ATTACHMENT 4

ATTACHMENT 4

ENVIRONMENTAL ASSESSMENT STATEMENT

I. PHYSICAL IMPACT

A. WATER FLOW AND QUALITY

The site and surrounding terrain are sloped from the north to the south with areas of the parcel and adjacent Town open space constituting steep slopes. An on-site wetlands delineation was completed in June of 2013 and survey data for the parcel as of July 2013 incorporated into the site drawings included behind Tab 3. The closest on-site wetland is approximately 89' west from the proposed tower compound and access drive, and approximately 40' from the nearest grading and areas of disturbance. No direct impact to any wetlands or watercourses are anticipated as a result of the tower site construction. The overall amount of impervious surface is low in comparison to residential development and storm water will be managed with on-site detention, design parameters and other Best Management Practices to be implemented during construction.

A shallow retention/detention basin is shown to attenuate rate of flow and minimize increase in runoff volume. The basin is designed to overflow at grade through a designed swale that will be lined on the high side of the compound. This will lengthen the path the runoff will use to reach the bottom of the hill and thus decrease the slope of the flow path adding less energy and lowering the velocity of the runoff.

Steep slopes will be covered with engineered erosion control fabric to prevent rills and sediment transport. The use of straw or mulch wattles at the toe of slope with check dams of the same material will control the

flows and provide for removal of sediment from the slopes prior to them becoming fully established and vegetated. The height and length of the slopes do not require benching of the slopes. Even if the slopes required benching the surface treatment (engineered solution) would remove the need for benching.

All access roadway development will provide positive drainage to the inside, towards the compound once on site. This will minimize runoff to the larger slopes of the development protecting them from erosion.

The area within the existing ROW will be similar to existing conditions. Any slight changes in runoff will be contained by the existing stonewalls and have no effect on abutting properties. The slopes here are much flatter and erosion issues would not be anticipated.

Additionally, the majority of soils within the area to be developed are very granular and are less subject to erosion. Particularly the area where the basin discharge will flow is existing weathered rock along a well defined path.

To summarize, the design is sensitive to the existing site and surfaces and will be designed in accordance with the DEEP Sedimentation and Erosion Control manual 2002 and the ConnDot Drainage Manual. This project will not require registration for the newly issued GP for Stormwater and Dewatering Wastewaters from Construction Activities. The area of disturbance will be below the threshold. Regardless, the site will be designed to the criteria of the new GP.

B. AIR QUALITY

Under ordinary operating conditions, the equipment that would be used at the proposed facility would emit no air pollutants of any kind. An

emergency diesel fuel generator with secondary containment systems will comply with Connecticut Department of Energy and Environmental Protection ("CTDEEP") air standards for such facilities.

C. LAND

Tree removal, clearing, grading and cut and fill will be required for the facility. The remaining land of the lessor would remain undisturbed by the construction and operation of the facility and serve as a buffer to adjoining properties.

D. NOISE

The equipment to be in operation at the facility would not emit noise other than that provided by the operation of the installed heating, air-conditioning and ventilation system. Some construction related noise would be anticipated during facility construction, which is expected to take approximately eight weeks. Temporary power outages could involve sound from the emergency generator.

E. POWER DENSITY

The cumulative worst-case calculation of power density from AT&T's operations at the facility in conjunction with municipal antennas would be 16.73% of the MPE standard. Attached is a copy of a Power Density Report for the facility.

F. VISIBILITY

The attached Visibility Analysis includes an evaluation of the anticipated potential visual impact of the proposed monopole, photographs of existing views and simulations of the proposed facility. Potential visibility was

assessed within an approximately two (2) mile radius using a computer-based, predictive view shed model that was field verified. Areas from where the proposed Facility would be visible above the tree canopy year-round comprise a total of approximately 141 acres. When the leaves are off the trees, seasonal views through intervening tree trunks and branches are anticipated to occur over ±199 additional acres within the 8,042 acre study area. No schools or licensed child day care centers are located within 250' of the site.

II. SCENIC, NATURAL, HISTORIC & RECREATIONAL VALUES

The Connecticut State Historic Preservation Officer ("SHPO") and the ("CTDEEP") were contacted for review of the proposed Facility. While SHPO review is pending, to date no impact to a historical or natural resource has been identified by the project's consultants. The site is also under evaluation in accordance with the FCC's regulations implementing the National Environmental Policy Act of 1969 ("NEPA") and no known impacts to federally recognized environmental resources are known at this time. CTDEEP indicated a potential for the presence of the bog turtle and eastern box turtle in the area and requested a site specific survey to determine if they are present. In lieu of same, Homeland asked its consultants to assume the presence of such species and develop a turtle protection plan with construction protocols similar to measures approved in other Dockets and by CTDEEP. The turtle protection plan was submitted to CTDEEP and is included in Attachment 6 of this Application.

Barrett
Bonacci &
Van Weele, PC

Civil Engineers
Surveyors
Planners

NY
175A Commerce Dr.
Hauppauge, NY 11788
T 631 435-1111
F 631 435-1022

www.bbvpc.com

FAA 2-C SURVEY CERTIFICATION

Applicant:	Homeland Towers
Site Name:	CT897 Ridgefield
Site Address:	Ledges at Ridgefield, Ridgefield, CT 06877
Survey Method:	GPS Survey
Vertical Datum:	NAVD 1988
Structure Type:	Proposed Monopole
Ground Elevation:	807'
Latitude:	N. 41° 19' 49.11"
Longitude:	W. 73° 31' 00.55"
Top of Proposed Pole Elevation:	969' (162' proposed monopole tower height provided by others)

Certification: I certify that the above antennas are located at the stated latitude and longitude and elevation. The location coordinates are accurate to within +/- 50 feet horizontal and that the site elevation and the height above ground, is accurate within +/- 20 foot vertically. The horizontal datum (coordinates) are in terms of the North American Datum of 1983 (NAD83) are expressed as degrees, minutes and seconds, to the nearest (tenth / hundredth) of a second. The vertical datum (height) is in the terms of the North American Vertical Datum of 1988 (NAVD) and is determined to the nearest foot.

Company: **BARRETT, BONACCI & Van WEELE, P.C.**

Surveyor: Gregory Brouillet
Connecticut Licensed Surveyor (# 0070251)

Date: August 15, 2013 (Revised 10/15/13)

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sitesafe
rf compliance experts

200 North Glebe Road, Suite 1000, Arlington, VA 22203-3728
703.276.1100 703.276.1169 fax
FAA@sitesafe.com www.sitesafe.com

FAA Aeronautical Evaluation

Ridgefield
CT897
REV 2013

For more information contact:
faa@sitesafe.com
770.532.3255 phone
703.276.1169 fax

SITE SPECIFIC EVALUATION
FOR
Client Site Name: Ridgefield
Client Site Number: CT897
Client Site Location: Ridgefield, CT.

Client/Requestor Name: Eileen Tavolacci Date: 10/21/13
Company Name: Homeland Towers
Address: 22 Shelter Rock Lane
Address: Danbury Ct. 06810

This is an evaluation based on application of surfaces identified in Federal Aviation Regulation (FAR) Part 77 and Federal Communication Commission (FCC) Rules Part 17.

EXECUTIVE SUMMARY OF FINDINGS

- **The maximum height that can be built at this site without notice to the FAA is 0 feet AGL or 807 feet AMSL.**
- Maximum No Extended Study height at this site is 200 AGL, or 1007 AMSL.
- Maximum No Hazard height at this site is 283 AGL, or 1090 AMSL.
- Maximum no marking and lighting height at this site is 200 AGL, or 1007 AMSL.

SITE DATA SUBMITTED FOR STUDY

Type of Structure:	Antenna	
Coordinates of site:	Lat:	41° 19’ 49.11”
	Long:	73° 31’ 00.55”
	Datum:	NAD 83

Site Ground Elevation:	807
Total Height above the ground of the entire structure (AGL):	162
Overall height of structure above mean sea level (AMSL):	969

***Note**: This report is for planning purposes only. If notification to the FAA or FCC is submitted on a site (whether it is, or is not required), a determination of no hazard or an approval letter should be received prior to any actions taken at this site.*

AIRPORT AND HELIPAD INFORMATION

Nearest public use or Government Use (DOD) facility is Danbury Municipal.

This structure would be located 2.9 NM or 17815 FT from the airport on a bearing of 32 degrees true to the airport.

Nearest private use facility is Danbury Hospital.

This structure would be located 5.5 NM from the helipad on a bearing of 35 degrees true to the helipad.

FINDINGS

AM Facilities:

*(The FCC protects AM transmission stations from possible electro magnetic interference for a distance of 3.0 km for directional facilities, and 1.0 km for non-directional facilities. Any antenna structures within these distances will most likely require a detuning evaluation of the site) (**Sitesafe offers a full range of detuning services**)*

For a free analysis of this site against the most current FCC data, go to our AM evaluation web site at http://sitesafe.com. A negative certificate can be generated, (on-line) if no conflict is found. If a conflict is found, our AM Detune department will contact you to review the findings.

This site was evaluated against the FCC's AM database, and is not within an AM transmission area.

FCC Notice Requirements:

(FCC Rules, Part 17)

This structure does require notification to the FAA or FCC based on these rules.

FAA EMI:

(The FAA protects certain air navigational aids and radio transmitters from possible electro-magnetic interference. The distance and direction are dependent on the type of facility be evaluated. Most of these transmission and receiver facilities are listed in the National Flight Data Center (NFDC) database.)

This site would not affect any FAA air navigational aids or transmitters listed in the NFDC database.

Military Airspace:

This structure will not affect this airspace.

***Note**: This report is for planning purposes only. If notification to the FAA or FCC is submitted on a site (whether it is, or is not required), a determination of no hazard or an approval letter should be received prior to any actions taken at this site.*

FAA Evaluation:

FAR Part 77 paragraph 9 (FAR 77.9). Construction or Alteration requiring notice:
(These are the imaginary surfaces that the FAA has implemented to provide general criteria for notification purposes only.)

This structure does require notification to the FAA.

FAR Part 77 paragraph 17 (FAR 77.17). Standards for Determining Obstructions:
(These are the imaginary surfaces that the FAA has implemented to protect aircraft safety. If any of these surfaces are penetrated, the structure may pose a Hazard to Air Navigation.)

This structure does not exceed these surfaces.

MARKING AND LIGHTING

FAA Advisory Circular 70/7460-1

Marking and lighting is not required for this structure.

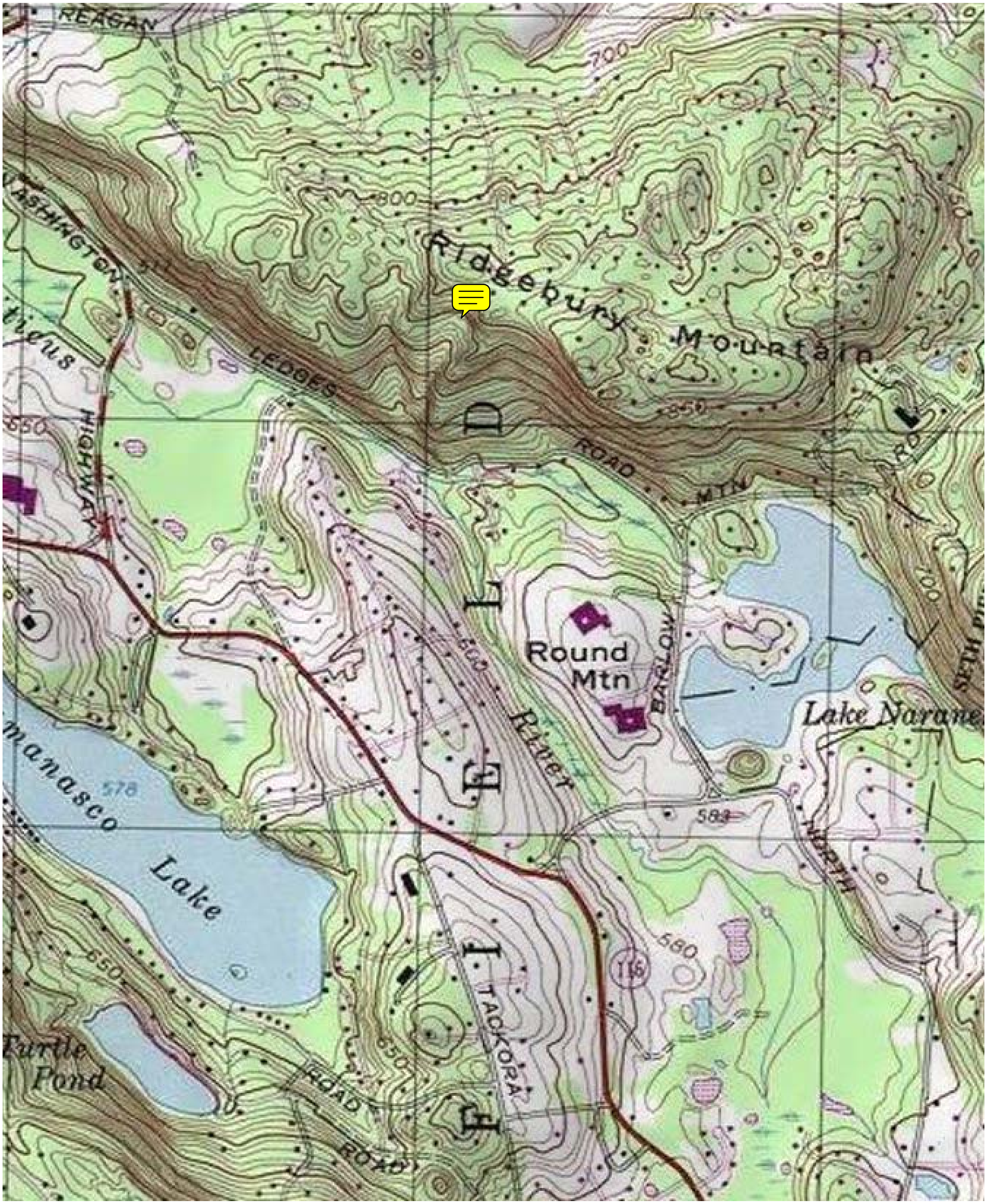
RECOMMENDATIONS OR ACTIONS

Sitesafe does not consider this site to be a hazard to air navigation as specified in FAR part 77.

☒FAA Form 7460-1 accomplished.

☐State notification accomplished.

***Note**: This report is for planning purposes only. If notification to the FAA or FCC is submitted on a site (whether it is, or is not required), a determination of no hazard or an approval letter should be received prior to any actions taken at this site.*


REAGAN
700
800
Ridgebury Mountain
LEDGES
HIGHWAY
650
850
ROAD
MTN
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BARLOW
Lake Narane
River
E
578
Lake
583
580
116
I
TACKORA
F
ROAD
Turtle
Pond

ArcGIS -

Mail Processing Center
Federal Aviation Administration
Southwest Regional Office
Obstruction Evaluation Group
2601 Meacham Boulevard
Fort Worth, TX 76137

Aeronautical Study No.
2013-ANE-1881-OE
Prior Study No.
2010-ANE-472-OE

Issued Date: 12/06/2013

Amy English
HPC Development (ET)
22 Shelter Rock Lane
Danbury, CT 06810

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Antenna Tower Ridgefield CT897
Location:	Ridgefield, CT
Latitude:	41-19-49.11N NAD 83
Longitude:	73-31-00.55W
Heights:	807 feet site elevation (SE)
	162 feet above ground level (AGL)
	969 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

Based on this evaluation, marking and lighting are not necessary for aviation safety. However, if marking/ lighting are accomplished on a voluntary basis, we recommend it be installed and maintained in accordance with FAA Advisory circular 70/7460-1 K Change 2.

This determination is based, in part, on the foregoing description which includes specific coordinates , heights, frequency(ies) and power . Any changes in coordinates , heights, and frequencies or use of greater power will void this determination. Any future construction or alteration , including increase to heights, power, or the addition of other transmitters, requires separate notice to the FAA.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

Any failure or malfunction that lasts more than thirty (30) minutes and affects a top light or flashing obstruction light, regardless of its position, should be reported immediately to (877) 487-6867 so a Notice to Airmen (NOTAM) can be issued. As soon as the normal operation is restored, notify the same number.

This aeronautical study included evaluation of a structure that exists at this time. Action will be taken to ensure aeronautical charts are updated to reflect the most current coordinates, elevation and height as indicated in the case description.

A copy of this determination will be forwarded to the Federal Communications Commission (FCC) because the structure is subject to their licensing authority.

If we can be of further assistance, please contact our office at (817) 321-7755. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2013-ANE-1881-OE.

Signature Control No: 199775667-203175603 (DNE)
Debbie Cardenas
Technician

Attachment(s)
Frequency Data

cc: FCC

Frequency Data for ASN 2013-ANE-1881-OE

LOW FREQUENCY	HIGH FREQUENCY	FREQUENCY UNIT	ERP	ERP UNIT
698	806	MHz	1000	W
806	824	MHz	500	W
824	849	MHz	500	W
851	866	MHz	500	W
869	894	MHz	500	W
896	901	MHz	500	W
901	902	MHz	7	W
930	931	MHz	3500	W
931	932	MHz	3500	W
932	932.5	MHz	17	dBW
935	940	MHz	1000	W
940	941	MHz	3500	W
1850	1910	MHz	1640	W
1930	1990	MHz	1640	W
2305	2310	MHz	2000	W
2345	2360	MHz	2000	W

Michael Lawton
SAI Communications
260 Cedar Hill St.
Marlborough, MA 01752
Mike.Lawton@sai-comm.com

October 22, 2013

Connecticut Siting Council

Subject: AT&T Wireless, S1855 - Ridgefield

Dear Connecticut Siting Council:

At the request of AT&T Wireless, SAI Communications has performed an assessment of the RF Power Density of AT&T's proposed installation, along with the proposed town emergency services located at Ledges Road, Ridgefield, CT.
Calculations were done in compliance with FCC OET Bulletin 65. This report provides an FCC compliance assessment based on a "worst-case" analysis that all transmitters are simultaneously operating at full power and pointing directly at the ground.

FCC OET Bulletin 65 formula:

$$S = \frac{2.56 * 1.64 * ERP}{4 * \pi * R^2}$$

Transmission Mode	Antenna Centerline AGL (ft)	Frequency (MHz)	Number of Channels	Effective Radiated Power per Channel (Watts)	Power Density (mW/cm^2)	Standard Limits (mW/cm^2)	% MPE (Uncontrolled/ General Public)
Police	150	154.9725	2	60.00	0.0019	0.1033	1.86%
Fire	70	159.045	2	60.00	0.0088	0.1060	8.31%
Microwave	65	11000	1	1.00	0.0001	1	0.01%
AT&T UMTS	180	850	2	500.00	0.0111	0.5667	1.96%
AT&T UMTS	180	1900	2	500.00	0.0111	1	1.11%
AT&T LTE	180	700	2	500.00	0.0111	0.4667	2.38%
AT&T LTE	180	2100	2	500.00	0.0111	1	1.11%
Total							**16.73%**

Conclusion: AT&T's proposed antenna installation along with the town's emergency services are calculated to be within 16.73% of FCC Standard for General Public/Uncontrolled Maximum Permissible Exposure (MPE).

Sincerely,

Michael Lawton
SAI Communications

Site Drainage Report

HOMELAND TOWERS SITE DEVELOPMENT
Aspen Ledges Road
Ridgefield, Connecticut

Prepared For Submission To:
Connecticut Siting Council

Submitted: January 31, 2014

Prepared For:
Homeland Towers
22 Shelter Rock Road
Danbury, CT 06810
(203) 297-6345

Prepared By:

ALL-POINTS
TECHNOLOGY CORPORATION

All-Points Technology Corporation
3 Saddlebrook Drive
Killingworth Connecticut 06419
(560)663-0935

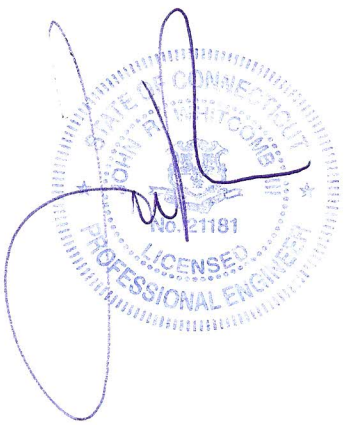

Table of Contents

Executive Summary:

This project will develop an existing undeveloped site for a telecommunications tower. It is proposed to construct a 650 foot access drive and a 4,650 square foot equipment compound as shown on the project drawings. The site will be designed to effectively manage stormwater runoff in accordance with State regulations. Peak discharge rates of the developed site for the studied discharge points are all the same or less than the existing conditions. The volume of runoff generated is also reduced for this site.

			2-Year Storm	5-Year Storm	10-Year Storm	25-Year Storm	50-Year Storm	100-Year Storm
Total Discharge	Rate (cfs)	Existing	6.3	9.7	12.2	14.7	17.3	20.2
		Proposed	5	9	11.7	14.2	16.7	19.7
	Volume (cf)	Existing	22,746	39,898	43,847	53,046	62,431	73,331
		Proposed	18,780	30,380	39,014	47,945	57,110	67,870

Introduction

The purpose of this report is to present the Connecticut Siting Council (CSC) with sufficient technical information to review potential impacts associated with the cellular site development for this site. All of the proposed site improvements are intended to be in full compliance with CSC requirements while taking into account prevailing site conditions and the owner's program. The proposed development has been designed to be compatible with the surrounding neighborhood, manage stormwater in terms of flow, volume and quality, and have no significant impacts on surrounding wetlands and watercourses.

Existing Site Conditions

General Site Information

The subject site is approximately 3.19-acre parcel. Directly to the north of the developed parcel is a parcel denoted on the survey as Parcel D-2, which is approximately 0.79 acres in size. The access for this development crosses Parcel D-2 within an existing easement. For continuity of the engineering analysis these parcels have been grouped in this report. Splitting these parcels for this hydrologic stormwater analysis would produce the same results and no beneficial interpretation is gained through this approach.

The development will gain access from the Town right of way at the intersection of Aspen Ledges Road and Old Stage Coach Road. The right of way for Old Stagecoach Road continues from this intersection ±120 feet southerly between the existing residential lots and ties into both of the parcels noted for this study. An existing traveled path way (dirt/gravel road) exists within the center of the right of way. This right of way is crested with shallow grades (<5%)

approximately two thirds of the way (75 feet) from the existing road and connects with both this parcel and parcel D-2. Currently there is no occupied development on this site. A deteriorated shed exists and there are dirt paths that traverse the site. These parcels consist mainly of a grassy wooded area with a section of wetlands delineated along the southern most boundary. There are significant rock outcrops throughout the parcels. The grades within the two parcels range from less than 10% to over 50% with some rock outcrops with weathered faces exhibiting more vertical faces.

The combined parcels have a high spot located on the northern edge along the eastern side. The remainder of the site drains from this area in a general southern direction. The NRCS Web Soil Survey identifies the predominate soil type is a Rock outcrop-Hollis Complex (76F). The right of way and a small portion on the northeastern corner of the combined parcels is comprised of a Charlton-Chatfield soil complex (73C). The soil type boundaries are shown on both drainage area maps and are indicated with a dash-dot line. The Rock outcrop-Hollis Complex (76F) is of the Hydrologic Soil Group (HSG) D, which is defined as soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission. This particular soil complex is rated as a D class soil because of shallow soils that have a high percentage of fine grained particles that have a low hydraulic conductivity and transmissivity.

The Charlton-Chatfield complex is a HSG B, which is defined as soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

A copy of a “Custom Soil Resource Report” for the site from the United States Department of Agriculture Natural Resources Conservation Service (USDA NRCS) is included as part of this report for reference. (See Appendix A)

The site was analyzed by Dean Gustafson, a registered professional soil scientist with All-Points Technology Corporation, P.C. who determined that wetlands were present on the property during a site investigation June 22, 2013. The wetlands were flagged and field located as shown on the Boundary and Topographic survey that is part of the project documents. No work is proposed within the wetland areas for the construction of the telecommunications facility. A copy of the Wetland Report is included in this report for reference.

Existing Drainage Patterns

The site generally slopes from north to south originating with radial flow paths easterly, southerly and westerly from the high point along the northern boundary of the study area. A small portion (2,317 sf) of the right of way drains north to Aspen Ledges Road. The remainder of the study area drains to discharge south. South of the study area is bounded by two parcels that belong to the Town of Ridgefield. A drainage area was developed for each Town parcel. The

following is a brief analysis of each existing drainage area as shown on the enclosed Existing Drainage Area Map (DR-EX):

Existing Area 1S: This is the small portion of the right of way, 2,317 square feet, that discharges the intersection of Aspen Ledges Road and Old Stagecoach Road. This outfall point will remain in the proposed telecommunications development.

Existing Area 2S: This 29,442-square foot drainage area is comprised of the portion of the right of way that drains southerly and portions of Parcel D-2 and the subject parcel that drain to the Town of Ridgefield parcel that borders the easterly edge of the development. This parcel contains both HSGs noted and originates at the high point located on parcel D-2.

Existing Area 4S: This 145,107-square foot drainage area is comprised of the portions of Parcel D-2 and the subject parcel that both drain to the Town of Ridgefield parcel that borders the western and southern edge of the development. This parcel contains both HSGs noted and originates at the high point located on parcel D-2. Dirt paths and a deteriorated shed structure exist on this site.

Developed Site Conditions

General Site Information

The proposed telecommunications development will consist of a fenced 4,650 square foot compound that has a gravel surface and is located within a 5,265 square foot lease area. The compound will include a 150 foot tall monopole tower to support telecommunication antennas. The compound will be located in the middle of the site below and to the south of the drainage high point. To gain access to the site a ±640 foot long by 12 foot wide gravel surfaced access drive will be constructed from the noted intersection to the compound. A portion of the drive, 260 linear feet, will require grades in excess of 9% and will be paved. Due to existing topography a portion of the road work will require fills in excess of 11 feet. To minimize the footprint of the development the slopes of the fill embankments are designed with a 2 feet horizontal to 1 foot vertical grade, 2:1. All embankments steeper than 3:1 will be covered with a rolled erosion control fabric designed for permanent stabilization of soils against surficial erosion. The intended fabric is Tensar ® VMax 250. A copy of the specifications are included in the Appendix A.

Proposed Drainage Patterns

The proposed site grading has been designed to mimic existing conditions and provide both rates and volumes of stormwater discharge similar to existing conditions. The report is organized to provide information comparable to the existing conditions discharge points.

The following is a brief analysis of each proposed drainage area as shown on the enclosed Proposed Drainage Plan (DR-PR):

Proposed Area 1S: This is the small portion of the right of way, 2,205 square feet, that discharges the intersection of Aspen Ledges Road and Old Stagecoach Road. The high point in the right of way is moved ±5 feet toward the road. Shortening of the length provides a decrease in flow rates and volumes to offset the additional flow generated by the improvements to the access.

Proposed Area 2S: This area is similar to existing area 2S. It comprises the area that drains to the Town parcel to the east. This area is 23,251 square feet, or nearly 6,000 square feet less than the existing drainage area. The area is reduced because the proposed access road intersects the upper portion of this drainage area. This reduced size provides a decrease in rate and volume for all storm events studied and should provide no decrease in stormwater runoff quality.

The remaining drainage areas comprise the areas that correspond with existing drainage area S2. The proposed areas are delineated to verify retention sizing, swale hydraulics and provide a better definition of the proposed conditions. The existing development will provide limits of clearing and a toe of slope for fill embankments +60 feet from the edge of the delineated wetlands, which is in excess of the Town's regulations (50 feet).

Proposed Area 4S: This is the remaining part of the existing area 2S and a portion of existing area 3S that is defined by the proposed access and drains to the proposed retention basin Node 6P. This area contains all of the asphalt surfaced access.

Proposed Area 6P: This design node is the retention basin designed for water quality treatment, water volume attenuation, and runoff rate attenuation. It is a small basin about 4 feet in depth designed with no outlet. It will fully capture the flow generated by the first inch of runoff from the asphalt areas.

Proposed Area 8S: Area 8S is a sliver drainage area (5,889 square feet) of existing undisturbed soils that will drain across the gravel area south to the existing wetlands.

Proposed Area 10S: Is a 16,643 square foot drainage area that remains in the existing condition. This drainage area is a study node because the discharge will be carried in a small swale running east to west along the northern edge of the compound. This area is routed through Node 9R within the report to verify that the 100 year runoff rate will be adequately conveyed in the swale without soil erosion or overtopping and flowing into the compound.

Proposed Area 11S: Drainage Area 11S (87,906 square feet) encompasses the remaining onsite areas west and downstream of the developed area and remains unchanged in the proposed conditions. This area discharges to the Town parcel.

Proposed Area 13S: Area 13S (16,579 square feet) is the proposed drainage area that comprises the compound and fill areas.

Storm Water Management

The proposed site has been designed in accordance with the 2004 Connecticut Stormwater Quality Manual. The sediment and erosion control has been designed in accordance with the DEEP's "2002 Connecticut Guidelines for Soil Erosion and Sediment Control". These manuals and guidelines are consistent with the Town of Ridgefield's regulations.

Water Quality

Water quality is addressed with the retention basin located to the east of the compound. The simplified DEEP method was used for the asphalt area draining to this basin. The basin provides 1,620 cubic feet of storage. The road contains 2,983 square feet of pavement. One inch of runoff on the asphalt creates 250 cubic feet of runoff. The storage volume well exceeds the generated water quality volume. The retention basin is also designed to contain the entire runoff volume generated by Proposed Drainage Area 4S for a 1 inch, 24 hour, Type III rain event. The storm event includes >98% of all rain events.

Water Quantity

A hydrology study was completed for the proposed development area to quantify the decrease in peak rates of storm water runoff versus existing conditions. To accurately compare the runoff rates, an analysis of all water tributary to the point of analysis for pre- and post-development conditions was determined as the 'control' limit of areas considered.

All drainage areas were plotted and measured with AutoCAD 2013. The HydroCAD 10.00 computer program by HydroCAD Software Solutions LLC was used to analyze the site hydrology. HydroCAD uses the National Resource Conservation Service's SCS Unit Hydrograph Method, commonly known as the SCS TR-20 runoff method, to estimate the runoff produced by each sub-area. The design storms analyzed were the 2, 10, 25, 50 and 100-year 24-hour duration storm, with Type III rainfall for Fairfield County. Detention/Retention is calculated using the Modified Puls methodology included in Technical Release 55. See Appendix B for the Pre-and Post- Development Hydrologic Computations.

In preparing the hydrology study, initial area computations were developed for the existing and proposed drainage areas. As a result of the proposed development comparing the existing conditions to the proposed conditions:

1. The runoff rates to each study discharge point and site in total, will remain the same or decrease in the proposed telecommunications development
2. The runoff volumes to each study discharge point to Town Parcels and the site in total, will remain the same or decrease in the proposed telecommunications development.
3. The runoff quality for all study discharge points and the site in total, will see no significant impact

The following is a chart outlining the pre- and post-development peak flows associated with all major storm events analyzed as part of the hydrologic modeling:

			2-Year Storm	5-Year Storm	10-Year Storm	25-Year Storm	50-Year Storm	100-Year Storm
To Aspen Ledges Road	Rate (cfs)	Existing	0.04	0.08	0.11	0.14	0.17	0.21
		Proposed	0.05	0.09	0.12	0.15	0.18	0.21
	Volume (cf)	Existing	171	296	393	496	604	731
		Proposed	192	321	419	522	629	755
To Town Parcel East	Rate (cfs)	Existing	0.8	1.3	1.7	2.1	2.5	3
		Proposed	0.7	1.1	1.5	1.8	2.1	2.5
	Volume (cf)	Existing	2,998	4,837	6,221	7,662	9,146	10,883
		Proposed	2,640	4,173	5,315	6,498	7,712	9,127
To Town Parcel South	Rate (cfs)	Existing	5.5	8.4	10.4	12.5	14.7	17.1
		Proposed	4.2	7.8	10.1	12.3	14.5	17
	Volume (cf)	Existing	19,576	29,765	37,233	44,888	52,682	61,717
		Proposed	15,947	25,887	33,279	40,924	48,770	57,925
Total Discharge	Rate (cfs)	Existing	6.3	9.7	12.2	14.7	17.3	20.2
		Proposed	5	9	11.7	14.2	16.7	19.7
	Volume (cf)	Existing	22,746	39,898	43,847	53,046	62,431	73,331
		Proposed	18,780	30,380	39,014	47,945	57,110	67,870

As a result of this comparison it is demonstrated that the proposed development will maintain or reduce the peak rates of runoff from the property at the points of analysis for all storm events reviewed. For all except the very small flows leaving towards Aspen Ledges Road a decrease in volume should also be realized in the built condition. It reasonable to opine that the proposed development will have no adverse impact on the adjacent wetlands and downstream properties.

Appendix A

- Wetland Report (prepared by All-Points Technology Corp)
- USDA NRCS Custom Soil Resource Report

WETLAND INVESTIGATION

October 30, 2013

Homeland Towers
22 Shelter Rock Road, Bld. C
Danbury, CT 06810

APT Project No.: CT283122

Re: Proposed Ridgefield Ledges Facility – CT-897
Old Stagecoach Road and Aspen Ledges Road
Ridgefield, Connecticut

All-Points Technology Corporation, P.C. ("APT") understands that a wireless telecommunications facility ("Facility") is proposed by Homeland Towers off Old Stagecoach Road in Ridgefield, Connecticut ("Subject Property"). At your request, Dean Gustafson, a Connecticut registered Professional Soil Scientist with APT conducted an inspection of the Subject Property on June 22, 2013 to determine the presence or absence of wetlands and watercourses within approximately 200 feet of proposed development activities ("Study Area"). The delineation methodology followed was consistent with both the Connecticut Inland Wetlands and Watercourses Act (IWWA) and the *Corps of Engineers Wetland Delineation Manual* (1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region*, Version 2.0 (January 2012). The results of this wetland investigation are provided below.

Site and Project Description:

The 3.18-acre Subject Property is located west of the intersection of Aspen Ledges Drive (Ledges Road) and Old Stagecoach Road in Ridgefield, Fairfield County, Connecticut. The Ridgefield Assessor's Office identifies the Host Property as Map D08, Lot 0124, with no numeric street address on Ledges Road. Limited access to the Host Property currently exists via existing rough dirt path. The Subject Property is undeveloped and the majority of the property is wooded. The surrounding land-use consists of residential development and undeveloped forested areas.

One wetland area was delineated on the Subject Property consisting of a hillside seep forested wetland system associated with a seasonal intermittent watercourse that generally flow to the west. Please refer to the enclosed Wetland Delineation Map for the approximate location of the identified wetland resource area. Wetlands were marked with pink and blue plastic flagging tape numbered with the following sequence: WF 1-01 to 1- 12. General weather conditions encountered during the above-referenced inspection included mid 80° F temperatures with sunny skies.

Regulation of Wetlands:

Wetlands and watercourses are regulated by local, state and federal regulations, with each regulatory agency differing slightly in their definition and regulatory authority of resource areas, as discussed below. The proposed Facility is under the exclusive jurisdiction of the State of Connecticut Siting Council and therefore exempt from local regulation, although local wetland regulations are considered by the Siting Council. If wetlands are identified on the Subject Property and direct impact is proposed, those wetlands may be considered Waters of the United States and therefore the activity may also be subject to jurisdiction by the U.S. Army Corps of Engineers ("ACOE") New England District.

Town of Ridgefield: The Town of Ridgefield regulates activities within wetlands and watercourses and within 100 feet of wetlands and watercourses through administration of the Connecticut Inland Wetlands and Watercourses Act (IWWA).

State of Connecticut: **Freshwater Wetlands:** The IWWA requires the regulation of activities affecting or having the potential to affect wetlands under Sec. 22a-36 through 22a-45 of the Connecticut General Statutes. The IWWA is administered through local municipalities. The IWWA defines wetlands as areas of poorly drained, very poorly drained, floodplain, and alluvial soils, as delineated by a soil scientist. Watercourses are defined as bogs, swamps, or marshes, as well as lakes, ponds, rivers, streams, etc., whether natural or man-made, permanent or intermittent. Intermittent watercourse determinations are 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.

ACOE: The U.S. Army Corps of Engineers regulates the discharge of dredged or fill material into waters of the United States under Section 404 of the Clean Water Act. Waters of the United States are navigable waters, tributaries to navigable waters, wetlands adjacent to those waters, and/or isolated wetlands that have a demonstrated interstate commerce connection. The ACOE Wetlands Delineation Manual defines wetlands as "[t]hose areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."

Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) prohibits the unauthorized obstruction or alteration of any navigable water of the United States. This section provides that the construction of any structure in or over any navigable water of the United States, or the accomplishment of any other work affecting the course, location, condition, or physical capacity of such waters is unlawful unless the work has been approved by the ACOE.

Soil Description:

Soil types encountered throughout the Subject Property were generally consistent with digitally available soil survey information obtained from the Natural Resources Conservation Service ("NRCS")[1]. Wetland soils field identified consist of Ridgebury, Leicester and Whitman extremely stony fine sandy loam. The non-wetland soils were examined along the wetland boundary and more distant upland areas during the delineation, including the proposed Facility location. They are dominated by Charlton-Chatfield complex and Hollis; areas of exposed bedrock were observed on the Subject Property. Detailed descriptions of wetland and upland soil types are provided below.

Wetland Soils:

The **Leicester** series consists of very deep, poorly drained loamy soils formed in friable till. They are nearly level or gently sloping soils in drainageways and low-lying positions on hills. Depth to bedrock is commonly more than 6 feet. Rock fragments range from 5 to 35 percent by volume to a depth of 40 inches and up to 50 percent below 40 inches. Leicester soils have a water table at or near the surface much of the year.

The **Ridgebury** series consists of very deep, somewhat poorly and poorly drained soils formed in glacial till derived mainly from granite, gneiss and schist. They are nearly level to gently sloping soils in low areas in uplands. This series includes phases that are poorly drained and the wetter part of somewhat poorly drained. A perched, fluctuating water table above the dense till saturates the solum to or near the surface for 7 to 9 months of the year.

The **Whitman** series consists of very deep, very poorly drained soils formed in glacial till derived mainly from granite, gneiss, and schist. They are nearly level or gently sloping soils in depressions and drainageways on uplands. Depth to dense till is 12 to 30 inches. Some pedons have organic horizons overlying the A horizon. They are fibric hemic or sapric material, and are up to 5 inches thick. Whitman soils are found on nearly level and gently sloping soils in depressions and in drainage ways of glacial uplands. Slopes are typically 0 to 2 percent but range up to 8 percent where wetness is due to seepage water. This soil is very poorly drained. A perched water table, or excess seepage water, is at or near the surface for about 9 months of the year.

Upland Soils:

The **Charlton** series is a very deep, well drained loamy soil formed in friable till. They are nearly level to very steep soils on till plains and hills. Depth to bedrock and the seasonal high water table is commonly more than 6 feet.

The **Chatfield** series consists of moderately deep, well drained, and somewhat excessively drained soils formed in till. They are nearly level to very steep soils on glaciated plains, hills, and ridges. Slope ranges from 0 to 70 percent. Crystalline bedrock is at depths of 20 to 40 inches. The soils formed in a moderately thick mantle of glacial till overlying granite, gneiss, or schist bedrock. Rock outcrops are rare to common and are limited to the more resistant bedrock.

The **Hollis** series consists of shallow, well drained and somewhat excessively drained soils formed in a thin mantle of glacial till derived mainly from gneiss, schist, and granite. They are nearly level to very steep upland soils on bedrock controlled hills and ridges. Depth to hard bedrock ranges from 10 to 20 inches. Bedrock outcrops vary from few to many.

[1] NRCS Web Soil Survey, http://websoilsurvey.nrcs.usda.gov/app/, accessed on June 18, 2013.

Wetlands Discussion:

Wetland 1 Classification Summary:

Wetland 1[2] (WF 1-01 to 1- 12)	System Palustrine	Subsystem	Class Forested	Subclass Broad-leaved Deciduous	Water Regime Saturated	Special Modifier
Watercourse Type	Perennial ☐	Intermittent ☒	Tidal ☐	**Special Aquatic Habitat** (None)	Vernal Pool ☐	Other ☐

Wetland 1 Description:

Wetland 1 is a hillside seep forested wetland system formed in dense glacial till with an associated interior intermittent watercourse that generally flows to the west. This wetland appears to have formed mainly by seasonal seepage as a result of thin glacial till overlying bedrock (exposed ledge was observed along the east wetland boundary). Wetland 1 is approximately 40 feet west of the grading limits associated with the proposed Facility.

Wetland 1 Dominant Vegetation:

Dominant Wetland Species Common Name (Latin Name)	**Dominant Adjacent Upland Species** Common Name (Latin Name)
Red Maple (Acer rubrum)	Sugar Maple (Acer saccharum)
Green Ash (Fraxinus pennsylvanica)	Steeplebush (Spiraea tomentosa)
Spicebush (Lindera benzoin)	Multiflora Rose* (Rosa multiflora)
Multiflora Rose* (Rosa multiflora)	Garlic Mustard* (Alliaria petiolata)
Jewelweed (Impatiens capensis)	Japanese stiltgrass* (Microstegium vimineum)
Common Reed* (Phragmites australis)	Witchhazel (Hamamelis virginiana)
Black Birch (Betula lenta)	Hayscented Fern (Dennstaedtia punctilobula)
Japanese stiltgrass* (Microstegium vimineum)	

* denotes Connecticut Invasive Plants Council invasive species

[2] Cowardin, L. M., V. Carter, F. C. Golet, E. T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. Jamestown, ND: Northern Prairie Wildlife Research Center Online. http://www.npwrc.usgs.gov/resource/wetlands/classwet/index.htm - contents.

Summary:

Based on a review of the Site Plan prepared by APT (Sheet No. SP-1, latest revision date 10/25/13), no direct impact to wetlands is associated with the proposed Homeland Towers development. Although portions of the proposed graded slope associated with the Facility's compound are located in close proximity to Wetland 1 (approximately 40 feet from wetland flag 1-04), no temporary impacts associated with construction activities are anticipated provided sedimentation and erosion controls are designed, installed and maintained during construction activities in accordance with the *2002 Connecticut Guidelines For Soil Erosion and Sediment Control*. Due to the relatively steep slope between the proposed development and nearby wetland, APT recommends that erosion and sedimentation controls be monitored during construction by a qualified individual independent of the contractor. Long term secondary impacts to wetland resources possibly associated with the operation of this Facility are minimized by the fact the development is unmanned, it minimizes the creation of impervious surfaces with the use of a primarily gravel access drive (±250 linear feet of the access will be paved) and gravel compound, and it creates minimal traffic. APT recommends that stormwater generated by the proposed development be properly handled and treated in accordance with the *2004 Connecticut Stormwater Quality Manual*. Provided these recommendations are implemented, it is APT's opinion that the proposed Homeland Towers development will not result in a likely adverse impact to wetland resources.

If you have any questions regarding the above-referenced information, please feel free to contact me by telephone at (860) 984-9515 or via email at dgustafson@allpointstech.com.

Sincerely,

All-Points Technology Corporation, P.C.

Dean Gustafson

Professional Soil Scientist

Enclosure

Wetland Delineation Map

Wetland Delineation Map

Legend

- Proposed Tower Location
- Proposed Access
- APT Delineated Wetland Boundary
- Approximate Wetland Area
- Subject Parcel
- CT DEEP Parcel (updated 8/10)

Proposed Homeland Towers Wireless Communications Facility
Old Stagecoach Road
Ridgefield, Connecticut

Wednesday, October 30, 2013

HOMELAND TOWERS

ALL-POINTS TECHNOLOGY CORPORATION

Path: C:\All_Points_Tech\Projects\Client\Homeland_Towers\Ridgefield\GIS\Maps\Delineation_Map.mxd

Hydrologic Soil Group—State of Connecticut
(Ridgefield WSS)

Map Scale: 1:1,900 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 25 50 100 150

Feet
0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: State of Connecticut
Survey Area Data: Version 11, Nov 19, 2013

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 26, 2011—Apr 16, 2012

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — State of Connecticut (CT600)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
73C	Charlton-Chatfield complex, 3 to 15 percent slopes, very rocky	B	0.7	7.1%
76F	Rock outcrop-Hollis complex, 45 to 60 percent slopes	D	9.3	92.9%
Totals for Area of Interest			**10.0**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

ROLLMAX™
ROLLED EROSION CONTROL

Specification Sheet – VMax® SC250® Turf Reinforcement Mat

DESCRIPTION

The composite turf reinforcement mat (C-TRM) shall be a machine-produced mat of 70% straw and 30% coconut fiber matrix incorporated into permanent three-dimensional turf reinforcement matting. The matrix shall be evenly distributed across the entire width of the matting and stitch bonded between a heavy duty UV stabilized nettings with 0.50 x 0.50 inch (1.27 x 1.27 cm) openings, an ultra heavy UV stabilized, dramatically corrugated (crimped) intermediate netting with 0.5 x 0.5 inch (1.27 x 1.27 cm) openings, and covered by an heavy duty UV stabilized nettings with 0.50 x 0.50 inch (1.27 x 1.27 cm) openings. The middle corrugated netting shall form prominent closely spaced ridges across the entire width of the mat. The three nettings shall be stitched together on 1.50 inch (3.81cm) centers with UV stabilized polypropylene thread to form permanent three-dimensional turf reinforcement matting. All mats shall be manufactured with a colored thread stitched along both outer edges as an overlap guide for adjacent mats.

The SC250 shall meet Type 5A, 5B, and 5C specification requirements established by the Erosion Control Technology Council (ECTC) and Federal Highway Administration's (FHWA) FP-03 Section 713.18

Material Content		
Matrix	70% Straw Fiber	0.35 lb/sq yd (0.19 kg/sm)
	30% Coconut Fiber	0.15 lbs/sq yd (0.08 kg/sm)
Netting	Top and Bottom, UV-Stabilized Polypropylene	5 lb/1000 sq ft (2.44 kg/100 sm)
	Middle, Corrugated UV-Stabilized Polypropylene	24 lb/1000 sf (11.7 kg/100 sm)
Thread	Polypropylene, UV Stable	

Standard Roll Sizes	
Width	6.5 ft (2.0 m)
Length	55.5 ft (16.9 m)
Weight ± 10%	34 lbs (15.42 kg)
Area	40 sq yd (33.4 sm)

Index Property	Test Method	Typical
Thickness	ASTM D6525	0.62 in. (15.75 mm)
Resiliency	ASTM 6524	95.2%
Density	ASTM D792	0.891 g/cm^3
Mass/Unit Area	ASTM 6566	16.13 oz/sy (548 g/sm)
UV Stability	ASTM D4355/ 1000 HR	100%
Porosity	ECTC Guidelines	99%
Stiffness	ASTM D1388	222.65 oz-in.
Light Penetration	ASTM D6567	4.1%
Tensile Strength – MD	ASTM D6818	709 lbs/ft (10.51 kN/m)
Elongation – MD	ASTM D6818	23.9%
Tensile Strength – TD	ASTM D6818	712 lbs/ft (10.56 kN/m)
Elongation – TD	ASTM D6818	36.9%
Biomass Improvement	ASTM D7322	441%

Design Permissible Shear Stress		
	Short Duration	**Long Duration**
Phase 1: Unvegetated	3.0 psf (144 Pa)	2.5 psf (120 Pa)
Phase 2: Partially Veg.	8.0 psf (383 Pa)	8.0 psf (383 Pa)
Phase 3: Fully Veg.	10.0 psf (480 Pa)	8.0 psf (383 Pa)
Unvegetated Velocity	9.5 fps (2.9 m/s)	
Vegetated Velocity	15 fps (4.6 m/s)	

Slope Design Data: C Factors

	Slope Gradients (S)		
Slope Length (L)	≤ 3:1	3:1 – 2.1	≥ 2:1
≤ 20 ft (6 m)	0.0010	0.0209	0.0507
20-50 ft	0.0081	0.0266	0.0574
≥ 50 ft (15.2 m)	0.0455	0.0555	0.081

Roughness Coefficients – Unveg.

Flow Depth	Manning's n
≤ 0.50 ft (0.15 m)	0.040
0.50 – 2.0 ft	0.040-0.012
≥ 2.0 ft (0.60 m)	0.011

Tensar®

NORTH AMERICAN GREEN®

Tensar International Corporation
2500 Northwinds Parkway
Suite 500
Alpharetta, GA 30009
800-TENSAR-1
tensarcorp.com

Appendix B

- Existing Drainage Area Map (EDA-1)
- Pre-Development Hydrologic Computations (HydroCAD)
- Proposed Drainage Area Map (PDA-1)
- Post-Development Hydrologic Computations (HydroCAD)
- Proposed Hydraulic Pipe Computations

APT ENGINEERING
3 SADDLEBROOK DRIVE PHONE: (860)-663-1697
KILLINGWORTH, CT 06419 FAX: (860)-663-0935
WWW.ALLPOINTSTECH.COM

APT FILING NUMBER: NY-283-120	
DR-EX	
SCALE: AS NOTED	DRAWN BY: JW3
DATE: 05/08/13	CHECKED BY: SMC

HOMELAND TOWERS
22 SHELTER ROCK LANE
BUILDING C
DANBURY, CT 0810

HOMELAND TOWERS:
CT897 RIDGEFIELD

LEDGES AT RIDGEFIELD
OLD STAGECOACH ROAD
RIDGEFIELD, CT 06877

EXISTING DRAINAGE PLAN

SCALE : 1" = 100'-0"

REVO:

NOTES:

1. EXACT LOCATION AND ORIENTATION OF PROPOSED COMPOUND AREA PENDING SITE SURVEY & FURTHER ENGINEERING REVIEW AND ANALYSIS.
2. PROPOSED UTILITY ROUTING TO BE DETERMINED BY LOCAL UTILITY PROVIDERS.
3. PROPERTY LINES SHOWN ARE BASED ON A PROPERTY BOUNDARY SURVEY PERPARED BY BARRET, BONACCI AND VAN WEELE, PC, DATED MAY 7, 2013.