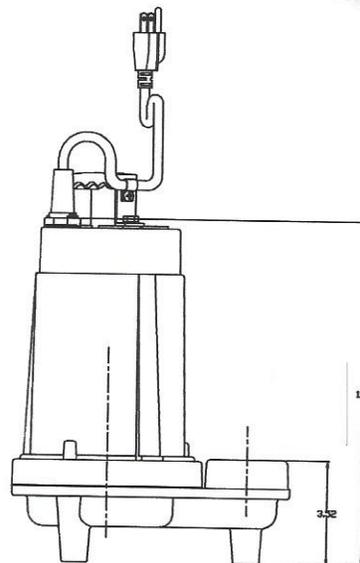
CPE 4/10HP & 1/2HP

EFFLUENT

*Nancy J. Faulkner 283 Highlee Rd.
Charlotte - Replacement Mound
System Required Effluent Pump
or Equal*

DISCHARGE	2" NPT. Vertical
SOLIDS HANDLING	3/4"
LIQUID TEMPERATURE	140 Degrees F. (Intermittent)
MOTOR HOUSING	Cast Iron
VOLUTE	Cast Iron
SEAL PLATE	Cast Iron
IMPELLER	Cast Iron
SHAFT	Stainless Steel
SHAFT SEAL	Inboard Mechanical With Secondary Exclusion Seal Carbon - Rotating Face Ceramic - Stationary Face Buna-N - Elastomer 300 Series Stainless Steel - Hardware
BEARING (UPPER & LOWER)	Single Row, Ball, Oil Lubricated
HARDWARE	300 Series Stainless Steel
SQUARE RINGS	Buna-N
CORD	(UL / CUL) Listed 16 AWG, Type SJTW 20' Length Standard. Other Lengths Available.
CORD ENTRY	Compression Grommet - Outer Jacket Seal Quick Disconnect Pin Terminals
MOTOR (SINGLE PHASE)	4/10 & 1/2 HP, 3450 RPM. 60Hz NEMA L Includes Overload Protection In The Motor. Oil Filled, Class B Permanent Split Capacitor
WEIGHT	35lbs (Manual)

Required Effluent Pump or Equal



www.championpump.com

Model	HP	Volts	Phase	Amps	Cord Length	Switch
CPE4-12 • CPE5-12 • CPEF5-12	4/10 • 1/2 • 1/2	115	1	6.6 • 7.2 • 8.5	20	Manual
CPE4-22 • CPE5-22 • CPEF5-22	4/10 • 1/2 • 1/2	230	1	3.3 • 3.6 • 4.3	20	Manual
CPE4-13 • CPE5-13 • CPEF5-13	4/10 • 1/2 • 1/2	115	1	6.6 • 7.2 • 8.5	30	Manual
CPE4-15 • CPE5-15 • CPEF5-15	4/10 • 1/2 • 1/2	115	1	6.6 • 7.2 • 8.5	50	Manual
<u>CPE4A-12 • CPE5A-12 • CPEF5A-12</u>	<u>4/10 • 1/2 • 1/2</u>	<u>115</u>	1	<u>6.6 • 7.2 • 8.5</u>	<u>20</u>	<u>Float</u>
CPE4A-22 • CPE5A-22 • CPEF5A-22	4/10 • 1/2 • 1/2	230	1	3.3 • 3.6 • 4.3	20	Float
CPE4A-13 • CPE5A-13 • CPEF5A-13	4/10 • 1/2 • 1/2	115	1	6.6 • 7.2 • 8.5	30	Float
CPE4V-12 • CPE5V-12 • CPEF5V-12	4/10 • 1/2 • 1/2	115	1	6.6 • 7.2 • 8.5	20	Vertical Float
CPE4V-22 • CPE5V-22 • CPEF5V-22	4/10 • 1/2 • 1/2	230	1	3.3 • 3.6 • 4.3	20	Vertical Float

Champion Pump Company, Inc • P.O. Box 528 • Ashland, OH 44805
phone 419-281-4500 • toll free 800-659-4491 • fax 419-616-1100



ITT

Nancy J. Faulkner
283 Higbee Road, Charlotte-
Replacement Wastewater System
Pump Station Required High Water
Level Alarm or Equal

CENTRIPRO Wastewater and Water Systems

TAN3M (XT Alarm System)

- The Tank Alert® XT can be used as a high level alarm in lift chambers, sump pump basins and holding tanks.
- UL Listed (for indoor and outdoor use) and CSA Certified.
- Voltage: 120 VAC, 50/60 Hz, 8.5 watts maximum, (alarm condition)
- Enclosure meets Type 3R water-tight standards, listed for indoor or outdoor use under UL standard 864. Dimensions are 6.5" x 4.5" x 3.0"
- Premounted terminal block so enclosure can also be used as a junction box for splicing pump, pump switch and pump power. Meets NEC standard for junction boxes.
- N.O. float switch has a 15' long, 18 gauge, 2 conductor SJOW (UL) cord
- Mechanical SignalMaster® Float on TAN3M, switches are rated for a maximum fluid temperature of 140° F (60° C)
- Automatic alarm reset, alarm test switch and horn silence switch
- Alarm Horn: 85 decibels at 10 feet (3 meters)
- Does not control or interface with pump
- Operates even if pump circuit fails when wired on separate circuit
- No power cord.

TAN4M (4X Alarm System)

- The Tank Alert® 4X can be used as a weatherproof high level alarm in lift chambers, sump pump basins and holding tanks.
- UL and cUL Listed
- Single phase, 120 volt, 60/50 hertz power supply required, 7 watts max. during alarm condition
- NEMA 4X enclosure rated for indoor or outdoor use.
- No power cord.
- Float Switch: Sensor Float® control switch with mounting clamp, 15' long, 18 gauge, SJOW.
- Stainless steel alarm horn sounds at 88db @ 10' (3 meters)
- NEMA 4X alarm beacon
- Automatic alarm reset and alarm test/normal/horn silence switch
- Dimensions are 6.4" x 5.3" x 5.0"
- Switches are rated for a maximum fluid temperature of 140° F (60° C)
- Does not control or interface with pump
- Operates even if pump circuit fails when wired on separate circuit.



LR54245 LISTED



LISTED

MOUND CONSTRUCTION INSTRUCTIONS

Mound construction procedures are just as important as the mound design. Good design with poor construction will result in the mound operating poorly and may result in failure. Proper equipment is essential. Small track type excavators work best. Wheel type tractors are too difficult to maneuver in the fill. The following is a step by step procedure for mound construction which has been tried and proven. Other techniques could be used as long as the basic principles of mound design, operation, and construction are not violated.

1. Submit a *representative* sample (enough to fill a 5 gallon bucket) of mound sand from the intended source for testing according to ASTM D 422 (Knight Consulting Engineers and Vermont Testing can perform this test). Submit a copy of the results to the designer.
2. Stake out the mound on this site so that the trenches or bed run perpendicular to the direction of the slope. Reference stakes are recommended in case corner stakes are disturbed.
3. Stake out corners of the bed and determine the bottom elevation of the bed.
4. Determine where the force main from the pump chamber connects to the distribution system in the mound.
5. Trench and lay the force main from the pump chamber to the mound. Lay the pipe 5.5' below the ground surface for frost protection. Where there is less than 5.5' of cover, insulate with 2" of rigid polystyrene insulation 4' wide (2' either side of pipe, placed in two 1" layers with staggered joints). Alternatively, where there is less than 5.5' of soil cover, the force main can be sloped *uniformly* back to the pumping chamber so that it drains after each dosing. Cut and cap the pipe one foot beneath the ground surface. Backfill and compact soil around the pipe to prevent back seepage of effluent along pipe. This step must be done before plowing to avoid compacting and disturbance of surface.
6. Install the curtain drain (if shown on plans).
7. Check the moisture content of the soil at 7 – 8 inches deep. If it is too wet, smearing and compaction will result, thus reducing the infiltration capacity of the soil. Soil moisture can be determined by rolling a soil sample between the hands. If it rolls into a ribbon, the site is too wet to prepare. If it crumbles, soil preparation can proceed.
8. Cut trees to ground level, remove excess vegetation by mowing. Prepare the site by using a moldboard plow to create 8 – 10 inch deep furrows perpendicular to the slope. Furrows must be thrown up hill. Chisel plowing may be used if a

moldboard plow is not available. Rototilling must not be done on heavy soils but can be used on non-structural soil such as sands. Alternatively, plowing can be done by using an excavator bucket to pull the soil into furrows parallel with the ground contours (the resulting surface must look as though it had been plowed with a moldboard plow, as outlined above). Immediate construction after plowing is necessary. Avoid rutting of plowed area with vehicular traffic. Inspection required at this point.

9. Extend the effluent pipe to several feet above the ground surface.
10. Place the approved fill material around the edge of the plowed area. Keep wheels of truck off plowed areas. Minimize the traffic on the downslope side of the mound. Work from the end and upslope side.
11. Move the fill material into place using a small track type tractor with a blade. Always keep a minimum of 6 inches of sand beneath tracks to prevent compaction of the natural soil.
12. Place the fill material to the required depth which is the top of the trenches or bed. Shape sides to the desired slope. Inspection required at this point.
13. With the blade of the tractor form the bed or trenches. Hand level the bottom of the bed. Make sure bottom is at the same elevation and level.
14. Place the coarse aggregate in the trenches or bed. It should be $\frac{3}{4}$ to $1\frac{1}{2}$ inch, washed, durable aggregate (i.e. **not** limestone or marble). Level aggregate to the design depth.
15. Place the distribution system on the aggregate. Connect the manifold to the force main from the pump chamber or siphon chamber. Slope manifold slightly toward distribution laterals. Lay laterals level, removing rises and dips. Place orifices upwards until pressure testing is complete. Inspection required at this point (to observe discharge rate and pressure testing).
16. Rotate orifices downward and properly cement all components. Place 2 inches of aggregate over the distribution pipe.
17. Place a synthetic non-woven filter fabric (Mirafi 140N or equivalent) over the entire stone bed. Overlap joints by 12" minimum. Place an 8'x8' mat of rigid polystyrene insulation, 2 inches thick, centered over force main riser. Place insulation in two layers (1" each) and stagger the joint pattern.
18. Place soil on top of the bed or trench to a depth of 1 foot in center and 6 inches at outer edge of bed or trenches. This may be a subsoil or topsoil.

19. Place 6 inches of good quality topsoil over the entire mound surface. This will raise the elevation at the center of the mound to a minimum of 1.5 feet and the outside edges of bed or trenches 1 foot. Inspection required at this point.
20. Landscape the mound by planting grass, using the best vegetation adaptable to the area. A mixture of 90% birdsfoot trefoil and 10% timothy may be desirable if the mound is not manicured. If manicuring is desired, a combination of 60% bluegrass, 30% creeping red fescue and 10% annual rye grass may be the desired vegetative cover. Shrubs can be planted around the base and up the sideslopes. They should be somewhat moisture tolerant since the toe of the mound may be somewhat moist during various times of the year. Keep all trees and shrubs away from the top of the mound, as root systems can destroy the distribution network.
21. Mound maintenance involves pumping the septic tank and pump chamber every 1 to 3 years to avoid carryover of solids into the mound. A good water conservation plan within the house assures that the mound will not be overloaded. Avoid excess traffic on the mound area. Winter traffic on mound should be avoided to minimize the frost penetration. Inspect pump chamber and septic tank each year to determine the level of sludge accumulation.

STATE MOUND SAND SPECIFICATIONS

(c) Fill Material: The fill material from the natural soil plowed surface to the top of the trench or bed shall be sand texture with one of the following sieve analyses:

(1). SAND FILL EXTENSIONS

<u>Sieve Number</u>	<u>Opening (mm)</u>	<u>Percent Passing, by Weight</u>
3/8	9.500	85-100
40	0.420	25-75
60	0.240	0-30
100	0.149	0-10
200	0.074	0-5

(2). SYSTEM SAND OR SAND FILL EXTENSIONS

<u>Sieve Number</u>	<u>Opening (mm)</u>	<u>Percent Passing, by Weight</u>
4	4.750	95-100
8	2.380	80-100
16	1.190	50-85
30	0.590	25-60
50	0.297	10-30
100	0.149	2-10

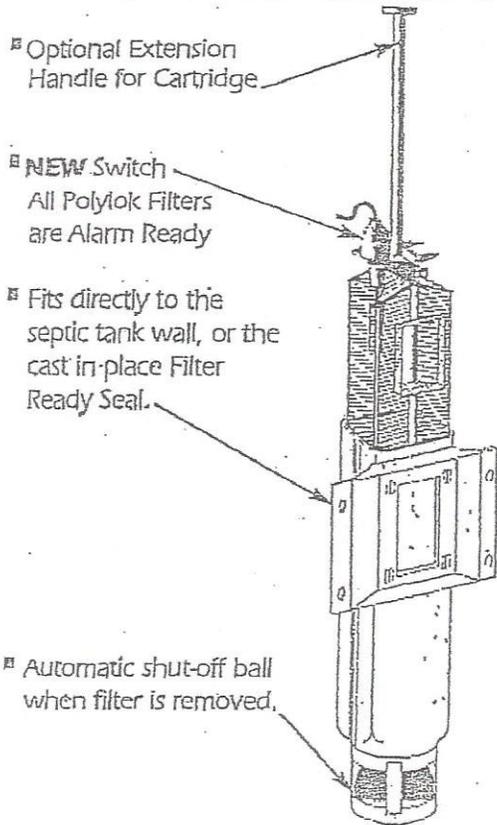
(3). SAND FILL EXTENSIONS

<u>Sieve Number</u>	<u>Opening (mm)</u>	<u>Percent Passing, by Weight</u>
3/8	9.500	85-100
40	0.420	30-50
200	0.074	0-5

The material must meet specifications 1, 2, or 3 above. Interpolation of analyses is not permitted. Fill material 2 is ASTM Specification C-33 and is intended for manufactured material.

Required Effluent Filter or Equal

THE PL-122 EFFLUENT FILTER AND CARTRIDGE



Optional Extension Handle for Cartridge

NEW Switch
All Polylok Filters are Alarm Ready

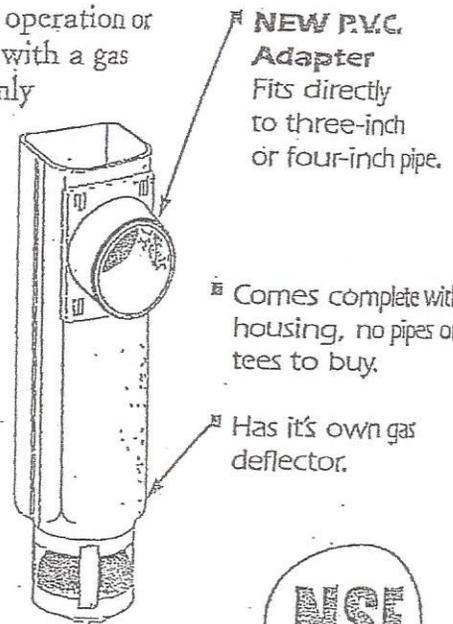
Fits directly to the septic tank wall, or the cast in-place Filter Ready Seal.

Automatic shut-off ball when filter is removed.

Filter Housing with Filter Ready Seal Adapter

Polylok's filter housing is engineered to provide years of maintenance free service no matter what external forces arise during operation or service. Our housing is equipped with a gas deflection/shutoff ball that not only deflects TSS (total suspended solids) from entering filter, but stops the flow of unfiltered effluent from escaping to the field when the filter cartridge is removed for service.

We also give you the option of attaching the filter unit directly to the septic tank wall, the cast in place Filter Ready Seal or directly to three-inch or four-inch pipe.



NEW P.V.C. Adapter
Fits directly to three-inch or four-inch pipe.

Comes complete with housing, no pipes or tees to buy.

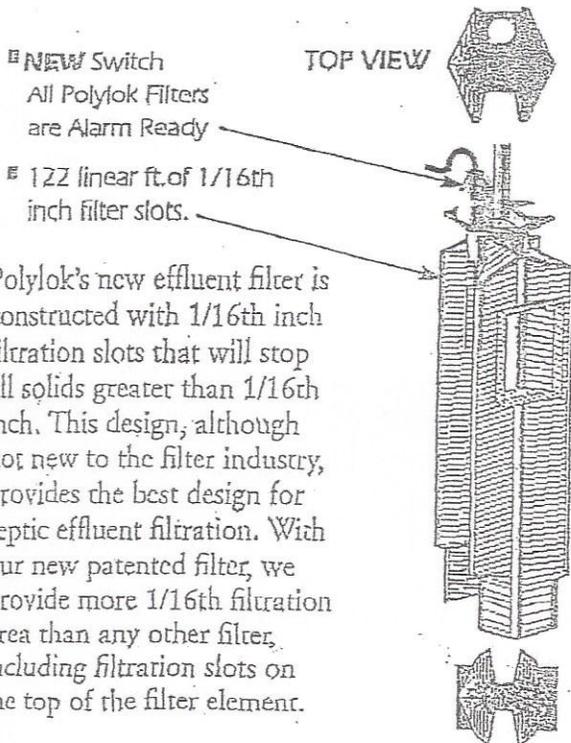
Has it's own gas deflector.

Filter Housing with 3" and 4" Pipe Adapter



Certified to ANSINSE46

Filter Cartridge



NEW Switch
All Polylok Filters are Alarm Ready

122 linear ft. of 1/16th inch filter slots.

Polylok's new effluent filter is constructed with 1/16th inch filtration slots that will stop all solids greater than 1/16th inch. This design, although not new to the filter industry, provides the best design for septic effluent filtration. With our new patented filter, we provide more 1/16th filtration area than any other filter, including filtration slots on the top of the filter element.

SIZING THE PL-122 FILTER

Septic tank filters should be sized based upon solids removal efficiency and peak flows. For a typical four bedroom, two and a half bathroom household, one Polylok PL-122 should be used.

For sizing larger residential or commercial installations, community systems please use the following chart.

- 1 PL-122/800 GPD average flow
- 2 PL-122/1600 GPD average flow
- 3 PL-122/2400 GPD average flow
- 4 PL-122/3200 GPD average flow
- 5 PL-122/4000 GPD average flow

Systems with design flows exceeding 3200 GPD requires engineer design and project specific approval.

Lifetime Warranty: Polylok's filter is guaranteed to be free of defects in material and workmanship for the Lifetime of the homeowner/purchaser. Free replacement (excluding all