

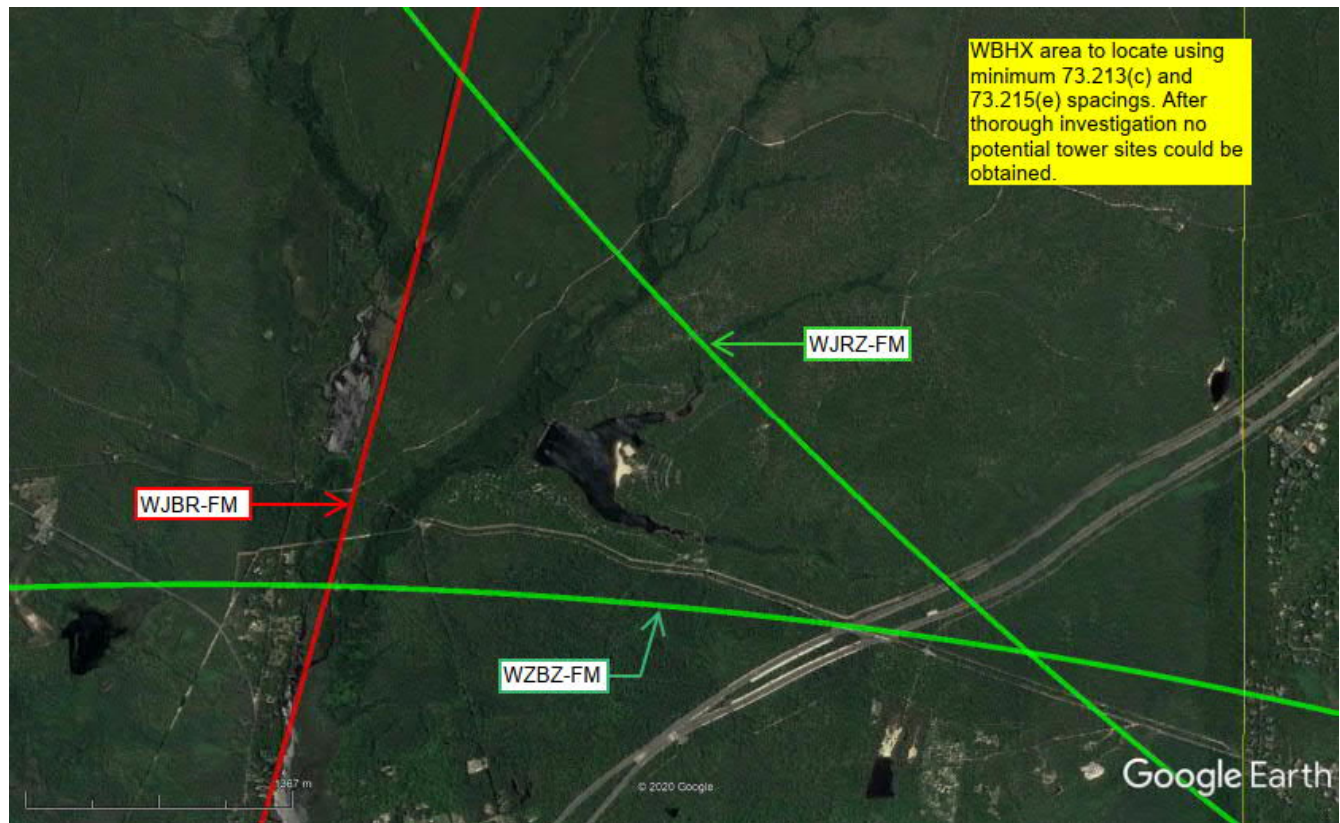
**WBHX(FM)
TUCKERTON, NJ
MINOR CHANGES**

WBHX (# 56233), a grandfathered 3 kW class A facility lost its licensed site in late 2017. That site was §73.207 short-spaced. In fact, there is no possible §73.207, fully-spaced site, and the very small area which meets 73.213(c) spacings is a beach front residential area in which tower construction is not possible (see below and E2).



Another small area which meets 73.213(c) spacings and minimum 73.215(e) short-spacing to WJRB-FM is shown below. This area was thoroughly investigated for the possibility of new tower construction with no success. The tower proposed in this application is the only viable option.

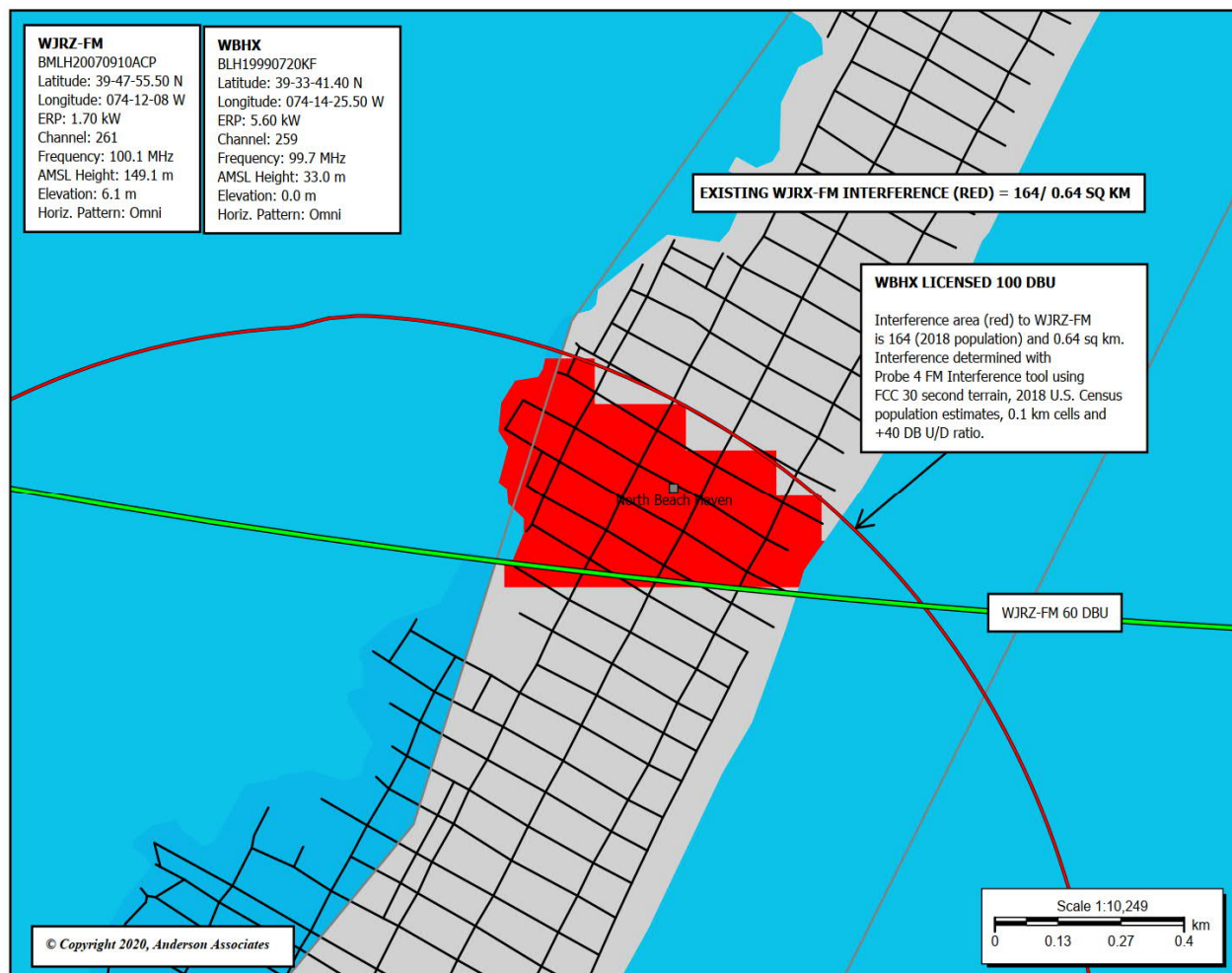
Small area meeting 73.213(c) and 73.215(e) spacings:



Since December, 2017, WBHX has operated with STAs. Through this application, WBHX requests a new licensed site at ASR #1210613 from which it has operated an STA since November, 2018 with no detrimental impact on existing stations and which represents the tower which has the least impact on existing stations.

The former WBHX licensed site was short-spaced to station WJRZ-FM on 2nd adjacent channel 261A and, in fact, caused an area of interference to the station of 0.64 sq km with a population of 164 (2018 U.S. Census estimates). This interference was determined using the V-Soft Probe 4 FM interference tool, the FCC 30 second terrain database and 2nd adjacent channel +40 dB ratio (see E1A).

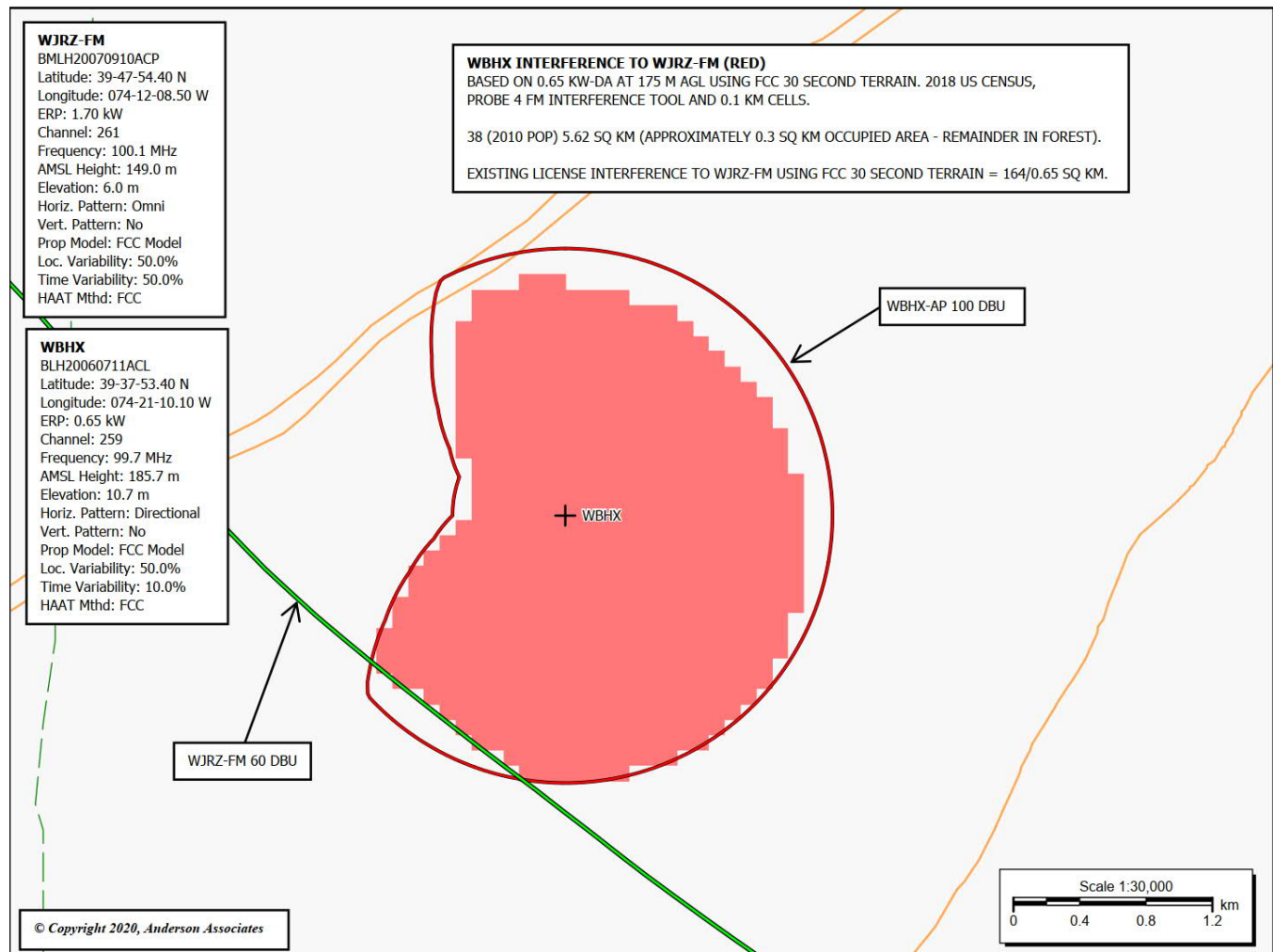
Interference to short-spaced WJRZ-FM at the former licensed site (E1A):



The WBHX application's interference to WJRZ-FM is substantially less and was determined using the same methodology to include a population of only 38 (2018) in an area of 5.62 sq km¹. This represents only 0.014% of the WJRZ-FM 60 dBu population and a dramatic decrease in interference population from 164 to 38. The actual area that could be occupied is only approximately 0.3 sq km since most of the area is heavily forested (see below and E1B).

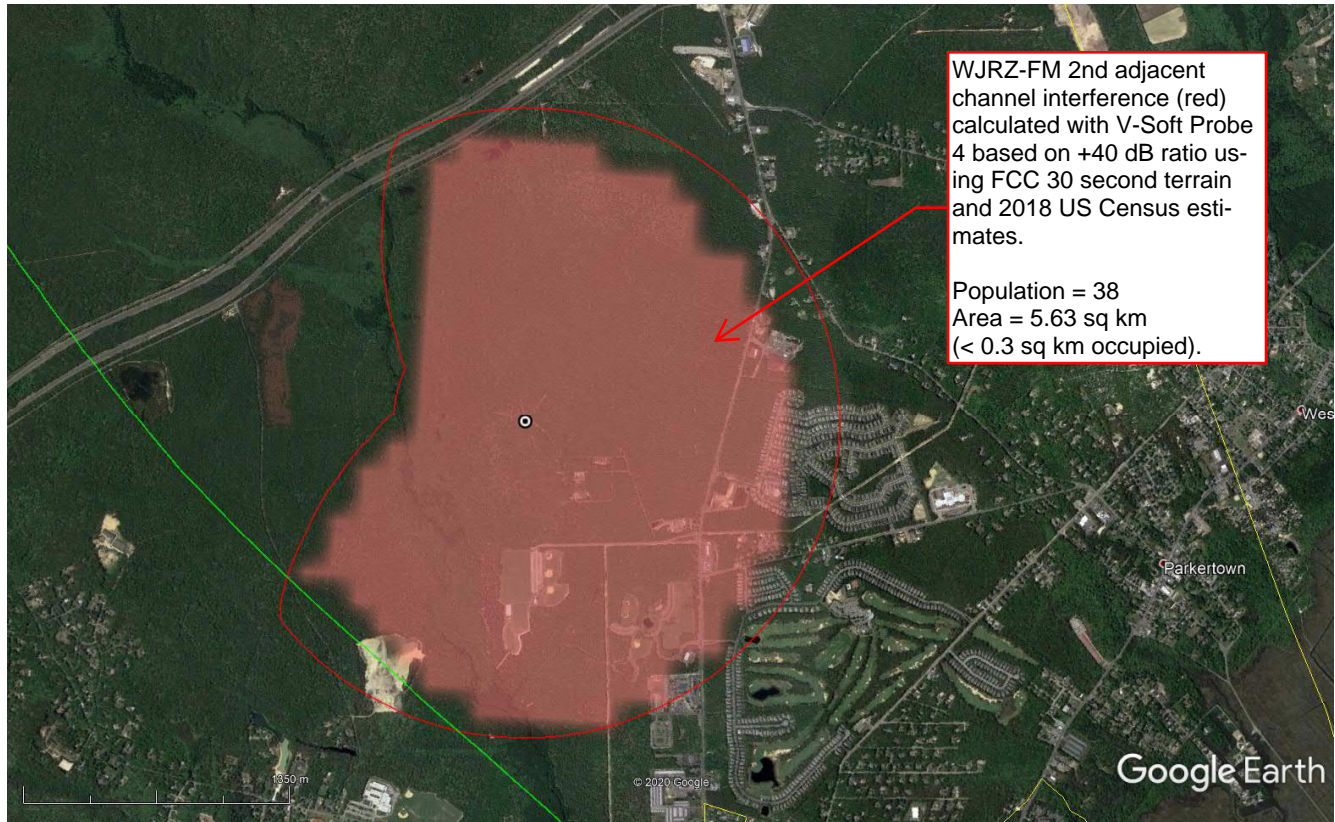
¹ The Probe 4 FM interference tool determines the Desired and Undesired signals in 0.1 km cells based on FCC ratios - in this case +40 dB. The FCC 30 second terrain database was used to determine HAAT in one degree increments and the 2018 U.S. Census estimate database for populations. This method provides a more accurate determination than the use of intersecting contours.

Application site interference to WJRZ-FM (population = 38):



The actual calculated interference area is depicted in red. Since the proposed interference area is “new”, an analysis of the other full-time aural services available in the small area shows at least thirteen (13) FM 60 dBu or greater signals (see E1B1). Furthermore, WBHX has operated from this site for more than a year at 450 Watts and 45.7 meters AGL with no adverse impact on WJRZ-FM.

Google Earth view of WJRZ-FM interference area (RED):



WBHX service area increase and interference received (E1C):

The proposed WBHX facility provides a substantial increase in the 60 dBu service area when compared to the licensed facility. The 60 dBu (2018 U.S. Census Estimate) population is 106,666 in an area of 1,339.4 sq km or an increase in population of 64,953 (+156%) and 529.5 sq km (+65.4%) (see E1D). At the same time, a small area of 2.8 sq km of received interference with a population of 835 is created. That is only 0.78% of the 60 dBu population and *deminimis*. In *WKTU, August 23, 2002*², the Commission waived 73.213(c) and approved a 2.5 km increase in short-spacing to WBZO(FM) and an increase in WKTU interference received from WBZO(FM) by 21,600 in an area of 13 sq km which was requested on the basis of the fact that it was less than 1% of the coverage area. The WBHX area of received interference was calculated using the same methodology described above.

² Letter to Doran Bunkin, Esq. On August 23, 2002 authorizing a minor change for WKTU(FM) which included a 73.213(c) waiver and an increase in interference received of 21,600 and 13 sq km.

Anderson Associates

Broadcast Engineering Consultants

Allocation analysis:

The FCC 30 second terrain database and the 2018 U.S. Census population estimates were used throughout. The following exhibits are provided:

E1A	Existing interference to WJRZ-FM
E1B	Proposed interference to WJRZ-FM
E1C	WBHX proposed interference received
E1D	WBHX increase in coverage
E2	§73.213(c) fully-spaced area
E3	Proposed and existing WBHX channel studies
E4	WJBR-FM interference plot
E5	Directional antenna pattern and tabulation
E6	WBHX 70 dBu
E7	ASR

Exhibit E3 demonstrates that the proposed WBHX facility meets Commission §73.207 spacing requirements with the exception of WJBR-FM to which §73.215 is elected, WZBZ-FM to which the short-spacing is reduced by 2.0 km and WJRZ-FM to which a waiver of 73.213(c) is requested similar to that granted by letter for *WKTU, August 23, 2003*.

Exhibit E4 demonstrates clearance to WJBR-FM and exhibit E6 demonstrates that the proposed facility will entirely encompass Tuckerton, NJ with a 70 dBu (50:50) contour.

ERP/ HAAT:

N 39-37-53.4 W 74-21-10.1

FCC, FM 2-10 Miles, 51 points Method - FCC 30 SEC

Az	AV	EL	HAAT	ERP kW	dBk	Field	60-F5	70-F5
000	25.1	160.6	0.6500	-1.87	1.000	21.11	11.76	
045	10.0	175.7	0.6500	-1.87	1.000	22.01	12.32	
090	0.0	185.7	0.6500	-1.87	1.000	22.55	12.64	
135	0.0	185.7	0.6500	-1.87	1.000	22.55	12.64	
180	0.5	185.2	0.6500	-1.87	1.000	22.52	12.63	
225	1.9	183.8	0.5682	-2.45	0.935	21.76	12.19	
270	6.1	179.6	0.0939	-10.28	0.380	13.61	7.65	
315	20.3	165.4	0.2580	-5.88	0.630	17.00	9.54	

Ave El= 8.00 M HAAT= 177.70 M AMSL= 185.7 M

The facility will operate at 0.65 kW at 177.7 meters HAAT with a 60 dbu of 22.12 km which is

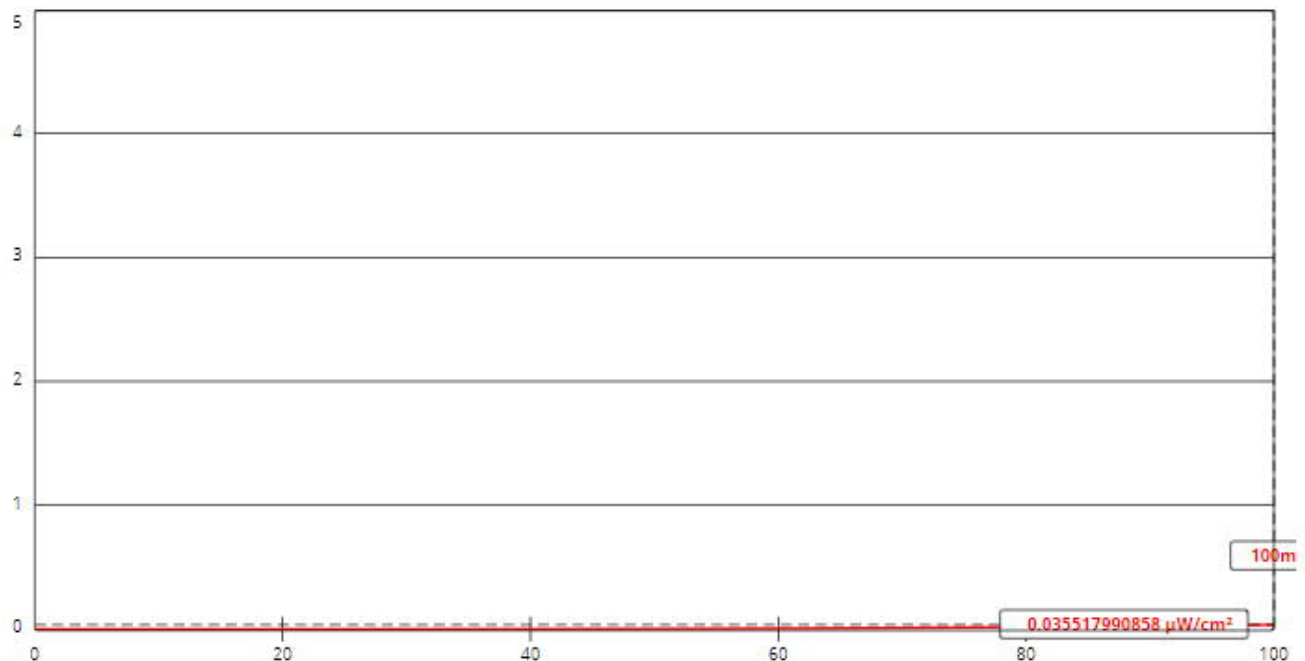
Anderson Associates

Broadcast Engineering Consultants

less than the 24 km permitted for a grand-fathered 3 kW class A.

Antenna and RF calculation:

The facility will utilize a Shively 6822-DA-SS two bay half-wave circularly polarized antenna with the radiation center at 175 meters AGL. The RF contribution of the facility was calculated using FMMODEL to be $0.036 \mu\text{W}/\text{cm}^2$ or 0.02 % of the maximum general public exposure, and less than the 5% which requires consideration.



[View Tabular Results +](#)

Channel Selection	Channel 259 (99.7 MHz) ▾		
Antenna Type +	EPA Type 1: Ring-and-Stub or "Other" ▾		
Height (m)	<input type="text" value="175"/>	Distance (m)	<input type="text" value="100"/>
ERP-H (W)	<input type="text" value="650"/>	ERP-V (W)	<input type="text" value="650"/>
Num of Elements	<input type="text" value="2"/>	Element Spacing (λ)	<input type="text" value=".5"/>
Num of Points	<input type="text" value="500"/>	<input type="button" value="Apply"/>	

Anderson Associates

Broadcast Engineering Consultants

Conclusion:

It is concluded that the grant of the WBHX application including the §73.213(c) waiver of a *deminimis* amount of interference caused (38 persons or 0.014% of the WJRZ-FM 60 dBu) will serve the public interest. Over several years, the applicant has exhausted the possibility of other towers as well as construction of a new tower. The preservation of the WBHX facility and its service depends on the grant of this application at the proposed site which results in the least amount of interference from available towers and from which an STA has been operated for more than a year with no negative impact.



Charles M. Anderson 3-27-2020
cmanderson43@yahoo.com
270-535-4432

WJRZ-FM

BMLH20070910ACP
Latitude: 39-47-55.50 N
Longitude: 074-12-08 W
ERP: 1.70 kW
Channel: 261
Frequency: 100.1 MHz
AMSL Height: 149.1 m
Elevation: 6.1 m
Horiz. Pattern: Omni

WBHX

BLH19990720KF
Latitude: 39-33-41.40 N
Longitude: 074-14-25.50 W
ERP: 5.60 kW
Channel: 259
Frequency: 99.7 MHz
AMSL Height: 33.0 m
Elevation: 0.0 m
Horiz. Pattern: Omni

E1A**EXISTING WJRZ-FM INTERFERENCE (RED) = 164/ 0.64 SQ KM****WBHX LICENSED 100 DBU**

Interference area (red) to WJRZ-FM is 164 (2018 population) and 0.64 sq km. Interference determined with Probe 4 FM Interference tool using FCC 30 second terrain, 2018 U.S. Census population estimates, 0.1 km cells and +40 DB U/D ratio.

North Beach Haven

WJRZ-FM 60 DBU

Scale 1:10,249

0 0.13 0.27 0.4 km

E1B

WJRZ-FM

BMLH20070910ACP
Latitude: 39-47-54.40 N
Longitude: 074-12-08.50 W
ERP: 1.70 kW
Channel: 261
Frequency: 100.1 MHz
AMSL Height: 149.0 m
Elevation: 6.0 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: FCC Model
Loc. Variability: 50.0%
Time Variability: 50.0%
HAAT Mthd: FCC

WBHX

BLH20060711ACL
Latitude: 39-37-53.40 N
Longitude: 074-21-10.10 W
ERP: 0.65 kW
Channel: 259
Frequency: 99.7 MHz
AMSL Height: 185.7 m
Elevation: 10.7 m
Horiz. Pattern: Directional
Vert. Pattern: No
Prop Model: FCC Model
Loc. Variability: 50.0%
Time Variability: 10.0%
HAAT Mthd: FCC

WBHX INTERFERENCE TO WJRZ-FM (RED)

BASED ON 0.65 KW-DA AT 175 M AGL USING FCC 30 SECOND TERRAIN. 2018 US CENSUS,
PROBE 4 FM INTERFERENCE TOOL AND 0.1 KM CELLS.

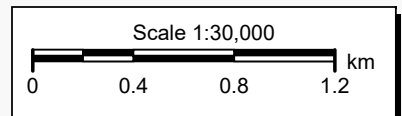
38 (2010 POP) 5.62 SQ KM (APPROXIMATELY 0.3 SQ KM OCCUPIED AREA - REMAINDER IN FOREST).

EXISTING LICENSE INTERFERENCE TO WJRZ-FM USING FCC 30 SECOND TERRAIN = 164/0.65 SQ KM.

WBHX-AP 100 DBU

WJRZ-FM 60 DBU

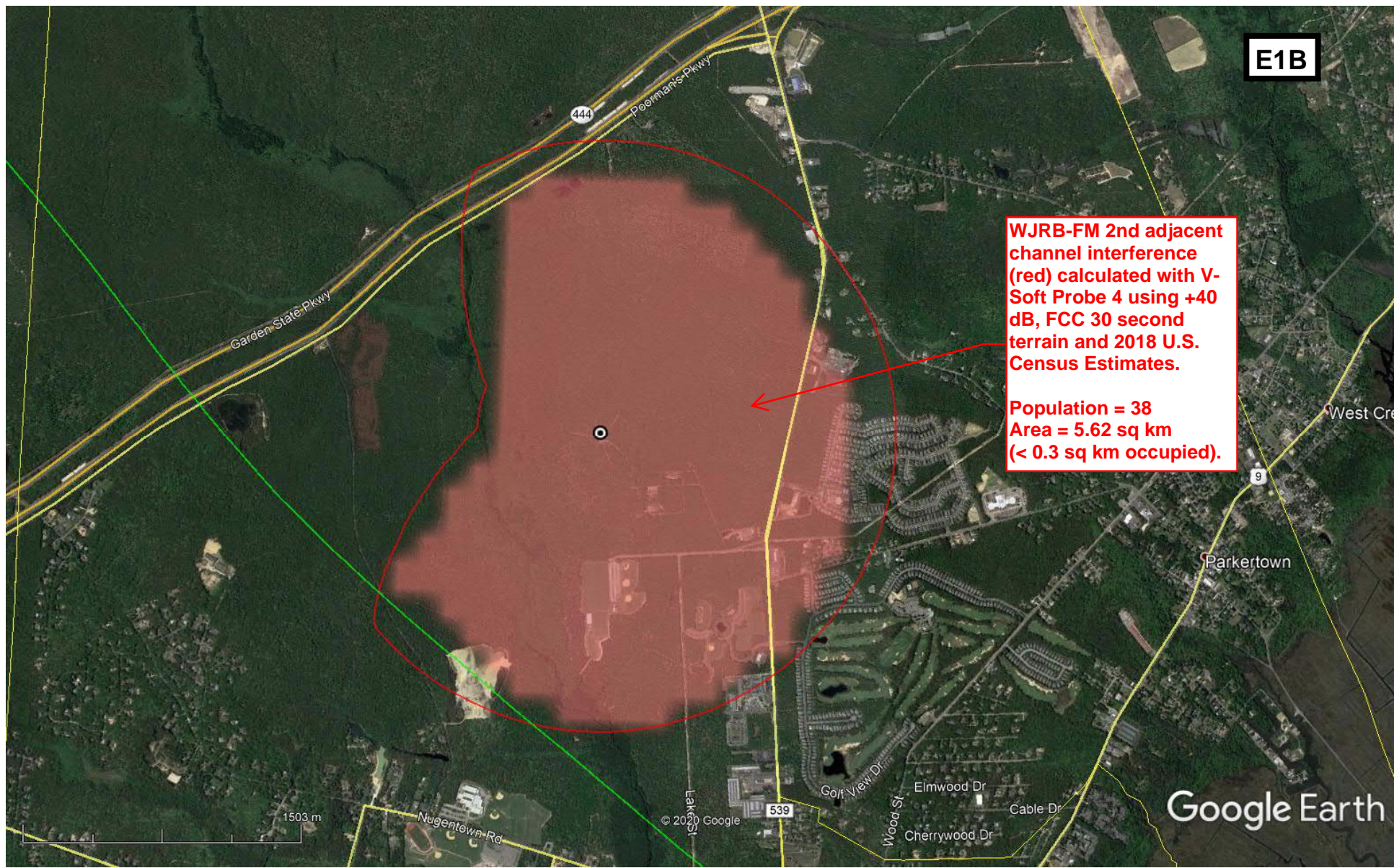
+ WBHX



E1B

WJRB-FM 2nd adjacent
channel interference
(red) calculated with V-
Soft Probe 4 using +40
dB, FCC 30 second
terrain and 2018 U.S.
Census Estimates.

Population = 38
Area = 5.62 sq km
(< 0.3 sq km occupied).



E1B1 V-SOFT PROBE 4 WJRZ-FM INTERFERENCE REPORT

WJRZ-FM (261) Manahawkin, NJ - BMLH20070910ACP

Lat: 39-47-54.40 N Lng: 074-12-08.50 W [NAD83]

ERP: 1.70 kW AMSL: 149.0 m

FM Interference Study

Protected: FCC F(50-50): 60 dBu

Interference considered within FCC interfering contour.

D/U Ratios Used:

Co: 20.0 dB

First Adj: 6.0 dB

Second Adj: -40.0 dB

Third Adj: -40.0 dB

Threshold for reception: 30.0 dBu.

Signal Resolution: 0.1 km

Study Date: 3/11/2020

FM Database Date: 3/11/2020

Terrain: FCC 30 Second US Database

Population Database: 2018 US Census Estimate

Percentages calculated using a baseline population of 278,666.

Stations which cause interference:

Call Letters	H Units	Population	%	Area (sq. km)
WBHX (259)	16	38	0.014	5.62

E1B1

WBHX-AP
BLH19990720KF
Latitude: 39-37-53.40 N
Longitude: 074-21-10.10 W
ERP: 0.65 kW
Channel: 259
Frequency: 99.7 MHz
AMSL Height: 185.7 m
Elevation: 10.7 m
Horiz. Pattern: Directional

**WBHX 100 DBU AREA
ENCOMPASSED BY 10+
FM 60 DBU+ AURAL SERVICES.**

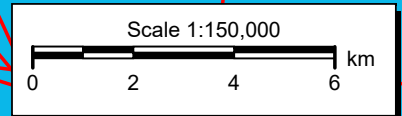
Services WBHX: FCC 100.00 dBu

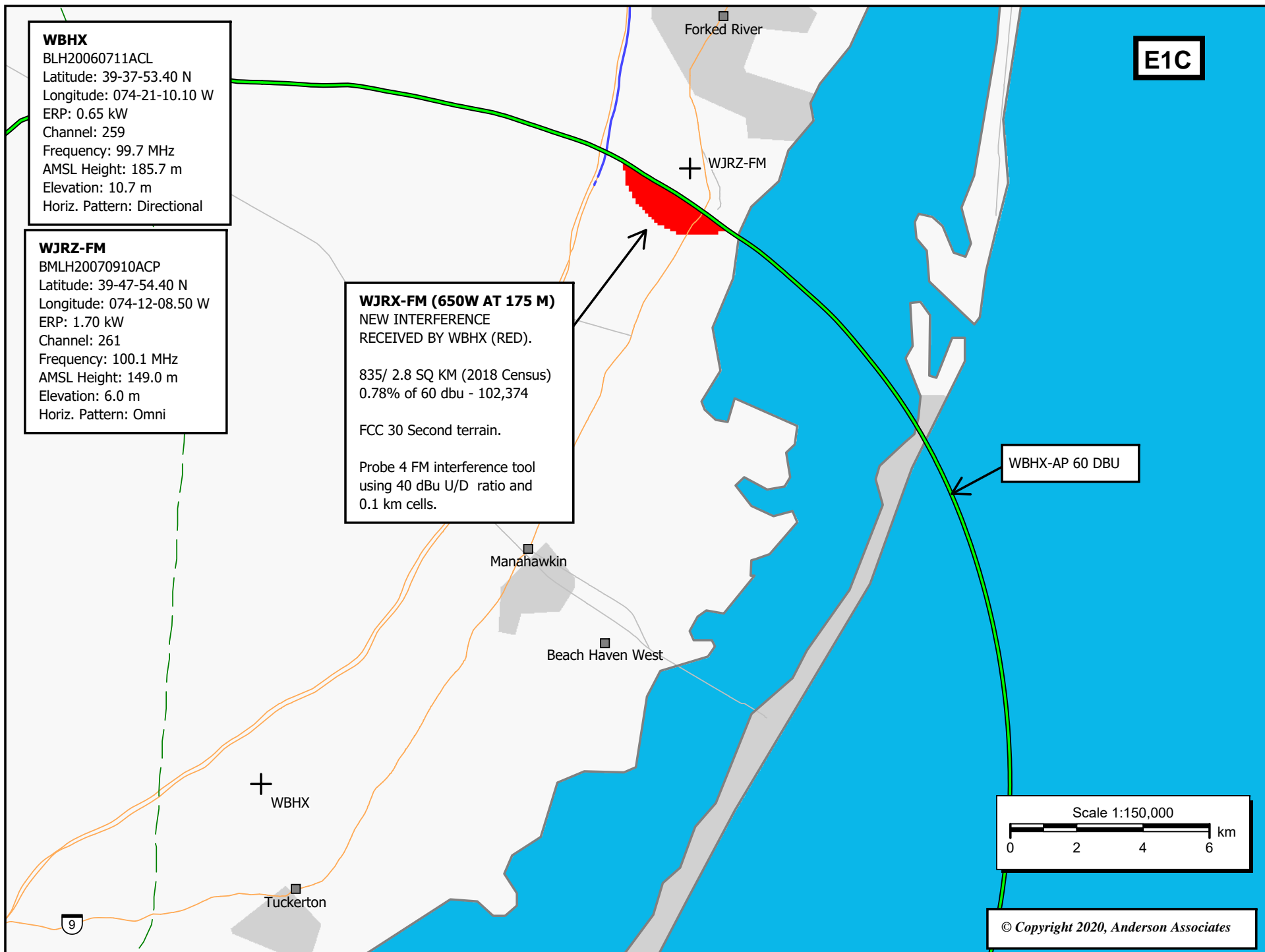
1	2	3	4	5	6	7	8	9	10 or more

WBHX (259): FCC 100.00 dBu

Contours that completely cover the reference area (13):

WEHA	(204) : FCC F(50-50)	60.00 dBu
WYRS	(214) : FCC F(50-50)	60.00 dBu
WBNJ	(220) : FCC F(50-50)	60.00 dBu
WAYV	(236) : FCC F(50-50)	60.00 dBu
WFPG	(245) : FCC F(50-50)	60.00 dBu
WENJ	(247) : FCC F(50-50)	60.00 dBu
WBBO	(253) : FCC F(50-50)	60.00 dBu
WMGM	(279) : FCC F(50-50)	60.00 dBu
WSJO	(285) : FCC F(50-50)	60.00 dBu
WCHR-FM	(289) : FCC F(50-50)	60.00 dBu
WCHR-FM	(289) : FCC F(50-50)	60.00 dBu
WTHJ	(293) : FCC F(50-50)	60.00 dBu
WPUR	(297) : FCC F(50-50)	60.00 dBu





WBHX

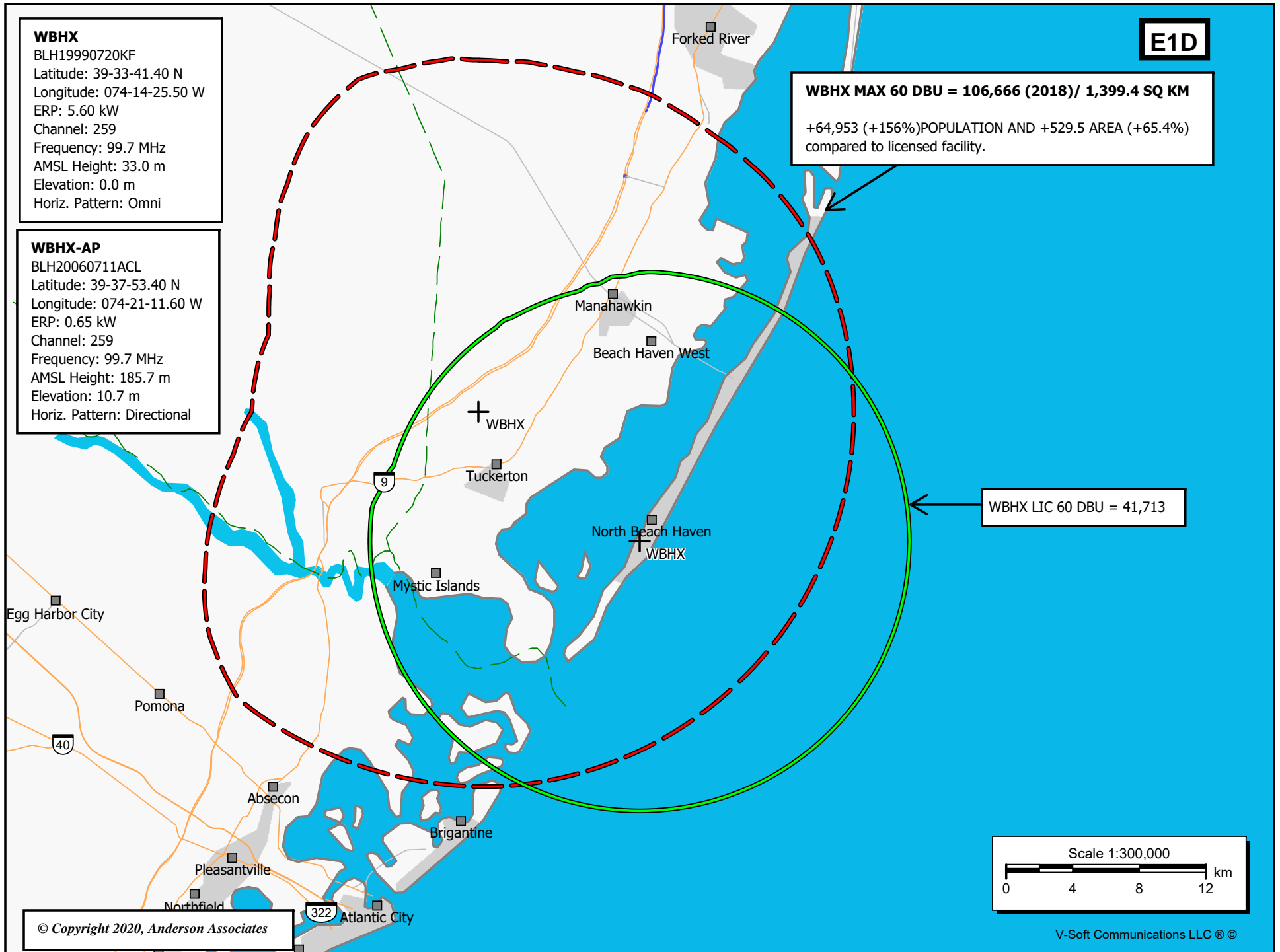
BLH19990720KF
Latitude: 39-33-41.40 N
Longitude: 074-14-25.50 W
ERP: 5.60 kW
Channel: 259
Frequency: 99.7 MHz
AMSL Height: 33.0 m
Elevation: 0.0 m
Horiz. Pattern: Omni

WBHX-AP

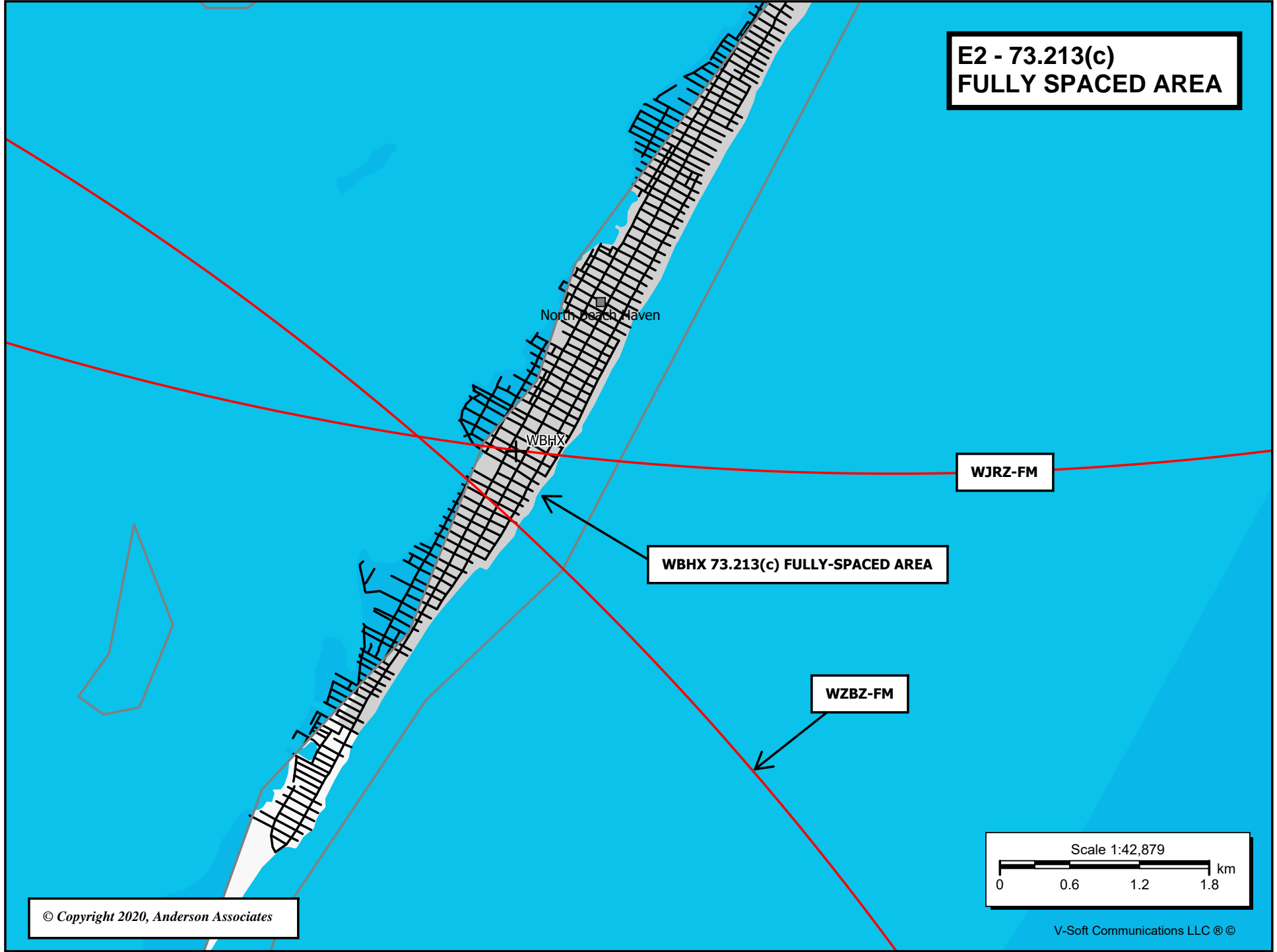
BLH20060711ACL
Latitude: 39-37-53.40 N
Longitude: 074-21-11.60 W
ERP: 0.65 kW
Channel: 259
Frequency: 99.7 MHz
AMSL Height: 185.7 m
Elevation: 10.7 m
Horiz. Pattern: Directional

E1D**WBHX MAX 60 DBU = 106,666 (2018)/ 1,399.4 SQ KM**

+64,953 (+156%) POPULATION AND +529.5 AREA (+65.4%)
compared to licensed facility.

WBHX LIC 60 DBU = 41,713

**E2 - 73.213(c)
FULLY SPACED AREA**



E2 AERIAL

WJRZ-FM



73.213(c) Fully-spaced

WBHX (259)

Beach Haven

WZBZ



Google Earth

© 2020 Google
Image © 2020 TerraMetrics



E3 CHANNEL STUDY - APPLICATION SITE

REFERENCE		DISPLAY DATES
39 37 53.40 N.	CLASS = A	DATA 03-20-20
74 21 10.10 W.	Current Spacings to 3rd Adj.	SEARCH 03-22-20
----- Channel 259 - 99.7 MHz -----		

Call	Channel	Location	Azi	Dist	FCC	Margin
WBHX	LIC 259A	Tuckerton	NJ 128.9	12.39	114.5	-102.1
WJBR-FM	LIC 258B	Wilmington	DE 283.0	102.87	112.5	-9.6

73.215 Elected.

WJRZ-FM_%	LIC	261A	Manahawkin	NJ	34.7	22.58	30.5	-7.9
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73.213(c)waiver requested.

WZBZ	CP	257A	Pleasantville	NJ	196.7	29.03	30.5	-1.5
WZBZ	LIC	257A	Pleasantville	NJ	196.7	29.56	30.5	-0.9

Short-spacing decreased by 2.0 km.

WBAI	LIC	258B	New York	NY	13.9	128.72	112.5	16.2
WBZC	LIC-D	205B1	Pemberton	NJ	325.2	28.62	11.5	17.1
WRNB	LIC-Z	262B	Media	PA	301.4	88.80	68.5	20.3
WAJM	LIC-D	205A	Atlantic City	NJ	199.5	31.38	9.5	21.9
WODE-FM	LIC	260B	Easton	PA	328.8	140.38	112.5	27.9

% = Station Fails minimum 73.215 spacings.
All separation margins include rounding.

E3A CHANNEL STUDY - LICENSED SITE

REFERENCE		DISPLAY DATES
39 33 41.40 N.	CLASS = A	DATA 03-20-20
74 14 25.50 W.	Current Spacings to 3rd Adj.	SEARCH 03-22-20
----- Channel 259 - 99.7 MHz -----		

Call	Channel	Location	Azi	Dist	FCC	Margin
WBHX	LIC 259A	Tuckerton NJ	0.0	0.00	114.5	-114.5
WJRZ-FM	LIC 261A	Manahawkin NJ	7.0	26.50	30.5	-4.0
WZBZ	CP 257A	Pleasantville NJ	222.0	26.96	30.5	-3.5
WZBZ	LIC 257A	Pleasantville NJ	221.5	27.43	30.5	-3.1
WJBR-FM	LIC 258B	Wilmington DE	285.8	114.16	112.5	1.7
WAJM	LIC-D 205A	Atlantic City NJ	222.7	29.70	9.5	20.2
WBAI	LIC 258B	New York NY	9.2	134.41	112.5	21.9
WBZC	LIC-D 205B1	Pemberton NJ	320.4	40.67	11.5	29.2

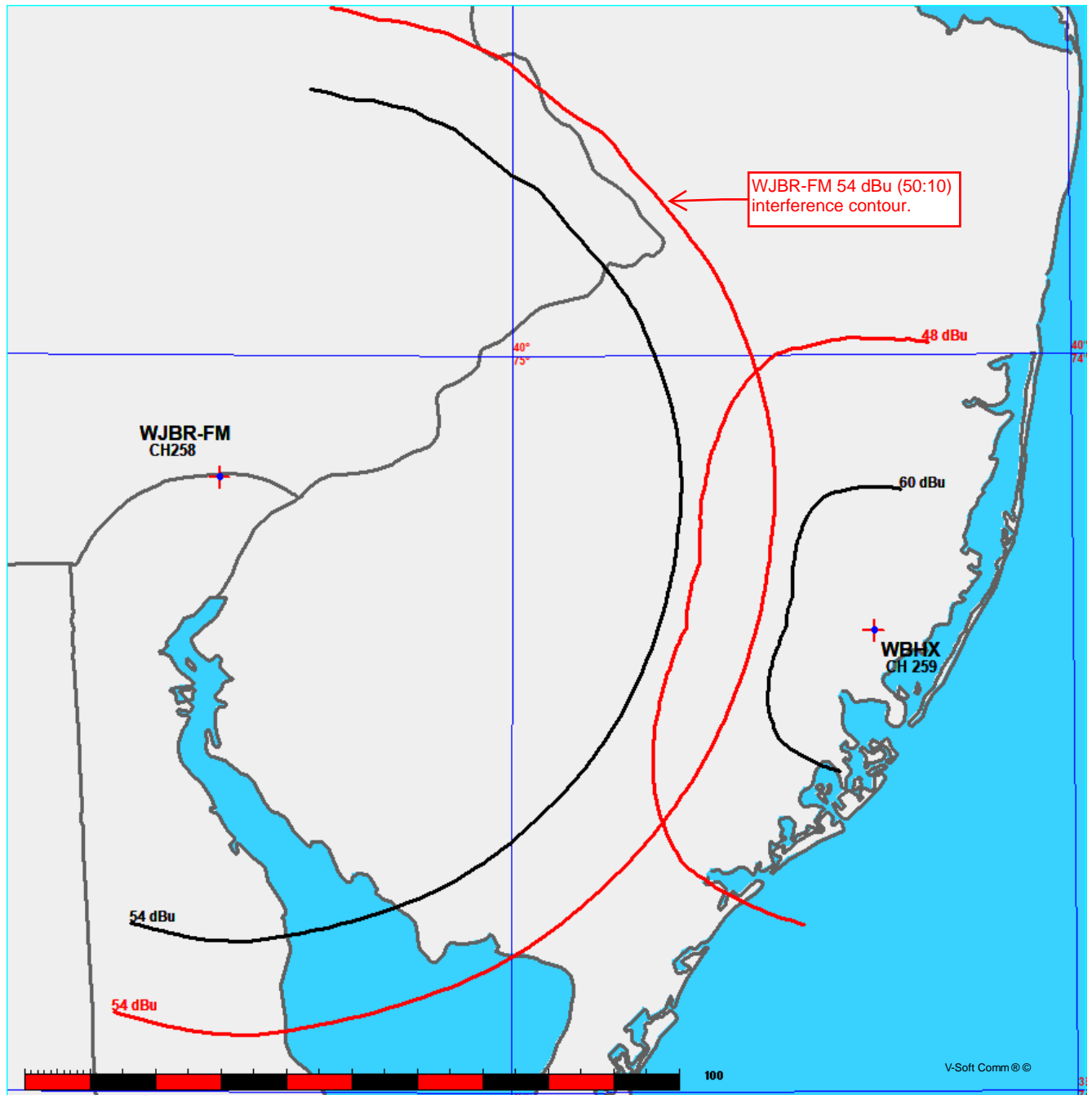
All separation margins include rounding.

E4 WBHX-WJBR-FM MAX CLASS INTERFERENCE PLOT

FMCommander Single Allocation Study - 03-22-2020 - FCC NGDC 30 Sec
WBHX's Overlaps (In= 3.72 km, Out= 3.22 km)

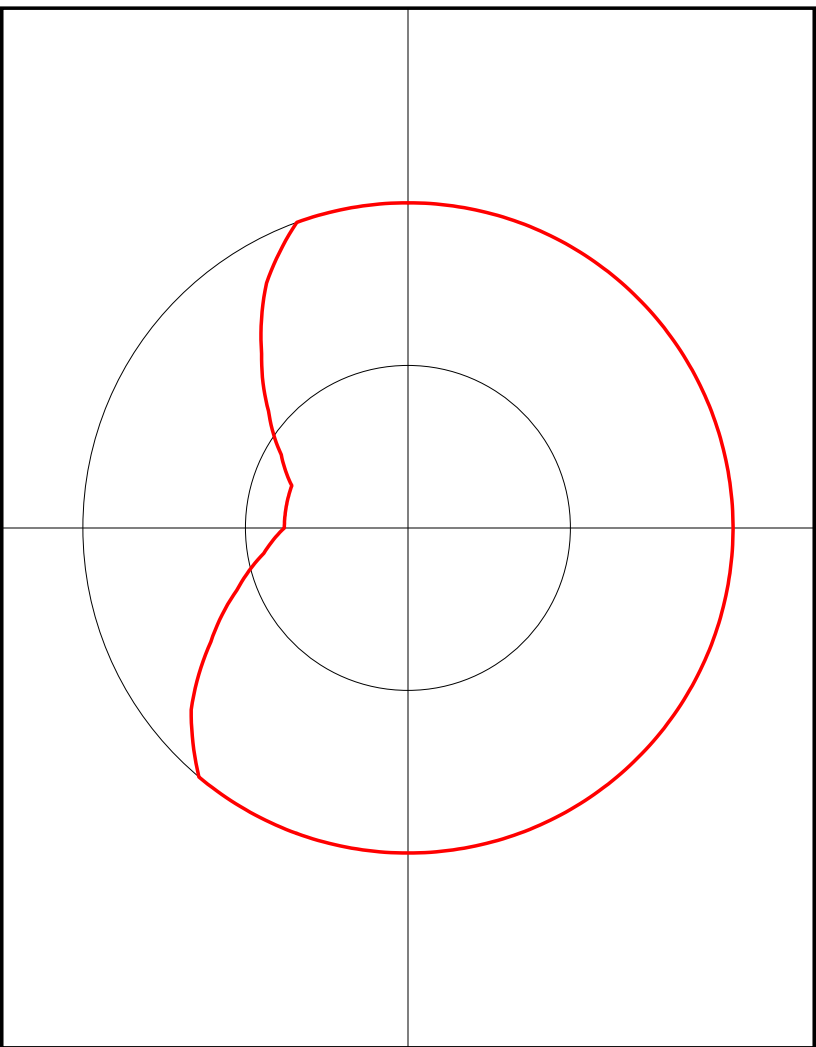
WBHX CH 259 A 73.215 Z
Lat= 39 37 53.40, Lng= 74 21 10.10
0.65 kW 177.7 m HAAT, 185.7 m COR
Prot.= 60 dBu, Intef.= 48 dBu

WJBR-FM[^] CH 258 B BMLH20080516AAX
Lat= 39 50 02.40, Lng= 75 31 25.70
Max Cls: 50.0 kW 150 m HAAT, 219 m COR
Prot.= 54 dBu, Intef.= 54 dBu



E5 Antenna Pattern

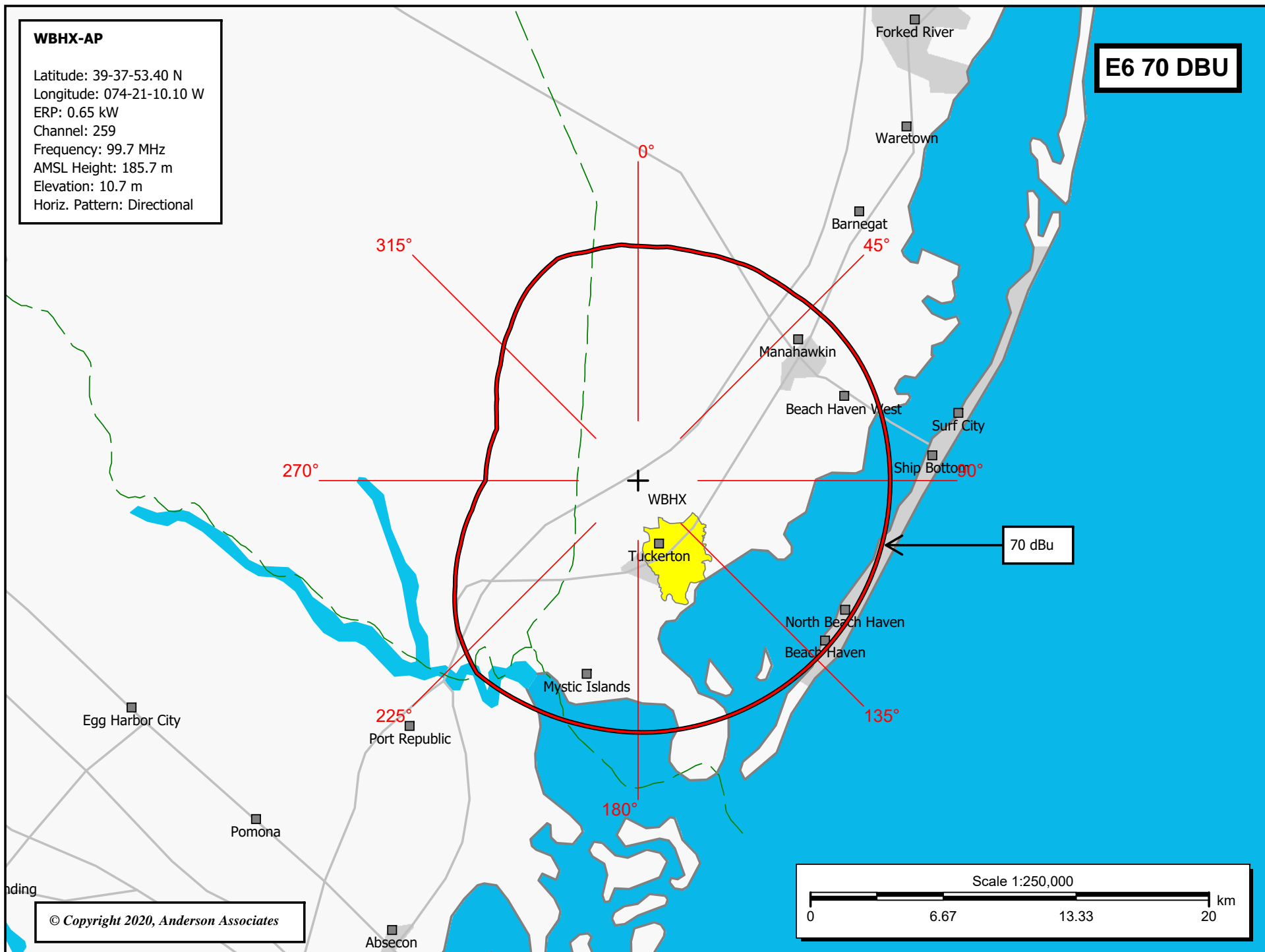
Azimuth (deg)	Relative Field
0.0	1.0
10.0	1.0
20.0	1.0
30.0	1.0
40.0	1.0
50.0	1.0
60.0	1.0
70.0	1.0
80.0	1.0
90.0	1.0
100.0	1.0
110.0	1.0
120.0	1.0
130.0	1.0
140.0	1.0
150.0	1.0
160.0	1.0
170.0	1.0
180.0	1.0
190.0	1.0
200.0	1.0
210.0	1.0
220.0	1.0
230.0	0.87
240.0	0.7
250.0	0.56
260.0	0.45
270.0	0.38
280.0	0.38
290.0	0.38
300.0	0.45
310.0	0.56
320.0	0.7
330.0	0.87
340.0	1.0
350.0	1.0



WBHX-AP

Latitude: 39-37-53.40 N
Longitude: 074-21-10.10 W
ERP: 0.65 kW
Channel: 259
Frequency: 99.7 MHz
AMSL Height: 185.7 m
Elevation: 10.7 m
Horiz. Pattern: Directional

E6 70 DBU



E7 Registration



[Map Registration](#)

Registration Detail

Reg Number	1210613	Status	Constructed
File Number	A1153201	Constructed	12/20/2000
EMI	No	Dismantled	
NEPA	No		

Antenna Structure

Structure Type TOWER - Free standing or Guyed Structure used for Commu

Location (in NAD83 Coordinates)

Lat/Long	39-37-53.4 N 074-21-10.1 W	Address	3.3 KM NORTH OF
City, State	TUCKERTON , NJ		
Zip	08087	County	OCEAN
Center of AM Array		Position of Tower in Array	

Heights (meters)

Elevation of Site Above Mean Sea Level	Overall Height Above Ground (AGL)
10.7	304.8
Overall Height Above Mean Sea Level	Overall Height Above Ground w/o Appurtenances
315.5	303.6

Painting and Lighting Specifications

FAA Chapters 4, 9, 12

Paint and Light in Accordance with FAA Circular Number 70/7460-1K

FAA Notification

FAA Study	99-AEA-1528-OE	FAA Issue Date	05/12/2000
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Owner & Contact Information

FRN	0022509178	Owner Entity Type	Limited Liability Company
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Assignor FRN	0022897425	Assignor ID	L01806277
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Owner

CTI Towers Assets II, LLC
Attention To: Matthew Bertolino
5000 Centre Green way
Cary , NC 27511

P: (919)893-2841
F:
E: mbertolino@ctitowers.com

Contact

Bertolino , Matthew
Attention To: Matthew Bertolino
5000 Centre Green way
Cary , NC 27511

P: (919)893-2841
F:
E: mbertolino@ctitowers.com

Last Action Status

Status	Constructed	Received	02/06/2020
Purpose	Change Owner	Entered	02/05/2020
Mode	Interactive		