

# Exhibit 13.1 - Copy of Existing Antenna Structure Registration



## Registration Detail

Reg Number	1219887	Status	Constructed
File Number	A0659845	Constructed	07/15/1938
EMI	No	Dismantled	
NEPA	No		

## Antenna Structure

Structure Type 3TA3 - Antenna Tower Array - 1st N = # towers 2nd N =

### Location (in NAD83 Coordinates)

Lat/Long	43-41-26.4 N 070-19-03.0 W	Address	Lane Avenue, 0.12 mi SE of Pankin Rd & I-95
City, State	Portland , ME		
Zip	04103	County	CUMBERLAND
Center of AM Array	43-41-24.3 N 070-19-03.2 W	Position of Tower in Array	

## Heights (meters)

Elevation of Site Above Mean Sea Level	Overall Height Above Ground (AGL)
21.6	109.7
Overall Height Above Mean Sea Level	Overall Height Above Ground w/o Appurtenances
131.3	108.8

## Painting and Lighting Specifications

FCC Paragraphs 1, 3, 12, 21

## FAA Notification

FAA Study	2005-ANE-172-OE	FAA Issue Date	03/11/2005
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## Owner & Contact Information

FRN	0009269424	Owner Entity Type	
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### Owner

Saga Communications of New England, LLC	P: (313)886-7070
Attention To: Gregory Urbiel	F:
73 Kercheval Avenue, Suite 201	E: gurbiel@sagacom.com
Grosse Pointe Farms , MI 48236	

### Contact

Smithwick , Gary S Esq	P: (202)363-4050
5028 Wisconsin Avenue NW, Suite 301	F:
Washington , DC 20016	E: gsmithwick@fccworld.com

## Last Action Status

Status	Constructed	Received	12/14/2009
Purpose	Notification	Entered	12/14/2009
Mode	Interactive		

## Related Applications

12/14/2009	A0659845 - Notification (NT)
09/05/2008	A0608453 - Modification (MD)
06/22/2005	A0452809 - Admin Update (AU)

Related applications (8)

## Comments

### Comments

None

## History

Date	Event
09/17/2011	Registration Printed
09/16/2011	Duplicate Registration Request Received
09/16/2011	Supersede - Internal Correction Applied

All History (22)

## Automated Letters

09/17/2011	Authorization, Reference
09/09/2009	Construction Reminder, Reference 633381
09/06/2008	Authorization, Reference

All letters (9)

## Exhibit 13.2

### Vertical Plan of Antenna System

The site is located on Lane Ave, 0.12 miles southeast of Pankin Road and I-95; the city of Portland, Cumberland County, Maine.

#### Site Location (NAD 27)

NL: 43° 41' 26"

WL: 70° 19' 05"

(43-41-26.4NL; 70-19-03.0WL NAD1983)

#### NOTE: Existing Tower Construction

Antenna Structure Registration No.

**1219887**

#### WYNZ(FM) Antenna

126 meters AMSL

104 meters AGL

#### WQAH638/WQAF915

STL Antenna

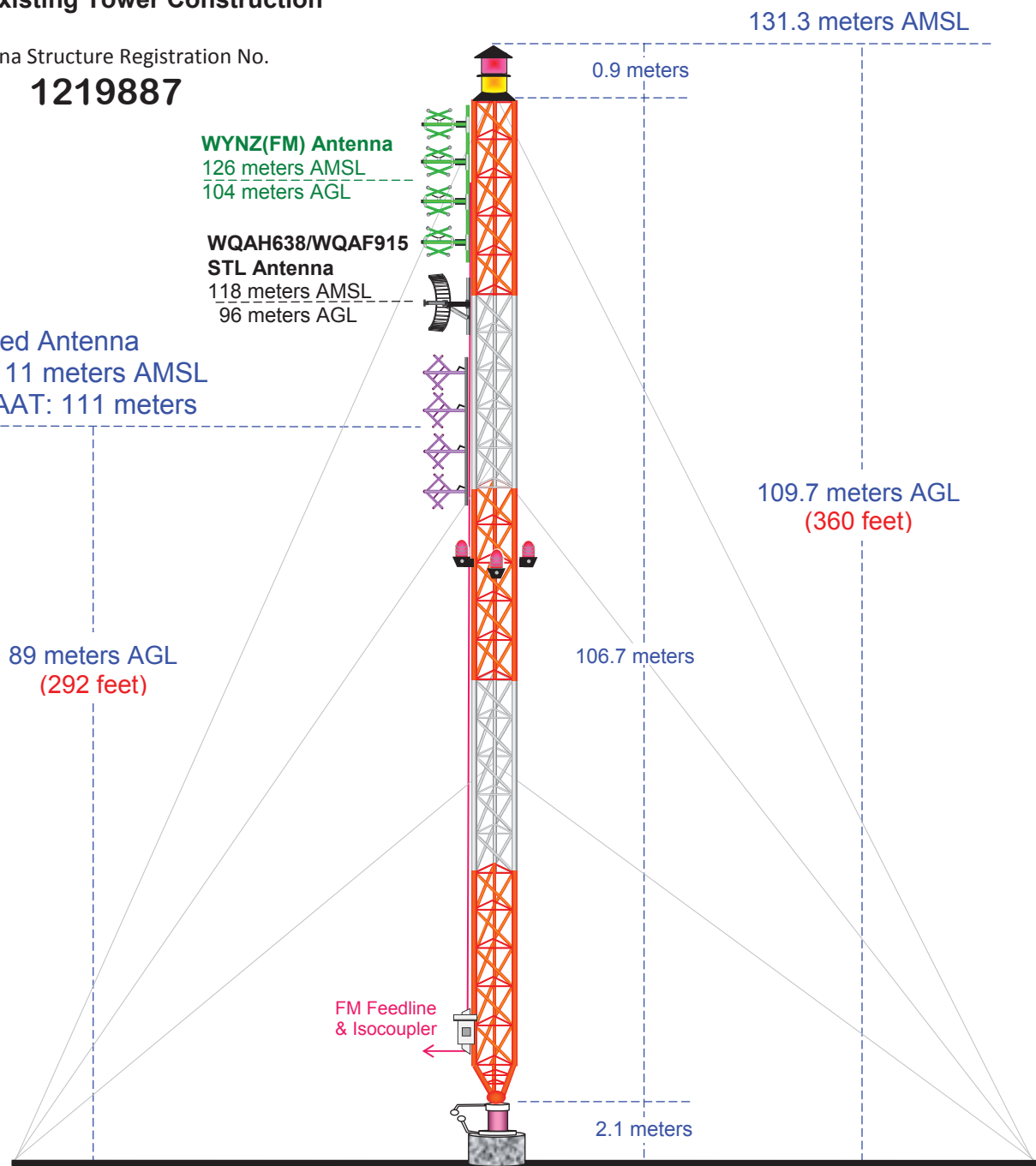
118 meters AMSL

96 meters AGL

#### Proposed Antenna

COR: 111 meters AMSL

max HAAT: 111 meters



Ground Elevation = 21.6 m AMSL

Drawing is not to Scale

**MUNN-REESE, INC.**

Broadcast Engineering Consultants  
Coldwater, MI 49036

Terrain  
-2 152 m

NGDC 30 SEC Terrain Database  
U.S. Census 2010 PL Database

## Exhibit 13.3 Present vs. Proposed Service Contour Study

*Long-Form 60 dBμ F(50:50) Contour*  
*Short-Form 60 dBμ F(50:50) Contour*

+ CH288D.long-form  
CH288D.short-form

CH288D.long-form  
Portland, ME  
BNPFT20030317GVE  
Facility ID: 150422  
Latitude: 43-41-26 N  
Longitude: 070-19-05 W  
ERP: 0.019 kW  
Channel: 288D  
Frequency: 105.5 MHz  
AMSL Height: 111.0 m  
Horiz. Pattern: Omni

60 dBμ Contour  
Total Population: 87,498  
Total Area: 117 sq. km

CH288D.short-form  
Portland, ME  
BNPFT20030317GVE  
Facility ID: 150422  
Latitude: 43-41-26.10 N  
Longitude: 070-19-04.80 W  
ERP: 0.013 kW  
Channel: 288D  
Frequency: 105.5 MHz  
AMSL Height: 126.6 m  
Horiz. Pattern: Omni

60 dBμ Contour  
Total Population: 87,421  
Total Area: 115 sq. km

Scale 1:85,000  
0 1 2 3 km

V-Soft Communications LLC ©





NGDC 30 SEC Terrain Database  
U.S. Census 2010 PL Database

## Exhibit 13.4 Proposed vs Primary Service Contour Study

**CH288D.long-form**  
Portland, ME  
BNPFT20030317GVE  
Facility ID: 150422  
Latitude: 43-41-26 N  
Longitude: 070-19-05 W  
ERP: 0.019 kW  
Channel: 288D  
Frequency: 105.5 MHz  
AMSL Height: 111.0 m  
Horiz. Pattern: Omni

**WMGX(FM)**  
Portland, ME  
BLH20050428AAH  
Facility ID: 58548  
Latitude: 43-41-17 N  
Longitude: 070-15-27 W  
ERP: 50.00 kW  
Channel: 226B  
Frequency: 93.1 MHz  
AMSL Height: 158.0 m  
Horiz. Pattern: Omni

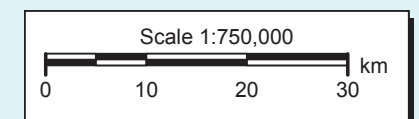
**Primary 54 dBμ F(50:50) Contour**

**Long-Form 54 dBμ F(50:50) Contour**

**CH288D.long-form**

**WMGX(FM)**

Portland



# Exhibit 13.5

## Tabulation of Proposed Translator Allocation

REFERENCE		CH#	288D	-	105.5	Bible Broadcasting Network, Inc.				COR= 111 M		DISPLAY DATES	
43 41 26.0 N.						MHz, Pwr= 0.019 kW, HAAT= 80.0 M,						DATA 08-01-13	
70 19 05.0 W.						Average Protected F(50-50)= 6.08 km						SEARCH 08-01-13	
						Omni -directional							
CH	CALL	TYPE	ANT	AZI	DIST	LAT	PWR(kW)	INT(km)	PRO(km)	*IN*	*OUT*		
CITY		STATE		<--	FILE #	LNG	HAAT(M)	COR(M)	LICENSEE	(Overlap in km)			
288D	643376	APP_C_		0.0	0.00	43 41 26.1	0.013	20.0	6.0	-24.4*<	-20.0*<		
Portland		ME		235.3	BNPFT20030317GVE	70 19 04.8	96	127	Radio Assist Ministry, Inc				
290B	WBCI	LIC_CN		36.7	52.60	44 04 09.0	50.000	6.0	65.5	40.5	-13.5*<		
Bath		ME		217.0	BLH7422	69 55 28.0	152	213	Blount Communications, Inc				
Grandfathered 50.0 kw @ 152 m													
288D	1562389	APP_C_		6.8	47.52	44 06 54.0	0.250	41.6	12.1	0.6	18.3		
Lewiston		ME		186.8	BNPFT20030317DOX	70 14 52.0		162	Edgewater Broadcasting, In				
286D	1561506	APP_DC_		203.1	17.72	43 32 38.0	0.013	0.1	4.1	11.3	13.3		
Saco		ME		23.1	BNPFT20030313AFV	70 24 16.0		127	Bible Broadcasting Networ				
288B1	WBYA	LIC_ZCN		56.7	128.29	44 18 58.0	25.000	102.8	31.3	18.8	70.6		
Islesboro		ME		237.6	BLH19990202KB	68 58 12.0	93	142	Wbin Media Co., Inc.				
288A	WJYY	LIC_CN		244.9	106.03	43 16 46.0	1.550	68.5	22.0	31.7	64.8		
Concord		NH		64.1	BLH19871005KD	71 30 15.0	139	298	Wbin Media Co., Inc.				
287A	WSHK	LIC_CN		213.2	68.46	43 10 28.0	2.200	30.6	20.8	31.7	39.0		
Kittery		ME		32.9	BLH19921030KC	70 46 50.0	113	142	Radio License Holding Cbc,				
289A	WLKC	LIC_ZCX		274.7	107.31	43 45 45.0	4.100	47.1	31.2	54.9	68.8		
Campton		NH		93.8	BLH20061012ABU	71 39 00.0	119	412	Devon Broadcasting Company				
285A	WLKZ	LIC_CX		259.7	86.85	43 32 45.3	0.560	1.5	31.1	80.0	55.4		
Wolfeboro		NH		79.0	BLH20110228ABN	71 22 42.8	325	560	Great Eastern Radio, Lic				
286C	WTOS-FM	LIC_CX		0.1	149.10	45 01 54.0	57.000	11.9	88.4	132.8	60.4		
Skowhegan		ME		180.1	BLH20020905AAI	70 18 50.0	747	1324	Blueberry Broadcasting, LI				
288A	WKXH	LIC_C_		301.8	154.39	44 24 38.0	1.250	77.7	26.6	71.5	110.7		
St. Johnsbury		VT		120.7	BLH20031205ACR	71 58 13.0	217	552	Vermont Broadcast Associat				
289B	WROR-FM	LIC_C_		202.9	161.77	42 20 50.0	23.000	78.3	66.1	77.2	83.3		
Framingham		MA		22.3	BLH20000223AAP	71 04 59.0	224	247	Greater Boston Radio, Inc.				

Terrain database is NGDC 30 SEC, R= 73.215 qualifying spacings or FCC minimum spacings in KM, M= Margin in KM  
 Contour distances are on direct line to and from reference station. Reference zone= East Zone, Co to 3rd adjacent.  
 All separation margins (if shown) include rounding  
 Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, \_= Omni), Polarization (C,H,V,E), Beamtilt(Y,N,X)  
 "\*"affixed to 'IN' or 'OUT' values = site inside protected contour.  
 < = Contour Overlap  
 Reference station has protected zone issue:

Green Text denotes the Auction 83 Application facility to be modified by this Form 349 Long-Form filing.  
 This facility need not be protected.

Blue Highlighted Text denotes supplemental contour protection studies toward select facilities as included in **Exhibit(s) 13.6**.

Yellow Highlighted text denotes a §74.1204(d) waiver request for Second Adjacent Channel Given Interference toward WBCI(FM) - Bath, ME (CH290B). The portion of the §74.1204(d) WBCI(FM) protection from 170 meters to the extent of the calculated 100.0 dBμ F(50:10) interference contour has been demonstrated through a downward radiation study as included in **Exhibit 13.7a**. Full protection will be afforded WBCI(FM) from 170 meters to the extent of the calculated 100.0 dBμ F(50:10) interference contour as this area will not reach the ground nor a 2 meter artificial plane representing a human at ground level when taking into account the downward radiation characteristics of the antenna as supplied by the antenna manufacturer. A copy of the antenna manufacturer specifications has been included in **Exhibit 13.7c**. The portion of the §74.1204(d) WBCI(FM) protection within 170 meters of the site are currently void of population, buildings (with the exception of the dedicated transmitter building) or major roads as noted in **Exhibit 13.7b**.



## Exhibit 13.6

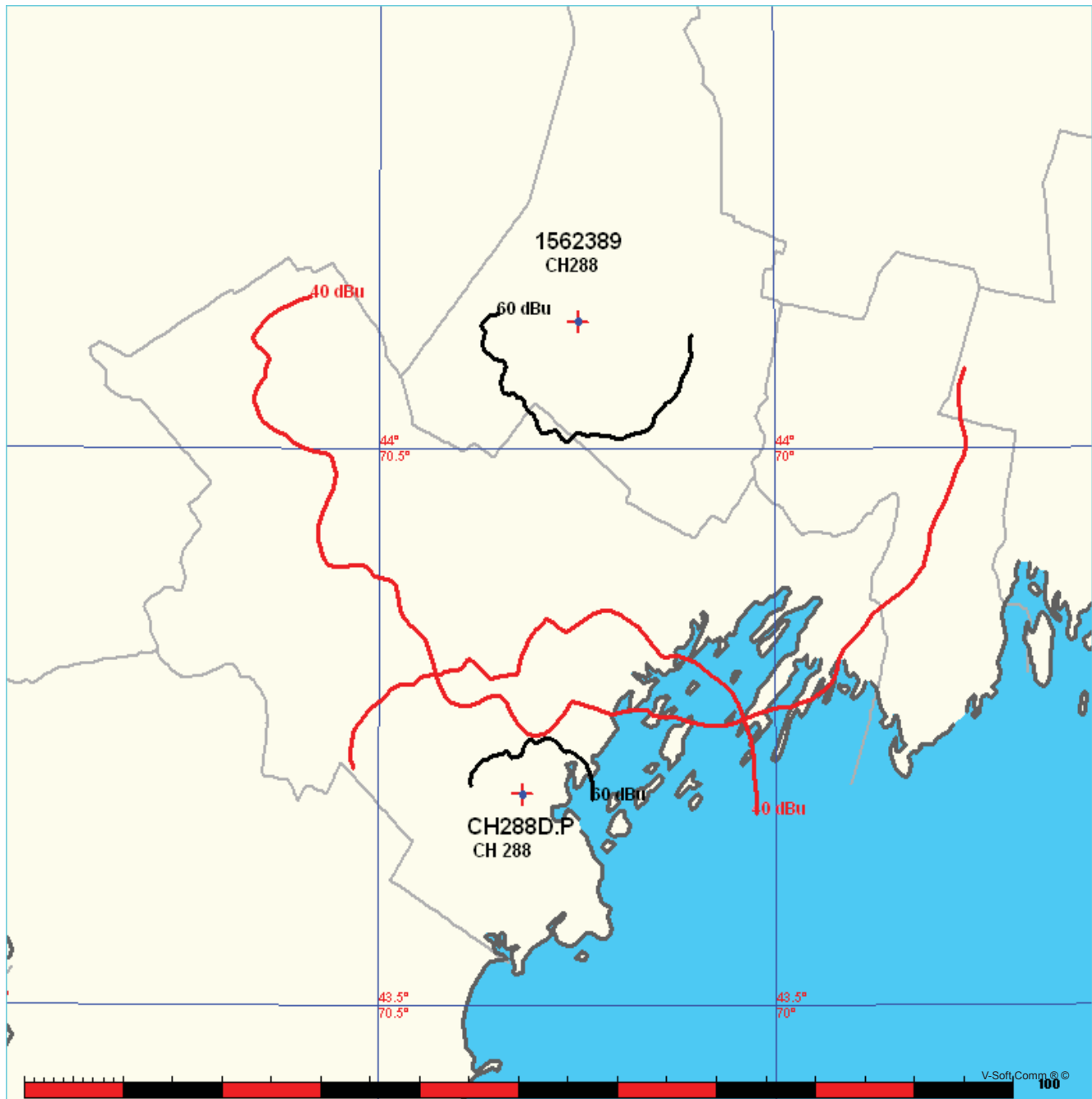
# Contour Protection Studies Toward APP288D - Lewiston, ME

Bible Broadcasting Network, Inc.

FMCommander Single Allocation Study - 08-01-2013 - NGDC 30 SEC  
CH288D.P's Overlaps (In= 0.63 km, Out= 18.31 km)

CH288D.P CH 288 D  
Lat= 43 41 26.0, Lng= 70 19 05.0  
0.019 kW 80 M HAAT, 111 M COR  
Prot.= 60 dBu, Intef.= 40 dBu

1562389 CH 288 D BNPFT20030317DOX  
Lat= 44 06 54.0, Lng= 70 14 52.0  
0.25 kW 0 M HAAT, 162 M COR  
Prot.= 60 dBu, Intef.= 40 dBu



## Exhibit 13.6

### Contour Protection Studies Toward APP288D - Lewiston, ME

08-01-2013

Terrain Data: NGDC 30 SEC

FMOver Analysis

CH288D.P

1562389 BNPFT20030317DOX

Channel = 288D

Max ERP = 0.019 kW

RCAMSL = 111 M

N. Lat. 43 41 26.0

W. Lng. 70 19 05.0

Protected

60 dBu

Channel = 288D

Max ERP = 0.25 kW

RCAMSL = 162 M

N. Lat. 44 06 54.0

W. Lng. 70 14 52.0

Interfering

40 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
324.0	000.0190	0046.7	004.7	190.9	000.0330	0076.7	044.2	29.09	
325.0	000.0190	0046.0	004.6	190.8	000.0329	0077.0	044.2	29.11	
326.0	000.0190	0045.6	004.6	190.7	000.0327	0077.3	044.1	29.13	
327.0	000.0190	0045.4	004.6	190.6	000.0325	0077.6	044.1	29.16	
328.0	000.0190	0044.9	004.5	190.5	000.0324	0077.9	044.1	29.18	
329.0	000.0190	0044.3	004.5	190.4	000.0322	0078.3	044.0	29.20	
330.0	000.0190	0043.5	004.5	190.3	000.0320	0078.7	044.0	29.22	
331.0	000.0190	0042.7	004.4	190.2	000.0318	0079.1	044.0	29.24	
332.0	000.0190	0042.3	004.4	190.1	000.0317	0079.4	044.0	29.27	
333.0	000.0190	0042.5	004.4	190.0	000.0315	0079.7	043.9	29.30	
334.0	000.0190	0043.1	004.4	190.0	000.0315	0079.9	043.9	29.33	
335.0	000.0190	0044.0	004.5	189.9	000.0314	0080.0	043.8	29.37	
336.0	000.0190	0044.9	004.5	189.9	000.0313	0080.2	043.7	29.41	
337.0	000.0190	0045.5	004.6	189.8	000.0312	0080.5	043.6	29.45	
338.0	000.0190	0045.2	004.6	189.7	000.0311	0080.8	043.6	29.48	
339.0	000.0190	0043.5	004.5	189.6	000.0308	0081.4	043.6	29.48	
340.0	000.0190	0040.9	004.3	189.4	000.0305	0082.1	043.7	29.48	
341.0	000.0171	0038.0	004.0	189.1	000.0301	0083.1	043.9	29.43	
342.0	000.0154	0034.2	003.7	188.9	000.0297	0083.9	044.2	29.36	
343.0	000.0137	0028.9	003.4	188.6	000.0293	0084.5	044.4	29.26	
344.0	000.0122	0023.8	003.3	188.5	000.0291	0084.8	044.5	29.23	
345.0	000.0107	0020.5	003.2	188.4	000.0289	0085.1	044.6	29.20	
346.0	000.0093	0018.0	003.1	188.2	000.0288	0085.3	044.6	29.17	
347.0	000.0080	0014.6	003.0	188.1	000.0286	0085.6	044.7	29.13	
348.0	000.0068	0011.9	002.9	188.0	000.0284	0085.8	044.8	29.10	
349.0	000.0057	0009.9	002.8	187.9	000.0283	0086.0	044.9	29.06	
350.0	000.0047	0008.4	002.6	187.8	000.0281	0086.3	045.0	29.02	
351.0	000.0043	0008.3	002.6	187.7	000.0280	0086.4	045.0	29.00	
352.0	000.0038	0009.5	002.5	187.6	000.0279	0086.6	045.1	28.98	
353.0	000.0034	0011.6	002.5	187.6	000.0277	0086.8	045.1	28.96	
354.0	000.0030	0014.4	002.4	187.5	000.0276	0087.0	045.2	28.94	
355.0	000.0027	0018.3	002.3	187.4	000.0275	0087.1	045.3	28.91	
356.0	000.0023	0021.9	002.2	187.4	000.0274	0087.3	045.3	28.89	
357.0	000.0020	0027.1	002.2	187.3	000.0273	0087.4	045.4	28.86	

**MUNN-REESE, INC.**

Broadcast Engineering Consultants  
COLDWATER, MI 49036

## Exhibit 13.6

### Contour Protection Studies Toward APP288D - Lewiston, ME

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
358.0	000.0017	0033.3	002.2	187.3	000.0273	0087.5	045.4	28.87
359.0	000.0014	0038.2	002.2	187.2	000.0272	0087.6	045.3	28.89
000.0	000.0012	0043.0	002.3	187.2	000.0271	0087.6	045.3	28.90
001.0	000.0012	0046.5	002.4	187.1	000.0271	0087.7	045.2	28.93
002.0	000.0012	0048.7	002.4	187.1	000.0270	0087.8	045.1	28.95
003.0	000.0012	0050.8	002.5	187.0	000.0269	0087.9	045.1	28.97
004.0	000.0012	0053.0	002.5	187.0	000.0269	0088.0	045.0	28.98
005.0	000.0012	0054.7	002.6	186.9	000.0268	0088.0	045.0	28.99
006.0	000.0012	0056.7	002.6	186.9	000.0267	0088.1	044.9	29.00
007.0	000.0012	0059.1	002.7	186.8	000.0266	0088.2	044.9	29.01
008.0	000.0012	0061.0	002.7	186.8	000.0265	0088.2	044.8	29.01
009.0	000.0012	0061.0	002.7	186.7	000.0264	0088.3	044.8	29.00
010.0	000.0012	0060.5	002.7	186.6	000.0264	0088.3	044.9	28.99
011.0	000.0012	0059.4	002.7	186.6	000.0263	0088.4	044.9	28.97
012.0	000.0012	0057.9	002.6	186.5	000.0262	0088.4	044.9	28.94
013.0	000.0012	0056.7	002.6	186.5	000.0261	0088.4	044.9	28.92
014.0	000.0012	0056.2	002.6	186.4	000.0260	0088.4	044.9	28.90
015.0	000.0012	0056.2	002.6	186.4	000.0260	0088.4	045.0	28.89
016.0	000.0012	0057.3	002.6	186.3	000.0259	0088.4	044.9	28.88
017.0	000.0012	0059.7	002.7	186.2	000.0258	0088.4	044.9	28.88
018.0	000.0012	0062.6	002.7	186.2	000.0257	0088.4	044.9	28.87
019.0	000.0012	0065.4	002.8	186.1	000.0256	0088.4	044.8	28.87
020.0	000.0012	0068.3	002.8	186.0	000.0255	0088.4	044.8	28.86
021.0	000.0012	0071.3	002.8	185.9	000.0253	0088.4	044.8	28.85
022.0	000.0012	0074.0	002.9	185.9	000.0252	0088.4	044.7	28.84
023.0	000.0012	0076.4	002.9	185.8	000.0251	0088.3	044.7	28.83
024.0	000.0012	0078.2	002.9	185.7	000.0250	0088.3	044.7	28.81
025.0	000.0012	0079.4	003.0	185.6	000.0249	0088.3	044.7	28.79
026.0	000.0012	0080.4	003.0	185.6	000.0248	0088.2	044.7	28.77
027.0	000.0012	0080.9	003.0	185.5	000.0247	0088.2	044.7	28.74
028.0	000.0012	0081.0	003.0	185.4	000.0246	0088.1	044.8	28.71
029.0	000.0012	0081.0	003.0	185.4	000.0246	0088.0	044.8	28.68
030.0	000.0012	0081.0	003.0	185.3	000.0245	0088.0	044.8	28.65
031.0	000.0014	0081.0	003.2	185.2	000.0243	0087.8	044.7	28.65
032.0	000.0017	0081.0	003.3	185.0	000.0240	0087.5	044.6	28.63
033.0	000.0020	0081.0	003.4	184.9	000.0241	0087.3	044.5	28.65
034.0	000.0023	0081.0	003.6	184.7	000.0242	0087.0	044.4	28.67
035.0	000.0027	0080.9	003.7	184.6	000.0242	0086.7	044.3	28.69
036.0	000.0030	0080.5	003.8	184.4	000.0243	0086.3	044.2	28.69
037.0	000.0034	0079.9	003.9	184.3	000.0244	0086.0	044.2	28.69
038.0	000.0038	0079.2	004.0	184.1	000.0244	0085.5	044.1	28.68
039.0	000.0043	0078.5	004.1	184.0	000.0245	0085.1	044.1	28.66
040.0	000.0047	0078.1	004.2	183.8	000.0245	0084.5	044.0	28.64
041.0	000.0057	0077.9	004.4	183.6	000.0247	0083.8	043.9	28.63
042.0	000.0068	0077.6	004.6	183.3	000.0248	0083.0	043.8	28.61
043.0	000.0080	0077.1	004.8	183.1	000.0249	0082.2	043.7	28.59



## Exhibit 13.6

### Contour Protection Studies Toward APP288D - Lewiston, ME

08-01-2013

Terrain Data: NGDC 30 SEC

FMOver Analysis

1562389 BNPFT20030317DOX

CH288D.P

Channel = 288D

Max ERP = 0.25 kW

RCAMSL = 162 M

N. Lat. 44 06 54.0

W. Lng. 70 14 52.0

Protected

60 dBu

Channel = 288D

Max ERP = 0.019 kW

RCAMSL = 111 M

N. Lat. 43 41 26.0

W. Lng. 70 19 05.0

Interfering

40 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
142.0	000.2500	0093.6	012.5	019.5	000.0190	0066.9	039.7	27.39	
143.0	000.2500	0096.3	012.6	019.5	000.0190	0067.0	039.4	27.51	
144.0	000.2500	0099.0	012.8	019.6	000.0190	0067.1	039.1	27.63	
145.0	000.2500	0100.8	012.9	019.5	000.0190	0067.0	038.9	27.71	
146.0	000.2500	0101.7	013.0	019.4	000.0190	0066.6	038.6	27.75	
147.0	000.2500	0101.9	013.0	019.2	000.0190	0066.0	038.4	27.77	
148.0	000.2500	0101.7	013.0	019.0	000.0190	0065.4	038.3	27.76	
149.0	000.2500	0101.2	012.9	018.7	000.0190	0064.7	038.1	27.74	
150.0	000.2500	0100.4	012.9	018.5	000.0190	0063.9	038.0	27.71	
151.0	000.2500	0099.4	012.8	018.2	000.0190	0063.0	037.9	27.65	
152.0	000.2500	0098.0	012.7	017.8	000.0190	0062.1	037.8	27.58	
153.0	000.2500	0096.8	012.7	017.5	000.0190	0061.2	037.7	27.52	
154.0	000.2500	0096.2	012.6	017.2	000.0190	0060.3	037.5	27.46	
155.0	000.2500	0095.6	012.6	017.0	000.0190	0059.5	037.4	27.41	
156.0	000.2500	0095.0	012.5	016.7	000.0190	0058.8	037.3	27.36	
157.0	000.2500	0094.8	012.5	016.4	000.0190	0058.1	037.2	27.33	
158.0	000.2500	0095.2	012.6	016.2	000.0190	0057.6	037.0	27.32	
159.0	000.2500	0095.4	012.6	015.9	000.0190	0057.1	036.9	27.31	
160.0	000.2500	0094.7	012.5	015.6	000.0190	0056.6	036.8	27.28	
161.0	000.2500	0093.3	012.4	015.2	000.0190	0056.3	036.7	27.25	
162.0	000.2500	0091.7	012.3	014.9	000.0190	0056.1	036.7	27.25	
163.0	000.2500	0090.3	012.2	014.5	000.0190	0056.1	036.6	27.26	
164.0	000.2500	0088.5	012.1	014.1	000.0190	0056.2	036.6	27.28	
165.0	000.2500	0086.4	012.0	013.7	000.0190	0056.3	036.7	27.28	
166.0	000.2500	0084.5	011.9	013.4	000.0190	0056.4	036.7	27.30	
167.0	000.2500	0084.0	011.8	013.1	000.0190	0056.6	036.6	27.35	
168.0	000.2500	0083.6	011.8	012.7	000.0190	0057.0	036.5	27.42	
169.0	000.2500	0081.9	011.7	012.4	000.0190	0057.4	036.6	27.48	
170.0	000.2500	0079.6	011.5	012.0	000.0190	0057.9	036.6	27.52	
171.0	000.2500	0078.6	011.5	011.7	000.0190	0058.3	036.6	27.58	
172.0	000.2500	0078.5	011.5	011.4	000.0190	0058.8	036.5	27.66	
173.0	000.2500	0078.5	011.5	011.1	000.0190	0059.3	036.5	27.75	
174.0	000.2500	0079.0	011.5	010.8	000.0190	0059.7	036.4	27.85	

**MUNN-REESE, INC.**

Broadcast Engineering Consultants

COLDWATER, MI 49036

## Exhibit 13.6

### Contour Protection Studies Toward APP288D - Lewiston, ME

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
175.0	000.2500	0079.4	011.5	010.5	000.0190	0060.2	036.3	27.94
176.0	000.2500	0078.5	011.5	010.2	000.0190	0060.4	036.3	27.97
177.0	000.2500	0076.9	011.4	009.8	000.0190	0060.6	036.4	27.97
178.0	000.2500	0076.1	011.3	009.5	000.0190	0060.7	036.4	27.98
179.0	000.2500	0075.2	011.2	009.2	000.0190	0060.9	036.4	27.99
180.0	000.2500	0074.2	011.2	008.9	000.0190	0061.1	036.4	28.00
181.0	000.2500	0074.0	011.2	008.6	000.0190	0061.3	036.4	28.02
182.0	000.2500	0078.1	011.4	008.3	000.0190	0061.2	036.1	28.14
183.0	000.2500	0081.9	011.7	008.0	000.0190	0061.1	035.9	28.23
184.0	000.2500	0085.2	011.9	007.7	000.0190	0060.7	035.6	28.28
185.0	000.2500	0087.5	012.1	007.4	000.0190	0060.0	035.5	28.27
186.0	000.2500	0088.4	012.1	007.1	000.0190	0059.3	035.4	28.20
187.0	000.2500	0087.9	012.1	006.7	000.0190	0058.5	035.4	28.09
188.0	000.2500	0085.8	012.0	006.4	000.0190	0057.8	035.6	27.93
189.0	000.2500	0083.4	011.8	006.1	000.0190	0057.0	035.7	27.75
190.0	000.2500	0079.8	011.6	005.8	000.0190	0056.2	036.0	27.54
191.0	000.2500	0076.5	011.3	005.5	000.0190	0055.5	036.2	27.35
192.0	000.2500	0074.8	011.2	005.2	000.0190	0055.0	036.4	27.22
193.0	000.2500	0075.4	011.3	004.9	000.0190	0054.6	036.3	27.16
194.0	000.2500	0077.3	011.4	004.6	000.0190	0054.0	036.2	27.11
195.0	000.2500	0079.5	011.5	004.2	000.0190	0053.4	036.1	27.06
196.0	000.2500	0081.3	011.7	003.9	000.0190	0052.7	036.1	26.99
197.0	000.2500	0082.3	011.7	003.5	000.0190	0052.0	036.0	26.89
198.0	000.2500	0082.5	011.7	003.2	000.0190	0051.3	036.1	26.76
199.0	000.2500	0082.0	011.7	002.9	000.0190	0050.6	036.2	26.60
200.0	000.2500	0080.8	011.6	002.6	000.0190	0050.0	036.3	26.45
201.0	000.2500	0078.3	011.5	002.4	000.0190	0049.5	036.5	26.29
202.0	000.2500	0075.0	011.2	002.2	000.0190	0049.1	036.8	26.12
203.0	000.2500	0071.8	011.0	002.1	000.0190	0048.8	037.1	25.95
204.0	000.2500	0068.9	010.8	001.9	000.0190	0048.5	037.3	25.80
205.0	000.2500	0066.2	010.6	001.8	000.0190	0048.1	037.6	25.65
206.0	000.2500	0064.2	010.5	001.6	000.0190	0047.8	037.8	25.51
207.0	000.2500	0063.3	010.4	001.4	000.0190	0047.3	037.9	25.38
208.0	000.2500	0062.9	010.4	001.2	000.0190	0046.8	038.0	25.25
209.0	000.2500	0062.4	010.4	000.9	000.0190	0046.4	038.1	25.14
210.0	000.2500	0061.8	010.3	000.7	000.0190	0046.1	038.3	25.04
211.0	000.2500	0061.1	010.3	000.5	000.0190	0045.6	038.4	24.90
212.0	000.2500	0060.0	010.2	000.4	000.0190	0044.9	038.6	24.71
213.0	000.2500	0058.1	010.0	000.3	000.0190	0044.3	038.8	24.54
214.0	000.2500	0056.1	009.9	000.2	000.0190	0044.0	039.0	24.39
215.0	000.2500	0054.6	009.7	000.1	000.0190	0043.5	039.2	24.23
216.0	000.2500	0054.1	009.7	359.9	000.0190	0042.8	039.4	24.04
217.0	000.2500	0054.5	009.7	359.7	000.0190	0041.6	039.4	23.81
218.0	000.2500	0055.4	009.8	359.5	000.0190	0040.4	039.5	23.55
219.0	000.2500	0056.0	009.8	359.2	000.0190	0039.2	039.5	23.31
220.0	000.2500	0055.7	009.8	359.0	000.0190	0038.4	039.7	23.11

# Exhibit 13.7a

## §74.1204(d) 2nd Adjacent Channel Given Interference Waiver Request Study Toward WBCI(FM)

Terrain  
-2 280 m

NGDC 30 SEC Terrain Database  
U.S. Census 2010 PL Database

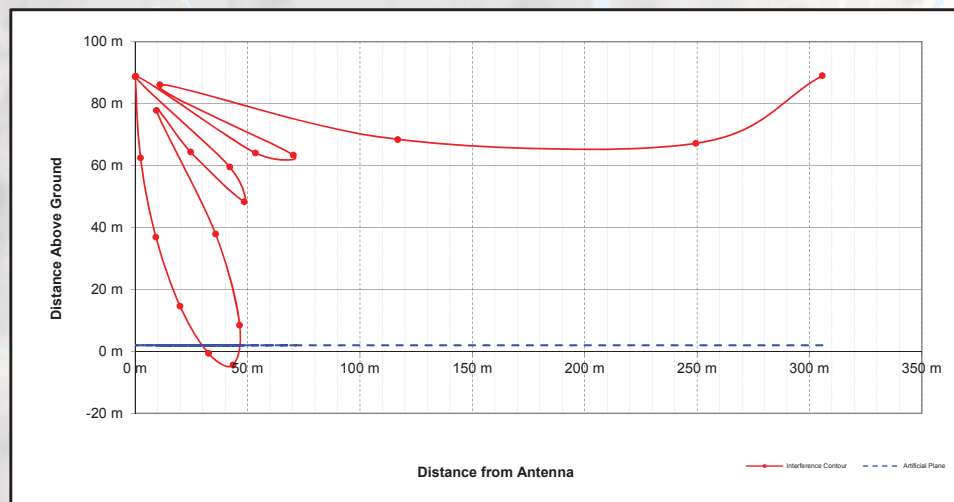
WBCI(FM)  
+

The portion of the §74.1204(d) WBCI(FM) - Bath, ME (CH290B) protection from 145 meters to the extent of the calculated 100.0 dBμ F(50:10) interference contour have been demonstrated through a downward radiation study as included in **Exhibit 13.7a**. Full protection will be afforded WBCI(FM) from 145 meters to the extent of the calculated 100.0 dBμ F(50:10) interference contour as this area will not reach the ground nor a two meter artificial plane representing a standard human at ground level when taking into account the downward radiation characteristics of the antenna as supplied by the antenna manufacturer. A copy of the antenna manufacturer specifications has been included in **Exhibit 13.8**.

The portion of the §74.1204(d) WBCI(FM) protection within 145 meters of the site are currently void of population, buildings (with the exception of the dedicated transmitter building) or major roads as noted in **Exhibit 13.7b**.

WBCI(FM)  
Bath, ME  
BLH7422  
Facility ID: 33288  
Latitude: 44-04-09 N  
Longitude: 069-55-28 W  
ERP: 50.00 kW  
Channel: 290B  
Frequency: 105.9 MHz  
AMSL Height: 213.0 m  
Horiz. Pattern: Omni

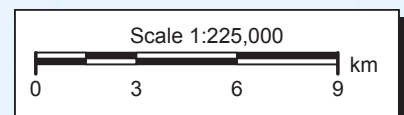
CH288D.long-form  
Portland, ME  
Proposed Operation  
Facility ID: 150422  
Latitude: 43-41-26 N  
Longitude: 070-19-05 W  
ERP: 0.019 kW  
Channel: 288D  
Frequency: 105.5 MHz  
AMSL Height: 111.0 m  
Horiz. Pattern: Omni



Proposed Antenna: PSIFML-4A (Four Bay Fully Spaced)								
Proposed Power: 0.019 kW								
Antenna Height AGL: 89 meters								
Interference Contour: 100 dBμ F(50:10)								
Artificial Ground Plane Height: 2 meters								
Distance (Free Space) Equation: $= (10^{((106.92 - [\text{desired dB}\mu] + [\text{ERP in dBK}]/20))}) * 1000$								
Field Strength (dBμ) Equation: $= 106.92 - (20 * (\text{LOG}_{10}[\text{DistMeters}/1000])) + [\text{ERP in dBK}]$								
Depression	Antenna	ERP	ERP	Distance	Distance	Field Strength	Distance	Field Strength
Angle	Relative	in kW	in dBK	from Ant.	from Ant. to	in dBμ @	from Ant.	in dBμ @
Below	Field			Contour	Artificial Plane	Artificial Plane	to Ground Level	Ground Level
Horizon								
0°	1.000	0.019	-17.21	305.76 m	infinite	---	---	---
-5°	0.819	0.013	-18.95	250.42 m	998.21 m	87.99 dBμ	1021.16 m	87.79 dBμ
-10°	0.388	0.003	-25.44	118.63 m	501.01 m	87.49 dBμ	512.53 m	87.29 dBμ
-15°	0.037	0.000	-45.85	11.31 m	336.14 m	70.54 dBμ	343.87 m	70.34 dBμ
-20°	0.245	0.001	-29.43	74.91 m	254.37 m	89.38 dBμ	260.22 m	89.18 dBμ
-25°	0.193	0.001	-31.50	59.01 m	205.86 m	89.15 dBμ	210.59 m	88.95 dBμ
-30°	0.001	0.000	-77.21	0.31 m	174.00 m	44.90 dBμ	178.00 m	44.70 dBμ
-35°	0.168	0.001	-32.71	51.37 m	151.68 m	90.60 dBμ	155.17 m	90.40 dBμ
-40°	0.207	0.001	-30.89	63.29 m	135.35 m	93.40 dBμ	138.46 m	93.20 dBμ
-45°	0.114	0.000	-36.07	34.86 m	123.04 m	89.04 dBμ	125.87 m	88.85 dBμ
-50°	0.048	0.000	-43.59	14.68 m	113.57 m	82.23 dBμ	116.18 m	82.03 dBμ
-55°	0.204	0.001	-31.02	62.37 m	106.21 m	95.38 dBμ	108.65 m	95.18 dBμ
-60°	0.304	0.002	-27.55	92.95 m	100.46 m	99.33 dBμ	102.77 m	99.13 dBμ
-65°	0.337	0.002	-26.66	103.04 m	95.99 m	100.62 dBμ	98.20 m	100.42 dBμ
-70°	0.312	0.002	-27.33	95.40 m	92.58 m	100.26 dBμ	94.71 m	100.06 dBμ
-75°	0.252	0.001	-29.18	77.05 m	90.07 m	98.64 dBμ	92.14 m	98.45 dBμ
-80°	0.173	0.001	-32.45	52.90 m	88.34 m	95.55 dBμ	90.37 m	95.35 dBμ
-85°	0.087	0.000	-38.42	26.60 m	87.33 m	89.67 dBμ	89.34 m	89.48 dBμ
-90°	0.001	0.000	-77.21	0.31 m	87.00 m	50.92 dBμ	89.00 m	50.72 dBμ

CH288D.long-form+

WBCI(FM) - 60.0 dBμ F(50:50)





**Exhibit 13.7b - Copy of USGS Aerial  
Photograph of Existing Site &  
§74.1204(d) Second Adjacent Channel  
Given Interference Waiver Request with  
WBCI(FM) - Bath, ME (CH290B)**

**Proposed Site  
43° 41' 26" NL  
70° 19' 05" WL  
NAD 1927**

(43-41-26.4 NL; 70-19-03.0 WL NAD83)

**145 meter Radius**

The portion of the §74.1204(d) WBCI(FM) - Bath, ME (CH290B) protection from 145 meters to the extent of the calculated 100.0 dBμ F(50:10) interference contour have been demonstrated through a downward radiation study as included in **Exhibit 13.7a**. Full protection will be afforded WBCI(FM) from 145 meters to the extent of the calculated 100.0 dBμ F(50:10) interference contour as this area will not reach the ground nor a two meter artificial plane representing a standard human at ground level when taking into account the downward radiation characteristics of the antenna as supplied by the antenna manufacturer. A copy of the antenna manufacturer specifications has been included in **Exhibit 13.8**.

The portion of the §74.1204(d) WBCI(FM) protection within 145 meters of the site are currently void of population, buildings (with the exception of the dedicated transmitter building) or major roads as noted in **Exhibit 13.7b**.

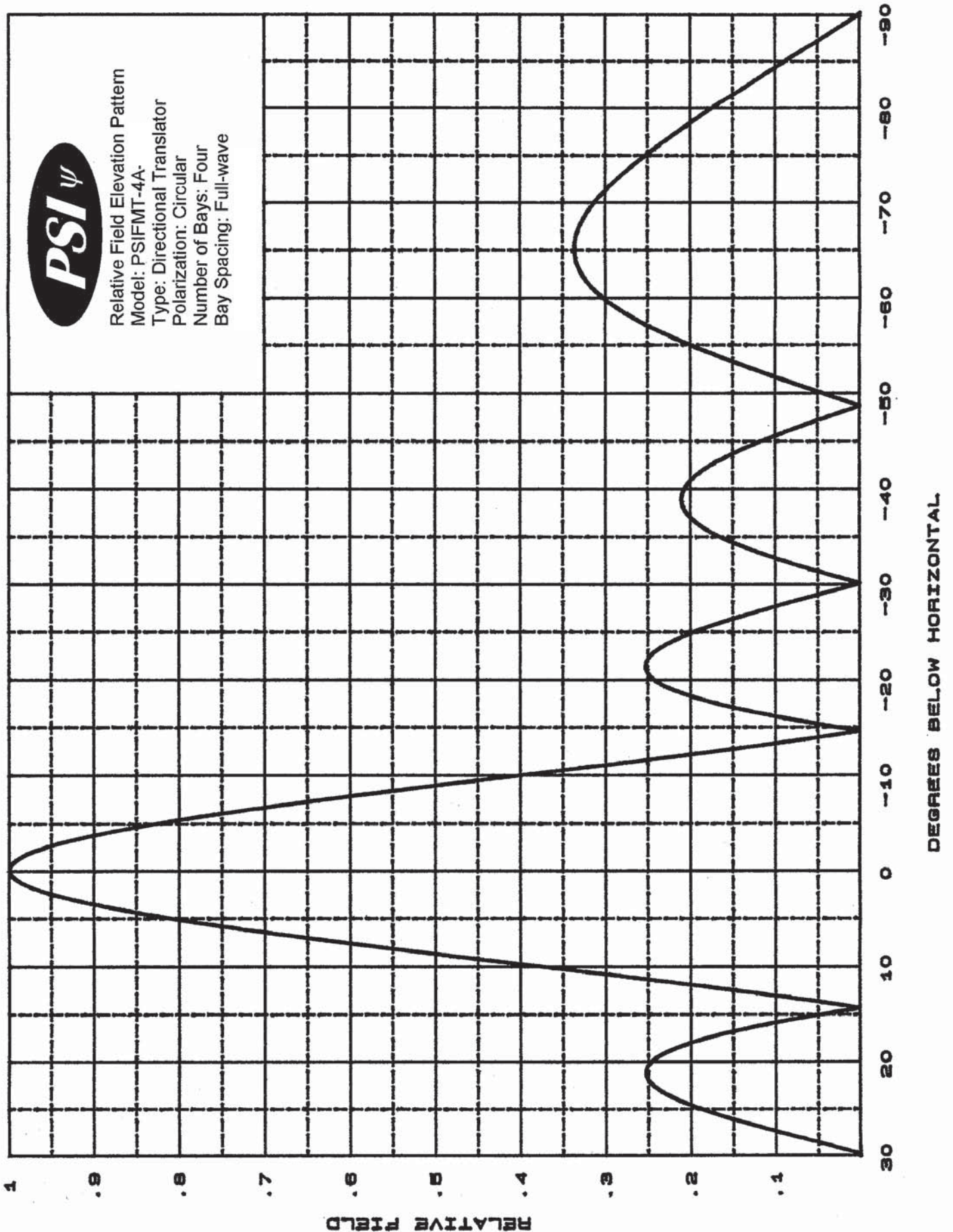


0 300 600ft

USGS  
The National Map



# Exhibit 13.8 - Copy of Manufacturer's Vertical Radiation Data





# Exhibit 13.8 - Copy of Manufacturer's Vertical Radiation Data



**Propagation Systems Inc.**  
Elevation Pattern Tabulation  
Antenna Model: PSIFMT-4A  
Bay spacing: Fullwave

Angle	Field	dB	Angle	Field	dB	Angle	Field	dB
-90.0	0.001	-60.000	-50.0	0.048	-26.315	-10.0	0.388	-8.216
-89.0	0.017	-35.177	-49.0	0.014	-36.928	-9.0	0.483	-6.326
-88.0	0.035	-29.156	-48.0	0.020	-34.179	-8.0	0.575	-4.804
-87.0	0.052	-25.634	-47.0	0.053	-25.584	-7.0	0.663	-3.563
-86.0	0.070	-23.136	-46.0	0.084	-21.489	-6.0	0.745	-2.553
-85.0	0.087	-21.198	-45.0	0.114	-18.890	-5.0	0.819	-1.738
-84.0	0.104	-19.626	-44.0	0.140	-17.049	-4.0	0.882	-1.095
-83.0	0.122	-18.297	-43.0	0.164	-15.714	-3.0	0.932	-0.609
-82.0	0.139	-17.153	-42.0	0.183	-14.750	-2.0	0.970	-0.269
-81.0	0.156	-16.151	-41.0	0.198	-14.085	-1.0	0.992	-0.067
-80.0	0.173	-15.260	-40.0	0.207	-13.676	0.0	1.000	0.000
-79.0	0.189	-14.460	-39.0	0.211	-13.512	1.0	0.992	-0.067
-78.0	0.205	-13.746	-38.0	0.209	-13.587	2.0	0.970	-0.269
-77.0	0.221	-13.104	-37.0	0.202	-13.914	3.0	0.932	-0.609
-76.0	0.237	-12.517	-36.0	0.188	-14.529	4.0	0.882	-1.094
-75.0	0.252	-11.989	-35.0	0.168	-15.492	5.0	0.819	-1.737
-74.0	0.266	-11.515	-34.0	0.143	-16.901	6.0	0.745	-2.552
-73.0	0.279	-11.095	-33.0	0.113	-18.959	7.0	0.664	-3.561
-72.0	0.291	-10.720	-32.0	0.078	-22.121	8.0	0.575	-4.802
-71.0	0.302	-10.392	-31.0	0.040	-27.861	9.0	0.483	-6.323
-70.0	0.312	-10.114	-30.0	0.001	-60.000	10.0	0.388	-8.213
-69.0	0.321	-9.881	-29.0	0.041	-27.700	11.0	0.294	-10.621
-68.0	0.327	-9.698	-28.0	0.083	-21.647	12.0	0.203	-13.855
-67.0	0.332	-9.566	-27.0	0.123	-18.221	13.0	0.116	-18.718
-66.0	0.336	-9.483	-26.0	0.160	-15.926	14.0	0.035	-29.007
-65.0	0.337	-9.460	-25.0	0.193	-14.301	15.0	0.037	-28.679
-64.0	0.335	-9.495	-24.0	0.220	-13.164	16.0	0.100	-20.013
-63.0	0.331	-9.594	-23.0	0.240	-12.412	17.0	0.153	-16.322
-62.0	0.325	-9.758	-22.0	0.251	-12.010	18.0	0.195	-14.220
-61.0	0.316	-10.005	-21.0	0.253	-11.942	19.0	0.225	-12.951
-60.0	0.304	-10.336	-20.0	0.245	-12.233	20.0	0.245	-12.233
-59.0	0.290	-10.761	-19.0	0.225	-12.951	21.0	0.253	-11.942
-58.0	0.272	-11.300	-18.0	0.195	-14.213	22.0	0.251	-12.010
-57.0	0.252	-11.968	-17.0	0.153	-16.313	23.0	0.240	-12.412
-56.0	0.229	-12.794	-16.0	0.100	-20.000	24.0	0.220	-13.164
-55.0	0.204	-13.816	-15.0	0.037	-28.643	25.0	0.193	-14.301
-54.0	0.176	-15.087	-14.0	0.035	-29.044	26.0	0.160	-15.918
-53.0	0.146	-16.691	-13.0	0.116	-18.729	27.0	0.123	-18.221
-52.0	0.115	-18.797	-12.0	0.203	-13.862	28.0	0.083	-21.647
-51.0	0.082	-21.727	-11.0	0.294	-10.626	29.0	0.041	-27.700