

TECHNICAL SUMMARY

FM TRANSLATOR STATION W286DL
AGUADILLA, PUERTO RICO
CHANNEL 286, 0.25 kW (H&V), 390 m AMSL

The attached allocation study tabulation exhibit summarizes the allocation study for the proposed facility. It is noted that the intermediate-frequency (I.F.) related separation requirements are met for the instant proposal.

The tabulation exhibit lists the results of a numerical analysis of the potential for contour overlap for all nearby co-channel, first-, second-, and third-adjacent-channel facilities. For the purposes of the numerical study, the radiation center height above mean sea level and the maximum ERP values for each station record were used in determining the maximum distance in any direction to the predicted protected and interfering contours

Facilities that were short based on the numerical study were evaluated based on a contour analysis. The attached allocation analysis map exhibit demonstrates compliance with the contour overlap requirements with respect to station: WIOC, Ponce, PR (Ch. 286B).

The contour overlap requirements are met with respect to all stations with the exception of third-adjacent channel station, W283DR, Aguadilla, PR (Ch. 283); and, second-adjacent-channel station, WFDT, Aguada, PR (Ch. 288A). A waiver of section 74.1204 of the FCC Rules is requested to the extent necessary since it is demonstrated that no actual interference will occur with respect to W283DR and WFDT.

Based on the undesired-to-desired (U/D) signal strength interference ratio methodology, which is permitted by the FCC [per *Living Way Ministries, Inc.*, 17 FCC Rcd 17054, 17056 (2002)], it has been determined that no actual interference would occur due to lack of population under Section 73.1204(d).

Specifically, the calculated $f(50,50)$ desired field strengths of W283DR and WFDT at the proposed transmitter site are calculated to be 106 dBu and 118 dBu, respectively. Using the 40 dB U/D ratio contained in Section 73.1204 of the FCC Rules, the proposed $f(50,10)$ undesired interfering signals are 146 dBu and 158 dBu, respectively, for W283DR and WFDT.

As demonstrated in the interference analysis tabulations, the predicted interference zones with respect to the W283DR and WFDT facilities extend from the transmitting antenna to no greater than 1 m with respect to W283DR; and 5 m with respect to WFDT.* Accordingly, the interference zones do not reach ground level and are completely devoid of population, buildings and publicly accessible roads. Therefore, the proposal meets the requirements of Section 74.1204(d) of the FCC Rules for such circumstances as clarified in the *Living Way Ministries, Inc., Memorandum Opinion and Order*, Released: September 9, 2002.

* This is based on the worst-case assumption of 1.0 relative field at all elevation angles from the antenna.

TOWAIR Determination Results

A routine check of the coordinates, heights, and structure type you provided indicates that this structure does not require registration.

*** NOTICE ***

TOWAIR's findings are not definitive or binding, and we cannot guarantee that the data in TOWAIR are fully current and accurate. In some instances, TOWAIR may yield results that differ from application of the criteria set out in 47 C.F.R. Section 17.7 and 14 C.F.R. Section 77.13. A positive finding by TOWAIR recommending notification should be given considerable weight. On the other hand, a finding by TOWAIR recommending either for or against notification is not conclusive. It is the responsibility of each ASR participant to exercise due diligence to determine if it must coordinate its structure with the FAA. TOWAIR is only one tool designed to assist ASR participants in exercising this due diligence, and further investigation may be necessary to determine if FAA coordination is appropriate.

DETERMINATION Results

PASS SLOPE (100:1): NO FAA REQ-RWY MORE THAN 10499 MTRS & 7281.67 MTRS (7.28169 KM) AWAY

| Type | C/R | Latitude | Longitude | Name | Address | Lowest Elevation (m) | Runway Length (m) |
|------|-----|--------------|---------------|-------------------------|----------------------------|----------------------|--------------------|
| AIRP | R | 18-15-15.00N | 067-09-20.00W | EUGENIO MARIA DE HOSTOS | --PUERTO RICO MAYAGUEZ, PR | 4.7 | 1523.4000000000001 |

Your Specifications

NAD83 Coordinates

| | |
|-----------|------------------|
| Latitude | 18-18-59.3 north |
| Longitude | 067-10-39.7 west |

Measurements (Meters)

| | |
|--------------------------------|------|
| Overall Structure Height (AGL) | 24.4 |
| Support Structure Height (AGL) | 24.4 |
| Site Elevation (AMSL) | 367 |

Structure Type

LTOWER - Lattice Tower

[Tower Construction Notifications](#)

Notify Tribes and Historic Preservation Officers of your plans to build a tower.

CLOSE WINDOW

Antenna: CA2-FM/CP

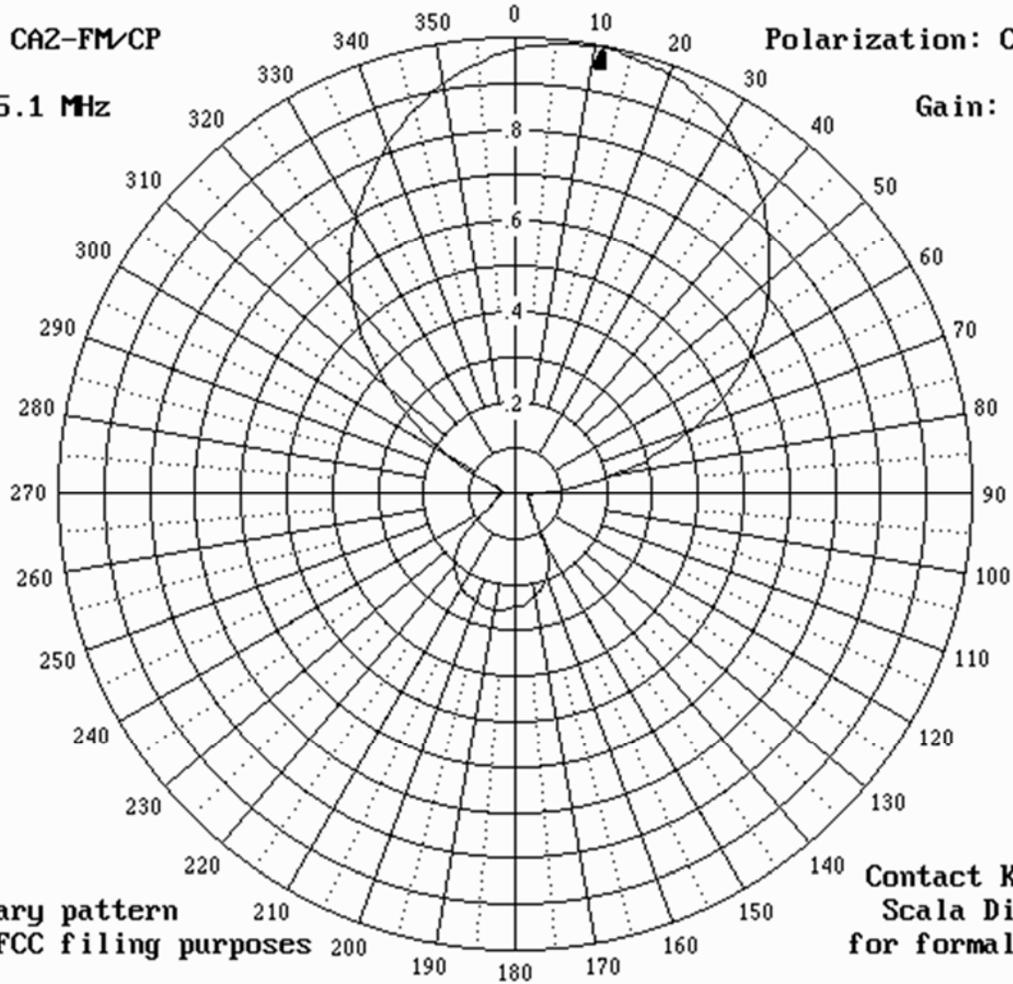
Freq: 105.1 MHz

Polarization: Circular

Gain: 1.0 dBd

Markers

11



Preliminary pattern
Not for FCC filing purposes

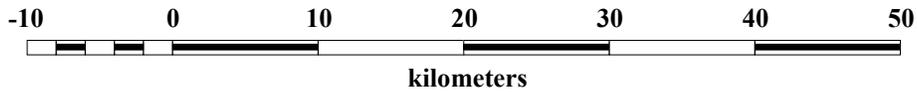
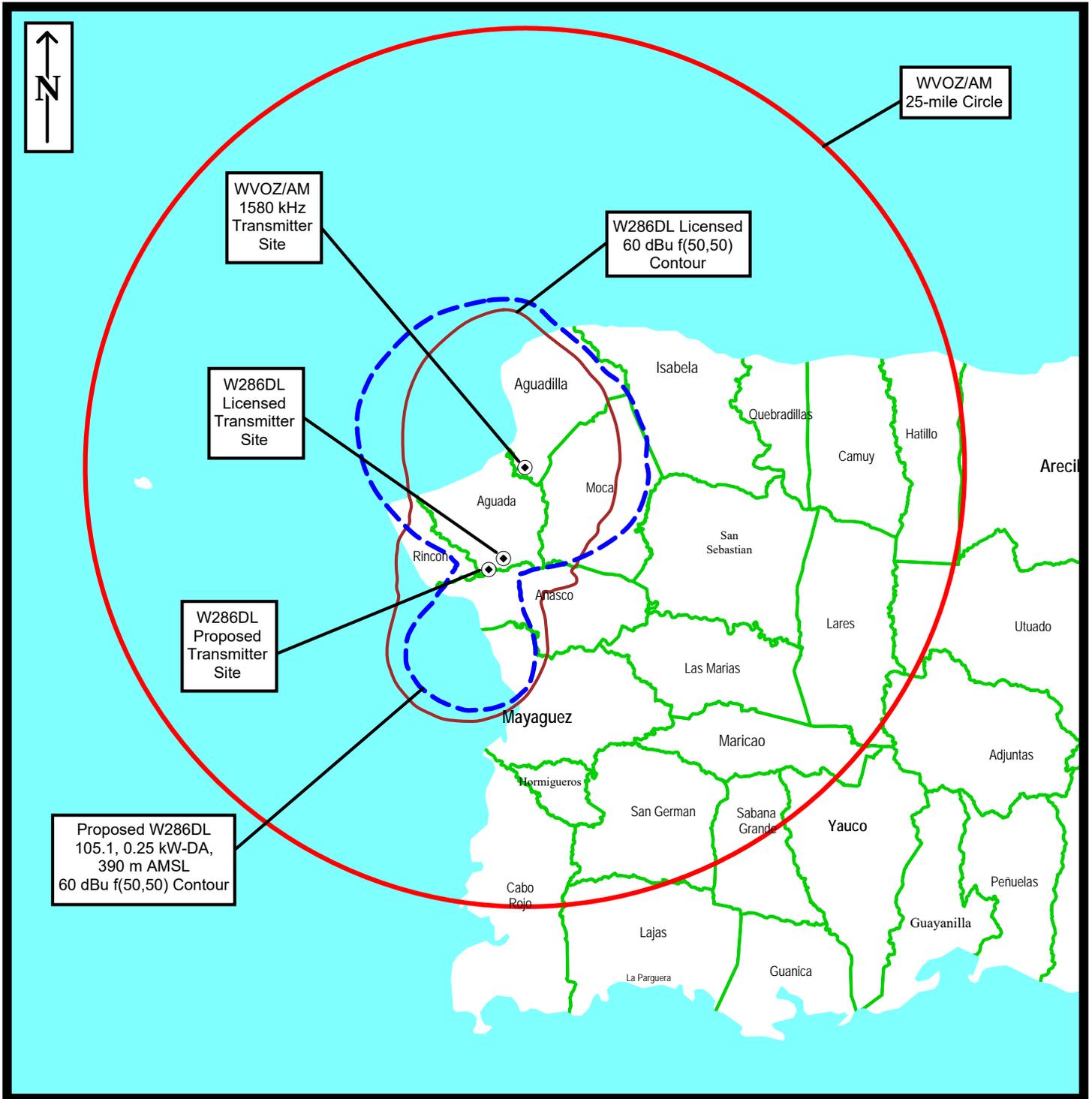
Contact Kathrein
Scala Division
for formal document

Kathrein Scala model CA2-FM/CP
(Circularly Polarized)
Maximum ERP = 0.25 kW

Based on antenna manufacturer data.

ANTENNA AZIMUTH PATTERN

du Treil, Lundin & Rackley, Inc. Sarasota, Florida



PREDICTED COVERAGE COMPLIANCE MAP

duTreil, Lundin & Rackley, Inc. Sarasota, Florida

FM Contour Study LMS

du Treil, Lundin, & Rackley, Inc., Sarasota, Florida



Channel: 286 **Coordinates:** 018-18-59.3 067-10-39.7 (NAD 83) **ERP:** 0.25 kW **Max. HAAT:** 390 m **Considering Only Interference Caused**

Comment: Change in transmitter site with change in antenna azimuth pattern.

| Callsign | Chan. | Service | Status | Freq. | City | State | Co. | Rec. | Latitude | Dist. (km) | Sep. (km) | Spac. (km) |
|---|------------------|---------|--------|---|-----------|--------|----------|----------|-------------|-------------|--------------|------------|
| Facility ID | ARN | | | Class | DA | 73.215 | ERP (kW) | HAAT (m) | Longitude | Bear. (deg) | Comment | |
| W283DR | 283 | FX | AMD | 104.5 | AGUADILLA | PR | US | C | 18-18-58.6 | 0.27 | 26.52 | -26.25 |
| 202073 | 0000206920 | | | D | DRL | | 0.25 | | 067-10-48.8 | 265.37 | SHORT | /1/ |
| W283DR 60.0 dBu desired distance: 25.4 km | | | | Proposed 100.0 dBu undesired distance: 1.1 km | | | | | | | | |
| W286DL | 286 | FX | L2C | 105.1 | AGUADILLA | PR | US | C | 18-19-31.8 | 1.68 | 100.17 | -98.49 |
| 202169 | BLFT-20181212AAW | | | D | DRL | | 0.25 | | 067-09-53.6 | 53.4 | SHORT | /2/ |
| W286DL 60.0 dBu desired distance: 23.6 km | | | | Proposed 40.0 dBu undesired distance: 76.6 km | | | | | | | | |
| WIOC | 286 | FM | L2C | 105.1 | PONCE | PR | US | C | 17-59-03 | 68.05 | 130.84 | -62.79 |
| 8152 | BLH-20190819AAH | | | B | NDI | | 50 | -20 | 066-38-12 | 122.79 | SHORT | /3/ |
| WIOC 54.0 dBu desired distance: 36.1 km | | | | Proposed 34.0 dBu undesired distance: 94.7 km | | | | | | | | |
| WFDT | 288 | FM | L2C | 105.5 | AGUADA | PR | US | C | 18-18-49.8 | 0.48 | 41.09 | -40.61 |
| 3251 | BLH-20020924AAE | | | A | NDI | | 3 | 304 | 067-10-52.6 | 232.2 | SHORT | /4/ |
| WFDT 60.0 dBu desired distance: 40.0 km | | | | Proposed 100.0 dBu undesired distance: 1.1 km | | | | | | | | |

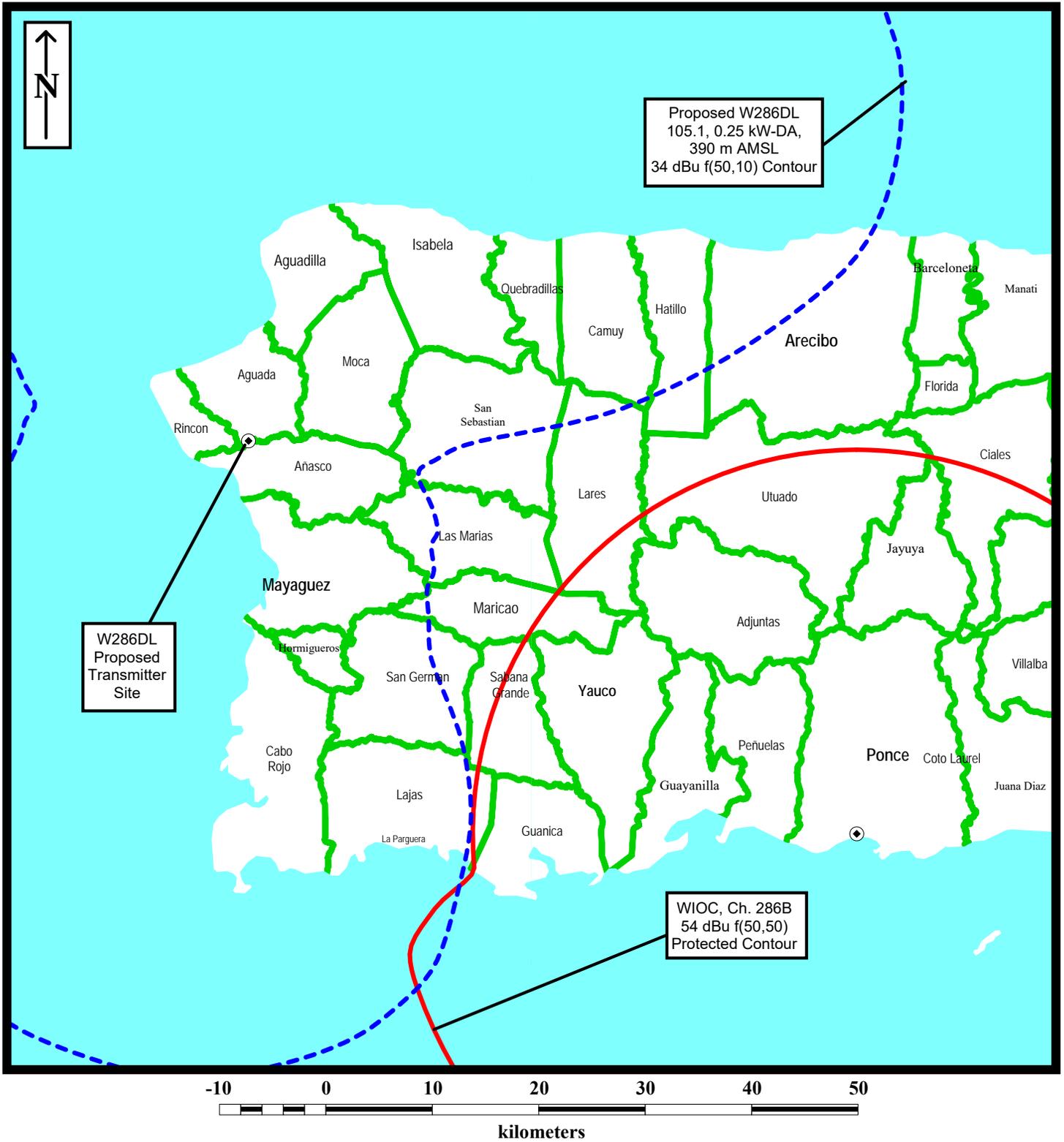
Notes:

/1/ - Although the contour overlap requirements are not met, it is demonstrated herein that no interference will be caused to any populated areas or publicly accessible areas. A waiver of Section 74.1204 of the FCC Rules is requested to the extent necessary under the 'Living Way' precedent since no actual interference will occur.

/2/ - Applicant's licensed facility.

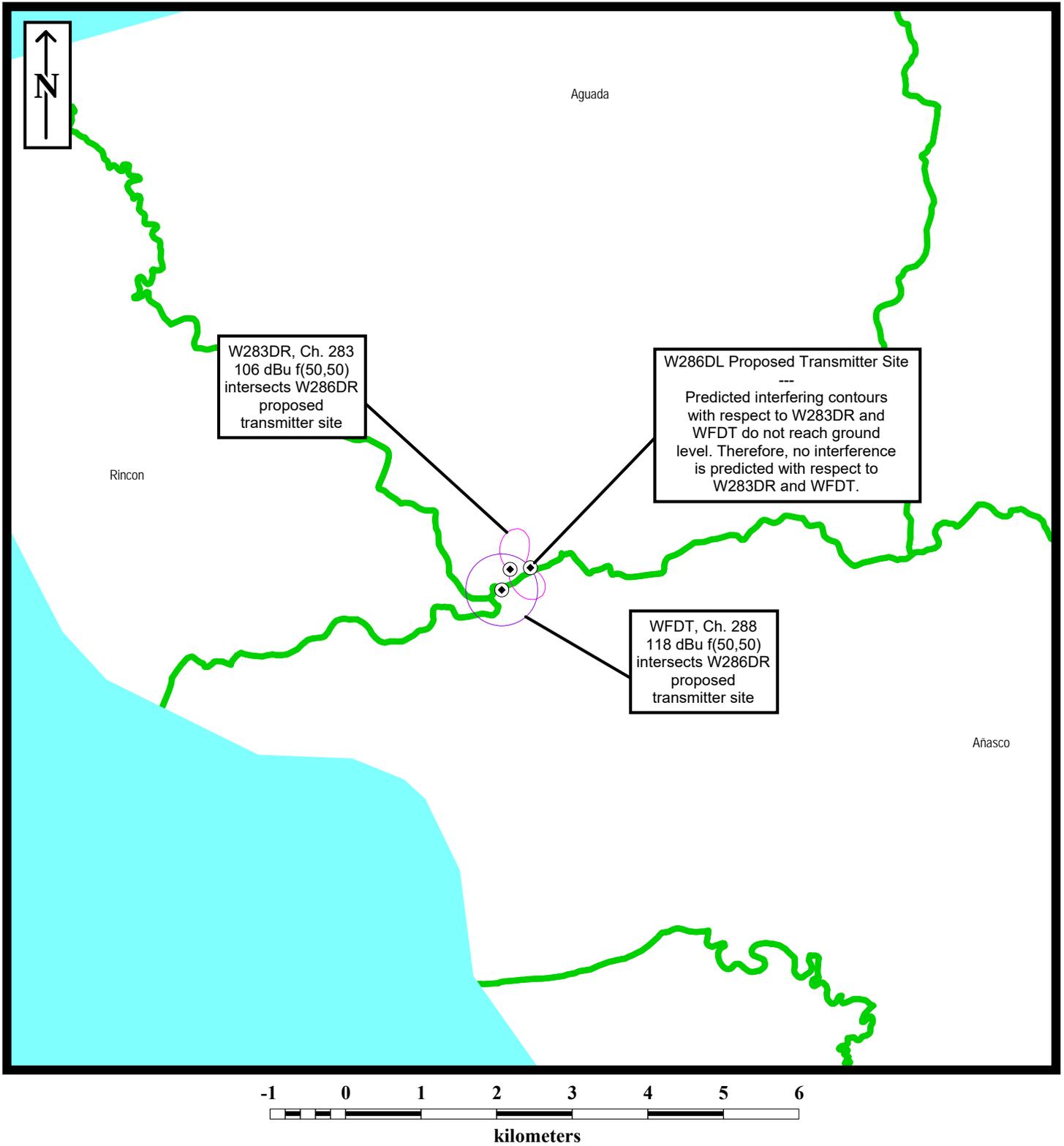
/3/ - The contour overlap requirements are met. See Allocation Study Map exhibit.

/4/ - Although the contour overlap requirements are not met, it is demonstrated herein that no interference will be caused to any populated areas or publicly accessible areas. A waiver of Section 74.1204 of the FCC Rules is requested to the extent necessary under the 'Living Way' precedent since no actual interference will occur.



ALLOCATION STUDY MAP WITH RESPECT TO WIOC

duTreil, Lundin & Rackley, Inc. Sarasota, Florida



ALLOCATION STUDY MAP WITH RESPECT TO W283DR AND WFDT

TABULATION OF PREDICTED INTERFERENCE ANALYSIS
 WITH RESPECT TO W283DR, AGUADILLA, PR (CHANNEL 283)
 FM TRANSLATOR W286DL, CHANNEL 286

| Depression Angle from Antenna | Distance from Base (m) | Elevation Pattern Relative Field | Direct Ray Distance (m) | Effective Radiated Power (kW) | Effective Radiated Power (dBk) | Distance to IX Contour (m)* | Height Above Receive Antenna (m)† |
|-------------------------------|------------------------|----------------------------------|-------------------------|-------------------------------|--------------------------------|-----------------------------|-----------------------------------|
| 85.0 | 1.8 | 1.000 | 21.1 | 0.2500 | -6.02 | 5 | 16.1 |
| 80.0 | 3.7 | 1.000 | 21.3 | 0.2500 | -6.02 | 5 | 16.3 |
| 75.0 | 5.6 | 1.000 | 21.7 | 0.2500 | -6.02 | 5 | 16.7 |
| 70.0 | 7.6 | 1.000 | 22.3 | 0.2500 | -6.02 | 5 | 17.3 |
| 65.0 | 9.8 | 1.000 | 23.2 | 0.2500 | -6.02 | 5 | 18.2 |
| 60.0 | 12.1 | 1.000 | 24.2 | 0.2500 | -6.02 | 5 | 19.2 |
| 55.0 | 14.7 | 1.000 | 25.6 | 0.2500 | -6.02 | 5 | 20.6 |
| 50.0 | 17.6 | 1.000 | 27.4 | 0.2500 | -6.02 | 5 | 22.4 |
| 45.0 | 21.0 | 1.000 | 29.7 | 0.2500 | -6.02 | 5 | 24.7 |
| 40.0 | 25.0 | 1.000 | 32.7 | 0.2500 | -6.02 | 5 | 27.7 |
| 35.0 | 30.0 | 1.000 | 36.6 | 0.2500 | -6.02 | 5 | 31.6 |
| 30.0 | 36.4 | 1.000 | 42.0 | 0.2500 | -6.02 | 5 | 37.0 |
| 25.0 | 45.0 | 1.000 | 49.7 | 0.2500 | -6.02 | 5 | 44.7 |
| 20.0 | 57.7 | 1.000 | 61.4 | 0.2500 | -6.02 | 5 | 56.4 |
| 15.0 | 78.4 | 1.000 | 81.1 | 0.2500 | -6.02 | 5 | 76.1 |
| 10.0 | 119.1 | 1.000 | 120.9 | 0.2500 | -6.02 | 5 | 115.9 |
| 5.0 | 240.0 | 1.000 | 240.9 | 0.2500 | -6.02 | 5 | 235.9 |
| 4.0 | 300.3 | 1.000 | 301.0 | 0.2500 | -6.02 | 5 | 296.0 |
| 3.0 | 400.7 | 1.000 | 401.3 | 0.2500 | -6.02 | 5 | 396.3 |
| 2.0 | 601.4 | 1.000 | 601.7 | 0.2500 | -6.02 | 5 | 596.7 |
| 1.0 | 1203.1 | 1.000 | 1203.3 | 0.2500 | -6.02 | 5 | 1198.3 |

* The interfering contour is the 146 dBu contour. An elevation relative field figure of 1.000 indicates that this is a worst-case analysis. The predicted interfering contour extends to 5 m or less from the antenna in any direction.

† Positive figures indicate no contact of predicted contour with surface; and, thus, no interference predicted in accessible areas.

TABULATION OF PREDICTED INTERFERENCE ANALYSIS
WITH RESPECT TO WFDT, AGUADA, PR (CHANNEL 288A)
FM TRANSLATOR W286DL, CHANNEL 286

| Depression Angle from Antenna | Distance from Base (m) | Elevation Pattern Relative Field | Direct Ray Distance (m) | Effective Radiated Power (kW) | Effective Radiated Power (dBk) | Distance to IX Contour (m)* | Height Above Receive Antenna (m)† |
|-------------------------------|------------------------|----------------------------------|-------------------------|-------------------------------|--------------------------------|-----------------------------|-----------------------------------|
| 85.0 | 1.8 | 1.000 | 21.1 | 0.2500 | -6.02 | 1 | 20.1 |
| 80.0 | 3.7 | 1.000 | 21.3 | 0.2500 | -6.02 | 1 | 20.3 |
| 75.0 | 5.6 | 1.000 | 21.7 | 0.2500 | -6.02 | 1 | 20.7 |
| 70.0 | 7.6 | 1.000 | 22.3 | 0.2500 | -6.02 | 1 | 21.3 |
| 65.0 | 9.8 | 1.000 | 23.2 | 0.2500 | -6.02 | 1 | 22.2 |
| 60.0 | 12.1 | 1.000 | 24.2 | 0.2500 | -6.02 | 1 | 23.2 |
| 55.0 | 14.7 | 1.000 | 25.6 | 0.2500 | -6.02 | 1 | 24.6 |
| 50.0 | 17.6 | 1.000 | 27.4 | 0.2500 | -6.02 | 1 | 26.4 |
| 45.0 | 21.0 | 1.000 | 29.7 | 0.2500 | -6.02 | 1 | 28.7 |
| 40.0 | 25.0 | 1.000 | 32.7 | 0.2500 | -6.02 | 1 | 31.7 |
| 35.0 | 30.0 | 1.000 | 36.6 | 0.2500 | -6.02 | 1 | 35.6 |
| 30.0 | 36.4 | 1.000 | 42.0 | 0.2500 | -6.02 | 1 | 41.0 |
| 25.0 | 45.0 | 1.000 | 49.7 | 0.2500 | -6.02 | 1 | 48.7 |
| 20.0 | 57.7 | 1.000 | 61.4 | 0.2500 | -6.02 | 1 | 60.4 |
| 15.0 | 78.4 | 1.000 | 81.1 | 0.2500 | -6.02 | 1 | 80.1 |
| 10.0 | 119.1 | 1.000 | 120.9 | 0.2500 | -6.02 | 1 | 119.9 |
| 5.0 | 240.0 | 1.000 | 240.9 | 0.2500 | -6.02 | 1 | 239.9 |
| 4.0 | 300.3 | 1.000 | 301.0 | 0.2500 | -6.02 | 1 | 300.0 |
| 3.0 | 400.7 | 1.000 | 401.3 | 0.2500 | -6.02 | 1 | 400.3 |
| 2.0 | 601.4 | 1.000 | 601.7 | 0.2500 | -6.02 | 1 | 600.7 |
| 1.0 | 1203.1 | 1.000 | 1203.3 | 0.2500 | -6.02 | 1 | 1202.3 |

* The interfering contour is the 158 dBu contour. An elevation relative field figure of 1.000 indicates that this is a worst-case analysis. The predicted interfering contour extends to 1 m or less from the antenna in any direction.

† Positive figures indicate no contact of predicted contour with surface; and, thus, no interference predicted in accessible areas.

ARECIBO OBSERVATORY

The William E. Gordon Telescope
Angel Ramos Foundation Science and Visitor Center



August 11, 2023

du Treil, Lundin & Rockley, Inc.
Consulting Engineers
P.O. Box 161
Osprey, FL 34229

Re: Station W286DL, Aguadilla, Puerto Rico
Digital Channel: 286 / 105.1 MHz
Antenna location (NAD83): 18-18-59.3 N / 67-10-39.7 W

Dear Eng. Louis R. du Treil, Jr.

Thank you very much for the copy of your FCC application sent to us in accordance with the Puerto Rico Coordination zone agreements. We have considered the technical aspects of your application and find that your installation of the proposed W286DL, Channel 286, Aguadilla, Puerto Rico, is unlikely to cause harmful interference to the passive use of the Radio Astronomy bands at the Observatory.

We therefore have no objection to your proposed installation.

Sincerely yours,

Angel M. Vázquez
Spectrum Manager

AV: ic

Cc: PRCZ files [File #11.Aug.23_01]