

Black Nubble Wind Farm

**Section 17: Wastewater Disposal &
Soils Maintenance Building Site**

Prepared by: Albert Frick

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1.0 On-Site Subsurface Wastewater Disposal

The Black Nubble Wind Farm wind turbines and electrical transmission system produce no wastewater. The proposed Maintenance Facility design includes a standard light-commercial septic system, to process wastewater from the building. The proposed subsurface wastewater disposal system (HHE-200 form) is included in Appendix 17-1.

During the construction phase, Endless Energy Corporation (or their contractors) will supply temporary chemical toilets at convenient locations around the project site.

1.1 Site Plan

The sewage disposal system will be sited on the Maintenance Facility Lot in a location with adequate soil drainage, a minimum of 100' from the water supply well. The proposed Site Plan is shown on the Maintenance Facility Layout map, included in section 1 of this application. An assessment of the soil drainage has been done by Albert Frick Associates, included in Appendix A. The report and septic design shows that the proposed subsurface wastewater disposal system complies with the State of Maine Subsurface Wastewater Disposal Rules, and the soils for the proposed Maintenance Facility are suitable for development. The proposed septic design meets the LURC standards of Section 10.25 I.

1.2 Nitrate-Nitrogen Impact Assessment - Exempt

The sewage disposal system will be a conventional system disposing of less than 300 gallons per day of domestic wastewater (as defined in Maine

Subsurface Wastewater Disposal Rules, 10-144A CMR 241). It will thus not require a Nitrate-Nitrogen impact assessment.

1.3 Soils Analysis of Maintenance Facility Lot

The proposed Maintenance Facility site is comprised of *Telos* and *Monarda* soils.

The *Telos* soil is somewhat poorly drained textured soil derived from glacial till sediments, and found in the upland positions.

The *Monarda* soil is poorly drained, sandy loam to loam textured soils derived from glacial till sediments, and found in the poorly drained areas of the site.

Class B High Intensity Soils map is included in Appendix B, along with Soil Narrative Report.


2.0 Appendices

- A. Proposed Septic System Design (HHE-200), by Albert Frick,
Licensed Site Evaluator
- B. Soils Analysis, by Albert Frick, Certified Soil Scientist

APPENDIX A

Proposed Septic System Design (HHE-200), by Albert Frick,
Licensed Site Evaluator

Black Nubble Wind Farm – Revised LURC Permit Application

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION		Maine Department of Human Services Division of Health Engineering, Station 10, SHS 12071 267-5672 FAX: (207) 267-4172
PROPERTY LOCATION		>> Caution: Permit Required – Attach In Space Below <<
City, Town, or Plantation	REDINGTON TOWNSHIP	The Subsurface Wastewater Disposal System <i>shall not</i> 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.
Street or Road	NIT PICKING ROAD	
Subdivision, Lot *		
OWNER/APPLICANT INFORMATION		
Name (last, first, MI)	ENDLESS ENERGY CORP	Owner
Mailing Address of	57 RYDER ROAD	
<input checked="" type="checkbox"/> Owner <input type="checkbox"/> Applicant	YARMOUTH, ME 04096	
Daytime Tel. *	847-9323	Municipal Tax Map * Lot *
Owner or Applicant Statement		Caution: Inspections Required
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.		I have inspected the installation authorized above and found it to be in compliance with the Subsurface Wastewater Disposal Rules Application.
Signature of Owner/Applicant _____ Date _____		Local Plumbing Inspector Signature _____ (1st) Date Approved _____ _____ (2nd) Date Approved _____
PERMIT INFORMATION		
TYPE OF APPLICATION 1. <input checked="" type="checkbox"/> First Time System 2. <input type="checkbox"/> Replacement System Type Replaced: _____ Year Installed: _____ 3. <input type="checkbox"/> Expanded System a. <input type="checkbox"/> Minor Expansion b. <input type="checkbox"/> Major Expansion 4. <input type="checkbox"/> Experimental System 5. <input type="checkbox"/> Seasonal Conversion	THIS APPLICATION REQUIRES 1. <input checked="" type="checkbox"/> No Rule Variance 2. <input type="checkbox"/> First Time System Variance a. <input type="checkbox"/> Local Plumbing Inspector Approval b. <input type="checkbox"/> State & Local Plumbing Inspector Approval 3. <input type="checkbox"/> Replacement System Variance a. <input type="checkbox"/> Local Plumbing Inspector Approval b. <input type="checkbox"/> State & Local Plumbing Inspector Approval 4. <input type="checkbox"/> Minimum Lot Size Variance 5. <input type="checkbox"/> Seasonal Conversion Approval	DISPOSAL SYSTEM COMPONENTS 1. <input checked="" type="checkbox"/> Complete Non-Engineered System 2. <input type="checkbox"/> Primitive System (graywater & alt toilet) 3. <input type="checkbox"/> Alternative Toilet, specify: _____ 4. <input type="checkbox"/> Non-Engineered Treatment Tank (only) 5. <input type="checkbox"/> Holding Tank, _____ Gallons 6. <input type="checkbox"/> Non-Engineered Disposal Field (only) 7. <input type="checkbox"/> Separated Laundry System 8. <input type="checkbox"/> Complete Engineered System (2000 gpd) 9. <input type="checkbox"/> Engineered Treatment Tank (only) 10. <input type="checkbox"/> Engineered Disposal Field (only) 11. <input type="checkbox"/> Pre-treatment, specify: _____ 12. <input type="checkbox"/> Miscellaneous components
SIZE OF PROPERTY 5.0 <input type="checkbox"/> sq. ft. <input checked="" type="checkbox"/> acres	DISPOSAL SYSTEM TO SERVE 1. <input type="checkbox"/> Single Family Dwelling Unit, No. of Bedrooms: _____ 2. <input type="checkbox"/> Multiple Family Dwelling, No. of Units: _____ 3. <input checked="" type="checkbox"/> Other: <u>MAINTENANCE BUILDING</u> SPECIFY _____ Current Use <input type="checkbox"/> Seasonal <input type="checkbox"/> Year Round <input checked="" type="checkbox"/> Undeveloped	TYPE OF WATER SUPPLY 1. <input checked="" type="checkbox"/> Drilled Well 2. <input type="checkbox"/> Dug Well 3. <input type="checkbox"/> Private 4. <input type="checkbox"/> Public 5. <input type="checkbox"/> Other: _____
SHORELAND ZONING <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
DESIGN DETAILS (SYSTEM LAYOUT SHOWN ON PAGE 3)		
TREATMENT TANK 1. <input checked="" type="checkbox"/> Concrete a. <input checked="" type="checkbox"/> Regular b. <input type="checkbox"/> Low Profile 2. <input type="checkbox"/> Plastic 3. <input type="checkbox"/> Other: _____ CAPACITY <u>1000</u> gallons	DISPOSAL FIELD TYPE & SIZE 1. <input type="checkbox"/> Stone Bed 2. <input type="checkbox"/> Stone Trench 3. <input checked="" type="checkbox"/> Proprietary Device a. <input type="checkbox"/> Cluster array c. <input checked="" type="checkbox"/> Linear b. <input checked="" type="checkbox"/> Regular d. <input type="checkbox"/> H-20 loaded 4. <input type="checkbox"/> Other: _____ SIZE <u>1200</u> <input checked="" type="checkbox"/> sq. ft. <input type="checkbox"/> lin. ft. 24 PLASTIC CHAMBER UNITS	GARBAGE DISPOSAL UNIT 1. <input checked="" type="checkbox"/> No 3. <input type="checkbox"/> Maybe 2. <input type="checkbox"/> Yes >> Specify one below: a. <input type="checkbox"/> Multi-compartment tank b. <input type="checkbox"/> _____ tanks in series c. <input type="checkbox"/> increase in tank capacity d. <input type="checkbox"/> Filter on tank outlet
SOIL DATA & DESIGN CLASS PROFILE <u>1</u> / CONDITION <u>D</u> / DESIGN <u>3</u> AT Observation Hole • <u>TP 1</u> Depth <u>14</u> " OF MOST LIMITING SOIL FACTOR _____	DISPOSAL FIELD SIZING 1. <input type="checkbox"/> Small - 2.0 sq.ft./gpd 2. <input type="checkbox"/> Medium - 2.6 sq.ft./gpd 3. <input type="checkbox"/> Medium-Large - 3.3 sq.ft./gpd 4. <input checked="" type="checkbox"/> Large - 4.1 sq.ft./gpd 5. <input type="checkbox"/> Extra-Large - 5.0 sq.ft./gpd	PUMPING 1. <input type="checkbox"/> Not required 2. <input type="checkbox"/> May be required 3. <input checked="" type="checkbox"/> Required >> Specify only for engineered or experimental systems: _____ DOSE: _____ Gallons
DESIGN FLOW <u>300</u> gallons per day BASED ON: 1. <input checked="" type="checkbox"/> Table 501.1 (dwelling unit(s)) 2. <input type="checkbox"/> Table 501.2 (other facilities) SHOW CALCULATIONS - for other facilities - 10 EMPLOYEES @15 GPD EACH = 150 GPD ALLOCATION FOR VISITORS = 150 GPD TOTAL = 300 GPD 3. <input type="checkbox"/> Section 503.0 (meter readings) ATTACH WATER-METER DATA		
SITE EVALUATOR STATEMENT		
I certify that on <u>6/13/05</u> (date) I completed a site evaluation on this property and state that the data reported is accurate and that the proposed system is in compliance with the Subsurface Wastewater Disposal Rules (10-144A CMR 24).		
 Site Evaluator Signature	<u>163</u> SE *	<u>8/9/2005</u> Date
ALBERT FRICK Site Evaluator Name Printed	(207) 839-5563 Telephone Number	AFA@MAINERR.COM E-mail Address
ALBERT FRICK ASSOCIATES - 95A COUNTY ROAD ROAD GORHAM, MAINE 04038 - (207) 839-5563 Note: Changes to or deviations from the design should be confirmed with the Site Evaluator		

Black Nubble Wind Farm – Revised LURC Permit Application

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

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

Town, City, Plantation REDINGTON TOWNSHIP	Street, Road Subdivision NIT PICKING ROAD	Owner's Name ENDLESS ENERGY
SITE PLAN		Scale 1" = <u>100</u> Ft. or as shown

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

Observation Hole TP 1 Test Pit Boring
" Depth of Organic Horizon Above Mineral Soil

Texture	Consistency	Color	Mottling
		DARK BROWN	
		LIGHT BROWN	
LOAM	FRIABLE	OLIVE BROWN	
			FEW, FAINT
	FIRM	OLIVE BROWN	COMMON, DISTINCT
REFUSAL			

Soil Classification I Profile D Condition	Slope %	Limiting Factor 14"	<input checked="" type="checkbox"/> Ground Water <input type="checkbox"/> Restrictive Layer <input type="checkbox"/> Bedrock <input type="checkbox"/> Pit Depth
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Albert Frick
Site Evaluator Signature

Observation Hole TB 2 Test Pit Boring
" Depth of Organic Horizon Above Mineral Soil

Texture	Consistency	Color	Mottling
		DARK BROWN	
		OLIVE BROWN	
LOAM	FRIABLE	OLIVE BROWN	
			FEW, FAINT
	FIRM	OLIVE BROWN	COMMON, DISTINCT
REFUSAL			

Soil Classification I Profile D Condition	Slope %	Limiting Factor 14"	<input checked="" type="checkbox"/> Ground Water <input type="checkbox"/> Restrictive Layer <input type="checkbox"/> Bedrock <input type="checkbox"/> Pit Depth
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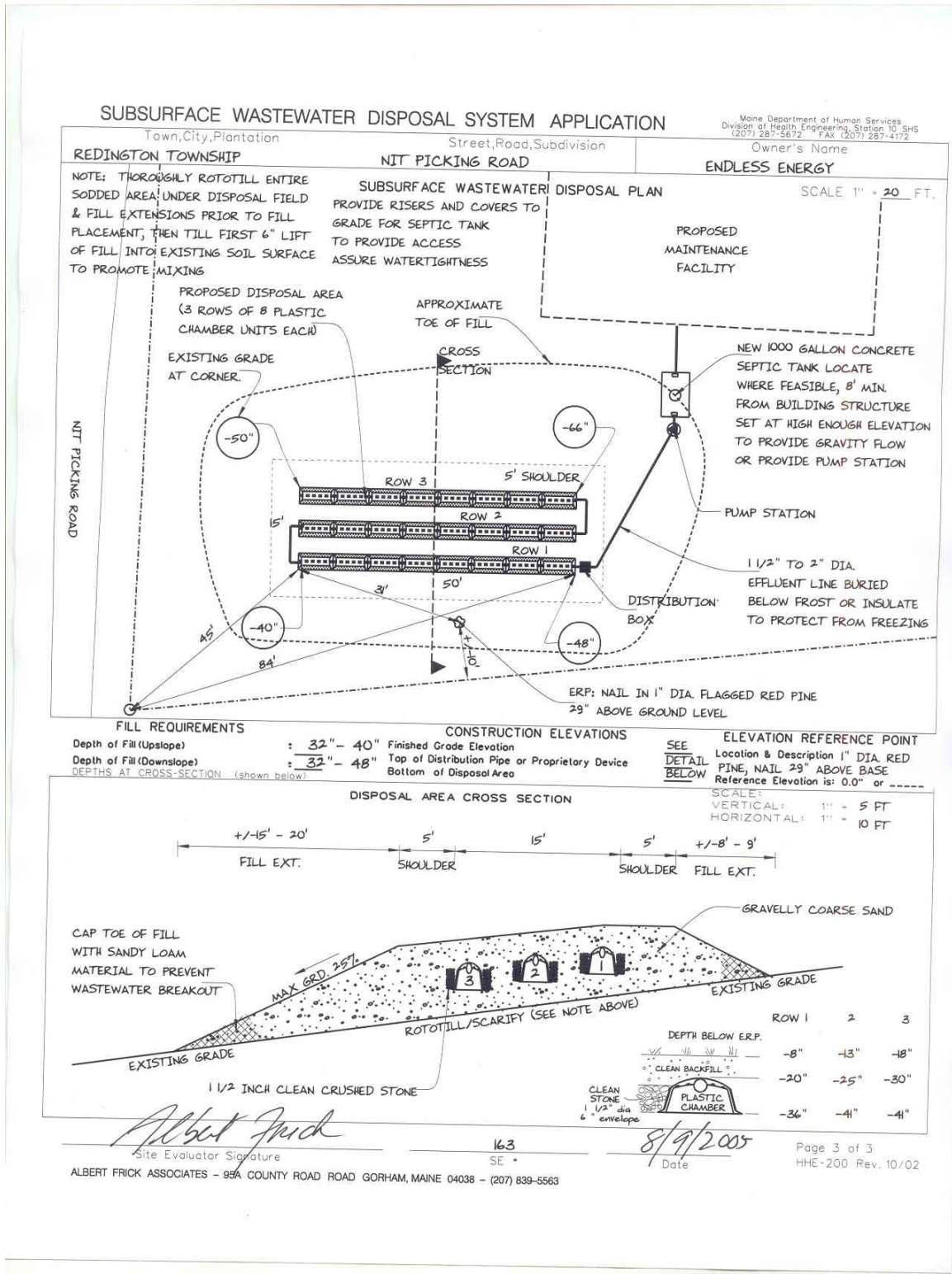
8/9/2005
Date

163 SE =

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ALBERT FRICK ASSOCIATES - 95A COUNTY ROAD ROAD GORHAM, MAINE 04038 - (207) 839-5563

Black Nubble Wind Farm – Revised LURC Permit Application



Black Nubble Wind Farm – Revised LURC Permit Application

REDINGTON TOWNSHIP

NIT PICKING ROAD

ENDLESS ENERGY

TOWN

LOCATION

APPLICANT'S NAME

1) The Plumbing and Subsurface Wastewater Disposal Rules adopted by the State of Maine, Department of Human Services pursuant to 22 M.R.S.A. § 42 (the "Rules") are incorporated herein by reference and made a part of this application and shall be consulted by the owner/applicant, the system installer and/or building contractor for further construction details and material specifications. The system Installer should contact Albert Frick Associates, Inc. 839-5563, if there are any questions concerning materials, procedures or designs. The system installer and/or building contractor installing the system shall be solely responsible for compliance with the Rules and with all state and municipal laws and ordinances pertaining to the permitting, inspection and construction of subsurface wastewater disposal systems.

2) This application is intended to represent facts pertinent to the Rules only. It shall be the responsibility of the owner/applicant, system Installer and/or building contractor to determine compliance with and to obtain permits under all applicable local, state and/or federal laws and regulations (including, without limitation, Natural Resources Protection Act, wetland regulations, zoning ordinances, subdivision regulations, Site Location of Development Act and minimum lot size laws) before installing this system or considering the property on which the system is to be installed a "buildable" lot. It is recommended that a wetland scientist be consulted regarding wetland regulations. Prior to the commencement of construction/installation, the local plumbing inspector or Code Enforcement Officer shall inform the owner/applicant and Albert Frick Associates, Inc of any local ordinances which are more restrictive than the Rules in order that the design may be amended. All designs are subject to review by local, state and/or federal authorities. Albert Frick Associates, Inc.'s liability shall be limited to revisions required by regulatory agencies pursuant to laws or regulations in effect at the time of preparation of this application.

3) All information shown on this application relating to property lines, well locations, subsurface structures and underground facilities (such as utility lines, drains, septic systems, water lines, etc.) are based solely upon information provided by the owner/applicant and has been relied upon by Albert Frick Associates, Inc. in preparing this application. The owner/applicant shall review this application prior to the start of construction and confirm this information. Well locations on abutting properties but not readily visible above grade should be confirmed by the owner/applicant prior to system installation to assure minimum setbacks.

4) Installation of a garbage (grinder) disposal is not recommended. If one is installed, an additional 1000 gallon septic tank or a septic tank filter shall be connected in series to the proposed septic tank.

5) The system user shall avoid introducing kitchen grease or fats into this system. Chemicals such as septic tank cleaners and/or chlorine (such as from water treatment units) and controlled or hazardous substances shall not be disposed of in this system. Additives such as yeast or enzymes are discouraged, since they have not been proven to extend system life.

6) The septic tank should be pumped within two years of installation and subsequently as recommended by the pump service, but in no event should the septic tank be pumped less often than every three years. All septic tank, pump stations and additional treatment tanks shall be installed to prevent ground water and surface water infiltration.

Black Nubble Wind Farm – Revised LURC Permit Application

ATTACHMENT TO SUBSURFACE WASTEWATER DISPOSAL APPLICATION

REDINGTON TOWNSHIP	NIT PICKING ROAD	ENDLESS ENERGY
TOWN	LOCATION	APPLICANT'S NAME

7) The actual water flow or number of bedrooms shall not exceed the design criteria indicated on this application without a re-evaluation of the system as proposed. If the system is supplied by public water or a private service with a water meter, the water consumption per period should be divided by the number of days to calculate the average daily water consumption (water usage (cu. ft.) x 7.48 cu. ft. (gallons per cu. ft.) divided by the # of days in period).

8) The general minimum setbacks between a well and septic system serving a single family residence is 100-300 feet, unless the local municipality has a more stringent requirement. A well installed by an abutter within the minimum setback distances prior to the issuance of a permit for the proposed disposal system may void this design.

9) When a gravity system is proposed: BEFORE CONSTRUCTION/INSTALLATION BEGINS, the system installer or building contractor shall review the elevations of all points given in this application and the elevation of the existing and/or proposed building drain and septic tank inverts for compatibility to minimum slope requirement. In gravity systems, the invert of the septic tank(s) outlet(s) shall be at least 4 inches above the invert of the distribution box outlet at the disposal area. When an effluent pump is required, provisions shall be made to make certain that surface ground water does not enter the septic tank or pump station, by sealing/grouting all seams and connections, and by placement of a riser and lid at or above grade. An alarm device warning of a pump failure shall be installed. Also, when pumping is required of a chamber system, install a "T" connection in the distribution box and place 3 inches of stone or a splash plate in the first chamber. Insulate gravity pipes, pump lines and the distribution box as necessary to prevent freezing.

10) On all systems, remove the vegetation, organic duff and old fill material from under the disposal area and any fill extension. On sites where the proposed system is to be installed in natural soil, scarify the bottom and sides of the excavated disposal area with a rake. Do not use wheeled equipment on the scarified soil surface. For systems installed in fill, scarify the native soil by roto-tilling to a depth of at least 8 inches over the entire disposal and fill extension area to prevent glazing and to promote fill bonding. Place fill in loose layers no deeper than 8 inches and compact before placing more fill (this ensures that voids and loose pockets are eliminated to minimize the chance of leakage or differential setting). Do not use wheeled equipment on the scarified soil area until after 12 inches of fill is in place. Keep equipment off proprietary devices. Divert the surface water away from the disposal area by ditching or shallow landscape swales.

11) Unless noted otherwise, fill shall be gravelly coarse sand, which contains no more than 5% fines (silt and clay).

12) Do not install systems on loamy, silty, or clayey soils during wet periods since soil smearing/glazing may seal off the soil interface.

13) Seed all filled and disturbed surfaces with perennial grass seed, then mulch with hay or equivalent material to prevent erosion. Alternatively, bark or permanent landscape mulch may be used to cover system. Woody trees or shrubs are not permitted on the disposal area or fill extensions.

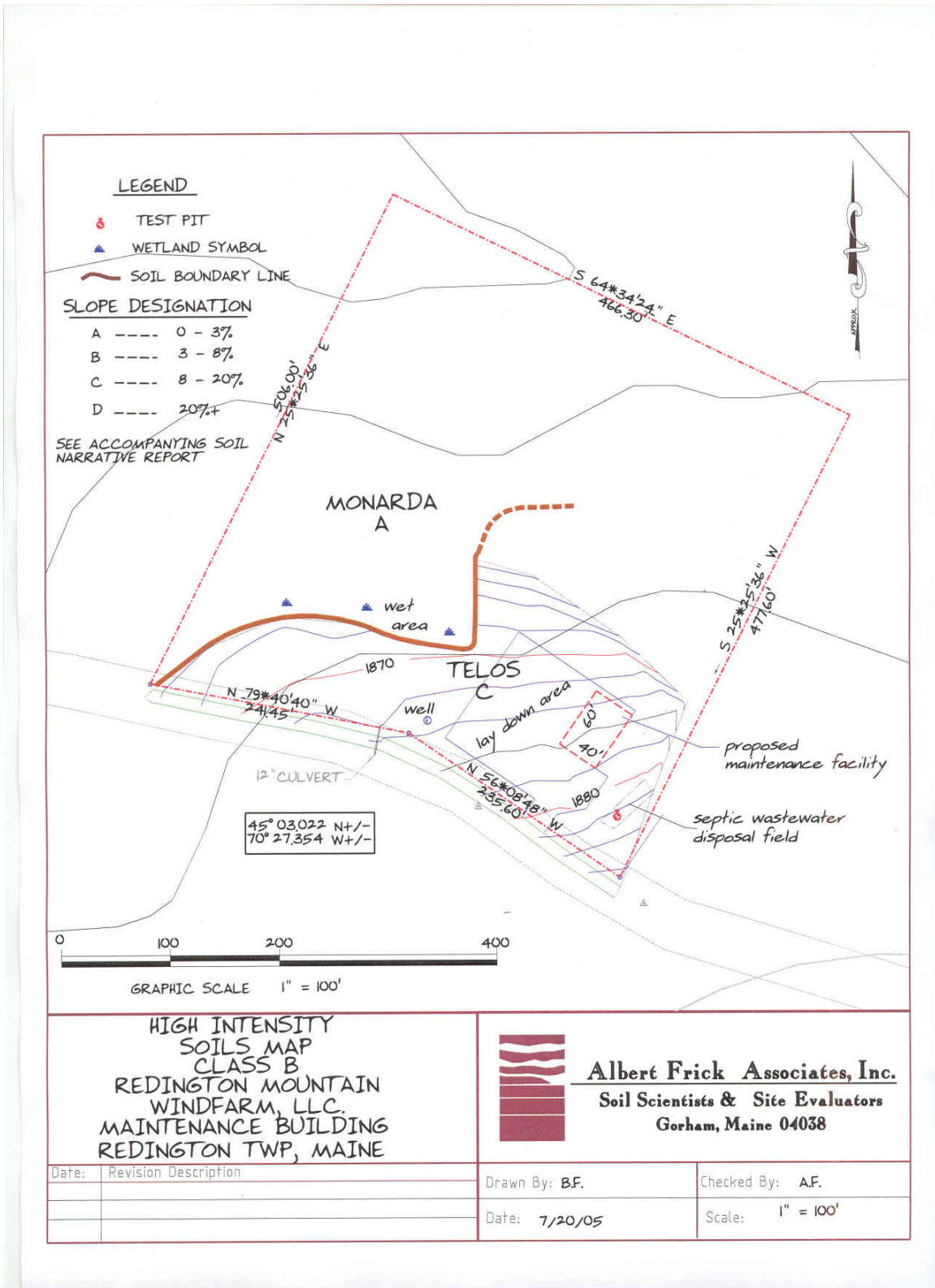


Albert Frick Associates, Inc.
 Soil Scientists & Site Evaluators
 95A County Road Gorham, Maine 04038
 (207) 839-5563

APPENDIX B

Soils Report for Maintenance Building Site

Black Nubble Wind Farm – Revised LURC Permit Application



HIGH INTENSITY
SOILS MAP
CLASS B
REDINGTON MOUNTAIN
WINDFARM, LLC.
MAINTENANCE BUILDING
REDINGTON TWP, MAINE



Albert Frick Associates, Inc.
Soil Scientists & Site Evaluators
Gorham, Maine 04038

Date:	Revision Description	Drawn By: BF.	Checked By: AF.
		Date: 7/20/05	Scale: 1" = 100'

BLACK NUBBLE WINDFARM

Endless Energy LLC

SOIL NARRATIVE REPORT

DATE: Soil profiles observed on June 13, 2005.

BASE MAP: Contour map -foot intervals, scaled 1"=2', provided by Licensed Land Surveyor.

GROUND CONTROL: Test pits located by tape measure.

THE SOIL MAPPING CONFORMS WITH A CLASS B SURVEY.

Class B - Soil Survey

1. Mapping units of 1 acre or greater.
2. Scale of 1" = 200' or larger.
3. Up to 35% inclusions in mapping units of which no more than 25% may be dissimilar soils.
4. Ground control - test pits located from known, surveyed, control points.
5. Base map with 5' contour lines.

The accompanying soil profile descriptions, soil map and this soil narrative report were done in accordance with the standards adopted by the Maine Association of Professional Soil Scientists, and the Maine Board of Certification of Geologists and Soil Scientists.

_____ C.S.S. #66, S.E. #163 / /

Albert Frick

Date

MONARDA

(Aeric Fragiaquepts)

SETTING

Parent Material:	Loamy glacial till.
Landform:	Nearly level to sloping soils.
Position in Landscape:	Occupies lower positions in the landscape, base of long slopes, swales, and depressional areas.
Slope Gradient Ranges:	(B) 3-8% (C) 8-20%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class:	Poorly drained with a perched groundwater table 0 to 1.5 feet beneath the soil surface from October through May and during periods of heavy precipitation.
Typical Profile	Surface layer: Black organic layer, 0-4"
Description:	Subsurface layer: Light brownish gray, gravelly silt loam, 4-9" Subsoil layer: Gray, olive gray and olive, gravelly silt loam, 9-33" Substratum: Gray, gravelly silt loam, 33"+
Hydrologic Group:	Group D
Permeability:	Moderate to moderately slow in the solum, moderately slow to slow in the substratum.
Depth to Bedrock:	Deep, greater than 60".
Hazard to Flooding:	None

INCLUSIONS

(Within Mapping Unit)

Similar:	Brayton, Telos, Colonel, Scantic
Contrasting:	Peacham

USE AND MANAGEMENT

Maintenance facility utilizing on-site septic and on-site water supplies: The limiting factor for building site development is wetness due to the presence of a high perched water table 0 to 1.5 feet below the existing the soil surface for a significant portion of the year. This soil is unsuitable for on-site subsurface wastewater disposal. Monarda soil may be classified as wetlands, based on the combined consideration of hydric conditions, hydrology, and vegetation.

TELOS

(Typic Haplorthods)

SETTING

Parent Material:	Loamy dense basal till.
Landform:	Lower side slopes in glaciated uplands.
Position in Landscape:	Nearly level to steeply sloping soils on upland till ridges.
Slope Gradient Ranges:	(B) 3-8% (C) 8-20%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class:	Somewhat poorly drained.
Typical Profile	Surface layer: Pinkish gray silt loam, 0-4"
Description	Subsurface layer: Dark reddish to yellowish brown silt loam, 4-15"
	Subsoil layer: Light olive brown silt loam, 15-20"
	Substratum: Olive gravelly silt loam, 20-65"
Hydrologic Group:	Group C
Surface Run Off:	Slow
Permeability:	Moderate in the solum, and slow or very slow in the substratum.
Depth to Bedrock:	Very deep, greater than 65".
Hazard to Flooding:	None

INCLUSIONS

(Within Mapping Unit)

Similar:	Chesuncook, Colonel
Contrasting:	Brayton, Monarda

USE AND MANAGEMENT

Maintenance facility utilizing on-site septic and on-site water supplies: The limiting factor for building site development is wetness, due to the presence of a groundwater table 1.0 to 1.5 feet beneath the soil surface for some portion of the year. Proper foundation drainage or other site modification is recommended for construction.