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**p**| 860.683.4200 **f**| 860.683.4206 **www.kleinfelder.com** 

December 22, 2008

Mr. Charles Regulbuto SBA Network Services, Inc. One Research Drive, Suite 200C Westborough, MA 01581

### RE: Wetland & Watercourse Delineation Report Rabbit Hill Road Warren, Litchfield County, Connecticut KLF Project No. 99114

Dear Mr. Regulbuto:

Kleinfelder East, Inc. (Kleinfelder) completed an on-site investigation to determine the presence or absence of wetlands and/or watercourses within 100 feet of the proposed monopole telecommunications facility and access road located on the above referenced property (Rabbit Hill Road, Warren, CT), as requested and authorized. This investigation involved a wetland/watercourse delineation that was completed by a qualified staff soil scientist and conducted in accordance with the principles and practices noted in the United States Department of Agriculture (USDA) Soil Survey Manual (1993). The soil classification system of the National Cooperative Soil Survey was used in this investigation to identify the soil map units present on the project site.

### **INVESTIGATION**

The project site was investigated on December 16, 2008, with a temperature in the mid-30s under cloudy conditions. Soil types are identified by observing soil morphology (soil texture, color, structure, etc.). To observe the morphology of the soils, numerous test pits and/or hand borings (generally to a depth of at least two feet) are completed. Wetland and watercourse boundaries were identified with flags and hung from vegetation or small wire stakes if in fields or grass communities. These flags are labeled "Wetland Delineation" and generally spaced a maximum of approximately 50 feet apart. It is important to note that flagged wetland and watercourse boundaries are subject to change until verified by local, state, or federal regulatory agencies.

### **REGULATORY INFORMATION**

Wetlands and watercourses are regulated by both state and federal law each with different definitions and regulatory requirements. Accordingly, the State may regulate waters that fall outside of federal jurisdiction; however, where federal jurisdiction exists concurrent State jurisdiction is almost always present.

### **State Regulation**

*Wetland* determinations are based on the presence of poorly drained, very poorly drained, alluvial, or floodplain soils and submerged land. *Watercourses* are defined as "rivers, streams, brooks, waterways, lakes, ponds, marshes, swamps, bogs and all other bodies of water, natural or artificial, vernal or intermittent, public or private, which are contained within, flow through or border upon the state or any

portion thereof." *Intermittent watercourse* determinations are made based on the presence of a defined permanent channel and bank, and two of the following characteristics: (1) evidence of scour or deposits of recent alluvium or detritus, (2) the presence of standing or flowing water for a duration longer than a particular storm incident, and (3) the presence of hydrophytic vegetation. (See Inland Wetlands and Watercourses Act §22a-38 CGS.)

# WETLAND AND WATERCOURSE SITE DESCRIPTION

Wetland classifications used to identify the type of wetland(s) occurring on the project site are based on guidance from the U.S. Fish and Wildlife Service (USFWS) (Cowardin et.al. 1979). These are further qualified with the Hydrogeomorphic Method of wetland classification (Brinson, 1993).

One on-site wetland system was identified during the December 16, 2008 site visit. Wetland 1 is an open-ended wetland delineated by several series of numbered flags (Figure 1). The series include flags 1 through 17, flags A1 through A8, flags B1 through B7, flags BB1 through BB3, and flags C1 through C8. Flag 1 connects to B7, flag B1 connects to BB1, and flag BB3 connects to C1. The wetland consists of a palustrine scrub-shrub broad-leaved deciduous seasonally flooded (USFWS class: PSS1C) riverine system comprised of one intermittent groundwater discharge watercourse and one drainage ditch that receives groundwater and overland flow from the agricultural fields topographically upgradient and east of the wetland. The groundwater discharge site includes a ponded area that is morphologically influenced by the surrounding rock outcrop and large woody debris. The vegetation in the wetland consists of shrubs and vines with few trees that are limited to the forested area south of the area of interest. The herb layer is strongly impacted by grazing associated with current and historic use as cattle pasture and in some upland areas is completely removed resulting in bare areas and impermanent depressions. These upland depressions, however, do not exhibit soil characteristics that indicate saturation beyond storm events or brief periods during the growing season. The watercourse associated with this wetland flows topographically downgradient in a southwesterly direct toward Rabbit Hill Road and through a culvert to an unnamed brook located southwest of the road. Scour deposits, preferentially oriented detritus, a defined channel, and flowing water were observed within the groundwater discharge watercourse and drainage ditch.

TREES & SAPLINGS			
Apple (Pyrus malus)	Sugar maple (Acer saccharinum)		
Pin oak (Quercus palustris)	White birch (Betula papyrifera)		
Red cedar (Juniperus virginiana)	White oak (Quercus alba)		
SHRUBS			
Multiflora rose (Rosa multiflora)*	Sugar maple (Acer saccharinum)		
HERBS/VINES			
Poison ivy (Toxicodendron radicans)	White clover ( <i>Trifolium repens</i> )		
Virginia creeper (Parthenocissus quinquefolia)	White-top aster (Aster umbellatus)		
	Wild carrot (Daucus carota)		
*Denotes State non-native invasive species			

TABLE 1: Representative vegetation within and adjacent to the wetlands (Common (Scientific) names)

## SOIL MAP TYPES

A brief description of each soil map unit identified on the project site is presented below including information from the Untied States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) soil descriptions. Further information on these and other soils, please refer to the internet site at <a href="http://soils.usda.gov/technical/classification/osd/index.html">http://soils.usda.gov/technical/classification/osd/index.html</a>).

# Upland Soils

### Hollis-Chatfield-Rock outcrop complex (75C)

This series consists of shallow, well drained and somewhat excessively drained soils formed in a thin mantle of till derived mainly from gneiss, schist, and granite. They are nearly level to very steep upland soils on bedrock-controlled hills and ridges, and include areas of rock outcrop. Slopes range from 15-45 percent. Diagnostic horizons and features recognized in this pedon include an ochric epipedon (0 to 7 inches), cambic horizon (7 to 16 inches) and lithic contact (hard bedrock at 16 inches).

### Woodbridge fine sandy loam (46B)

The Woodbridge series consists of moderately well drained loamy soils formed in subglacial till. They are very deep to bedrock and moderately deep to a densic contact. They are nearly level to moderately steep soils on till plains, hills, and drumlins. Slope ranges from 0 to 25 percent. The soils formed in acid till derived mostly from schist, gneiss, and granite. Diagnostic horizons include an ochric epipedon from 0 to 7 inches (Ap horizon), and a cambic horizon from 7 to 30 inches (Bw horizons). Aquic features (low chroma iron depletions) may occur within a 24 inch depth (Bw2 horizon).

### Wetland Soils

### Ridgebury-Leicester-Whitman complex, extremely stony (3)

The series is poorly drained to very poorly drained soil formed in glacial till derived from granite, gneiss and schist. The soil texture is generally loamy with a high proportion of rock fragments. The series may be founding slightly concave depressions and drainageways of till uplands with slopes that range from 0-5 percent. Depth to the perched seasonal high water table from November to May, or longer, is perched above the densic materials. The soils diagnostic horizons include an ochric epipedon (0 to 5 inches (A horizon)), aeric feature 100 percent of the zone from 5 to 9 inches (Bw1 horizon), and a cambic horizon (5 to 18 inches (Bw and Bg horizons)). Densic contact root limiting material begins at 18 inches (Cd). Endosaturation occurs within the zone from 9 to 18 inches and is saturated above the densic contact (Bw2 horizon).

### REFERENCES

- 1. Brinson, M.M. 1993. *A Hydrogeomorphic Classification for Wetlands*. Tech. Rpt.WRP-DE-4, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.
- Cowardin, L.M., V. Carter, F.C. Golet, E.T. LaRoe. 1979. Classification of Wetland and Deepwater Habitats of the Untied States. US Government Printing Office. Washington D.C. GPO 024-010-00524-6.103 pp.

### CLOSING

Thank for the opportunity to work with you on this project. Please contact me at (860) 683-4200 if you have any questions or require additional assistance.

Very truly yours, **Kleinfelder East, Inc.** 

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Ashley G. Hawes, SS Natural Resource Scientist

Enclosures

Benjamin Rieger, LEED AP Project Manager



### LEGEND

PROPERTY BOUNDARY



WETLAND LINE

WETLAND FLAG (APPROXIMATE LOCATION)

HOLLIS-CHATFIELD-ROCK OUTCROP COMPLEX

WOODBRIDGE FINE SANDY LOAM

RIDGEBURY-LEICESTER-WHITMAN COMPLEX, EXTREMELY STONEY

SOURCE:

 CLOUGH HARBOUR & ASSOCIATES LLP ABUTTERS MAP FOR RABBIT HILL ROAD WARREN, CONNECTICUT (DATED 12/12/08)

14	WETLAND DELINEATION SKETCH MAP	FIGURE
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	SITE B RABBIT HILL ROAD	
	LITCHFIELD COUNTY WARREN, CONNECTICUT	



99 Lamberton Road, Suite 201 Windsor, CT 06095 p| 860.683.4200 f| 860.683.4206 kleinfelder.com

February 17, 2009

Mr. Charles Regulbuto SBA Network Services, Inc. One Research Drive, Suite 200C Westborough, MA 01581

### RE: Wetland & Watercourse Impact Assessment Rabbit Hill Road – Site A and B Warren, Litchfield County, Connecticut KLF Project No. 99114

Dear Mr. Regulbuto:

Kleinfelder East, Inc. (Kleinfelder) completed an on-site investigation to determine the presence or absence of wetlands and/or watercourses within 100 feet of the proposed monopole telecommunications facilitys and access roads located on the above referenced property (Rabbit Hill Road, Warren, CT). This investigation involved a wetland/watercourse delineation that was completed by a qualified staff soil scientist and conducted in accordance with the principles and practices noted in the United States Department of Agriculture (USDA) Soil Survey Manual (1993). The soil classification system of the National Cooperative Soil Survey was used in this investigation to identify the soil map units present on the project site.

Kleinfelder also evaluated the functions and values of the wetland system and the potential for changes to these functions and values resulting from the proposed developments as described in site plans prepared by Clough Harbour & Associates and dated June 23, 2008 and February 5, 2009 (attached).

## **REGULATORY INFORMATION**

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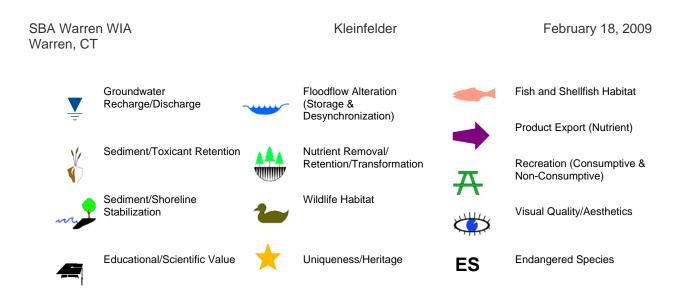
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## FUNCTIONS ASSESSMENT

Biophysical elements, such as wetlands' landscape position, geology, hydrology, substrate and vegetation, determine the wetlands functions and to what capacity they are performed. A description of the wetland system is provided above. The United States Army Corps of Engineers Highway Methodology Workbook (1993) identifies the following 13 functions and values provided by wetlands:



The onsite wetland consists of a palustrine scrub-shrub broad-leaved deciduous seasonally flooded (USFWS class: PSS1C) riverine system comprised of one intermittent groundwater discharge watercourse and one drainage ditch that receives groundwater and overland flow from the agricultural fields topographically upgradient and east of the wetland.

This wetland primarily functions to convey surface and groundwater discharge flows. The vegetation within and immediately surrounding the northern drainage ditch is limited to grazed pasture grasses. For this reason, as well as the steep gradient of the wetland channel and surrounding area, the functions and values of the wetland are primarily limited to groundwater discharge with sediment/shoreline stabilization and wildlife habitat as secondary functions.

## **IMPACT ASSESSMENT**

Based upon the current project design, the greater than 500-foot distance of the Site A groundbreaking disturbance to the wetland boundary and the 50-foot distance of the Site B groundbreaking disturbance to the wetland boundary, no direct impacts to the wetland are expected. Short-term indirect impacts are expected to be limited to the potential for soil erosion and sedimentation and are anticipated to be managed and mitigated through the erosion and sediment control plan developed by the project engineer. The soil and erosion control plan should incorporate controls to manage the movement of soil during storm events in order to avoid the introduction of sediment to the wetland and watercourse during the construction phase. The plan should be implemented during the construction phase and following completion until all disturbed soils are stabilized.

The function of the wetland for groundwater discharge is not expected to be altered by the project. Minor side grading is proposed as part of both proposed locations and is not expected to alter overland flow patterns to the wetland. The substrate proposed for the access road and compound area is gravel, a pervious material, and is therefore not anticipated increase surface flow from the proposed sites.

The wetland and surrounding area have undergone significant disturbance through past clearing for pasture and active cattle grazing. Therefore, little cover habitat is present in the upland surrounding the wetlands. Due to this disturbance and the fragmentation of the local landscape, the species expected to occur within and surrounding the wetland are limited to generalist (e.g., low area sensitive) wildlife species. The groundwater discharge pond located southeast of the Site B has the potential to support amphibians; however, this pond is located

greater than 100 feet and cross-gradient from Site B. Site A is greater than 500 feet east of the pond. Due to this significant distance no impacts from the proposed Site A o r B developments are anticipated.

A review of the Connecticut Natural Diversity Database Map, revised in December 2008, showed that there are no state or federally listed species or significant natural communities located in or in the immediate vicinity of the proposed project area. Therefore, an impact on endangered or threatened species or significant natural communities is not likely and does not require a review by the Connecticut Department of Environmental Protection.

According to a letter from the United States Fish and Wildlife Service on November 16, 2007, the bald eagle (*Haliaeetus leucocephalus*), bog turtle (*Clemmys muhlenbergii*), and small whorled pagonia (*Isotria medeoloides*) are known to occur in Litchfield County, Connecticut. However, the proposed project does not occur in an area known to support these species. Based upon this data and site observations, the proposed project will not impact listed or proposed threatened or endangered species or their critical habitats.

### SUMMARY CLOSING

Based upon the site plans referenced above, no direct impacts to the wetland system are anticipated from either proposed Site A or Site B. By utilizing appropriate best management practices and sedimentation controls, indirect impacts will be minimized during the construction and operation of the tower site.

Thank for the opportunity to work with you on this project. Please contact me at (860) 683-4200 if you have any questions or require additional assistance.

Very truly yours, Kleinfelder East, Inc.

Benjamin B. Rieger Project Manager

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Ashley G. Hawes Project Scientist



### LEGEND

PROPERTY BOUNDARY



WETLAND LINE

WETLAND FLAG (APPROXIMATE LOCATION)

HOLLIS-CHATFIELD-ROCK OUTCROP COMPLEX

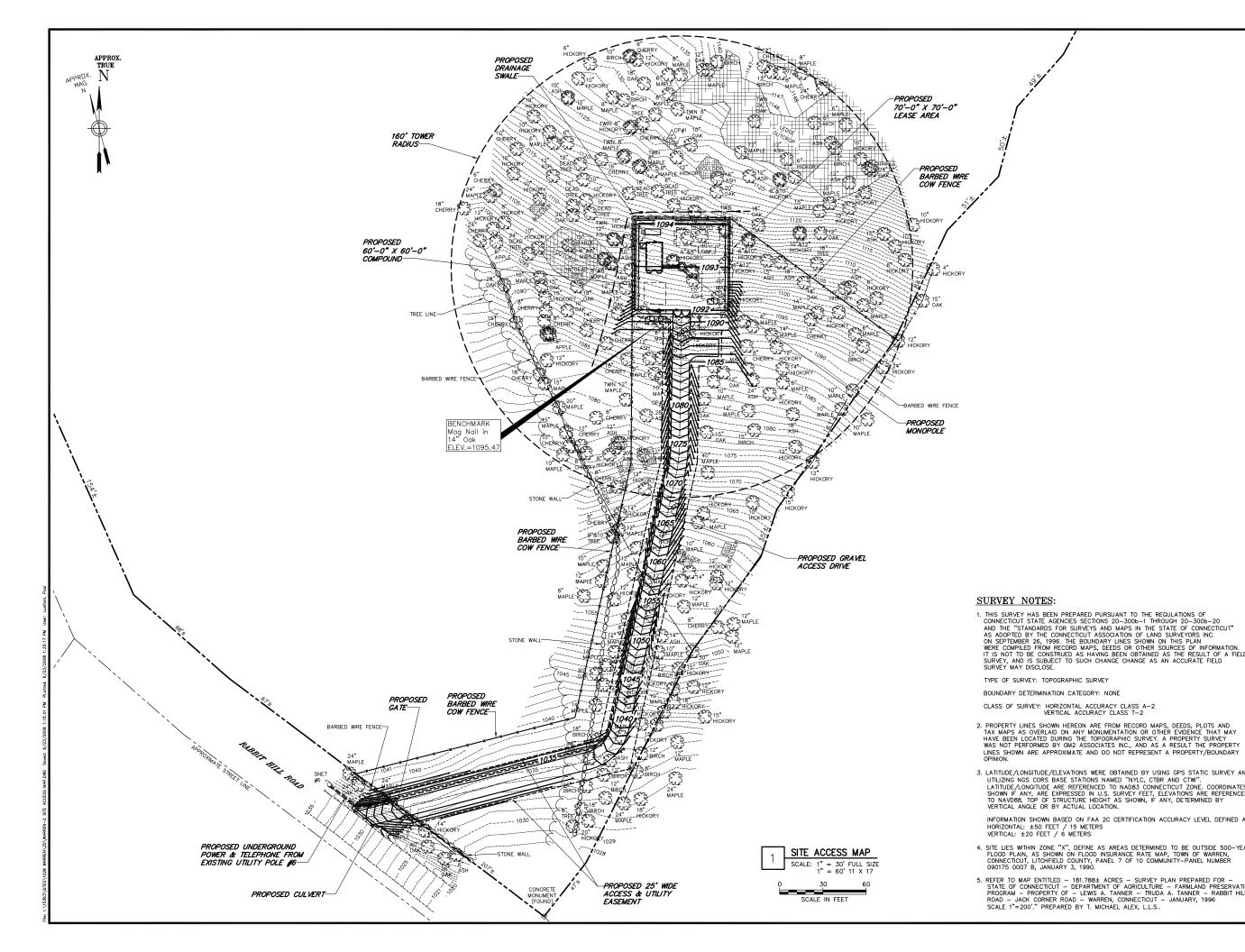
WOODBRIDGE FINE SANDY LOAM

RIDGEBURY-LEICESTER-WHITMAN COMPLEX, EXTREMELY STONEY

SOURCE:

 CLOUGH HARBOUR & ASSOCIATES LLP ABUTTERS MAP FOR RABBIT HILL ROAD WARREN, CONNECTICUT (DATED 12/12/08)

14	WETLAND DELINEATION SKETCH MAP	FIGURE
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	SITE B RABBIT HILL ROAD	
	LITCHFIELD COUNTY WARREN, CONNECTICUT	



(((•))) OPTASITE TOWERS LLC 1 RESEARCH DRIVE, SUITE 200C WESTBOROUGH, MA 01581 Drawing Copyright © 2007 Clough Harbour & Associates LLP CLOUGH HARBOUR & ASSOCIATES LLP way, Suite 212 - Rocky Hill, CT 06067-2 Main: (860) 257-4557 · www.cloughharbour.com CHA PROJECT NO: 15363 - 1028 - 1601 SUBMITTAL ISSUED FOR REVIEW /05/07 APP'D: JP CHK: PAL REVISED PER COMMENTS CHK: PAL APP D: JPS 06/23/08 BY: PAL 1. THIS SURVEY HAS BEEN PREPARED PURSUANT TO THE REGULATIONS OF CONNECTICUT STATE AGENCIES SECTIONS 20-300b-1 THROUGH 20-300b-20 AND THE "STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" AS ADOPTED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS INC. ON SEPTEMBER 26, 1996. THE BOUNDARY LINES SHOWN ON THIS PLAN WERE COMPILED FROM RECORD MAPS, DEEDS OR OTHER SOURCES OF INFORMATION. IT IS NOT TO BE CONSTRUED AS HAVING BEEN OBTAINED AS THE RESULT OF A FIELD SURVEY, AND IS SUBJECT TO SUCH CHANGE CHANGE AS AN ACCURATE FIELD SURVEY MAY DISCLOSE. IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT. SITE ID: CT-999-0052 SITE NAME: WARREN SITE ADDRESS: 131 RABBIT HILL ROAD WARREN, CT 3. LATITUDE /LONGITUDE /ELEVATIONS WERE OBTAINED BY USING GPS STATIC SURVEY AND LATITUDE/LONGITUDE/ELEVATIONS WERE OBTAINED BY USING GPS STATIC SURVEY AND UTILIZING NOS CORS BASE STATIONS NAMED "N'ILC, CTBR AND CTW". LATITUDE/LONGITUDE ARE REFERENCED TO NADB3 CONNECTICUT ZONE. COORDINATES SHOWN IF ANY, ARE EXPRESSED IN U.S. SURVEY FEET, ELEVATIONS ARE REFERENCED TO NAVDB8. TOP OF STRUCTURE HEIGHT AS SHOWN, IF ANY, DETERMINED BY VERTICAL ANGLE OR BY ACTUAL LOCATION. 06777 LITCHFIELD COUNTY INFORMATION SHOWN BASED ON FAA 2C CERTIFICATION ACCURACY LEVEL DEFINED AS: SHEET TITLE SITE ACCESS MAP 4. SITE LIES WITHIN ZONE "X", DEFINE AS AREAS DETERMINED TO BE OUTSIDE 500-YEAR FLOOD PLAIN, AS SHOWN ON FLOOD INSURANCE RATE MAP, TOWN OF WARREN, CONNECTICUT, LITCHFIELD COUNTY, PANEL 7 OF 10 COMMUNITY-PANEL NUMBER 090175 0007 B, JANUARY 3, 1990. SHEET NUMBER REFER TO MAP ENTITLED – 181.788± ACRES – SURVEY PLAN PREPARED FOR – STATE OF CONNECTICUT – DEPARTMENT OF AGRICULTURE – FARMLAND PRESERVATION PROGRAM – PROPERTY OF – LEWIS A. TANNER – TRUDA A. TANNER – RABBIT HILL ROAD – JACK CORNER ROAD – WARREN, CONNECTICUT – JANUARY, 1996 A02

