ALL-POINTS TECHNOLOGY CORPORATION, P.C.

STRUCTURAL ANALYSIS REPORT
275' SELF-SUPPORTING TOWER
GRAY, MAINE

Prepared for
MACRO Corporation

Site: Gray RCC

August 14, 2007

STATE OF MAINE
ROBERT
E.
ADAIR, JR.
No. 7408
REGISTERED
PROFESSIONAL ENGINEER

APT Project #ME247120

☐ 3 SADDLEBROOK DRIVE • KILLINGWORTH, CONNECTICUT 06419 • PHONE: 860-663-1697 • FAX: 860-663-0935
☒ 150 OLD WESTSIDE ROAD • NORTH CONWAY, NEW HAMPSHIRE 03860 • PHONE/FAX: 603-356-5214

STRUCTURAL ANALYSIS REPORT
275' SELF-SUPPORTING TOWER
GRAY, MAINE
prepared for
Macro Corporation

EXECUTIVE SUMMARY:

All-Points Technology Corporation, P.C. (APT) performed a condition assessment and structural analysis of this 275-foot self-supporting tower. The analysis was performed with the existing antenna loading and for the addition of an omnidirectional antenna and two 8' dishes with radomes.

Our analysis indicates the tower does not meet the requirements of TIA-222 and IBC 2003 under existing or proposed loadings. The tower would require reinforcement on at least seven 20' tower sections to meet current code requirements.

The base foundations could not be evaluated, as information on their design or construction were not available.

INTRODUCTION:

A condition assessment and structural analysis was performed on the above-mentioned tower by APT for Macro Corporation. The tower is located at Gray RCC headquarters in Gray, Maine.

The structure is a 275-foot galvanized steel, self-supporting tower manufactured by ROHN. The tower is a Model SSVMW, with the bottom 40' comprised of two 20' K-braced sections, followed by eleven 20' sections and one 15' section of X-braced tower. The tower was reportedly relocated to the current site from the Scarborough State Police Barracks.

Robert E. Adair, P.E. and Robert O. Parrott visited the tower site on June 12, 2007 to record information regarding physical and dimensional properties of the structure and its appurtenances. Mr. Parrott climbed the structure in its entirety to compile data necessary to perform the structural analysis.

The analysis was performed using the following antenna inventory (proposed antennas shown in **bold** text):

Antenna	Elev.	Mount	Feed Line
Beacon	275'	Top plate	1" conduit
18' omnidirectional whip	275'	Leg	7/8"
8' dish with radome	**255'**	**Pipe mount**	**EW-63**
(2) 20' omnidirectional whips	254'	10' double sidearm	(2) 7/8"
10' single dipole	246'	Leg	1/2"
8' dish with radome	**235'**	**Pipe mount**	**EW-63**
20' omnidirectional whip	196'	6' sidearm	7/8"
(3) 20' omnidirectional whips	171'	(2) 12' double sidearms	(3) 7/8"
2' square panel	144'	Leg	1/2"
(3) Obstruction lights	134'	Legs	1" conduit
Bird COL54-160 omnidirectional	**131'**	**3' sidearm**	**7/8"**
5' omnidirectional whip	103'	Pipe on leg	3/8"
4' yagi	103'	Pipe on bracing	1/2"
3' yagi	79'	Leg	3/8"

TOWER LOCATION:

GPS coordinates were obtained using a Garmin Etrex, with a level of accuracy of 33 feet:

Latitude: N 43° 55' 46.7"
Longitude: W 70° 21' 7.3"
Elevation: 360 feet

CONDITION ASSESSMENT:

- **General Condition:** The tower, a painted galvanized steel structure, appeared to be in good condition. No indications of movement or overstress were noted.

- **Lattice Bracing:** Connections were visually observed to the maximum extent practicable. All observed connections appeared to be sound, with no loose or missing bolts noted.

- **Antennas and Connections:** Antenna mounting hardware was in good condition, with corrosion-resistant hardware and galvanized members.

- **Splice Connections:** Connections were visually observed to the maximum extent practicable. No loose or missing splice bolts were observed.

- **Base Foundations:** Visible concrete appeared to be in good condition.

STRUCTURAL ANALYSIS:

Methodology:
The structural analysis was done in accordance with TIA-222, Revision G (TIA), Structural Standard for Antenna Supporting Structures and Antennas.

The analysis was conducted using a 3-second gust wind speed of 90 miles per hour with no ice and 40-mph with 1" radial ice in accordance with the TIA-222-G standard for Cumberland County, Maine. The following additional design criteria were used:

Structure Class:	III	(essential communications facility)
Topographic Category:	1	
Exposure Category:	B	

Analysis:
Our analysis determined the existing tower does not meet the requirements of TIA-222-G under current or proposed loads.

The following table summarizes the results of the analysis based on stresses of individual leg and bracing members:

Elevation	Existing Leg Capacity	Existing Bracing Capacity	Proposed Leg Capacity	Proposed Bracing Capacity
260'-275'	7%	9%	7%	9%
240'-260'	42%	28%	52%	41%
220'-240'	76%	43%	98%	68%
200'-220'	70%	52%	88%	73%
180'-200'	89%	**111%**	**110%**	**141%**
160'-180'	93%	**182%**	**113%**	**213%**
140'-160'	**113%**	**174%**	**135%**	**198%**
120'-140'	**102%**	88%	**120%**	**101%**
100'-120'	**125%**	86%	**145%**	97%
80'-100'	**105%**	**109%**	**121%**	**121%**
60'-80'	**120%**	69%	**136%**	76%
40'-60'	81%	52%	92%	56%
20'-40'	83%	83%	94%	89%
0'-20'	91%	92%	**102%**	99%

Splice and Bracing Bolts:

The structure's connection bolts were evaluated under the proposed loading. Splice and bracing bolts were found to be adequately sized.

Base Foundations:

The base foundations could not be evaluated, as information on their design or construction were not available. Base reactions with the proposed antennas were calculated as follows:

Uplift:	171.4 kips
Compression:	207.6 kips
Shear:	23.1 kips
Overturning Moment:	5134 ft-kips

CONCLUSIONS AND RECOMMENDATIONS:

Our structural analysis indicates the 275-foot self-supporting tower located at Gray RCC headquarters in Gray, Maine does not meet the requirements of TIA-222 and IBC 2003 under existing or proposed loads. The base foundations could not be evaluated, as information on their design or construction were not available.

Reinforcing the tower to support the proposed antennas would require installation of additional bracing on at least 140' of tower. If operationally possible, reducing the height of the tower and antennas may be the most viable way to utilize the existing structure.

No items requiring maintenance were noted.

LIMITATIONS:

This report is based on the following:

1. Tower is properly installed and maintained.
2. All members are in non-corroded condition.
3. All required members are in place.
4. All bolts are in place and are properly tightened.
5. Tower is in plumb condition.

All-Points Technology Corporation, P.C. (APT) is not responsible for any modifications completed prior to or hereafter which APT is not or was not directly involved. Modifications include but are not limited to:

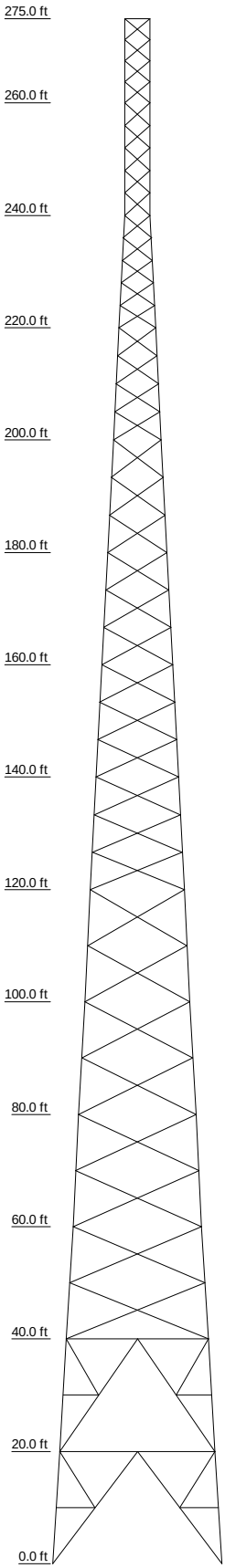
1. Replacing or reinforcing bracing members.
2. Reinforcing leg members in any manner.
3. Installing antenna mounts or side arms.
4. Extending tower.

APT hereby states that this document represents the entire report and that it assumes no liability for any factual changes that may occur after the date of this report. All representations, recommendations, and conclusions are based upon the information contained and set forth herein. If you are aware of any information which is contrary to that which is contained herein, or you are aware of any defects arising from the original design, material, fabrication and erection deficiencies, you should disregard this report and immediately contact APT. APT disclaims all liability for any representation, recommendation, or conclusion not expressly stated herein.

Appendix A

Tower Schematic

Section	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13	T14
Legs	ROHN 2 STD			ROHN 2.5 STD	ROHN 2.5 EH	ROHN 3 STD		ROHN 3 EH	ROHN 3.5 EH	ROHN 4 EH			ROHN 5 EH	
Leg Grade	A572-50													
Diagonals	L1 1/2x1 1/2x1/8			L1 3/4x1 3/4x1/8			L2x2x1/8	L2 1/2x2 1/2x3/16	L3x3x3/16		L3 1/2x3 1/2x1/4	L4x4x1/4	ROHN 2.5 STD	
Diagonal Grade	A36													
Top Girts	L2x2x1/8	N.A.												
Horizontals	N.A.												ROHN 2.5 STD	
Red. Horizontals	N.A.												ROHN 1.5 STD	
Red. Diagonals	N.A.												ROHN 1.5 STD	
Face Width (ft) 30	4.5208			6.5625	8.5625	10.5625	12.6042	14.6563	16.6979	18.6979	20.7813	22.7813	25.1667	27.5833
# Panels @ (ft)	4 @ 3.75	10 @ 4		4 @ 5		12 @ 6.66667				8 @ 10			2 @ 20	
Weight (lb) 21098.7	359.3	440.8	470.8	661.1	762.2	801.2	906.0	1558.1	1657.2	1886.5	2555.5	3308.8	2824.8	2906.3



MAX. CORNER REACTIONS AT BASE:
DOWN: 207615 lb
UPLIFT: -171363 lb
SHEAR: 23063 lb

AXIAL 164411 lb
SHEAR 11419 lb
MOMENT 1616187 lb-ft
TORQUE 929 lb-ft
40 mph WIND - 1.0000 in ICE

AXIAL 30032 lb
SHEAR 37825 lb
MOMENT 5134405 lb-ft
TORQUE 6242 lb-ft
REACTIONS - 90 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Flash Beacon Lighting	275	20' x 2.5" omni whip	171
18' x 2.5" omni whip	275	20' x 2.5" omni whip	171
8' dish with radome	255	2' square panel	144
20' x 2.5" omni whip	254	Obstruction light	134
10' double sidearm	254	Obstruction light	134
20' x 2.5" omni whip	254	Obstruction light	134
10' single dipole	246	COL50 VHF 5db omni	131
8' dish with radome	235	3' sidearm	131
20' x 2.5" omni whip	196	10' x 1-1/4" pipe mount	103
6' sidearm	196	4' yagi	103
20' x 2.5" omni whip	171	5' x 1" omni whip	103
12' double sidearm	171	10' x 1-1/4" pipe mount	103
12' double sidearm	171	3' Yagi	79

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

All-Points Technology Corp.
150 Old Westside Road
North Conway, NH 03860
Phone: 603-496-5853
FAX: 603-356-5214

Job: ***275' Self-Supporting Tower***
Project: ***ME247120 Gray RCC***
Client: Macro Corp. | Drawn by: Robert E. Adair, P.E. | App'd:
Code: TIA-222-G | Date: 08/13/07 | Scale: NTS
Path: C:\Documents and Settings\Robert Adair\My Documents\Jobs\ME MACRO project\ME247120 Gray RCC\ME247120 Gray RCC.eri | Dwg No. E-1

Appendix B

Photographs

MACRO CORPORATION
275' SELF-SUPPORTING TOWER
GRAY, MAINE

Photo showing overview of 275' self-supporting tower.

Photos taken by All-Points Technology Corporation, P.C. on June 12, 2007

MACRO CORPORATION
275' SELF-SUPPORTING TOWER
GRAY, MAINE

Photo showing existing antennas at top of tower.

Photos taken by All-Points Technology Corporation, P.C. on June 12, 2007

Photo of typical base pier.

Photos taken by All-Points Technology Corporation, P.C. on June 12, 2007

Appendix C

Calculations

All-Points Technology Corp.
150 Old Westside Road
North Conway, NH 03860
Phone: 603-496-5853
FAX: 603-356-5214

Tower Input Data

The main tower is a 3x free standing tower with an overall height of 275.00 ft above the ground line.
The face width of the tower is 4.52 ft at the top and 30.00 ft at the base.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Basic wind speed of 90 mph.
Structure Class III.
Exposure Category B.
Topographic Category 1.
Nominal ice thickness of 1.0000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 40 mph is used in combination with ice.
Stress ratio used in tower member design is 1.
Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	275.00-260.00			4.52	1	15.00
T2	260.00-240.00			4.52	1	20.00
T3	240.00-220.00			4.52	1	20.00
T4	220.00-200.00			6.56	1	20.00
T5	200.00-180.00			8.56	1	20.00
T6	180.00-160.00			10.56	1	20.00
T7	160.00-140.00			12.60	1	20.00
T8	140.00-120.00			14.66	1	20.00
T9	120.00-100.00			16.70	1	20.00
T10	100.00-80.00			18.70	1	20.00
T11	80.00-60.00			20.78	1	20.00
T12	60.00-40.00			22.78	1	20.00
T13	40.00-20.00			25.17	1	20.00
T14	20.00-0.00			27.58	1	20.00

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	275.00-260.00	3.75	X Brace	No	No	0.0000	0.0000
T2	260.00-240.00	4.00	X Brace	No	No	0.0000	0.0000
T3	240.00-220.00	4.00	X Brace	No	No	0.0000	0.0000
T4	220.00-200.00	5.00	X Brace	No	No	0.0000	0.0000
T5	200.00-180.00	6.67	X Brace	No	No	0.0000	0.0000
T6	180.00-160.00	6.67	X Brace	No	No	0.0000	0.0000
T7	160.00-140.00	6.67	X Brace	No	No	0.0000	0.0000
T8	140.00-120.00	6.67	X Brace	No	No	0.0000	0.0000
T9	120.00-100.00	10.00	X Brace	No	No	0.0000	0.0000
T10	100.00-80.00	10.00	X Brace	No	No	0.0000	0.0000
T11	80.00-60.00	10.00	X Brace	No	No	0.0000	0.0000
T12	60.00-40.00	10.00	X Brace	No	No	0.0000	0.0000
T13	40.00-20.00	20.00	K1 Down	No	Yes	0.0000	0.0000
T14	20.00-0.00	20.00	K1 Down	No	Yes	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 275.00-260.00	Pipe	ROHN 2 STD	A572-50 (50 ksi)	Equal Angle	L1 1/2x1 1/2x1/8	A36 (36 ksi)
T2 260.00-240.00	Pipe	ROHN 2 STD	A572-50 (50 ksi)	Equal Angle	L1 1/2x1 1/2x1/8	A36 (36 ksi)
T3 240.00-220.00	Pipe	ROHN 2 STD	A572-50 (50 ksi)	Equal Angle	L1 1/2x1 1/2x1/8	A36 (36 ksi)
T4 220.00-200.00	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x1/8	A36 (36 ksi)
T5 200.00-180.00	Pipe	ROHN 2.5 EH	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x1/8	A36 (36 ksi)
T6 180.00-160.00	Pipe	ROHN 3 STD	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x1/8	A36 (36 ksi)
T7 160.00-140.00	Pipe	ROHN 3 STD	A572-50 (50 ksi)	Equal Angle	L2x2x1/8	A36 (36 ksi)
T8 140.00-120.00	Pipe	ROHN 3 EH	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T9 120.00-100.00	Pipe	ROHN 3.5 EH	A572-50 (50 ksi)	Equal Angle	L3x3x3/16	A36 (36 ksi)
T10 100.00-80.00	Pipe	ROHN 4 EH	A572-50 (50 ksi)	Equal Angle	L3x3x3/16	A36 (36 ksi)
T11 80.00-60.00	Pipe	ROHN 4 EH	A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T12 60.00-40.00	Pipe	ROHN 5 EH	A572-50 (50 ksi)	Equal Angle	L4x4x1/4	A36 (36 ksi)
T13 40.00-20.00	Pipe	ROHN 5 EH	A572-50 (50 ksi)	Pipe	ROHN 2.5 STD	A36 (36 ksi)
T14 20.00-0.00	Pipe	ROHN 5 EH	A572-50 (50 ksi)	Pipe	ROHN 2.5 STD	A36 (36 ksi)

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 275.00-260.00	Equal Angle	L2x2x1/8	A36 (36 ksi)			A36 (36 ksi)

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T13 40.00-20.00	None			A36 (36 ksi)	Pipe	ROHN 2.5 STD	A36 (36 ksi)
T14 20.00-0.00	None			A36 (36 ksi)	Pipe	ROHN 2.5 STD	A36 (36 ksi)

Tower Elevation ft	Redundant Bracing Grade		Redundant Type	Redundant Size	K Factor
T13 40.00-20.00	A36 (36 ksi)	Horizontal (1)	Pipe	ROHN 1.5 STD	1
		Diagonal (1)	Pipe	ROHN 1.5 STD	1
T14 20.00-0.00	A36 (36 ksi)	Horizontal (1)	Pipe	ROHN 1.5 STD	1
		Diagonal (1)	Pipe	ROHN 1.5 STD	1

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg Bolt Size in	Leg No.	Diagonal Bolt Size in	Diagonal No.	Top Girt Bolt Size in	Top Girt No.	Bottom Girt Bolt Size in	Bottom Girt No.	Mid Girt Bolt Size in	Mid Girt No.	Long Horizontal Bolt Size in	Long Horizontal No.	Short Horizontal Bolt Size in	Short Horizontal No.
T1 275.00-260.00	Flange	0.6250 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.3750 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 260.00-240.00	Flange	0.6250 A325N	4	0.5000 A325N	1	0.5000 A325N	0	0.3750 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 240.00-220.00	Flange	0.6250 A325N	4	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 220.00-200.00	Flange	0.6250 A325N	4	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 200.00-180.00	Flange	0.7500 A325N	4	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T6 180.00-160.00	Flange	0.7500 A325N	4	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T7 160.00-140.00	Flange	0.8750 A325N	4	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T8 140.00-120.00	Flange	0.8750 A325N	4	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T9 120.00-100.00	Flange	0.8750 A325N	4	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T10 100.00-80.00	Flange	0.8750 A325N	4	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T11 80.00-60.00	Flange	1.0000 A325N	4	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T12 60.00-40.00	Flange	1.0000 A325N	4	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T13 40.00-20.00	Flange	1.0000 A325N	4	0.6250 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.7500 A325N	2	0.6250 A325N	0
T14 20.00-0.00	Flange	1.0000 A325N	4	0.6250 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.7500 A325N	2	0.6250 A325N	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
1/2	A	Yes	Ar (CaAa)	245.00 - 6.00	1	1	0.0000	0.5800		0.25
7/8	A	Yes	Ar (CaAa)	254.00 - 6.00	2	1	0.0000	1.1100		0.54
EW63	A	Yes	Ar (CaAa)	255.00 - 6.00	1	1	0.0000	1.5742		0.51
EW63	A	Yes	Ar (CaAa)	235.00 - 6.00	1	1	0.0000	1.5742		0.51
7/8	C	Yes	Ar (CaAa)	275.00 - 6.00	1	1	0.0000	1.1100		0.54
7/8	C	Yes	Ar (CaAa)	171.00 - 6.00	3	2	0.0000	1.1100		0.54
7/8	C	Yes	Ar (CaAa)	196.00 - 6.00	1	1	0.0000	1.1100		0.54
7/8	C	Yes	Ar (CaAa)	131.00 - 6.00	1	1	0.0000	1.1100		0.54
3/8	C	Yes	Ar (CaAa)	103.00 - 6.00	2	1	0.0000	0.4400		0.08
1" conduit	C	Yes	Ar (CaAa)	275.00 - 6.00	1	1	1.0000	1.0000		1.00

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Flash Beacon Lighting	A	None		0.0000	275.00	No Ice	2.70	2.70	50.00
						1/2" Ice	3.10	3.10	70.00
						1" Ice	3.50	3.50	90.00
18' x 2.5" omni whip	B	None		0.0000	275.00	No Ice	4.50	4.50	60.00
						1/2" Ice	6.33	6.33	93.30
						1" Ice	8.18	8.18	138.00
20' x 2.5" omni whip	A	From Leg	3.00	0.0000	254.00	No Ice	5.00	5.00	50.00
			0.00			1/2" Ice	7.03	7.03	86.96
			0.00			1" Ice	9.07	9.07	136.55
20' x 2.5" omni whip	C	From Leg	3.00	0.0000	254.00	No Ice	5.00	5.00	50.00
			0.00			1/2" Ice	7.03	7.03	86.96
			0.00			1" Ice	9.07	9.07	136.55
10' double sidearm	C	None		0.0000	254.00	No Ice	7.45	3.77	325.00
						1/2" Ice	11.75	5.87	450.00
						1" Ice	15.85	7.92	575.00
10' single dipole	B	None		0.0000	246.00	No Ice	1.90	1.90	25.00
						1/2" Ice	4.08	4.08	43.29
						1" Ice	6.28	6.28	75.05
20' x 2.5" omni whip	C	From Leg	6.00	0.0000	196.00	No Ice	5.00	5.00	50.00
			0.00			1/2" Ice	7.03	7.03	86.96
			0.00			1" Ice	9.07	9.07	136.55
6' sidearm	C	None		0.0000	196.00	No Ice	4.17	2.09	75.00
						1/2" Ice	6.17	3.09	125.00
						1" Ice	8.17	4.09	200.00
20' x 2.5" omni whip	A	From Leg	4.00	0.0000	171.00	No Ice	5.00	5.00	50.00
			0.00			1/2" Ice	7.03	7.03	86.96
			0.00			1" Ice	9.07	9.07	136.55
20' x 2.5" omni whip	B	From Leg	4.00	0.0000	171.00	No Ice	5.00	5.00	50.00
			0.00			1/2" Ice	7.03	7.03	86.96
			0.00			1" Ice	9.07	9.07	136.55
20' x 2.5" omni whip	C	From Leg	4.00	0.0000	171.00	No Ice	5.00	5.00	50.00
			0.00			1/2" Ice	7.03	7.03	86.96
			0.00			1" Ice	9.07	9.07	136.55
12' double sidearm	B	None		0.0000	171.00	No Ice	5.80	5.80	260.00
						1/2" Ice	8.17	8.17	360.00
						1" Ice	10.55	10.55	460.00
12' double sidearm	C	None		0.0000	171.00	No Ice	5.80	5.80	260.00
						1/2" Ice	8.17	8.17	360.00
						1" Ice	10.55	10.55	460.00
2' square panel	B	None		0.0000	144.00	No Ice	5.60	0.52	25.00
						1/2" Ice	5.92	0.67	48.43
						1" Ice	6.24	0.83	75.30
Obstruction light	A	None		0.0000	134.00	No Ice	0.18	0.18	8.00
						1/2" Ice	0.25	0.25	10.47
						1" Ice	0.33	0.33	13.91
Obstruction light	B	None		0.0000	134.00	No Ice	0.18	0.18	8.00
						1/2" Ice	0.25	0.25	10.47
						1" Ice	0.33	0.33	13.91
Obstruction light	C	None		0.0000	134.00	No Ice	0.18	0.18	8.00
						1/2" Ice	0.25	0.25	10.47
						1" Ice	0.33	0.33	13.91
5' x 1" omni whip	A	From Leg	2.00	0.0000	103.00	No Ice	0.50	0.50	20.00
			0.00			1/2" Ice	1.02	1.02	24.68
			0.00			1" Ice	1.43	1.43	32.68
10' x 1-1/4" pipe mount	A	None		0.0000	103.00	No Ice	0.87	0.87	14.60
						1/2" Ice	1.11	1.11	21.91

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
						1" Ice	1.36	1.36	32.07
10' x 1-1/4" pipe mount	A	None		0.0000	103.00	No Ice	0.87	0.87	14.60
						1/2" Ice	1.11	1.11	21.91
						1" Ice	1.36	1.36	32.07
4' yagi	A	From Leg	2.00	0.0000	103.00	No Ice	0.50	0.50	25.00
			0.00			1/2" Ice	0.86	0.86	29.40
			0.00			1" Ice	1.11	1.11	36.53
3' Yagi	C	None		0.0000	79.00	No Ice	2.08	2.08	30.95
						1/2" Ice	3.79	3.79	51.64
						1" Ice	5.52	5.52	84.55
COL50 VHF 5db omni	B	From Leg	3.00	0.0000	131.00	No Ice	6.40	6.40	50.00
			0.00			1/2" Ice	8.57	8.57	96.02
			0.00			1" Ice	10.75	10.75	155.53
3' sidearm	B	None		0.0000	131.00	No Ice	1.43	0.72	30.00
						1/2" Ice	2.18	1.09	65.00
						1" Ice	2.93	1.47	105.00

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight lb
8' dish with radome	B	Paraboloid w/Radome	From Leg	1.00	-5.0000		255.00	8.00	No Ice	50.27	450.00
				0.00					1/2" Ice	51.32	713.43
				0.00					1" Ice	52.37	976.86
8' dish with radome	C	Paraboloid w/Radome	From Leg	1.00	39.0000		235.00	8.00	No Ice	50.27	450.00
				0.00					1/2" Ice	51.32	713.43
				0.00					1" Ice	52.37	976.86

Solution Summary

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	275 - 260	47.773	5	1.9090	0.2237
T2	260 - 240	41.773	5	1.8972	0.2235
T3	240 - 220	33.963	5	1.7604	0.1910
T4	220 - 200	27.118	5	1.4564	0.1225
T5	200 - 180	21.399	5	1.2326	0.0831
T6	180 - 160	16.520	3	1.0555	0.0547
T7	160 - 140	12.408	3	0.8723	0.0342
T8	140 - 120	9.031	3	0.6847	0.0206
T9	120 - 100	6.367	3	0.5430	0.0140
T10	100 - 80	4.255	3	0.4251	0.0099
T11	80 - 60	2.590	3	0.3246	0.0067
T12	60 - 40	1.375	3	0.2211	0.0049
T13	40 - 20	0.542	3	0.1461	0.0036
T14	20 - 0	0.117	2	0.0728	0.0016

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	275	Leg	A325N	0.6250	4	49.34	20340.20	0.002 ✔	1	Bolt Tension
		Diagonal	A325N	0.5000	1	506.20	6525.00	0.078 ✔	1	Member Bearing
		Top Girt	A325N	0.5000	1	41.09	6525.00	0.006 ✔	1	Member Bearing
T2	260	Leg	A325N	0.6250	4	801.53	20340.20	0.039 ✔	1	Bolt Tension
		Diagonal	A325N	0.5000	1	2202.03	6525.00	0.337 ✔	1	Member Bearing
T3	240	Leg	A325N	0.6250	4	4456.03	20340.20	0.219 ✔	1	Bolt Tension
		Diagonal	A325N	0.5000	1	2439.21	6525.00	0.374 ✔	1	Member Bearing
T4	220	Leg	A325N	0.6250	4	7874.80	20340.20	0.387 ✔	1	Bolt Tension
		Diagonal	A325N	0.5000	1	2369.86	6525.00	0.363 ✔	1	Member Bearing
T5	200	Leg	A325N	0.7500	4	11035.60	29820.60	0.370 ✔	1	Bolt Tension
		Diagonal	A325N	0.5000	1	2796.22	6525.00	0.429 ✔	1	Member Bearing
T6	180	Leg	A325N	0.7500	4	14006.40	29820.60	0.470 ✔	1	Bolt Tension
		Diagonal	A325N	0.5000	1	3266.71	6525.00	0.501 ✔	1	Member Bearing
T7	160	Leg	A325N	0.8750	4	17172.30	40589.10	0.423 ✔	1	Bolt Tension
		Diagonal	A325N	0.5000	1	3581.82	6525.00	0.549 ✔	1	Member Bearing
T8	140	Leg	A325N	0.8750	4	20496.50	40589.10	0.505 ✔	1	Bolt Tension
		Diagonal	A325N	0.5000	1	4227.88	7068.58	0.598 ✔	1	Bolt Shear
T9	120	Leg	A325N	0.8750	4	24259.10	40589.10	0.598 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	1	5070.10	11044.70	0.459 ✔	1	Bolt Shear
T10	100	Leg	A325N	0.8750	4	27847.90	40589.10	0.686 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	1	5347.39	11044.70	0.484 ✔	1	Bolt Shear
T11	80	Leg	A325N	1.0000	4	31441.20	53014.40	0.593 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	1	6086.36	11044.70	0.551 ✔	1	Bolt Shear
T12	60	Leg	A325N	1.0000	4	34980.00	53014.40	0.660 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	1	5743.30	11044.70	0.520 ✔	1	Bolt Shear
T13	40	Leg	A325N	1.0000	4	37058.50	53014.40	0.699 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	3	3283.24	11044.70	0.297 ✔	1	Bolt Shear
		Horizontal	A325N	0.7500	2	2671.74	15904.30	0.168 ✔	1	Bolt Shear
T14	20	Leg	A325N	1.0000	4	39997.60	53014.40	0.754 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	3	3188.75	11044.70	0.289 ✔	1	Bolt Shear
		Horizontal	A325N	0.7500	2	2706.10	15904.30	0.170 ✔	1	Bolt Shear

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	øP$_{allow}$ lb	% Capacity	Pass Fail
T1	**275 - 260**	**Leg**	**ROHN 2 STD**	**3**	**-2689.12**	**35960.20**	**7.5**	**Pass**
		Diagonal	L1 1/2x1 1/2x1/8	8	-500.07	5562.91	9.0	Pass
		Top Girt	L2x2x1/8	5	-38.90	6023.23	1.1	Pass
T2	**260 - 240**	**Leg**	**ROHN 2 STD**	**33**	**-18042.20**	**34795.50**	**51.9**	**Pass**
		Diagonal	L1 1/2x1 1/2x1/8	37	-2202.03	5354.03	41.1	Pass
T3	**240 - 220**	**Leg**	**ROHN 2 STD**	**66**	**-33984.30**	**34762.60**	**97.8**	**Pass**
		Diagonal	L1 1/2x1 1/2x1/8	68	-2229.29	3303.94	67.5	Pass
T4	**220 - 200**	**Leg**	**ROHN 2.5 STD**	**99**	**-47647.30**	**53962.20**	**88.3**	**Pass**
		Diagonal	L1 3/4x1 3/4x1/8	101	-2315.57	3187.29	72.6	Pass
T5	**200 - 180**	**Leg**	**ROHN 2.5 EH**	**126**	**-60910.10**	**55265.30**	**110.2**	**Fail** ✗
		Diagonal	L1 3/4x1 3/4x1/8	128	-2784.00	1980.31	140.6	Fail ✗
T6	**180 - 160**	**Leg**	**ROHN 3 STD**	**147**	**-75361.90**	**66953.00**	**112.6**	**Fail** ✗
		Diagonal	L1 3/4x1 3/4x1/8	149	-3266.71	1530.97	213.4	Fail ✗
T7	**160 - 140**	**Leg**	**ROHN 3 STD**	**168**	**-90468.80**	**66952.20**	**135.1**	**Fail** ✗
		Diagonal	L2x2x1/8	170	-3581.82	1806.54	198.3	Fail ✗
T8	**140 - 120**	**Leg**	**ROHN 3 EH**	**189**	**-106650.00**	**89099.30**	**119.7**	**Fail** ✗
		Diagonal	L2 1/2x2 1/2x3/16	191	-4227.88	4172.74	101.3	Fail ✗
T9	**120 - 100**	**Leg**	**ROHN 3.5 EH**	**210**	**-122285.00**	**84202.60**	**145.2**	**Fail** ✗
		Diagonal	L3x3x3/16	212	-5070.10	5225.00	97.0	Pass
T10	**100 - 80**	**Leg**	**ROHN 4 EH**	**225**	**-139451.00**	**115375.00**	**120.9**	**Fail** ✗
		Diagonal	L3x3x3/16	227	-5347.39	4430.39	120.7	Fail ✗
T11	**80 - 60**	**Leg**	**ROHN 4 EH**	**240**	**-157322.00**	**115391.00**	**136.3**	**Fail** ✗
		Diagonal	L3 1/2x3 1/2x1/4	242	-6086.36	7996.89	76.1	Pass
T12	**60 - 40**	**Leg**	**ROHN 5 EH**	**255**	**-174500.00**	**189987.00**	**91.8**	**Pass**
		Diagonal	L4x4x1/4	257	-5705.34	10214.20	55.9	Pass
T13	**40 - 20**	**Leg**	**ROHN 5 EH**	**270**	**-178453.00**	**189980.00**	**93.9**	**Pass**
		Diagonal	ROHN 2.5 STD	275	-9849.73	11024.40	89.3	Pass
		Horizontal	ROHN 2.5 STD	271	-5238.01	6602.26	79.3	Pass
		Redund Horz 1 Bracing	ROHN 1.5 STD	283	-3385.45	11929.50	28.4	Pass
		Redund Diag 1 Bracing	ROHN 1.5 STD	284	-3096.55	3766.37	82.2	Pass
T14	**20 - 0**	**Leg**	**ROHN 5 EH**	**294**	**-193835.00**	**189980.00**	**102.0**	**Fail** ✗
		Diagonal	ROHN 2.5 STD	299	-9566.25	10382.70	92.1	Pass
		Horizontal	ROHN 2.5 STD	295	-5412.20	5478.03	98.8	Pass
		Redund Horz 1 Bracing	ROHN 1.5 STD	307	-3364.31	10264.30	32.8	Pass
		Redund Diag 1 Bracing	ROHN 1.5 STD	308	-2908.14	3542.45	82.1	Pass
							Summary	
						Leg (T9)	145.2	Fail ✗
						Diagonal (T6)	213.4	Fail ✗
						Horizontal (T14)	98.8	Pass
						Redund Diag 1 Bracing (T13)	82.2	Pass
						Bolt Checks	75.4	Pass
						RATING =	**213.4**	**Fail** ✗

Section Capacity Table – Existing Loads

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$øP_{allow}$ lb	% Capacity	Pass Fail
T1	**275 - 260**	**Leg**	**ROHN 2 STD**	**3**	**-2639.70**	**35960.20**	**7.3**	**Pass**
		Diagonal	L1 1/2x1 1/2x1/8	8	-484.58	5562.91	8.7	Pass
		Top Girt	L2x2x1/8	5	-40.61	6023.23	1.1	Pass
T2	**260 - 240**	**Leg**	**ROHN 2 STD**	**33**	**-14447.00**	**34795.50**	**41.5**	**Pass**
		Diagonal	L1 1/2x1 1/2x1/8	38	-1522.37	5354.03	28.4	Pass
T3	**240 - 220**	**Leg**	**ROHN 2 STD**	**66**	**-26386.40**	**34762.60**	**75.9**	**Pass**
		Diagonal	L1 1/2x1 1/2x1/8	68	-1414.79	3303.94	42.8	Pass
T4	**220 - 200**	**Leg**	**ROHN 2.5 STD**	**99**	**-37477.80**	**53962.20**	**69.5**	**Pass**
		Diagonal	L1 3/4x1 3/4x1/8	101	-1660.49	3187.29	52.1	Pass
T5	**200 - 180**	**Leg**	**ROHN 2.5 EH**	**126**	**-48954.30**	**55265.30**	**88.6**	**Pass**
		Diagonal	L1 3/4x1 3/4x1/8	128	-2203.62	1980.31	111.3	Fail ✗
T6	**180 - 160**	**Leg**	**ROHN 3 STD**	**147**	**-61976.10**	**66953.00**	**92.6**	**Pass**
		Diagonal	L1 3/4x1 3/4x1/8	149	-2779.24	1530.97	181.5	Fail ✗
T7	**160 - 140**	**Leg**	**ROHN 3 STD**	**168**	**-75918.10**	**66952.20**	**113.4**	**Fail ✗**
		Diagonal	L2x2x1/8	170	-3144.01	1806.54	174.0	Fail ✗
T8	**140 - 120**	**Leg**	**ROHN 3 EH**	**189**	**-90928.30**	**89099.30**	**102.1**	**Fail ✗**
		Diagonal	L2 1/2x2 1/2x3/16	191	-3681.48	4172.74	88.2	Pass
T9	**120 - 100**	**Leg**	**ROHN 3.5 EH**	**210**	**-105391.00**	**84202.60**	**125.2**	**Fail ✗**
		Diagonal	L3x3x3/16	212	-4495.75	5225.00	86.0	Pass
T10	**100 - 80**	**Leg**	**ROHN 4 EH**	**225**	**-121394.00**	**115375.00**	**105.2**	**Fail ✗**
		Diagonal	L3x3x3/16	227	-4817.55	4430.39	108.7	Fail ✗
T11	**80 - 60**	**Leg**	**ROHN 4 EH**	**240**	**-138156.00**	**115391.00**	**119.7**	**Fail ✗**
		Diagonal	L3 1/2x3 1/2x1/4	242	-5536.08	7996.89	69.2	Pass
T12	**60 - 40**	**Leg**	**ROHN 5 EH**	**255**	**-154452.00**	**189987.00**	**81.3**	**Pass**
		Diagonal	L4x4x1/4	257	-5297.13	10214.20	51.9	Pass
T13	**40 - 20**	**Leg**	**ROHN 5 EH**	**270**	**-158313.00**	**189980.00**	**83.3**	**Pass**
		Diagonal	ROHN 2.5 STD	275	-9161.78	11024.40	83.1	Pass
		Horizontal	ROHN 2.5 STD	271	-4869.44	6602.26	73.8	Pass
		Redund Horz 1 Bracing	ROHN 1.5 STD	287	-3003.35	11929.50	25.2	Pass
		Redund Diag 1 Bracing	ROHN 1.5 STD	284	-2747.06	3766.37	72.9	Pass
T14	**20 - 0**	**Leg**	**ROHN 5 EH**	**294**	**-173002.00**	**189980.00**	**91.1**	**Pass**
		Diagonal	ROHN 2.5 STD	299	-8929.11	10382.70	86.0	Pass
		Horizontal	ROHN 2.5 STD	295	-5050.82	5478.03	92.2	Pass
		Redund Horz 1 Bracing	ROHN 1.5 STD	311	-3002.71	10264.30	29.3	Pass
		Redund Diag 1 Bracing	ROHN 1.5 STD	312	-2580.81	3542.45	72.9	Pass

	Summary	
Leg (T9)	125.2	Fail ✗
Diagonal (T6)	181.5	Fail ✗
Horizontal (T14)	92.2	Pass
Redund Diag 1 Bracing (T13)	72.9	Pass
Bolt Checks	67.4	Pass
RATING =	**181.5**	**Fail ✗**

1300 Pennsylvania Avenue NW
Washington, DC 20229

U.S. Customs and Border Protection

MAR 07 2011

Ms. Lori Nordstrom
Ecological Field Supervisor
U.S. Fish and Wildlife Service
Maine Ecological Services Field Office
17 Godfrey Drive, Suite #2
Orono, Maine 04473

Reference: Request for concurrence with the determination of effect for 27 tower site locations proposed under the U.S. Customs and Border Protection Project 25 Tactical Communications Modernization Project.

Dear Ms. Nordstrom:

As a continuation to our last correspondence letter, dated January 14, 2011 requesting that U.S. Fish and Wildlife Service (USFWS) review Phase 1 of the U.S. Customs and Border Protection (CBP) P-25 Tactical Communications (TACCOM) Modernization Project including 30 tower site locations, please find enclosed, the subset of 27 additional tower site locations (Enclosure 2) taken from the tower site list (Enclosure 1) that can be considered Phase 2 of the Project.

Also enclosed, please find a Rare, Threatened, and Endangered (RTE) Species Survey Report (Enclosure 4) prepared by Stantec Consulting Services, Inc. for the 27 tower sites included in this review (Enclosure 3). During the months of August, September, and October 2010, a State Certified Wildlife Biologist from Stantec visited each site location to identify and document state and federally-listed RTE species or their suitable habitats. The survey report includes a U.S. Geological Survey (USGS) topographic quadrangle map for each site location with the tower project clearly marked, as well as a description of the work to be performed for each location.

In accordance with Section 7 of the Endangered Species Act (ESA), as amended (16 U.S.C.1531-1543), the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d, 54 Stat. 250) and the Fish and Wildlife Coordination Act, as amended (16 U.S.C. 661-667d), we are requesting USFWS to concur with CBP's determination that the proposed project is not likely to adversely affect federally-listed species at the sites currently under consideration for construction and that the project may proceed as planned.

We look forward to continuing the Section 7 consultation process with you. Written correspondence may be submitted to me by mail to the address below:

Brendan Deyo
Acting Director
Environmental and Energy Division
U.S. Customs and Border Protection
1331 Pennsylvania Avenue, NW, NP 1220
Washington, DC 20229-1106

We appreciate the time and effort it may take for you to evaluate these materials. If you have any questions or concerns, please feel free to contact Jennifer DeHart Hass by telephone at (202) 344-1929 or by e-mail at Jennifer.Hass@cbp.dhs.gov.

Sincerely,

Brendan Deyo For
Acting Director
Environmental and Energy Division

Enclosures(s)

1. Tower Site List
2. Phase 2 Tower Site List
3. Rare, Threatened, and Endangered Species Survey Table
4. Rare, Threatened, and Endangered Species Survey Report

Enclosure 1: Tower Site List

Tower Site List (60 Sites)			
1	SM Musquash Mountain	31	CBP Estcourt
2	CBP Calais, Conant Hill	32	POE Hamlin
3	POE Calais	33	POE Madawaska
4	POE Lubec	34	POE Fort Kent
5	SM Bald Mountain	35	POE Van Buren
6	Lead Mountain	36	Rocky Mountain
7	CBP Parkhurst	37	RVSS Deer Farm
8	SM Clear Lake Mountain	38	Cooper Mountain
9	SM New Sweden	39	Ellsworth
10	SM Portage Lake	40	Chase Mountain
11	CBP St. Pamphile	41	Garland DOT
12	POE Limestone	42	Granite Hill
13	POE St. Juste	43	CBP Portland ATC
14	RVSS Fuller Road	44	Oxbow Township
15	CBP Hovey Hill	45	POE Portsmouth
16	POE Forest City	46	Huntoon
17	POE Orient	47	Bucks Harbor
18	Peekaboo Mountain	48	Cyr DOT
19	SM Norway Bluff	49	Eaton Mountain
20	POE Easton	50	Gray RCC
21	SM Benedicta	51	Mount Harris
22	SM Robinson Mountain	52	No 9 Mountain
23	SM Spruce Mountain 2	53	Ossipee Mountain
24	CBP Coburn Mountain	54	Passadumkeag
25	SM Hatchet Mountain	55	Pleasant Mountain
26	POE St Aurelie	56	St. Francis
27	SM Spencer Mountain	57	Spruce Mountain
28	POE Coburn Gore	58	Sugarloaf Mountain
29	SM Mount Blue	59	Whitten Hill
30	SM W. Kennebago	60	York

Enclosure 2: Phase 2 Tower Site List

Phase 2 Tower Site List (27 Sites)	
1	POE Calais
2	POE Forest City
3	POE Van Buren
4	SM Hatchet Mountain
5	POE Limestone
6	Pleasant Mountain
7	SM Portage Lake
8	SM Bald Mountain
9	POE Fort Kent
10	SM Clear Lake Mountain
11	CBP Coburn Mountain
12	Chase
13	CBP Estcourt
14	SM Mount Blue
15	SM Norway Bluff
16	Oxbow Township
17	Rocky Mountain
18	SM Spencer Mountain
19	SM Spruce Mountain 2
20	CBP St. Pamphile
21	SM W. Kennebago
22	No. 9 Mountain
23	SM Benedicta
24	RVSS Deer Farm
25	Huntoon
26	Whitten Hill
27	RVSS Fuller Road

Enclosure 3: Rare, Threatened, and Endangered Species Survey Table

Site #	Site Name	Known Protected Resources	Effects Determination
4	Coburn Mountain	Lynx critical habitat	Not likely to adversely affect lynx or modify critical habitat
6	POE Calais	Eagle nest within 2 miles	Take or disturbance of eagles unlikely
8	POE Forest City	Eagle nest within 2 miles	Take or disturbance of eagles unlikely
9	POE Fort Kent	Within range of Furbish's louswort	No effect on Furbish's lousewort
11	POE Limestone	None	No effect
17	POE Van Buren	Within range of Furbish's louswort	No effect on Furbish's lousewort
18	Bald Mountain	Salmon critical habitat	May affect; not likely to adversely affect salmon or modify critical habitat
21	Estcourt	Lynx critical habitat	Not likely to adversely affect lynx or modify critical habitat
25	St. Pamphile	Lynx critical habitat	Not likely to adversely affect lynx or modify critical habitat
27	RVSS Deer Farm	Within range of Furbish's lousewort and site of boreal snaketail occurrence	No effect on Furbish's lousewort; no impacts to boreal snaketail or habitat
28	RVSS Fuller Road	None	No effect
29	Oxbow Township	None	No effect
30	Benedicta	Salmon critical habitat	May affect; not likely to adversely affect salmon or modify critical habitat
34	Clear Lake Mountain	Lynx critical habitat	Not likely to adversely affect lynx or modify critical habitat
36	Hatchet Mountain	Salmon critical habitat	May affect; not likely to adversely affect salmon or modify critical habitat
37	Mount Blue	None	No effect
39	Norway Bluff	Lynx critical habitat	Not likely to adversely affect lynx or modify critical habitat
40	Portage Lake	Lynx critical habitat; eagle nest within 2 mi	Not likely to adversely affect lynx or modify critical habitat; take or disturbance of eagles unlikely
42	Spencer Mountain	Lynx critical habitat	Not likely to adversely affect lynx or modify critical habitat
43	West Kennebago Mountain	None	No effect
45	Rocky Mountain	Lynx critical habitat	Not likely to adversely affect lynx or modify critical habitat
46	Spruce 2 Mountain	None	No effect
48	Huntoon	Salmon critical habitat	No effect on Salmon; not likely to modify critical

			habitat
54	Number 9 Mountain	Lynx critical habitat	Not likely to adversely affect lynx or modify critical habitat
57	Pleasant Mountain	None	No effect
61	Whitten Hill	Salmon critical habitat	Not likely to affect salmon or modify critical habitat
63	Chase Mountain	Lynx critical habitat	Not likely to adversely affect lynx or modify critical habitat

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Maine Field Office – Ecological Services
17 Godfrey Drive, Suite #2
Orono, ME 04473
(207) 866-3344 Fax: (207) 866-3351

FWS/Region 5/ES/MEFO

March 21, 2011

Brendan Deyo, Acting Director
Environmental and Energy Division
US Department of Homeland Security
Customs and Border Protection
1331 Pennsylvania Ave. NW
Suite 1415
Washington, D.C. 20004

Dear Mr. Deyo:

Thank you for your letters dated January 14 and March 7, 2011, requesting U.S. Fish and Wildlife Service (Service) concurrence that communications projects proposed by the U.S. Customs and Border Protections, Phase 1 and Phase II, respectively, are not likely to adversely affect federally-listed species. Details on the projects are contained in Stantec Consulting Services, Inc.'s January 2011 and February 2011 survey reports for rare, threatened and endangered species. This letter provides the Service's response pursuant to Section 7 of the Endangered Species Act (ESA), as amended (16 U.S.C. 1531-1543), the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d, 54 Stat. 250), Migratory Bird Treaty Act (16 U.S.C. 703-712), and the Fish and Wildlife Coordination Act, as amended (16 U.S.C. 661-667d).

This office only has information on the presence of listed species in Maine. We have not reviewed the POE Portsmouth project, which is in New Hampshire. ESA reviews in New Hampshire are conducted by the Service's New England Field Office (70 Commercial Street, Concord, NH 03301-5087; Phone: 603-223-2541, FAX: 603-223-0104). Therefore, we cannot provide concurrence that this project will not have an effect on listed species under the jurisdiction of the Service.

Project Name/Location: Maine Tactical Communications Modernization

Log Number: 53411-2009-I-0315

Federally Listed Species

Atlantic Salmon

Many of the project sites are within the Gulf of Maine Distinct Population Segment (GOM DPS) of Atlantic salmon (*Salmo salar*) in Maine, which is a federally-endangered species under the joint jurisdiction of the Service and the National Marine Fisheries Service (NMFS) (74 FR 29344; June 19, 2009). The Service generally handles projects in the freshwater component of

the salmon's habitat and NMFS handles projects in the marine and estuarine environment (generally below the head of tide).

The Atlantic salmon GOM DPS encompasses all naturally spawned and conservation hatchery populations of anadromous Atlantic salmon whose freshwater range occurs in the watersheds from the Androscoggin River northward along the Maine coast to the Dennys River and wherever these fish occur in the estuarine and marine environment. Also included in the GOM DPS are all associated conservation hatchery populations used to supplement these natural populations. Excluded are landlocked Atlantic salmon and those salmon raised in commercial hatcheries for aquaculture.

Critical habitat is designated to include all perennial rivers, streams, and estuaries and lakes connected to the marine environment within the designated HUC-10 watersheds that have been designated as critical habitat for Atlantic salmon by NMFS (74 FR 39907; August 10, 2009). Many of the proposed project sites (Calais ME ne012, Cooper Mountain, Garland DOT, Ellsworth, Robinson Mountain, Peekaboo Mountain, Bucks Harbor, Eaton Mountain, Mount Harris, Bald Mountain, Benedicata, Hatchet Mountain, Huntoon, Whitten Hill) occur within designated critical habitat for Atlantic salmon. Contrary to the February survey report, the Mount Blue site is also within designated critical habitat of Atlantic salmon. Contrary to the January survey report, Granite Hill and Passadumkeag are just outside of designated critical habitat, but within the GOM DPS.

Based on your project descriptions, sizes, and locations, the Service concurs with your determination that the proposed projects are not likely to adversely affect Atlantic salmon.

Canada lynx

Many of the proposed projects occur within the range of the Canada lynx (*Lynx canadensis*) in Maine, a federally-threatened species under the jurisdiction of the Service. This designation under the ESA became effective on March 27, 2009 (74 FR 8616: February 25, 2009). In addition to the sites listed in the Survey Report, Robinson Mountain, Peekaboo Mountain, Cyr DOT, POE Forest City, POE Limestone, RVSS Fuller Road, Oxbow Township, West Kennebago, and Spruce 2 Mountain are within the DPS of Canada lynx.

The projects listed in the Survey Report (POE St. Juste, POE Ste. Aurelie, St. Francis, Coburn Mountain, Estcourt, St. Pamphile, Clear Lake Mountain, Norway Bluff, Spencer Mountain, Rocky Mountain, Number 9 Mountain, and Chase Mountain) are within the designated critical habitat for the Canada lynx.

Canada lynx in Maine prefer to use regenerating spruce-fir habitats having high stem densities. These regenerating stands support high populations of snowshoe hare (*Lepus americanus*), the primary food of the Canada lynx. In a study of the seasonal space-use patterns, Canada lynx with VHF (very-high-frequency) radiocollars have been located near the Clear Lake Mountain and Norway Bluff project sites. Forest practices that diminish habitat quality for snowshoe hares may have an adverse effect on Canada lynx. We have developed *Canada lynx habitat management guidelines for Maine.* Please email (mark_mccollough@fws.gov) or call (207 866-3344 x115) if you are interested in obtaining a copy.

Based on your project descriptions, sizes, and locations, the Service concurs with your determination that the proposed projects are not likely to adversely affect the Canada lynx.

Furbish's Lousewort

The Survey Report states that several of the projects (POE Hamlin, POE Madawaska, POE Van Buren, POE Fort Kent, and RVSS Deer Farm) are within the range of Furbish's lousewort (*Pedicularis furbishiae*) but would have no effect. Furbish's lousewort is a perennial herb that was listed as a federally-endangered species under the jurisdiction of the Service (43 FR 17910-17916, On April 26, 1978). This plant is found only on the shores of the upper St. John River in Maine and New Brunswick in a narrow band along the river bank. Periodic ice scour events greatly reduce or eliminate populations but are essential to the species' survival in that they reduce competition from shrubby plants and create conditions suitable for seed germination and growth of lousewort seedlings. The Furbish's lousewort was included in a cursory 5-year review conducted for all species listed before 1991 (56 FR 56882, November 6, 1991). The 1982 recovery plan and 1991 revised recovery plan for this species have included assessments of its status. Causes of habitat degradation associated with shorefront development include dumping of refuse, slash, and fill; motorized vehicles; vegetation clearing; ATV use along the river bank; personal boat access; and impermeable surfaces that focus runoff. The Service is currently conducting a 5-year reviews of five listed species: Delmarva Peninsula fox squirrel, northeastern bulrush, Chittenango ovate amber snail, and Virginia roundleaf, birch, as well as Furbish lousewort (75 FR 47025, August 4, 2010).

To the best of our knowledge, the project nearest to Furbish's lousewort (POE Fort Kent) is about one-fourth-mile from a known occurrence. Based on your project descriptions, sizes, and locations, the Fish and Wildlife Service concurs with your determination that this project will have no effect on Furbish's lousewort.

New England cottontail rabbit

Based on the information currently available to us, no other federally-listed species under the jurisdiction of the Service are known to occur in the project area. However, the New England cottontail rabbit (*Sylvilagus transitionalis*), a candidate for federal listing could occur on the Portland ATC 10047, Ossipee Mountain, and SM York project sites. New England cottontail was officially listed as a candidate species for federal listing on September 12, 2006 (71 FR 53756). Thus, the New England cottontail will likely be federally listed in the future. At this time, the New England cottontail is afforded no protection under the Federal ESA. However, we strongly encourage you to consider this species in your project planning. This species uses old field and scrub shrub habitats. We encourage you to conduct surveys to determine the presence of this species or its habitat in the project area.

The New England cottontail is listed as an endangered species by Maine Inland Fisheries and Wildlife. We encourage you to contact MDIFW's Mammal Group (John Depue, Maine Inland Fisheries and Wildlife, 650 State St., Bangor, ME 04401 Phone: 207 941-4473 or Scott Lindsay, Maine Inland Fisheries and Wildlife, Region A, RR 1, 358 Shaker Road, Gray, ME 04039 Phone:207 657-2345) for more information.

Reinitiation

This concludes consultation pursuant to Section 7 of the ESA for these projects. Reinitiation of consultation is required and shall be requested by the U.S. Customs and Border protection or by the Service, where discretionary Federal involvement or control over one or more of the action(s) has/have been retained or is authorized by law and (a) if new information reveals effects of the

action that may affect listed species or critical habitat in a manner or to an extent not previously considered in the consultation; (b) if the identified action(s) is subsequently modified in a manner that causes the listed species or critical habitat that was not considered in the consultation; or (c) if a new species is listed or critical habitat designated that may be affected by the identified action(s).

Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act

The bald eagle (*Haliaeetus leucocephalus*) was removed from the federal threatened list on August 9, 2007 and is now protected from take under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. "Take" means to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb. The term "disturb" under the Bald and Golden Eagle Protection Act was recently defined within a final rule published in the Federal Register on June 5, 2007 (72 FR 31332). "Disturb" means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle; 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior; or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.

Further information on bald eagle delisting and their protection can be found at http://www.fws.gov/migratorybirds/baldeagle.htm.

Please consult with our new national bald eagle guidelines, which can found at http://www.fws.gov/migratorybirds/issues/BaldEagle/NationalBaldEagleManagementGuidelines.pdf. These Guidelines are voluntary and were prepared to help landowners, land managers and others meet the intent of the Eagle Act and avoid disturbing bald eagles. If you believe any of these projects will result in taking or disturbing bald or golden eagles, please contact our office for further guidance. We encourage early and frequent consultations to avoid take of eagles.

We note that many of the proposed communications towers are collocated with the communications equipment on existing communication towers or other structures, but a number of new towers would be constructed in Maine. The construction of new towers creates a potentially significant impact on migratory birds, especially some 350 species of night-migrating birds. Communications towers are estimated to kill 4-5 million birds per year, which violates the spirit and the intent of the Migratory Bird Treaty Act and the Code of Federal Regulations at Part 50 designed to implement the MBTA. Some of the species affected are also protected under the Endangered Species Act and Bald and Golden Eagle Act. Therefore, we have enclosed a copy of *Service interim guidelines for recommendations on communications tower siting, construction, operation, and decommissioning*.

Maine Natural Resources Protection Act

We have not reviewed this project for state-threatened and endangered wildlife, wildlife species of special concern, and significant wildlife habitats protected under the Maine Natural Resources Protection Act. We recommend that you contact the Maine Department of Inland Fisheries and Wildlife:

Steve Timpano
Maine Department of Inland Fisheries and Wildlife
284 State St.
State House Station 41
Augusta, ME 04333-0041
Phone: 207 287-5258

We also recommend that you contact the Maine Natural Areas Program for additional information on state-threatened and endangered plant species, plant species of special concern, and rare natural communities:

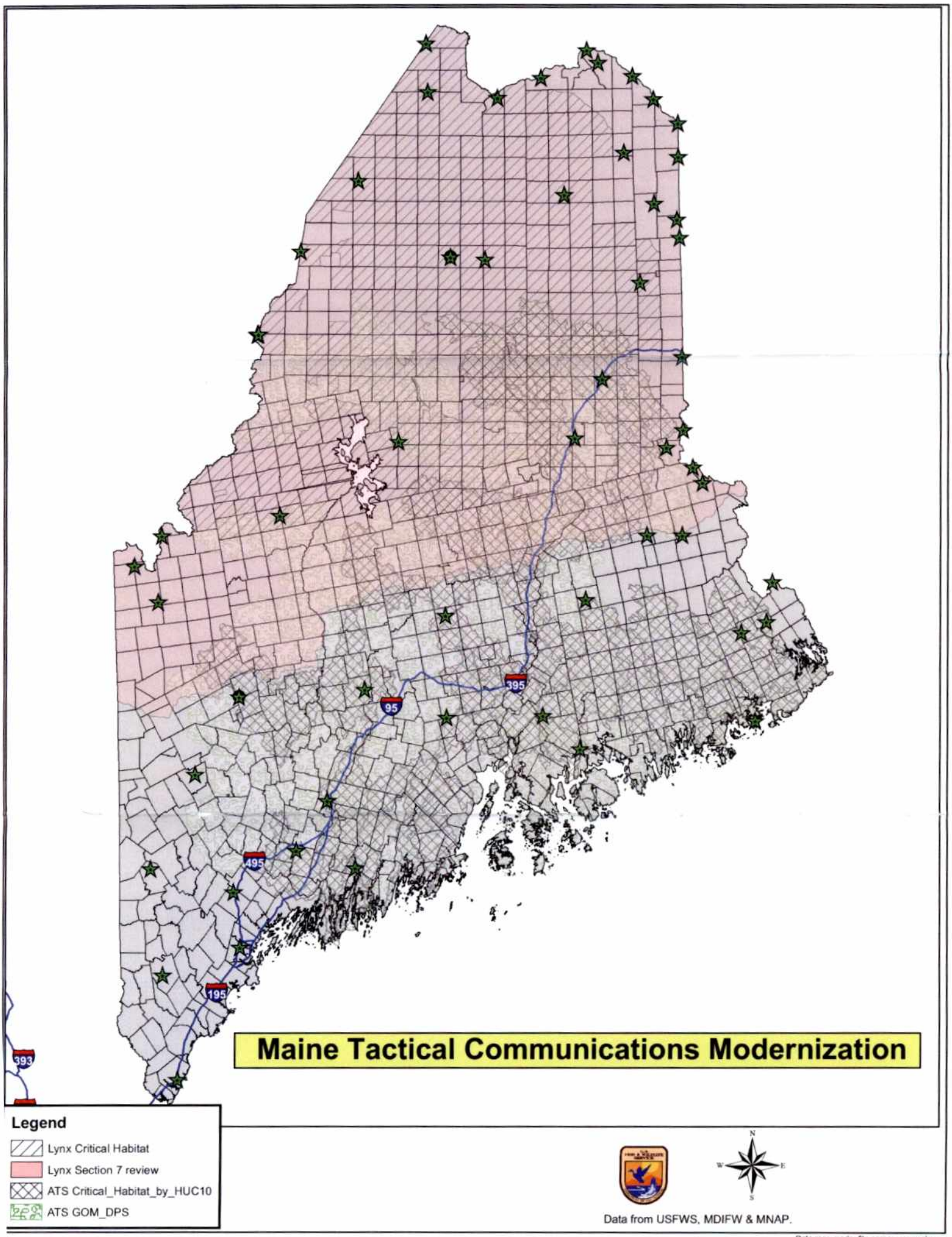
Lisa St. Hilaire
Maine Natural Areas Program
Department of Conservation
93 State House Station
Augusta, ME 04333
Phone: 207 287-8046

If you have any questions or concerns about this consultation or the consultation process in general, please contact Mark McCollough in our Maine Field Office at (207) 866-3344, Ext. 115.

Sincerely,

Laury Zicari, Field Supervisor
Maine Field Office

Enclosure


Maine Tactical Communications Modernization
95
395
495
195
393
Legend
Lynx Critical Habitat
Lynx Section 7 review
ATS Critical_Habitat_by_HUC10
ATS GOM_DPS
N
W
E
S
Data from USFWS, MDIFW & MNAP.
Date map made; file name; map maker.

1300 Pennsylvania Avenue NW
Washington, DC 20229

U.S. Customs and Border Protection

AUG 11 2010

Robin Stancampiano
Architectural Historian, Review and Compliance/CLG Coordinator
Maine Historic Preservation Commission
55 Capitol Street
65 State House Station
Augusta, ME 04333-0065

Reference: Initiation of Section 106 Consultation for 19 additional tower sites to be included with the previously reviewed 43 tower sites and 7 alternative tower sites proposed under the U.S. Customs and Border Protection P-25 Tactical Communications Modernization Project

Dear Ms. Stancampiano:

Pursuant to the Council on Environmental Quality regulations for implementing the procedural provisions of the National Environmental Policy Act (NEPA; 40 CFR 1500), and U.S. Department of Homeland Security (DHS) Management Directive 023-01, Environmental Planning Program (MD 023-01, previously numbered 5100.1), U.S. Customs and Border Protection (CBP) is analyzing the potential environmental and socioeconomic impacts of the CBP P-25 TacComm Modernization Project.

Since our letter dated August 18, 2009 requesting that the Commission review 43 locations and 7 alternative locations, CBP has changed the site list for this project. Specifically, CBP has removed 6 of the previously reviewed sites from this project and has added 19 new locations. Please find enclosed a table (Enclosure 1) identifying the sites being removed from, and added to, this project.

Also enclosed, please find 7.5-minute USGS topographic quadrangle maps (Figures 1-19) for each of the 19 proposed communication tower sites that have not been reviewed by the Commission to date. The tower locations are clearly marked and the work plan for each site involved in this undertaking is described. We are requesting your review and comment in accordance with Section 106 of the National Historic Preservation Act (NHPA) in regards to prehistoric and historic archaeological resources.

In order to determine whether historic above ground resources will be affected by the proposed undertaking, an architectural survey and assessment of project impact on any National Register-listed or eligible historic properties that lie within each appropriate area of potential effect (APE) will be performed by a qualified Historic Preservation Consultant, who meets the minimum National Park Service professional qualification standards in 36 CRF 61. Reports detailing the finding of this work will be forwarded to your office.

The qualified Historic Preservation Consultant will review project areas defined as appropriate APEs by your office and prepare architectural surveys and assessments in accordance with the "Above Ground Cultural Resource Survey Manual Guidelines for Identification: Architecture and Cultural Landscapes Section 106 Specific" and associated forms which have been retrieved from the Maine Historic Preservation Web site. Limits include:

A. Within 0.5 mile from the tower site if the proposed tower is 200 feet or less in overall height;

B. Within 0.75 mile from the tower site if the proposed tower is more than 200 but no more than 400 feet in overall height; or

C. Within 1.5 miles from the proposed tower site if the proposed tower is more than 400 feet in overall height.

Once CBP has received guidance from your office regarding prehistoric and historic archaeological resources, all required Phase 1 Archaeological Surveys would be completed by Northeast Archaeological Research Center and reports would be submitted to your office for concurrence, prior to any ground disturbance.

In accordance with the NHPA, CBP has also initiated consultation with Native American Tribes with interest in the proposed tower site locations. CBP made good faith efforts to identify the interested tribes and sent letters or e-mails which included project information, site maps, and photographs. CBP consulted the following Native American tribes that may have an interest in the areas impacted by the P-25 project: the Aroostook Band of Micmacs, the Houlton Band of Maliseet Indians, the Passamaquoddy Tribe of Indians - Indian Township Reservation, the Passamaquoddy Tribe of Indians – Pleasant Point Reservation, the Penobscot Indian Nation, and the Keweenaw Bay Indian Community.

Written correspondence may be submitted to me by mail at the following address:

Jennifer Hass
Acting Director
Environmental and Energy Division
U.S. Customs and Border Protection
1331 Pennsylvania Avenue, NW, NP 1220
Washington, DC 20229-1106

We look forward to continuing the Section 106 consultation process with you. If you have any questions or concerns, please feel free to contact me by telephone at (202) 344-1929 or by e-mail at Jennifer.Hass@cbp.dhs.gov.

Sincerely,

Jennifer Hass
Acting Director
Environmental and Energy Division

Enclosure(s)

David-

Per our conversation, please find enclosed our recent correspondence regarding the new tower sites.

I have some other email I sent to Jennifer that same day which I will forward to you also today.

Let me know if you have any questions.

Robin Stancampiano
Maine Historic Preservation Commission
207-287-2992

From: Stancampiano, Robin
Sent: Friday, September 10, 2010 3:13 PM
To: Jennifer Haas
Cc: Mohney, Kirk
Subject: MHPC# 1614-10 through MHPC# 1632-10 proposed communication towers

MHPC# 1614-10 Patriot Tower; Cooper Mountain; off Tower road; Meddybemps
1615-10 Patriot Tower; Ellsworth; off High Street & Buttermilk Road; Ellsworth
1616-10 Patriot Tower; POE Portsmouth; 43 Airline Avenue; Portsmouth, NH
1617-10 Patriot Tower; SM Huntoon; off Huntoon Hill Road; Wiscasset
1618-10 Patriot Tower; SM Bucks Harbor; 64 Base Road; Machiasport
1619-10 Patriot Tower; SM CYR DOT; Aspen Rd (aka Beaulieu Road); Madawaska
1620-10 Patriot Tower; SM Eaton Mountain; off Eaton Mountain Rd & Lamphere Ln; Skowhegan
1621-10 Patriot Tower; SM Gray RCC; of Shaker Rd & Game Farm Rd; Gray
1622-10 Patriot Tower; SM Mount Harris; off Moosehead Trail; Dixmont
1623-10 Patriot Tower; SM No 9 Mountain; No 9 Lake Road; off Bootfoot Rd; TD R2 Wels
1624-10 Patriot Tower; SM Ossippee Mountain; off McLucas Rd & Middle Rd; Waterboro
1625-10 Patriot Tower; SM Passadumkeag; Burlington
1626-10 Patriot Tower; SM Pleasant Mountain; off Tower Rd; Denmark
1627-10 Patriot Tower; SM Saint Francis; Back Settlement Rd; Saint Francis
1628-10 Patriot Tower; SM Spruce Mountain; off Spruce Mountain Rd; Woodstock
1629-10 Patriot Tower; SM Sugarloaf Mountain; 5092 Sugarloaf Mountain Access Rd; Kingfield
1630-10 Patriot Tower; SM Whitten Hill; off West Road; Bowdoin
1631-10 Patriot Tower; SM York; off Blue Star Memorial Hwy; York
1632-10 Patriot Tower; CBP Portland ATC Site No. 10047; 225 Riverside Industrial Parkway; Portland

Jennifer:

In response to your recent request, our office has reviewed the information received August 12, 2010 to initiate consultation on the above referenced undertaking pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended.

Please email me the site list (43 locations and 7 alternate locations; with 6 removed and 19 new locations) for this project for our files. It does not appear that we received this list with your letter and the maps.

Regarding the 19 new locations, our office has the following comments:

Regarding prehistoric and historic archaeological resources, our office has no concerns with these new sites with the exception of MHPC# 1630-10 Patriot Tower; SM Whitten Hill; off West Road; Bowdoin. For that location, please send us a plan of the access road for review due the proximity of the W. Knight site which is shown on the enclosed 1858 map.

Regarding architectural survey for these 19 sites, we concur with the architectural survey approach as stated in your letter and look forward to receiving information for review and comment.

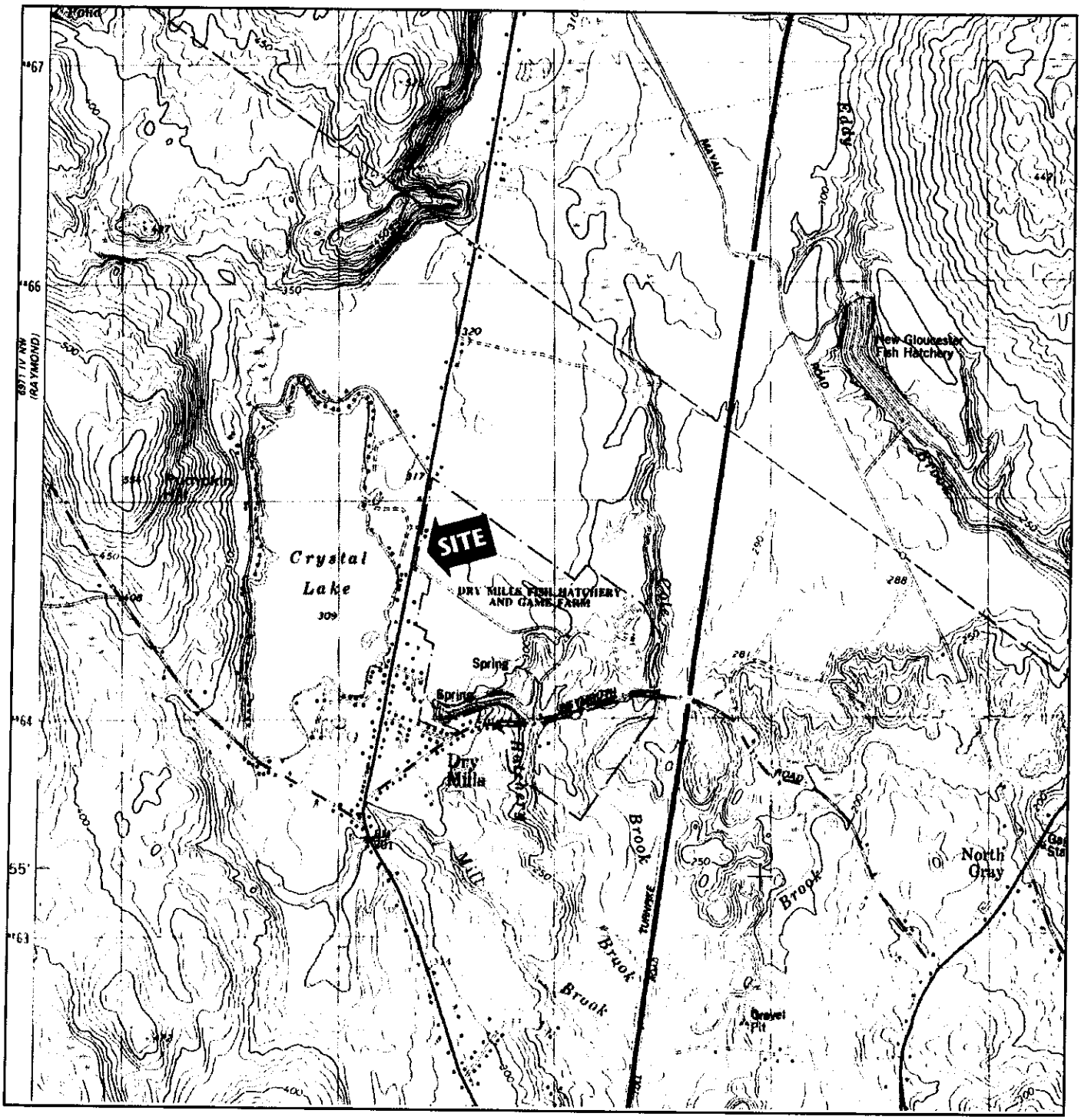
I will be sending you two separate emails regarding the proposed towers at St. Pamphile and St. Aurelie.

We look forward to continuing Section 106 consultation with the CBP on this project.

<<MHPC# 1630-10-.jpg>>

Robin Stancampiano
--Review & Compliance Coordinator
--Certified Local Government Coordinator
Maine Historic Preservation Commission
55 Capitol Street
65 State House Station
Augusta, ME 04333
phone: 207-287-2132 ext. 1
fax: 207-287-2335
http://www.maine.gov/mhpc

Historical Topographic Map



N	TARGET QUAD NAME: GRAY MAP YEAR: 1980 SERIES: 7.5 SCALE: 1:24000	SITE NAME: SM Gray RCC ADDRESS: Northeast of Shaker Road and Game Farm Road Gray, ME 04039 LAT/LONG: 43.9297 / -70.352	CLIENT: Patriot Tower CONTACT: Jennifer Jung INQUIRY#: 2832213.60 RESEARCH DATE: 08/03/2010