OWL ENGINEERING & EMC TEST LABS, INC.

CONSULTING COMMUNICATIONS ENGINEERS · EMC TEST LABORATORIES

5844 Hamline Avenue North, Shoreview, MN 55126
651-784-7445 • Fax 651-784-7541

ENGINEERING EXHIBIT FOR AN APPLICATION FOR A CONSTRUCTION PERMIT FOR A MINOR CHANGE TO TRANSLATOR K287AD (BLFT-20000919AHI) FACILITY ID# 49542 CHANNEL 287D 105.3 MHZ LEECH LAKE BAND OF OJIBWE

CHANNEL 287D 0.25 KW (H&V) 32 METERS HAAT

MARCH 25, 2014

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ENGINEERING STATEMENT

This engineering exhibit, of which this Statement is a part, was prepared in accordance with the Rules and Regulations of the Federal Communications Commission and pursuant to the provisions of Section III-B of FCC Form 349 on behalf of Leech Lake Band of Ojibwe. (Hereafter ("**Lake Band**") in support of an application for authority to modify an existing FM Translator. The purpose of this application is to modify the site location using a power output of 250 watts ERP and 32 meters HAAT. This power/height combination is an allowable Class D facility permitted under the current rules and regulations. This change is proposed to eliminate interference to a co-located Public Safety radio system that could not be eliminated at the licensed site.

Lake Band proposes to operate from a site uniquely described by the geographic coordinates:

(NAD 27)
47° 27' 37" North Latitude
94° 51' 31" West Longitude

The proposed facility will be located on an **existing tower**. Engineering Figure 1 is a portion of the Bemidji East, MN 7.5 minute USGS map that shows the exact location of the proposed new tower. Figure 2 is an aerial view of the site. The proposed new site is located 2.38 km from the licensed site. The applicant is aware of the provisions of §74.1203 of the FCC's Rules and the requirement for satisfying all complaints of interference that are received.

ALLOCATION CONSIDERATIONS

A review of allotments and assignments on channel 287, on the three immediately upper adjacent, the three immediately lower adjacent channels and the two channels removed by 53 and 54 channels (233 & 234) shows that the site proposed has no short-spaced conditions. The results of the allocation study are shown in Figure 3.

A search was performed for the presence of any other AM, FM or TV communications facilities located nearby and AM facilities KPMI and KKBJ were found to be located 2.08 km away.

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COVERAGE CONTOURS

The three-to-sixteen-kilometer average terrain elevations were derived from the NGDC 30-second terrain database.

DISTANCES TO CONTOURS (Kilometers):
Antenna COR elevation (AMSL): 455 meters Average HAAT: 32 meters
Frequency: 105.3000 MHz
Coordinates: N 47° 27 37.00 W 94° 51 31.00
F(50,50) Curves Number of Contours: 2

AZ (degs)	HAAT (m)	ERPd (kW)	CONTOUR LEVELS (dBuV): 70.0	60.0
0.0	41	0.2500	4.6	8.2
30.0	36	0.2500	4.3	7.8
60.0	35	0.2500	4.3	7.6
90.0	40	0.2500	4.6	8.2
120.0	36	0.2500	4.3	7.8
150.0	34	0.2500	4.2	7.5
180.0	-2	0.2500	4.0	7.1
210.0	38	0.2500	4.5	8.0
240.0	30	0.2500	4.0	7.1
270.0	33	0.2500	4.1	7.4
300.0	32	0.2500	4.1	7.3
330.0	31	0.2500	4.0	7.2

The effective antenna radiation center height for each of the twelve standard 30-degree spaced radials was used in conjunction with the F (50, 50) metric curves of Figure 1 of §73.333 of the Rules to determine the distances to the coverage contours. Figure 4 shows the proposed 60 dBuV signal contour.

ANSI Power Density Calculations

The power density at the base of the tower was calculated using the following formula from OST Bulletin Number 65, August, 1997:

$$S = \frac{0.64 \times 1.64 \times ERP}{\pi(R^2)}$$

Where: S = power density in μW/ centimeter^2
ERP = effective radiated power in watts
R = distance to radiation source in centimeters
π = 3.14

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The site is considered to be a controlled site since access to the tower area is restricted. Access to RF circuitry is restricted by a property fence that surrounds the tower and limits access to the public. Signs are posted warning of the potential danger. When persons require access to the site, tower or antenna for maintenance purposes, the transmitter power will be reduced or completely eliminated to comply with ANSI guidelines. Hence, the conditions of §1.1306(b) (3) would not be involved.

Using:

ERP = 0.25 KW Vertical & 0.25 KW Horizontal
R = 4,400 cm.

Using this formula and the values shown below, a power density of less than 8.67 $\mu W/cm^2$ is found to exist at the base of the tower. This predicted value is 0.93% of the controlled exposure maximum limit of 1,000 $\mu W/cm^2$ or 4.3% of the General Population exposure limit.

ENVIRONMENTAL IMPACT STATEMENT

The instant proposal is categorically excluded from environmental processing since none of the conditions of §1.1306(b)(2) and (3) would be involved for the following reasons:

1) The site proposed is not in or near any location referenced in §1.1306(b)(1) as being of environmental interest.

2) The provisions of §1.1306(b)(2) relating to the use of high intensity strobe lighting do not apply since this tower is not utilizing this type of lighting.

3) Compliance to §1.1306(b)(3) regarding human exposure to RF radiation was examined for multiple sources. A search was made about the proposed site coordinates to locate any additional sources of RF radiation and none were found.

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CONCLUSIONS

Based on the engineering studies provided, the proposal is in complete conformance with all technical rules of the Federal Communications Commission.

Garrett G. Lysiak, P.E.
March 25, 2014

BEMIDJI EAST QUADRANGLE
MINNESOTA
TOPOGRAPHIC SERIES

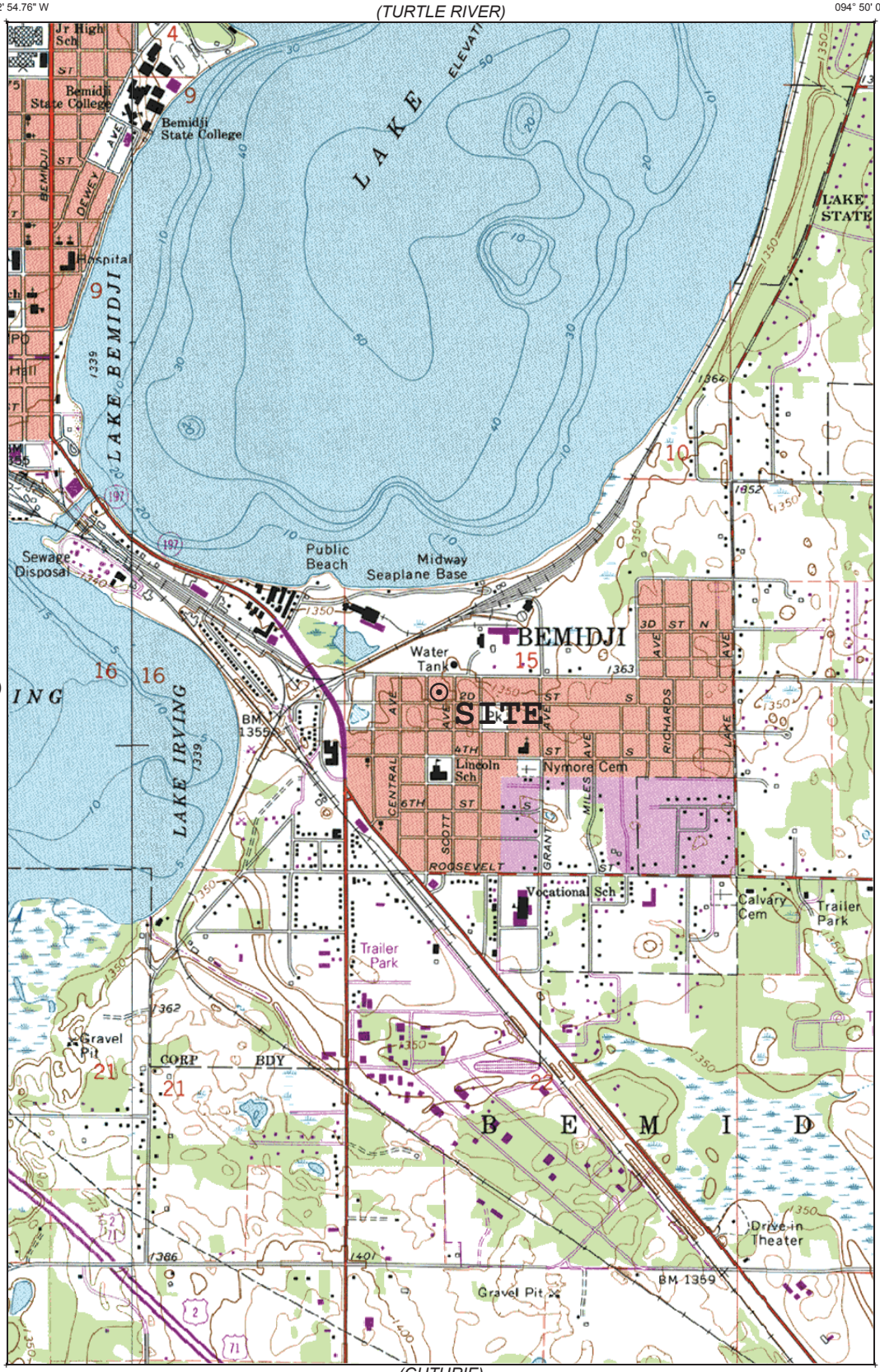
(PETERSON LAKE)

(TURTLE RIVER LAKE)

094° 52' 54.76" W
047° 29' 06.10" N

(TURTLE RIVER)

094° 50' 04.57" W
047° 29' 06.10" N



(BEMIDJI WEST)

(ANDRUSIA LAKE)

047° 26' 07.97" N
094° 52' 54.76" W

(GUTHRIE)

047° 26' 07.97" N
094° 50' 04.57" W

(FRONTENAC LAKE)

(STEAMBOAT LAKE)

Declination

GN 1.37° W
MN 1.46° E

SCALE 1:24000

0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9
MILES

0 1000
YARDS

0 1
KILOMETER

CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM 1929

BEMIDJI EAST, MN
1968

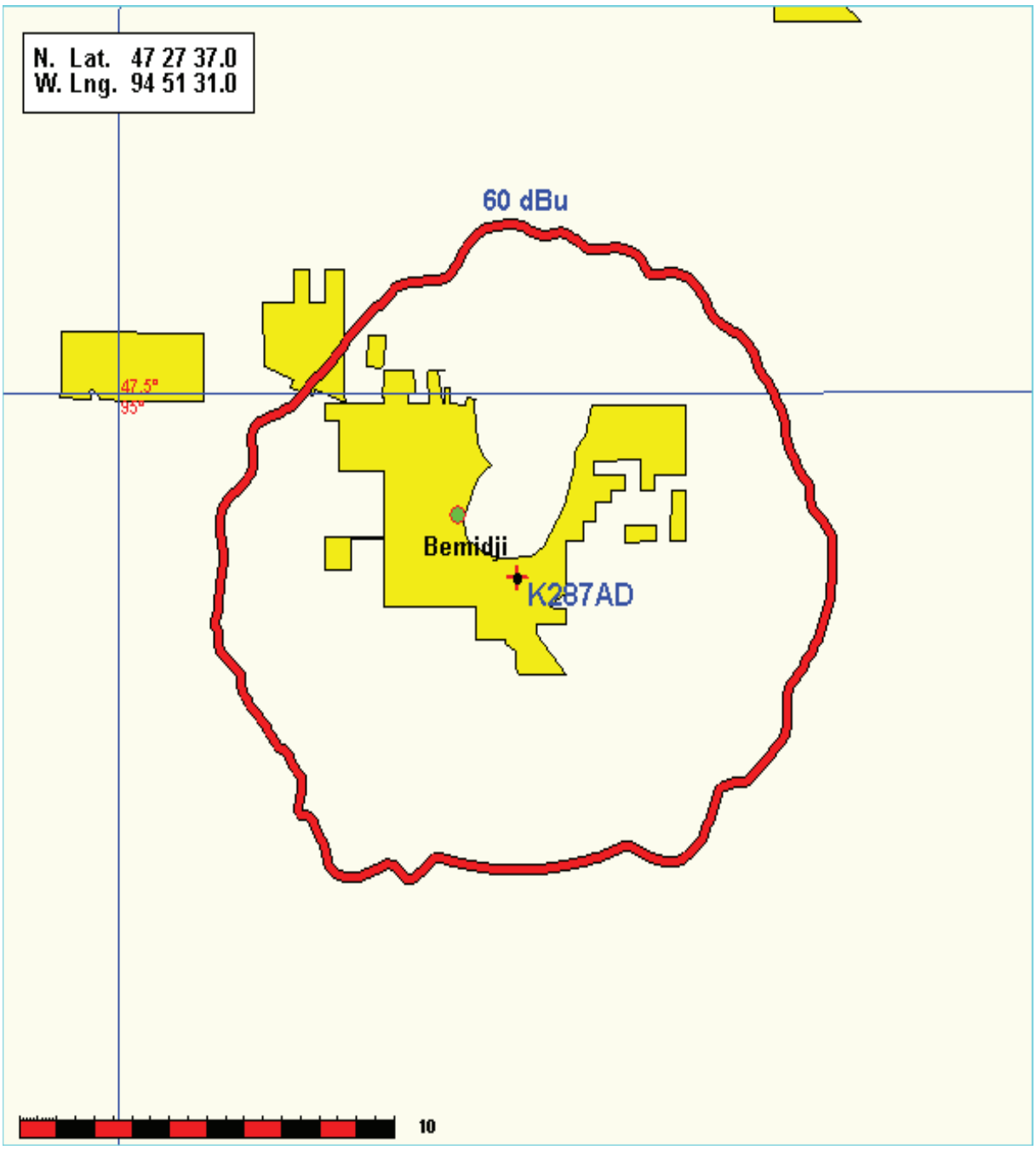
FIGURE 1 - SITE MAP

FIGURE 2 - AERIAL VIEW

FIGURE 3 - ALLOCATION STUDY

Leech Lake Band Of Ojibwe
REFERENCE CH# 287D - 105.3 MHz, Pwr= 0.25 kW, HAAT= 32.0 M, COR= 444.9 M
47 27 37.0 N. Average Protected F(50-50)= 7.09 km
94 51 31.0 W. Omni-directional

CH CALL / CITY	TYPE ANT / STATE	AZI <--	DIST / FILE #	LAT / LNG	PWR(kW) / HAAT(M)	INT(km) / COR(M)	PRO(km) / LICENSEE	*IN* (Overlap in km)	*OUT*
287D K287AD Bemidji	LIC _C_ MN	309.6 129.6	2.28 BLFT20000919AHI	47 28 24.0 94 52 55.0	0.250 23	23.8 445	7.1 Leech Lake Band Of Ojibwe	-28.6*	-28.6*
288C1 KBAJ Deer River	LIC _C_ MN	96.4 277.5	111.17 BLH20000115AAA	47 20 22.0 93 23 48.0	100.000 155	89.1 562	59.4 Red Rock Radio Corp.	15.0	41.4
285D K285FK Walker	LIC _C_ MN	152.6 332.8	45.92 BLFT20051011AGS	47 05 36.0 94 34 47.0	0.190 97	1.0 518	12.3 Shine The Light, Inc	37.9	32.1
290C1 KKWS Wadena	LIC _C_ MN	181.9 1.9	95.72 BMLH20020411AAE	46 35 59.0 94 54 04.0	100.000 171	7.5 577	60.7 Bl Broadcasting, Inc.	81.1	34.0
285C AL0529 Rainy River	AL ___ ON	8.7 188.9	141.35	48 43 00.0 94 34 00.0	100.000 600	13.6 934	97.0	120.6	41.2


N. Lat. 47 27 37.0
W. Lng. 94 51 31.0
60 dBu
47.5°
95°
Bemidji
K287AD
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