



OWL ENGINEERING & EMC TEST LABS, INC.

CONSULTING COMMUNICATIONS ENGINEERS • EMC TEST LABORATORIES

MINNESOTA OFFICE
5844 Hamline Avenue North, Shoreview, MN 55126
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800-797-1338

**ENGINEERING EXHIBIT FOR AN
APPLICATION FOR A CONSTRUCTION PERMIT
CHANNEL 221 C2
PASKVAN MEDIA, INC
BLACKDUCK, MN**

CHANNEL 221 36 KW (H&V) 176 METERS HAAT

November 6, 2006



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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 301 on behalf of Paskvan Media, Inc (hereafter “**PMI**”) in support of an application for authority to construct a new FM broadcast facility operating on channel 221 (92.1 MHz) at Blackduck, MN. The purpose of this application is to amend an existing application (BNPH-20060310ACR) to change the effective radiated power to 36 KW, both in the horizontal and vertical plane, and the antenna center of radiation to 176 meters above the average terrain. This power/height combination is the maximum allowable Class C2 facility permitted under the current rules and regulations.

“**PMI**” proposes to operate from a site uniquely described by the geographic coordinates:

(NAD 27)

N 47° 33' 26" North Latitude
W 94° 48' 04" West Longitude

(NAD 83)

N 47° 33' 26.1" North Latitude
W 94° 48' 04.9" West Longitude

Notification to the FAA Great Lakes Regional office was done and a determination of no hazard was issued. The tower was registered and the registration number is 1255741. However, an application for a construction permit was simultaneously filed for a new facility on channel 283 with an output power of 8.5 kW with an antenna having a center of radiation 137 meters AGL on the same tower.

Engineering Figure 1 is a portion of the Turtle River, Minnesota 7.5 Second map that shows the exact location of the tower. A search was performed for the presence of any other communications facilities located nearby and none were found.



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Figure 2 shows an aerial view of the proposed site and that the surrounding area is rural. Because the area is rural, there is not expected to be any problem with blanketing interference. The applicant is aware of the provisions of Section 73.318 of the FCC's Rules and the requirement for satisfying all complaints of blanketing interference that are received within a one-year period. The main studio for the station is located in the Blackduck area.

ALLOCATION CONSIDERATIONS

A review of allotments and assignments on channel 221, on the three immediately upper adjacent, the three immediately lower adjacent channels and the two channels removed by 53 and 54 channels (274 & 275) shows that the site proposed would be in full compliance with Section 73.207.

FM CHANNEL SPACING STUDY

ALLOCATION STUDY

47 33 26 N.			CLASS = C2 Int = B					
94 48 04 W.			Current Spacings					
----- Channel 221 - 92.1 MHz -----								
Call	Channel		Location		Azi	Dist	FCC	Margin

KDSU	LIC	220C	Fargo	ND	252.4	190.83	188.0	2.83
KXKK.C	CP -N	223C2	Park Rapids	MN	192.7	71.37	58.0	13.37
KXKK	LIC	223C3	Park Rapids	MN	192.7	71.37	56.0	15.37
WYRQ-FM	LIC	221A	Little Falls	MN	167.7	182.86	166.0	16.86
CITIFM	OPE	221C	Winnipeg	MB	325.9	298.65	274.0	24.65
KAXE	LIC	219C1	Grand Rapids	MN	107.6	108.52	79.0	29.52
WWAX	LIC	221C3	Hermantown	MN	111.7	220.35	177.0	43.35
KXBR	LIC	220A	International Falls	MN	41.4	151.70	106.0	45.70
KQMN	LIC	218C1	Thief River Falls	MN	289.7	143.33	79.0	64.33
KKWQ	LIC	223C1	Warroad	MN	343.1	147.88	79.0	68.88
KXRA-FM	LIC	222C3	Alexandria	MN	195.4	187.26	117.0	70.26

COVERAGE CONTOURS

The three-to-sixteen-kilometer average terrain elevations were derived from the Defense Mapping Agency 3-second topography database.

The effective antenna radiation center height for each of the eight standard 45-degree spaced radials was used in conjunction with the F(50,50) metric curves of Figure 1 of Section 73.333 of the Rules to determine the distances to the 70 dBu and 60 dBu coverage contours. The contours drawn from the data are depicted on the map included as Engineering Figure 2. As is readily evident, all of Blackduck, MN is included within the proposed 70 dBu coverage contour as required by the rules. Figure 4 shows that there is no intervening terrain between the proposed transmitter site and the far edge of the city of license.



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DISTANCE TO CONTOURS

DISTANCES TO CONTOURS (Kilometers):

Antenna COR elevation (AMSL): 595 meters Average HAAT: 176 meters

Frequency: 92.1000 MHz

Coordinates: N 47 33 26 W 94 48 4

F(50,50) Curves Number of Contours: 2

AZ (degs)	HAAT (m)	ERPd (kW)	CONTOUR LEVELS (dBu) :	
			70.0	60.0
0.0	176	36.0000	32.6	52.1
45.0	175	36.0000	32.5	52.1
90.0	186	36.0000	33.4	53.1
135.0	178	36.0000	32.7	52.3
180.0	169	36.0000	32.0	51.3
225.0	177	36.0000	32.6	52.2
270.0	166	36.0000	31.8	51.1
315.0	178	36.0000	32.7	52.4

POPULATION AND AREA DATA

Based on the 2000 U.S. Census of Population, the numbers of persons enclosed by the proposed 60 dBu coverage contour are 55,920 persons. The population count was made through the employment of a computer program containing a database including the geographic coordinates of the centroids of population groupings. The area within the proposed 60 dBu coverage contour is 8,550 square kilometers. A computerized integration program determined this area.

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:

$$S = ((0.64)(1.64)(ERP)(1000)(\text{milliwatts/watt})) / (\pi(R)^2)$$

where: S = power density in milliwatts per square centimeter

ERP = effective radiated power in watts

R = distance to radiation source in centimeters

$\pi = 3.14$

Using this formula and the values shown below, a power density of 0.78 mW/cm² is found to exist at the base of the tower. This predicted value is 43.6% of the public exposure maximum limit of 0.2 mW/cm².

ERP = 72 kW watts

R = 16,600 cm.



ANSI Power Density Calculations

The proposed antenna will be energized such that it produces an effective radiated power of 36 kW from a center of radiation 166 meters above ground level. There is also another FM station proposed to be located on the tower on channel 283 with an output power of 8.5 kW at a height of 137 meters above ground level.

Using the FCC FM Model program the maximum RF Radiation level assuming the combined power levels of channels 221 and channel 283 the predicted radiation levels are:

STATION	Power Density ($\mu\text{W}/\text{cm}^2$)	% of maximum uncontrolled
221	87.3	43.6
283	30.3	15.1
TOTAL	117.3	58.6

Based on the calculations it was determined that the RF radiation would be only 58.67% of the uncontrolled limit.

Access to RF circuitry is restricted by a metal fence that surrounds the property that 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 Section 1.1306(b)(3) would not be involved.



ENVIRONMENTAL IMPACT STATEMENT

The instant proposal is categorically excluded from environmental processing since none of the conditions of Section 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 Section 1.1306(b)(1) as being of environmental interest.
- 2) The provisions of Section 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 Section 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.

CONCLUSIONS

Based on the engineering studies provided, the following conclusions can be obtained:

- (1) Implementation of the instant proposal will continue to provide Blackduck with a full time aural broadcast service.
- (2) 55,920 persons in 8,550 square kilometers would have an available signal strength of 60 dBu or greater from the proposed construction location.
- (3) All of Blackduck would be served with a signal of 70 dBu or greater from the proposed construction site.
- (4) The proposal is in complete conformance with all technical rules of the Federal Communications Commission.

Garrett G. Lysiak, P.E.
November 6, 2006

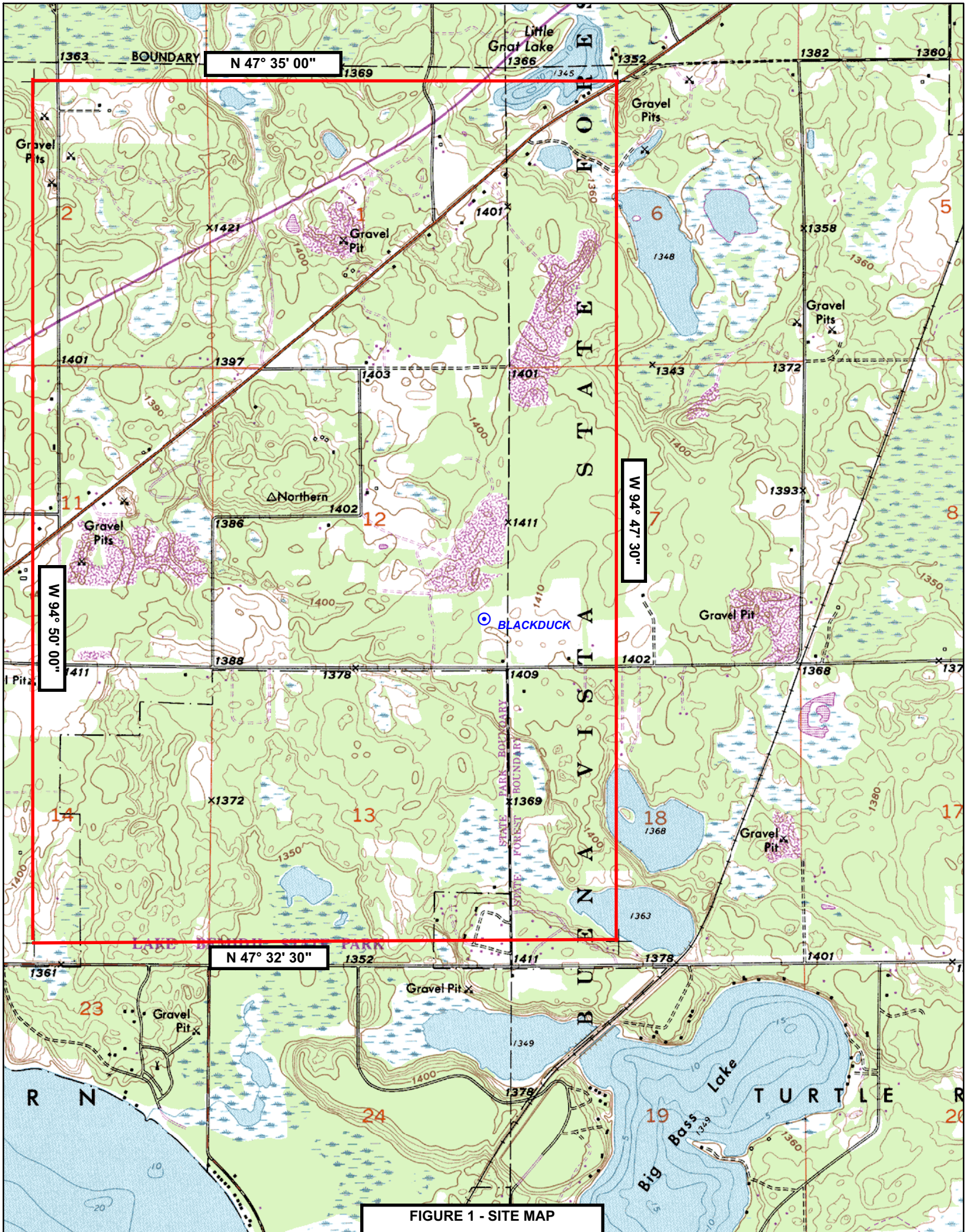


FIGURE 1 - SITE MAP

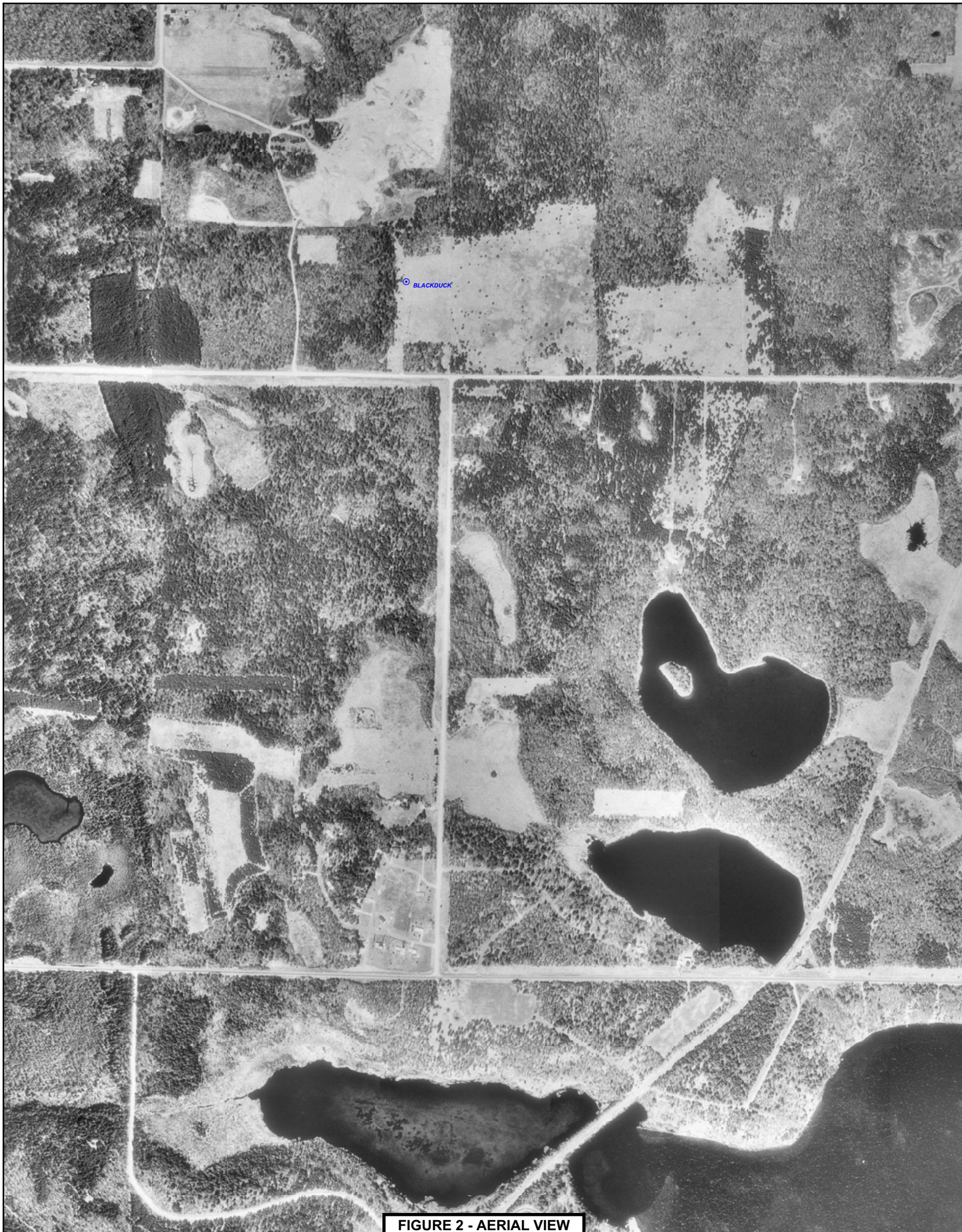


FIGURE 2 - AERIAL VIEW

Prop. model: FCC-EDX
Time: 50.0% **Loc.:** 50.0%
Prediction Confidence Margin: 0.0dB
Climate: Continental Temperate
Land use (clutter): none
Atmospheric Abs.: none
K Factor: 1.333
RX Antenna - Type: OMNI
Height: 9.1 m **AGL Gain:** -2.15 dBd

Field strength at remote

 = 70.0 dBμV/m
 = 60.0 dBμV/m
Display threshold level: -120.0 dBmW

Sites

Site: BLACKDUCK

N47°33'21.00" W94°48'03.00" 429.0 m

BLACKDUC Tx.Ht.AGL: 166.0 m Total ERPd: 36.00kW
Grp: 1 omni-horizontal/0.0° 92.1000 MHz

Reference Grid (spacing: 30')

KILOMETERS

20
0
-5

OWL ENGINEERING, INC

SIGNAL CONTOURS

FIGURE 3

NOVEMBER 6, 2006

