John Elias Baldacci
Governor

Maine Department of Health and Human Services

Maine Center for Disease Control and Prevention
286 Water Street, 3rd Floor
11 State House Station
Augusta, ME 04333-0011

Brenda M. Harvey,
Acting Commissioner

Dora Anne Mills, MD, MPH
Public Health Director
Maine CDC Director

June 27, 2007

Aeration Systems
Attn. Richard A. Sweet, SE
155 Gray Road
Falmouth, ME 04105

Subject: Product Registration, Revised Approval, Aeration Systems LLC *Mound Buster*

Dear Mr. Sweet:

Thank you for updated information regarding your company's product. This information was submitted pursuant to Section 1802 of the Maine State Plumbing Code, Subsurface Wastewater Disposal Rules (Rules), for code registration, for use in Maine.

Product Description

The Aeration Systems LLC *Mound Buster* consists of four inch diameter, perforated plastic pipes which are wrapped in one layer of non-woven geotextile fabric. The pipes are placed in a bed of gravelly coarse sand, which would surround the pipes with a minimum of six inches of sand on all sides. The pipes would be placed 12 inches apart, center to center, within the bed resulting in eight inches of sand between the pipes. A solid four inch diameter pipe manifold would be placed at each end of the pipes, when placed in a level bed configuration. Serial distribution systems would utilize inverted 180 degree bends in the connecting manifolds.

The Aeration Systems LLC *Mound Buster* is designed for use with advanced treatment units producing effluent with combined BOD_5 and TSS of less than 30 mg/l, specifically, the Aeration Systems LLC *OxyPro System*. The disposal area would be sized using *Darcy's Law* as a basis, with permeability rates (*k* factors) for soils obtained from data published by the Maine Soil and Water Conservation Commission in *Soil Series of Maine Soil Interpretations*.

Claim

Based upon additional data gathered over the past year, you have submitted a table with requested revised loading rates. The loading rates would now range from 0.57 lin. ft./gpd to 1.43 lin. ft./gpd. These rates are based upon your assumed design flow of 270 gpd, from which the Division calculated the linear foot loading rates using the soil profile sizing criteria in Table 600.1.

Determination

On the basis of the information provided, the Division has determined that the Aeration Systems LLC *Mound Buster* is acceptable for use in the State of Maine with the revised loading rates specified above, provided that it is installed, operated, and maintained in conformance with the manufacturer's directions and the following conditions.

1. All conditions of the Provisional Approval dated May 16, 2005 remain in effect, except that setbacks may now be measured form the MoundBuster pipes rather than the surrounding installation fill.

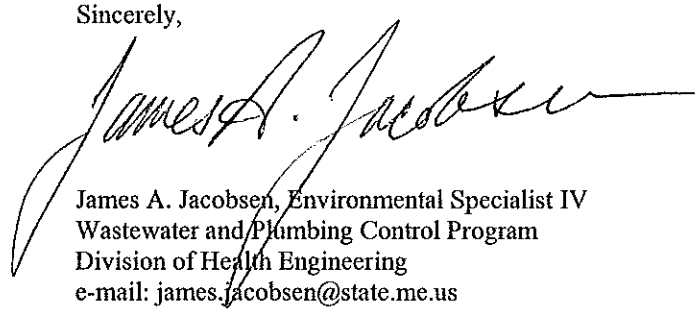
In the event that the product fails to perform as claimed by the applicant, use of the product in Maine, including all installations approved installed under Provisional Approval pursuant to Section 1801.7 of the Rules, shall cease. Use of the new or experimental technology shall not resume until the applicant and the Division have reached a mutually acceptable agreement for resolving the failure to perform as claimed.

Because installation and owner maintenance has a significant effect on the working order of onsite sewage disposal systems, including their components, the Division makes no representation or guarantee as to the efficiency and/or operation of Aeration Systems LLC *Mound Buster*.

Further, registration of this product for use in the State of Maine does not represent Division preference or recommendation for this product over similar products.

If you have any questions please feel free to contact me at (207) 287-5695.

Sincerely,



James A. Jacobsen, Environmental Specialist IV
Wastewater and Plumbing Control Program
Division of Health Engineering
e-mail: james.jacobsen@state.me.us

/jaj

xc: Product File

AERATION SYSTEMS
Wastewater Technology

155 Gray Road • Falmouth, Maine 04105
(207) 797-7351 • FAX 878-2364

email: aerationsys@aol.com
website: www.septicaeration.com

April 11, 2007

James A. Jacobsen
Subsurface Wastewater Program
Division of Environmental Health
286 Water Street, 3rd Floor
Augusta, ME 04333-0011

RE: Product Registration Modification, Provisional Approval, Aeration Systems, LLC, MoundBuster

Dear Mr. Jacobsen:

The Aeration Systems, LLC, MoundBuster disposal field has provisional approval from your department based on letters dated July 11, 2003, May 16, 2005, and February 27, 2006. We request two modifications to those approvals as follows:

1. Currently, there are 11 MoundBuster disposal fields in the ground and all receive wastewater from an OxyPro advanced wastewater treatment system. Each of these systems is operating properly. We have been able to closely observe these systems and find that the basis for sizing these systems was very conservative. We are proposing to modify the MoundBuster sizing method by tying the sizing to the stone bed. This method results in a slight reduction in the size of the MoundBuster disposal field. Additional calculations are attached to show the comparison between disposal field sizing using Darcy's equation for all Plumbing Code profiles, and modified sizing calculations for MoundBuster. The modified sizing calculations for MoundBuster are based on dividing a stone bed by 3.5 for all profiles. Since the MoundBuster is only used with the OxyPro advanced wastewater treatment system, BOD and TSS concerns for biomat growth are minimal to non-existent, therefore it is assumed that the Darcy equation results provide a realistic base point when sizing MoundBuster systems. Column 6 in the Table and titled "Area of Soil Required for 270 gpd" shows the size in square feet required to adequately drain 270 gpd through soil with the permeabilities shown in Columns 3 and 4 (the range of permeabilities is taken from the range of soils within the profiles listed in Column 1). As Column 8 shows, the MoundBuster system is oversized by a minimum of 3 times the Darcy calculated sizing using the most conservative hydraulic conductivity for each profile. We realize that gallons per day should really be gallons per 16 hours and that flows fluctuate above and below an average, however, the calculations and our experience to date show that the sizing presented provides a wide margin of safety and it conforms better to current Code methods for sizing disposal fields.

2. In the original application for MoundBuster we specified a 6-inch gravelly coarse sand envelope around each MoundBuster pipe. The Department responded that horizontal and vertical setbacks shall be measured from the outside edge of the gravelly coarse sand. We request that the Department modify that requirement to require all setbacks to be measured from the MoundBuster pipe. The original design of the system was made with a sand envelope to assure rapid water movement from the MoundBuster pipe into the surrounding soil. Since the water in the MoundBuster is low in organics, we were not concerned with a biomat buildup at the pipe and were therefore not thinking of the sand as a way to move the biomat farther away to the outside edge of the coarse sand.

   Therefore, the sand envelope is a hydraulic device only. We noticed that the Department modified the Presby EnviroSeptic pipe approval by allowing setbacks to be measured from the bottom of the pipe in 2004. Since MoundBuster is similar to EnviroSeptic except in scale, and MoundBuster receives only highly treated water, we ask that the horizontal and vertical setbacks for MoundBuster pipe be measured from the pipe.

In summary, we are asking for a modification to the MoundBuster provisional approval to allow MoundBuster sizing to be based on the calculation for a stone bed divided by 3.5 to find the length of MoundBuster pipe required. Secondly, we are asking that all setbacks be measured from the MoundBuster pipe.

Sincerely,

Richard A. Sweet
Vice President

Enclosures

RAS/smh

Hydraulic Loading Rates for Maine Soil Profiles

Soil ^ Profile	Stone Bed ^ (sf/gal/day)	Permeability " [Range] (in/hr)	Hydraulic K [Range] (ft/day)	*Darcy i=1*** gpd/sf	Area (sf) of Soil req. for 270 gpd	Area (sf) of Stone Bed req. for 270 gpd	Linear feet Moundbuster req. for 270 gpd ^^
1	4.1	0.2 2	0.4 4	3.0 29.9	90.2 9.0	1107	316
2	3.3	2 6	4 12	29.9 89.8	9.0 3.0	891	255
3	3.3	0.6 2	1.2 4	9.0 29.9	30.1 9.0	891	255
4	2.6	2 20	4 40	29.9 299.2	9.0 0.9	702	201
5	2.6	6 20	12 40	89.8 299.2	3.0 0.9	702	201
6	2	10 25	20 50	149.6 374.1	1.8 0.7	540	154
7	3.3	2 6	4 12	29.9 89.8	9.0 3.0	891	255
8	4.1	0.2 2	0.4 4	3.0 29.9	90.2 9.0	1107	316
9	5	0.2 1	0.4 2	3.0 15.0	90.2 18.0	1350	386

^ - from Department of Human Services, Maine Subsurface Waste Water Disposal Rules, 144 CMR 241.

" - from Maine Association of Professional Soil Scientists and USDA Soil Conservation Service of Maine, Soil Series of Maine Soil Interpretations.

** Darcy's law is $Q = K * i * A$; where

Q - flow volume i - hydraulic gradient (value is 1 if flow is vertical)

K - hydraulic conductivity A - cross-sectional area

^^ - The total linear feet of Moundbuster pipe required is the Stone Bed area divided by 3.5.

John Elias Baldacci
Governor

Maine Department of Health and Human Services

Maine Center for Disease Control and Prevention
286 Water Street, 3rd Floor
11 State House Station
Augusta, ME 04333-0011

Brenda M. Harvey,
Acting Commissioner

Dora Anne Mills, MD, MPH
Public Health Director
Maine CDC Director

February 27, 2006

Aeration Systems
Attn. Richard A. Sweet, SE
155 Gray Road
Falmouth, ME 04105

Subject: Product Registration, Provisional Approval, Aeration Systems LLC *Mound Buster*

Dear Mr. Sweet:

Thank you for updated information regarding your company's product. This information was submitted pursuant to Section 1802 of the Maine State Plumbing Code, Subsurface Wastewater Disposal Rules (Rules), for code registration, for use in Maine.

Product Description

The Aeration Systems LLC *Mound Buster* consists of four inch diameter, perforated plastic pipes which are wrapped in one layer of non-woven geotextile fabric. The pipes are placed in a bed of gravelly coarse sand, which would surround the pipes with a minimum of six inches of sand on all sides. The pipes would be placed 12 inches apart, center to center, within the bed resulting in eight inches of sand between the pipes. A solid four inch diameter pipe manifold would be placed at each end of the pipes, when placed in a level bed configuration. Serial distribution systems would utilize inverted 180 degree bends in the connecting manifolds.

The Aeration Systems LLC *Mound Buster* is designed for use with advanced treatment units producing effluent with combined BOD_5 and TSS of less than 30 mg/l, specifically, the Aeration Systems LLC *OxyPro System*. The disposal area would be sized using *Darcy's Law* as a basis, with permeability rates (*k* factors) for soils obtained from data published by the Maine Soil and Water Conservation Commission in *Soil Series of Maine Soil Interpretations*. Loading rates would range from 0.8 square feet per gallon per day (sq. ft./gpd), to 1.7 sq. ft./gpd, based upon the *k* factor for each Subsurface Wastewater Disposal Rules soil profile.

Claim

Based upon data gathered since the original approval for this product, you have submitted a table with revised loading rates. The loading rates now vary from 0.7 sq. ft./gpd to 1.1 sq. ft./gpd.

Determination

On the basis of the information provided, the Division has determined that the Aeration Systems LLC *Mound Buster* is acceptable for use in the State of Maine with the revised loading rates specified above, provided that it is installed, operated, and maintained in conformance with the manufacturer's directions and the following conditions.

1. All conditions of the Provisional Approval dated May 16, 2005 remain in effect.

In the event that the product fails to perform as claimed by the applicant, use of the new or experimental technology in Maine, including all installations approved installed under Provisional Approval pursuant to Section 1801.7 of the Rules, shall cease. Use of the new or experimental technology shall not resume until the applicant and the Division have reached a mutually acceptable agreement for resolving the failure to perform as claimed.

one: Phone: (207) 287-5695
Fax: (207) 287-3165
NexTalk (former TTY/TDD Line)
1-800-606-0215

Because installation and owner maintenance has a significant effect on the working order of onsite sewage disposal systems, including their components, the Division makes no representation or guarantee as to the efficiency and/or operation of Aeration Systems LLC *Mound Buster*.

Further, registration of this product for use in the State of Maine does not represent Division preference or recommendation for this product over similar products.

If you have any questions please feel free to contact me at (207) 287-5695.

Sincerely,

James A. Jacobsen, Environmental Specialist IV
Wastewater and Plumbing Control Program
Division of Health Engineering
e-mail: james.jacobsen@state.me.us

/jaj

xc: Product File

Profile	Typical Soil Type	Permeability from Soil Series of ME Soil Interpretations IN/HR	FT/DAY	Calculated Loading Rate w/12 Safety Factor GAL/SQ FT	Calculated Loading Rate w/12 Safety Factor SQ FT/GPD	(No Pretreat) ME Plumbing Code Disposal Area Sizing SQ FT/GPD	Wasteflow w/Safety Factor of 12			Eljen Indrain		Drain Pipe	
							FT/D	GAL/SQ FT	SQ FT/GPD	GAL/SQ FT	SQ FT/GPD	GAL/SQ FT	SQ FT/GPD
1	Atherton (silt loam till)	0.6 - 2.0	1.2 - 4	0.7 - 2.5	1.4 - 0.4	4.1	0.64	0.4	2.5	0.71	1.4	0.7	1.4
2	Lyman (loam to sandy loam till)	2 - 6	4 - 12	2.5 - 7.5	0.4 - 0.1	3.3	1.1	0.7	1.4	0.89	1.1	0.8	1.1
3	Becket (loam to loamy sand till)	0.6 - 2	1.2 - 4	0.7 - 2.5	1.4 - 0.4	3.3	1.1	0.7	1.4	0.89	1.1	0.8	1.1
4	Hermon (sandy loam to loamy sand till)	2 - 20	4 - 40	2.5 - 25	0.4 - 0.04	2.6	1.9	1.2	0.8	1.18	0.8	1.2	0.8
5	Madawaska (loam to loamy sand outwash)	6 - 20	12 - 40	7.5 - 25	0.1 - 0.04	2.6	1.9	1.2	0.8	1.18	0.8	1.2	0.8
6	Colton (loamy sand to sand outwash)	6 - 20	12 - 40	7.5 - 25	0.1 - 0.04	2.0	2.2	1.4	0.7	1.5	0.7	1.4	0.7
7	Elmwood (sand over clay)	2 - 6	4 - 12	2.5 - 7.5	0.4 - 0.1	3.3	0.96	0.6	1.7	0.89	1.1	0.7	1.1
8	Melrose (loam over silt loam)	<0.2	0.4	0.2	5	4.1	0.64	0.4	2.5	0.71	1.4	0.6	1.4
9	Buxton (silt loam over silty clay)	<0.2	0.4	0.2	5	5	0.64	0.4	2.5	0.59	1.7	0.6	1.7

STATE OF MAINE
DEPARTMENT OF HEALTH AND HUMAN SERVICES
DIVISION OF HEALTH ENGINEERING
286 WATER STREET
AUGUSTA, MAINE
04333-0011

John Elias Baldacci
Governor

John R. Nicholas
Commissioner

May 16, 2005

Sweet Associates
Attn. Richard A. Sweet, SE
155 Gray Road
Falmouth, ME 04105

Subject: Product Registration, Provisional Approval, Aeration Systems LLC *Mound Buster*

Dear Mr. Sweet:

Thank you for your letter dated April 26, 2005 regarding your company's product. This information was submitted pursuant to Section 1802 of the Maine State Plumbing Code, Subsurface Wastewater Disposal Rules (Rules), for code registration, for use in Maine.

Product Description

The Aeration Systems LLC *Mound Buster* consists of four inch diameter, perforated plastic pipes which are wrapped in one layer of non-woven geotextile fabric. The pipes are placed in a bed of gravelly coarse sand, which would surround the pipes with a minimum of six inches of sand on all sides. The pipes would be placed 12 inches apart, center to center, within the bed resulting in eight inches of sand between the pipes. A solid four inch diameter pipe manifold would be placed at each end of the pipes, when placed in a level bed configuration. Serial distribution systems would utilize inverted 180 degree bends in the connecting manifolds.

The Aeration Systems LLC *Mound Buster* is designed for use with advanced treatment units producing effluent with combined BOD_5 and TSS of less than 30 mg/l, specifically, the Aeration Systems LLC *OxyPro System*. The disposal area would be sized using *Darcy's Law* as a basis, with permeability rates (*k* factors) for soils obtained from data published by the Maine Soil and Water Conservation Commission in *Soil Series of Maine Soil Interpretations*. Loading rates would range from 0.8 square feet per day, to 1.7 square feet per day, based upon the *k* factor for each Subsurface Wastewater Disposal Rules soil profile.

Claim

According to the information you provided, the Aeration Systems LLC *Mound Buster* would perform similarly to drip emitter irrigation systems and cuspated block systems, with respect to infiltration of treated effluent into unclogged soils.

Determination

On the basis of the information provided, the Division has determined that the Aeration Systems LLC *Mound Buster* is acceptable for use in the State of Maine on a Provisional Approval basis, provided that it is installed, operated, and maintained in conformance with the manufacturer's directions and the following conditions.

1. The Aeration Systems LLC *Mound Buster* shall be used exclusively with Aeration Systems LLC *OxyPro Systems* advanced treatment units, as proposed by the applicant.

2. This office approves 25 installations of Aeration Systems LLC *Mound Buster* under Provisional Approval, of which 4 may be the Pilot systems previously installed.

3. Provisional product registration installations may include sites which require a variance or waiver to the Rules, with the provision that such variances or waivers are also subject to the standard variance requirements of the Rules, i.e., a passing point score for soils related variances, etc.

4. Horizontal setbacks and vertical separation from limiting factors shall be measured from the gravelly sand in the Aeration Systems LLC *Mound Buster*.

5. On no less than a monthly basis for a period of not less than twelve months after installation, the applicant shall examine each Aeration Systems LLC *Mound Buster* installed under Pilot Approval for evidence of ponding The results of these tests shall be submitted to the Division on no less than a quarterly basis.

6. Applications for a permit to install an Aeration Systems LLC *Mound Buster* system shall be prepared on a current HHE-200 Form, and shall be accompanied by a copy of this letter.

To receive General Use approval for a product registration, the applicant shall demonstrate that the 25 installations allowed under Provisional approval have operated as designed and intended. Upon such demonstration, the provisionally approved product under consideration shall be granted written General Use status approval for use in Maine, and shall be included in the next revision of the Rules.

In the event that the product fails to perform as claimed by the applicant, use of the new or experimental technology in Maine, including all installations approved installed under Provisional Approval pursuant to Section 1801.7 of the Rules, shall cease. Use of the new or experimental technology shall not resume until the applicant and the Division have reached a mutually acceptable agreement for resolving the failure to perform as claimed.

Because installation and owner maintenance has a significant effect on the working order of onsite sewage disposal systems, including their components, the Division makes no representation or guarantee as to the efficiency and/or operation of Aeration Systems LLC *Mound Buster*.

Further, registration of this product for use in the State of Maine does not represent Division preference or recommendation for this product over similar products.

If you have any questions please feel free to contact me at (207) 287-5695.

Sincerely,

James A. Jacobsen

James A. Jacobsen, Environmental Specialist IV
Wastewater and Plumbing Control Program
Division of Health Engineering
e-mail: james.jacobsen@state.me.us

/jaj

xc: Product File

AERATION SYSTEMS
Wastewater Technology

155 Gray Road • Falmouth, Maine 04105
(207) 797-7351 • FAX 878-2364

email: aerationsys@aol.com
website: www.septicaeration.com

April 26, 2005

James Jacobsen
Wastewater and Plumbing Control
Division of Health Engineering
State House Station 10
August, ME 04333

Re: Request for Provisional Approval of Mound Buster

Mr. Jacobsen:

Enclosed please find written summaries of the four Mound Buster installations we have overseen and inspected to date. Although the number of installations is small, each site has had significantly different soil types and limiting factors. We are confident that these installations demonstrate that the Mound Buster system can function hydraulically in a wide range of soil conditions while reducing the profile, footprint, and cost of existing disposal field technologies. We would ask that the Department grant Mound Buster provisional approval so that we can continue to install and observe the system. We would also ask that the Department consider allowing the product on sites requiring variances as these are the sites where the Mound Buster system has the most to offer over conventional systems.

Regards,

Matthew Engelman
VP-Operations
Aeration Systems, LLC.

Mound Buster Pilot Installation #1

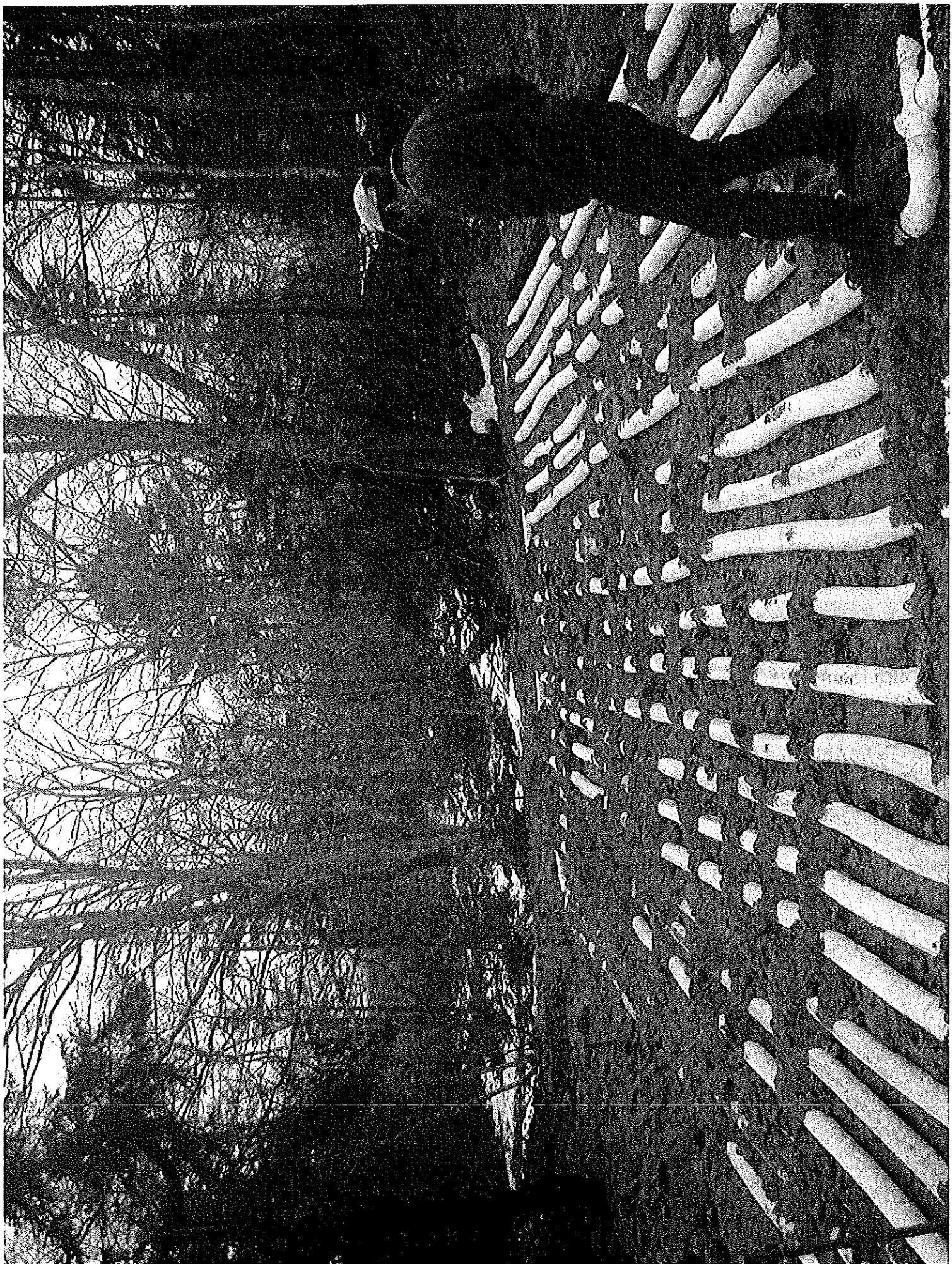
Date: January, 2004

Location: Below Residence
39 Pond Road
Harpswell, Maine

HHE-200 Date: November 15, 2001

Design Flow: 645 GPD
Mound Buster Footprint: 23.25' x 35'
Soil Profile/Condition: 2AIII
Limiting Factor: 16" Bedrock

System installed by RA Webber and Sons Excavating in January of 2004. System serves two residences and small woodworking shop. Inspection in February of 2005 revealed no signs of organic or hydraulic overload in the gravelly-coarse sand surrounding the Mound Buster pipe. There was no ponding observed in the observation pits excavated. The effluent from the the OxyPro 1500 was observed to be clear and odorless. Download of the Septic Sentry monitoring data indicates no events of effluent ponding with the Mound Buster piping over the previous year of operation.



SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Department of Human Services
Division of Health Engineering, 10 SHS
(207) 287-5672 Fax: (207) 287-3165

PROPERTY LOCATION

City, Town, or Plantation	HARPSWELL
Street or Road	POND ROAD
Subdivision, Lot #	

>> CAUTION: PERMIT REQUIRED - ATTACH IN SPACE BELOW <<

The Subsurface Wastewater Disposal System *shall not* be installed until a Permit is attached HERE by the Local Plumbing Inspector. The Permit shall authorize the owner or installer to install the disposal system in accordance with this application and the Maine Subsurface Wastewater Disposal Rules.

OWNER/APPLICANT INFORMATION

Name (last, first, MI): BELOW, BENJAMIN ☒ Owner ☐ Applicant

Mailing Address of Owner/Applicant	39 POND ROAD HARPSWELL ME 04079
Daytime Tel. #	833-6020

Municipal Tax Map # _____ Lot # _____

OWNER OR APPLICANT STATEMENT
I state and acknowledge that the information submitted is correct to the best of my knowledge and understand that any falsification is reason for the Department and/or Local Plumbing Inspector to deny a Permit.

_____ _____
Signature of Owner or Applicant Date

CAUTION: INSPECTION REQUIRED
I have inspected the installation authorized above and found it to be in compliance with the Subsurface Wastewater Disposal Rules Application. _____ (1st) date approved

_____ _____
Local Plumbing Inspector Signature (2nd) date approved

PERMIT INFORMATION

TYPE OF APPLICATION
- ☒ 1. First Time System
- ☐ 2. Replacement System
  - Type replaced: _____
  - Year installed: _____
- ☐ 3. Expanded System
  - ☐ a. Minor Expansion
  - ☐ b. Major Expansion
- ☐ 4. Experimental System
- ☐ 5. Seasonal Conversion

THIS APPLICATION REQUIRES
- ☒ 1. No Rule Variance
- ☐ 2. First Time System Variance
  - ☐ a. Local Plumbing Inspector Approval
  - ☐ b. State & Local Plumbing Inspector Approval
- ☐ 3. Replacement System Variance
  - ☐ a. Local Plumbing Inspector Approval
  - ☐ b. State & Local Plumbing Inspector Approval
- ☐ 4. Minimum Lot Size Variance
- ☐ 5. Seasonal Conversion Permit

DISPOSAL SYSTEM COMPONENTS
- ☒ 1. Complete Non-engineered System
- ☐ 2. Primitive System (graywater & alt. toilet)
- ☐ 3. Alternative Toilet, specify: _____
- ☐ 4. Non-engineered Treatment Tank (only)
- ☐ 5. Holding Tank, _____ gallons
- ☐ 6. Non-engineered Disposal Field (only)
- ☐ 7. Separated Laundry System
- ☐ 8. Complete Engineered System (2000 gpd or more)
- ☐ 9. Engineered Treatment Tank (only)
- ☐ 10. Engineered Disposal Field (only)
- ☐ 11. Pre-treatment, specify: _____
- ☐ 12. Miscellaneous Components

SIZE OF PROPERTY
1 1/4 ☐ SQ. FT. ☒ ACRES

SHORELAND ZONING
☒ Yes ☐ No

DISPOSAL SYSTEM TO SERVE
- ☒ 1. Single Family Dwelling Unit, No. of Bedrooms: 5
- ☐ 2. Multiple Family Dwelling, No. of Units: ____
- ☒ 3. Other: RESERVE FOR BUSINESS (specify)

Current Use ☐ Seasonal ☒ Year Round ☐ Undeveloped

TYPE OF WATER SUPPLY
☒ 1. Drilled Well ☐ 2. Dug Well ☐ 3. Private
☐ 4. Public ☐ 5. Other

DESIGN DETAILS (SYSTEM LAYOUT SHOWN ON PAGE 3)

TREATMENT TANK
- ☒ 1. Concrete
  - ☐ a. Regular
  - ☐ b. Low Profile
- ☐ 2. Plastic
- ☒ 3. Other: OKYPRO 1500
  - CAPACITY: 1000 GAL.
  - PLUS 2000 GAL

DISPOSAL FIELD TYPE & SIZE
- ☐ 1. Stone Bed ☐ 2. Stone Trench
- ☒ 3. Proprietary Device
  - ☐ a. cluster array ☐ c. Linear
  - ☒ b. regular load ☐ d. H-20 load
- ☐ 4. Other: _____
  - SIZE: 1065 ☒ sq. ft. ☐ lin. ft.

GARBAGE DISPOSAL UNIT
☐ 1. No ☐ 2. Yes ☒ 3. Maybe
If Yes or Maybe, specify one below:
- ☐ a. multi-compartment tank
- ☒ b. 2 tanks in series
- ☐ c. increase in tank capacity
- ☐ d. Filter on Tank Outlet

DESIGN FLOW
645 gallons per day
BASED ON:
- ☐ 1. Table 501.1 (dwelling unit(s))
- ☐ 2. Table 501.2 (other facilities)

SHOW CALCULATIONS
---- for other facilites ---

SOIL DATA & DESIGN CLASS
PROFILE CONDITION DESIGN
2 / AIII / _____
at Observation Hole # TB-4
Depth 16"
of Most Limiting Soil Factor

DISPOSAL FIELD SIZING
- ☐ 1. Small---2.0 sq. ft. / gpd
- ☐ 2. Medium---2.6 sq. ft. / gpd
- ☒ 3. Medium---Large 3.3 sq. ft / gpd
- ☐ 4. Large---4.1 sq. ft. / gpd
- ☐ 5. Extra Large---5.0 sq. ft. / gpd

EFFLUENT/EJECTOR PUMP
- ☐ 1. Not Required
- ☐ 2. May Be Required
- ☒ 3. Required

Specify only for engineered systems:
DOSE: _____ gallons

☐ 3. Section 503.0 (meter readings)
ATTACH WATER METER DATA

SITE EVALUATOR STATEMENT

I certify that on 11-15-01 (date) I completed a site evaluation on this property and state that the data reported are accurate and that the proposed system is in compliance with the State of Maine Subsurface Wastewater Disposal Rules (10-144A CMR 241).

Site Evaluator Signature	SE #	Date
	262	12-5-03

Site Evaluator Name Printed	Telephone Number	E-mail Address
MARK CENCI	797-2110	

Note: Changes to or deviations from the design should be confirmed with the Site Evaluator.

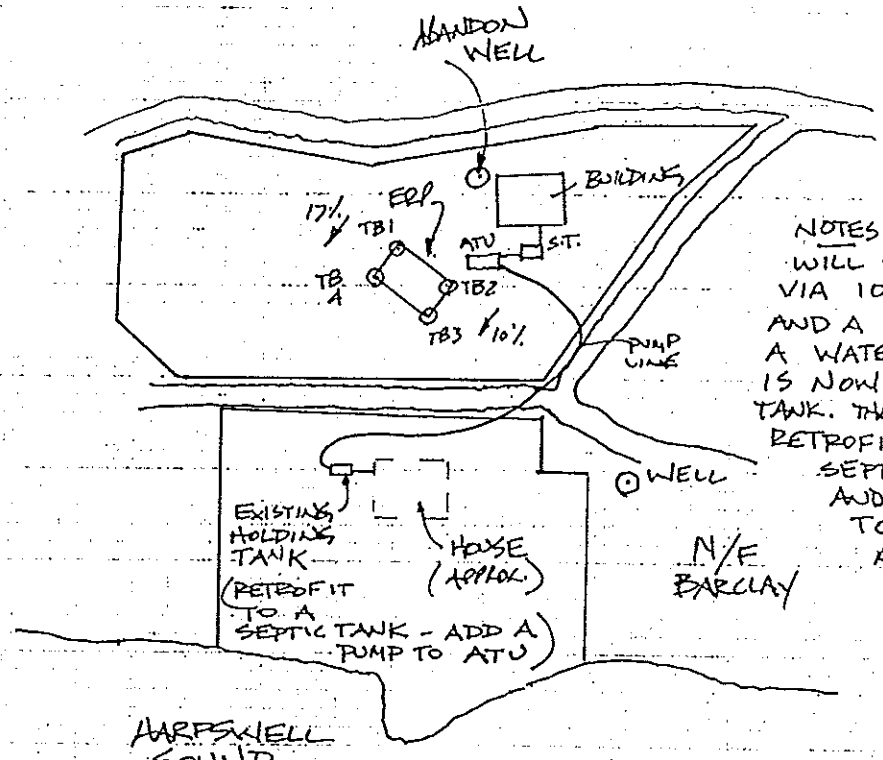
SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Department of Human Services
Division of Health Engineering, Station 10
(207) 287-5672 FAX (207) 287-4172

Town, City, Plantation	Street, Road, Subdivision	Owner or Applicant Name
HARPSWELL	POND ROAD	BENJAMIN BELOW

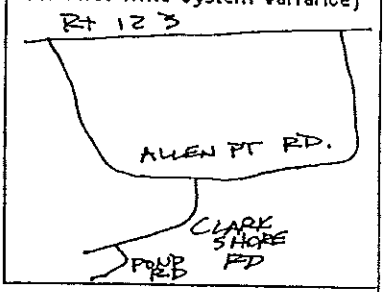
SITE PLAN

Scale: 1" = 100 ft.



SITE LOCATION MAP

(Attach map from Maine Atlas for First Time System Variance)



NOTES: MOUND-BUSTER PIPE SYSTEM WILL SERVE 2-BEDROOM APARTMENT VIA 1000 GALLON SEPTIC TANK AND A 2-BEDROOM HOME ON A WATERFRONT LOT. THAT HOME IS NOW SERVED BY A HOLDING TANK. THE HOLDING TANK CAN BE RETROFITTED TO BECOME A SEPTIC TANK. ADD A PUMP AND PUMP THE WASTEWATER TO AN ATU TANK. APARTMENT WATER SHALL FLOW BY GRAVITY TO THE ATU TANK.

SOIL PROFILE DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole # TB1 - 4 ☐ Test Pit ■ Boring

____" Depth of organic horizon above mineral soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0				
6	FINE SANDY LOAM	FRIABLE	DK. BRN. TO RED TO YELLOW BRN.	
12				
18				
24				
30	BEDROCK			
36				
42				
48				

TB 4 at ~18"; TB 1 at ~24"; TB 3 at ~30"; TB 2 at ~30"

Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
2	A III	10-17	16	☐ Groundwater ☐ Restrictive Layer ■ Bedrock

Observation Hole # ____ ☐ Test Pit ☐ Boring

____" Depth of organic horizon above mineral soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0				
6				
12				
18				
24				
30				
36				
42				
48				

Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
				☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

REVISED 12-5-03

Site Evaluator Signature — 262 SE # — 11-21-01 Date

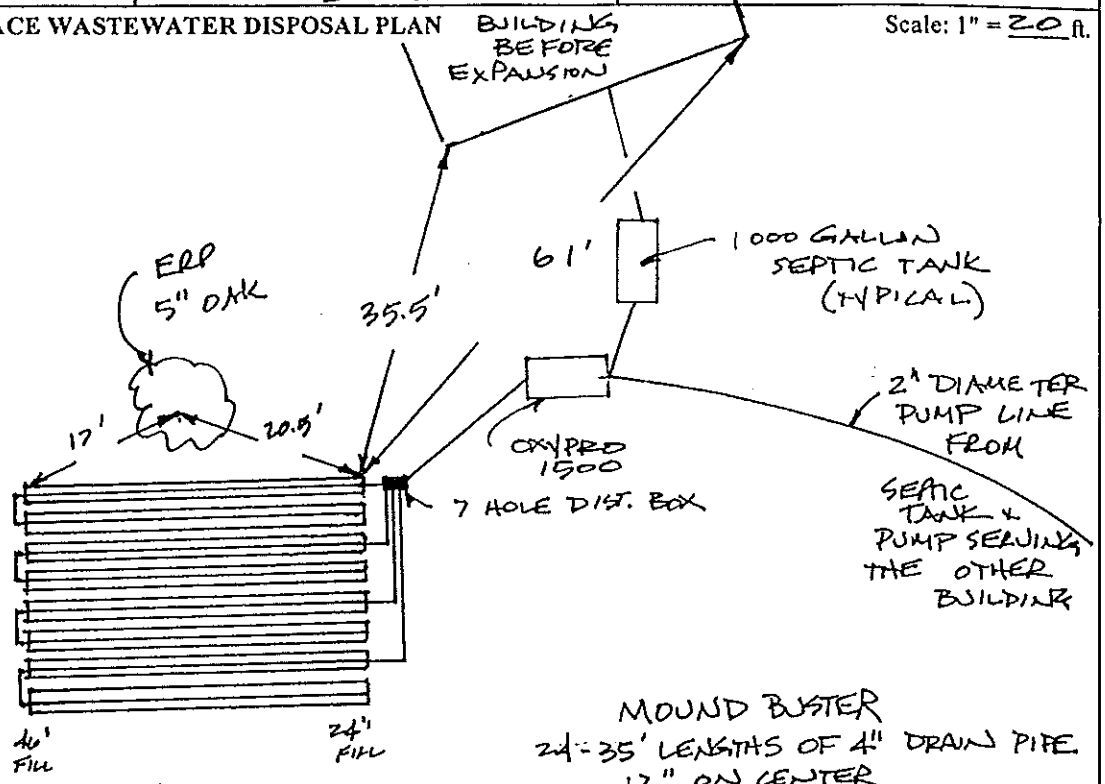
SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Department of Human Services
Division of Health Engineering, Station 10
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation	Street, Road, Subdivision	Owner or Applicant Name
HARPSWELL	POND ROAD	BENJAMIN BELOW

SUBSURFACE WASTEWATER DISPOSAL PLAN

Scale: 1" = 20 ft.



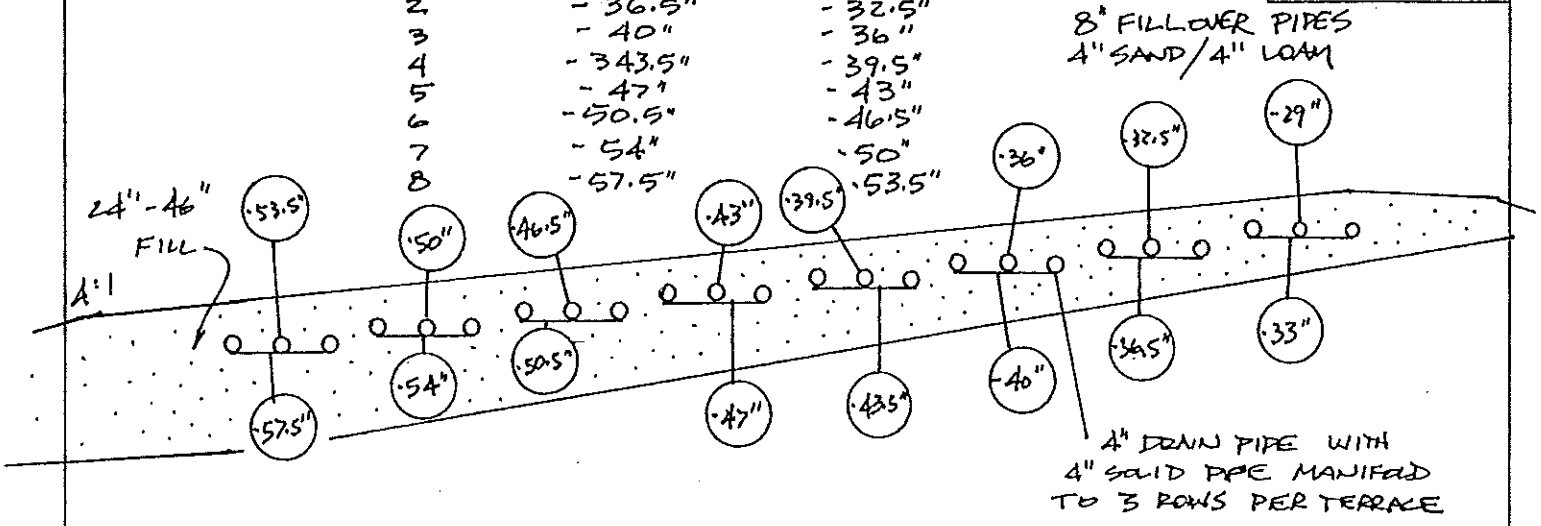
MOUND BUSTER
24 - 35' LENGTHS OF 4" DRAIN PIPE
12" ON CENTER
8 TERRACES WITH 3 LENGTHS OF PIPE PER TERRACE
23.25' x 35'

BACKFILL REQUIREMENTS		CONSTRUCTION ELEVATIONS		ELEVATION REFERENCE POINT
Depth of Backfill (upslope) 20.25'	Finished Grade Elevation (at Row 1)	-21"	Location & Description: NAIL IN 5" DIAMETER OAK TREE	
Depth of Backfill (downslope) 24-46	Top of Proprietary Device (at Row 1)	-29"		
DEPTHS AT CROSS-SECTION (shown below)	Bottom of Disposal Field (at Row 1)	-33"	Reference Elevation is: 0.0" or:	

DISPOSAL FIELD CROSS SECTION

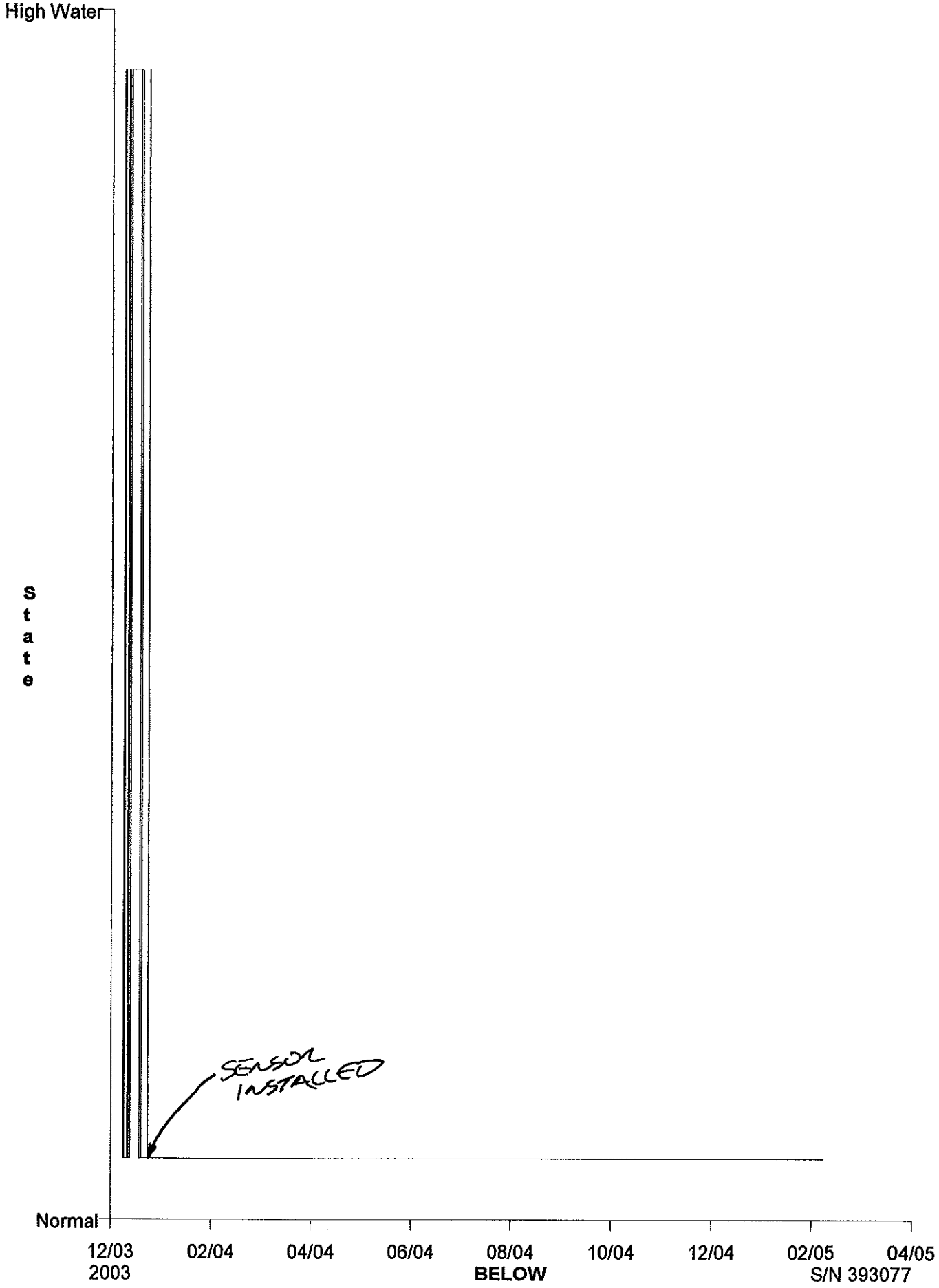
Scales:
Vertical: 1" = 4 ft.
Horizontal: 1" = 4 ft.

TERRACE	PIPE BOTTOM	PIPE TOP
2	-36.5"	-32.5"
3	-40"	-36"
4	-343.5"	-39.5"
5	-47"	-43"
6	-50.5"	-46.5"
7	-54"	-50"
8	-57.5"	-53.5"



23' 3"

Site Evaluator Signature	SE #	Date
	262	12-5-03


High Water
State
SENSOR INSTALLED
Normal
12/03
2003
02/04
04/04
06/04
08/04
BELOW
10/04
12/04
02/05
04/05
S/N 393077

Mound Buster Pilot Installation #2

Date: December, 2003

Location: Verrill Residence
63 Country Lane
North Yarmouth, Maine

HHE-200 Date: October 17, 2003

Design Flow: 180 GPD
Mound Buster Footprint: 15' x 21'
Soil Profile/Condition: 8D
Limiting Factor: 12" Seasonal High Water Table

System installed by Les Wilson Excavating in December of 2003. System serves a single two-bedroom residence. Inspection in February of 2005 revealed no signs of organic or hydraulic overload in the gravelly-coarse sand surrounding the Mound Buster pipe. There was no ponding observed in the observation pits excavated. The effluent from the OxyPro 1000 serving the residence was observed to be clear and odorless. Download of the Septic Sentry monitoring data indicates no events of effluent ponding with the Mound Buster piping over the previous year of operation.

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Department of Human Services
Division of Health Engineering, 10 SHS
(207) 287-5672 Fax: (207) 287-3165

PROPERTY LOCATION

City, Town, or Plantation	NORTH YARMOUTH
Street or Road	COUNTRY LANE
Subdivision, Lot #	

OWNER/APPLICANT INFORMATION

Name (last, first, MI): VERRILL, JEFFREY — [X] Owner [ ] Applicant

Mailing Address of Owner/Applicant: 63 COUNTRY LANE, NORTH YARMOUTH ME

Daytime Tel. #: 829-3696

OWNER OR APPLICANT STATEMENT

I state and acknowledge that the information submitted is correct to the best of my knowledge and understand that any falsification is reason for the Department and/or Local Plumbing Inspector to deny a Permit.

Signature of Owner or Applicant _____ Date _____

>> CAUTION: PERMIT REQUIRED - ATTACH IN SPACE BELOW <<

The Subsurface Wastewater Disposal System ***shall not*** be installed until a Permit is attached HERE by the Local Plumbing Inspector. The Permit shall authorize the owner or installer to install the disposal system in accordance with this application and the Maine Subsurface Wastewater Disposal Rules.

Municipal Tax Map # _____ Lot # _____

CAUTION: INSPECTION REQUIRED

I have inspected the installation authoirzed above and found it to be in compliance with the Subsurface Wastewater Disposal Rules Application. _____ (1st) date approved

Local Plumbing Inspector Signature _____ (2nd) date approved

PERMIT INFORMATION

TYPE OF APPLICATION

- [X] 1. First Time System
- [ ] 2. Replacement System
  - Type replaced: _____
  - Year installed: _____
- [ ] 3. Expanded System
  - [ ] a. Minor Expansion
  - [ ] b. Major Expansion
- [ ] 4. Experimental System
- [ ] 5. Seasonal Conversion

THIS APPLICATION REQUIRES

- [X] 1. No Rule Variance
- [ ] 2. First Time System Variance
  - [ ] a. Local Plumbing Inspector Approval
  - [ ] b. State & Local Plumbing Inspector Approval
- [ ] 3. Replacement System Variance
  - [ ] a. Local Plumbing Inspector Approval
  - [ ] b. State & Local Plumbing Inspector Approval
- [ ] 4. Minimum Lot Size Variance
- [ ] 5. Seasonal Conversion Permit

DISPOSAL SYSTEM COMPONENTS

- [X] 1. Complete Non-engineered System
- [ ] 2. Primitive System (graywater & alt. toilet)
- [ ] 3. Alternative Toilet, specify: _____
- [ ] 4. Non-engineered Treatment Tank (only)
- [ ] 5. Holding Tank, _____ gallons
- [ ] 6. Non-engineered Disposal Field (only)
- [ ] 7. Separated Laundry System
- [ ] 8. Complete Engineered System (2000 gpd or more)
- [ ] 9. Engineered Treatment Tank (only)
- [ ] 10. Engineered Disposal Field (only)
- [X] 11. Pre-treatment, specify: OXIPRO
- [ ] 12. Miscellaneous Components

SIZE OF PROPERTY

13 [ ] SQ. FT. [X] ACRES

SHORELAND ZONING

[ ] Yes [X] No

DISPOSAL SYSTEM TO SERVE

- [X] 1. Single Family Dwelling Unit, No. of Bedrooms: 2
- [ ] 2. Multiple Family Dwelling, No. of Units: ____
- [ ] 3. Other: _____ (specify)

Current Use [ ] Seasonal [ ] Year Round [X] Undeveloped

TYPE OF WATER SUPPLY

- [X] 1. Drilled Well
- [ ] 2. Dug Well
- [ ] 3. Private
- [ ] 4. Public
- [ ] 5. Other

DESIGN DETAILS (SYSTEM LAYOUT SHOWN ON PAGE 3)

TREATMENT TANK

- [X] 1. Concrete
  - [X] a. Regular
  - [ ] b. Low Profile
- [ ] 2. Plastic
- [ ] 3. Other: _____

CAPACITY: 1000 GAL.

DISPOSAL FIELD TYPE & SIZE

- [ ] 1. Stone Bed
- [ ] 2. Stone Trench
- [X] 3. Proprietary Device
  - [X] a. cluster array
  - [ ] c. Linear
  - [X] b. regular load
  - [ ] d. H-20 load
- [ ] 4. Other: _____

SIZE: 738 [X] sq. ft. [ ] lin. ft.

GARBAGE DISPOSAL UNIT

[ ] 1. No [ ] 2. Yes [X] 3. Maybe

If Yes or Maybe, specify one below:

- [ ] a. multi-compartment tank
- [ ] b. ___ tanks in series
- [ ] c. increase in tank capacity
- [X] d. Filter on Tank Outlet

DESIGN FLOW

180 gallons per day

BASED ON:

- [X] 1. Table 501.1 (dwelling unit(s))
- [ ] 2. Table 501.2 (other facilities)
  - SHOW CALCULATIONS
  - --- for other facilites ---
- [ ] 3. Section 503.0 (meter readings)
  - ATTACH WATER METER DATA

SOIL DATA & DESIGN CLASS

PROFILE CONDITION DESIGN

8 / D /

at Observation Hole # TB-1

Depth 12"

of Most Limiting Soil Factor

DISPOSAL FIELD SIZING

- [ ] 1. Small---2.0 sq. ft. / gpd
- [ ] 2. Medium---2.6 sq. ft. / gpd
- [ ] 3. Medium---Large 3.3 sq. f.t / gpd
- [X] 4. Large---4.1 sq. ft. / gpd
- [ ] 5. Extra Large---5.0 sq. ft. / gpd

EFFLUENT/EJECTOR PUMP

- [X] 1. Not Required
- [ ] 2. May Be Required
- [ ] 3. Required

Specify only for engineered systems:

DOSE: _____ gallons

SITE EVALUATOR STATEMENT

I certify that on 10-17-03 (date) I completed a site evaluation on this property and state that the data reported are accurate and that the proposed system is in compliance with the State of Maine Subsurface Wastewater Disposal Rules (10-144A CMR 241).

Site Evaluator Signature	SE #	Date
Mark Cenci	262	10-20-03

Site Evaluator Name Printed	Telephone Number	E-mail Address
MARK CENCI	797-2110	

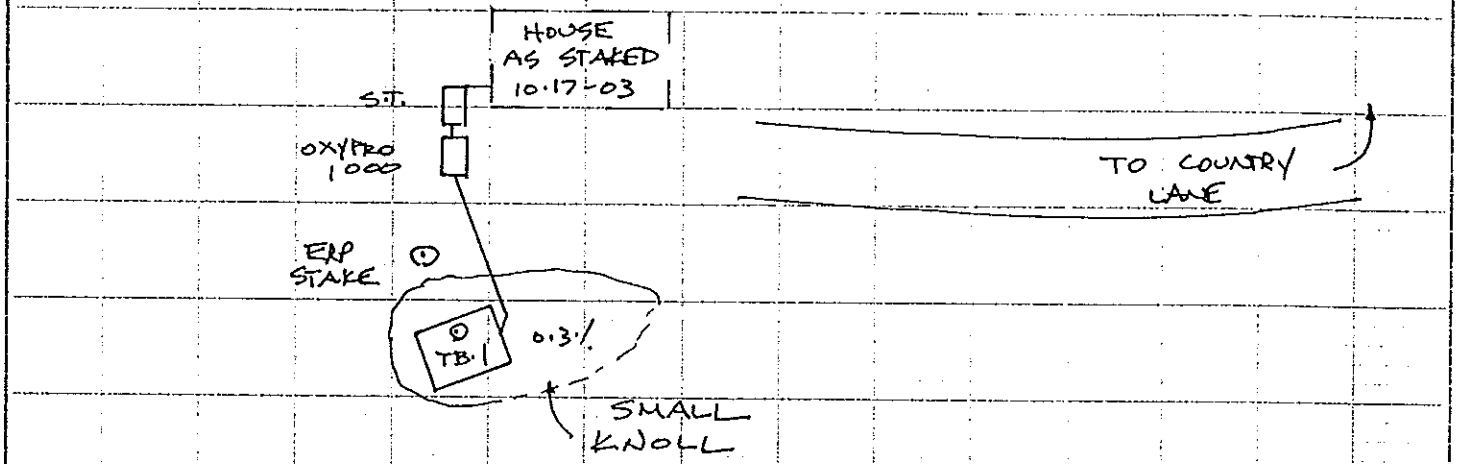
Note: Changes to or deviations from the design should be confirmed with the Site Evaluator.

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

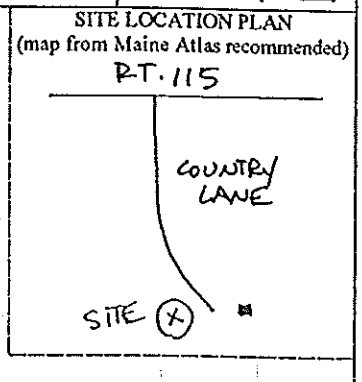
Maine Department of Human Services
Division of Health Engineering, Station 10
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation	Street, Road, Subdivision	Owner or Applicant Name
NORTH YARMOUTH	COUNTRY LANE	JEFFREY VERRILL

SITE PLAN Scale 1" = 50 ft.



SITE LOCATION PLAN
(map from Maine Atlas recommended)



SOIL PROFILE DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole # TB-1 ☐ Test Pit ☒ Boring

" Depth of organic horizon above mineral soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0				
6	FINE SANDY LOAM	FRIABLE	DK. BRN / YELLOW BRN.	FEW
12				
18	SILT LOAM	FIRM	OLIVE BRN TO GRAY	
24				
30				
36				
42				
48				

Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
8	D	0-3	12	☒ Groundwater ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Observation Hole # _____ ☐ Test Pit ☐ Boring

" Depth of organic horizon above mineral soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0				
6				
12				
18				
24				
30				
36				
42				
48				

Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
				☐ Groundwater ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Site Evaluator Signature _____ SE # 262 Date 10-20-03

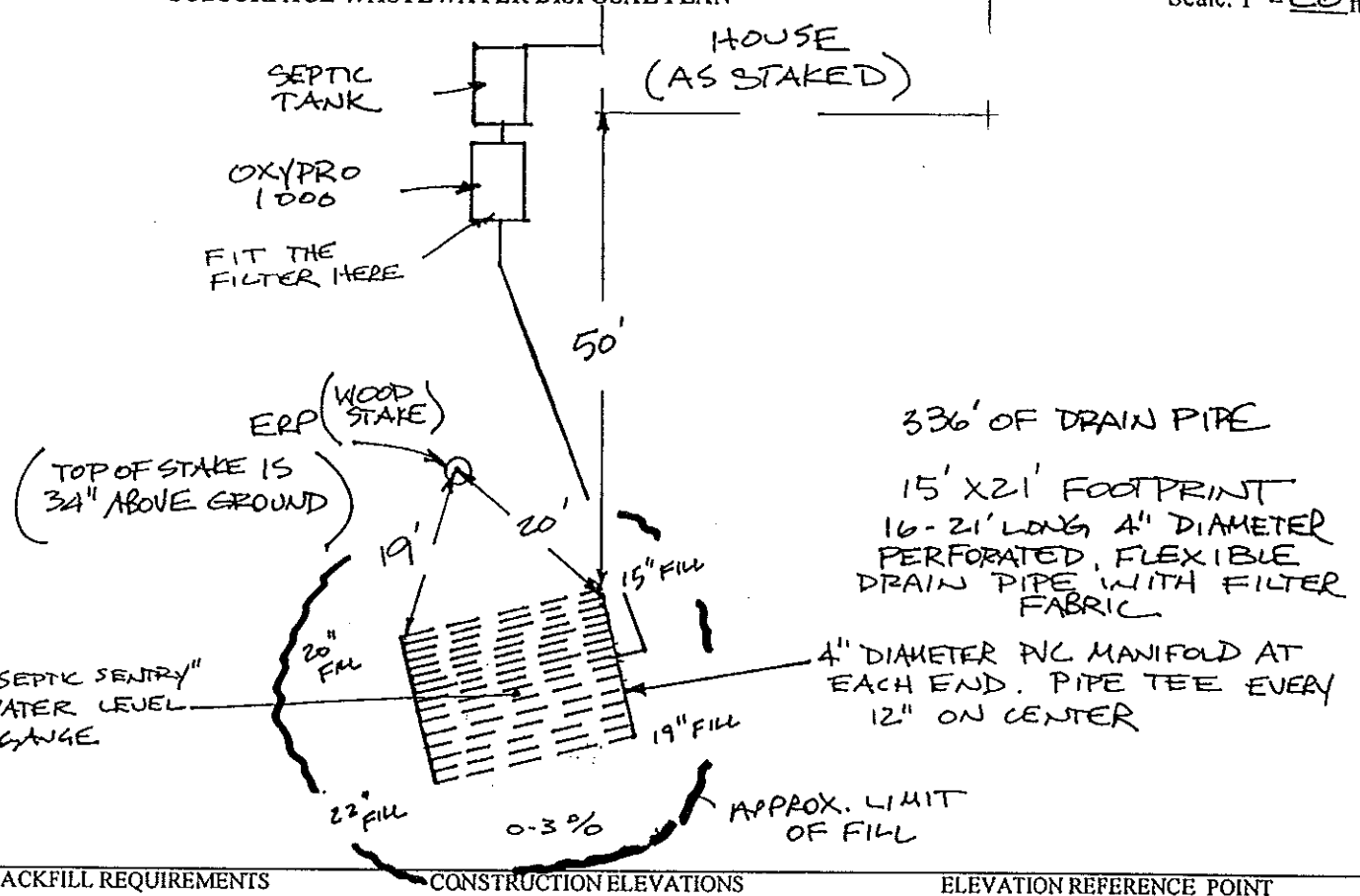
SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Department of Human Services
Division of Health Engineering, Station 10
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation	Street, Road, Subdivision	Owner or Applicant Name
NORTH YARMOUTH	COUNTRY LANE	JEFFREY VERRILL

SUBSURFACE WASTEWATER DISPOSAL PLAN

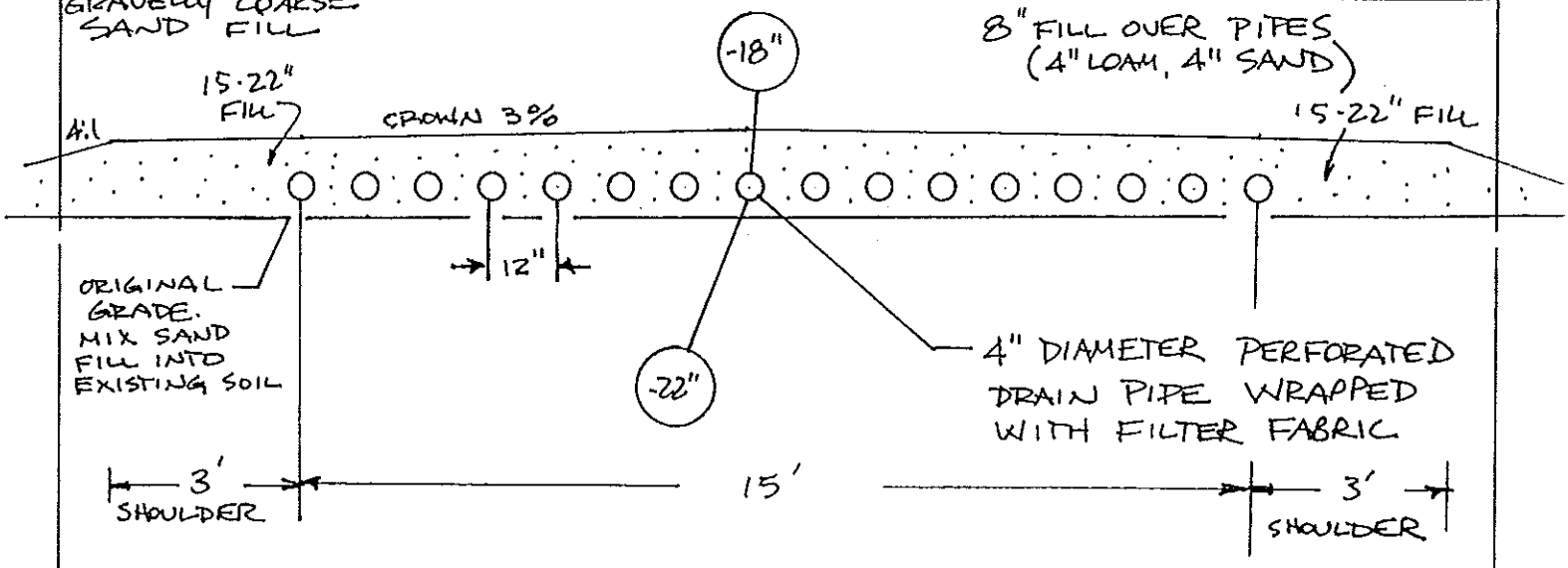
Scale: 1" = 20 ft.



BACKFILL REQUIREMENTS	CONSTRUCTION ELEVATIONS		ELEVATION REFERENCE POINT
Depth of Backfill (upslope) 15-20"	Finished Grade Elevation	-10"	Location & Description: TOP OF SET WOOD STAKE, 34" HIGH
Depth of Backfill (downslope) 19-22"	Top of PIPE	-18"	
DEPTHS AT CROSS-SECTION (shown below)	Bottom of Disposal Field	-22"	Reference Elevation is: 0.0" or:

DISPOSAL FIELD CROSS SECTION

Scales:
Vertical: 1" = 3 ft.
Horizontal: 1" = 3 ft.



Site Evaluator Signature	SE #	Date	Page 3 of 3
	262	10-20-03	HHE-200 Rev. 10/02

Mound Buster Pilot Installation #3

Date: June, 2004

Location: Chase Residence
Indian Way
Falmouth, Maine

HHE-200 Date: May 12, 2004

Design Flow: 360 GPD
Mound Buster Footprint: 20' x 20'
Soil Profile/Condition: 2A
Limiting Factor: 18" Bedrock

System installed by Chase Excavating in June of 2004. System serves a single four-bedroom residence with high occupancy. Inspection in March of 2005 revealed no signs of organic or hydraulic overload in the gravelly-coarse sand surrounding the Mound Buster pipe. There was no ponding observed in the observation pits excavated. The effluent from the OxyPro 1000 serving the residence was observed to be odorless and clear. Download of the Septic Sentry monitoring data indicates no events of effluent ponding with the Mound Buster piping over the previous year of operation.

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Department of Human Services
Division of Health Engineering, 10 SHS
(207) 287-5672 Fax: (207) 287-3165

PROPERTY LOCATION

City, Town, or Plantation	FALMOUTH
Street or Road	INDIAN WAY
Subdivision, Lot #	

>> CAUTION: PERMIT REQUIRED - ATTACH IN SPACE BELOW <<

The Subsurface Wastewater Disposal System *shall not* be installed until a Permit is attached HERE by the Local Plumbing Inspector. The Permit shall authorize the owner or installer to install the disposal system in accordance with this application and the Maine Subsurface Wastewater Disposal Rules.

OWNER/APPLICANT INFORMATION

Name (last, first, MI): CHASE, DAVID — ☒ Owner ☐ Applicant

Mailing Address of Owner/Applicant:

Daytime Tel. #:

Municipal Tax Map # _____ Lot # _____

OWNER OR APPLICANT STATEMENT
I state and acknowledge that the information submitted is correct to the best of my knowledge and understand that any falsification is reason for the Department and/or Local Plumbing Inspector to deny a Permit.

Signature of Owner or Applicant _____ Date _____

CAUTION: INSPECTION REQUIRED
I have inspected the installation authorized above and found it to be in compliance with the Subsurface Wastewater Disposal Rules Application. _____ (1st) date approved

Local Plumbing Inspector Signature _____ (2nd) date approved _____

PERMIT INFORMATION

TYPE OF APPLICATION
- ☒ 1. First Time System
- ☐ 2. Replacement System
  - Type replaced: _____
  - Year installed: _____
- ☐ 3. Expanded System
  - ☐ a. Minor Expansion
  - ☐ b. Major Expansion
- ☐ 4. Experimental System
- ☐ 5. Seasonal Conversion

THIS APPLICATION REQUIRES
- ☒ 1. No Rule Variance
- ☐ 2. First Time System Variance
  - ☐ a. Local Plumbing Inspector Approval
  - ☐ b. State & Local Plumbing Inspector Approval
- ☐ 3. Replacement System Variance
  - ☐ a. Local Plumbing Inspector Approval
  - ☐ b. State & Local Plumbing Inspector Approval
- ☐ 4. Minimum Lot Size Variance
- ☐ 5. Seasonal Conversion Permit

DISPOSAL SYSTEM COMPONENTS
- ☒ 1. Complete Non-engineered System
- ☐ 2. Primitive System (graywater & alt. toilet)
- ☐ 3. Alternative Toilet, specify: _____
- ☐ 4. Non-engineered Treatment Tank (only)
- ☐ 5. Holding Tank, _____ gallons
- ☐ 6. Non-engineered Disposal Field (only)
- ☐ 7. Separated Laundry System
- ☐ 8. Complete Engineered System (2000 gpd or more)
- ☐ 9. Engineered Treatment Tank (only)
- ☐ 10. Engineered Disposal Field (only)
- ☒ 11. Pre-treatment, specify: OXYPRO ATU
- ☐ 12. Miscellaneous Components

SIZE OF PROPERTY
33 ± ☐ SQ. FT. ☒ ACRES

SHORELAND ZONING
☐ Yes ☒ No

DISPOSAL SYSTEM TO SERVE
- ☒ 1. Single Family Dwelling Unit, No. of Bedrooms: 4
- ☐ 2. Multiple Family Dwelling, No. of Units: _____
- ☐ 3. Other: _____ (specify)

Current Use ☐ Seasonal ☐ Year Round ☒ Undeveloped

TYPE OF WATER SUPPLY (TO BE)
- ☐ 1. Drilled Well ☐ 2. Dug Well ☐ 3. Private
- ☐ 4. Public ☐ 5. Other

DESIGN DETAILS (SYSTEM LAYOUT SHOWN ON PAGE 3)

TREATMENT TANK
- ☒ 1. Concrete
  - ☐ a. Regular
  - ☐ b. Low Profile
- ☐ 2. Plastic
- ☐ 3. Other: _____

CAPACITY: 1500 GAL.

DISPOSAL FIELD TYPE & SIZE
- ☐ 1. Stone Bed ☐ 2. Stone Trench
- ☐ 3. Proprietary Device
  - ☐ a. cluster array ☐ c. Linear
  - ☐ b. regular load ☐ d. H-20 load
- ☒ 4. Other: DRAIN PIPE

SIZE: 400 ☒ sq. ft. ☐ lin. ft.

GARBAGE DISPOSAL UNIT
☐ 1. No ☒ 2. Yes ☐ 3. Maybe

If Yes or Maybe, specify one below:
- ☐ a. multi-compartment tank
- ☐ b. ___ tanks in series
- ☐ c. Increase in tank capacity
- ☒ d. Filter on Tank Outlet

DESIGN FLOW
360 gallons per day

BASED ON:
- ☒ 1. Table 501.1 (dwelling unit(s))
- ☐ 2. Table 501.2 (other facilities)

SHOW CALCULATIONS --- for other facilites ---

SOIL DATA & DESIGN CLASS
PROFILE CONDITION DESIGN
2 / A / 1

at Observation Hole # 1

Depth 18"

of Most Limiting Soil Factor

DISPOSAL FIELD SIZING
- ☐ 1. Small---2.0 sq. ft. / gpd
- ☐ 2. Medium---2.6 sq. ft. / gpd
- ☒ 3. Medium---Large 3.3 sq. ft / gpd
- ☐ 4. Large---4.1 sq. ft. / gpd
- ☐ 5. Extra Large---5.0 sq. ft. / gpd

EFFLUENT/EJECTOR PUMP
- ☒ 1. Not Required
- ☐ 2. May Be Required
- ☐ 3. Required

Specify only for engineered systems:

DOSE: _____ gallons

- ☐ 3. Section 503.0 (meter readings)

ATTACH WATER METER DATA

SITE EVALUATOR STATEMENT

I certify that on 5-12-04 (date) I completed a site evaluation on this property and state that the data reported are accurate and that the proposed system is in compliance with the State of Maine Subsurface Wastewater Disposal Rules (10-144A CMR 241).

Richard A. Sweet — Site Evaluator Signature
034 — SE #
5-26-04 — Date

RICHARD A. SWEET — Site Evaluator Name Printed
797-2110 — Telephone Number
SWEET@MAINE.RR.COM — E-mail Address

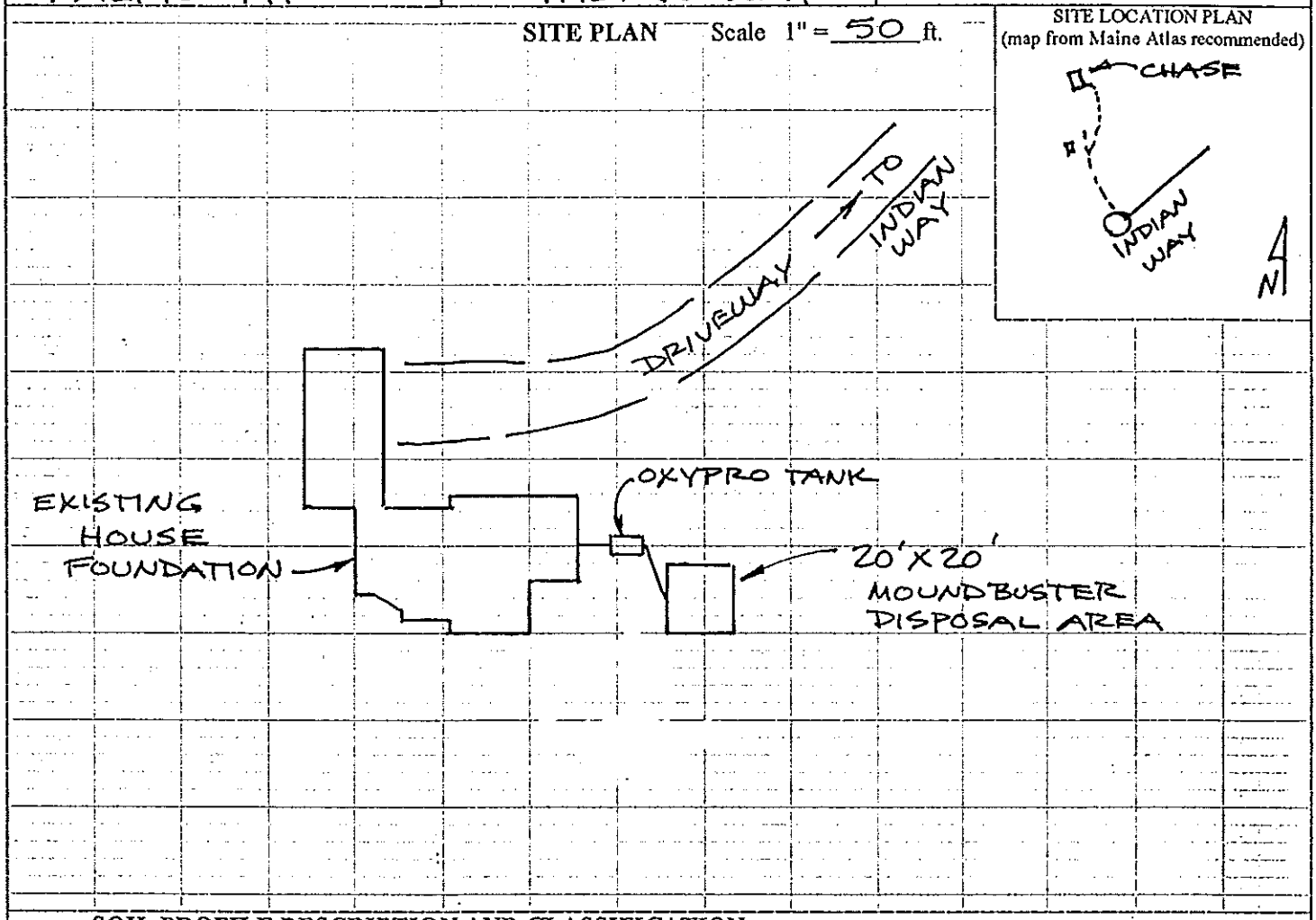
Note: Changes to or deviations from the design should be confirmed with the Site Evaluator.

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Department of Human Services
Division of Health Engineering, Station 10
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation	Street, Road, Subdivision	Owner or Applicant Name
FALMOUTH	INDIAN WAY	CHASE

SITE PLAN Scale 1" = 50 ft.



SITE LOCATION PLAN
(map from Maine Atlas recommended)

SOIL PROFILE DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole # TP-1 ☒ Test Pit ☐ Boring

" Depth of organic horizon above mineral soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0				
6	SANDY LOAM	FRIABLE	RED	
12				
18	BEDROCK			
24				
30				
36				
42				
48				

Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
2	A		18	☐ Groundwater ☐ Restrictive Layer ☒ Bedrock ☐ Pit Depth

Observation Hole # _____ ☐ Test Pit ☐ Boring

" Depth of organic horizon above mineral soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0				
6				
12				
18				
24				
30				
36				
42				
48				

Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
				☐ Groundwater ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Richard Arwest — Site Evaluator Signature

034 — SE #

5-26-04 — Date

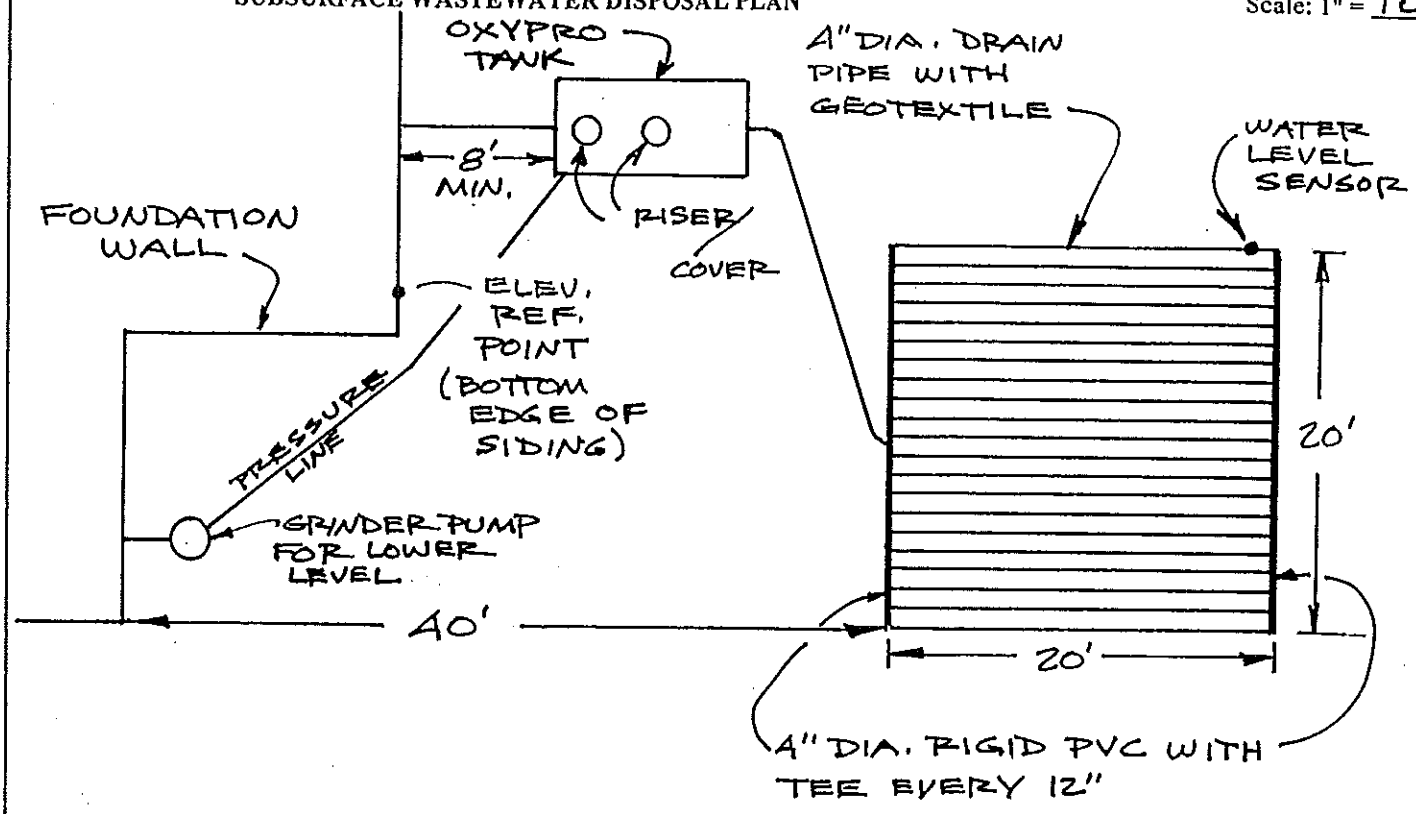
SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Department of Human Services
Division of Health Engineering, Station 10
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation	Street, Road, Subdivision	Owner or Applicant Name
FALMOUTH	INDIAN WAY	CHASE

SUBSURFACE WASTEWATER DISPOSAL PLAN

Scale: 1" = 10 ft.



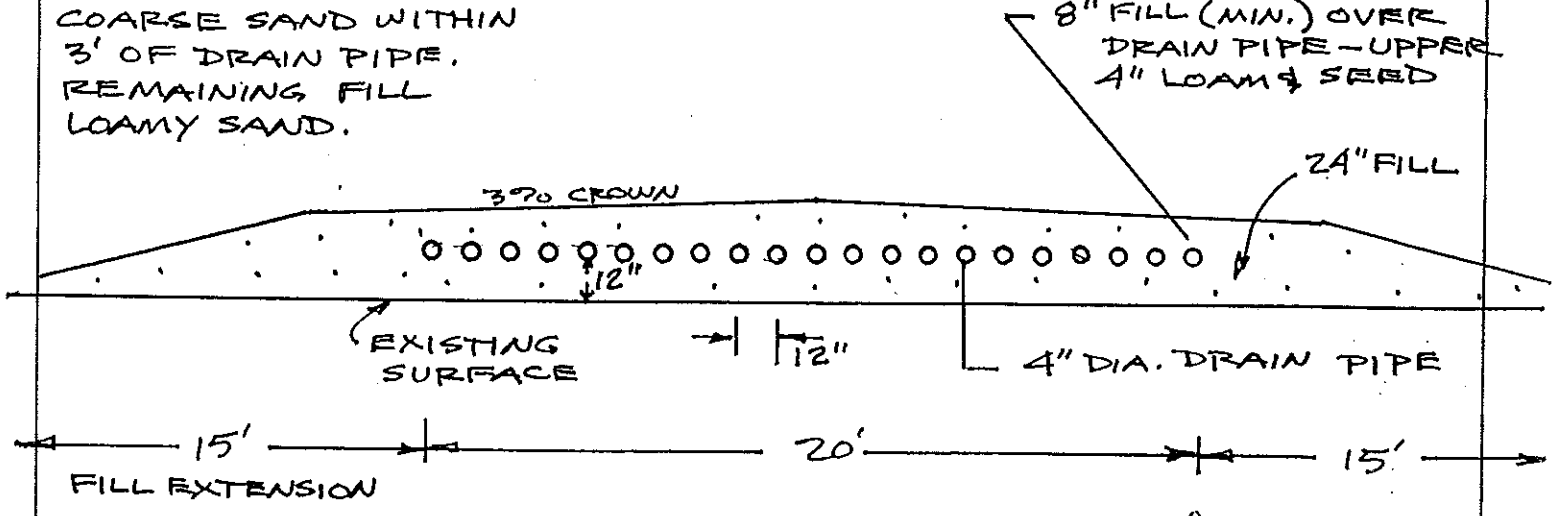
BACKFILL REQUIREMENTS		CONSTRUCTION ELEVATIONS		ELEVATION REFERENCE POINT
Depth of Backfill (upslope)	24 "	Finished Grade Elevation	-18 "	Location & Description: BOTTOM EDGE OF HOUSE SIDING
Depth of Backfill (downslope)	24 "	Top of Proprietary Device (PIPE)	-26 "	
DEPTHS AT CROSS-SECTION (shown below)		Bottom of Disposal Field (PIPE)	-30 "	Reference Elevation is: 0.0" or:

DISPOSAL FIELD CROSS SECTION

Scales:
Vertical: 1" = 5 ft.
Horizontal: 1" = 5 ft.

NOTE: SCARIFY GROUND SURFACE BELOW ALL FILL.

FILL: GRAVELLY COARSE SAND WITHIN 3' OF DRAIN PIPE. REMAINING FILL LOAMY SAND.



Richard Arwet 034 5-26-04

Site Evaluator Signature | SE # | Date

Mound Buster Pilot Installation #4

Date: September, 2004

Location: Sweet Residence
Carriage Hill Road
North Yarmouth, Maine

HHE-200 Date: November 15, 2005

Design Flow: 360 GPD
Mound Buster Footprint: 15' x 20'
Soil Profile/Condition: 5B
Limiting Factor: None within 48"

System installed by Chase Excavating in September of 2004. System serves a single four-bedroom residence with high occupancy. Inspection in April of 2005 revealed no signs of organic or hydraulic overload in the gravelly-coarse sand surrounding the Mound Buster pipe. There was no ponding observed in the observation pits excavated. The effluent from the OxyPro 1000 serving the residence was observed to be odorless and clear. Download of the Septic Sentry monitoring data indicates no events of effluent ponding within the Mound Buster piping over the previous year of operation.

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Department of Human Services
Division of Health Engineering, 10 SHS
(207) 287-5672 Fax: (207) 287-3165

PROPERTY LOCATION

City, Town, or Plantation	NORTH YARMOUTH
Street or Road	CARRIAGE HILL ROAD
Subdivision, Lot #	LOT # 5

>> CAUTION: PERMIT REQUIRED - ATTACH IN SPACE BELOW <<

The Subsurface Wastewater Disposal System *shall not* be installed until a Permit is attached HERE by the Local Plumbing Inspector. The Permit shall authorize the owner or installer to install the disposal system in accordance with this application and the Maine Subsurface Wastewater Disposal Rules.

OWNER/APPLICANT INFORMATION

Name (last, first, MI): SWEET, NINA, RICHARD J — ☒ Owner ☐ Applicant

Mailing Address of Owner/Applicant	P.O. BOX 85 CUMBERLAND, ME. 04021
Daytime Tel. #	797-2110

Municipal Tax Map # _____ Lot # _____

OWNER OR APPLICANT STATEMENT

I state and acknowledge that the information submitted is correct to the best of my knowledge and understand that any falsification is reason for the Department and/or Local Plumbing Inspector to deny a Permit.

_____ Signature of Owner or Applicant — _____ Date

CAUTION: INSPECTION REQUIRED

I have inspected the installation authorized above and found it to be in compliance with the Subsurface Wastewater Disposal Rules Application. _____ (1st) date approved

_____ Local Plumbing Inspector Signature — _____ (2nd) date approved

PERMIT INFORMATION

TYPE OF APPLICATION

- ☐ 1. First Time System
- ☐ 2. Replacement System
  - Type replaced: _____
  - Year installed: _____
- ☐ 3. Expanded System
  - ☐ a. Minor Expansion
  - ☐ b. Major Expansion
- ☒ 4. Experimental System
- ☐ 5. Seasonal Conversion

THIS APPLICATION REQUIRES

- ☒ 1. No Rule Variance
- ☐ 2. First Time System Variance
  - ☐ a. Local Plumbing Inspector Approval
  - ☐ b. State & Local Plumbing Inspector Approval
- ☐ 3. Replacement System Variance
  - ☐ a. Local Plumbing Inspector Approval
  - ☐ b. State & Local Plumbing Inspector Approval
- ☐ 4. Minimum Lot Size Variance
- ☐ 5. Seasonal Conversion Permit

DISPOSAL SYSTEM COMPONENTS

- ☒ 1. Complete Non-engineered System
- ☐ 2. Primitive System (graywater & alt. toilet)
- ☐ 3. Alternative Toilet, specify: _____
- ☐ 4. Non-engineered Treatment Tank (only)
- ☐ 5. Holding Tank, _____ gallons
- ☐ 6. Non-engineered Disposal Field (only)
- ☐ 7. Separated Laundry System
- ☐ 8. Complete Engineered System (2000 gpd or more)
- ☐ 9. Engineered Treatment Tank (only)
- ☐ 10. Engineered Disposal Field (only)
- ☒ 11. Pre-treatment, specify: OXYPRO
- ☐ 12. Miscellaneous Components

SIZE OF PROPERTY

9.58 ☐ SQ. FT. ☒ ACRES

SHORELAND ZONING

☐ Yes ☒ No

DISPOSAL SYSTEM TO SERVE

- ☒ 1. Single Family Dwelling Unit, No. of Bedrooms: 4
- ☐ 2. Multiple Family Dwelling, No. of Units: ____
- ☐ 3. Other: _____ (specify)

Current Use ☐ Seasonal ☐ Year Round ☐ Undeveloped

TYPE OF WATER SUPPLY

TO BE

☐ 1. Drilled Well ☐ 2. Dug Well ☐ 3. Private ☐ 4. Public ☐ 5. Other

DESIGN DETAILS (SYSTEM LAYOUT SHOWN ON PAGE 3)

TREATMENT TANK

- ☒ 1. Concrete
  - ☒ a. Regular
  - ☐ b. Low Profile
- ☐ 2. Plastic
- ☐ 3. Other: _____

CAPACITY: 1000 GAL.

DISPOSAL FIELD TYPE & SIZE

- ☐ 1. Stone Bed ☐ 2. Stone Trench
- ☐ 3. Proprietary Device
  - ☐ a. cluster array ☐ c. Linear
  - ☐ b. regular load ☐ d. H-20 load
- ☒ 4. Other: 320' DRAIN PIPE

SIZE: _____ ☐ sq. ft. ☐ lin. ft.

GARBAGE DISPOSAL UNIT

☐ 1. No ☒ 2. Yes ☐ 3. Maybe

If Yes or Maybe, specify one below:

- ☐ a. multi-compartment tank
- ☐ b. ___ tanks in series
- ☐ c. Increase in tank capacity
- ☒ d. Filter on Tank Outlet

DESIGN FLOW

369 gallons per day

BASED ON:

- ☒ 1. Table 501.1 (dwelling unit(s))
- ☐ 2. Table 501.2 (other facilities)

SHOW CALCULATIONS --- for other facilites ---

SOIL DATA & DESIGN CLASS

PROFILE CONDITION DESIGN

5 / B / 1

at Observation Hole # 1

Depth — "

of Most Limiting Soil Factor

DISPOSAL FIELD SIZING

- ☐ 1. Small---2.0 sq. ft. / gpd
- ☒ 2. Medium---2.6 sq. ft. / gpd
- ☐ 3. Medium---Large 3.3 sq. f.t / gpd
- ☐ 4. Large---4.1 sq. ft. / gpd
- ☐ 5. Extra Large---5.0 sq. ft. / gpd

EFFLUENT/EJECTOR PUMP

- ☒ 1. Not Required
- ☐ 2. May Be Required
- ☐ 3. Required

Specify only for engineered systems:

DOSE: _____ gallons

- ☐ 3. Section 503.0 (meter readings)

ATTACH WATER METER DATA

SITE EVALUATOR STATEMENT

I certify that on 11-15-03 (date) I completed a site evaluation on this property and state that the data reported are accurate and that the proposed system is in compliance with the State of Maine Subsurface Wastewater Disposal Rules (10-144A CMR 241).

Richard A. Sweet — Site Evaluator Signature

034 — SE #

12-7-03 — Date

RICHARD A. SWEET — Site Evaluator Name Printed

797-2110 — Telephone Number

SWEET@MAINE.RR.COM — E-mail Address

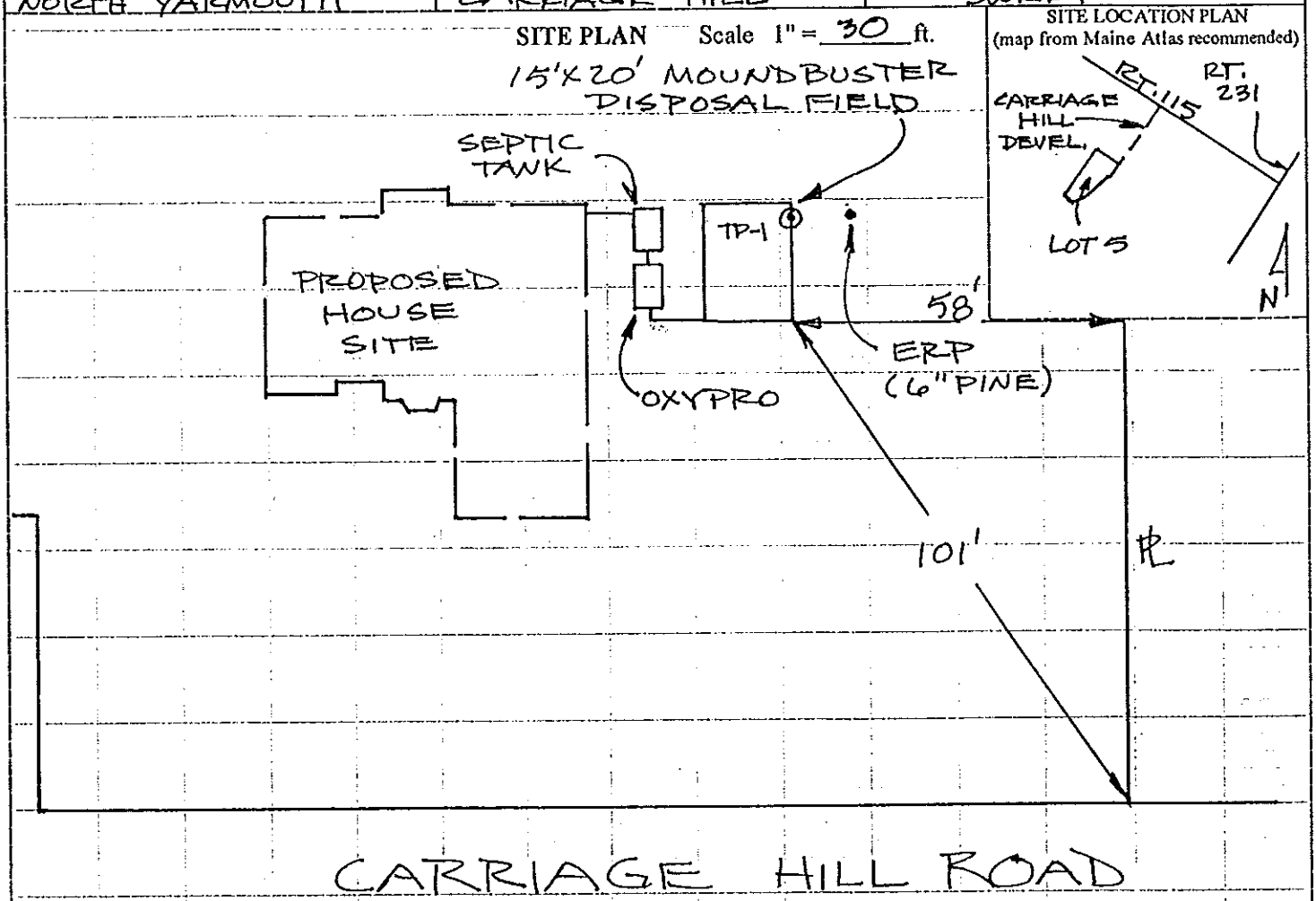
Note: Changes to or deviations from the design should be confirmed with the Site Evaluator.

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Department of Human Services
Division of Health Engineering, Station 10
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation	Street, Road, Subdivision	Owner or Applicant Name
NORTH YARMOUTH	CARRIAGE HILL	SWEET

SITE PLAN Scale 1" = 30 ft.



SITE LOCATION PLAN
(map from Maine Atlas recommended)

SOIL PROFILE DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole # TP-1 ☐ Test Pit ☐ Boring

" Depth of organic horizon above mineral soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	SANDY LOAM		DK. BROWN	
12	LOAMY SAND	LOOSE	RED	
24	GRAVELLY SAND		LT. BROWN	
36				
48				

Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
5	B		—	☐ Groundwater ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Observation Hole # _____ ☐ Test Pit ☐ Boring

" Depth of organic horizon above mineral soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0				
12				
24				
36				
48				

Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
				☐ Groundwater ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Richard Arnett — Site Evaluator Signature
034 — SE #
12-7-03 — Date

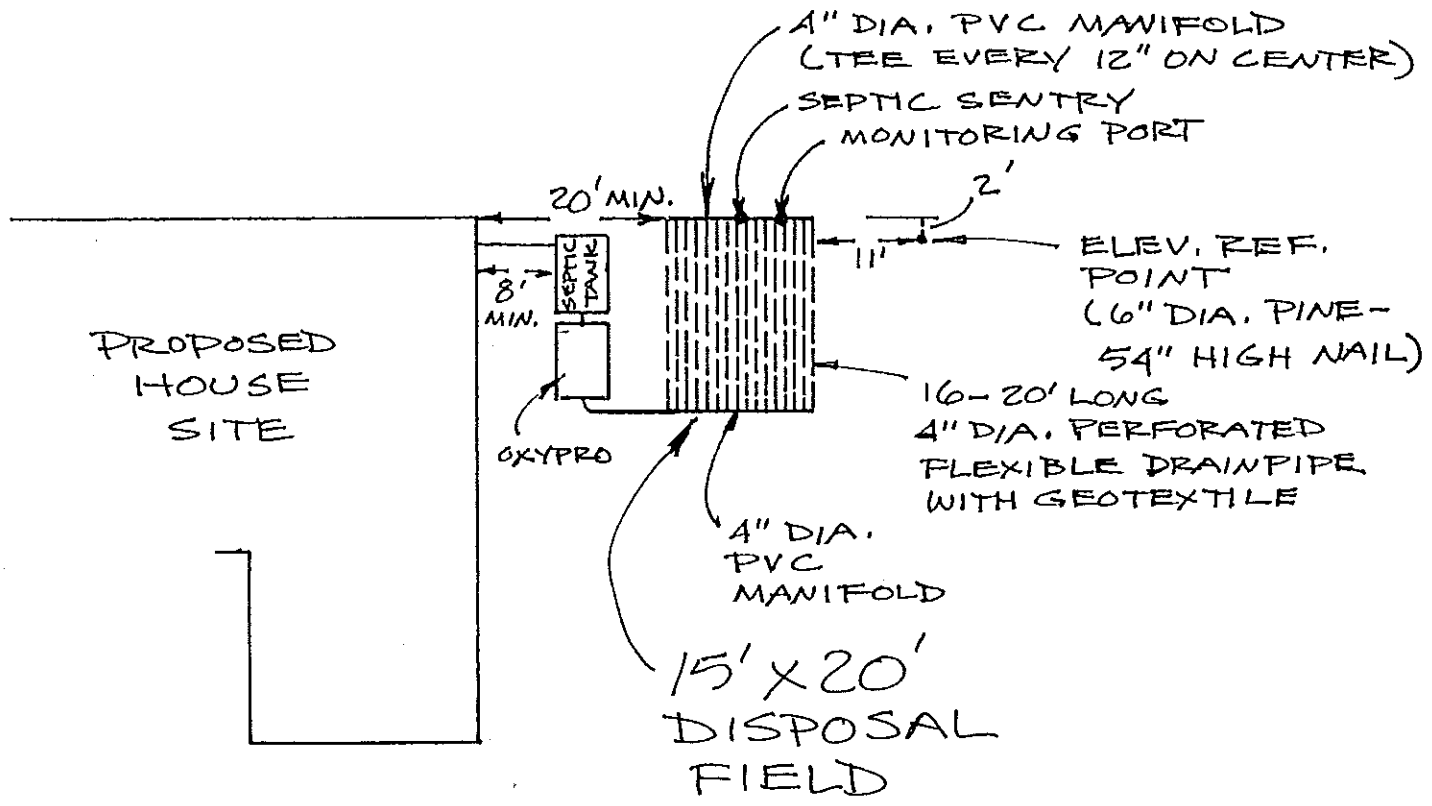
SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Department of Human Services
Division of Health Engineering, Station 10
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation	Street, Road, Subdivision	Owner or Applicant Name
NORTH YARMOUTH	CARRIAGE HILL	SWEET

SUBSURFACE WASTEWATER DISPOSAL PLAN

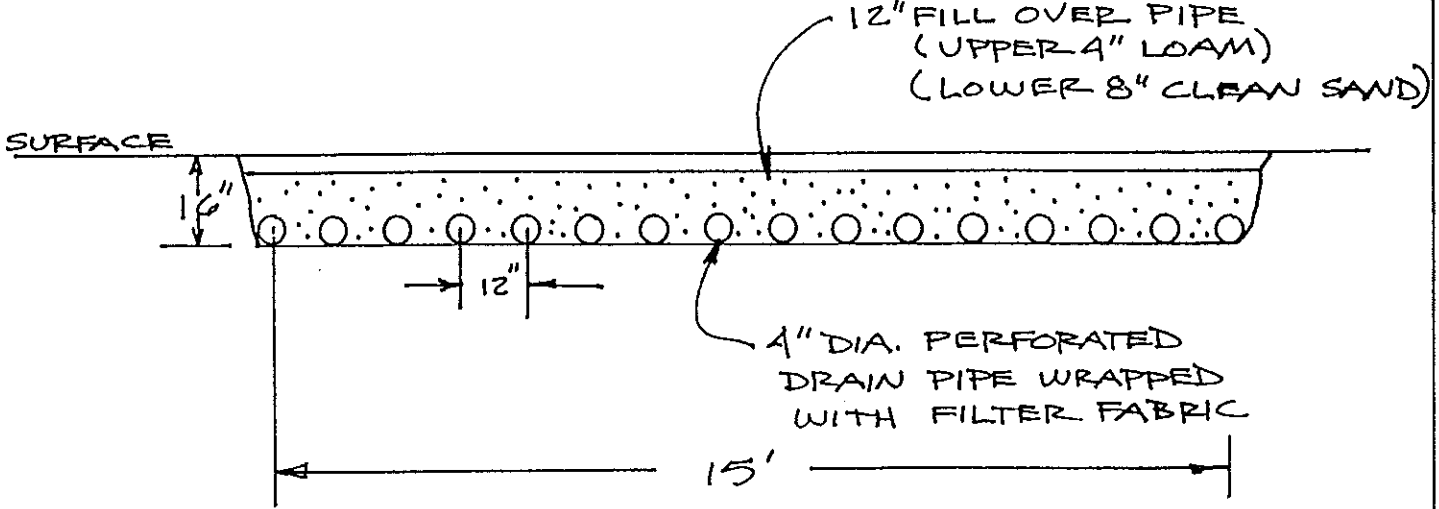
Scale: 1" = 20 ft.



BACKFILL REQUIREMENTS		CONSTRUCTION ELEVATIONS		ELEVATION REFERENCE POINT
Depth of Backfill (upslope)	0 "	Finished Grade Elevation (at Row 1)	-54 "	Location & Description: NAIL IN PINK SQUARE IN 6" PINE
Depth of Backfill (downslope)	0 "	Top of Proprietary Device (at Row 1)	-66 "	
DEPTHS AT CROSS-SECTION (shown below)		Bottom of Disposal Field (at Row 1)	-70 "	Reference Elevation is: 0.0" or:

DISPOSAL FIELD CROSS SECTION

Scales:
Vertical: 1" = 3 ft.
Horizontal: 1" = 3 ft.



Richard Sweet — Site Evaluator Signature
034 — SE #
12-7-03 — Date


KOMATSU
PC
160
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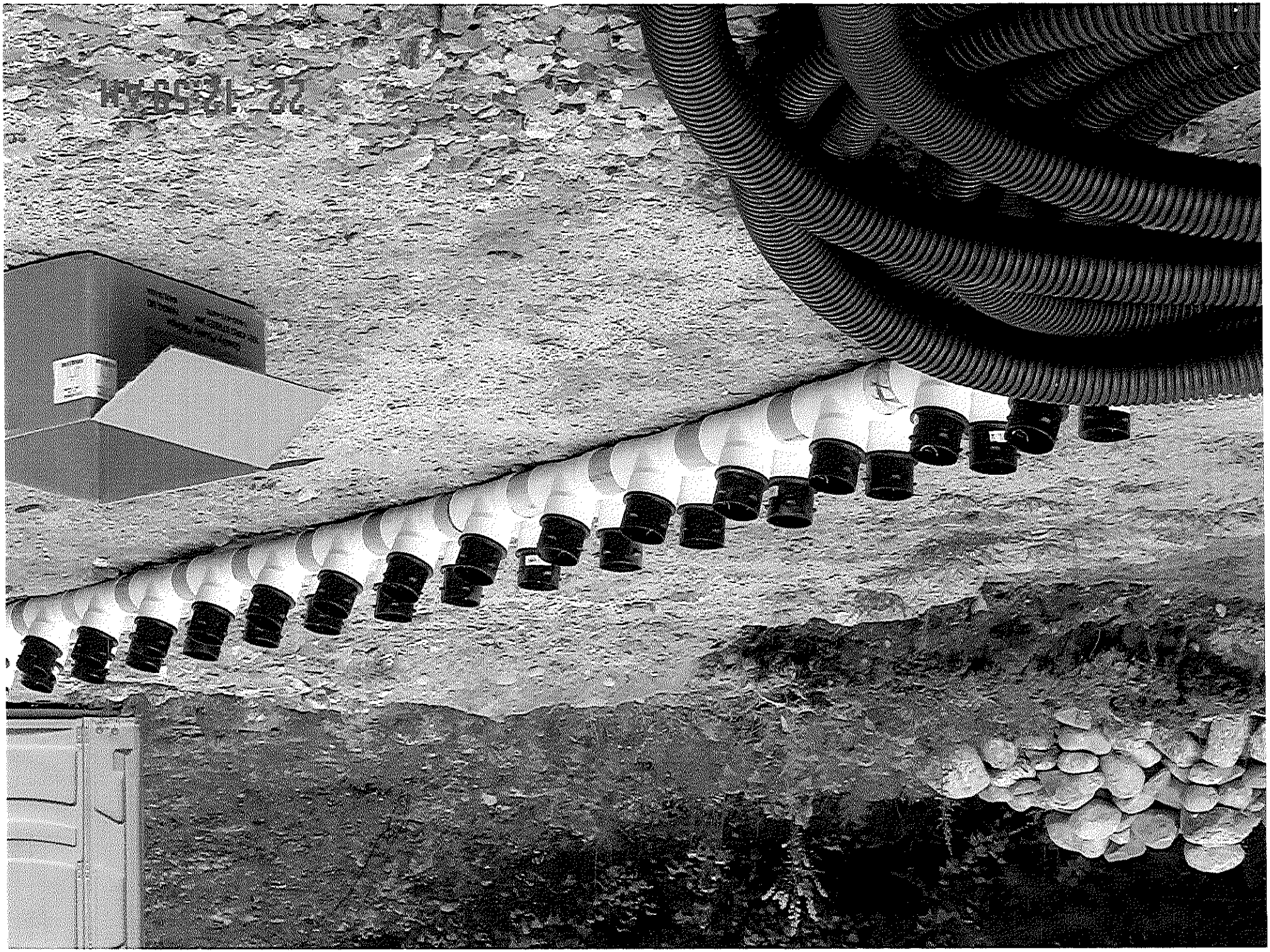



KOMATSU

JOHN ELIAS BALDACCI
GOVERNOR

STATE OF MAINE
DEPARTMENT OF HUMAN SERVICES
DIVISION OF HEALTH ENGINEERING
11 STATE HOUSE STATION
OFFICE: 161 CAPITOL STREET
AUGUSTA, MAINE
04333-0011

September 11, 2003

Sweet Associates
Attn. Richard A. Sweet, SE
155 Gray Road
Falmouth, ME 04105

Subject: Request to Modify Product Registration, OxyPro Mound Buster

Dear Mr. Sweet:

Thank you for your letter dated July 31, 2003 regarding your company's product, received August 5, 2003. In your letter you requested three modifications to the Division's Pilot Approval for the OxyPro Mound Buster.

1. Removal of Condition #3: "Pilot Approval installations shall be limited to sites which do not otherwise require any variance or waiver to the Subsurface Wastewater Disposal Rules."

This request is denied.

Pilot Approvals are generally issued for untried products or processes. They are required to be installed on sites that pass without variance or waiver to the Rules pursuant to Section 1802.4.1 the Rules. The reason is simply that the product or process under consideration is unproven; and this office has no intention of allowing development of properties with unproven technology that might otherwise be undevelopable, in the event the product fails to perform adequately. This office finds no compelling reason that would persuade us to waive this requirement.

2. Removal of Condition #4: "Horizontal setbacks and vertical separation from limiting factors shall be measured from the gravelly sand in the OxyPro Mound Buster."

This request is denied.

Section 605 of the Rules mandates vertical separations based upon the bottom of disposal areas. The bottom of the Mound Buster system is the coarse sand surrounding the pipes. You have requested that this requirement be waived since you state that it appears that the requirement was not applied to Eljen In-Drains. However, Eljen In-Drains were approved in December of 1993 by this office and that approval letter states as Condition #3 "The bottom of the disposal area for determination of vertical separation under Section 11.C of the Rules, is the bottom of the 6 inch sand below the Indrain (sic)." You provided no additional evidence to support this request. This office finds no compelling reason that would persuade us to waive this design standard.

3. Modification of Condition #5, which reads in relevant part: Each system installed under Pilot approval shall include a monitoring port or similar provision, for observing the system for signs of saturated conditions."

This request is approved.

Specifically, you propose to use Septic Sentry remote monitoring devices to monitor the installations, and to download your data at six month intervals. This is acceptable.

PHONE: (207) 287-5338 TTY: 207-287-2070 FAX: (207) 287-4172

If you have any further questions please feel free to contact me at (207) 287-5695.

Sincerely,

James A. Jacobsen

James A. Jacobsen, Environmental Specialist IV
Wastewater and Plumbing Control Program
Division of Health Engineering
e-mail: james.jacobsen@state.me.us

/jaj

xc: Product File
Russell Martin, Program Director

Sweet Associates HYDROGEOLOGY • SITE EVALUATIONS
155 GRAY ROAD • FALMOUTH, MAINE 04105 • (207) 797-2110 • FAX (207) 878-2364

July 31, 2003

AUG 0 5 2003

James A. Jacobsen
Wastewater and Plumbing Control Program
Division of Health Engineering
11 State House Station
Augusta, ME 04333-0011

RE: OxyPro Mound Buster

Dear Mr. Jacobsen:

Thank you for your letter of July 11, 2003 giving us Pilot Approval of the OxyPro Mound Buster System. After reviewing your approval letter we would like to request an adjustment to three of the conditions. The three conditions are as follows:

3. *Pilot Approval installations shall be limited to sites which do not otherwise require any variance or waiver to the Subsurface Wastewater Disposal Rules.*

   This condition limits the OxyPro Mound Buster to sites which do not require a variance or waiver. It will be quite difficult finding sites for Pilot testing if we are limited to non-variance sites. Most people interested in this system are looking for a way to avoid high mounding on lots with existing houses. The fact that mounding is high is usually because the water table is shallow enough to require a variance. On new lots where mounding is required, the house elevations can usually be adjusted to accommodate the mound. We have been observing the Piranha/White Knight journey through the Pilot and Provisional Approval Program and know they would be severely hampered if they could not install their components into systems that today would require a variance if the system was replaced.

   We would request that our Pilot Approval be allowed for any system whether or not a variance is required. The fact that pre-treatment is a basic component of this design should reduce fears of malfunction under tough site conditions. Also, the distribution system piping is very inexpensive and can be easily replaced if Pilot testing finds a problem and a standard system needs to be installed.

4. *Horizontal setbacks and vertical separation from limiting factors shall be measured from the gravelly sand in the OxyPro Mound Buster.*

   We would like you to reconsider the requirement that the vertical separation from the limiting factor be measured from the bottom of the gravelly coarse sand around the pipe. We notice the same requirement is not applied to the Eljen In-drain system which has a six-inch sand base.

5. *Each system installed under Pilot approval shall include a monitoring port or similar provision, for observing the system for signs of saturated conditions. On no less than a bi-weekly basis for a period of not less than six months after installation, and once per month for at least an additional six months, the applicant shall examine each OxyPro Mound Buster installed under Pilot Approval for evidence of ponding. The results of these tests shall be submitted to the Division on no less than a quarterly basis.*

   Our requested change for the monitoring port and bi-weekly testing of the water level in each system has to do with the way the testing would be done. We would like to be able to install a water level sensor such as Septic Sentry on each system. Septic Sentry records by means of a data logger every time the water level in the pipe reaches a prescribed level such as the top of the pipe and when it drops below that level. The advantage of this is it is continuously recording critical levels rather than spot checks and we do not need to make bi-weekly trips to sites that may be many miles away. We would plan to download the data logger at six month intervals.

Please do not hesitate to call or email (sweet@maine.rr.com) if you have any questions.

Sincerely,

Richard A. Sweet

RAS/smh

STATE OF MAINE
DEPARTMENT OF HUMAN SERVICES
DIVISION OF HEALTH ENGINEERING
11 STATE HOUSE STATION
AUGUSTA, MAINE
04333-0011

JOHN ELIAS BALDACCI
GOVERNOR

July 11, 2003

Sweet Associates
Attn. Richard A. Sweet, SE
155 Gray Road
Falmouth, ME 04105

Subject: Product Registration, OxyPro Mound Buster

Dear Mr. Sweet:

Thank you for your letter dated June 20, 2003 regarding your company's product. This information was submitted pursuant to Section 1802 of the Maine State Plumbing Code, Subsurface Wastewater Disposal Rules (Rules), for code registration, for use in Maine.

Product Description

The OxyPro Mound Buster consists of four inch diameter, perforated plastic pipes which are wrapped in one layer of non-woven geotextile fabric. The pipes are placed in a bed of gravelly coarse sand, which would surround the pipes with a minimum of six inches of sand on all sides. The pipes would be placed 12 inches apart, center to center, within the bed resulting in eight inches of sand between the pipes. A solid four inch diameter pipe manifold would be placed at each end of the pipes, when placed in a level bed configuration. Serial distribution systems would utilize inverted 180 degree bends in the connecting manifolds.

The OxyPro Mound Buster is designed for use with advanced treatment units producing effluent with combined BOD_5 and TSS of less than 30 mg/l, specifically, the OxyPro System. The disposal area would be sized using *Darcy's Law* as a basis, with permeability rates (*k* factors) for soils obtained from data published by the Maine Soil and Water Conservation Commission in *Soil Series of Maine Soil Interpretations*. Loading rates would range from 0.8 square feet per day, to 1.7 square feet per day, based upon the *k* factor for each Subsurface Wastewater Disposal Rules soil profile.

Claim

According to the information you provided, the OxyPro Mound Buster would perform similarly to drip emitter irrigation systems and cuspated block systems, with respect to infiltration of treated effluent into unclogged soils.

Determination

On the basis of the information provided, the Division has determined that the OxyPro Mound Buster is acceptable for use in the State of Maine on a Pilot Approval basis, provided that it is installed, operated, and maintained in conformance with the manufacturer's directions and the following conditions.

1. The OxyPro Mound Buster shall be used exclusively with OxyPro advanced treatment units, as proposed by the applicant.

2. No more than 15 installations of the OxyPro Mound Buster may be installed under Pilot Approval.

3. Pilot Approval installations shall be limited to sites which do not otherwise require any variance or waiver to the Subsurface Wastewater Disposal Rules.

4. Horizontal setbacks and vertical separation from limiting factors shall be measured from the gravelly sand in the OxyPro Mound Buster.

5. Each system installed under Pilot approval shall include a monitoring port or similar provision, for observing the system for signs of saturated conditions. On no less than a bi-weekly basis for a period of not less than six months after installation, and once per month for at least an additional six months, the applicant shall examine each OxyPro Mound Buster installed under Pilot Approval for evidence of ponding The results of these tests shall be submitted to the Division on no less than a quarterly basis.

6. Applications for a permit to install an OxyPro Mound Buster system shall be prepared on a current HHE-200 Form, and shall be accompanied by a copy of this letter.

Upon successful operation under Pilot Approval, the applicant may proceed to Provisional Approval, which allows an applicant to demonstrate ability of a product to operate under a broader range of site conditions and to provide a larger number of data sources for such demonstration. No more than 50 installations of a specific new product shall be granted Provisional Approval by the Division, of which 15 may be Pilot systems previously approved by the Division.

In the event that the product fails to perform as claimed by the applicant, use of the new or experimental technology in Maine, including all installations approved installed under Pilot Approval pursuant to Section 1801.7 of the Rules, shall cease. Use of the new or experimental technology shall not resume until the applicant and the Division have reached a mutually acceptable agreement for resolving the failure to perform as claimed.

Because installation and owner maintenance has a significant effect on the working order of onsite sewage disposal systems, including their components, the Division makes no representation or guarantee as to the efficiency and/or operation of OxyPro Mound Buster. Further, registration of this product for use in the State of Maine does not represent Division preference or recommendation for this product over similar products.

If you have any questions please feel free to contact me at (207) 287-5695.

Sincerely,

James A. Jacobsen

James A. Jacobsen, Environmental Specialist IV
Wastewater and Plumbing Control Program
Division of Health Engineering
e-mail: james.jacobsen@state.me.us

/jaj

xc: Product File

Sweet Associates HYDROGEOLOGY • SITE EVALUATIONS
155 GRAY ROAD • FALMOUTH, MAINE 04105 • (207) 797-2110 • FAX (207) 878-2364
sweet@maine.rr.com

FAX COVER SHEET

TO: Jim Jacobson

COMPANY:

FAX #: 287-3165

FROM: Dick Sweet

DATE: 7/11/03

TIME:

PAGES INCLUDING COVER SHEET: 2

COMMENTS:

Sweet Associates HYDROGEOLOGY • SITE EVALUATIONS

155 GRAY ROAD • FALMOUTH, MAINE 04105 • (207) 797-2110 • FAX (207) 878-2364

DATE: July 10, 2003

TO: Jim Jacobsen

FROM: Richard A. Sweet

RE: OxyPro Mound Buster

In response to your email of July 10, 2003 regarding the OxyPro Mound Buster on slopes, I would offer the following. I had the same concern when I started designing plastic chambers on slopes with a silt or clay natural soil causing all the rows of chambers, including the fill between rows, to be mounded above the ground surface. The fill is usually a relatively high permeability sand. The same of course occurs even with a mounded bed system on a slope and entirely underlain by sand fill. In both cases the effluent wants to run downslope to the lower toe of fill. We have found the way to solve that problem is to require a fill slope of 15% or less on the downhill side of the system when on a silt or clay site. The 25% slope is too steep on those soils on sloping sites, at least in some cases. I do not recall seeing seepage problems at the lower toe of fill on the other soils when a 25% fill slope is used. This is the reason for Item 7 in my application of June 20, 2003.

The other thing that helps our new system minimize the risk is the initial loading in the upper end of the system. This relatively small pipe (4 inch) forces the water to spread across the slope better than in plastic chambers or even concrete chambers with a built in concrete pipe. In both plastic and concrete chambers, I have seen an extreme effluent buildup at the entry point into the system, usually the first chamber, and bleeding from the toe of fill nearest that chamber. We have had success solving that problem by pushing rigid 4 inch PVC pipe down the first row with perforations in the last few feet of the pipe, forcing release of the water at the end of the chamber row. The next row down we do the same thing only changing the location of the perforations and so on. This has solved that problem, at least so far. I believe that the pipe we are using on the OxyPro system will tend to spread the flow across the slope in the same way.

If you think this explanation does not suitably answer your question, please let me know. We can work other safeguards into it if you want.

Richard A. Sweet

RAS/smh

John Elias Baldacci
Governor

State of Maine
Department of Human Services
Division of Health Engineering
11 State House Station
Augusta, Maine
04333-0011

DATE 7/17/03 TIME AM/PM

TO: Dick Sweet

FROM: Jim Jacobsen

PAGES INCLUDING THIS COVER SHEET: 3

MESSAGE:

Re: Oxy Pro Mound Buster

Jacobsen, James

From: Jacobsen, James
Sent: Thursday, July 10, 2003 9:18 AM
To: 'sweet@maine.rr.com'
Subject: OxyPro Mound Buster question

Dick,

I'm drafting approval for the OxyPro Mound Buster and I have a question about serial distribution systems on slopes. Do you anticipate trench installations on slopes? If not, I can't imagine what would keep all the effluent from running down to the lowest point of a sloping "bed".

Thanks,

Jim

Sweet Associates HYDROGEOLOGY • SITE EVALUATIONS
155 GRAY ROAD • FALMOUTH, MAINE 04105 • (207) 797-2110 • FAX (207) 878-2364

June 20, 2003

James Jacobsen
Wastewater & Plumbing Control
Division of Health Engineering
State House Station 10
Augusta, ME 04333

RE: Product Approval, OxyPro Mound Buster Disposal System
Dear Mr. Jacobsen:

In response to your letter of May 21, 2003, regarding use of corrugated drain pipe in a disposal field, I am applying for approval for 4 inch perforated corrugated filter fabric wrapped drain pipe as a proprietary product in disposal field use under the following criteria:

1. This drain pipe may only be used when wastewater has been treated in an OxyPro advanced treatment unit to a maximum 30 mg/L combined BOD and TSS.

2. Drain pipe will be placed in rows with a separation of 12 inches center to center.

3. At least 6 inches of gravelly coarse sand must surround the bottom and sides of each drain pipe.

4. A 4 inch manifold must connect both ends of each perforated drain pipe when placed in a level configuration.

5. Sloped serial distribution will require a "U" bend at the end of each perforated drain pipe before water can flow to the next lowest pipe.

6. At least 8 inches of fill shall be placed over the top of each perforated drain pipe. The top 4 inches of fill shall be loam when the slope from drain pipe to drain pipe is 3% or greater.

7. Fill slope extensions shall be no steeper than 15% on Profile 1, 8, and 9 soils. All other slopes shall conform to the Maine Plumbing Code.

8. System sizing: the attached table lists profiles and sizing.

Sizing of the drain pipe was done by comparison with the Wasteflow drip system and the Eljen Indrain system. The Wasteflow drip system sizing is based on pre-treatment to less than 20 mg/L BOD and 20 mg/L TSS (data from Wasteflow is attached). The Eljen Indrain is sized based on primary clogging within the Indrain and not at the Indrain soil interface. The drain pipe sizing is based on pre-treatment to less than 30 mg/L combined BOD and TSS.

Since sizing of these systems is tied to permeability or hydraulic conductivity, a comparison was also made using expected permeabilities for each profile. Soils were matched with profiles using the list prepared by David Rocque of the Maine Soil and Water Conservation Commission. The permeability range for each soil was then taken from the *Soil Series of Maine Soil Interpretations* as shown in Column 3. The loading rate for these permeabilities was calculated using guidelines in the Wasteflow design manual. The basis for these guidelines is as follows.

As the soil approaches water saturation, the absorption rate reduces to an equilibrium at the saturated hydraulic conductivity. According to Wasteflow subsurface drip system design parameters, the wastewater application rates should be less than 10% of the saturated equilibrium. They assume a safety factor of 12 for design purposes. The calculated loading rates shown in Columns 5 and 6 show the loading rates at a safety factor of 12 in gallons per day per square foot and square feet per gallon per day for the permeabilities listed in column 3. Column 7 lists the loading rates from the Maine Plumbing Code for comparison.

The Wasteflow drip system loading rates (see attached Wasteflow table) are matched with the Maine Plumbing Code profiles by means of permeability comparison. In all cases except Profiles 8 and 9 the comparison is very conservative. The Maine Plumbing Code loading rates for these two profiles are not nearly as high as the soil permeability would suggest it should be. We can only assume that the Maine rates are based on the A and B soil horizon permeabilities instead of the C horizon permeability as listed. The Eljen Indrain loading rate columns would also suggest that is the case.

The loading rate for the drain pipe is taken from a comparison between Geoflow drip and Eljen Indrains. In no case is the loading rate more than the two established systems.

Should you have any questions or require further information, please do not hesitate to contact me.

Sincerely,

Richard A. Sweet

Enclosures

RAS/smh

Profile	Typical Soil Type	Permeability from Soil Series of ME Soil Interpretations IN/HR	FT/DAY	Calculated Loading Rate w/12 Safety Factor GAL/SQ FT	Calculated Loading Rate w/12 Safety Factor SQ FT/GPD	(No Pretreat) ME Plumbing Code Disposal Area Sizing SQ FT/GPD	Wasteflo FT/D
1	Atherton (silt loam till)	0.6 - 2.0	1.2 - 4	0.7 - 2.5	1.4 - 0.4	4.1	0.64
2	Lyman (loam to sandy loam till)	2 - 6	4 - 12	2.5 - 7.5	0.4 - 0.1	3.3	1.1
3	Becket (loam to loamy sand till)	0.6 - 2	1.2 - 4	0.7 - 2.5	1.4 - 0.4	3.3	1.1
4	Hermon (sandy loam to loamy sand till)	2 - 20	4 - 40	2.5 - 25	0.4 - 0.04	2.6	1.9
5	Madawaska (loam to loamy sand outwash)	6 - 20	12 - 40	7.5 - 25	0.1 - 0.04	2.6	1.9
6	Colton (loamy sand to sand outwash)	6 - 20	12 - 40	7.5 - 25	0.1 - 0.04	2.0	2.2
7	Elmwood (sand over clay)	2 - 6	4 - 12	2.5 - 7.5	0.4 - 0.1	3.3	0.96
8	Melrose (loam over silt loam)	<0.2	0.4	0.2	5	4.1	0.64
9	Buxton (silt loam over silty clay)	<0.2	0.4	0.2	5	5	0.64

FROM WASTEFLOW INSTALLATION MANUAL

DESIGN PARAMETERS:

1. SELECT AREA

Select the area with careful consideration of the soil, the terrain and your State and County regulations. Be sure the field is not in a flood plain or bottom of a slope where excessive water may collect after rain.

2. SOIL APPLICATION DESIGN

Note: This paragraph is extracted from Subsurface Trickle Irrigation System for On-Site Wastewater Disposal And Reuse by B. L. Carlile and A. Sanjines.

The basis of the information is from the Texas Health Department regulations. The rules in your County and State may vary.

The instantaneous water application rate of the system must not exceed the water absorption capacity of the soil. A determination of the instantaneous water absorption capacity of the soil is difficult, however, since the value varies with the water content of the soil. As the soil approaches saturation with water, the absorption rate reduces to an equilibrium rate called the "saturated hydraulic conductivity." Wastewater application rates should be less than 10 percent of this saturated equilibrium.

Even though the trickle irrigation system maximizes the soil absorption rate through the low rate of application, thus keeping the soil below saturation, there will be times when the soil is at or near saturation from rainfall events. The design must account for these periods and assume the worst case condition of soil saturation. *By designing for a safety factor of 10 or 12, based on the saturated hydraulic conductivity, the system will be under-loaded most of the time but should function without surface failure during extreme wet periods.*

Using a safety factor of 12, a suitable design criterion would be to load the system at the estimated hydraulic conductivity but apply water for only a total of 2 hours per day out of the available 24 hours. By applying wastewater for a total of 2 hour per day, particularly if applied in "pulses" or short doses several times per day near the soil surface where the soil dries the quickest, this would keep the soil absorption rate at the highest value and minimize the potential of water surfacing in poor soil conditions.

As stated previously, this design criterion will under-load the system at all times except when the soil is at or near saturation from rainfall. If designing for an efficient irrigation system, the water supply may not be sufficient to meet the demands of a lawn or landscaped area during peak water demand months. This problem can be overcome by either of two solutions: add additional fresh-water make-up to the system during the growing season to supply the needed water for plants in question; or split the system into two or more fields with necessary valves and only use one of the fields during the peak water demand months and alternate the fields during winter months or extremely wet periods, or use both fields simultaneously if the pump capacity will so allow.

Table 1 shows the recommended hydraulic loading rates for various soil conditions, using a safety factor of at least 12 with regard to the equilibrium saturated hydraulic conductivity rate of the soil. These loading rates assume a treated effluent with BOD and TSS values of less than 20 mg/l is produced in the pre-treatment system.

Updated

TABLE 1. MINIMUM SURFACE AREA GUIDELINES
TO DISPOSE OF 100 GPD OF SECONDARY TREATED EFFLUENT

Soil Class	Soil Type	Soil Absorption Rates		Design Hydraulic Loading Rate gal / sq. ft. per day	Total Area Required sq. ft./ 100 gallons per day
		Est. Soil Perc. Rate minutes/in	Hydraulic Conductivity inches/hr		
I	Coarse- sand	<5	>2	1.400	71.5
I	Fine sand	5-10	1.5-2	1.200	83.3
II	Sandy loam	10-20	1.0-1.5	1.000	100.0
II	loam	20-30	0.75-1.0	0.700	143.0
III	Clay loam	30-45	0.5-0.75	0.600	167.0
III	Silt-clay loam	45-60	0.3-0.5	0.400	250.0
IV	Clay non-swell	60-90	0.2-0.3	0.200	500.0
IV	Clay - swell	90-120	0.1-0.2	0.100	1000.0
IV	Poor clay	>120	<0.1	0.075	1334.0

Disposal field area calculation:
Total square feet area of disposal field = Design flow divided by loading rate

NOTES:

1) Problems with drip disposal fields occur when soils are misinterpreted. If in doubt, choose the more restrictive soil type from the table above.
2) "Soil type" should be based on the most restrictive layer within two feet of the bottom of the dripline. In many soils 1-ft. vertical separation from the limiting layer has proven successful, and Geoflow recommends you follow State and Local guidelines.
3) The above chart is provided as a guide only. States and Counties may have regulations that are different. Check your State guidelines and consult with your local health department.

3. DEPTH AND SPACING

WASTEFLOW systems usually have emitter lines placed on 2 foot (600 mm) centers with a 2 foot emitter spacing such that each emitter supplies a 4 sq. ft (0.36 m2) area. These lines are best placed at depths of 6-10 inches (150 - 250 mm) below the surface. This is a typical design for systems on sandy and loamy soils with a cover crop of lawn grass. Closer line and/or emitter spacing of 12 inches may be used on heavy clay soils or very coarse sands where lateral movement of water is restricted. Using closer spacing should not reduce the size of the field.

$$X\ \frac{IN}{HR} \times \frac{24\ HR}{1\ DAY} \times \frac{1\ FT}{12\ IN} = \frac{FT}{DAY}$$

$$X\ \frac{IN}{HR} \times 2 = \frac{FT}{DAY}$$

$$\frac{FT}{DAY} \times 7.481 = GAL/SQ.FT.$$

$$GAL/SQ\ FT \times 0.0833 = GAL/SQ.FT.$$ (WITH SAFETY FACTOR OF 12)

STATE OF MAINE
DEPARTMENT OF HUMAN SERVICES
DIVISION OF HEALTH ENGINEERING
11 STATE HOUSE STATION
AUGUSTA, MAINE
04333-0011

JOHN ELIAS BALDACCI
GOVERNOR

May 21, 2003

Sweet Associates
Attn.: Richard Sweet, SE
155 Gray Road
Falmouth, ME 04105

Re: Proposed Experimental System, North Yarmouth

Dear Mr. Sweet:

Thank you for your letter of May 15, 2003 regarding your proposal for an experimental system on your property in North Yarmouth.

It is my understanding that the proposed system would consist of an OxyPro 1000 advanced treatment unit followed by a proprietary disposal area. The disposal area would consist of 16 twenty-foot long, four inch diameter plastic drainage pipes wrapped in non-woven filter fabric, with solid pipe manifolds. These would be placed in a 15 foot by 20 foot long, eight inch thick layer of clean sand (no sieve specifications provided). The disposal area would be sized upon application of Darcy's Law (hydraulic transmissivity) rather than prescriptive design flow.

The Subsurface Wastewater Disposal Rules define an experimental system as: "(a)ny subsurface waste water disposal system, including components thereof, designed upon unproven concepts; processes otherwise untried in Maine; or field applications of processes developed under controlled research conditions." Your proposal does not appear to meet any of these criteria, in that there does not appear to be any unproven concept, untried process, or field test of laboratory development involved. In fact, your proposal seems to be a variation on existing fabric covered tube products, rather than a bona fide experimental system; the performance of the Oxy Pro is established; and there is precedent for sizing systems on hydraulic factors.

If you wish, you can revise the proposal for product approval (I regret we can not issue a single installation product approval, as you seem to propose). I've included a product registration form. In addition to information on the form, it would be useful if you would elaborate on how you propose to apply Darcy's Law to installations, that is, how would Darcy's coefficient of permeability (*k* factor) be determined for specific sites? Calculations, specifications, and supporting data would be highly useful. Also, do you propose a specific texture to the sand fill?

If you have any questions please feel free to contact me at (207) 287-5695.

Sincerely,

James A. Jacobsen

James A. Jacobsen, Environmental Specialist IV
Wastewater and Plumbing Control Program
Division of Health Engineering
e-mail: james.jacobsen@maine.gov

/jaj
Enc: HHE-221
xc: Product File

Sweet Associates HYDROGEOLOGY • SITE EVALUATIONS
155 GRAY ROAD • FALMOUTH, MAINE 04105 • (207) 797-2110 • FAX (207) 878-2364

May 15, 2003

MAY 19 2003

Jim Jacobsen
Wastewater & Plumbing Control
Division of Health Engineering
State House Station 10
Augusta, ME 04333

RE: Experimental System, Richard A. Sweet, North Yarmouth

Dear Jim:

Attached are two HHE-200 designs for a system at Lot 5, Carriage Hill Road, North Yarmouth. The lot is in my wife's name and we will be building our own 4-bedroom house on the lot. We would like approval for an experimental system on the lot.

The lot is underlain by gravelly sand glacial outwash soils with no water table within 4 feet of the surface (5B). A design for a backup system of 20 plastic chambers is attached. The proposed experimental design uses a standard 1000 gallon septic tank attached to an OxyPro 1000 pre-treatment tank. The OxyPro drains to an experimental disposal field.

The disposal field consists of 4 inch diameter perforated flexible drain pipe covered with geotextile (land drain with fabric). The pipe is placed 12 inches apart center to center. The ends of each pipe connect by means of a land drain internal pipe coupling to a rigid 4 inch diameter PVC pipe with 14 PVC tees and two 90 degree PVC elbows at each end. The pipe internal volume is 209 gallons.

The disposal field size is based on and equivalent to sizing for an Eljen In-drain system. Darcy's equation for groundwater flow on these soils for a 15' by 20' area shows a potential flow of 1,122 gallons per day assuming a hydraulic conductivity of 50 feet per day. Since the water entering the disposal field has been pre-treated, biomat buildup should be essentially non-existent allowing Darcy's equation results to be used.

While the pipe proposed for this system is not unique, I am unaware that it has ever been used in Maine for disposal system use, thus it seems appropriate to designate this use experimental. I am

not proposing this as anything more than a one-time permit, however, if it works as I think it will I may ask for additional experimental approvals.

I am proposing to sample the monitoring well and monitoring port (see HHE-200) quarterly for nitrate-nitrogen.

Please call if you have any questions.

Sincerely,

Richard A. Sweet

Enclosures

RAS/smh

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Department of Human Services
Division of Health Engineering, 10 SHS
(207) 287-5672 Fax: (207) 287-3165

PROPERTY LOCATION

City, Town, or Plantation	NORTH YARMOUTH
Street or Road	CARRIAGE HILL ROAD
Subdivision, Lot #	LOT # 5

>> CAUTION: PERMIT REQUIRED - ATTACH IN SPACE BELOW <<

The Subsurface Wastewater Disposal System *shall not* be installed until a Permit is attached HERE by the Local Plumbing Inspector. The Permit shall authorize the owner or installer to install the disposal system in accordance with this application and the Maine Subsurface Wastewater Disposal Rules.

OWNER/APPLICANT INFORMATION

Name (last, first, MI): SWEET, NINA — ☒ Owner ☐ Applicant

Mailing Address of Owner/Applicant	P.O. BOX 85 CUMBERLAND, ME. 04021
Daytime Tel. #	797-2110

Municipal Tax Map # _____ Lot # _____

OWNER OR APPLICANT STATEMENT
I state and acknowledge that the information submitted is correct to the best of my knowledge and understand that any falsification is reason for the Department and/or Local Plumbing Inspector to deny a Permit.

_____ Signature of Owner or Applicant _____ Date

CAUTION: INSPECTION REQUIRED
I have inspected the installation authorized above and found it to be in compliance with the Subsurface Wastewater Disposal Rules Application. _____ (1st) date approved

_____ Local Plumbing Inspector Signature _____ (2nd) date approved

PERMIT INFORMATION

TYPE OF APPLICATION
- ☐ 1. First Time System
- ☐ 2. Replacement System
  - Type replaced: _____
  - Year installed: _____
- ☐ 3. Expanded System
  - ☐ a. Minor Expansion
  - ☐ b. Major Expansion
- ☒ 4. Experimental System
- ☐ 5. Seasonal Conversion

THIS APPLICATION REQUIRES
- ☒ 1. No Rule Variance
- ☐ 2. First Time System Variance
  - ☐ a. Local Plumbing Inspector Approval
  - ☐ b. State & Local Plumbing Inspector Approval
- ☐ 3. Replacement System Variance
  - ☐ a. Local Plumbing Inspector Approval
  - ☐ b. State & Local Plumbing Inspector Approval
- ☐ 4. Minimum Lot Size Variance
- ☐ 5. Seasonal Conversion Permit

DISPOSAL SYSTEM COMPONENTS
- ☒ 1. Complete Non-engineered System
- ☐ 2. Primitive System (graywater & alt. toilet)
- ☐ 3. Alternative Toilet, specify: _____
- ☐ 4. Non-engineered Treatment Tank (only)
- ☐ 5. Holding Tank, _____ gallons
- ☐ 6. Non-engineered Disposal Field (only)
- ☐ 7. Separated Laundry System
- ☐ 8. Complete Engineered System (2000 gpd or more)
- ☐ 9. Engineered Treatment Tank (only)
- ☐ 10. Engineered Disposal Field (only)
- ☒ 11. Pre-treatment, specify: OXYPRO
- ☐ 12. Miscellaneous Components

SIZE OF PROPERTY
9.58 ☐ SQ. FT. ☒ ACRES

SHORELAND ZONING
☐ Yes ☒ No

DISPOSAL SYSTEM TO SERVE
- ☒ 1. Single Family Dwelling Unit, No. of Bedrooms: 4
- ☐ 2. Multiple Family Dwelling, No. of Units: _____
- ☐ 3. Other: _____ (specify)

Current Use ☐ Seasonal ☐ Year Round ☐ Undeveloped

TYPE OF WATER SUPPLY
TO BE DRILLED
☐ 1. Drilled Well ☐ 2. Dug Well ☐ 3. Private
☐ 4. Public ☐ 5. Other

DESIGN DETAILS (SYSTEM LAYOUT SHOWN ON PAGE 3)

TREATMENT TANK
- ☒ 1. Concrete
  - ☒ a. Regular
  - ☐ b. Low Profile
- ☐ 2. Plastic
- ☐ 3. Other: _____

CAPACITY: 1000 GAL.

DISPOSAL FIELD TYPE & SIZE
- ☐ 1. Stone Bed ☐ 2. Stone Trench
- ☐ 3. Proprietary Device
  - ☐ a. cluster array ☐ c. Linear
  - ☐ b. regular load ☐ d. H-20 load
- ☒ 4. Other: 320' DRAIN PIPE

SIZE: _____ ☐ sq. ft. ☐ lin. ft.

GARBAGE DISPOSAL UNIT
☐ 1. No ☒ 2. Yes ☐ 3. Maybe
If Yes or Maybe, specify one below:
- ☐ a. multi-compartment tank
- ☐ b. ___ tanks in series
- ☐ c. increase in tank capacity
- ☒ d. Filter on Tank Outlet

DESIGN FLOW
369 gallons per day
BASED ON:
- ☒ 1. Table 501.1 (dwelling unit(s))
- ☐ 2. Table 501.2 (other facilities)

SHOW CALCULATIONS --- for other facilites ---

SOIL DATA & DESIGN CLASS
PROFILE CONDITION DESIGN
5 / B / 1
at Observation Hole # 1
Depth — "
of Most Limiting Soil Factor

DISPOSAL FIELD SIZING
- ☐ 1. Small---2.0 sq. ft. / gpd
- ☒ 2. Medium---2.6 sq. ft. / gpd
- ☐ 3. Medium---Large 3.3 sq. f.t / gpd
- ☐ 4. Large---4.1 sq. ft. / gpd
- ☐ 5. Extra Large---5.0 sq. ft. / gpd

EFFLUENT/EJECTOR PUMP
- ☒ 1. Not Required
- ☐ 2. May Be Required
- ☐ 3. Required

Specify only for engineered systems:
DOSE: _____ gallons

☐ 3. Section 503.0 (meter readings)
ATTACH WATER METER DATA

SITE EVALUATOR STATEMENT

I certify that on 5-10-03 (date) I completed a site evaluation on this property and state that the data reported are accurate and that the proposed system is in compliance with the State of Maine Subsurface Wastewater Disposal Rules (10-144A CMR 241).

Richard A. Sweet — Site Evaluator Signature
034 — SE #
5-15-03 — Date

RICHARD A. SWEET — Site Evaluator Name Printed
797-2110 — Telephone Number
SWEET@MAINE.RR.COM — E-mail Address

Note: Changes to or deviations from the design should be confirmed with the Site Evaluator.

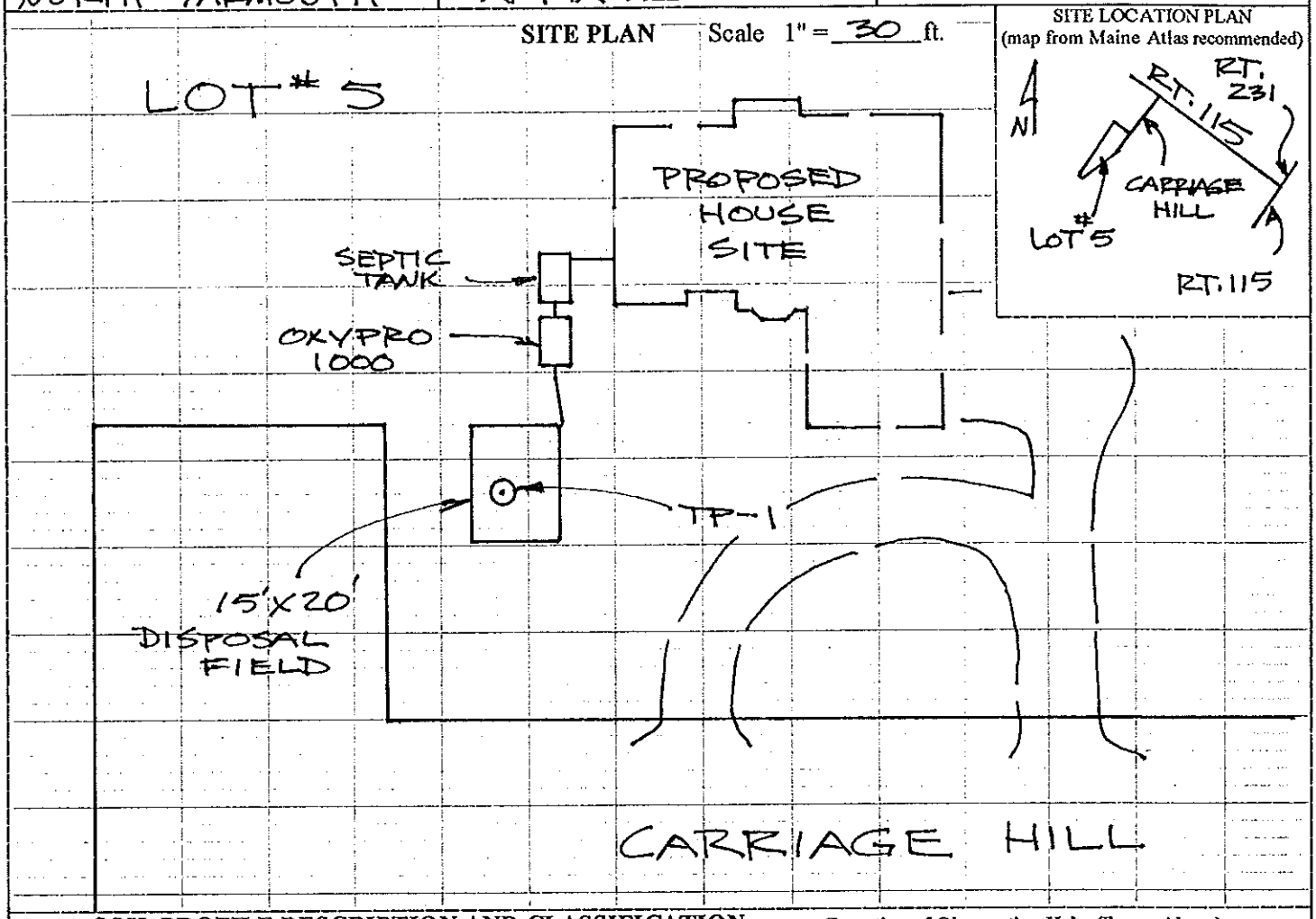
SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Department of Human Services
Division of Health Engineering, Station 10
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation	Street, Road, Subdivision	Owner or Applicant Name
NORTH YARMOUTH	CARRIAGE HILL	SWEET

SITE PLAN

Scale 1" = 30 ft.



SITE LOCATION PLAN
(map from Maine Atlas recommended)

SOIL PROFILE DESCRIPTION AND CLASSIFICATION

(Location of Observation Holes Shown Above)

Observation Hole # TP-1 ☐ Test Pit ☐ Boring

" Depth of organic horizon above mineral soil

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6	SANDY LOAM		DK. BROWN	
6–12				
12–18				
18–24	GRAVELLY COARSE SAND	LOOSE	LT. BROWN	
24–30				
30–36				
36–42				
42–48				

Soil Profile	Classificatioin Condition	Slope Percent	Limiting Factor Depth	
5	B	0-3	—	☐ Groundwater ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Observation Hole # _____ ☐ Test Pit ☐ Boring

" Depth of organic horizon above mineral soil

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6				
6–12				
12–18				
18–24				
24–30				
30–36				
36–42				
42–48				

Soil Profile	Classificatioin Condition	Slope Percent	Limiting Factor Depth	
				☐ Groundwater ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Richard Hunt — Site Evaluator Signature

034 — SE #

5-15-03 — Date

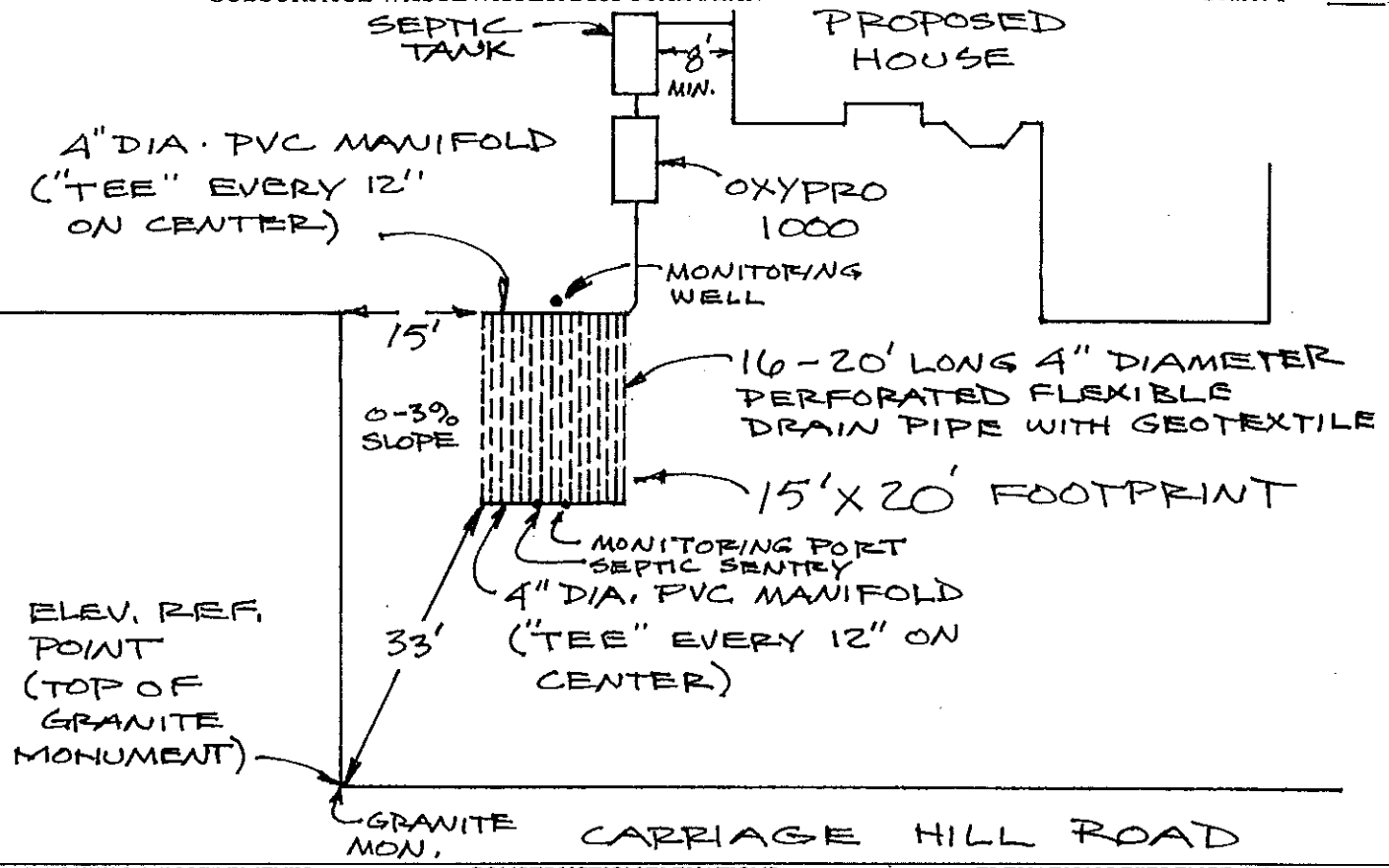
SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Department of Human Services
Division of Health Engineering, Station 10
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation	Street, Road, Subdivision	Owner or Applicant Name
NORTH YARMOUTH	CARRIAGE HILL	SWEET

SUBSURFACE WASTEWATER DISPOSAL PLAN

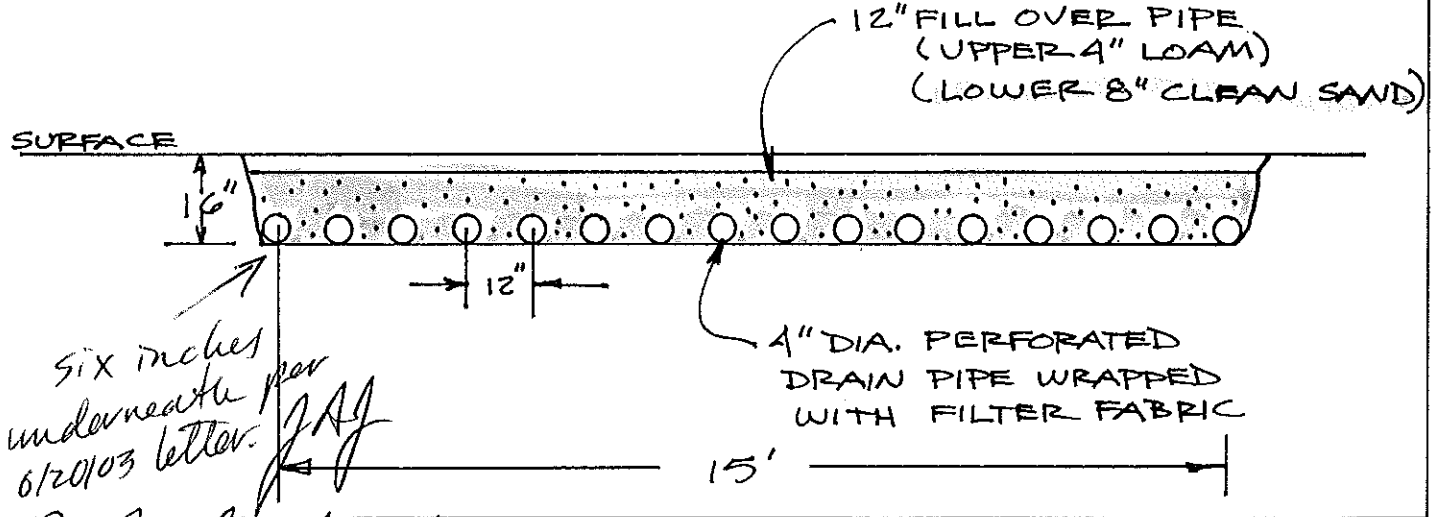
Scale: 1" = 20 ft.



BACKFILL REQUIREMENTS		CONSTRUCTION ELEVATIONS		ELEVATION REFERENCE POINT
Depth of Backfill (upslope)	0 "	Finished Grade Elevation (at Row 1)	0 "	Location & Description: TOP OF GRANITE MONUMENT
Depth of Backfill (downslope)	0 "	Top of Proprietary Device (at Row 1)	-12 "	
DEPTHS AT CROSS-SECTION (shown below)		Bottom of Disposal Field (at Row 1)	-16 "	Reference Elevation is: 0.0" or:

DISPOSAL FIELD CROSS SECTION

Scales:
Vertical: 1" = 3 ft.
Horizontal: 1" = 3 ft.



six inches underneath per 6/20/03 letter. JAJ

Richard Sweet — 034 — 5-15-03

Site Evaluator Signature | SE # | Date

BACKUP SYSTEM

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Department of Human Services
Division of Health Engineering, 10 SHS
(207) 287-5672 Fax: (207) 287-3165

PROPERTY LOCATION

City, Town, or Plantation	NORTH YARMOUTH
Street or Road	CARRIAGE HILL ROAD
Subdivision, Lot #	LOT # 5

>> CAUTION: PERMIT REQUIRED - ATTACH IN SPACE BELOW <<

The Subsurface Wastewater Disposal System ***shall not*** be installed until a Permit is attached HERE by the Local Plumbing Inspector. The Permit shall authorize the owner or installer to install the disposal system in accordance with this application and the Maine Subsurface Wastewater Disposal Rules.

OWNER/APPLICANT INFORMATION

Name (last, first, MI): SWEET, NINA — ☒ Owner ☐ Applicant

Mailing Address of Owner/Applicant	
Daytime Tel. #	

Municipal Tax Map # _____ Lot # _____

OWNER OR APPLICANT STATEMENT
I state and acknowledge that the information submitted is correct to the best of my knowledge and understand that any falsification is reason for the Department and/or Local Plumbing Inspector to deny a Permit.

_____ Signature of Owner or Applicant _____ Date

CAUTION: INSPECTION REQUIRED
I have inspected the installation authorized above and found it to be in compliance with the Subsurface Wastewater Disposal Rules Application. _____ (1st) date approved

_____ Local Plumbing Inspector Signature _____ (2nd) date approved

PERMIT INFORMATION

TYPE OF APPLICATION
- ☒ 1. First Time System
- ☐ 2. Replacement System
  - Type replaced: _____
  - Year installed: _____
- ☐ 3. Expanded System
  - ☐ a. Minor Expansion
  - ☐ b. Major Expansion
- ☐ 4. Experimental System
- ☐ 5. Seasonal Conversion

THIS APPLICATION REQUIRES
- ☒ 1. No Rule Variance
- ☐ 2. First Time System Variance
  - ☐ a. Local Plumbing Inspector Approval
  - ☐ b. State & Local Plumbing Inspector Approval
- ☐ 3. Replacement System Variance
  - ☐ a. Local Plumbing Inspector Approval
  - ☐ b. State & Local Plumbing Inspector Approval
- ☐ 4. Minimum Lot Size Variance
- ☐ 5. Seasonal Conversion Permit

DISPOSAL SYSTEM COMPONENTS
- ☒ 1. Complete Non-engineered System
- ☐ 2. Primitive System (graywater & alt. toilet)
- ☐ 3. Alternative Toilet, specify: _____
- ☐ 4. Non-engineered Treatment Tank (only)
- ☐ 5. Holding Tank, _____ gallons
- ☐ 6. Non-engineered Disposal Field (only)
- ☐ 7. Separated Laundry System
- ☐ 8. Complete Engineered System (2000 gpd or more)
- ☐ 9. Engineered Treatment Tank (only)
- ☐ 10. Engineered Disposal Field (only)
- ☐ 11. Pre-treatment, specify: _____
- ☐ 12. Miscellaneous Components

SIZE OF PROPERTY
9.58 ☐ SQ. FT. ☒ ACRES

SHORELAND ZONING
☐ Yes ☒ No

DISPOSAL SYSTEM TO SERVE
- ☒ 1. Single Family Dwelling Unit, No. of Bedrooms: 4
- ☐ 2. Multiple Family Dwelling, No. of Units: _____
- ☐ 3. Other: _____ (specify)

Current Use ☐ Seasonal ☐ Year Round ☐ Undeveloped

TYPE OF WATER SUPPLY
TO BE
- ☐ 1. Drilled Well ☐ 2. Dug Well ☐ 3. Private
- ☐ 4. Public ☐ 5. Other

DESIGN DETAILS (SYSTEM LAYOUT SHOWN ON PAGE 3)

TREATMENT TANK
- ☒ 1. Concrete
  - ☒ a. Regular
  - ☐ b. Low Profile
- ☐ 2. Plastic
- ☐ 3. Other: _____

CAPACITY: 1000 GAL.

DISPOSAL FIELD TYPE & SIZE
- ☐ 1. Stone Bed ☐ 2. Stone Trench
- ☒ 3. Proprietary Device
  - ☐ a. cluster array ☐ c. Linear
  - ☒ b. regular load ☐ d. H-20 load
- ☐ 4. Other: _____

SIZE: 1000 ☒ sq. ft. ☐ lin. ft.

GARBAGE DISPOSAL UNIT
☐ 1. No ☒ 2. Yes ☐ 3. Maybe

If Yes or Maybe, specify one below:
- ☐ a. multi-compartment tank
- ☐ b. ___ tanks in series
- ☐ c. increase in tank capacity
- ☒ d. Filter on Tank Outlet

DESIGN FLOW
385 gallons per day

BASED ON:
- ☒ 1. Table 501.1 (dwelling unit(s))
- ☐ 2. Table 501.2 (other facilities)

SHOW CALCULATIONS --- for other facilites ---

SOIL DATA & DESIGN CLASS

PROFILE	CONDITION	DESIGN
5	B	1

at Observation Hole # 1
Depth — "
of Most Limiting Soil Factor

DISPOSAL FIELD SIZING
- ☐ 1. Small---2.0 sq. ft. / gpd
- ☒ 2. Medium---2.6 sq. ft. / gpd
- ☐ 3. Medium---Large 3.3 sq. f.t / gpd
- ☐ 4. Large---4.1 sq. ft. / gpd
- ☐ 5. Extra Large---5.0 sq. ft. / gpd

EFFLUENT/EJECTOR PUMP
- ☒ 1. Not Required
- ☐ 2. May Be Required
- ☐ 3. Required

Specify only for engineered systems:
DOSE: _____ gallons

☐ 3. Section 503.0 (meter readings)
ATTACH WATER METER DATA

SITE EVALUATOR STATEMENT

I certify that on 5-10-03 (date) I completed a site evaluation on this property and state that the data reported are accurate and that the proposed system is in compliance with the State of Maine Subsurface Wastewater Disposal Rules (10-144A CMR 241).

Richard A. Sweet — Site Evaluator Signature
034 — SE #
5-15-03 — Date

RICHARD A. SWEET — Site Evaluator Name Printed
797-2110 — Telephone Number
SWEET@MAINE.RR.COM — E-mail Address

Note: Changes to or deviations from the design should be confirmed with the Site Evaluator.

(BACKUP SYSTEM)

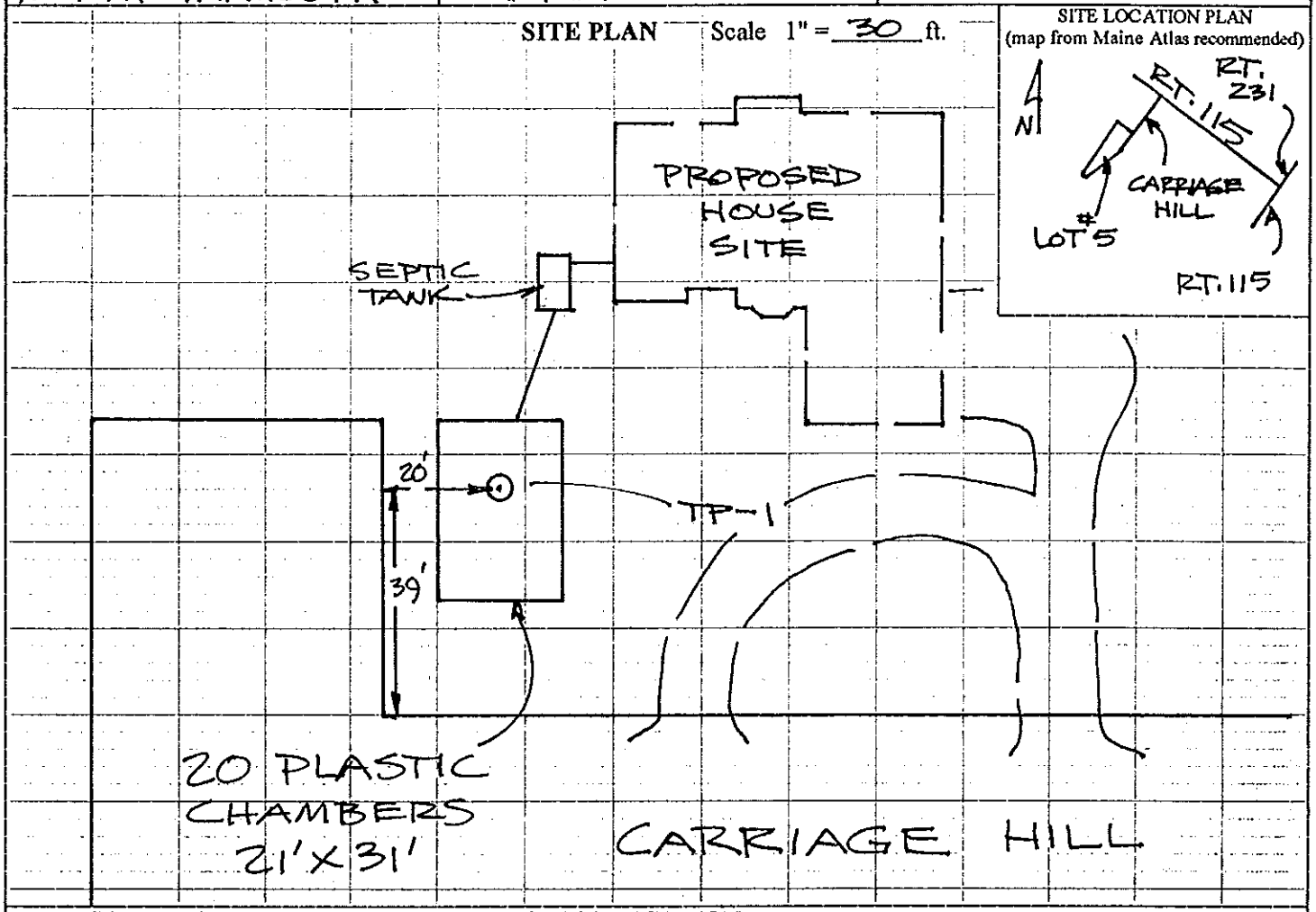
SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Department of Human Services
Division of Health Engineering, Station 10
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation	Street, Road, Subdivision	Owner or Applicant Name
NORTH YARMOUTH	CARRIAGE HILL	SWEET

SITE PLAN

Scale 1" = 30 ft.



SITE LOCATION PLAN
(map from Maine Atlas recommended)

SOIL PROFILE DESCRIPTION AND CLASSIFICATION

(Location of Observation Holes Shown Above)

Observation Hole # TP-1 ☐ Test Pit ☐ Boring

" Depth of organic horizon above mineral soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0				
6	SANDY LOAM		DK. BROWN	
12				
18	GRAVELLY COARSE SAND	LOOSE	LT. BROWN	
24				
30				
36				
42				
48				

Soil Classification		Slope	Limiting Factor	
5	B	0-3	—	☐ Groundwater
Profile	Condition	Percent	Depth	☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Observation Hole # _____ ☐ Test Pit ☐ Boring

" Depth of organic horizon above mineral soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0				
6				
12				
18				
24				
30				
36				
42				
48				

Soil Classification		Slope	Limiting Factor	
Profile	Condition	Percent	Depth	☐ Groundwater ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Richard Hunt — Site Evaluator Signature

034 — SE #

5-15-03 — Date

(BACKUP SYSTEM)

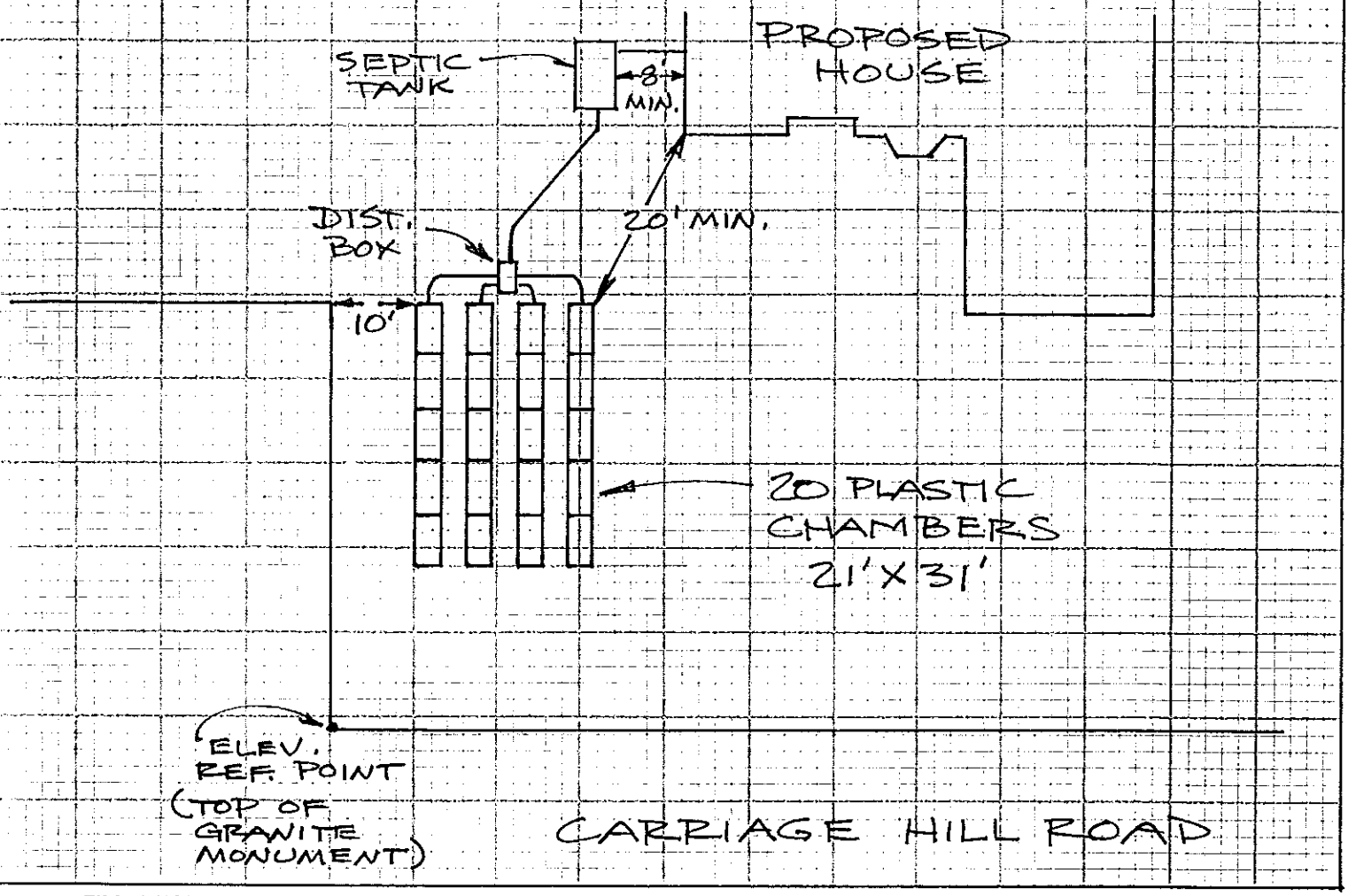
SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Department of Human Services
Division of Health Engineering

Town, City, Plantation	Street, Road, Subdivision	Owners Name
NORTH YARMOUTH	CARRIAGE HILL	SWEET

SUBSURFACE WASTEWATER DISPOSAL PLAN

Scale 1" = 20 Ft.



FILL REQUIREMENTS

Depth of Fill (Upslope): 0"
Depth of Fill (Downslope): 0"

CONSTRUCTION ELEVATIONS

Reference Elevation Is: 0
Bottom of Disposal Area: -24"
Top of Distribution Lines or Chambers: -8"

ELEVATION REFERENCE POINT LOCATION & DESCRIPTION

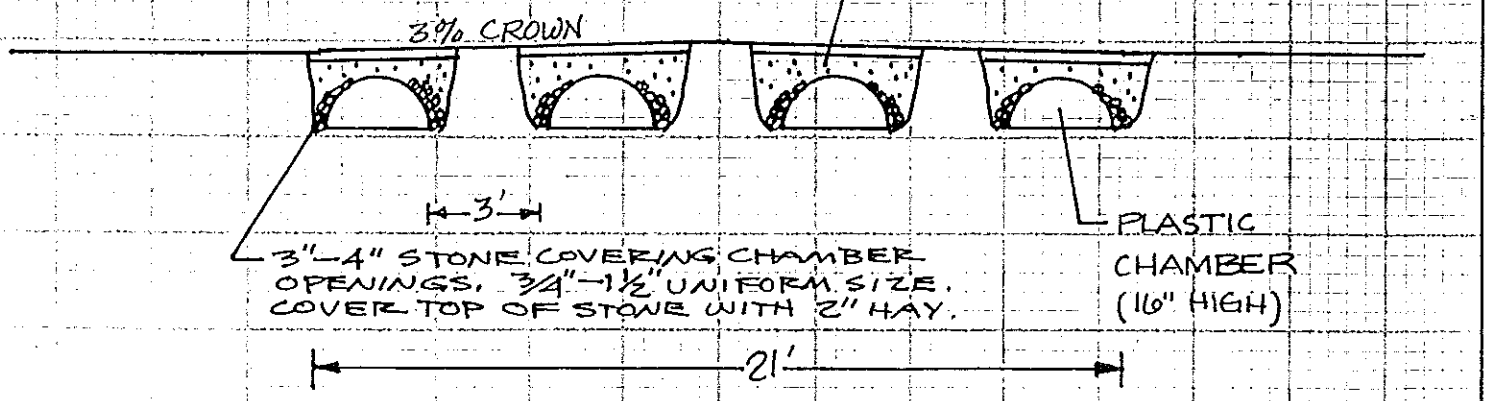
TOP OF GRANITE MONUMENT

DISPOSAL AREA CROSS SECTION

NOTE: SCARIFY GROUND SURFACE BELOW ALL FILL.

Scale:
Vertical: 1 inch = 5 Ft.
Horizontal: 1 inch = 5 Ft.

GRAVELLY COARSE SAND FILL WITHIN 3' OF CHAMBERS. REMAINING FILL LOAMY SAND - NO CLAY.



Richard Lunt
Site Evaluator Signature

034
SE#

5-15-03
Date

HHE-200 Rev. 1/84

MOUNDBUSTER

MoundBuster is an innovative wastewater disposal field uniquely designed to lower the mounding profile and footprint of conventional disposal field systems. The MoundBuster System has the smallest footprint in standard configuration of any system approved in Maine. MoundBuster is provisionally approved for use in the State of Maine and it is approved to be used only with the OxyPro advanced treatment unit (ATU).

The MoundBuster size is minimized because the OxyPro ATU provides a high degree of wastewater treatment. Conventional systems send organic-rich, oxygen-poor water to the disposal field. Anaerobic bacteria consume the organic material and cause clogging in the disposal field. Since conventional disposal field sizing is based to a great extent on that clogging, disposal fields need to be large to take into account the slow permeability of the clogging zone surrounding the disposal field. The OxyPro ATU produces effluent with very little organic material and a high oxygen content. This helps to prevent anaerobic bacteria from becoming a problem in the disposal field. Since the MoundBuster receives relatively clean wastewater from the OxyPro ATU unit, the MoundBuster disposal field can be sized based primarily on the permeability of the natural soil.

The elevation or above-ground profile of the MoundBuster system is smaller than conventional disposal fields partly due to the thickness of the MoundBuster system and partly due to the reduced separation requirements from the limiting factors of seasonal high water table, hardpan, or bedrock as a result of the OxyPro treatment unit. The thickness of the MoundBuster system is only 12-inches as measured from the bottom of the 4-inch diameter pipe to the finished grade. Most conventional disposal fields have a thickness of 20- to 25-inches. In addition, conventional disposal fields are required to be 24-inches above bedrock and the limiting factor of some soils. The separation requirement for the MoundBuster above the limiting factor is 12-inches for all soil conditions and bedrock. The end result is a disposal field that has as much as a 25-inch lower profile than a conventional system.

An additional feature of the MoundBuster disposal field that is different than most conventional systems is its flexibility on difficult sites in areas where the disposal field needs to curve around shallow bedrock or water table features requiring non-rectangular shapes. Since the MoundBuster pipe is flexible, many disposal field shapes are possible. Another feature of flexibility for the MoundBuster system is the ability to design the system around small areas of non-permitted soils or shallow bedrock by substituting non-perforated pipe where a non-permitted feature underlies a portion of the system.

SYSTEM COMPONENTS

MoundBuster Pipe - The MoundBuster pipe is a 4-inch diameter corrugated land drain wrapped with geotextile. This can be single- or double-walled, although the single-walled pipe is easier to install on uneven slopes.

Manifold Pipe - The manifold is a 4-inch diameter non-perforated rigid PVC pipe with a tee connection every 1 foot. The manifold pipe can be installed in short sections for sloping sites as shown in the attached diagrams. The effluent inlet point on the manifold pipe can be at either end of the pipe or anywhere along the pipe as long as a manifold outlet tee is not positioned directly opposite the inlet point.

Backfill - The fill surrounding the system should meet the Maine Plumbing Code definition of backfill. The backfill within 3 feet of the MoundBuster pipe should be at the coarse end of the definition and screen as follows:

Less than 80% passing the #10 sieve

Less than 30% passing the #40 sieve

Less than 4% passing the #200 sieve.

The remaining fill should conform to the general definition of backfill.

The extension of backfill away from the MoundBuster pipe can follow the Plumbing Code for slope of the backfill, however, as for all disposal field types on soils that are primarily silty, i.e. Profiles 8 and 9, the fill on the downslope side of the system should receive increased extension as appropriate.

LINEAR FEET OF MOUNDBUSTER PIPE REQUIRED

Calculate the number of square feet required for the base area of a stone bed and divide by 3.5 for the number of linear feet of MoundBuster pipe required. Or use Table A below.

TABLE A: Linear Footage

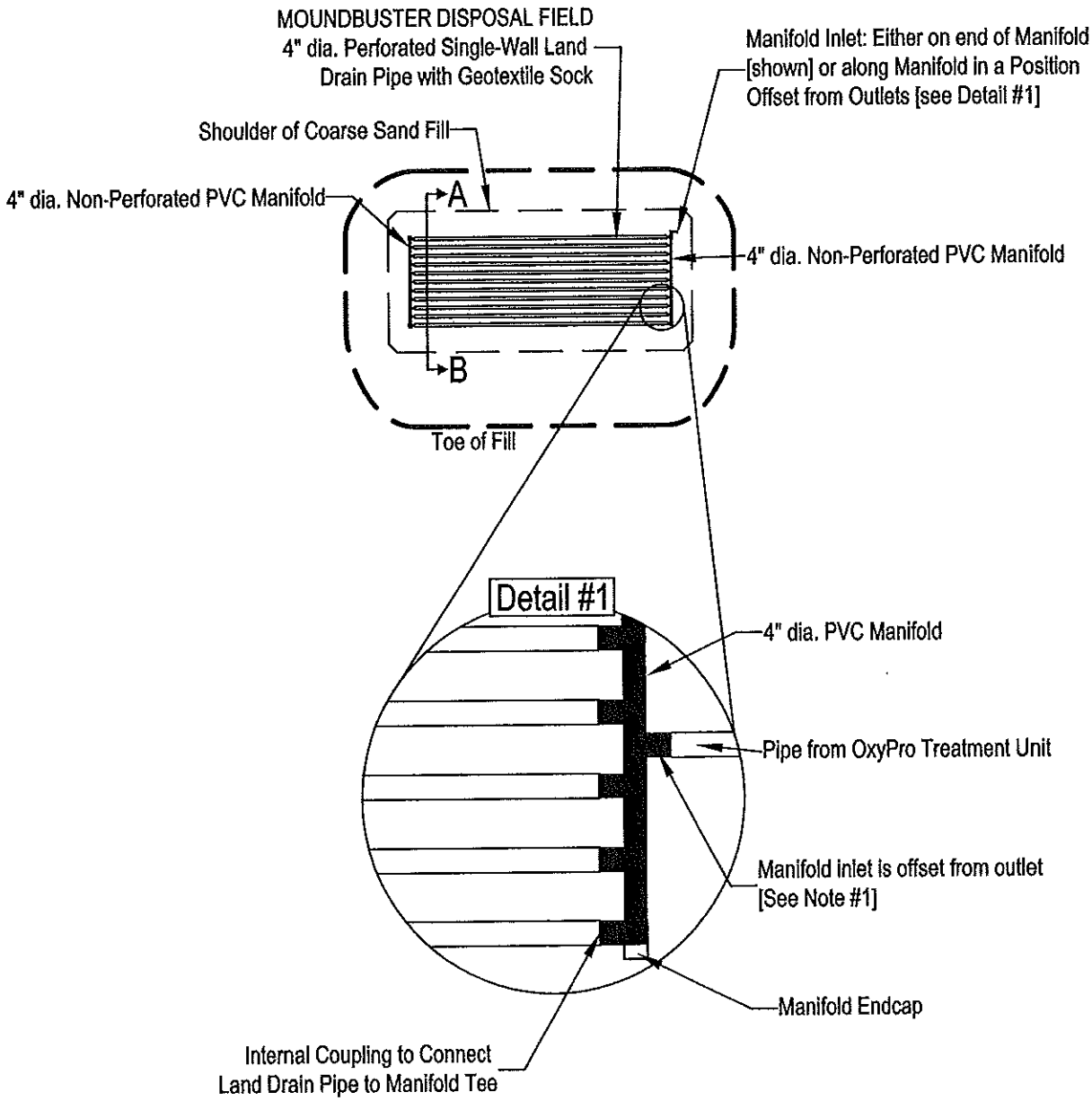
Soil Profile	Number of Bedrooms					Add'l Bedroom	Commercial Per 1 GPD
	2	3	4	5	6		
1	211	317	422	528	633	106	1.2
2	170	255	340	425	510	85	1.0
3	170	255	340	425	510	85	1.0
4	134	201	268	335	402	67	0.8
5	134	201	268	335	402	67	0.8
6	103	155	206	258	309	52	0.6
7	170	255	340	425	510	85	1.0
8	211	317	422	528	633	106	1.2
9	258	386	515	643	772	129	1.5

SITE PREPARATION

Site preparation should follow requirements of the Maine Plumbing Code. Emphasis should be placed on removing the top organic horizon for the entire MoundBuster pipe and associated fill area. Added fill should be blended into the natural soil with a backhoe bucket or cutting furrows with a slanted dozer blade to provide a gradual transition between the fill and natural soil.

MOUNDBUSTER DESIGN

The following site plans show the variety of layouts available for the MoundBuster system. As with all systems, the preferable MoundBuster plan view should be long and narrow.

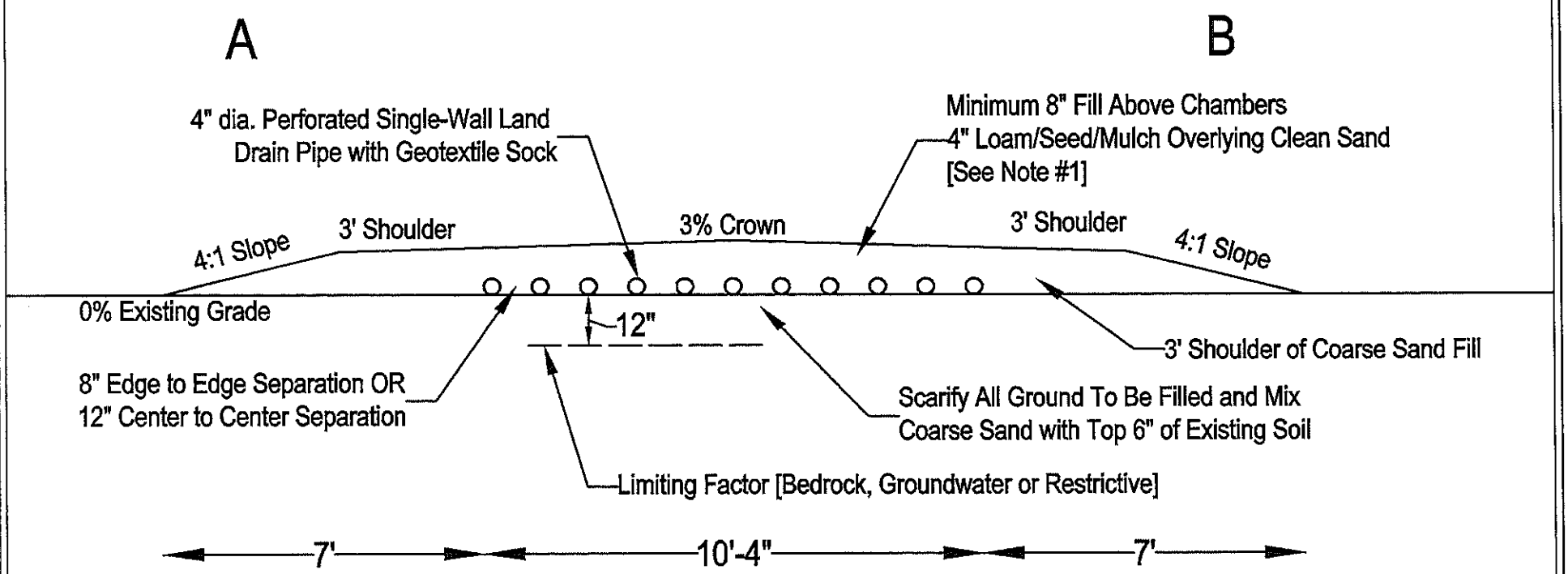


NOT TO SCALE

NOTES:
1. Pumped systems require a reducing tee on the manifold inlet.

MoundBuster | Level System Plan w/ Manifold Detail

AERATION SYSTEMS
Wastewater Technology



NOTES:

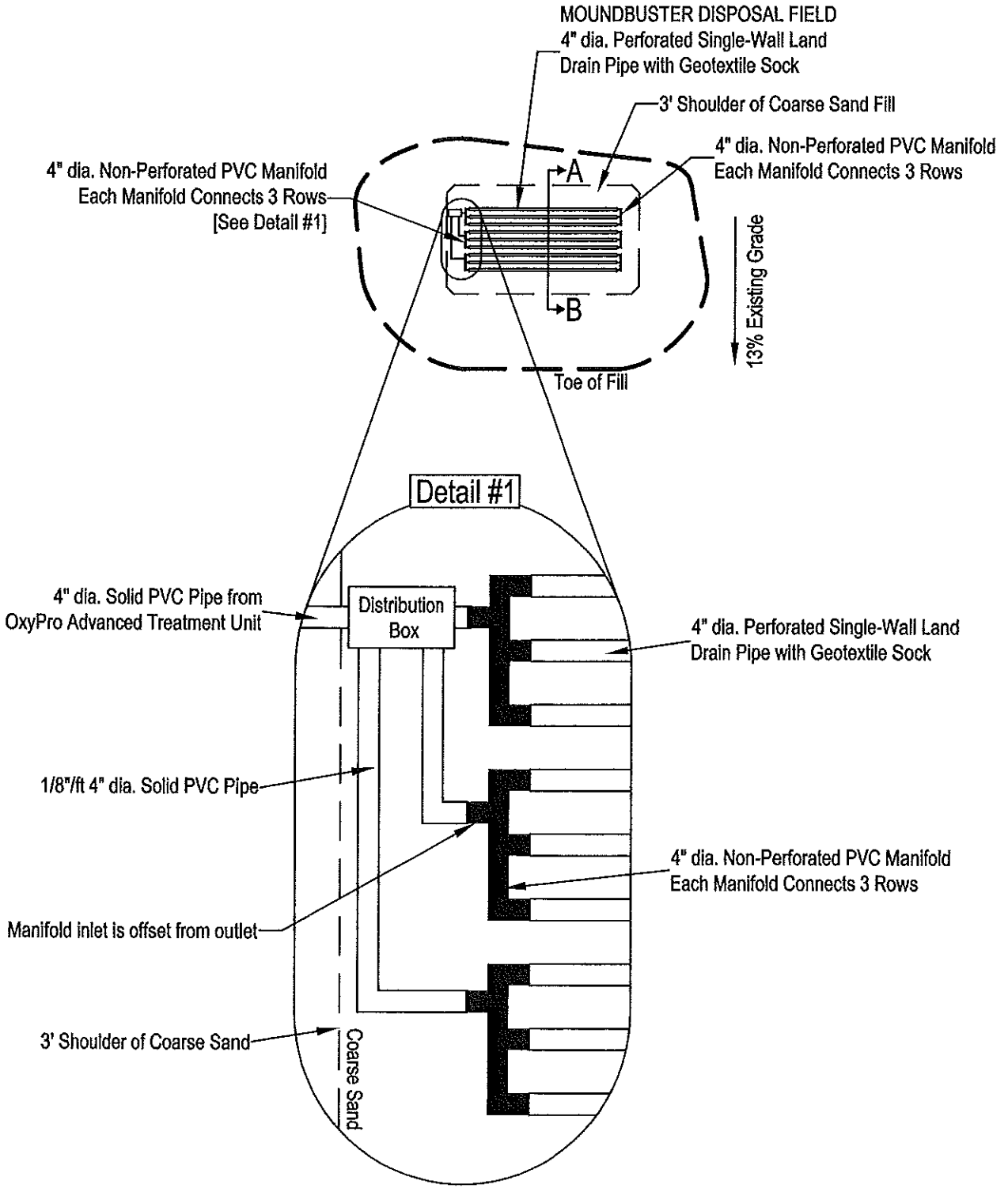
1. In difficult to access sites, designers can specify minimum 8" of packed organic debris [wood chips, leaves, etc.] above the system sand.

NOT TO SCALE

MoundBuster™

Level System Cross-Section

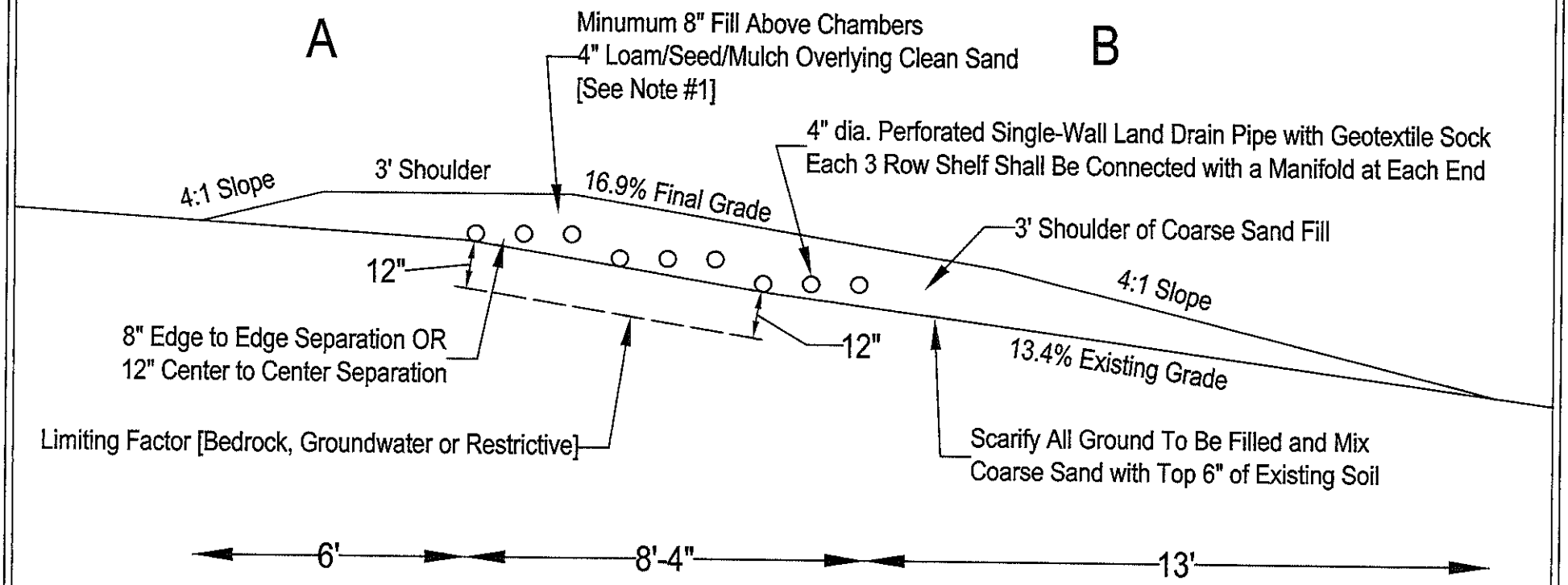
AERATION SYSTEMS
Wastewater Technology



NOT TO SCALE

MoundBuster | Sloping System Plan w/ Manifold Detail

AERATION SYSTEMS
Wastewater Technology



NOTES:

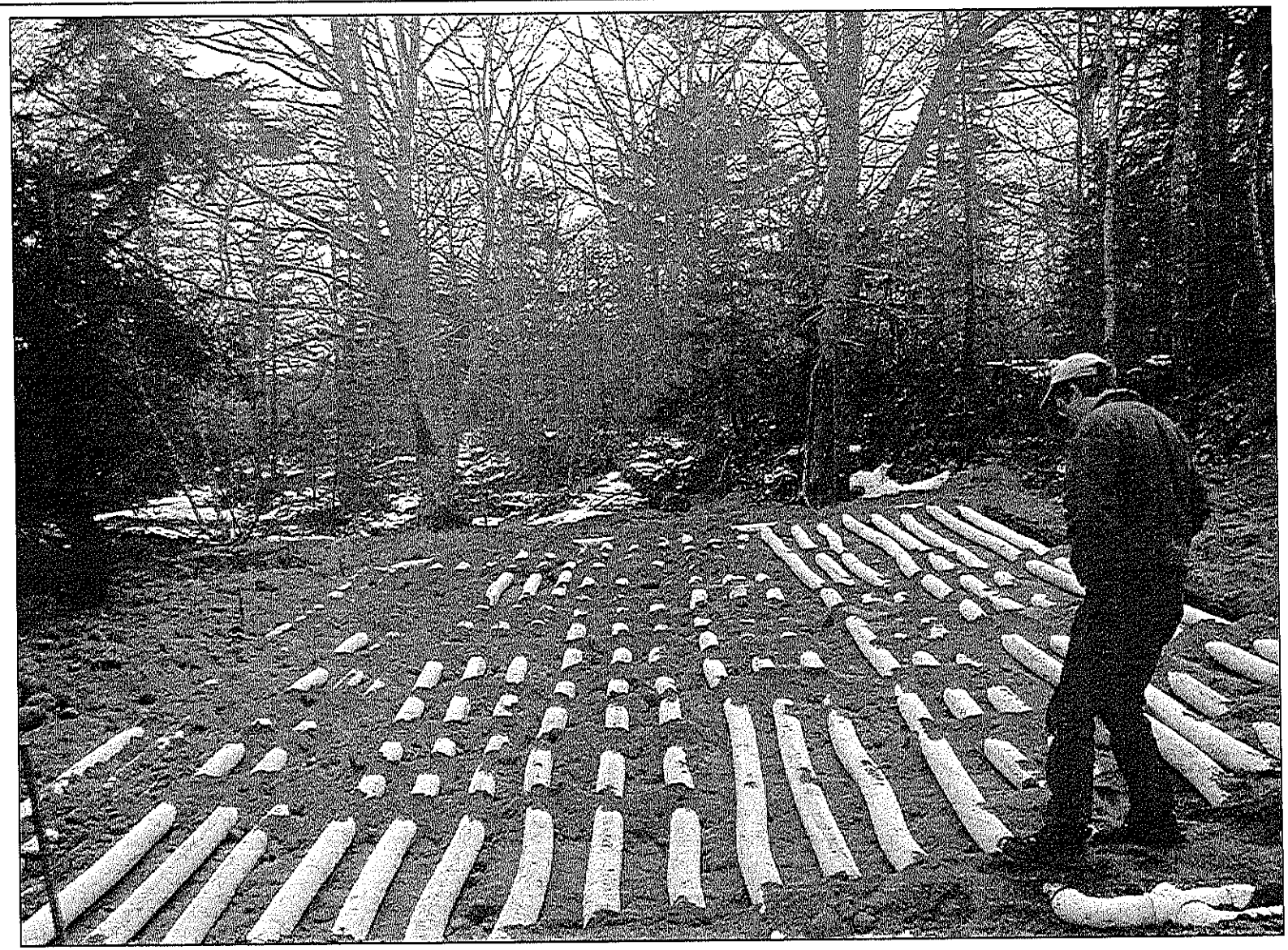
1. In difficult to access sites, designers can specify minimum 8" of packed organic debris [wood chips, leaves, etc.] above the system sand.

NOT TO SCALE

MoundBuster

Sloping System Cross-Section

AERATION SYSTEMS
Wastewater Technology



MOUNDBUSTER INSTALLATION

AERATION SYSTEMS
155 Gray Road
Falmouth, Maine
Phone: (207) 797-2110

John Elias Baldacci
Governor

Maine Department of Health and Human Services

Maine Center for Disease Control and Prevention
286 Water Street, 3rd Floor
11 State House Station
Augusta, ME 04333-0011

Brenda M. Harvey,
Acting Commissioner

Dora Anne Mills, MD, MPH
Public Health Director
Maine CDC Director

June 27, 2007

Aeration Systems
Attn. Richard A. Sweet, SE
155 Gray Road
Falmouth, ME 04105

Subject: Product Registration, Revised Approval, Aeration Systems LLC *Mound Buster*

Dear Mr. Sweet:

Thank you for updated information regarding your company's product. This information was submitted pursuant to Section 1802 of the Maine State Plumbing Code, Subsurface Wastewater Disposal Rules (Rules), for code registration, for use in Maine.

Product Description

The Aeration Systems LLC *Mound Buster* consists of four inch diameter, perforated plastic pipes which are wrapped in one layer of non-woven geotextile fabric. The pipes are placed in a bed of gravelly coarse sand, which would surround the pipes with a minimum of six inches of sand on all sides. The pipes would be placed 12 inches apart, center to center, within the bed resulting in eight inches of sand between the pipes. A solid four inch diameter pipe manifold would be placed at each end of the pipes, when placed in a level bed configuration. Serial distribution systems would utilize inverted 180 degree bends in the connecting manifolds.

The Aeration Systems LLC *Mound Buster* is designed for use with advanced treatment units producing effluent with combined BOD_5 and TSS of less than 30 mg/l, specifically, the Aeration Systems LLC *OxyPro System*. The disposal area would be sized using *Darcy's Law* as a basis, with permeability rates (*k* factors) for soils obtained from data published by the Maine Soil and Water Conservation Commission in *Soil Series of Maine Soil Interpretations*.

Claim

Based upon additional data gathered over the past year, you have submitted a table with requested revised loading rates. The loading rates would now range from 0.57 lin. ft./gpd to 1.43 lin. ft./gpd. These rates are based upon your assumed design flow of 270 gpd, from which the Division calculated the linear foot loading rates using the soil profile sizing criteria in Table 600.1.

Determination

On the basis of the information provided, the Division has determined that the Aeration Systems LLC *Mound Buster* is acceptable for use in the State of Maine with the revised loading rates specified above, provided that it is installed, operated, and maintained in conformance with the manufacturer's directions and the following conditions.

1. All conditions of the Provisional Approval dated May 16, 2005 remain in effect, except that setbacks may now be measured form the MoundBuster pipes rather than the surrounding installation fill.

In the event that the product fails to perform as claimed by the applicant, use of the product in Maine, including all installations approved installed under Provisional Approval pursuant to Section 1801.7 of the Rules, shall cease. Use of the new or experimental technology shall not resume until the applicant and the Division have reached a mutually acceptable agreement for resolving the failure to perform as claimed.

one: Phone: (207) 287-5695
Fax: (207) 287-3165
NexTalk (former TTY/TDD Line)
1-800-606-0215

Because installation and owner maintenance has a significant effect on the working order of onsite sewage disposal systems, including their components, the Division makes no representation or guarantee as to the efficiency and/or operation of Aeration Systems LLC *Mound Buster*.

Further, registration of this product for use in the State of Maine does not represent Division preference or recommendation for this product over similar products.

If you have any questions please feel free to contact me at (207) 287-5695.

Sincerely,

James A. Jacobsen, Environmental Specialist IV
Wastewater and Plumbing Control Program
Division of Health Engineering
e-mail: james.jacobsen@state.me.us

/jaj

xc: Product File