Exhibit 15A
Albert Frick and Associates Soils Report
Supplemental Frick Soils Report

BOWERS WIND FARM PROJECT
Off Route 6
Carroll Plantation and Kossuth Township, Maine

SOIL NARRATIVE REPORT

October, 2010

PREPARED FOR:

STANTEC
(CHAMPLAIN WIND ENERGY)

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1.0 Introduction

Albert Frick Associates is pleased to provide the enclosed Class L & A High Intensity Soil Survey for the proposed Bowers Mountain Wind Project in Carroll Plantation and Kossuth Township, Maine.

1.1 Purpose

The purpose of our investigation was to provide taxonomic classification for the various soils identified on the project site to better quantify limitations for development, with respect to soil drainage, physical properties and/or depths to bedrock class. Specifically, our investigation was intended to yield a Class L High Intensity level of soils mapping for the proposed turbines and road, and Class A High Intensity Soil Survey for the proposed Operations and Maintenance building site.

1.2 Appendices

This report is subject to the limitations specified in Appendix A. Appendix B contains a reduced 11" x 17" copy of the Class A High Intensity Soil Survey, along with a full size folded plan at 1" = 100' scale. Appendix C provides details of map unit composition and soil types encountered, along with specific information regarding soil drainage class, permeabilities, runoff and hydrologic groupings for the various individual soil encountered. Appendix D contains individual soil test pit classifications and descriptions for each test pit excavated on the project site, predominantly by hand shovel. Appendix E includes a glossary of soil terms that better explain the soil information presented in the soil narrative report. Appendix F describes the methodology for creation of a High Intensity Soil Survey, and provides details for the minimum mapping standards established by the Maine Association of Professional Soil Scientists (MAPSS) in accordance with the Maine Department of Environmental Protection (MDEP) requirements for mapping guidelines.

2.0 Site Location/Setting

The site is located in Carroll Plantation and Kossuth Township, Maine. It generally consists of moderately to steeply sloping topography, and is comprised mainly of woodlands.

3.0 Site Investigation and Testing

Albert Frick Associates (AFA) conducted field investigations from April, 2010 through August, 2010. Test pits were excavated, either by backhoe or hand shovel, and were identified on-site with numbered flagging tape. Each was located by submeter GPS by AFA personnel. Additional confirmatory soil borings/observations by soil auger assisted in placement of soil map unit boundaries onto the soil survey base map. Further *ad hoc* symbols have been added in places to the map, to provide more detailed information about bedrock outcropping locations, groundwater seeps or surface water runoff, the location of intermittent or perennial streams or watercourses, and other natural features of the property.

4.0 General Site and Subsurface Conditions

The site includes Bowers Mountain, Dill Hill, Horse Hill, and the area around Dipper Pond. The predominant mapped soils are Monson and Elliotsville on ridgetops and upper sideslopes, which are formed in somewhat excessively to well drained glacial till, and are similar to Thorndike soils. These are shallow to moderately deep bedrock, and are interspersed with moderately well drained Chesuncook and somewhat poorly drained Telos soils, which are over 60” to bedrock. Also present are areas of similar Howland soils. The hydric soils Monarda and Burnham may also be identified as wetland areas, where prevalence of hydrophytic vegetation and wet hydrology are present. The survey area straddles the Penobscot/Washington county boundary. As such, Natural Resources Conservation Service (formerly SCS), in differing survey areas, had conflicting information along the common county line. Albert Frick Associates attempted to

minimize these anomalies by classifying soils into 'best fit' taxonomic units, based on use and management of the soils for the specific proposed use.

5.0 Soil Map Unit Descriptions

The map unit descriptions included in Appendix C provide taxonomic details regarding the soil series encountered, and an idea of the composition of soils within a given map unit (both for the range of soil characteristics and the dominant soils within complex units). In map units with multiple names, the names are generally listed in order of their prevalence within the map unit. Slope gradient ranges are also provided, and refer to slope phases indicated in the soil survey map and in the soil legend.

6.0 Conclusions and Recommendations

Based on our observations of the project site, and our knowledge of the proposed use of the property, the soils within the development area are suitable for the proposed use, with the following notable exceptions:

Monarda and Burnham map units have limitations for construction, due to wetness and instability in Burnham soils, where organic surface horizons can be 12-16" thick. Further similar consideration should be given to areas of somewhat poorly drained Telos and Elliotsville (Variant) soils, due to water tables within 12" of the mineral soil for long durations.

The nearly level, gently to moderately sloping glacial till soils that are at least moderately well drained are generally suitable for the proposed use, although some modifications to drainage or slope may be needed to improve conditions. On the somewhat poorly drained soils, where seasonal high groundwater tables may be within 12" of the mineral soil surface for a significant portion of the year, additional measures such as the addition of coarse granular fill, or the installation of upslope curtain drain to intercept sheet flow drainage, may be needed to overcome limitations. Construction techniques should strive to maintain the "sheet flow" drainage that generally exists on the soil hardpan or bedrock surfaces, to avoid a concentration of flows and possibly increased erosion.

The poorly or very poorly drained hydric soils have further limitations due to prolonged wetland and frost susceptibility, and may have additional permitting implications if identified as wetland areas.

7.0 Closure

It has been a pleasure of Albert Frick Associates to be of assistance in the resource inventory and evaluation phase of your project. Please do not hesitate to contact us, should further assistance or information be necessary.

James Logan, C.S.S #213
L.S.E. #237

APPENDIX A

Limitations

This soil narrative report and accompanying soil survey map have been prepared for the exclusive use of Stantec Consulting Services, Inc., for its specific application to the proposed Bowers Wind Farm Project in Carroll Plantation and Kossuth Township, Maine. Albert Frick Associates, Inc. conducted the work in accordance with generally accepted soil science practices outlined in the Maine Association of Professional Soil Scientists guidelines, and the Maine Board of Certification of Geologists and Soil Scientists guidelines. Further, presentation of mapping information meets the requirements of Guidelines for Maine Certified Soil Scientists for Soil Identification and Mapping (2004), and in accordance with standards adopted by the Maine Department of Environmental Protection (MDEP) for project review. No other warranty, expressed or implied, is made.

It should be recognized that map unit design is influenced by the intended use of the soil survey information, and may not be adequate or sufficient to evaluate for uses other than that for which the specific soil survey was developed. Soils which are non-limiting for one use may be considered a limitation for different use than that identified.

The analysis contained herein is based on data obtained during subsurface exploration of the site, and the interpretation of published information by the USDA Natural Resources Conservation Services. Due to the glaciation of Maine, and the complexity of the landscaping, variations in subsurface conditions may exist between exploration sites which may not become evident until significant project excavation begins. Should significant variations in subsurface conditions become evident after the submission of this report, it may be necessary to re-evaluate the nature of the variation, in light of the recommendations enclosed herein.

APPENDIX B

Class A/L High Intensity Soil Survey Map, scaled 1” = 100’

APPENDIX C

Map Unit Descriptions

BURNHAM
(Frigid Histic Humaquepts)

SETTING

Parent Material: Coarse-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: **(A)** 0-3%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Very poorly drained with a perched ground water table 0 to 0.5 feet beneath the soil surface from October to May and during periods of heavy precipitation. May be ponded from time to time.

Typical Profile Description:

Surface layer:	Black to dark reddish brown muck (organic), 0-13"
Subsurface layer:	Mottled gray, gravelly silt loam, 13-34"
Substratum:	Mottled dark grayish brown, gravelly silt loam, 34-65"

Hydrologic Group: Group D

Permeability:

0-2.0"	0.6 - 2.0 in/hr
> 2.0"	0.06 - 2.0 in/hr

Depth to Bedrock: Greater than 60".

Hazard to Flooding: None

INCLUSIONS
(Within Mapping Unit)

Similar: Chesuncook, Monarda, Telos
Dissimilar: Brayton, organic soils

USE AND MANAGEMENT

Development of wind power projects: The soil limitation of Burnham soil for site development is the very poorly drained characteristic. Burnham soil is hydric and most likely is classified as jurisdictional wetland. Burnham soils should be avoided and/or special permits sought for wetland filling. Special erosion and sediment control techniques are recommended, due to thick organic surface horizons and seasonal high groundwater tables at or near the soil surface for long durations during the growing season.

CHESUNCOOK
(Typic Haplorthods)

SETTING

Parent Material: Loamy glacial till.

Landform: Glaciated uplands.

Position in Landscape: Side slope.

Slope Gradient Ranges: **(B)** 3-8% **(C)** 8-20% **(D)** 20%+

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Moderately well drained, with a perched water table 1.5 to 3.0 feet beneath the existing soil surface March through May and during periods of excessive precipitation.

Typical Profile Description:

Surface layer:	Dark reddish brown organic, 0-3"
Subsurface layer:	Light gray, dark reddish brown to reddish brown and yellowish brown silt loam and loam, 3-14"
Subsoil layer:	Olive brown to grayish brown, gravelly loam, 14-24"
Substratum:	Olive gravelly loam, 24-36"

Hydrologic Group: Group C

Permeability: Moderate in the solum, moderately slow or slow in the compact substratum.

Depth to Bedrock: Very deep, greater than 60 inches.

Hazard to Flooding: None

INCLUSIONS
(Within Mapping Unit)

Similar: Howland, Plaisted
Dissimilar: Telos, Monson, Elliotsville (less than 40" to bedrock), Thorndike

USE AND MANAGEMENT

Development of wind power projects: The limiting factor for site development is wetness due to the presence of a perched water table 1.5 to 3.0 feet beneath the soil surface for some portion of the year. Proper foundation drainage or other site modification is recommended for construction. Chesuncook soil is generally suitable for construction of wind power projects, for both turbine pad placement and road construction.

CHESUNCOOK–TELOS COMPLEX

SETTING

Parent Material: Coarse-loamy glacial till.

Landform: Glaciated uplands.

Position in Landscape: Side slopes.

Slope Gradient Ranges: **(B)** 3-8% **(C)** 8-20%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Moderately well drained (Chesuncook) to somewhat poorly drained (Telos), with a perched water table 0.5 to 3.0 feet beneath the existing soil surface March through May and during periods of excessive precipitation.

Typical Profile Desciption:

(for Chesuncook)

Surface layer:	Dark reddish brown organic, 0-3"
Subsurface layer:	Light gray, dark reddish brown to reddish brown and yellowish brown silt loam and loam, 3-14"
Subsoil layer:	Olive brown to grayish brown, gravelly loam, 14-24"
Substratum:	Olive gravelly loam, 24-36"
Note:	These soils occur on the landscape in a regular repeating pattern that was not separated out at the scale provided.

(for Telos)

Surface layer:	Black organic material, 0-2"
Subsurface layer:	Pinkish gray, gravelly silt loam, 2-5"
Subsoil layer:	Dark brown, dark yellowish brown, olive, gravelly silt loam, 5-52"
Substratum:	Olive gravelly silt loam, 52-60"
Note:	These soils occur on the landscape in a pattern that could not be separated out at the level of detail provided. Chesuncook generally occupies the 'mounds' within the micro-topography, and is the dominant component, while Telos occupies micro-depressions.

Hydrologic Group: Group C

Permeability:

Chesuncook:	0-21"	0.6 - 2.0 in/hr
Telos:	> 21"	< 0.2 in/hr

Depth to Bedrock: Very deep, greater than 60 inches.

Hazard to Flooding: None

INCLUSIONS
(Within Mapping Unit)

Similar: Howland, Plaisted

Dissimilar: Monson, Elliotsville (less than 40" to bedrock), D slopes in C slope map units, stony and very stony phase inclusions, Monarda

USE AND MANAGEMENT

Development of wind power projects: The limiting factor for site development is wetness due to the presence of a perched water table 1.5 to 3.0 feet beneath the soil surface for some portion of the year. Proper foundation drainage or other site modification is recommended for construction. Chesuncook and this Telos soil are suitable for construction of wind power projects, by overcoming limitations due to soil drainage through sound engineering practice. Slopes are generally more convex than concave, though small depressions exist within micro-topography.

ELLIOTSVILLE (Variant)

SETTING

Parent Material: Loamy glacial till.

Landform: Glaciated uplands.

Position in Landscape: Upper positions on landform.

Slope Gradient Ranges: **(B)** 3-8% **(C)** 8-20% **(D)** 20+%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: While Elliotsville is typically well drained, with no evidence of a water table, or only inches from the bedrock surface during spring and during periods of heavy precipitation. However, this mapping unit consists of moderately deep (20-40") soils that are predominantly somewhat poorly drained with seasonal high groundwater table within 15" of the soil surface.

Typical Profile Description:

Surface layer:	Black and dark reddish brown silt loam to loam, 0-4"
Subsurface layer:	Dark reddish brown silt loam to loam, 4-10"
Subsoil layer:	Dark reddish brown loam, 10-15"
Substratum layer:	Light olive brown to olive, 15-20". Bedrock at 20-40".

Hydrologic Group: Group B

Surface Run Off: Rapid

Permeability: Moderate or moderately rapid, 0.6 to 2.0 inches/hour.

Depth to Bedrock: Moderately deep, 20-40".

Hazard to Flooding: None

INCLUSIONS
(Within Mapping Unit)

Similar: Thorndike, Chesuncook, Howland (MWD-SWP), Telos
Dissimilar: Lyman Variant, Naskeag, Monarda

USE AND MANAGEMENT

Development of wind power projects: The limiting factor for development of wind power projects and proposed roads is wetness, due to the presence of seasonal high groundwater table within 15" of the soil surface. Redirecting surface water and/or the use of sound engineering practices can overcome limitations due to drainage. Moderately deep depths to bedrock are suitable for anchoring wind turbines.

ELLIOTSVILLE-CHESUNCOOK COMPLEX

SETTING

Parent Material: Coarse-loamy glacial till.

Landform: Glaciated uplands.

Position in Landscape: Side slopes and upper portions of landscape features.

Slope Gradient Ranges: **(B)** 3-8% **(C)** 8-20% **(D)** 20%+

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Moderately well drained to well-drained, with a perched water table in Chesuncook soils 1.5 to 3.0 feet beneath the existing soil surface March through May and during periods of excessive precipitation. Water table is present in Elliotsville soils on bedrock surface for short durations in spring and during periods of excessive precipitation.

NOTE: These soils generally occur in a non-repeating pattern that was not separated out in mapping.

Typical Profile Description: (For Elliotsville - see also Chesuncook soil description)

Surface layer:	Dark reddish brown organic, 0-3"
Subsurface layer:	Light gray, dark reddish brown to reddish brown and yellowish brown silt loam and loam, 3-14"
Subsoil layer:	Olive brown to grayish brown, gravelly loam, 14-24"
Substratum:	Olive gravelly loam, 24-36"

Hydrologic Group: Group C

Permeability:

Chesuncook:	0-21" 0.6 - 2.0 in/hr
	> 21" < 0.2 in/hr

Depth to Bedrock:

Elliotsville:	Moderately deep, 20-40"
Chesuncook:	Very deep, greater than 60 inches.

Hazard to Flooding: None

INCLUSIONS
(Within Mapping Unit)

Similar: Howland, Thorndike
Dissimilar: Telos, Elliotsville (Variant – SWP), Monarda

USE AND MANAGEMENT

Development of wind power projects: These soils are generally suited to the proposed use. Use and management recommendations are generally as for individual Elliotsville or Chesuncook map units.

ELLIOTSVILLE (Variant) – MONARDA COMPLEX

SETTING

Parent Material: Loamy glacial till.

Landform: Glaciated uplands.

Position in Landscape: Upper positions on landform.

Slope Gradient Ranges: **(B)** 3-8% **(C)** 8-20% **(D)** 20+%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Somewhat poorly drained Elliotsville (Variant) to poorly drained (Monarda), with evidence of a water table during spring and during periods of heavy precipitation within 15" of the soil surface.

Typical Profile Description: (for Monarda)

Surface layer:	Black and dark reddish brown silt loam to loam, 0-4"
Subsurface layer:	Dark reddish brown silt loam to loam, 4-10"
Subsoil layer:	Dark reddish brown loam, 10-15"
Substratum layer:	Light olive brown to olive, 15-20". Bedrock at 20-40".
NOTE:	These Elliotsville soils are generally somewhat poorly drained (ie. water table 7-15" beneath the soil surface) and may be 20-40" to bedrock.

Hydrologic Group: Group C

Surface Run Off: Rapid

Permeability: Moderate or moderately rapid, 0.6 to 2.0 inches/hour.

Depth to Bedrock: Moderately deep, 20-40".

Hazard to Flooding: Generally none

INCLUSIONS
(Within Mapping Unit)

Similar: Telos, Howland (SWP)

Dissimilar: Lyman Variant, Naskeag, Brayton

USE AND MANAGEMENT

Development of wind power projects: The soil limitation for proposed development is depth to bedrock, and seasonal high groundwater tables. While Elliotsville soils have depth to bedrock characteristics that are suited for anchoring wind turbines, areas of Monarda soils have shallow water tables, and thus project engineers should employ sound erosion and sediment control practices to protect natural resources. Monarda soils may be classified as jurisdictional wetlands, and thus have further permitting limitations.

ELLIOTSVILLE (Variant) – TELOS COMPLEX

SETTING

Parent Material: Loamy glacial till.

Landform: Glaciated uplands.

Position in Landscape: Upper positions on landform.

Slope Gradient Ranges: **(B)** 3-8% **(C)** 8-20% **(D)** 20+%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: While Elliotsville is typically well drained, with no evidence of a water table, or only inches from the bedrock surface during spring and during periods of heavy precipitation, this mapping unit is intended to represent areas that are predominantly composed of soils with somewhat poorly drained conditions, in which the bedrock surface is undulating from 20-40" beneath the soil surface to beyond 60" in areas with Telos soils.

NOTE: The two soils were not separated out in mapping, since drainage characteristics are otherwise similar. Elliotsville (Variant) in this survey area has characteristics similar to Naskeag soils, but are generally finer-textured.

Typical Profile Description: (For Elliotsville Variant – see also Telos soil description)

Surface layer:	Black and dark reddish brown silt loam to loam, 0-4"
Subsurface layer:	Dark reddish brown silt loam to loam, 4-10"
Subsoil layer:	Dark reddish brown loam, 10-15"
Substratum layer:	Light olive brown to olive, 15-20". Bedrock at 20-40".

Hydrologic Group: Group B

Surface Run Off: Rapid

Permeability: Moderate or moderately rapid, 0.6 to 2.0 inches/hour.

Depth to Bedrock: Moderately deep, 20-40".

Hazard to Flooding: None

INCLUSIONS
(Within Mapping Unit)

Similar: Chesuncook, Colonel, Naskeag, Thorndike

Dissimilar: Lyman Variant, Brayton, Monarda

USE AND MANAGEMENT

Development of wind power projects: The soil limitation for proposed development is depth to bedrock and soil drainage. Seasonal high groundwater tables range from near the bedrock surface to within 12" of the soil surface during spring and after significant rainfall events.

HOWLAND
(Typic Haplorthods)

SETTING

Parent Material: Coarse-loamy glacial till materials, formed from fine-grained quartzite, slate and some granite.

Landform: Glaciated upland ridges and side sloping areas above toeslopes.

Position in Landscape: Uppermost and sidesloping shoulders of till ridges and knolls.

Slope Gradient Ranges: **(B)** 3-8% **(C)** 8-20% **(D)** 20%+

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Moderately well drained to somewhat poorly drained, with a seasonal high groundwater table 1.0 – 3.5' beneath the soil surface in spring and during periods of excessive precipitation.

Typical Profile Description:

Surface layer:	Very dark brown silt loam, 0-6"
Subsurface layer:	Yellowish brown silt loam, 6-16"
Subsoil layer:	Light olive brown silt loam, 16-26"
Substratum:	Light olive brown loam, 26-65"

Hydrologic Group: Group C

Surface Run Off: Medium

Permeability: Moderate above fragipan and moderately slow in the fragipan.

Depth to Bedrock: Very deep, greater than 60"

Hazard to Flooding: None

Erosion factors (Kf): 0"-6"-.24
6"-65"-.28

INCLUSIONS
(Within Mapping Unit)

Similar: Telos, Bangor, Dixmont, Chesuncook

Dissimilar: Thorndike, Monarda, Naskeag

USE AND MANAGEMENT

Development of Wind Power Projects: The limiting factor for development of wind power projects is depth to seasonal high groundwater table, which is 1.0' – 3.5' beneath the soil surface. Regrading or other site modifications may be necessary to mitigate concerns over sheet flow drainage, which can be perched on top of the dense substratum. Proper foundation drainage or import of sandy granular fill is recommended for construction. Portions of the Howland soil map unit may be suitable for subsurface wastewater disposal, in accordance with the State of Maine Subsurface Wastewater Disposal Rules.

MADE LAND (EXISTING GRAVEL ROAD)
(Udorthents)

SETTING

Parent Material: Variable, placed or regraded by man. This map unit consists of nearly level to moderately sloping areas where the original soils have been cut away or covered with variable fill material (ranging from sandy loam to gravel). Most areas have been graded to a smooth surface. Areas are dominantly on uplands but are in almost every landscape position. Areas range in size. Map unit can be linear when exhibiting old road construction. Slopes are smooth or irregular, and range form 0 to 25 percent, but are dominantly 0 to 10 percent. Where the original soil has been cut away.

Landform: Variable. Generally less than 15% maximum grade

Position in Landscape: Variable. Generally in lower elevations and along mountain sideslopes.

Slope Gradient Ranges: **(A)** 0-3% **(B)** 3-8% **(C)** 8-20%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: None assigned

Typical Profile Description:
Surface layer:) Typically this map unit
Subsurface layer:) consists of areas
Subsoil layer:) excavated and reworked
Substratum:) by man, then smoothed.
Note: These map units generally consist of existing gravel roads and associated disturbed area. Ditch turn-outs, fill piles and stump tailings are often present along map unit boundaries.

Hydrologic Group: Variable

Surface Run Off: Variable

Permeability: Variable

Depth to Bedrock: Variable

Hazard to Flooding: None

INCLUSIONS
(Within Mapping Unit)

Similar: Filled Land

Dissimilar: Small 'made' depressions that contain standing water or have other drainage implications. These may be caused by compaction by vehicular traffic, which is not synonymous with seasonal water tables.

USE AND MANAGEMENT

Development of wind power projects: This map unit consists of areas reworked by man, so that the soils are no longer taxonomically classifiable. Limiting factor for development is depth to seasonal high water table, which is somewhat difficult to determine in this map units. Proper subgrade drainage or other site alterations recommended for construction.

In most areas, this soil map unit is used for redevelopment of roads on pre-existing road alignment. The properties of these soils vary greatly with depth, however, they are generally well suited to use as road sites, due to the existing sub-base. These soils differ greatly from place to place, consequently, on-site investigation is needed to assess the suitability of the soils for specific land uses or redevelopment.

MONARDA
(Aeric Haplaquepts)

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: **(A)** 0-3% **(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 Description:

Surface layer:	Black organic layer, 0-4”
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, except adjacent to small waterbodies

INCLUSIONS
(Within Mapping Unit)

Similar: Brayton, Telos, Colonel, Scantic

Dissimilar: Peacham, Elliotsville (variant), Thorndike, Burnham

USE AND MANAGEMENT

Development of wind power projects: 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.

MONSON

SETTING

Parent Material: Coarse-loamy glacial till.

Landform: Glaciated uplands, ridge tops.

Position in Landscape: Uppermost positions of landforms, ridgetops

Slope Gradient Ranges: **(B)** 3-8% **(C)** 8-20% **(D)** 20%+

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Somewhat excessively well drained with no water table observed throughout the growing season.

Typical Profile Description:

Surface layer:	Dark reddish brown organic material, 0-4"
Subsurface layer:	Light gray channery silt loam, 4-5"
Subsoil layer:	Dark reddish to yellowish brown silt loam, 6-11"
Substratum:	Light olive brown channery silt loam, 11-19"
Slate bedrock @ 19"	

Hydrologic Group: Group C/D

Surface Run-off: Rapid

Permeability: 0.6 - 2.0 in/hr

Depth to Bedrock: shallow 10-20"

Hazard to Flooding: None

Erosion Factors (Kf):

0-8"	-.28
8"-bedrock surface	-.37

INCLUSIONS
(Within mapping unit)

Similar: Telos, Chesuncook, B slope inclusions within C/D map units, Thorndike, Elliotsville
Dissimilar: Monarda, Burnham (very limited extent), Naskeag (Variant)

USE AND MANAGEMENT

Development of wind power projects: The limiting factor for building site development is bedrock, due to depths varying from zero to within 40" of the mineral soil surface. This map unit provides for stable anchoring for tower/turbine construction. Proper foundation drainage or other site modification is recommended for construction.

MONSON–ELLIOTSVILLE COMPLEX

SETTING

Parent Material: Fine-textured glacial till derived from slate and meta sandstone.

Landform: Crests and sideslopes of glaciated uplands.

Position in Landscape: Uppermost of intermediate positions in the landscape.

Slope Gradient Ranges: **(B)** 0-8% **(C)** 8-20% **(D)** 20%+

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Somewhat excessively to well drained, with no evidence of a water table, except on the bedrock surface for short duration during spring and periods of excessive rainfall. The Monson and Elliotsville soils occur in a non-repeating pattern that cannot be separated out in mapping.

Typical Profile Description:

(for Monson)

Surface layer:	Dark reddish brown organic material, 0-4”
Subsurface layer:	Light gray channery silt loam, 4-5”
Subsoil layer:	Dark reddish to yellowish brown silt loam, 6-11”
Substratum:	Light olive brown channery silt loam, 11-19”
Slate bedrock @ 19”	
Note:	Monson soils are 10-20” to bedrock with no dense basal till.

(for Elliotsville)

Surface layer:	Pinkish-gray silt loam, 0-2"
Subsurface layer:	Dark reddish-brown and strong brown silt loam or loam, 2-11"
Subsoil layer:	Light olive brown channery loam, 11-17”
Substratum:	Olive channery loam, 17-26”

Hydrologic Group: Group C/D depending on depth to bedrock

Surface Run-off: Moderately rapid to rapid (on exposed bedrock)

Permeability: Moderate to rapid (on exposed bedrock surfaces)

Depth to Bedrock: 0” (rock outcrop) to moderately deep (40”)

Hazard to Flooding: None

INCLUSIONS
(Within mapping unit)

Similar: Chesuncook, Thorndike, Howland

Dissimilar: D-slopes in C-slope map units, Naskeag, Telos, Monarda

USE AND MANAGEMENT

Development for Wind Power Projects: The limiting factor for development of wind power projects is depth to bedrock. These soils are generally suited to the proposed use with ample potential for solid anchoring points for wind turbines.

MONSON-ROCK OUTCROP COMPLEX

SETTING

Parent Material: Fine-textured glacial till derived from slate and meta sandstone.

Landform: Crests and sideslopes of glaciated uplands.

Position in Landscape: Uppermost of intermediate positions in the landscape.

Slope Gradient Ranges: **(B)** 0-8% **(C)** 8-20% **(D)** 20%+

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Somewhat excessively to well drained, with no evidence of a water table, except on the bedrock surface for short duration during spring and periods of excessive rainfall. The Monson soils occur in a non-repeating pattern along with the rock outcrop that cannot be separated out in mapping.

Typical Profile Description:

Surface layer:	Dark reddish brown organic material, 0-4"
Subsurface layer:	Light gray channery silt loam, 4-5"
Subsoil layer:	Dark reddish to yellowish brown silt loam, 6-11"
Substratum:	Light olive brown channery silt loam, 11-19"
Slate bedrock @ 19"	

Hydrologic Group: Group C/D depending on depth to bedrock

Surface Run-off: Moderately rapid to rapid (on exposed bedrock)

Permeability: Moderate to rapid (on exposed bedrock surfaces)

Depth to Bedrock: 0" (rock outcrop) shallow (<20")

Hazard to Flooding: None

INCLUSIONS
(Within mapping unit)

Similar: Chesuncook, Thorndike, Elliotsville

Dissimilar: D-slopes in C-slope map units, Naskeag, Telos, Monarda

USE AND MANAGEMENT

Development for Wind Power Projects: The limiting factor for development of wind power projects is depth to bedrock, which is generally less than 20" beneath the soil surface. These soil map units are suited to the proposed use, since they provide for solid anchoring points for wind turbines, with no further limitation due to drainage.

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, with a seasonal water table generally 9-15" beneath the soil surface in spring and during wettest seasons.

Typical Profile Description

Surface layer:	Pinkish gray silt loam, 0-4"
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, Howland (SWP)

Dissimilar: Brayton, Monarda, Burnham

USE AND MANAGEMENT

Development of wind power projects: The limiting factors for development of wind power projects is wetness. Proper road foundation drainage, or importation of coarse granular fill may be needed to overcome soil drainage limitations.

TELOS-CHESUNCOOK COMPLEX

SETTING

Parent Material: Coarse-loamy glacial till.

Landform: Glaciated uplands.

Position in Landscape: Side slopes.

Slope Gradient Ranges: **(B)** 3-8% **(C)** 8-20%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Somewhat poorly drained (Telos) to moderately well drained (Chesuncook), with a perched water table 0.5 to 3.0 feet beneath the existing soil surface March through May and during periods of excessive precipitation.

Typical Profile Description:

(for Telos)

Surface layer:	Black organic material, 0-2"
Subsurface layer:	Pinkish gray, gravelly silt loam, 2-5"
Subsoil layer:	Dark brown, dark yellowish brown, olive, gravelly silt loam, 5-52"
Substratum:	Olive gravelly silt loam, 52-60"

(for Chesuncook)

Surface layer:	Dark reddish brown organic, 0-3"
Subsurface layer:	Light gray, dark reddish brown to reddish brown and yellowish brown silt loam and loam, 3-14"
Subsoil layer:	Olive brown to grayish brown, gravelly loam, 14-24"
Substratum:	Olive gravelly loam, 24-36"

Note: These soils occur on the landscape in a regular repeating pattern that was not separated out at the scale provided. Telos is generally the dominant soil, and occupies the micro-depression within the landscape, while Chesuncook is found on small mounds within the micro-topography.

Hydrologic Group: Group C

Surface Run-off: Rapid

Permeability:

Telos:	0-18"	0.6-2.0 in/hr
	>18"	0.0-0.2 in/hr
Chesuncook:	0-21"	0.6 - 2.0 in/hr
	> 21"	< 0.2 in/hr

Depth to Bedrock: Very deep, greater than 60 inches.

Hazard to Flooding: None

Erosion Factors (Kf): 0-8" -.28

INCLUSIONS
(Within Mapping Unit)

Similar: Howland, Plaisted

Dissimilar: Telos, Monson, Elliotsville (less than 40" to bedrock), D slopes in C slope map units, stony and very stony phase inclusions, Monarda, Thorndike

USE AND MANAGEMENT

Development of wind power projects: The limiting factor for building site development is wetness due to the presence of a perched water table 1.0 to 3.0 feet beneath the soil surface for some portion of the year. Proper foundation drainage or other site modification is recommended for construction. Chesuncook soil is suitable for subsurface wastewater disposal, in accordance with the State of Maine Rules for Subsurface Wastewater Disposal. This soil requires a 12-inch separation distance between the seasonal high groundwater table and the bottom of any disposal area, and also requires 4.0 and 2.0 sq.ft/gpd for disposal beds and chamber area, respectively.

TELOS-MONARDA COMPLEX
(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 (Telos) to poorly drained Monarda or Monarda Variant with perched seasonal high groundwater table 0-1.5' beneath the soil surface from October through May and during periods of heavy precipitation.

Typical Profile Description: (for Telos)

Surface layer:	Pinkish gray silt loam, 0-4"
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"

Typical Profile Description: (for Monarda)

Surface layer:	Black organic layer, 0-4"
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"+

Note: These soils occur in a non-regular, non-repeating pattern which could not be separated out at the mapping scale provided. Telos dominates the map unit and exists on mounds, while Monarda occupies small micro-depressions.

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: Brayton, Colonel, Scantic

Dissimilar: Peacham, Burnham, Biddeford

USE AND MANAGEMENT

Development of wind power projects: The limiting factor for building site development is wetness, due to the presence of a groundwater table 1.0 to 1.5 feet below the soil surface for some portion of the year. Proper foundation drainage or other site modification is recommended for construction. These map units have limitations for construction of roads and/or use as turbine pad construction sites, since significant drainage is present for long durations during the year, but oxiaquic conditions prevent identification of these areas as wetlands. Soil drainage limitations for road and/or turbine construction can be overcome through proper engineering techniques and/or importation of granular fill. Special erosion and sediment control is recommended.

APPENDIX D

Soil Profile Descriptions and Taxonomic Names

Town, City, Plantation	Street, Road Subdivision	Owner's Name
CARROLL PLT & KOSSUTH TWP	BOWERS WIND PROJECT	CHAMPLAIN WIND ENERGY (STANTEC)

SOIL 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
GRAVELLY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	
		OLIVE BROWN	OXIDIZED RHIZOSPHERES
	FIRM	OLIVE	COMMON DISTINCT

FOR WASTEWATER DISPOSAL →

Soil Classification (Profile / Condition)	Slope	Limiting Factor	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth
	%	10 "	

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
TELOS (ON MOUND)		

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

Observation Hole TP 2 ■ Test Pit ☐ Boring

5+/- " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
		DARK YELLOWISH BROWN	
GRAVELLY SILT LOAM	FRIABLE	OLIVE BROWN	COMMON FAINT & SATURATED
	FIRM	OLIVE	COMMON DISTINCT

Soil Classification (Profile / Condition)	Slope	Limiting Factor	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth
	%	7 "	

Soil Series Name:	Drainage Class:	Hydrologic Group:
MONARDA (IN PIT)		

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

Observation Hole TP 3 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
		DARK YELLOWISH BROWN	
GRAVELLY SILT LOAM	FRIABLE	OLIVE BROWN	COMMON FAINT
	FIRM	OLIVE	COMMON DISTINCT

FOR WASTEWATER DISPOSAL →

Soil Classification (Profile / Condition)	Slope	Limiting Factor	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth
	%	11 "	

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
TELOS (IN PIT)-NO SATURATION		

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

Observation Hole TP 4 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
		LIGHT GRAY (ALBIC)	
	FRIABLE	DARK YELLOWISH BROWN	
GRAVELLY SILT LOAM		YELLOWISH BROWN	
	SOMEWHAT FIRM	OLIVE BROWN	COMMON FAINT
	FIRM	OLIVE	COMMON DISTINCT

Soil Classification (Profile / Condition)	Slope	Limiting Factor	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth
	%	19 "	

Soil Series Name:	Drainage Class:	Hydrologic Group:
CHESUNCOOK (ON MOUND)		

STATE OF MAINE
JAMES LOGAN #213
SOIL SCIENTIST

James Logan (for AFA) — 237/213 — 4/13/10

Site Evaluator / Soil Scientist Signature — SE/CSS # — Date

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

Town, City, Plantation	Street, Road Subdivision	Owner's Name
CARROLL PLT & KOSSUTH TWP	BOWERS WIND PROJECT	CHAMPLAIN WIND ENERGY (STANTEC)

TEST PIT LOCATED OUTSIDE FINAL SURVEY AREA

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

Observation Hole TP 5 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
GRAVELLY SILT LOAM	FRIABLE	LIGHT GRAY (ALBIC)	NONE EVIDENT
		DARK YELLOWISH BROWN	
REFUSAL (BEDROCK)			

Soil Classification	Slope	Limiting Factor	
Profile / Condition	%	13 "	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR WASTEWATER DISPOSAL →

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
ELLIOTTSVILLE		

Observation Hole TP 6 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
GRAVELLY SILT LOAM	FRIABLE	DARK BROWN	NONE EVIDENT
		DARK YELLOWISH BROWN	
		OLIVE BROWN	
BEDROCK			

Soil Classification	Slope	Limiting Factor	
Profile / Condition	%	25 "	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
ELLIOTTSVILLE		

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

Observation Hole TP 7 ■ Test Pit ☐ Boring

2+/- " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
GRAVELLY SILT LOAM	FRIABLE	LIGHT GRAY (ALBIC)	
		DARK YELLOWISH BROWN	
		YELLOWISH BROWN	
		OLIVE BROWN	
REFUSAL			FREE WATER

Soil Classification	Slope	Limiting Factor	
Profile / Condition	%	26 "	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR WASTEWATER DISPOSAL →

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
ELLIOTTSVILLE		

(VARIANT- WITH WATER TABLE)

Observation Hole TP 8 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
GRAVELLY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	
		OLIVE BROWN	COMMON FAINT
		OLIVE	COMMON DISTINCT
REFUSAL			

Soil Classification	Slope	Limiting Factor	
Profile / Condition	%	9 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
ELLIOTTSVILLE		

(VARIANT- SWP)

STATE OF MAINE
JAMES LOGAN #213
SOIL SCIENTIST

James Logan (for AFA) — Site Evaluator / Soil Scientist Signature

237/213 — SE/CSS #

4/13/10 — Date

Town, City, Plantation	Street, Road, Subdivision	Owner's Name
CARROLL PLT & KOSSUTH TWP	BOWERS WIND PROJECT	CHAMPLAIN WIND ENERGY (STANTEC)

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

Observation Hole TP 9 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	GRAVELLY SILT LOAM	FRIABLE	VARIABLE DARK BROWN	
10			MIXED DARK YELLOWISH BROWN	COMMON FAINT
20		REFUSAL		
30				
40				
50				

FOR WASTEWATER DISPOSAL →

Soil Classification	Slope	Limiting Factor	Ground Water / Restrictive Layer / Bedrock / Pit Depth
Profile: — Condition: —	— %	8 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
MONSON (VARIANT)		

Observation Hole TP 10 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	GRAVELLY SILT LOAM	FRIABLE	BROWN	
10			DARK YELLOWISH BROWN	
20			OLIVE BROWN	FEW FAINT
30		REFUSAL (BEDROCK)		FREE WATER
40				
50				

Soil Classification	Slope	Limiting Factor	Ground Water / Restrictive Layer / Bedrock / Pit Depth
Profile: — Condition: —	— %	28 "	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
ELLIOTTSVILLE		

TEST PIT LOCATED OUTSIDE FINAL SURVEY AREA

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

Observation Hole TP 11 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	ORGANIC		BLACK	FREE WATER
10	GRAVELLY SILT LOAM	FRIABLE	VARIABLE DARK GRAYISH BROWN	
20			OLIVE GRAY	
30				
40				
50				

Soil Classification	Slope	Limiting Factor	Ground Water / Restrictive Layer / Bedrock / Pit Depth
Profile: — Condition: —	— %	0 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
BURNHAM		

Observation Hole TP 12 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	GRAVELLY SILT LOAM	FRIABLE	DARK BROWN	
10			LIGHT GRAY (ALBIC)	
20			MIXED DARK YELLOWISH BROWN	COMMON FAINT
30		REFUSAL (BEDROCK)		FREE WATER
40				
50				

Soil Classification	Slope	Limiting Factor	Ground Water / Restrictive Layer / Bedrock / Pit Depth
Profile: — Condition: —	— %	13 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
ELLIOTTSVILLE (VARIANT-SWP)		

STATE OF MAINE — JAMES LOGAN #213 — SOIL SCIENTIST

James Logan (for AFA) — Site Evaluator / Soil Scientist Signature

237/213 — SE / CSS #

4/13/10 — Date

Town, City, Plantation	Street, Road Subdivision	Owner's Name
CARROLL PLT & KOSSUTH TWP	BOWERS WIND PROJECT	CHAMPLAIN WIND ENERGY (STANTEC)

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

Observation Hole TP 13 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Depth	Texture	Consistency	Color	Mottling
0	GRAVELLY FINE SANDY LOAM	FRIABLE	DARK YELLOWISH BROWN	
10			MIXED YELLOWISH BROWN	FEW FAINT
20	GRAVELLY LOAMY SAND & SAND	FIRM TO VERY FIRM	OLIVE GRAY	COMMON DISTINCT & △△△ FREE WATER
30				
40	LIMIT OF EXCAVATION			
50				

FOR WASTEWATER DISPOSAL →

Soil Classification: Profile	Condition	Slope	Limiting Factor	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth
		%	14 "	

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
COLONEL		

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

Observation Hole TP 14 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Depth	Texture	Consistency	Color	Mottling
0			DARK YELLOWISH BROWN	
10	GRAVELLY SILT LOAM	FRIABLE	OLIVE BROWN	
20		FIRM	OLIVE	FEW FAINT COMMON FAINT & SATURATED
30				
40	LIMIT OF EXCAVATION			
50				

Soil Classification: Profile	Condition	Slope	Limiting Factor	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth
		%	12 "	

Soil Series Name:	Drainage Class:	Hydrologic Group:
TELOS		

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

Observation Hole TP 15 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Depth	Texture	Consistency	Color	Mottling
0			DARK YELLOWISH BROWN	
10	GRAVELLY SILT LOAM	FRIABLE	OLIVE BROWN	FEW FAINT
20		FIRM	OLIVE	SATURATED COMMON DISTINCT
30				
40	LIMIT OF EXCAVATION			
50				

Soil Classification: Profile	Condition	Slope	Limiting Factor	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth
		%	10 "	

Soil Series Name:	Drainage Class:	Hydrologic Group:
TELOS		

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

Observation Hole TP 16 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Depth	Texture	Consistency	Color	Mottling
0			DARK YELLOWISH BROWN	
10	GRAVELLY SILT LOAM	FRIABLE	OLIVE BROWN	COMMON FAINT
20		FIRM	OLIVE	COMMON DISTINCT
30				
40				
50				

Soil Classification: Profile	Condition	Slope	Limiting Factor	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth
		%	11 "	

Soil Series Name:	Drainage Class:	Hydrologic Group:
TELOS		

STATE OF MAINE
JAMES LOGAN #213
SOIL SCIENTIST

(MONARDA INCLUSIONS IN WETTEST MICRO-DEPRESSIONS)

James Logan (for AFA) — Site Evaluator / Soil Scientist Signature

237/213 — SE/CSS #

4/14/10 — Date

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

Town, City, Plantation	Street, Road Subdivision	Owner's Name
CARROLL PLT & KOSSUTH TWP	BOWERS WIND PROJECT	CHAMPLAIN WIND ENERGY (STANTEC)

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

Observation Hole TP 17 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	
10–20			OLIVE BROWN	
20–30		FIRM	OLIVE	FEW FAINT
30–40			OLIVE GRAY	COMMON FAINT
40–50		LIMIT OF EXCAVATION		

FOR WASTEWATER DISPOSAL →

Soil Classification: Profile ____ Condition ____ | Slope ____ % | Limiting Factor 16 " | ■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING →

Soil Series Name: CHESUNCOOK | Drainage Class: | Hydrologic Group:

Observation Hole TP 18 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	
10–20			OLIVE BROWN	FEW FAINT
20–30	GRAVELLY VERY FINE SANDY LOAM	FIRM	OLIVE	COMMON DISTINCT
30–40				
40–50				

Soil Classification: Profile ____ Condition ____ | Slope ____ % | Limiting Factor 20 " | ■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Soil Series Name: CHESUNCOOK | Drainage Class: | Hydrologic Group:

TEST PIT LOCATED OUTSIDE FINAL SURVEY AREA

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

Observation Hole TP 19 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	NONE EVIDENT
10–20			OLIVE BROWN	
20–30		BEDROCK		
30–40				
40–50				

FOR WASTEWATER DISPOSAL →

Soil Classification: Profile ____ Condition ____ | Slope ____ % | Limiting Factor 20 " | ☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR SOILS MAPPING →

Soil Series Name: MONSON-ELLIOTTSVILLE | Drainage Class: | Hydrologic Group:

Observation Hole TP 20 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	NONE EVIDENT
10–20		REFUSAL (BEDROCK)		
20–30				
30–40				
40–50				

STATE OF MAINE ★ JAMES LOGAN #213 ★ SOIL SCIENTIST

Soil Classification: Profile ____ Condition ____ | Slope ____ % | Limiting Factor 12 " | ☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

Soil Series Name: MONSON | Drainage Class: | Hydrologic Group:

James Logan (for AFA) — Site Evaluator / Soil Scientist Signature

237/213 — SE / CSS #

4/14/10 — Date

Town, City, Plantation	Street, Road, Subdivision	Owner's Name
CARROLL PLT & KOSSUTH TWP	BOWERS WIND PROJECT	CHAMPLAIN WIND ENERGY (STANTEC)

TEST PIT LOCATED OUTSIDE FINAL SURVEY AREA

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

Observation Hole TP 21 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
ORGANIC	FRIABLE	BLACK	△△△
BEDROCK			FREE WATER

Soil Classification	Slope	Limiting Factor	Ground Water / Restrictive Layer / Bedrock / Pit Depth
Profile / Condition	%	"	☐ ☐ ☐ ☐

FOR WASTEWATER DISPOSAL →

Soil Series Name	Drainage Class	Hydrologic Group
RUNOFF-INCLUSION IN SHALLOW TO BEDROCK MAP UNIT		

FOR SOILS MAPPING →

Observation Hole TP 22 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
		BROWN	
GRAVELLY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	
		OLIVE BROWN	FEW FAINT
REFUSAL (BEDROCK)			△△△ FREE WATER

Soil Classification	Slope	Limiting Factor	Ground Water / Restrictive Layer / Bedrock / Pit Depth
Profile / Condition	%	11 "	■ ☐ ☐ ☐

Soil Series Name	Drainage Class	Hydrologic Group
ELLIOTTSVILLE (VARIANT)		

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

Observation Hole TP 23 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
		DARK YELLOWISH BROWN	
GRAVELLY SILT LOAM	FRIABLE		
		OLIVE BROWN	COMMON FAINT
			SATURATED
REFUSAL (BEDROCK)			

Soil Classification	Slope	Limiting Factor	Ground Water / Restrictive Layer / Bedrock / Pit Depth
Profile / Condition	%	16 "	☐ ☐ ■ ☐

FOR WASTEWATER DISPOSAL →

Soil Series Name	Drainage Class	Hydrologic Group
ELIOTTSVILLE (VARIANT-WITH WATER TABLE)		

FOR SOILS MAPPING →

Observation Hole TP 24 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
		DARK YELLOWISH BROWN	
GRAVELLY SILT LOAM	FRIABLE		
		OLIVE BROWN	FEW FAINT
REFUSAL			

Soil Classification	Slope	Limiting Factor	Ground Water / Restrictive Layer / Bedrock / Pit Depth
Profile / Condition	%	17 "	☐ ☐ ■ ☐

Soil Series Name	Drainage Class	Hydrologic Group

STATE OF MAINE
JAMES LOGAN #213
SOIL SCIENTIST
MONSON

James Logan (for AFA) 237/213 4/14/10

Site Evaluator / Soil Scientist Signature SE/CSS # Date

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

Town, City, Plantation	Street, Road Subdivision	Owner's Name
CARROLL PLT & KOSSUTH TWP	BOWERS WIND PROJECT	CHAMPLAIN WIND ENERGY (STANTEC)

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

Observation Hole TP 25 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	
10–20			BROWN	COMMON FAINT
20	BEDROCK			

Soil Classification	Slope	Limiting Factor	
Profile / Condition	%	17 "	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR WASTEWATER DISPOSAL →

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
MONSON (VARIANT- WITH WATER TABLE)		

Observation Hole TP 26 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	
10–20			BROWN	
20	BEDROCK			FREE WATER

Soil Classification	Slope	Limiting Factor	
Profile / Condition	%	14 "	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
MONSON		

TEST PIT LOCATED OUTSIDE FINAL SURVEY AREA

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

Observation Hole TP 27 ■ Test Pit ☐ Boring

3+/- " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK GRAYISH BROWN	FREE WATER
10–20		FIRM TO VERY FIRM	OLIVE GRAY	COMMON DISTINCT
20–50				

Soil Classification	Slope	Limiting Factor	
Profile / Condition	%	0 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR WASTEWATER DISPOSAL →

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
MONARDA		

STATE OF MAINE
JAMES LOGAN #213
SOIL SCIENTIST

Observation Hole TP 28 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	
10–20		FIRM	MIXED DARK YELLOWISH BROWN / OLIVE	FEW FAINT / COMMON DISTINCT & SATURATED
20–30	REFUSAL			

Soil Classification	Slope	Limiting Factor	
Profile / Condition	%	11 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
ELLIOTTSVILLE (VARIANT-SWP)		

James Logan (for ABA) — Site Evaluator / Soil Scientist Signature

237/213 — SE / CSS #

4/14/10 — Date

Town, City, Plantation	Street, Road Subdivision	Owner's Name
CARROLL PLT & KOSSUTH TWP	BOWERS WIND PROJECT	CHAMPLAIN WIND ENERGY (STANTEC)

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

Observation Hole TP 29A ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
GRAVELLY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	
	FIRM	MIXED DARK GRAYISH BROWN	COMMON FAINT
			FREE WATER

Soil Classification	Slope	Limiting Factor	Ground Water / Restrictive Layer / Bedrock / Pit Depth
Profile: — Condition: —	— %	9 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR WASTEWATER DISPOSAL →

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
TELOS		

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

Observation Hole TP 30A ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
		BROWN	
GRAVELLY SILT LOAM & VERY FINE SANDY LOAM	FRIABLE	DARK YELLOWISH BROWN	
	SOMEWHAT FIRM	MIXED YELLOWISH BROWN	FEW FAINT
		OLIVE BROWN	COMMON FAINT
	LIMIT OF EXCAVATION		

Soil Classification	Slope	Limiting Factor	Ground Water / Restrictive Layer / Bedrock / Pit Depth
Profile: — Condition: —	— %	24 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
HOWLAND/PLAISTED		

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

Observation Hole TP 29B ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
		DARK BROWN	
GRAVELLY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	NONE EVIDENT
BEDROCK			

Soil Classification	Slope	Limiting Factor	Ground Water / Restrictive Layer / Bedrock / Pit Depth
Profile: — Condition: —	— %	17 "	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR WASTEWATER DISPOSAL →

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
MONSON		

STATE OF MAINE
JAMES LOGAN #213
SOIL SCIENTIST

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

Observation Hole TP 30B ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
		DARK BROWN	
GRAVELLY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	
	SOMEWHAT FIRM	OLIVE BROWN	FEW FAINT
REFUSAL			

Soil Classification	Slope	Limiting Factor	Ground Water / Restrictive Layer / Bedrock / Pit Depth
Profile: — Condition: —	— %	27 "	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
ELLIOTTSVILLE		

James Logan (for AFA) 237/213 4/14 & 5/19/10

Site Evaluator / Soil Scientist Signature — SE/CSS # — Date

Town, City, Plantation	Street, Road Subdivision	Owner's Name
CARROLL PLT & KOSSUTH TWP	BOWERS WIND PROJECT	CHAMPLAIN WIND ENERGY (STANTEC)

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

Observation Hole TP 31A ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	
10–20			OLIVE BROWN	FEW FAINT
20–30		FIRM	OLIVE	COMMON FAINT
30		LIMIT OF EXCAVATION		

FOR WASTEWATER DISPOSAL	Soil Classification (Profile / Condition)	Slope	Limiting Factor	
		____ %	13"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING	Soil Series Name	Drainage Class	Hydrologic Group
	TELOS		

Observation Hole TP 31B ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK BROWN	NONE EVIDENT
10–20			DARK YELLOWISH BROWN	
20		REFUSAL		

FOR WASTEWATER DISPOSAL	Soil Classification (Profile / Condition)	Slope	Limiting Factor	
		____ %	18"	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR SOILS MAPPING	Soil Series Name	Drainage Class	Hydrologic Group
	MONSON		

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

Observation Hole TP 32A ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK BROWN	
10–20			DARK YELLOWISH BROWN	
20	GRAVELLY FINE SANDY LOAM	SOMEWHAT FIRM	OLIVE BROWN	
20–30			OLIVE	COMMON FAINT
30		REFUSAL		

FOR WASTEWATER DISPOSAL	Soil Classification (Profile / Condition)	Slope	Limiting Factor	
		____ %	26"	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR SOILS MAPPING	Soil Series Name	Drainage Class	Hydrologic Group
	ELLIOTTSVILLE		

Observation Hole TP 32B ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	
10–20			YELLOWISH BROWN	
20			OLIVE BROWN	
20–30		SOMEWHAT FIRM TO FIRM	OLIVE GRAY	FEW FAINT COMMON FAINT
30		LIMIT OF EXCAVATION		

FOR WASTEWATER DISPOSAL	Soil Classification (Profile / Condition)	Slope	Limiting Factor	
		____ %	23"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING	Soil Series Name	Drainage Class	Hydrologic Group
	HOWLAND		

STATE OF MAINE
JAMES LOGAN #213
SOIL SCIENTIST

(NO SATURATION)

James Logan (for AFA) — Site Evaluator / Soil Scientist Signature

237/213 — SE/CSS #

5/19/10 — Date

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

Town, City, Plantation	Street, Road Subdivision	Owner's Name
CARROLL PLT & KOSSUTH TWP	BOWERS WIND PROJECT	CHAMPLAIN WIND ENERGY (STANTEC)

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

Observation Hole TP 33 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	ORGANIC		BROWN	
10	SILT LOAM	FRIABLE	DARK REDDISH BROWN	NONE EVIDENT
	REFUSAL			
20				
30				
40				
50				

FOR WASTEWATER DISPOSAL →

Soil Classification: Profile	Condition	Slope: %	Limiting Factor: 12 "	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
MONSON (VARIANT)		

Observation Hole TP 34 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	CHANNERY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	NONE EVIDENT
10	REFUSAL			
20				
30				
40				
50				

Soil Classification: Profile	Condition	Slope: %	Limiting Factor: 5 "	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
ABRAM (VARIANT)		

INCLUSION

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

Observation Hole TP 35 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0			DARK BROWN	
10	GRAVELLY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	
20				SATURATED
	BEDROCK			
30				
40				
50				

FOR WASTEWATER DISPOSAL →

Soil Classification: Profile	Condition	Slope: %	Limiting Factor: 23 "	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
ELLIOTTSVILLE		

Observation Hole TP 36 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0			DARK BROWN	
10	GRAVELLY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	COMMON FAINT COMMON DISTINCT
20	BEDROCK			
	(SATURATION ON BEDROCK SURFACE)			
30				
40				
50				

Soil Classification: Profile	Condition	Slope: %	Limiting Factor: 22 "	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
ELLIOTTSVILLE (VARIANT)		

STATE OF MAINE
JAMES LOGAN #213
SOIL SCIENTIST

James Logan (for AF-A) 237/213 5/19 & 5/20/10

Site Evaluator / Soil Scientist Signature SE/CSS # Date

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

Town, City, Plantation	Street, Road Subdivision	Owner's Name
CARROLL PLT & KOSSUTH TWP	BOWERS WIND PROJECT	CHAMPLAIN WIND ENERGY (STANTEC)

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

Observation Hole TP 37 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Depth	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK BROWN	
10–20			DARK YELLOWISH BROWN	SATURATED
10	BEDROCK			

FOR WASTEWATER DISPOSAL	Soil Classification (Profile / Condition)	Slope	Limiting Factor	
		%	9 "	■ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR SOILS MAPPING	Soil Series Name:	Drainage Class:	Hydrologic Group:
	ABRAM (VARIANT) INCLUSION		

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

Observation Hole TP 38 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Depth	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK BROWN	
10–20			DARK YELLOWISH BROWN	NONE EVIDENT
10	BEDROCK			

FOR WASTEWATER DISPOSAL	Soil Classification (Profile / Condition)	Slope	Limiting Factor	
		%	16 "	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR SOILS MAPPING	Soil Series Name:	Drainage Class:	Hydrologic Group:
	MONSON		

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

Observation Hole TP 39 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Depth	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK BROWN	
10–20			YELLOWISH BROWN	
20–30			OLIVE BROWN	COMMON DISTINCT
30–50		FIRM	OLIVE	SATURATED

FOR WASTEWATER DISPOSAL	Soil Classification (Profile / Condition)	Slope	Limiting Factor	
		%	10 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING	Soil Series Name:	Drainage Class:	Hydrologic Group:
	TELOS		

STATE OF MAINE
JAMES LOGAN #213
SOIL SCIENTIST

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

Observation Hole TP 40 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Depth	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK BROWN	
10–20			DARK YELLOWISH BROWN	NONE EVIDENT
20	REFUSAL			

FOR WASTEWATER DISPOSAL	Soil Classification (Profile / Condition)	Slope	Limiting Factor	
		%	19 "	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR SOILS MAPPING	Soil Series Name:	Drainage Class:	Hydrologic Group:
	MONSON		

James Logan (for AFA) — Site Evaluator / Soil Scientist Signature

237/213 — SE / CSS #

5/20 & 6/22/10 — Date

Town, City, Plantation	Street, Road Subdivision	Owner's Name
CARROLL PLT & KOSSUTH TWP	BOWERS WIND PROJECT	CHAMPLAIN WIND ENERGY (STANTEC)

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

Observation Hole TP 41 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	GRAVELLY SILT LOAM	FRIABLE	LIGHT GRAY (ALBIC)	NONE EVIDENT
10			DARK YELLOWISH BROWN	
20	REFUSAL			
30				
40				
50				

FOR WASTEWATER DISPOSAL → Soil Classification: Profile ____ Condition ____ | Slope: ____ % | Limiting Factor: 15 " | ☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR SOILS MAPPING → Soil Series Name: MONSON | Drainage Class: | Hydrologic Group:

Observation Hole TP 42 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0			BROWN	
10	GRAVELLY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	
20		SOMEWHAT FIRM	OLIVE BROWN	FEW FAINT
30	REFUSAL			
40				
50				

FOR WASTEWATER DISPOSAL → Soil Classification: Profile ____ Condition ____ | Slope: ____ % | Limiting Factor: 22 " | ☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR SOILS MAPPING → Soil Series Name: ELLIOTTSVILLE | Drainage Class: | Hydrologic Group:

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

Observation Hole TP 43 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0			BROWN	
10	GRAVELLY SILT LOAM	FRIABLE	YELLOWISH BROWN	
			OLIVE BROWN	
			OLIVE	COMMON FAINT
20		SOMEWHAT FIRM TO FIRM		COMMON DISTINCT
30				
40				
50				

FOR WASTEWATER DISPOSAL → Soil Classification: Profile ____ Condition ____ | Slope: ____ % | Limiting Factor: 10-15 " | ■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING → Soil Series Name: TELOS-CHESUNCOOK (ON EDGE OF PIT/MOUND TOPOGRAPHY) | Drainage Class: | Hydrologic Group:

Observation Hole TP 44 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0				
10	GRAVELLY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	
20			OLIVE BROWN	FEW FAINT
		SOMEWHAT FIRM TO FIRM	OLIVE	COMMON FAINT
30				
40				
50				

FOR WASTEWATER DISPOSAL → Soil Classification: Profile ____ Condition ____ | Slope: ____ % | Limiting Factor: 17 " | ■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING → Soil Series Name: CHESUNCOOK (IN COMPLEX W/ TELOS) | Drainage Class: | Hydrologic Group:

STATE OF MAINE ★ JAMES LOGAN #213 ★ SOIL SCIENTIST

James Logan (for AFA) 237/213 6/22 & 6/23/10

Site Evaluator / Soil Scientist Signature SE/CSS # Date

Town, City, Plantation	Street, Road Subdivision	Owner's Name
CARROLL PLT & KOSSUTH TWP	BOWERS WIND PROJECT	CHAMPLAIN WIND ENERGY (STANTEC)

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

Observation Hole TP 45 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Depth	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	
10–20			OLIVE BROWN	FEW FAINT
20–30		SOMEWHAT FIRM TO FIRM	OLIVE	COMMON FAINT
30–50				

Soil Classification	Slope	Limiting Factor	
Profile / Condition	____%	16"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR WASTEWATER DISPOSAL →

FOR SOILS MAPPING →

Soil Series Name	Drainage Class	Hydrologic Group
CHESUNCOOK (MWD LANDFORM)		

Observation Hole TP 46 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Depth	Texture	Consistency	Color	Mottling
0–10	SILT LOAM	FRIABLE	LIGHT GRAY (ALBIC)	NONE EVIDENT
10–50		REFUSAL		

Soil Classification	Slope	Limiting Factor	
Profile / Condition	____%	6"	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

Soil Series Name	Drainage Class	Hydrologic Group
ABRAM (VARIANT) INCLUSION		

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

Observation Hole TP 47 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Depth	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	
10–20		FIRM	OLIVE BROWN	COMMON FAINT
20–50			OLIVE	COMMON DISTINCT

Soil Classification	Slope	Limiting Factor	
Profile / Condition	____%	10"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR WASTEWATER DISPOSAL →

FOR SOILS MAPPING →

Soil Series Name	Drainage Class	Hydrologic Group
TELOS		

STATE OF MAINE
JAMES LOGAN #213
SOIL SCIENTIST

Observation Hole TP 48 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Depth	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	
10–20		FIRM	OLIVE BROWN	COMMON FAINT
20–50			OLIVE	COMMON DISTINCT

Soil Classification	Slope	Limiting Factor	
Profile / Condition	____%	13"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Soil Series Name	Drainage Class	Hydrologic Group
TELOS		

James Logan (for AFA)
Site Evaluator / Soil Scientist Signature

237/213
SE/CSS #

6/23/10
Date

Town, City, Plantation	Street, Road Subdivision	Owner's Name
CARROLL PLT & KOSSUTH TWP	BOWERS WIND PROJECT	CHAMPLAIN WIND ENERGY (STANTEC)

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

Observation Hole TP 49 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
CHANNERY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	NONE EVIDENT
		YELLOWISH BROWN	
REFUSAL			

Soil Classification	Slope	Limiting Factor	
Profile / Condition	%	25 "	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR WASTEWATER DISPOSAL →

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
ELLIOTTSVILLE		

Observation Hole TP 50 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
ORGANIC		BLACK 10YR2/1	
	FRIABLE		
STONY SILT		OLIVE GRAY	MANY PROMINENT
REFUSAL			

Soil Classification	Slope	Limiting Factor	
Profile / Condition	%	0 "	☐ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
ELLIOTTSVILLE (VARIANT) (MONARDA VARIANT)		

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

Observation Hole TP 51 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	NONE EVIDENT
REFUSAL			

Soil Classification	Slope	Limiting Factor	
Profile / Condition	%	5 "	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR WASTEWATER DISPOSAL →

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
MONSON (VARIANT)		

STATE OF MAINE ★ JAMES LOGAN #213 ★ SOIL SCIENTIST

Observation Hole TP 52 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	NONE EVIDENT
	SOMEWHAT FIRM	OLIVE BROWN	
REFUSAL			

Soil Classification	Slope	Limiting Factor	
Profile / Condition	%	14 "	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
MONSON (VARIANT)		

James Logan (for AFA) — Site Evaluator / Soil Scientist Signature

237/213 — SE/CSS #

6/24 & 7/21/10 — Date

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

Town, City, Plantation	Street, Road Subdivision	Owner's Name
CARROLL PLT & KOSSUTH TWP	BOWERS WIND PROJECT	CHAMPLAIN WIND ENERGY (STANTEC)

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

Observation Hole TP 53 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

	Texture	Consistency	Color	Mottling
0–10	MUCK	FRIABLE	BLACK	
10–20	STONY SILT LOAM	FRIABLE	OLIVE GRAY	ΔΔΔ FREE WATER
20–50		FIRM		

FOR WASTEWATER DISPOSAL →

Soil Classification	Slope	Limiting Factor	
Profile: — Condition: —	—%	0"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
MONARDA (VARIANT)		

Observation Hole TP 54 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	VARIABLE DARK BROWN	
10–20		FRIABLE	MIXED DARK YELLOWISH BROWN	COMMON FAINT
20–30		FIRM	OLIVE GRAY	COMMON DISTINCT
30–50	LIMIT OF EXCAVATION			

Soil Classification	Slope	Limiting Factor	
Profile: — Condition: —	—%	8"	■ Ground Water ■ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
TELOS		

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

Observation Hole TP 55 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK BROWN	
10–20		FRIABLE	DARK YELLOWISH BROWN	
20–30		FIRM	OLIVE BROWN / OLIVE	FEW DISTINCT / COMMON DISTINCT
30–50	REFUSAL			

FOR WASTEWATER DISPOSAL →

Soil Classification	Slope	Limiting Factor	
Profile: — Condition: —	—%	12"	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
ELLIOTTSVILLE (VARIANT-SWP)		

Observation Hole TP 56 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

	Texture	Consistency	Color	Mottling
0–10	SILT LOAM	FRIABLE	LIGHT GRAY (ALBIC)	NONE EVIDENT
10–20			DARK YELLOWISH BROWN	
20–50	BEDROCK			

STATE OF MAINE ★ JAMES LOGAN #213 ★ SOIL SCIENTIST

Soil Classification	Slope	Limiting Factor	
Profile: — Condition: —	—%	11"	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
MONSON		

James Logan (for AFA) — Site Evaluator / Soil Scientist Signature

237/213 — SE/CSS #

7/21/10 — Date

Town, City, Plantation	Street, Road Subdivision	Owner's Name
CARROLL PLT & KOSSUTH TWP	BOWERS WIND PROJECT	CHAMPLAIN WIND ENERGY (STANTEC)

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

Observation Hole TP 57 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	NONE EVIDENT
BEDROCK			

Soil Classification (Profile / Condition)	Slope	Limiting Factor	
	___ %	10 "	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR WASTEWATER DISPOSAL →

FOR SOILS MAPPING → Soil Series Name:	Drainage Class:	Hydrologic Group:
MONSON		

Observation Hole TP 58 ■ Test Pit ☐ Boring

3+/- " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
SILT LOAM	FRIABLE	DARK YELLOWISH BROWN / OLIVE BROWN	FEW FAINT
BEDROCK			

Soil Classification (Profile / Condition)	Slope	Limiting Factor	
	___ %	10 "	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR WASTEWATER DISPOSAL →

FOR SOILS MAPPING → Soil Series Name:	Drainage Class:	Hydrologic Group:
MONSON (VARIANT)		

NOTE: TP IN SMALL CREVASSE IN BEDROCK LANDFORM

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

Observation Hole TP 59 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
GRAVELLY SILT LOAM	FRIABLE	DARK BROWN / DARK YELLOWISH BROWN	
	SOMEWHAT FIRM	OLIVE BROWN	COMMON FAINT
	FIRM	OLIVE	COMMON DISTINCT

Soil Classification (Profile / Condition)	Slope	Limiting Factor	
	___ %	12 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR WASTEWATER DISPOSAL →

FOR SOILS MAPPING → Soil Series Name:	Drainage Class:	Hydrologic Group:
TELOS		

Observation Hole TP 60 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
GRAVELLY SILT LOAM	FRIABLE	DARK BROWN 10YR3/3 / DARK YELLOWISH BROWN 10YR4/6	
	FIRM	LIGHT OLIVE BROWN	COMMON FAINT

Soil Classification (Profile / Condition)	Slope	Limiting Factor	
	___ %	17 "	■ Ground Water ■ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
CHESUNCOOK		

STATE OF MAINE
JAMES LOGAN #213
SOIL SCIENTIST

James Logan (for AFA)

Site Evaluator / Soil Scientist Signature

237/213

SE/CSS #

7/21 & 10/6/10

Date

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

Town, City, Plantation	Street, Road Subdivision	Owner's Name
CARROLL PLT & KOSSUTH TWP	BOWERS WIND PROJECT	CHAMPLAIN WIND ENERGY (STANTEC)

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

Observation Hole TP 61 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	VARIABLE DARK BROWN	
10–20			OLIVE BROWN	FEW FAINT
20–30		FIRM	OLIVE	COMMON DISTINCT
30–50		LIMIT OF EXCAVATION		

FOR WASTEWATER DISPOSAL →

Soil Classification	Slope	Limiting Factor	
Profile ____ Condition ____	____ %	12 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
TELOS		

Observation Hole TP 62 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK BROWN	
10–20			DARK YELLOWISH BROWN	
20–30		FIRM	OLIVE BROWN	COMMON FAINT
30–50		REFUSAL (BEDROCK)		

Soil Classification	Slope	Limiting Factor	
Profile ____ Condition ____	____ %	23 "	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
ELLIOTTSVILLE		

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

Observation Hole ____ ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–50				

FOR WASTEWATER DISPOSAL →

Soil Classification	Slope	Limiting Factor	
Profile ____ Condition ____	____ %	"	☐ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:

Observation Hole ____ ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–50				

STATE OF MAINE JAMES LOGAN #213 SOIL SCIENTIST

Soil Classification	Slope	Limiting Factor	
Profile ____ Condition ____	____ %	"	☐ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:

James Logan (for AFA) — Site Evaluator / Soil Scientist Signature

237/213 — SE/CSS #

10/6/10 — Date

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

Town, City, Plantation	Street, Road Subdivision	Owner's Name
CARROLL PLANTATION	BOWERS WIND PROJECT O & M SITE	CHAMPLAIN WIND ENERGY (STANTEC)

ALL TEST PITS EXCAVATED BY BACKHOE

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

Observation Hole TP 100 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	SILT LOAM	FRIABLE	DARK BROWN 10YR5/3	NONE EVIDENT
10–20			DARK YELLOWISH BROWN 10YR4/6	
20	BEDROCK			

FOR WASTEWATER DISPOSAL	Soil Classification	Slope	Limiting Factor	
	I (Profile) A (Condition)	____ %	16"	☐ Ground Water ☐ Restrictive Layer ☐ Bedrock ■ Pit Depth

FOR SOILS MAPPING	Soil Series Name:	Drainage Class:	Hydrologic Group:

Observation Hole TP 101 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK BROWN 10YR3/3	
10–20			DARK YELLOWISH BROWN 10YR4/4	
20		FIRM	DARK YELLOWISH BROWN 10YR3/4	COMMON FAINT
30			OLIVE BROWN	COMMON DISTINCT
40	(WEATHERED BEDROCK 45" – 56")			

FOR WASTEWATER DISPOSAL	Soil Classification	Slope	Limiting Factor	
	I (Profile) A/C (Condition)	____ %	20"	☐ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING	Soil Series Name:	Drainage Class:	Hydrologic Group:
	HOWLAND (MWD)		

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

Observation Hole TP 102 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	CHANNERY SILT LOAM	FRIABLE	DARK BROWN 10YR3/3	
10–20			DARK YELLOWISH BROWN 10YR4/6	
20		SOMEWHAT FIRM	OLIVE BROWN	FEW FAINT
30		FIRM		COMMON DISTINCT
40	WEATHERED BEDROCK			

FOR WASTEWATER DISPOSAL	Soil Classification	Slope	Limiting Factor	
	I (Profile) A/C (Condition)	____ %	17"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING	Soil Series Name:	Drainage Class:	Hydrologic Group:

Observation Hole TP 103 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	CHANNERY SILT LOAM	FRIABLE	DARK BROWN 10YR3/3	
10–20			DARK YELLOWISH BROWN 10YR4/6	
20		FIRM	MIXED DARK YELLOWISH BROWN	FEW FAINT
30			OLIVE BROWN	COMMON DISTINCT
40			OLIVE	
	FRACTURED BEDROCK			

FOR WASTEWATER DISPOSAL	Soil Classification	Slope	Limiting Factor	
	Profile Condition	____ %	16"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING	Soil Series Name:	Drainage Class:	Hydrologic Group:
	HOWLAND		

STATE OF MAINE JAMES LOGAN #213 SOIL SCIENTIST

James Logan (6/14-FA)

Site Evaluator / Soil Scientist Signature

237/213

SE/CSS #

10/7/10

Date

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

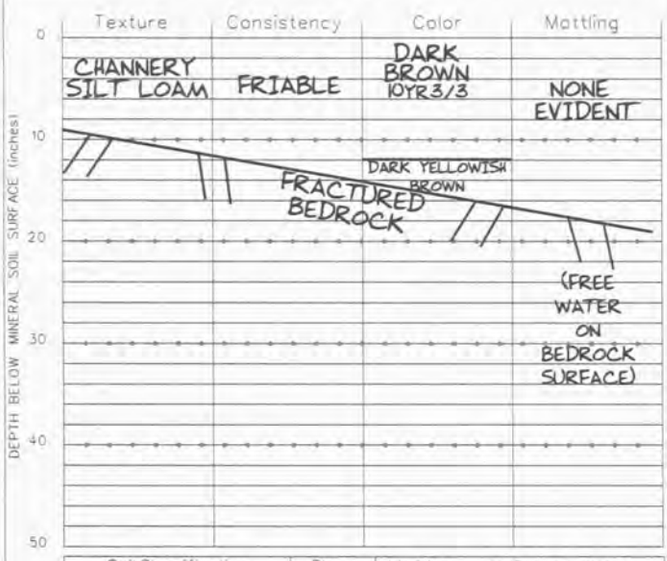
Town, City, Plantation	Street, Road, Subdivision	Owner's Name
CARROLL PLANTATION	BOWERS WIND PROJECT O & M SITE	CHAMPLAIN WIND ENERGY (STANTEC)

ALL TEST PITS EXCAVATED BY BACKHOE

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

Observation Hole TP 104 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

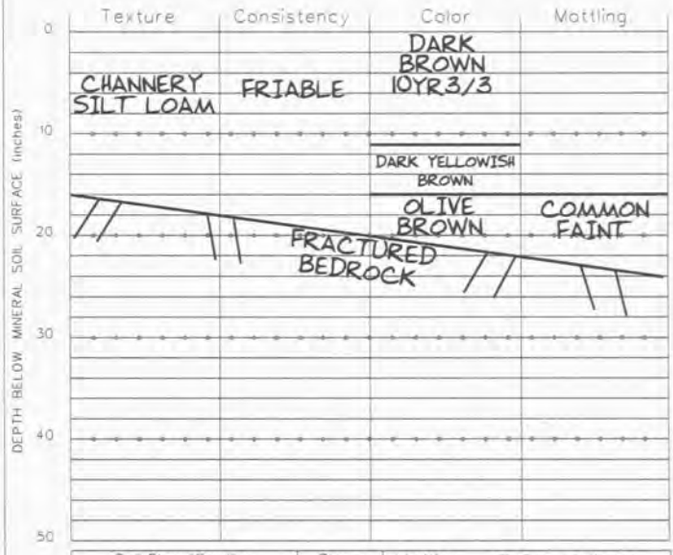


FOR WASTEWATER DISPOSAL →	Soil Classification	Slope	Limiting Factor	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth
	Profile: I / Condition: A	____ %	9-19"	

FOR SOILS MAPPING →	Soil Series Name:	Drainage Class:	Hydrologic Group:
	MONSON		

Observation Hole TP 105 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil



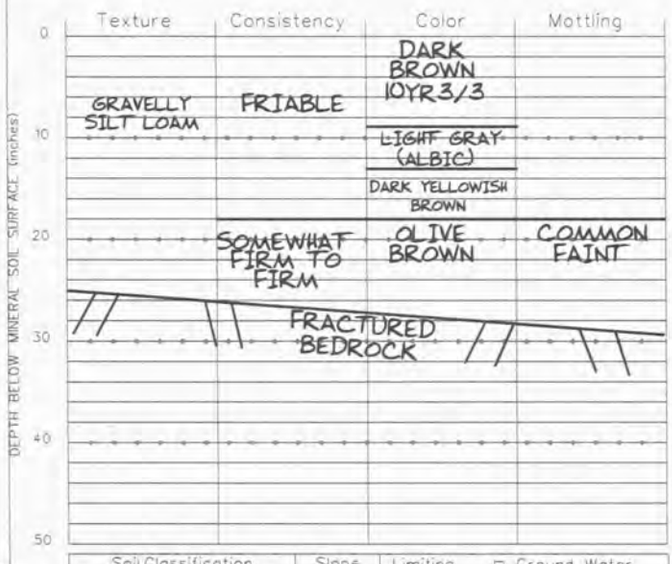
Soil Classification	Slope	Limiting Factor	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth
Profile: ____ / Condition: ____	____ %	16-24"	

Soil Series Name:	Drainage Class:	Hydrologic Group:
MONSON-ELLIOTTSVILLE		

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

Observation Hole TP 106 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

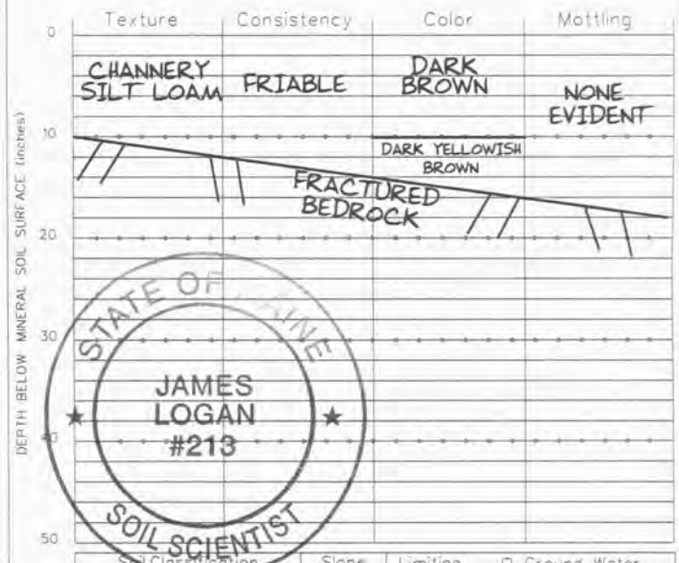


FOR WASTEWATER DISPOSAL →	Soil Classification	Slope	Limiting Factor	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth
	Profile: ____ / Condition: ____	____ %	25-29"	

FOR SOILS MAPPING →	Soil Series Name:	Drainage Class:	Hydrologic Group:
	ELLIOTTSVILLE		

Observation Hole TP 107 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil



Soil Classification	Slope	Limiting Factor	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth
Profile: ____ / Condition: ____	____ %	10-18"	

Soil Series Name:	Drainage Class:	Hydrologic Group:
MONSON		

James Logan (for AFA)

Site Evaluator / Soil Scientist Signature

237/213

SE/CSS #

10/7/10

Date

Town, City, Plantation	Street, Road, Subdivision	Owner's Name
CARROLL PLANTATION	BOWERS WIND PROJECT O & M SITE	CHAMPLAIN WIND ENERGY (STANTEC)

ALL TEST PITS EXCAVATED BY BACKHOE

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

Observation Hole TP 108 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
0 SILT LOAM (OVERBURDEN)	FRIABLE	DARK BROWN	
		DARK YELLOWISH BROWN	
10 GRAVELLY SILT LOAM		VARIABLE DARK GRAYISH BROWN	FEW FAINT
	SOMEWHAT FIRM TO FIRM	OLIVE BROWN	COMMON DISTINCT & ΔΔΔ FREE WATER
20			
30			
40			
50 LIMIT OF EXCAVATION			

Soil Classification	Slope	Limiting Factor	
Profile / Condition	%	12"	☐ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR WASTEWATER DISPOSAL →

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
FILL OVER TELOS	SWP	

Observation Hole TP 109 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
0		VARIABLE DARK BROWN 10YR3/2	
GRAVELLY SILT LOAM	FRIABLE		OXIDIZED RHIZOSPHERES
10		OLIVE BROWN	COMMON DISTINCT
	FIRM	OLIVE	ΔΔΔ FREE WATER
20			
30			
40 LIMIT OF EXCAVATION			
50			

Soil Classification	Slope	Limiting Factor	
Profile / Condition	%	8+/-"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
TELOS		

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

Observation Hole TP 110 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
0		VARIABLE DARK GRAYISH BROWN	SATURATED
10 GRAVELLY SILT LOAM			
	FRIABLE	OLIVE GRAY	COMMON DISTINCT
20			(OXIDIZED RHIZOSPHERES @ 4")
30 COBBLY GRAVELLY SILT LOAM		MIXED OLIVE GRAY	
40			
50			

Soil Classification	Slope	Limiting Factor	
Profile / Condition	%	4+/-"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR WASTEWATER DISPOSAL →

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
MONARDA		

STATE OF MAINE
JAMES LOGAN #213
SOIL SCIENTIST

James Logan (for AFA)
Site Evaluator / Soil Scientist Signature

237/213
SE/CSS #

10/7/10
Date

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

APPENDIX E

Glossary Of Soil Terminology

Depth Classes

These refer to the depth of the particle control section used to describe the central concept of each taxonomic unit. These are as follows:

Very shallow	less than 10" to bedrock
Shallow	10" to 20" to bedrock
Moderately deep	20" to 40" to bedrock
Deep	40" to 60" deep
Very deep	greater than 60"

Drainage Class

Drainage class is a reference to the frequency and duration of periods of soil saturation and/or action by seasonal groundwater tables, as evidenced by soil morphologic features identified within each respective soil profile.

Seven classes of soil drainage are recognized:

Excessively drained	water is removed from the soil very rapidly. These are commonly very coarse-textured, rocky or shallow. All are free of soil mottling related to wetness.
Somewhat excessively drained	water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy-textured and very pervious/porous. Some are shallow. Some occur on steep slopes where much of the water they receive is lost as runoff. These too are free of observed mottling due to wetness.
Well drained	Water is removed from the soil readily, but not rapidly. It may be available for plant growth at the deepest rooting depths, and not so wet as to inhibit the growth of plant roots for significant periods during most growing seasons. Well drained soils are often medium textured, or contain restrictive subhorizons generally below 24". They are mainly free of mottling related to wetness.

Moderately well drained	water is removed from the spoils somewhat slowly during wet periods and spring seasons. Moderately well drained soils are saturated in the upper soil profile for short duration during the growing season. Often, they contain a slowly pervious (or restrictive) layer beneath the solum, and may receive additional runoff from upslope areas.
Somewhat poorly drained	water is removed so slowly that the soil is wet for significant periods during the growing season. Somewhat poorly drained soils commonly have an impervious substratum that contributes to a perched water table, additional water through sideslope seeps, long continuous sheet flows below large watershed areas with few or no outlets, or a combination of these together.
Poorly drained	water is removed from these soils so slowly that the soil is saturated during the growing season or remains wet for long durations. Water is present during the growing season which may be prohibitive to plant root growth, due to anaerobic/saturated conditions. These soils are classified as hydric, and may also have implications as wetlands.
Very poorly drained	water is removed from these soils so slowly that free water can be observed at or very near the mineral soil surface for long durations during the growing season. These commonly occur on nearly level slopes or in depressional areas, and can be frequently ponded. Often they include thick organic surface horizons.

Hydrologic Soil Groups

A hydrologic soil group is a class of numerous soil series that all have the same runoff potential under similar climate and vegetative conditions. Soil properties that can

influence runoff are those that affect minimum infiltration rates for a bare soil after prolonged wetting and with no frozen ground surface. Most important are depth to seasonal high groundwater table, permeability rates after prolonged wetting, and depth to slowly permeable (restrictive) layer.

Permeability

Permeability is the soil property which enables water to move downward through the soil profile. It is measured as the number of inches per hour of water that can be added to a particular soil as it moves downward through the unsaturated soil. Terminology and ranges are as flows:

Very slow	less than 0.06 in./hr
Slow	0.06 to 0.20 in./hr
Moderately slow	0.20 to 0.60 in./hr
Moderate	0.6 to 2.0 in./hr
Moderately rapid	2.0 to 6.0 in./hr
Rapid	6.0 to 20 in./hr

Soil Erodibility (K Factor)

The measure of soil erodability, or K factor, is the susceptibility of a soil particle to detachment and transport by rainfall. K factors for soil in Maine vary from 0.02 to 0.69. The higher the value, the more susceptible the named soil is to sheet or rill erosion by water.

Soil properties which influence erosion are those that can affect infiltration rates, movement of water through the soil profile and the water storage capacity of a soil. Other soil properties can affect the dispersion and mobility of soil particles by rainfall ad/or runoff. Some of the most important of these properties include soil layer, and the size and stability of the soil structural aggregates in the exposed faces of subsoils. Background levels of soil moisture and the presence of frozen soil horizons also can influence erosion.

Soil Texture

Soil texture refers to the USDA classification for the relative proportions by weight of the several soil particle size classes that are finer than 2 millimeters in diameter, which form the fine earth fraction. (Materials larger than 2 mm. in diameter are considered rock fragments).

Soil texture can influence on plant growth, or the soil mechanics of a particular site when used as construction and/or backfill material for foundations, etc. It influences such physical properties as load bearing strength, permeability, shrink/swell potential (frost action or due to wetness), compressibility and compaction. Rock fragment size and content can also affect applications for use as construction materials.

Soil Texture Modifiers

Named soil texture classes can be further modified by the addition of appropriate adjectives when rock fragment content approaches 15% by volume (i.e. gravelly sandy loam). "Mucky" or "peaty" are modifying terms used when organic matter content reaches 40% (i.e. mucky silt/loam).

Surface Runoff

Surface runoff is water that flows away from the soil over the surface of the site without infiltrating into the ground surface. It may originate from precipitation, or as drainage water from adjacent, upslope areas. The rate and amount of runoff are affected by internal physical characteristics of the soil as well as slope gradient ranges and landform shape (i.e. concave vs. convex slopes). Runoff can be significantly different on a given soil under natural vegetation, cultivation by man, or other kinds of management. Runoff from a particular site can also be affected by other factors such as rainfall amounts, snow pack accumulation or other climatic fluctuations. Surface runoff is usually significantly greater on frozen ground surfaces.

Six categories for runoff rates are provided:

Ponded	little or none of the precipitation and run-on (from surrounding, higher elevations) escapes the site as runoff. Free water stands on or above the existing soil surface for significant periods of time. Ponding normally appears on level to nearly level (i.e. <3%) slopes, in depressions or within concavities in a pit/mound micro-relief topography. Water depth may vary considerably throughout the year, or from year to year. Often this is consistent with very poorly drained soils.
Very slow	surface water flows away slowly, and free water may be present at the soil surface for portions of the year, or may infiltrate slowly into the soil surface when not ponded. These soils may be consistent with very poorly drained, or poorly drained soils that are coarser textured and somewhat porous.
Slow	surface water flows away from the soil quickly enough, either due to slope or the porosity of the soils, so that free

water can be observed at the soil surface for moderate periods immediately following spring snowmelt or prolonged storm rainfall events. Most of the water passes through the soil, is used by plants, or evaporates.

Medium — surface water flows away quickly enough due to slope or soil porosity that water is observed at or near the soil surface for short durations, usually during spring snowmelt or immediately following significant storm rainfall events.

Rapid — surface water flows away quickly enough that any period of saturation is brief, and free water does not stand on the soil surface. Only a small portion of the water enters the soil as infiltration, either due to steep slopes and/or fine textures with slow rates of absorption.

Very rapid — surface water flows away so quickly that duration of any event is brief, and water never stands on the soil surface. Only a very small portion of the available moisture enters the soil as infiltration.

ADDITIONAL SOIL TERMS

Flooding (Hazard to flooding)

Flooding is the temporary covering of the soil surface by flowing water from any source, including but not limited to: streams or rivers overflowing their banks, runoff from adjacent or upslope areas, inflow from high tide action, or a combination of sources. Water due to snowmelt is excluded from this definition, as is standing or ponded water that forms a permanent or semi-permanent cover above the soil surface.

Flooding hazard is further expressed by frequency classes, duration, and the time of year that the flooding occurs. The velocity and depth of the floodwater are also important factors.

Ponding — Ponding is standing water in a closed depression. The water is removed only by evaporation, transpiration by plants, or percolation through the ground.

Soil complex — A map unit that consist of two or more kinds of soils (i.e. soil series/taxonomic unit) that occur on a non-regular, non-repeating pattern that cannot be separated out at the scale provided. The order of the soils named are generally in order of predominance within the map unit.

Soil map unit

A collection of soils or soil areas that are delineated during soils mapping. It generally is an aggregate of several soil entities with a predominant named soil type. Kinds of soil map units may include complexes, consociations, or associations.

Soil slope gradient range

The slope identified for any given map unit, based on the immediate topography within a specific portion of the mapping site. Designations generally are as follows:

A	0-3%	nearly level to level
B	3-8%	gently sloping
C	8-20%	moderately sloping
D	20%+	steeply sloping

Stoniness

This is a phase of surface characteristic that may be identified in soils mapping, ranging from stony or bouldery (0.01 to 0.1% of soil surface covered with stones) to rubbly or rubble land, in which up to 75% of the soil surface is covered with stones. Extremely stony sites or sites with rubble land may have additional limitations for use of mechanized equipment.

APPENDIX F

Methodology

Soils identification and mapping were done in accordance with the standards adopted by the Maine Association of Professional Soil Scientists (revised February 2004) for Class A-D soil surveys. Soils are described using standard soil terminology developed by the USDA Natural Resources Conservation Service, which is also where soil interpretation records originate for each soil series described in Maine. Scale requirements vary depending on the level of soil survey required, and limits for dissimilar soil inclusions likewise vary depending on class of mapping accuracy requested. Where important distinctions between hydric and non-hydric soils are made in the mapping, the Maine Association of Professional Soil Scientists Key to Soil Drainage Classes was also utilized, as well as a separate list of regional indicators for identification of hydric soils (Field Indicators for Identifying Hydric Soils in New England, version 3 2004).

APPENDIX G

Photographs

Champlain Wind Energy
Bowers Mountain Wind Project
Carroll Plantation & Kossuth Township, Maine

Test pit 14-Telos soils with somewhat poorly drained conditions (similar to Howland SWP)

Exposed bedrock surface exhibiting brief runoff conditions after significant rainfall events and during snowmelt

Champlain Wind Energy
Bowers Mountain Wind Project
Carroll Plantation & Kossuth Township, Maine

Typical Monson-Elliottsville soil complex w/ undulating bedrock depth beneath soil surface

Gravelly silt loam textured glacial till soils (Chesuncook)

Champlain Wind Energy
Bowers Mountain Wind Project
Carroll Plantation & Kossuth Township, Maine

Typical road cut with existing made land/gravel road map feature

Typical road cut in project area exhibiting moderately well-drained to well-drained conditions

Champlain Wind Energy
Bowers Mountain Wind Project
Carroll Plantation & Kossuth Township, Maine

Typical Monards soils which are poorly drained (hydric)

Test pit 24: Typical Monson soils which are generally 10-20” to bedrock

Champlain Wind Energy
Bowers Mountain Wind Project
Carroll Plantation & Kossuth Township, Maine

Typical Howland (somewhat poorly-drained) silt loam glacial till soils

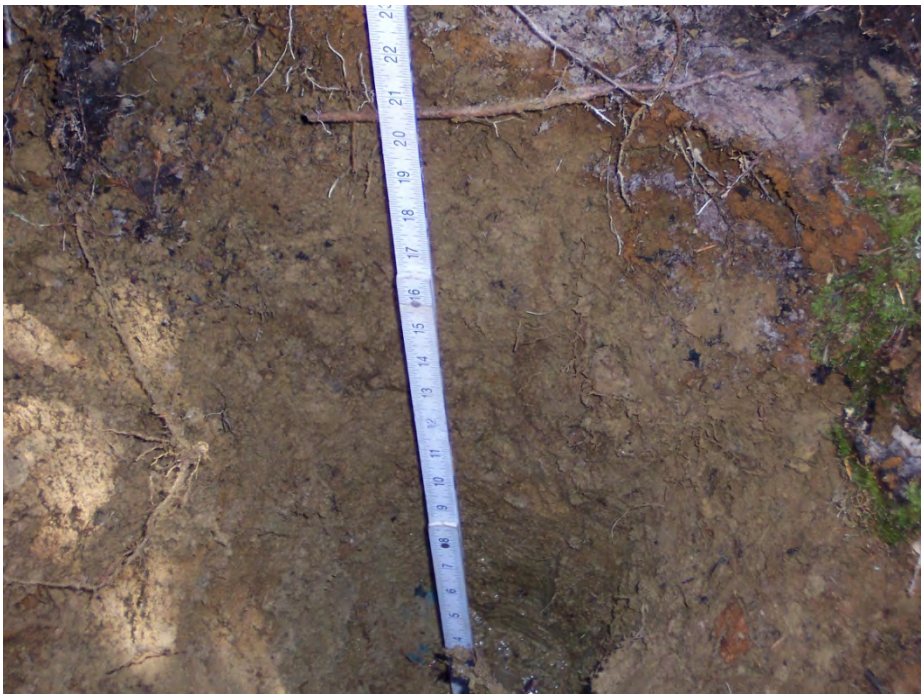
Typical Howland (moderately well-drained) soils on a beech hardwood ridge

Champlain Wind Energy
Bowers Mountain Wind Project
Carroll Plantation & Kossuth Township, Maine

Typical Burnham (very poorly-drained) soils with 8”+/- organic surface horizon over mineral soils

Typical Burnham soil setting (very poorly-drained)

Champlain Wind Energy
Bowers Mountain Wind Project
Carroll Plantation & Kossuth Township, Maine



Typical Elliottsville (Variant) soils which are 20-40” to bedrock and exhibit somewhat poorly-drained conditions

Test pit 35: Elliottsville with bedrock @ 23”+/-

Champlain Wind Energy
Bowers Mountain Wind Project
Carroll Plantation & Kossuth Township, Maine

Test pit 7: Elliottsville (Variant) soils with 26” to bedrock/refusal (free water observed on bedrock surface)