KIBBY WIND POWER PROJECT
CLASS "D" MEDIUM INTENSITY
SOIL SURVEY

Prepared for:

TransCanada
In business to deliver

amec

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KIBBY WINDPOWER PROJECT
CLASS D MEDIUM INTENSITY SOIL SURVEY

TABLE OF CONTENTS

LIST OF APPENDICES

1.0 Introduction and Purpose of Study

TransCanada is proposing to develop a wind energy project on Kibby Mountain and Kibby Range in northern Franklin County, Maine. The Kibby Wind Power Project will generate approximately 130 megawatts (MW) of electrical power from 44 wind turbine sites along the ridgelines of the Kibby Range and Kibby Mountain. The project will require construction of a new 115 kilovolt (kV) transmission line corridor to tie into the existing power grid. The new transmission line will be approximately 27.5 miles in length, with its origin at the proposed Kibby Substation in Kibby Township. The corridor will be cleared to approximately 150 feet in width along its entire length, except where it will be co-located with an existing transmission ROW; in such locations, the new cleared area will be approximately 125 feet wide. The transmission corridor will extend south from Kibby Township through Jim Pond Township, Eustis, Coplin Plantation, Wyman Township and Carrabassett Valley to the Bigelow Substation. This soil survey report describes soils mapped along the proposed transmission corridor.

The Kibby Wind Power Project team presented a preliminary plan of the proposed wind energy project to the Land Use Regulation Commission (LURC) on September 13, 2006. Ms. Marcia-Spencer Famous (LURC Land Use Planner), Mr. Robert Marvinney, (Director and State Geologist), and Mr. David Rocque (State Soil Scientist) identified potential environmental issues to be addressed for the proposed project. Upon meeting with Mr. Rocque, it was determined that a Class D Medium-Intensity Soil Survey (using existing soil data) would be adequate to address the proposed transmission route. Additional soil mapping could potentially be required in the future. Based on the described consultation, this survey has been conducted to the Class D Medium-Intensity level, and applies strictly to the proposed 115 kV transmission line. A more intense, Class C Medium-High Intensity soil survey was prepared for the ridge development areas, and is presented in a separate report.

The purpose of this Class D Medium Intensity Soil Survey is to review, identify, and describe the mapped soils (where data exist) that are traversed along the proposed transmission line route. This report may be used to support permitting procedures as required under the Site Location of Development Act (SLODA), Natural Resources Protection Act (NRPA), LURC, or other pertinent regulations. The soil information herein may be used to obtain hydrological grouping ratings to assist in the calculations for storm water runoff curve values required by the Maine Department of

Environmental Protection (DEP), under the Site Law, 38 Maine Revised Statute Annotated (MRSA) §§ 481-490; Section 12. This soil information may also be used to evaluate soil suitability relating to development for the proposed transmission project. Additionally, this information can be used to address LURC standards for erosion and sediment control rule 10.25G for the Kibby Wind Power Project.

Section 2 discusses the methods used for this survey. In Section 3, soil characteristics and map unit descriptions are presented. Section 4 presents the conclusions of this report, while limitations and references are provided in Sections 5 and 6, respectively. Appendix A provides certification of the soil report. Appendix B lists the soil mapping units that occur along the route and their characteristics. Appendix C provides narrative descriptions of soil types. Appendix D presents summaries of the linear distance crossed for each soil type. Appendix E provides interpretational definitions commonly used in soils analysis. Appendix F presents the soils maps prepared for the transmission line corridor.

2.0 Methods

This Class D Medium-Intensity Soil Survey is based on existing soil survey data for Franklin and Somerset Counties. Specifically, data were obtained from published soil surveys, maps, and online databases of the United States Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS). Information was also obtained from personal communications with county soil scientists. Soils along the proposed route were not observed in the field for the purposes of developing this report. All descriptions herein are based directly upon a desktop review of published soil maps, and respective official soils descriptions, consistent with the requirements for a Class D survey.

Geographic Information Systems (GIS) technology was used to apply spatial reference to digital design of the proposed transmission route. This reference was used to establish spatial continuity between design data, Maine GIS data and USDA NRCS soils data. The coordinate system that was applied to establish this continuity was Universal Transverse Mercator (UTM) Zone 19 Northern Hemisphere, and North American Datum 1983. Soils were mapped within a 75 foot buffer on either side of the centerline of the proposed route, for a total corridor width of 150 feet. Resulting Class D

medium-intensity soil maps of the proposed transmission corridor are presented in Appendix F. Soil map units were measured in linear feet along the centerline of the proposed route.

Additional soil data, such as hydric soils listings, were obtained from the official NRCS website. Available data for identified soil types were reviewed and used to identify potential soil limitations relating to the construction and maintenance of the proposed transmission line corridor.

3.0 Soil Characteristics and Map Unit Descriptions

The NRCS Soil Maps that were referenced for this project were produced from two different soil survey efforts; specifically, Survey Area ME-610 and Survey Area ME-619. Survey Area ME-610 covers areas of the proposed transmission route that are in Eustis Township, Coplin Plantation and Carrabassett Valley. Soil Survey Area ME-619 covers portions of the route which lie in Kibby Township, Jim Pond Township and Wyman Township. It should be noted that, in some cases, these surveys use identical map unit symbols to describe different soils; likewise, in some cases, they may use different map unit symbols for identical soils.

Generally, the proposed route crosses soils that are derived from and formed in glacial till, or in glaciofluvial deposits in lower elevations and adjacent to water bodies and streams. The NRCS soil maps also identified alluvial and organic soils along the proposed transmission route. Generally, the soil map units were "mapped" as associations and complexes with a few individual soils.

The soil survey maps presented in Appendix F depict the size and location of individual soil map units relative to each other and to existing site features by use of symbols. Each symbol or soil map unit identified by the NRCS for Soil Survey Areas 610 and 619 generally consists of three letters. The first two letters refer to the soils making up the map unit, and the third letter refers to the surface slope gradient for the map unit. For example, "AFC" would indicate a strongly sloping Adams-Croghan Association. Other soil units, such as "CG" (Charles-Medomak-Cornish Association), do not indicate any slope gradient; only the soils making up the soil map unit are noted.

Land gradients (slopes) along the proposed route vary between soil survey areas 610 or 619. Soils in area 610 generally have "C" slopes or 8 to 15 percent. Many of the Soil Map Units in Survey Areas

610 and 619 did not include a numerical slope designation and general terms were used to describe slope, such as gently, rolling, moderately steep, steep, and very steep.

The soil series phase name is a representation of the soil characteristics, such as texture, stoniness, drainage, and depth to bedrock, all of which may affect the potential use and management of the soil. There may be small areas of different soils within a soil map unit, known as inclusions. Inclusions may exist within a delineated soil map unit, although the size of the inclusion may be too small to be represented as an NRCS map unit. A soil legend, which lists all soils encountered along the proposed transmission route, is presented in Appendix B. Detailed soils descriptions are presented in Appendix C. Appendix D identifies the mileages at which each map unit appears along the proposed route, beginning at the northern origin at the Kibby Substation, in Kibby Township, Maine, and moving south, toward the Bigelow Substation in Carrabassett Valley. Interpretations for soil descriptions are provided in Appendix E, and Class D Medium-intensity soil maps are provided in Appendix F.

4.0 Conclusions

The soil series, soil associations, and soil complexes mapped by the NRCS would have similar properties to the soil series descriptions and should respond to use and management as determined and described in the *Soil Series of Maine Soil Interpretations*, published by the Maine Association of Professional Soil Scientists in cooperation with the USDA Soil Conservation Service, dated January 1987 and revised January 1988 and 1989. See Appendix C for detailed soils information and terminology.

The soils along the proposed 115 kV transmission line route are suitable for utility land uses based on the soil survey data obtained and reflected in this Class D soil survey. Mapped soils have some limitations for development, but in general these can be accommodated by appropriate planning, construction timing, and standard engineering methods. Site features such as the depth to bedrock, runoff volumes, seasonal soil saturation depths, the potential for frost and erosion activity, rock outcrops, and jurisdictional wetland areas were considered. The following is a summary of soils identified on the NRCS soil maps with potential negative effects relating to the development of this parcel:

- Steep slopes located in the proposed right-of-way corridor may require deep cuts to install utility pole structures. Special attention to erosion control practices and stabilization of these areas will address this limitation.
- The route generally has a "very deep" (greater than 60 inches) depth to bedrock classification of mineral soil over bedrock. Shallow soil map units (that have less than 60 inches of mineral soil over bedrock) that are traversed by the centerline of the proposed transmission route include LAC, LAE, LNC, LNE, LTC, LTE and RYE (see Appendices B through F for more information on these map units). The centerline of the proposed transmission corridor crosses roughly 27,100 linear feet of these soil types; this constitutes approximately 19 percent of the total linear distance of the proposed route. Areas with shallow bedrock may require drilling and/or blasting in order to install poles. Erosion control is especially important in shallow soils.
- Jurisdictional wetland areas and hydric soils are present in the proposed transmission line corridor. Hydric soil map units that are traversed along the centerline of the proposed transmission route include BSB, BTB, BW, Ca, CG (610 and 619), CNC, CRB, Nb, PPB and WO (see Appendices B through F for more information on these map units). The centerline of the proposed transmission corridor crosses roughly 29,350 linear feet of these soil types; this constitutes approximately 20 percent of the total linear distance of the proposed route. Impacts to these areas will be avoided to the extent practicable. Any pole placement that potentially impacts wetland areas will be minimized.

The use of accepted Best Management Practices for erosion and sediment control will reduce the potential for site erosion and sedimentation.

5.0 Limitations

The scope of this investigation has been limited to this Class D Medium-Intensity Soil Survey in general accordance with standards and guidelines established by the Maine Association of Professional Soil Scientists. No test pit observations have been conducted for this survey. The soil map and soil survey report were prepared for the exclusive use of TransCanada for specific application to the proposed Kibby Wind Power Project.

No other warranty, expressed or implied, is made. The conclusions and recommendations presented in this soil report are based on data obtained from the NRCS and our interpretations of this

information. It should be noted, with the great variation in bedrock depth fluctuations, there is potential for shallow soils. The limited subsurface work associated with utility line installation is anticipated to allow for appropriate flexibility in pole placement, if warranted.

The soil map units used in this soil report and on the existing soil map were prepared by the NRCS. These map units were in part influenced by the minimum unit size (40 acres) and may not always be adequate for all proposed land uses and a more intense soil survey may be required in specific areas. Data from this soil report and soil map should not be used for any purpose other than the proposed Kibby Wind Power Project, as some soils, which may be considered limiting for a particular use, could be considered non-limiting for different uses.

6.0 References

Guidelines for Maine Certified Soil Scientists for Soil Identification and Mapping. Maine Association of Professional Soil Scientists, September 2000.

Soil Taxonomy, A Basic System of Soil Classification for Making and Interpreting Soil Surveys. The United States Department of Agriculture, (USDA) 1975.

Soil Survey Manual. Soil Survey Division Staff, USDA, Handbook No. 18, issued October 1993.

Keys to Soil Taxonomy. Soil Survey Staff, USDA, Fifth Edition, 1992.

Soil Series of Maine, Soil Interpretations. Published by the Maine Association of Professional Soil Scientists in cooperation with the USDA Soil Conservation Service. January 1987, Revised January 1989.

Soil Series of Maine, Soil Descriptions. Published by the Maine Association of Professional Soil Scientists in cooperation with the USDA Soil Conservation Service. January 1987, Revised January 1989.

USDA Natural Resources Conservation Service (NRCS) official website: http://soils.usda.gov

APPENDIX A
SOIL REPORT

KIBBY WIND POWER PROJECT
CLASS D MEDIUM INTENSITY

SOIL REPORT

Kibby, Jim Pond, Eustis, Wyman Townships & Coplin Plantation

Date: February 15, 2007

Base Map: Political boundaries courtesy of Maine Office of GIS.
Soils data from Natural Resource Conservation Service of the United States Department of Agriculture.
Scale: 1" = 2000'

Ground Control: Wetlands were located by GPS with sub-meter capability.

The Maine Association of Professional Soil Scientists has adopted standards for soil surveys. Soil surveys are divided into four classes of survey, which are dependent upon the amount of information required for the project. The following is a summary of requirements for a Class D Medium Intensity Soil Survey. Soil profiles were not observed in the field for this survey/report.

Class D Medium-Intensity Soil Survey Standards

1. Map units may contain dissimilar limiting inclusions larger than 5 acres provided that each individual dissimilar inclusion is smaller than the minimum unit size used. Dissimilar limiting inclusions may total more than 5 acres per map unit delineation in the aggregate, if not contiguous.
2. Scale of 1 inch = 2,000 feet (2,000') or larger.
3. Ground control: As determined by the mapper.
4. Base map: as determined by the mapper.

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

This Soil Survey was prepared in relation to a proposed Kibby Wind Power Project and associated access routes. Some mapping units may be smaller than 5 acres in size and, therefore, more intensive than Standards for Class D Medium Intensity Soil Survey. However, the smaller units are wetland areas and useful for planning purposes and not indicative of unit size for the entire soil map.

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APPENDIX B
SOIL MAP UNITS

Map Unit Symbol	Mapping Area (610/619)	Complex / Series	Parent Material	Texture	Range of Slope (%)	Hydrologic Soil Group (HSG)
AFC	610	Adams-Croghan Association	Glaciofluvial materials		Strongly sloping	A,B
BkC	610	Berkshire Soils	Glacial till	Fine sandy loam	8-l5%	B
BkD	610	Berkshire Soils	Glacial till	Fine sandy loam	15-25%	B
BSB	610	Brayton-Colonel Association	Glacial till	Very stony	Gently sloping	C,C
BTB	610	Brayton-Peacham-Markey Association	Glacial till / organic soils	Very stony	Gently sloping	C,D,A/D
BW	610	Bucksport and Markey Soils	Organic soils	Decomposed organics	0-2%	D,A/D
Ca	610	Charles	Alluvial soils	Silt loam	No designation	C
CG	619	Charles Cornish Wonsqueak	Alluvial / organic soils		0-2%	C,C,D
CG	610	Charles-Medomak-Cornish	Alluvial soils		No designation	C,D,C
CNC	619	Colonel-Dixfield–Pillsbury	Glacial till	Fine sandy loam	8-l5%	C,C,C
CPC	610	Colonel-Dixfield Association	Glacial till	Very stony	Strongly sloping	C,C
CRB	619	Colonel-Pillsbury-Skerry Assoc	Glacial till		1-8%	C,C,C
CTC	610	Colton-Sheepscot Association	Glaciofluvial materials		5-15%	A,B
CTC	619	Colton Adams Association	Glacial till		Rolling terrain	A,A
CVD	619	Colton-Hermon Association	Glacial till		15-30%	A,A
DMC	610	Dixfield-Marlow Association	Glacial till	Very stony	Strongly sloping	C,C
DMC	619	Dixfield Colonel Marlow Association	Glacial till		3-15%	C,C,C
DTC	619	Dixfield-Colonel Rawsonville	Glacial till		3-15%	C,C,C
HMC	610	Hermon-Monadnock Association	Glacial till	Very stony	Rolling	A,B
HSC	619	Hermon-Skerry	Glacial till		5-15%	A,C
HTC	619	Hermon-Rawsonville-Skerry	Glacial till		5-15%	A,C,C
HTD	619	Hermon-Rawsonville-Skerry	Glacial till		12-30%	A,C,C
LAC	619	Hogback-Abram	Glacial till		4-25%	C,D
LAE	619	Hogback-Abram	Glacial till		15-60%	C,D
LNC	610	Lyman-Tunbridge-Abram Complex	Glacial till	Very stony	Rolling	C/D,C,D
LNE	610	Lyman-Tunbridge-Abram Complex	Glacial till	Very stony	Steep	C/D,C,D
LTC	619	Hogback-Rawsonville Complex	Glacial till		4-25%	C,C
LTE	619	Hogback-Rawsonville Complex	Glacial till		20-60%	C,C
MDD	619	Marlow-Dixfield Soils	Glacial till		12-30%	C,C
MED	619	Marlow-Dixfield-Rawsonville	Glacial till	Fine sandy loam	12-30%	C,C,C

Map Unit Symbol	Mapping Area (610/619)	Complex / Series	Parent Material	Texture	Range of Slope (%)	Hydrologic Soil Group (HSG)
MGD	610	Marlow-Dixfield Association	Glacial till	Very stony	Moderately steep	C,C
MNC	610	Monadnock-Berkshire Complex	Glacial till	Very stony	Steep	B,B
MNC	619	Monadnock-Berkshire-Rawsonville Association	Glacial till	Very stony	5-16%	B,B,C
MND	619	Berkshire-Monadnock-Rawsonville Association	Glacial till		10-45%	B,B,C
Nb	610	Naumburg Soils	Glaciofluvial materials	Loamy sand	No Designation	C
PPB	619	Pillsbury-Peacham Association	Glacial till		1-8%	C,D
RYE	610	Rock outcrop-Abram-Lyman Complex	Glacial till	Very stony	Very steep	D,D,C/D
TRC	610	Tunbridge-Berkshire-Dixfield Association	Glacial till	Very stony	Rolling	C,B,C
W	610	Water	N/A	N/A	N/A	N/A
WO	610 & 619	Wonsqueak-Bucksport Soils	Organic soils	Muck	0-2%	D,D

APPENDIX C
SOIL NARRATIVES

ABRAM

(Frigid Lithic Udorthents)

TYPICAL SETTING

Parent Material: Thin mantle of glacial till.

Landform: Bedrock controlled ridges and mountains.

Position in Landscape: Nearly level to very steep ridges.

Slope Gradient Ranges: 0 to 80 %

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Excessively drained with less than 5" to bedrock.

Typical Profile Description:

Surface layer: Black organic material, 0-1 inch
Subsurface layer: Pinkish gray sandy loam, 1-2 inches
Subsoil layer: Very dusky red and brown sandy loam, 2-5 inches
Substratum: Bedrock at 5 inches

Hydrologic Group: Group D.

Surface Runoff: Very Rapid.

Permeability: Limited by shallow depth to bedrock.

Depth to Bedrock: Very Shallow <5".

Hazard to Flooding: None.

INCLUSIONS

(Within Mapping Unit)

Similar: Lyman, Hogback.
Contrasting: Dixfield, Rock Outcrop, Tunbridge.

USE AND MANAGEMENT

Abram soils have "Severe" ratings for most site development due to the shallow depth of bedrock. Site preparation for subsurface utilities typically include: blasting, filling or ripping of the bedrock.

ADAMS
(Frigid Typic Haplorthods)

TYPICAL SETTING

Parent Material: Glaciofluvial/Glaciolacustrine sands.

Landform: Outwash plains, deltas, lake plains, moraines, terraces and eskers.

Position in Landscape: Highest elevations and slopes.

Slope Gradient Ranges: 0 to 60% slopes.

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Excessively, somewhat excessively and well drained.

Typical Profile Description:

Surface layer: Pinkish gray sand, 0 to 4 inches.

Subsoil layer: Dark reddish brown and brown loamy sand, 4 to 10 inches, and brown and yellowish brown loose sand 10 to 26-inches.

Substratum: Grayish brown loose sand, 26 to 60 inches.

Hydrologic Group: Group A.

Surface Runoff: Very slow to medium.

Permeability: Rapid or very rapid in surface layer and in the upper part of the subsoil and rapid or very rapid in the lower part of the subsoil and substratum.

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

Hazard to Flooding: None.

INCLUSIONS
(Within Mapping Unit)

Similar: Croghan

Contrasting: Naumburg (Wetness)

USE AND MANAGEMENT

A limiting factor for building site development is the proneness to "caving" of cut-banks typical of granular sandy soils. Proper foundation drainage or site modification is recommended for construction. Use of this soil for roadways is rated as "good" with slopes less than 15 percent.

BERKSHIRE

(Frigid Typic Haplorthods)

TYPICAL SETTING

Parent Material: Glacial till.

Landform: Ridges.

Position in Landscape: Upper portions of landforms.

Slope Gradient Ranges: 3 to 75 %.

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Well Drained, with no observed water table within 4 feet of the soil surface.

Typical Profile Description:

Surface layer: Grayish brown gravelly loamy sand, 0-7 inches.
Subsurface layer: Dark reddish brown gravelly loamy sand, 7-11 inches.
Subsoil layer: Reddish brown gravelly loamy sand, 11-16 inches.
Substratum: Yellowish brown and pale brown very gravelly sand, 16-70 inches.

Hydrologic Group: Group B.

Surface Runoff: Slow.

Permeability: Rapid or very rapid in the solum, very rapid in the substratum.

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

Hazard to Flooding: None.

INCLUSIONS

(Within Mapping Unit)

Similar: **Monadnock**
Contrasting: Dixfield (moderately well drained), Rawsonville (shallow).

USE AND MANAGEMENT

Berkshire soils have few limitations for site development.

BRAYTON

(Frigid Aeric Haplaquepts)

TYPICAL SETTING

Parent Material: Compact loamy glacial till.

Landform: Depressions and toe-slopes of glaciated uplands.

Position in Landscape: Lowest positions on landform.

Slope Gradient Ranges: 0 to 15 %.

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Somewhat poorly and poorly drained, typically with a perched water table 0 to 1.0 feet beneath the soil surface from November through May or during periods of excessive precipitation.

Typical Profile Description:

Surface layer: Very dark grayish brown sandy loam, 0-5 inches.
Subsurface layer: Grayish brown sandy loam, 5-15 inches.
Subsoil layer: Olive gray fine sandy loam, 15-24 inches.
Substratum: Olive sandy loam, 24-65 inches.

Hydrologic Group: Group C.

Surface Runoff: Moderate to moderately rapid.

Permeability: Moderate in solum, moderately slow or slow in dense substratum.

Depth to Bedrock: Deep, greater than 40-inches.

Hazard to Flooding: None.

INCLUSIONS

(Within Mapping Unit)

Similar: Colonel
Contrasting: Markey, Peacham

USE AND MANAGEMENT

Development is limited for building site development by wetness, due to a perched water table within one foot of the soil surface for a significant portion of the year. Proper foundation drainage or other site modification is recommended for construction. Brayton (poorly drained) may be classified as jurisdictional wetlands, dependent upon meeting the three parameters of hydric conditions, hydrology, and wetland vegetation (hydrophytes).

BUCKSPORT

(Typic Eudic Borasaprists)

TYPICAL SETTING

Parent Material: Decomposed organic materials.

Landform: Ground moraines, shallow till ridges and outwash plains.

Position in Landscape: Lowest flat elevations.

Slope Gradient Ranges: 0 to 1% slopes.

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Very poorly drained soils in depressions.

Typical Profile Description:

Surface layer: Black muck 0 to 12 inches thick.

Subsurface layers: Dark reddish brown muck 12 to 25 inches and black muck from 25 to 60".

Hydrologic Group: Group D.

Surface Runoff: Very slow, usually inundated.

Permeability: Moderately slow to moderately rapid in the subsurface layers.

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

Hazard to Flooding: Rare.

INCLUSIONS

(Within Mapping Unit)

Similar: Wonsqueak

Contrasting: Markey

USE AND MANAGEMENT

A limiting factor for building site development is prolonged wetness. These soils are usually saturated or inundated to the soil surface with the ground water table. Usually located in jurisdictional wetland areas and proper identification and appropriate setbacks or complete avoidance is suggested for site development.

CHARLES (Limerick)

(Frigid Aeric Fluvaquents)

TYPICAL SETTING

Parent Material: Recently deposited alluvium, sometimes stratified.

Landform: Floodplains adjacent to rivers and streams.

Position in Landscape: Commonly found in broad depressions on floodplains.

Slope Gradient Ranges: 0 to 2 %

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Poorly drained, with an apparent water table from 0 to 1.5 feet beneath the soil surface from November through June.

Typical Profile Description:

Surface layer: Dark grayish brown silt loan, 0-13 inches.
Subsurface layer: Olive gray silt loam, 13-35 inches.
Subsoil layer: Gray silt loam, 35-40 inches.
Substratum: Dark gray silt loam, 40-65 inches.

Hydrologic Group: Group C.

Permeability: Moderate to very rapid.

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

Hazard to Flooding: Brief periods from March through October.

INCLUSIONS

(Within Mapping Unit)

Similar: Cornish, Wonsqueak.
Contrasting: Medomak very poorly drained (Saco).

USE AND MANAGEMENT

Charles soils are limited for building site development by wetness, due to the presence of an apparent water table near the soil surface for a significant portion of the year, and the common frequency of flooding during spring runoff and periods of heavy precipitation. Proper foundation drainage or other site modification is recommended for construction. Limerick (Charles) soil may be classified as wetlands on the combined consideration of hydric conditions, hydrology and vegetation.

COLONEL

(Frigid Aquic Haplorthods)

TYPICAL SETTING

Parent Material: Compact loamy glacial till.

Landform: Glaciated uplands.

Position in Landscape: Intermediate positions on landform.

Slope Gradient Ranges: 0 to 30 %.

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Somewhat poorly drained, with a perched water table 1.0 to 1.5 feet beneath the soil surface from November through May or during periods of excessive precipitation.

Typical Profile Description:

Surface layer: Grayish brown fine sandy loam, 0-2 inches.
Subsurface layer: Dark reddish brown fine sandy loam, 2-12 inches.
Subsoil layer: Light olive brown gravelly fine sandy loam, 12-18 inches.
Substratum: Olive gravelly fine sandy loam, 18-65 inches.

Hydrologic Group: Group C.
Surface Runoff: Moderate.
Permeability: Moderate in solum and moderately slow or slow in the compact substratum.
Depth to Bedrock: Deep, greater than 40-inches.
Hazard to Flooding: None.

INCLUSIONS

(Within Mapping Unit)

Similar: Brayton, Pillsbury.
Contrasting: Dixfield, Skerry.

USE AND MANAGEMENT

Site development is limited by wetness, due to the presence of a perched water table 1.0 to 1.5 feet beneath the soil surface for some portion of the year. Proper foundation drainage or other site modification is recommended for construction.

COLTON

(Frigid Typic Haplorthods)

TYPICAL SETTING

Parent Material: Glaciofluvial deposits.

Landform: Terraces, kames, eskers, and outwash plains.

Position in Landscape: Upper portions of landforms.

Slope Gradient Ranges: 0 to 60%.

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Excessively drained, with no observed water table within 6 feet of the soil surface.

Typical Profile Description:

Surface layer: Grayish brown gravelly loamy sand, 0-7 inches.
Subsurface layer: Dark reddish brown gravelly loamy sand, 7-11 inches.
Subsoil layer: Reddish brown gravelly loamy sand, 11-16 inches.
Substratum: Yellowish brown and pale brown very gravelly sand, 16-70 inches.

Hydrologic Group: Group A.

Surface Runoff: Slow.

Permeability: Rapid or very rapid in the solum, very rapid in the substratum.

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

Hazard to Flooding: None.

INCLUSIONS

(Within Mapping Unit)

Similar: Hermon.
Contrasting: Adams, Croghan.

USE AND MANAGEMENT

Colton soil is suitable for most types of development. Proper foundation drainage or other site modification is recommended for construction.

CORNISH

(Frigid Fluvaquentic Dystrochrepts)

TYPICAL SETTING

Parent Material: Alluvial sediments.

Landform: Floodplains.

Position in Landscape: Nearly level areas, commonly in broad depressions.

Slope Gradient Ranges: 0 to 2 %.

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Somewhat poorly drained, with an apparent water table 1.0 to 2.0 feet beneath the soil surface from November through May and during periods of excessive precipitation or spring run off.

Typical Profile Description:

Surface layer: Very dark grayish-brown very fine sandy loam, 0-12 inches.
Subsurface layer: Light olive-brown very fine sandy loam, 12-24 inches.
Subsoil layer: Olive very fine sandy loam, 24-35 inches.
Substratum: Olive-gray very fine sandy loam, 35-60 inches.

Hydrologic Group: Group C.

Surface Runoff: Slow.

Permeability: Moderate in coarse silty layers and moderate to very rapid in the silt loam to fine gravel strata, where present.

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

Hazard to Flooding: Twice annually to once every ten years.

INCLUSIONS

(Within Mapping Unit)

Similar: Charles, Medomak.
Contrasting: Wonsqueak.

USE AND MANAGEMENT

Site development is limited by wetness, due to the presence of a water table 1.0 to 2.0 feet beneath the soil surface for a significant portion of the year. Cornish soils are alluvial or floodplain soils that may frequently flood. Proper setbacks should be maintained for site improvements.

CROGHAN

(Frigid Aquic Haplorthods)

TYPICAL SETTING

Parent Material: Derived from outwash or deltaic sand.

Landform: Occupy outwash terraces and sand plains.

Position in Landscape: Usually are found in intermediate or upper positions in the landscape.

Slope Gradient Ranges: 0 to 8 %

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Moderately well drained soils, with a seasonal water table 1.5 to 2.0 feet below the soil surface from November through May.

Typical Profile Description:

Surface layer: Dark brown sand, 0-7 inches.

Subsoil: Strong brown/yellowish brown, brown & pale brown sand with mottles below 13 inches, 7 to 53 inches.

Substratum: Grayish brown loose sand, 53-60 inches.

Hydrologic Group: Group B.

Surface Run Off: Slow to medium.

Permeability: Rapid to very rapid in the lower horizons.

Depth to Bedrock: Deep, greater than 40 inches.

Hazard to Flooding: None

INCLUSIONS
(Within Mapping Unit)

Similar: Adams.
Contrasting: Naumburg.

USE AND MANAGEMENT

Site development is limited by wetness, due to the presence of a groundwater table. Proper foundation drainage or site modification is recommended.

DIXFIELD

(Frigid Typic Haplorthods)

SETTING

Parent Material: Compact loamy glacial till.

Landform: Glaciated uplands and drumlins.

Position in Landscape: Upper portions of landforms.

Slope Gradient Ranges: 0 to 50 %.

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Moderately well drained, with a perched water table 1.5 to 2.5 feet beneath the existing soil surface from November through April and during periods of excessive precipitation.

Typical Profile Description:

Surface layer:	Grayish brown and dark brown fine sandy loam, 0-6 inches.
Subsurface layer:	Strong brown and dark yellowish brown fine sandy loam, 6-19 inches.
Subsoil layer:	Light olive brown gravelly fine sandy loam, 19-24 inches.
Substratum:	Light olive brown gravelly sandy loam, 24-65 inches.

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: Marlow.
Contrasting: Colonel (wetness), Rawsonville (20-40 inches to bedrock)

USE AND MANAGEMENT

Site development is limited by wetness, due to the presence of a perched water table 1.5 to 2.5 feet beneath the existing soil surface for a significant portion of the year. Proper foundation drainage is recommended for subsurface structures.

HERMON

(Frigid Typic Haplorthods)

SETTING

Parent Material: Loose loamy and sandy glacial till.

Landform: Glaciated upland plains, hills and ridges.

Position in Landscape: Uppermost portions of landforms.

Slope Gradient Ranges: 0 to 60 %.

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Somewhat excessively drained, with a water table greater than 6.0 feet beneath the existing soil surface.

Typical Profile Description:

Surface layer: Pinkish gray sandy loam, 0-3 inches.
Subsurface layer: Dark reddish brown, 3-9 inches.
Subsoil layer: Strong brown and dark yellowish brown, 9-32 inches.
Substratum: Light olive brown gravelly coarse sand, 32-65 inches.

Hydrologic Group: Group A

Surface Runoff: Slow to medium.

Permeability: Moderately rapid or rapid in solum, rapid or very rapid in the loose substratum.

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

Hazard to Flooding: None.

INCLUSIONS

(Within Mapping Unit)

Similar: Colton, Monadnock, Skerry.
Contrasting: Rawsonville (Shallow to bedrock, Tunbridge (Shallow to bedrock).

USE AND MANAGEMENT

No water table is present within 6.0 feet of the soil surface; however, proper foundation is recommended for construction. Hermon soils have few limitations for site development.

HOGBACK

(Frigid Lithic Haplorthods)

SETTING

Parent Material: Loamy glacial till.

Landform: Bedrock controlled uplands.

Position in Landscape: Higher positions in the landscape on knolls, hills and mountains.

Slope Gradient Ranges: 3 to 70 %.

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Well drained. Water table usually not present within 40 inches of the soil surface.

Typical Profile Description:

Surface layer: Dark reddish brown fine sandy loam, 0 to 2 inches.
Subsoil layer: Dark reddish brown fine sandy 2 to 15 inches.
Bedrock at 15”

Hydrologic Group: Group B: When bedrock is known to be cracked or impervious.

Surface Runoff: Slow to rapid depending on slope and bedrock exposure.

Permeability: Moderately rapid.

Depth to Bedrock: 15 inches.

Hazard to Flooding: None.

INCLUSIONS

(Within Mapping Unit)

Similar: Rawsonville, Tunbridge (20 to 40 inches to bedrock)
Contrasting: Abram, Rock outcrop.

USE AND MANAGEMENT

Development with subsurface wastewater disposal is limited by shallow depth to bedrock, which is generally less than 20 inches. Blasting or ripping of the more fractured and weathered bedrock is required for deep excavation.. Proper foundation drainage is recommended for construction.

LYMAN (Hollis)

(Frigid Lithic Haplorthods)

SETTING

Parent Material: Glacial till.

Landform: Rocky hills and high plateaus.

Position in Landscape: Higher positions in the landscape on knolls, hills and mountains.

Slope Gradient Ranges: 3 to 80 %.

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Somewhat excessively drained. Water table usually not present but may exist on top of the underlying bedrock in concave pockets in places during prolonged wet periods.

Typical Profile Description:

Surface layer: Black loam, 0-2 inches.
Subsurface layer: Reddish gray fine sandy loam. 2-4 inches.
Subsoil layer: Very dusky red, dark red to brown loam, 10-20 inches.

Hydrologic Group: Group C: When bedrock is known to be cracked or impervious.

Group D: When bedrock is impervious or if soil is in the extremely rocky class.

Surface Runoff: Slow to rapid depending on slope and bedrock exposure.

Permeability: Moderately rapid.

Depth to Bedrock: Shallow, 8-20 inches.

Hazard to Flooding: None.

INCLUSIONS

(Within Mapping Unit)

Similar: Abram (Shallow), Tunbridge (20 to 40 inches to bedrock), Rock outcrop.
Contrasting: Dixfield (greater than 40 inches to bedrock).

USE AND MANAGEMENT

Site development is usually limited with shallow depths to bedrock, generally less than 20 inches. Blasting or ripping of the more fractured and weathered bedrock is required for deep excavation.

MARLOW (Paxton)

(Frigid Typic Haplorthods)

SETTING

Parent Material: Loamy soils underlain by compact, loamy glacial till.

Landform: Drumlins and glaciated uplands.

Position in Landscape: Uppermost portions of landform.

Slope Gradient Ranges: 0 to 60 % slopes.

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Well drained, with a perched water table 2.0 to 3.5 feet below the soil surface through March and April, and during periods of excessive rainfall.

Typical Profile Description:

Surface layer: Dark gray and gray fine sandy loam, 0-6 inches.
Subsurface layer: Yellowish red fine sandy loam, 6-13 inches.
Subsoil layer: Light olive brown fine sandy loam, 13-17 inches.
Substratum: Olive and olive gray fine sandy loam, 17-65 inches.

Hydrologic Group: Group C.

Surface Runoff: Moderate.

Permeability: Moderate in solum and moderately slow to slow in the compact substratum.

Depth to Bedrock: Very deep, greater than 40-inches.

Hazard to Flooding: None.

INCLUSIONS

(Within Mapping Unit)

Similar: Dixfield.
Contrasting: Colonel (wetness), Rawsonville (shallow).

USE AND MANAGEMENT

Marlow soils have moderate ratings for site development, but are well suited for most construction projects. However, proper foundation drainage or other site modification is recommended since there is a perched water table 2.0 to 3.5 feet beneath the soil surface for a portion of the year.

MARKEY

(Frigid Terric Haplosaprists)

TYPICAL SETTING

Parent Material: Decomposed herbaceous organic materials.

Landform: River terraces, moraines, flood plains, lake plains and outwash plains.

Position in Landscape: Lowest flat elevations.

Slope Gradient Ranges: 0 to 2% slopes.

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Very poorly drained soils in depressions.

Typical Profile Description:

Surface layer: Black muck 0 to 9 inches thick.

Subsurface layers: Very dark brown or black muck 9 to 32 inches And gray sand to 60 inches.

Hydrologic Group: Group D.

Surface Runoff: Very slow, usually inundated.

Permeability: Moderately slow to moderately rapid in the organic materials and rapid or very rapid in sandy materials.

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

Hazard to Flooding: Rare.

INCLUSIONS

(Within Mapping Unit)

Similar: Bucksport, Peacham.

Contrasting: Brayton, somewhat poorly drained.

USE AND MANAGEMENT

A limiting factor for building site development is prolonged wetness. These soils are usually saturated or inundated to the soil surface with the ground water table. Usually located in jurisdictional wetland areas and proper identification and appropriate setbacks or complete avoidance is suggested for site development.

MEDOMAK

(Frigid Fluvaquentic Humaquepts)

TYPICAL SETTING

Parent Material: Recently deposited alluvium, sometimes stratified.

Landform: Floodplains adjacent to rivers and streams.

Position in Landscape: Commonly found in broad depressions on floodplains.

Slope Gradient Ranges: 0 to 2%.

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Very Poorly drained, with an apparent water table near the soil surface most of the year.

Typical Profile Description:

Surface layer: Very dark grayish brown silt loan, 0 to 12 inches.
Subsoil layer: Dark gray and very dark gray silt loam, 12 to 60 inches.

Hydrologic Group: Group D.

Permeability: Moderate in the coarse-silty materials and rapid in the silt loam or gravel strata if present.

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

Hazard to Flooding: Frequently flooded.

INCLUSIONS

(Within Mapping Unit)

Similar: Cornish (somewhat poorly drained).
Contrasting: Charles (poorly drained).

USE AND MANAGEMENT

Development with subsurface wastewater disposal is limited for building site development by wetness, due to the presence of an apparent water table near the soil surface for a significant portion of the year, and the common frequency of flooding during spring runoff and periods of heavy precipitation. Medomak soils may be classified as wetlands on the combined consideration of hydric conditions, hydrology and vegetation.

MONADNOCK

(Frigid Typic Haplorthods)

SETTING

Parent Material: Deep loamy mantle underlain by sandy glacial till.

Landform: Upland hills, plains, or mountain side slopes.

Position in Landscape: Side slopes in glaciated uplands.

Slope Gradient Ranges: 3 to 60 %.

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Well drained

Typical Profile Description:

Surface layer: Brown fine sandy loam. 0-3 inches.
Subsurface layer: Light brownish gray sandy loam, 3-5 inches.
Subsoil layer: Reddish to yellowish brown fine sandy loam, 5-23 inches.
Substratum: Olive gravelly loamy sand, 23-65 inches.

Hydrologic Group: Group B.

Permeability: Moderate in solum and moderately rapid in substratum.

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

Hazard to Flooding: None.

INCLUSIONS

(Within Mapping Unit)

Similar: Berkshire, Hermon.
Contrasting: Rawsonville (shallow).

USE AND MANAGEMENT

Development with subsurface wastewater disposal: This map unit consists of a complex of Lyman, Tunbridge and Monadnock soils that occur on glaciated upland ridges, in a non-repeating pattern that cannot be separated out in mapping. Also, included are areas of exposed bedrock outcropping.

NAUMBURG

(Frigid Aeric Haplaquods)

SETTING

Parent Material: Derived from outwash, stratified drift and deltaic sediments.

Landform: Low sand plains and terraces.

Position in Landscape: Lower positions of landscape.

Slope Gradient Ranges: 0 to 8 %.

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Somewhat poorly to poorly drained with a perched water table 0 to 1.5 feet beneath the soil surface from November though May. The water table fluctuates from 0 feet during prolonged wet periods to depths greater than 1.5 in dry seasons.

Typical Profile Description:

Surface layer: Black organic, 6 inches thick.

Subsurface layer: Reddish gray loamy sand, 0-6 inches.

Subsoil layer: Mottled dark reddish brown, dark brown, and yellowish brown sand fine sand or loamy sand, 6-30 inches.

Substratum: Light brownish gray sand, 30-60 inches.

Hydrologic Group: Group C.

Surface Runoff: Very slow.

Permeability: Rapid.

Depth to Bedrock: Deep, greater than 40-inches.

Hazard to Flooding: None.

INCLUSIONS

(Within Mapping Unit)

Similar: None.

Contrasting: Croghan (moderately well drained).

USE AND MANAGEMENT

Site development is usually limited by wetness with the presence of a groundwater table. Proper foundation drainage is recommended for construction. Naumburg (poorly drained) may be classified as wetlands, based on the combined consideration of hydric conditions, hydrology, and vegetation.

PILLSBURY

(Frigid Aeric Haplaquepts)

TYPICAL SETTING

Parent Material: Compact glacial till.

Landform: Depressions and toe slopes of glaciated uplands.

Position in Landscape: Lowest positions on landform.

Slope Gradient Ranges: 0 to 15%.

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Somewhat poorly to poorly drained, with a perched water table 0 to 1.0 feet beneath the soil surface from November through May or during periods of excessive precipitation.

Typical Profile Description:

Surface layer: Black friable loam, 0 to 5 inches.

Subsoil layer: Mottled dark grayish brown and olive gray fine sandy loam, 15 to 24 inches.

Substratum: Olive sandy loam, 24 to 65 inches.

Hydrologic Group: Group C.

Surface Runoff: Moderate to moderately rapid.

Permeability: Moderate in solum, moderately slow or slow in dense substratum.

Depth to Bedrock: Deep, greater than 60 inches.

Hazard to Flooding: None.

INCLUSIONS

(Within Mapping Unit)

Similar: Colonel.

Contrasting: Dixfield, Skerry (moderately well drained).

USE AND MANAGEMENT

Development with subsurface wastewater disposal is limited for building site development by wetness, due to a perched water table within one foot of the soil surface for a significant portion of the year. Proper foundation drainage or other site modification is recommended for construction. Pillsbury (poorly drained) may be classified as wetlands, based on the combined consideration of hydric conditions, hydrology, and vegetation.

RAWSONVILLE

(Frigid Typic Haplorthods)

SETTING

Parent Material: Loamy glacial till.

Landform: Bedrock controlled ridges.

Position in Landscape: Higher positions on knolls, ridges and mountains.

Slope Gradient Ranges: 3 to 70%.

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Somewhat excessively drained. Water table usually not present but may exist on top of the underlying bedrock in concave pockets in places during prolonged wet periods.

Typical Profile Description:

Surface layer:	Black fine sandy loam, 0-1 inch.
Subsurface layer:	Dark reddish brown fine sandy loam. 1-19 inches.
Subsoil layer:	Dark brown fine sandy loam, 19-28 inches.
Bedrock	Schist bedrock at 28 inches.

Hydrologic Group: Group C: When bedrock is known to be cracked or impervious.

Group D: When bedrock is impervious.

Surface Runoff: Slow to rapid depending on slope and bedrock exposure.

Permeability: Moderately rapid.

Depth to Bedrock: Shallow, 8-20 inches.

Hazard to Flooding: None.

INCLUSIONS

(Within Mapping Unit)

Similar: Lyman, Tunbridge (20-40 inches to bedrock)

Contrasting: Berkshire, Colonel, Dixfield, Hermon, Marlow, Monadnock.

USE AND MANAGEMENT

Blasting or ripping of the more fractured and weathered bedrock is required for deep excavation. Proper foundation drainage is recommended for construction.

SHEEPSCOT

(Frigid Typic Haplorthods)

SETTING

Parent Material: Glaciofluvial deposits.

Landform: Mainly found on outwash plains, deltas and terraces.

Position in Landscape: Mid elevations and slopes.

Slope Gradient Ranges: 0 to 15%.

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Moderately well drained.

Typical Profile Description:

Surface layer: Dark and light gray fine sandy loam, 0 to 3 inches.

Subsoil layer: Dark reddish brown gravelly fine sandy loam and brown gravelly sandy loam in the upper part and the lower part to 25 inches is mostly light olive brown very gravelly sand.

Substratum: Olive extremely gravelly sand, 25 to 60 inches.

Hydrologic Group: Group B.

Surface Runoff: Slow to medium.

Permeability: Moderate or moderately rapid in surface layer and in the upper part of the subsoil and rapid or very rapid in the lower part of the subsoil and substratum.

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

Hazard to Flooding: None.

INCLUSIONS

(Within Mapping Unit)

Similar: None.

Contrasting: Colton (well drained).

USE AND MANAGEMENT

Development with subsurface wastewater disposal is rated "severe" due to poor filtering capability. A limiting factor for building site development is wetness. Proper foundation drainage or site modification is recommended for construction. Use of this soil for roadways is rated as "fair" due to wetness.

SKERRY

(Frigid Aquic Haplorthods)

TYPICAL SETTING

Parent Material: Glacial till.

Landform: Glaciated uplands.

Position in Landscape: Mid and upper landforms.

Slope Gradient Ranges: 8 to 25%.

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Moderately well drained, with a perched water table 1.5 to 2.5 feet beneath the existing soil surface from November through May and during periods of excessive precipitation.

Typical Profile Description:

Surface layer: Light gray stony Dark fine sandy loam, 0-4 inches.

Subsoil layer: Dark reddish brown fine sandy loam 4-6 inches and reddish brown fine and dark reddish brown gravelly fine sandy loam 6-20" and mottled yellowish brown gravelly fine sandy loam 20-25".

Substratum: Brown and grayish brown gravelly fine sandy loam with lenses of loose sand, 25-60 inches.

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: Hermon.

Contrasting: Colonel (wetness), Pillsbury (wetness), Rawsonville (shallow).

USE AND MANAGEMENT

Proper foundation drainage is recommended for construction. Skerry soils have a "fair" rating for road fill and "severe' to "moderate" ratings for building site development due to wetness.

TUNBRIDGE

(Frigid Typic Haplorthods)

SETTING

Parent Material: Loamy glacial till.

Landform: Bedrock controlled ridges.

Position in Landscape: Higher positions on knolls, ridges and mountains.

Slope Gradient Ranges: 0 to 75%.

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Well drained. Water table usually not present within 40" of the soil surface, but may exist on top of the underlying bedrock in concave pockets in places during prolonged wet periods.

Typical Profile Description:

Surface layer:	Dark brown fine sandy loam, 0-2 inches.
Subsurface layer:	Grayish brown fine sandy loam. 2-3 inches.
Subsoil layer:	Dark reddish brown loam in the upper part and yellowish brown silt loam in the lower part 3-14 inches.
Substratum	Dark grayish brown gravelly fine sandy loam 14-28 inches. Micaschist and gneiss bedrock is at 28"

Hydrologic Group: Group C: When bedrock is known to be cracked or impervious.

Group D: When bedrock is impervious.

Surface Runoff: Slow to rapid depending on slope and bedrock exposure.

Permeability: Moderately rapid.

Depth to Bedrock: Shallow, 28 inches.

Hazard to Flooding: None.

INCLUSIONS

(Within Mapping Unit)

Similar: Lyman.

Contrasting: Abram, Berkshire, Dixfield.

USE AND MANAGEMENT

Blasting or ripping of the more fractured and weathered bedrock is required for deep excavation. Proper foundation drainage is recommended for construction.

WONSQUEAK
(Terric Euic Borasaprists)

TYPICAL SETTING

Parent Material: Organic materials over loamy mineral materials.

Landform: Depressions.

Position in Landscape: Lowest flat elevations.

Slope Gradient Ranges: 0 to 2%.

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Very poorly drained soils in depressions.

Typical Profile Description:

Surface layer: Very dark gray muck 0 to 8 inches thick.
Subsurface layer: Black Muck 8 to 32 inches.
Substratum layer: Gray silt loam 32 to 65 inches.

Hydrologic Group: Group D.

Surface Runoff: Very slow, usually inundated.

Permeability: Moderately slow to moderately rapid in the organic materials and moderate or moderately slow in the underlying mineral materials.

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

Hazard to Flooding: Common, long durations (March through October).

INCLUSIONS
(Within Mapping Unit)

Similar: Bucksport
Contrasting: Charles, Cornish (alluvial soils)

USE AND MANAGEMENT

A limiting factor for building site development is prolonged wetness. These soils are usually saturated or inundated to the soil surface with the ground water table. Usually located in jurisdictional wetland areas and proper identification and appropriate setbacks or complete avoidance is suggested for site development.

APPENDIX D
SOIL MAP UNIT TABLES

KIBBY WIND POWER PROJECT
CLASS D MEDIUM INTENSITY

SOIL SURVEY MAP UNIT TABLES

The tables presented in the following summaries illustrate the linear distance that is crossed for each soil type, as measured along the centerline of the proposed right-of-way.

AFC: Adams-Croghan Association (610)

Map Unit Symbol	Start (Milepost)	End (Milepost)	Linear Dist (ft)
AFC	12.58	12.73	814.79
		Total Linear Distance (feet)	**814.79**
		Total Linear Distance (miles)	**0.15**
		Percent of Total Length	**0.56%**

BkC: Berkshire (610)

Map Unit Symbol	Start (Milepost)	End (Milepost)	Linear Dist (ft)
BkC	27.51	27.59	436.34
		Total Linear Distance (feet)	**436.34**
		Total Linear Distance (miles)	**0.08**
		Percent of Total Length	**0.30%**

BkD: Berkshire (610)

Map Unit Symbol	Start (Milepost)	End (Milepost)	Linear Dist (ft)
BkD	22.69	22.8	565.79
		Total Linear Distance (feet)	**565.79**
		Total Linear Distance (miles)	**0.11**
		Percent of Total Length	**0.39%**

BSB: Brayton-Colonel Association (610)

Map Unit Symbol	Start (Milepost)	End (Milepost)	Linear Dist (ft)
BSB	14.84	15.07	1224.00
	18.16	18.19	179.37
	18.27	18.6	1727.01
	19.25	19.27	118.91
	19.39	19.46	341.82
	19.48	19.7	1175.80
	19.81	19.93	631.18
	20.05	20.13	413.97
	20.53	20.60	373.05
	20.67	20.75	442.26
	20.85	20.96	551.16
	23.94	23.95	26.21
Total Linear Distance (feet)			**7204.75**
Total Linear Distance (miles)			**1.36**
Percent of Total Length			**4.94%**

BTB: Brayton-Peacham-Markey Association (610)

Map Unit Symbol	Start (Milepost)	End (Milepost)	Linear Dist (ft)
BTB	11.47	11.50	190.91
	15.93	15.98	260.91
	17.34	17.44	556.26
	21.10	21.13	141.40
	21.31	21.67	1857.46
Total Linear Distance (feet)			**3006.94**
Total Linear Distance (miles)			**0.57**
Percent of Total Length			**2.06%**

BW: Bucksport and Markey (610)

Map Unit Symbol	Start (Milepost)	End (Milepost)	Linear Dist (ft)
BW	11.63	11.67	191.34
	11.76	11.95	1029.20
	21.13	21.17	231.43
Total Linear Distance (feet)			**1451.97**
Total Linear Distance (miles)			**0.27**
Percent of Total Length			**1.00%**

Ca: Charles (610)

A sliver of this soil type exists in one location on the periphery of the proposed transmission right of way. It does not intersect the right-of-way center line.

CG: Charles-Medomak-Cornish Association (610)
CG: Charles Cornish Wonsqueak (619)

Map Unit Symbol	Start (Milepost)	End (Milepost)	Linear Dist (ft)
CG-610	13.03	13.08	227.81
		Total Linear Distance (feet)	**227.81**
		Total Linear Distance (miles)	**0.04**
		Percent of Total Length	**0.16%**

Map Unit Symbol	Start (Milepost)	End (Milepost)	Linear Dist (ft)
CG-619	9.01	9.19	938.34
		Total Linear Distance (feet)	**938.34**
		Total Linear Distance (miles)	**0.18**
		Percent of Total Length	**0.64%**

CNC: Colonel-Dixfield-Pillsbury

Map Unit Symbol	Start (Milepost)	End (Milepost)	Linear Dist (ft)
CNC	2.38	2.46	400.31
	2.60	2.69	471.40
	2.77	2.94	908.50
	3.21	3.37	863.41
	4.17	4.74	3011.34
	9.35	9.66	1619.34
	11.31	11.38	385.09
	11.38	11.39	38.71
		Total Linear Distance (feet)	**7698.10**
		Total Linear Distance (miles)	**1.46**
		Percent of Total Length	**5.28%**

CPC: Colonel-Dixfield Association (610)

Map Unit Symbol	Start (Milepost)	End (Milepost)	Linear Dist (ft)
CPC	11.38	11.39	74.85
	11.39	11.47	391.93
	11.95	12.04	477.77
	13.08	13.25	891.81
	13.40	14.12	3778.72
	15.07	15.35	1503.70
	16.20	16.21	9.90
	16.26	16.51	1320.90
	16.55	16.74	976.26
	17.26	17.34	415.19
	18.60	19.25	3454.17
	19.27	19.39	623.74
	19.70	19.81	586.53
	20.22	20.53	1630.92
	20.60	20.67	397.29
	20.75	20.85	519.33
	20.96	21.10	774.22
	22.05	22.12	368.96
	22.49	22.59	550.53
	23.84	23.94	516.77
Total Linear Distance (feet)			**19263.47**
Total Linear Distance (miles)			**3.65**
Percent of Total Length			**13.22%**

CRB: Colonel-Pillsbury-Skerry Association (619)

Map Unit Symbol	Start (Milepost)	End (Milepost)	Linear Dist (ft)
CRB	3.37	4.17	4217.99
	9.19	9.35	831.85
	23.98	24.24	1356.91
Total Linear Distance (feet)			**6406.76**
Total Linear Distance (miles)			**1.21**
Percent of Total Length			**4.40%**

CTC: Colton-Sheepscot Association (610)
CTC: Colton-Adams Association (619)

Map Unit Symbol	Start (Milepost)	End (Milepost)	Linear Dist (ft)
CTC (610)	12.73	13.03	1586.50
	17.82	18.16	1793.92
Total Linear Distance (feet)			**3380.41**
Total Linear Distance (miles)			**0.64**
Percent of Total Length			**2.32%**

Map Unit Symbol	Start (Milepost)	End (Milepost)	Linear Dist (ft)
CTC (619)	6.96	7.22	1379.12
	7.31	7.48	904.46
Total Linear Distance (feet)			**2283.58**
Total Linear Distance (miles)			**0.43**
Percent of Total Length			**1.57%**

CVD: Colton-Hermon Association

Map Unit Symbol	Start (Milepost)	End (Milepost)	Linear Dist (ft)
CVD	2.46	***2.58***	658.19
Total Linear Distance (feet)			**658.19**
Total Linear Distance (miles)			**0.12**
Percent of Total Length			**0.45%**

DMC: Dixfield-Marlow Association (610)
DMC: Dixfield Colonel Marlow (619)

Map Unit Symbol	Start (Milepost)	End (Milepost)	Linear Dist (ft)
DMC (610)	12.18	12.50	1637.84
	13.25	13.40	841.55
	14.12	14.19	383.05
	15.48	15.63	767.67
	15.98	16.20	1178.28
	16.21	16.26	266.77
	16.51	16.55	231.72
	16.74	16.88	741.26
	16.90	17.26	1879.32
	19.93	20.05	639.43
	20.13	20.22	447.97
	21.92	22.05	669.40
	22.12	22.49	1973.35
	22.59	22.69	516.65
	23.59	23.84	1346.01
Total Linear Distance (feet)			**13520.26**
Total Linear Distance (miles)			**2.56**
Percent of Total Length			**9.28%**

Map Unit Symbol	Start (Milepost)	End (Milepost)	Linear Dist (ft)
DMC (619)	2.94	3.21	1406.54
	10.49	10.73	1247.29
	10.86	10.87	89.13
Total Linear Distance (feet)			**2742.96**
Total Linear Distance (miles)			**0.52**
Percent of Total Length			**1.88%**

DTC: Dixfield Colonel Rawsonville

Map Unit Symbol	Start (Milepost)	End (Milepost)	Linear Dist (ft)
DTC	0.53	0.86	1739.76
	1.11	1.75	3392.29
	2.04	2.38	1815.06
	2.58	2.60	115.01
	2.69	2.77	395.57
	9.77	10.14	1937.78
	10.38	10.49	576.52
	10.73	10.86	683.60
	25.00	25.63	3337.63
	25.72	26.13	2174.42
	26.48	27.03	2915.37
		Total Linear Distance (feet)	**19083.01**
		Total Linear Distance (miles)	**3.61**
		Percent of Total Length	**13.09%**

HMC: Hermon-Monadnock Association (610)

Map Unit Symbol	Start (Milepost)	End (Milepost)	Linear Dist (ft)
HMC	15.63	15.93	1593.59
		Total Linear Distance (feet)	**1593.59**
		Total Linear Distance (miles)	**0.30**
		Percent of Total Length	**1.09%**

HSC: Hermon-Skerry Association (619)

A sliver of this soil type exists in one location on the periphery of the proposed transmission right of way. It does not intersect the right-of-way centerline.

HTC: Hermon-Rawsonville-Skerry Association (619)

Map Unit Symbol	Start (Milepost)	End (Milepost)	Linear Dist (ft)
HTC	8.02	8.09	355.84
	24.24	24.45	1114.56
		Total Linear Distance (feet)	**1470.40**
		Total Linear Distance (miles)	**0.28**
		Percent of Total Length	**1.01%**

HTD: Hermon-Rawsonville-Skerry Association (619)

Map Unit Symbol	Start (Milepost)	End (Milepost)	Linear Dist (ft)
HTD	4.84	5.53	3604.53
	7.72	8.02	1602.89
		Total Linear Distance (feet)	**5207.42**
		Total Linear Distance (miles)	**0.99**
		Percent of Total Length	**3.57%**

LAC: Hogback-Abram Complex (619)

Map Unit Symbol	Start (Milepost)	End (Milepost)	Linear Dist (ft)
LAC	1.86	2.04	913.75
	6.46	6.61	827.23
	6.93	6.96	202.79
	7.48	7.72	1266.13
	8.09	8.39	1553.54
		Total Linear Distance (feet)	**4763.43**
		Total Linear Distance (miles)	**0.90**
		Percent of Total Length	**3.27%**

LAE: Hogback-Abram Complex (619)

Map Unit Symbol	Start (Milepost)	End (Milepost)	Linear Dist (ft)
LAE	5.53	5.80	1434.04
	6.00	6.46	2413.62
	10.20	10.20	8.75
		Total Linear Distance (feet)	**3856.42**
		Total Linear Distance (miles)	**0.73**
		Percent of Total Length	**2.65%**

LNC: Lyman-Tunbridge-Abram Complex (610)

Map Unit Symbol	Start (Milepost)	End (Milepost)	Linear Dist (ft)
LNC	14.19	14.28	447.83
	14.61	14.84	1169.97
	15.35	15.48	698.75
	16.88	16.90	153.09
		Total Linear Distance (feet)	**2469.64**
		Total Linear Distance (miles)	**0.47**
		Percent of Total Length	**1.69%**

LNE: Lyman-Tunbridge-Abram Complex (610)

Map Unit Symbol	Start (Milepost)	End (Milepost)	Linear Dist (ft)
LNE	14.28	14.61	1775.98
	22.80	22.90	507.90
	22.99	22.99	44.54
	23.00	23.00	12.26
	23.07	23.12	264.54
	23.23	23.28	226.13
	23.32	23.59	1408.56
Total Linear Distance (feet)			**4239.91**
Total Linear Distance (miles)			**0.80**
Percent of Total Length			**2.91%**

LTC: Hogback-Rawsonville Complex (619)

Map Unit Symbol	Start (Milepost)	End (Milepost)	Linear Dist (ft)
LTC	1.75	1.86	605.56
	5.80	6.00	1046.47
	6.61	6.93	***1652.87***
	7.22	7.31	442.73
	8.39	8.73	1807.09
	8.82	9.01	1039.22
	9.66	9.77	617.43
	10.14	10.20	300.93
	10.20	10.27	392.18
	10.87	11.31	2288.15
Total Linear Distance (feet)			**10192.63**
Total Linear Distance (miles)			**1.93**
Percent of Total Length			**6.99%**

LTE: Hogback-Rawsonville Complex (619)

Map Unit Symbol	Start (Milepost)	End (Milepost)	Linear Dist (ft)
LTE	8.73	8.82	476.02
Total Linear Distance (feet)			**476.02**
Total Linear Distance (miles)			**0.09**
Percent of Total Length			**0.33%**

MDD: Marlow-Dixfield Association (619)

Map Unit Symbol	Start (Milepost)	End (Milepost)	Linear Dist (ft)
MDD	25.63	25.72	427.03
		Total Linear Distance (feet)	**427.03**
		Total Linear Distance (miles)	**0.08**
		Percent of Total Length	**0.29%**

MED: Marlow-Dixfield-Rawsonville Association (619)

Map Unit Symbol	Start (Milepost)	End (Milepost)	Linear Dist (ft)
MED	0.01	0.31	1602.64
	0.86	1.11	1298.15
	4.74	4.84	549.12
		Total Linear Distance (feet)	**3449.91**
		Total Linear Distance (miles)	**0.65**
		Percent of Total Length	**2.37%**

MGD: Marlow-Dixfield Association (610)

Map Unit Symbol	Start (Milepost)	End (Milepost)	Linear Dist (ft)
MGD	23.12	23.23	602.20
		Total Linear Distance (feet)	**602.20**
		Total Linear Distance (miles)	**0.11**
		Percent of Total Length	**0.41%**

MNC: Monadnock Berkshire Complex (610)
MNC: Monadnock-Berkshire-Rawsonville Association (619)

Map Unit Symbol	Start (Milepost)	End (Milepost)	Linear Dist (ft)
MNC (610)	11.50	11.63	661.48
	11.67	11.76	485.55
	12.50	12.58	438.93
	18.19	18.27	413.28
Total Linear Distance (feet)			**1999.25**
Total Linear Distance (miles)			**0.38**
Percent of Total Length			**1.37%**

Map Unit Symbol	Start (Milepost)	End (Milepost)	Linear Dist (ft)
MNC (619)	24.45	25.00	2924.93
	26.13	27.27	588.32
	27.36	27.51	785.29
	27.51	27.53	123.67
Total Linear Distance (feet)			**4422.20**
Total Linear Distance (miles)			**0.84**
Percent of Total Length			**3.03%**

MND: Berkshire-Monadnock-Rawsonville Association (619)

Map Unit Symbol	Start (Milepost)	End (Milepost)	Linear Dist (ft)
MND	0.31	0.53	1176.41
	26.16	26.48	1693.70
	27.03	27.19	818.18
Total Linear Distance (feet)			**3688.29**
Total Linear Distance (miles)			**0.70**
Percent of Total Length			**2.53%**

Nb: Naumburg Soils (610)

Map Unit Symbol	Start (Milepost)	End (Milepost)	Linear Dist (ft)
Nb	21.67	21.92	1339.46
Total Linear Distance (feet)			**1339.46**
Total Linear Distance (miles)			**0.25**
Percent of Total Length			**0.92%**

PPB: Pillsbury-Peacham Association (619)

Map Unit Symbol	Start (Milepost)	End (Milepost)	Linear Dist (ft)
PBB	27.27	27.36	506.63
		Total Linear Distance (feet)	**506.63**
		Total Linear Distance (miles)	**0.10**
		Percent of Total Length	**0.35%**

RYE: Rock outcrop-Abram-Lyman Complex (610)

Map Unit Symbol	Start (Milepost)	End (Milepost)	Linear Dist (ft)
RYE	22.90	22.99	482.09
	23.00	23.07	384.40
	23.28	23.32	231.84
		Total Linear Distance (feet)	**1098.34**
		Total Linear Distance (miles)	**0.21**
		Percent of Total Length	**0.75%**

TRC: Tunbridge-Berkshire-Dixfield Association (610)

Map Unit Symbol	Start (Milepost)	End (Milepost)	Linear Dist (ft)
TRC	12.04	12.18	751.30
	17.44	17.82	1964.86
	21.17	21.31	734.89
		Total Linear Distance (feet)	**3451.06**
		Total Linear Distance (miles)	**0.65**
		Percent of Total Length	**2.37%**

W: Water (610)

Map Unit Symbol	Start (Milepost)	End (Milepost)	Linear Dist (ft)
W	19.46	19.48	120.35
		Total Linear Distance (feet)	**120.35**
		Total Linear Distance (miles)	**0.02**
		Percent of Total Length	**0.08%**

WO: Wonsqueak-Bucksport Soils (619)

Map Unit Symbol	Start (Milepost)	End (Milepost)	Linear Dist (ft)
WO	10.27	10.38	570.10
		Total Linear Distance (feet)	**570.10**
		Total Linear Distance (miles)	**0.11**
		Percent of Total Length	**0.39%**

APPENDIX E
SOIL SURVEY INTERPRETATIONS

KIBBY WIND POWER PROJECT
CLASS D MEDIUM INTENSITY

SOIL SURVEY INTERPRETATIONS

Soil survey interpretations are derived from the inherent soil characteristics found within the soil profile. The interpretations are predictions (numerical and descriptive) of soil reaction to a specific use, based on the soil's characteristics. These interpretations have many uses, such as: estimating costs for land development, storm water runoff calculations, structural bearing strengths, estimating erodability, etc. Soil interpretations are also useful for using and managing existing soils for specific uses. Soil interpretations often identify potential soil limitations, which can be considered during project designs to overcome these limitations for the proposed use.

Soil Interpretations

Soil interpretations are very useful for many purposes and projects, although they do have limitations with their use. The following is a listing of limitations for the usage of soil interpretations:

1. An interpretation for a specific purpose is rarely adaptable for another use without management considerations.

2. Use of interpretations for specific areas has an inherent limitation relating to variability in composition of delineations found within the soil map unit. This limitation is related to the size of the area of the soil survey and the size of the soil map units.

3. Interpretations are also limited by the variability within a soil in nature, which directly affects the precision of the soil interpretation. However, are very useful in providing information on the likelihood that an area is suitable for a particular land use therefore valuable for screening areas for a particular land use.

4. Soil interpretations are predictions of suitability or limitations by soil properties. A soil may possess several limiting factors and must be site specific for accurate interpretations for each particular land use.

5. Soil interpretations are used to predict the costs of development and to ultimately determine feasibility of a project. It should be noted that most soil limitations can be overcome with engineering solutions to make the soil suitable for a proposed use.

Soil Limitations

Soils are assigned a limitation range according to their genetic makeup in their natural state when characterized for a specific use. Limitation ratings can be based on hazards, risks and obstructions of undisturbed natural soil. These ratings range from slight, moderate, severe and very severe.

1. **Slight** is a rating given to soils that have, at most, minor problems associated with a specific use. The soils give satisfactory performance with little or no modifications.

2. **Moderate** is the rating given to a soil that possesses certain undesirable characteristics that can be overcome without exceptional risks or costs. These soils may be modified , special designs, and/or maintenance may be required to achieve satisfactory soil performance. The cost to modify these soils for a particular use may increase costs to use, although the costs usually are not prohibitive.
3. **Severe** is the rating given to soils that require modification to become satisfactory for use at reduced risks. These soils can be modified to meet standards for a proposed use, although the costs may be very high to overcome the undesirable characteristics.
4. **Very severe** are soils that have such severe limitations for a particular use and should be avoided, unless no other options exist. The negative undesirable soil characteristics may or not be overcome with substantial modifications and costs.

Soil Suitability

Soil suitability is based on the characteristics of soils that influence the usability of the soil for a particular use. The range of ratings is from good, fair, poor and unsuited

1. **Good** is the rating assigned to soils that possess properties favorable for the proposed use. Satisfactory performance and low costs can be expected.
2. **Fair** includes soils that may possess one or more unfavorable properties that impact the use and less suitable than the good rating.
3. **Poor** rating is applied to soils with one or more unfavorable properties that require special practices to overcome the negative qualities within the soil. These soils will require special designs, extra maintenance, extra costs or field alterations.
4. **Unsuited** are soils that are unacceptable for the proposed use unless extreme measures are employed to alter the undesirable characteristics.

Many soils possess unfavorable properties in relation to their development, which can become easily overcome with simple cost-effective modifications. Some examples of unfavorable soil qualities inherent in Maine soils are listed below:

1. **Depth to Bedrock** is a significant soil property in relation to the development of lands. The solid rock usually requires blasting or specialized equipment to amend this negative quality. This factor impacts storm-water runoff, rooting depths, soil permeability, impedes downward movement of water in the soil, subsurface waste disposal, and subsurface piping, etc.
2. **Seasonally High Water Table** is an unfavorable aspect relating to most development. The amount of groundwater within a soil profile can affect vegetative growth, subsurface wastewater disposal and saturation, which may require drainage for construction.
3. **Depth to Restrictive Layers** is the depth within the soil horizon in which a firm or cemented layer exists. Restrictive layers impede rooting depths and downward movement of water in the soil horizon and may cause a seasonable high water table.
4. **Soil Slopes** impact surface water runoff, influences water retention, govern the potential for erosion or sloughing, limit accessibility by machinery, etc.
5. **Flooding** is a major factor governing land development. Many regulations do not allow for development within a flood zone due to the high costs involved with reconstruction after flooding occurs.

Drainage Classes

MAPSS Drainage Classes

Drainage classes are the relative wetness that a soil under normal conditions has relating to the soil water table. The following seven drainage classes are used for the soils found in Maine:

1. **Excessively Drained** soils are less than 10 inches (10") to bedrock. The soils have a sandy or sandy-skeletal particle size class with a loamy cap less than 10" thick.

2. **Somewhat Excessively Drained** soils are 10 to 20 inches (10" to 20") to bedrock with a loamy or loamy skeletal particle size class.

3. **Well Drained** soils are at least 20 inches (20") to bedrock and has a texture of loamy very fine sand or finer and redoximorphic features, if present, are 40 inches (40")or more below the mineral surface layer.

4. **Moderately Well Drained** soils have redoximorphic features at a depth of 16 inches to less than 40" below the mineral surface.

5. **Somewhat Poorly Drained** soils have redoximorphic features at a depth of 7" to less than 16" below the mineral soil surface.

6. **Poorly Drained** soils have dominant textures in the upper 20" (below the "A" or "Ap" horizon if present) of loamy fine sand or coarser and has redoximorphic features or has a Bh or Bhs horizon that is a value 3 or less and chroma 2 or less, which is directly underlain by a horizon with the redoximorphic features, within 7 inches of the mineral soil surface or have an Ap horizon that is 7" thick or greater with a value of 3 or less and chroma 2 or less and a texture in all subhorizons within 20" of the mineral surface of loamy fine sand or coarser and have redoximorphic features directly beneath the Ap horizon or has a depleted or gleyed matrix within 20" of the mineral soil surface and redox depletions with value of 4 or more and chroma 2 or less in ped interiors that are less than 7" below the mineral soil surface or has an Ap horizon that is 7" thick or greater with a value of 3 or less and chroma 2 or less in ped interiors or a depleted or gleyed matrix directly beneath the Ap horizon

7. **Very Poorly Drained Soils** have organic soil materials that extend from the surface to a depth of 8" to 16" (Histic Epipedon) and is directly underlain by a horizon that has a depleted or gleyed matrix or mineral soils with sulfidic materials within 20" of the mineral soil surface or Alluvial soils with an umbric epipedon

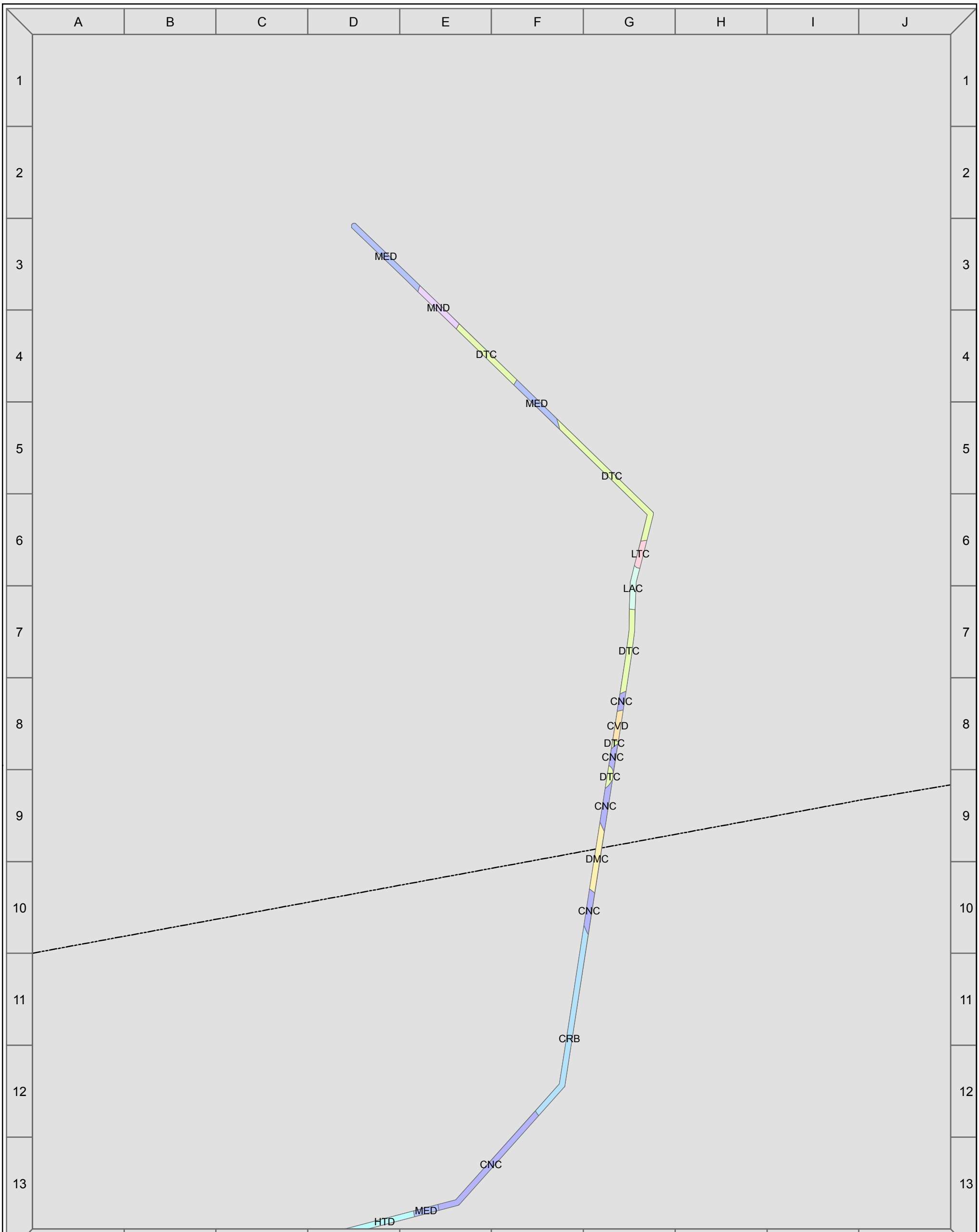
Depth to Bedrock

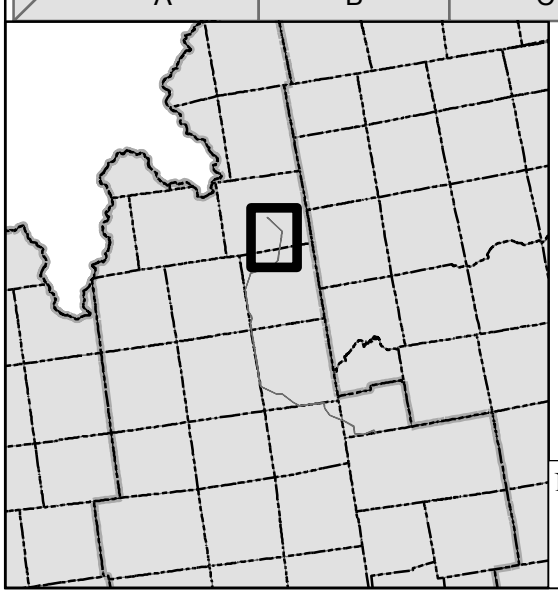
1.	**Very Shallow**	Less than10 inches to bedrock
2.	**Shallow**	10 inches to 20 inches to bedrock
3.	**Moderately Deep**	20 inches to 40 inches to bedrock
4.	**Deep**	40 inches to 60 inches to bedrock
5.	**Very Deep**	Greater than 60 inches to bedrock

Stoniness Class

1.	**Non-stony**	Less than 0.01 percent surface coverage
2.	**Stony or boulder-like**	0.01 to 0.1 percent surface coverage
3.	**Very stony**	0.1 to 3.0 percent surface coverage
4.	**Very boulder-like**	0.1 to 3.0 percent surface coverage
5.	**Extremely stony**	3.0 to 15 percent surface coverage
6.	**Extremely boulder-like**	3.0 to 15 percent surface coverage
7.	**Rubble**	15 to 75 percent surface coverage
8.	**Rubble Land**	More than 75 percent surface coverage

APPENDIX F
CLASS D MEDIUM INTENSITY SOIL MAPS





Legend

Proposed Transmission Line — Town Boundary — County Boundary

Soil MU Symbol

AFC	CG	Ca	HTD	LTE	Nb
BSB	CNC	DMC	LAC	MDD	PPB
BTB	CPC	DTC	LAE	MED	RYE
BW	CRB	HMC	LNC	MGD	TRC
BkC	CTC	HSC	LNE	MNC	W
BkD	CVD	HTC	LTC	MND	WO

Notes:

0.5

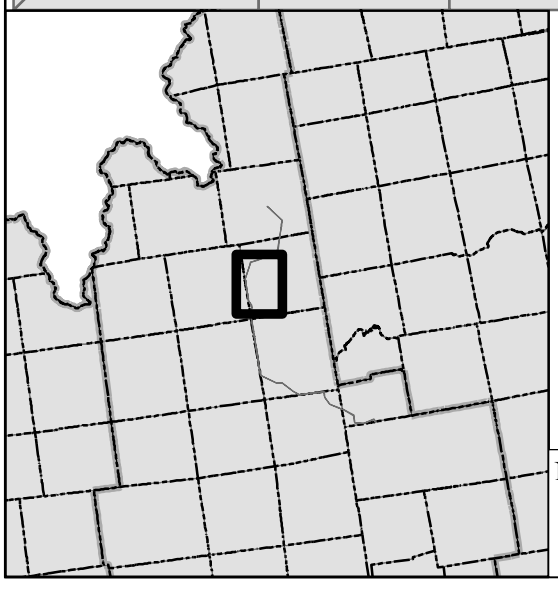
Miles

Figure x-xx1

Kibby Wind Power Project

Transmission Line Soil Types

CNC
MED
HTD
LAE
LTC
LAE
LAC
LTC
LAC
CTC
LTC
CTC
LAC
HTD
HTC
LAC
LTC
LTE
LTC
CG
CRB
CNC
LTC
DTC
LTC
LTC
WO
DTC
DMC
DTC
DMC
LTC



Legend

Proposed Transmission Line — Town Boundary — County Boundary

Soil MU Symbol

AFC	CG	Ca	HTD	LTE	Nb
BSB	CNC	DMC	LAC	MDD	PPB
BTB	CPC	DTC	LAE	MED	RYE
BW	CRB	HMC	LNC	MGD	TRC
BkC	CTC	HSC	LNE	MNC	W
BkD	CVD	HTC	LTC	MND	WO

Notes:

N

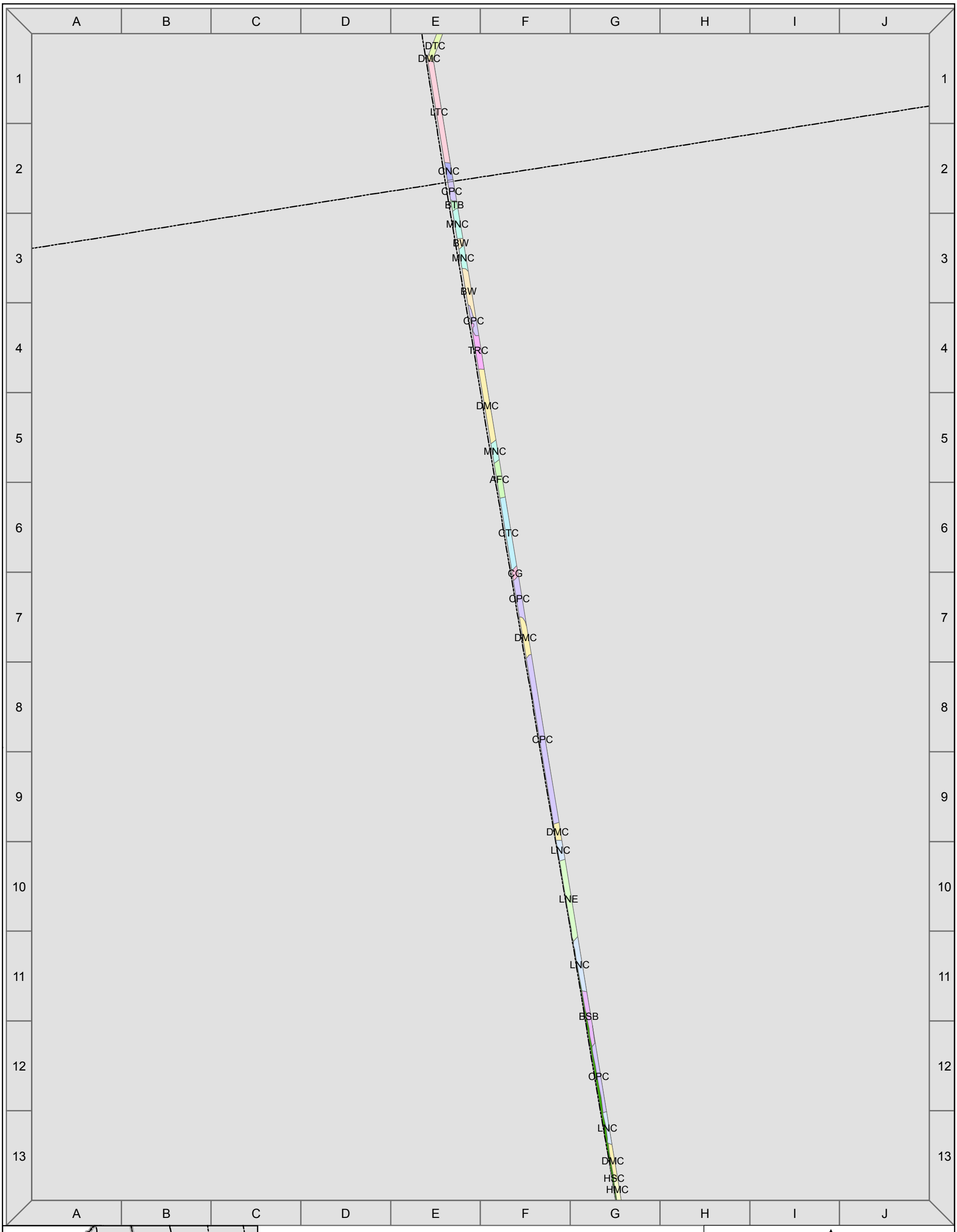
0.5

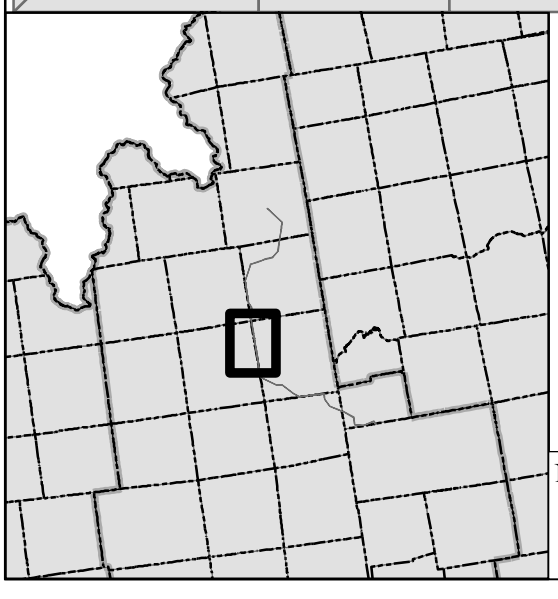
Miles

Figure x-xx2

Kibby Wind Power Project

Transmission Line Soil Types





Legend

Proposed Transmission Line — Town Boundary — County Boundary

Soil MU Symbol

AFC	CG	Ca	HTD	LTE	Nb
BSB	CNC	DMC	LAC	MDD	PPB
BTB	CPC	DTC	LAE	MED	RYE
BW	CRB	HMC	LNC	MGD	TRC
BkC	CTC	HSC	LNE	MNC	W
BkD	CVD	HTC	LTC	MND	WO

Notes:

N

0.5

Miles

Figure x-xx3

Kibby Wind Power Project

Transmission Line Soil Types

BSB
CPC
LNC
DMC
CNC
HSC
HMC
WO
BTB
DTC
DMC
CPC
DMC
LNC
DMC
CPC
BTB
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CTC
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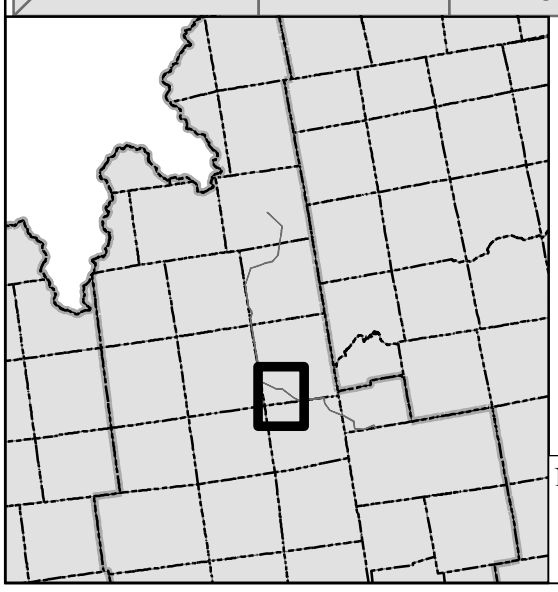
MNC
BSB
CPC
BSB
BSB
W
BSB
CPC
BSB
DMC



Legend

Proposed Transmission Line — Town Boundary — County Boundary

Soil MU Symbol

AFC	CG	Ca	HTD	LTE	Nb
BSB	CNC	DMC	LAC	MDD	PPB
BTB	CPC	DTC	LAE	MED	RYE
BW	CRB	HMC	LNC	MGD	TRC
BkC	CTC	HSC	LNE	MNC	W
BkD	CVD	HTC	LTC	MND	WO

Notes:

N

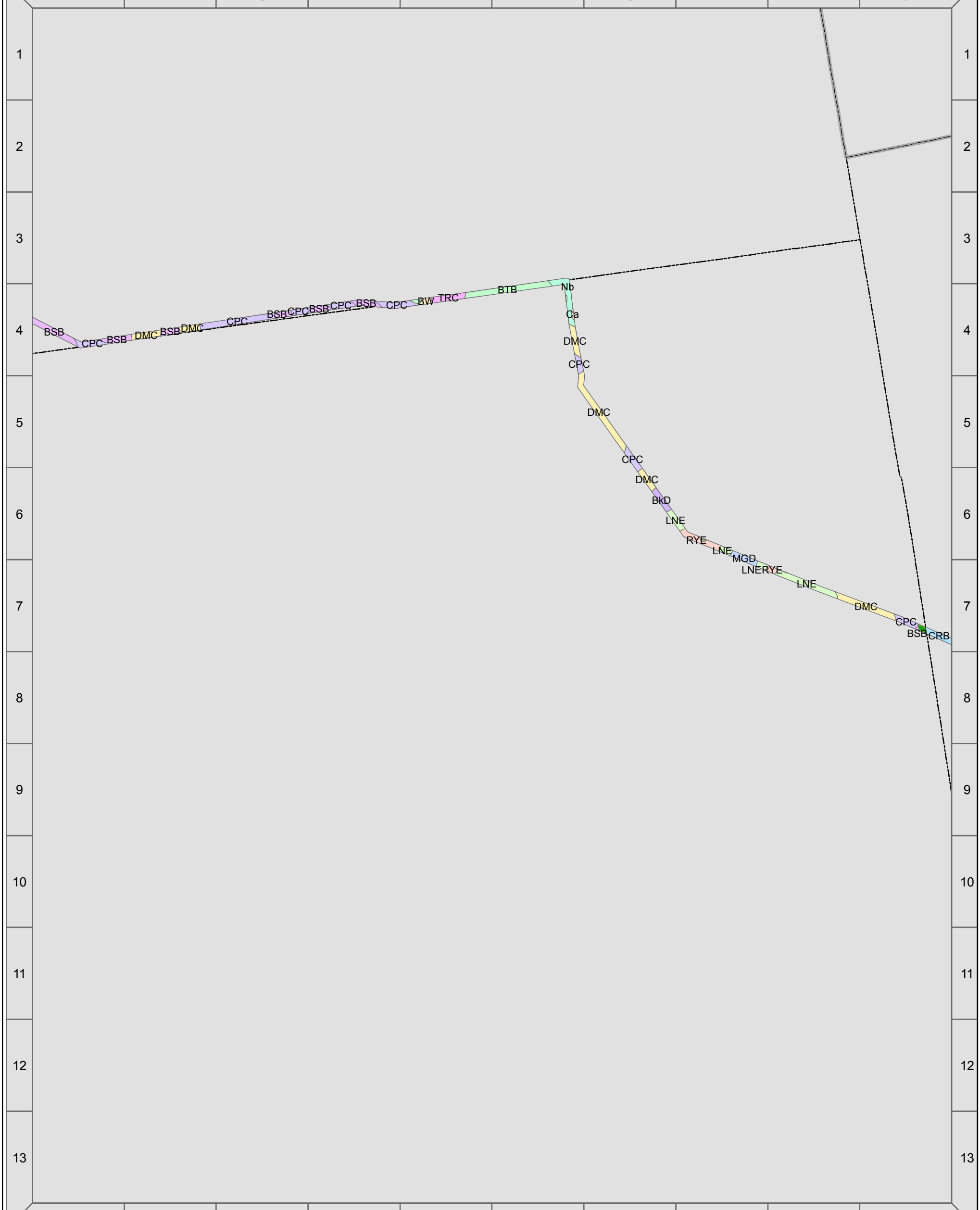
0.5

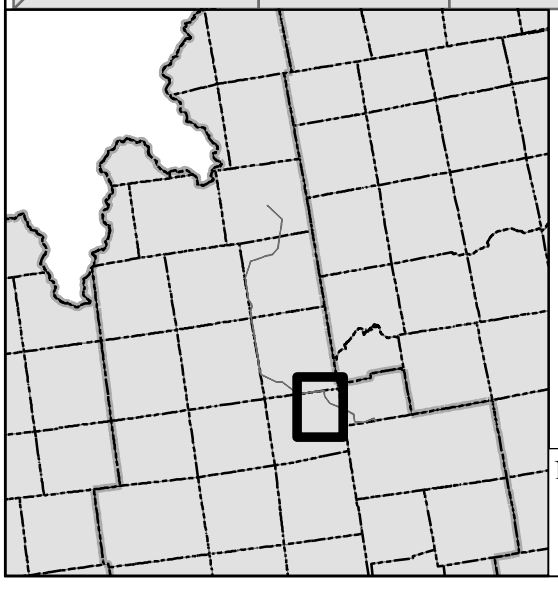
Miles

Figure x-xx4

Kibby Wind Power Project

Transmission Line Soil Types





Legend

Proposed Transmission Line — Town Boundary — County Boundary

Soil MU Symbol

AFC	CG	Ca	HTD	LTE	Nb
BSB	CNC	DMC	LAC	MDD	PPB
BTB	CPC	DTC	LAE	MED	RYE
BW	CRB	HMC	LNC	MGD	TRC
BkC	CTC	HSC	LNE	MNC	W
BkD	CVD	HTC	LTC	MND	WO

Notes:

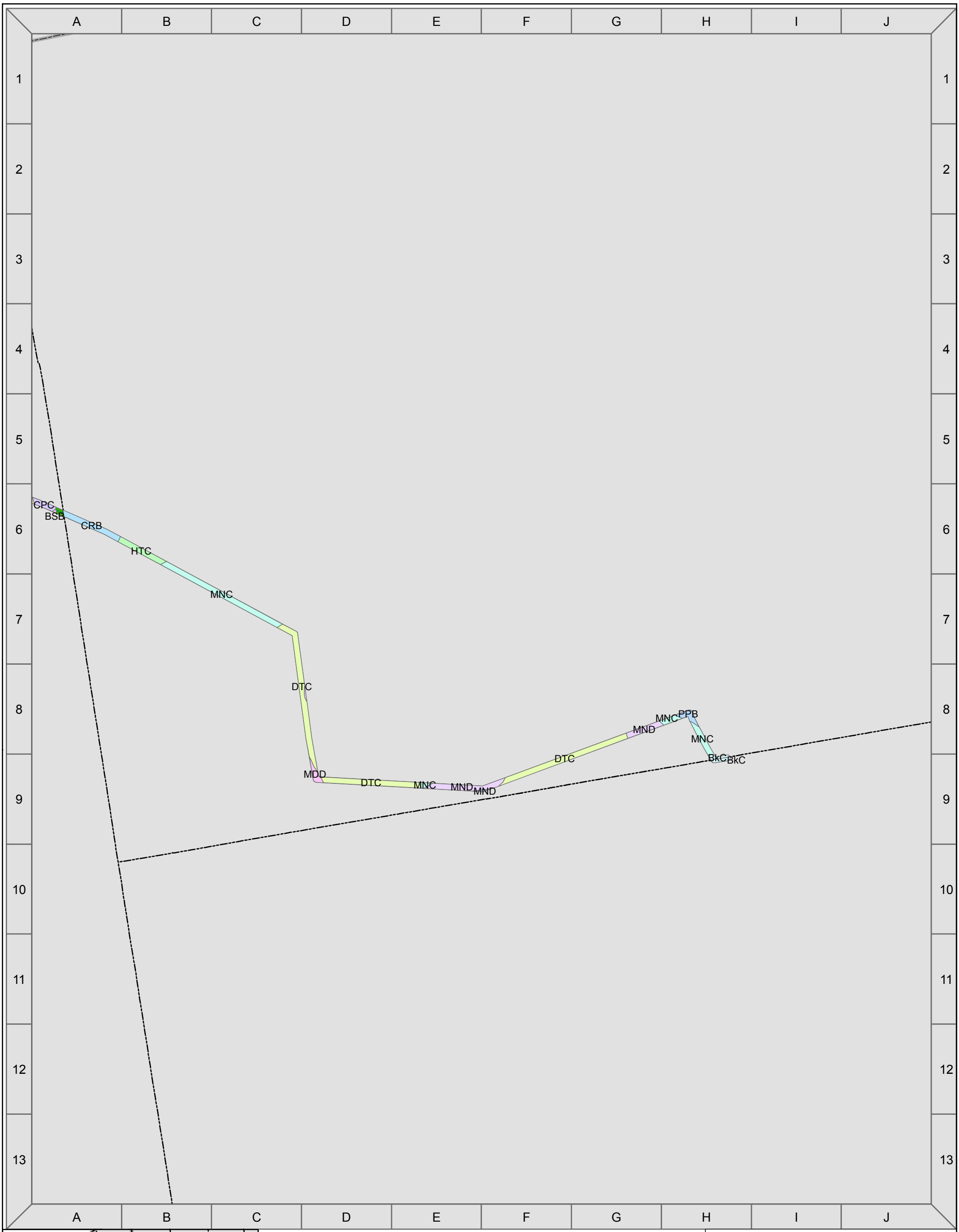
0.5

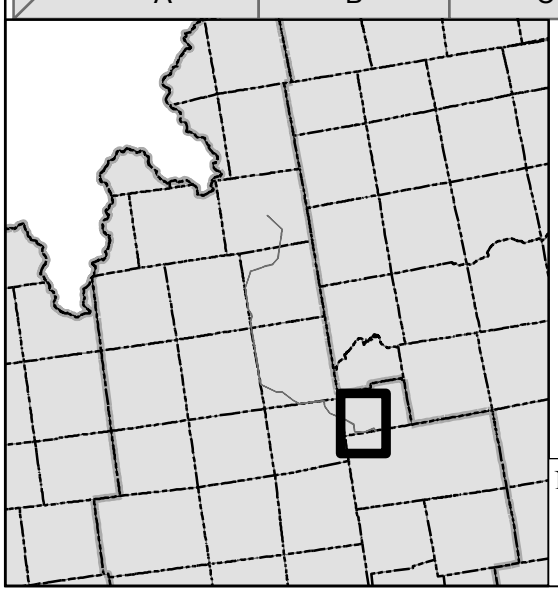
Miles

Figure x-xx5

Kibby Wind Power Project

Transmission Line Soil Types





Legend

Proposed Transmission Line — Town Boundary — County Boundary

Soil MU Symbol

AFC	CG	Ca	HTD	LTE	Nb
BSB	CNC	DMC	LAC	MDD	PPB
BTB	CPC	DTC	LAE	MED	RYE
BW	CRB	HMC	LNC	MGD	TRC
BkC	CTC	HSC	LNE	MNC	W
BkD	CVD	HTC	LTC	MND	WO

Notes:

0.5

Miles

Figure x-xx6

Kibby Wind Power Project

Transmission Line Soil Types