

TECHNICAL EXHIBIT
APPLICATION FOR MODIFICATION
OF CONSTRUCTION PERMIT

DIGITAL TELEVISION STATION WBUP
ISHPEMING, MICHIGAN
FACILITY ID: 59281
DTV CHANNEL 10 / 0.4 kW ERP / DA

LAKE SUPERIOR COMMUNITY BROADCASTING CORPORATION

JULY, 2013

APPLICATION FOR MODIFICATION OF CONSTRUCTION PERMIT

The following engineering statement and attached exhibits have been prepared for **Lake Superior Community Broadcasting Corporation** ("Lake Superior"), licensee of digital television station WBUP at Ishpeming, Michigan, and are in support of their application for modification of construction permit.¹

This application seeks to lower the center of radiation for the facility as well as decrease the effective radiated power associated with the facility. These changes are necessary to meet a construction deadline at the new tower site proposed by Lake Superior. Specifically Lake Superior proposes to operate WBUP with a maximum effective radiated power of 400 Watts utilizing a directional antenna. The directional antenna that would be utilized by the facility is the antenna currently in use at the licensed facility, which will be relocated to the new tower.

The antenna used by the licensed facility has a front-to-back ratio that is significantly less than the antenna authorized under the construction permit. As a result, the effective radiated power and center of radiation are being reduced from the authorized facility in order to keep the noise limited service contour within the licensed noise limited contour.² Lake Superior will subsequently seek to modify the facility that will be licensed to increase the center of radiation and effective radiated power. Exhibit E-1 illustrates the 36 dBu F(50,90) service contour for the licensed, authorized, and proposed facilities, and demonstrates that the proposed contour would be wholly contained within the licensed contour.

¹ The Facility ID for WBUP at Ishpeming, Michigan is 59281.

² Due to the remaining time on the construction permit, obtaining Canadian concurrence for a facility with a larger footprint seems unlikely.

JEREMY RUCK & ASSOCIATES, INC.

P.O. Box 415
221 S. 1st Avenue
Canton, IL 61520

Tel: 309.647.1200
Fax: 855.332.9537
jeremyruck.com

The facility proposed under this application would comply with the principal community coverage requirements under Section 73.625 of the Commission's Rules. Exhibit E-2 illustrates the 43 dBu and 36 dBu F(50,90) service contours for the proposed facility overlaid on the Longley-Rice predicted field strength. As this map demonstrates, the entire community of Ishpeming would receive a signal level of at least 43 dBu.

The notification requirements of Section 73.1030 are not applicable to the proposed facility. The proposed facility is not located in the National Radio Astronomy Quiet Zone, in the vicinity of the Table Mountain Zone, or on the island of Puerto Rico. The closest FCC monitoring station is in Allegan, Michigan, which is in Lower Michigan, and is located at a distance greater than is required for coordination or notification.

The proposed facility would utilize a tower that has been registered. This tower is currently under construction. The change in the height and ERP of the facility would not increase the environmental impact that would result from the presence of the structure. In addition, the proposed facility would not constitute an RF exposure hazard to the general population.

As indicated on the form pages, the proposed center of radiation for the facility is 61.2 meters AGL. Under a worst case scenario using the equations in Appendix A of *OET Bulletin 65*, the predicted power density at two meters above ground level is $0.39 \mu\text{W}/\text{cm}^2$. This value complies with the uncontrolled environment condition of the applicable safety standard. Lake Superior certifies it will coordinate with all other users of the site to ensure that workers and other personnel having access to the tower are not exposed to levels of non-ionizing radiation in excess

JEREMY RUCK & ASSOCIATES, INC.

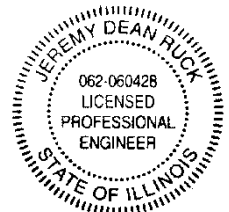
P.O. Box 415
221 S. 1st Avenue
Canton, IL 61520

Tel: 309.647.1200
Fax: 855.332.9537
jeremyruck.com

of the applicable standards. Such coordination will include, but is not necessarily limited to, a reduction in transmitter power or cessation of operation.

The proposed facility would comply with the interference protection requirements of the Commission's Rules. Exhibits E-3 and E-4 contain the outgoing interference study for the proposed facility. As these exhibits demonstrate, the proposed facility would not cause interference to any relevant proposed or existing facility in the region.

The preceding statement and attached exhibits have been prepared by me, or under my direction, and are true and accurate to the best of my belief and knowledge.



Above signature is digitized copy of actual signature
License Expires November 30, 2013

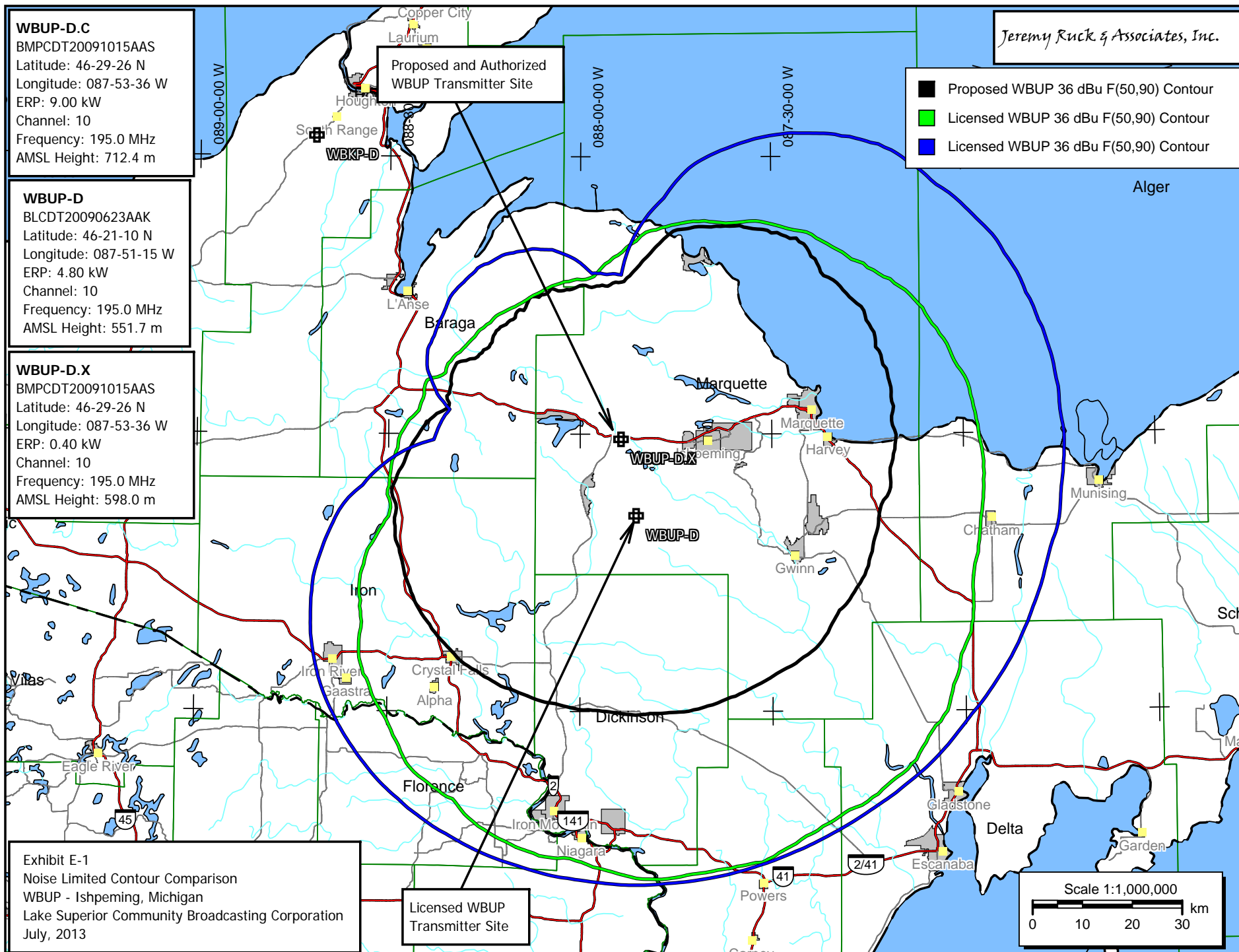
Jeremy D. Ruck, PE
July 31, 2013

JEREMY RUCK & ASSOCIATES, INC.

P.O. Box 415
221 S. 1st Avenue
Canton, IL 61520

Tel: 309.647.1200
Fax: 855.332.9537
jeremyruck.com

7.31.2013



WBUP-D.X

BMPCDT20091015AAS
Latitude: 46-29-26 N
Longitude: 087-53-36 W
ERP: 0.40 kW
Channel: 10
Frequency: 195.0 MHz
AMSL Height: 598.0 m
Elevation: 529.273 m
Horiz. Pattern: Directional
Prop Model: Longley/Rice
Climate: Cont temperate
Conductivity: 0.0050
Dielec Const: 15.0
Refractivity: 311.0
Receiver Ht AG: 9.1 m
Receiver Gain: 0 dB
Time Variability: 90.0%
Sit. Variability: 50.0%
ITM Mode: Broadcast

Blue: > 43.0 dBu
Red: 36.0 - 43.0

43 dBu F(50,90)
Service Contour

36 dBu F(50,90)
Service Contour

Jeremy Ruck & Associates, Inc.

Baraga

Marquette

Marquette

Harvey

WBUP-D.X

Ishpeming

Gwinn

City of License
Ishpeming, Michigan

Iron

Exhibit E-2

City of License Coverage

WBUP - Ishpeming, Michigan

Lake Superior Community Broadcasting Corporation

July, 2013

Scale 1:500,000

0 7 14 21 km

WBUP-D.X

BMPCDT20091015AAS

Latitude: 46-29-26 N

Longitude: 087-53-36 W

ERP: 0.40 kW

Channel: 10

Frequency: 195.0 MHz

AMSL Height: 598.0 m

Elevation: 529.273 m

Horiz. Pattern: Directional

Prop Model: Longley/Rice

Climate: Cont temperate

Conductivity: 0.0050

Dielec Const: 15.0

Refractivity: 301.0

Receiver Ht AG: 10.0 m

Receiver Gain: 0 dB

Time Variability: 10.0%

Sit. Variability: 50.0%

ITM Mode: Broadcast

Jeremy Ruck & Associates, Inc.

- ☐ WBUP-D.X (10)
- ☐ WWUP-TV-D (10)
- ☐ WBKP-DR.P (11)
- ☐ W11CZ (11Z)
- ☐ WDIO-DT (10)
- ☐ WWUP-D (10)
- ☐ WDIO-D (10)

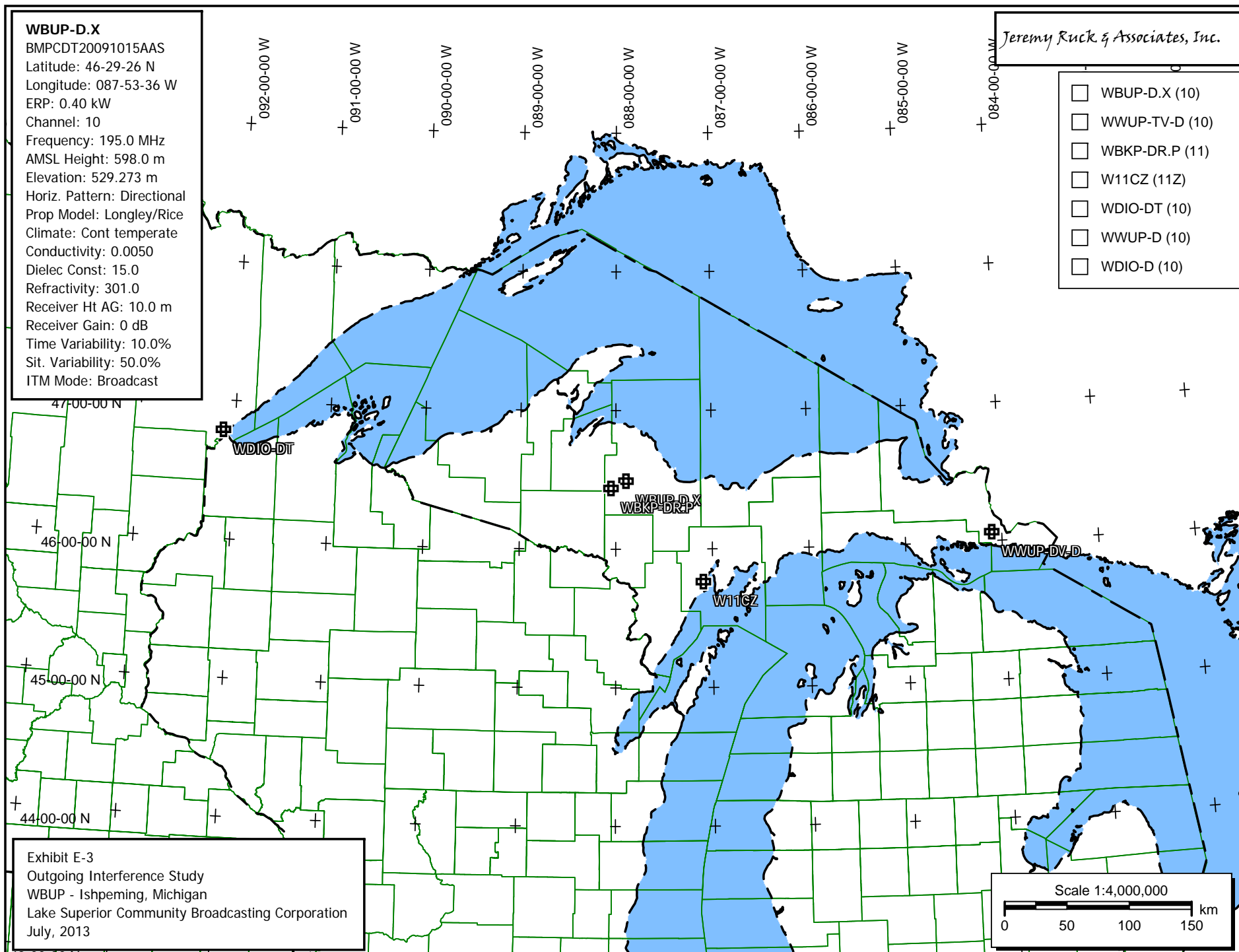


Exhibit E-3

Outgoing Interference Study

WBUP - Ishpeming, Michigan

Lake Superior Community Broadcasting Corporation

July, 2013

Exhibit E-4
Outgoing Interference Population Report

WBUP-D.X (10) Ishpeming, MI - BMPCDT20091015AAS
Broadcast Type: Digital Service: T
Lat: 46-29-26 N Lng: 087-53-36 W ERP: 0.4 kW AMSL: 598.0 m
TV Outgoing Interference Study
Signal Resolution: 1.0 km
Consider NTSC Taboo: Yes
KWX error points are considered to
be interference free coverage.
Default # of radials computed for contours: 360
Contours calculated using 8 radial HAAT.
LR Profile Spacing Increment: 0.1 km
Masked interference points are being
counted as interference.
Pop Centroid DB: 2010 US Census (PL)

Study Date: 7/31/2013
TV Database Date: 7/31/2013

Primary Terrain: NED 3 Second US Terrain
Secondary Terrain: FCC 30 Second US Database

Population Database: 2010 US Census (PL)

Stations Considered:

Call Letters	City	State	Dist	Azi
WWUP-TV-D (10)	Sault Ste. Marie	MI	296.3	97.9
WBKP-DR.P (11)	Calumet	MI	13.3	244.1
W11CZ (11Z)	Escanaba	MI	101.6	142.4
WDIO-DT (10)	Duluth	MN	325.4	277.4
WWUP-D (10)	SAULT STE. MARIE	MI	296.0	97.9
WDIO-D (10)	DULUTH	MN	325.3	277.3

Call	Area	HUnits	Contour	Masked Ix	Unmasked Ix	%
WWUP-TV-D (10)	0.0	0	116,481	0	0	0.00
WBKP-DR.P (11)	0.0	0	193,759	0	0	0.00
W11CZ (11Z)	0.0	0	13,741	0	0	0.00
WDIO-DT (10)	0.0	0	341,161	0	0	0.00
WWUP-D (10)	0.0	0	107,189	0	0	0.00
WDIO-D (10)	0.0	0	294,642	0	0	0.00

Housing Units Population