

January 2016
FM Translator K231CB
Notus, Idaho Channel 233D
Allocation Study

250 Mile Window Application

This application is being filed as a "250 Mile Window Application" to modify an authorized FM translator for use with an AM station.

AM Station Callsign: KTRP
AM Station Class: C

Translator Distance: 346.63 kilometers (215 miles)

(The applicant is not the licensee of the AM station, but has entered into a retransmission agreement with the primary station licensee.)

Allocation Study

The attached spacing study shows the spacing between the proposed translator site and the location of cochannel and adjacent channel stations and proposals. This study was made with the Commission's Class A spacing requirements, and individual situations were examined to determine the lack of prohibited contour overlap per the requirements of §74.1204 of the Rules. The attached allocation study map demonstrates compliance with the Commission's Rules for protection of FM broadcast stations and FM translators as outlined in §74.1204.

The spacing study demonstrates compliance with §73.207 of the Commission's Rules regarding spacing restrictions to stations which are 53 or 54 channels removed from the proposed operation.

KBXL 231C Caldwell

KRVB 235C Nampa

The proposed translator transmitter site is located within the 60 dBu protected contour of second-adjacent channel stations KBXL and KRVB. The following calculations, performed using the *Living Way* methodology, demonstrates interference protection to those stations.

Protected Station	Distance & Bearing to Proposal	Station ERP and HAAT on that azimuth	Station Field Strength at Proposal	Corresponding Translator Interfering Contour	Distance to Translator Interfering Contour
KBXL 231C	53.91 km 281 deg True	40 kW 930 meters	76.2 dBu F(50,50)	116.2 dBu	see following
KRVB 235C	53.91 km 281 deg True	49 kW 949 meters	77.2 dBu F(50,50)	117.2 dBu	see following

Given that the transmitting antenna will be installed at a height of 120 meters above ground, and taking into consideration the vertical plane pattern of the Shively 6812B-2 antenna, the attached Free Space calculations demonstrate that the interference area to KBXL will not reach ground level.

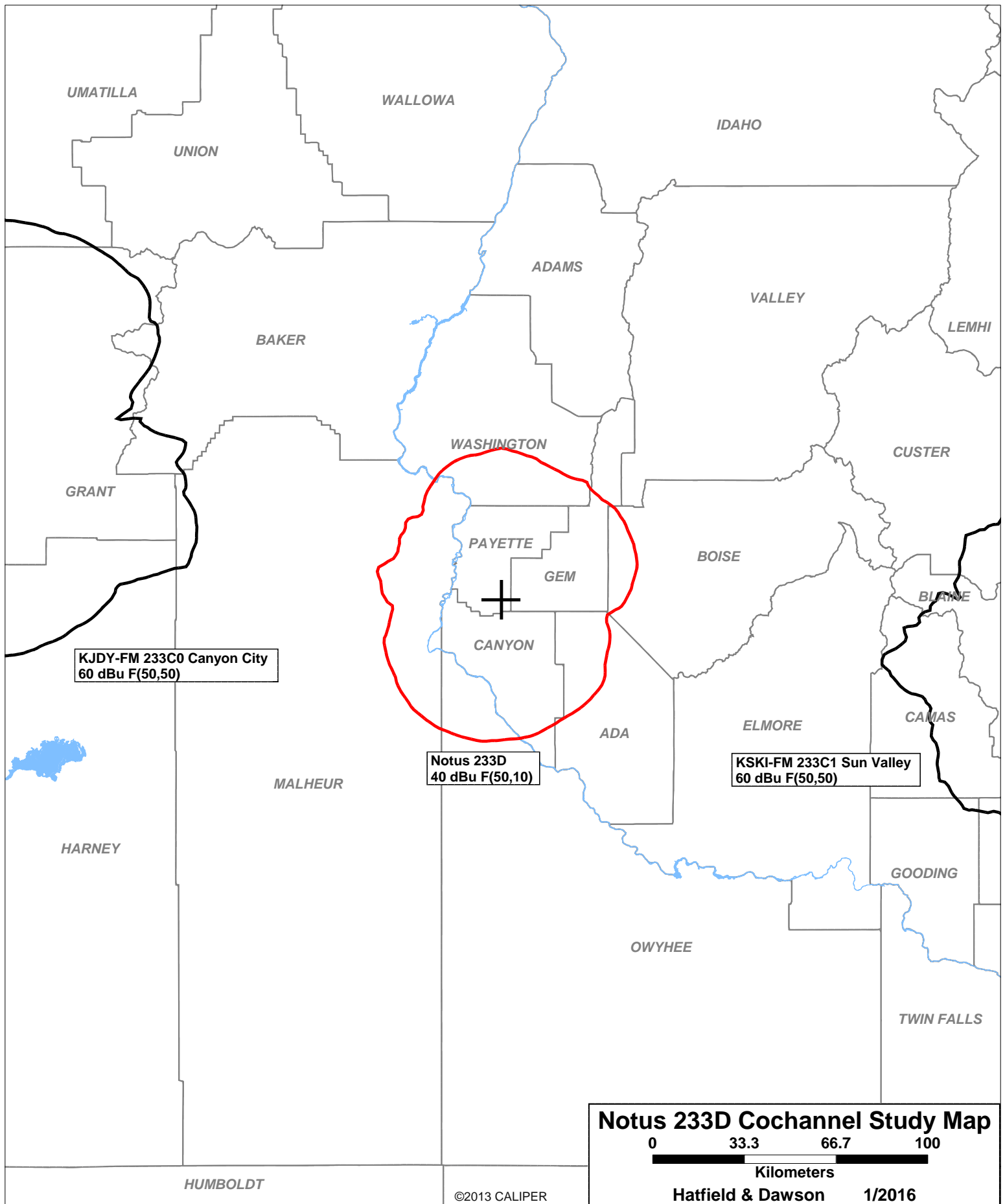
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There is no population within this contour, and the interference contour to KRVB would have an even smaller radius. Therefore, the proposed facility satisfies the requirements of §74.1204(d) with respect to KBXL or KRVB.

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SEARCH PARAMETERS                               FM Database Date: 160121
Channel: 233A      94.5 MHz                      Page 1
Latitude: 43 50 44
Longitude: 116 45 21
Safety Zone: 50 km
Job Title: NOTUS 233
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Call Status	City St	FCC File No.	Channel Freq.	ERP(kW) HAAT(m)	Latitude Longitude	Bearing deg-True	Dist (km)	Req (km)
KBXL LIC	CALDWELL ID	BLH-21106ABA	231C 94.1	40.000 803.0	43-45-18 116-05-52	100.6	53.91 -41.09	95 SHORT
K233BJ LIC	MCCALL ID	BLFT-50902ACC	233D 94.5	0.010 1012.0	45-00-18 116-08-01	20.8	138.04 0.00	0 TRANS
KSKI-FM LIC	SUN VALLEY ID	BLH-30930BUY	233C1 94.5	2.500 583.0	43-38-37 114-23-50	95.9	191.31 -8.69	200 SHORT
KJDY-FM LIC	CANYON CITY OR	BMLH-51207ALP	233C0 94.5	45.000 416.0	44-17-48 119-02-12	286.2	189.47 -25.53	215 SHORT
KRVB LIC	NAMPA ID	BMLH-50511ABL	235C 94.9	49.000 821.0	43-45-18 116-05-52	100.6	53.91 -41.09	95 SHORT
KJOT LIC	BOISE ID	BMLH-50511ABI	286C 105.1	53.000 789.0	43-45-18 116-05-52	100.6	53.91 24.91	29 CLEAR

===== END OF FM SPACING STUDY FOR CHANNEL 233 =====



Notus 233D Free Space Interference Area Calculator

Interference Area to KBXL

Antenna Height: 120 meters AGL
 Contour Level: 116.2 dBu equals 0.6 V/m
 ERP in Watts: 250 Watts

Maximum distance
 to interfering contour is: 563.2 feet equals 171.7 meters

Antenna: 6812B-2

Depression Angle (degrees)	Shively 6812B-2 Relative Field	Adjusted ERP (Watts)	Free Space Distance To 116.2 dBu Contour Along the depression angle	Horizontal Distance (meters)	Contour AGL (meters)
-90	0.000	0.0	0.0 meters	0	120.0
-89	0.018	0.1	3.1	0.1	116.9
-88	0.036	0.3	6.2	0.2	113.8
-87	0.052	0.7	8.9	0.5	111.1
-86	0.069	1.2	11.8	0.8	108.2
-85	0.085	1.8	14.6	1.3	105.5
-84	0.101	2.6	17.3	1.8	102.8
-83	0.117	3.4	20.1	2.4	100.1
-82	0.133	4.4	22.8	3.2	97.4
-81	0.148	5.5	25.4	4.0	94.9
-80	0.163	6.6	28.0	4.9	92.4
-79	0.177	7.8	30.4	5.8	90.2
-78	0.191	9.1	32.8	6.8	87.9
-77	0.205	10.5	35.2	7.9	85.7
-76	0.219	12.0	37.6	9.1	83.5
-75	0.231	13.3	39.7	10.3	81.7
-74	0.244	14.9	41.9	11.5	79.7
-73	0.256	16.4	43.9	12.8	78.0
-72	0.267	17.8	45.8	14.2	76.4
-71	0.278	19.3	47.7	15.5	74.9
-70	0.288	20.7	49.4	16.9	73.5
-69	0.298	22.2	51.2	18.3	72.2
-68	0.307	23.6	52.7	19.7	71.1
-67	0.315	24.8	54.1	21.1	70.2
-66	0.323	26.1	55.5	22.6	69.3
-65	0.329	27.1	56.5	23.9	68.8
-64	0.335	28.1	57.5	25.2	68.3
-63	0.340	28.9	58.4	26.5	68.0
-62	0.343	29.4	58.9	27.6	68.0
-61	0.346	29.9	59.4	28.8	68.0
-60	0.348	30.3	59.7	29.9	68.3
-59	0.349	30.5	59.9	30.9	68.6
-58	0.348	30.3	59.7	31.7	69.3
-57	0.347	30.1	59.6	32.4	70.0
-56	0.344	29.6	59.1	33.0	71.0
-55	0.340	28.9	58.4	33.5	72.2
-54	0.335	28.1	57.5	33.8	73.5
-53	0.328	26.9	56.3	33.9	75.0
-52	0.320	25.6	54.9	33.8	76.7
-51	0.311	24.2	53.4	33.6	78.5
-50	0.300	22.5	51.5	33.1	80.5
-49	0.288	20.7	49.4	32.4	82.7

-48	0.274	18.8	47.0	31.5	85.0
-47	0.259	16.8	44.5	30.3	87.5
-46	0.243	14.8	41.7	29.0	90.0
-45	0.225	12.7	38.6	27.3	92.7
-44	0.206	10.6	35.4	25.4	95.4
-43	0.185	8.6	31.8	23.2	98.3
-42	0.162	6.6	27.8	20.7	101.4
-41	0.139	4.8	23.9	18.0	104.3
-40	0.114	3.2	19.6	15.0	107.4
-39	0.087	1.9	14.9	11.6	110.6
-38	0.059	0.9	10.1	8.0	113.8
-37	0.030	0.2	5.2	4.1	116.9
-36	0.000	0.0	0.0	0.0	120.0
-35	0.031	0.2	5.3	4.4	116.9
-34	0.064	1.0	11.0	9.1	113.9
-33	0.097	2.4	16.7	14.0	110.9
-32	0.131	4.3	22.5	19.1	108.1
-31	0.166	6.9	28.5	24.4	105.3
-30	0.202	10.2	34.7	30.0	102.7
-29	0.239	14.3	41.0	35.9	100.1
-28	0.276	19.0	47.4	41.8	97.8
-27	0.313	24.5	53.7	47.9	95.6
-26	0.351	30.8	60.3	54.2	93.6
-25	0.389	37.8	66.8	60.5	91.8
-24	0.426	45.4	73.1	66.8	90.3
-23	0.464	53.8	79.7	73.3	88.9
-22	0.502	63.0	86.2	79.9	87.7
-21	0.539	72.6	92.5	86.4	86.8
-20	0.575	82.7	98.7	92.8	86.2
-19	0.611	93.3	104.9	99.2	85.8
-18	0.646	104.3	110.9	105.5	85.7
-17	0.680	115.6	116.7	111.6	85.9
-16	0.713	127.1	122.4	117.7	86.3
-15	0.745	138.8	127.9	123.5	86.9
-14	0.775	150.2	133.1	129.1	87.8
-13	0.804	161.6	138.0	134.5	89.0
-12	0.832	173.1	142.8	139.7	90.3
-11	0.857	183.6	147.1	144.4	91.9
-10	0.881	194.0	151.2	149.0	93.7
-9	0.903	203.9	155.0	153.1	95.7
-8	0.923	213.0	158.5	156.9	97.9
-7	0.941	221.4	161.5	160.3	100.3
-6	0.956	228.5	164.1	163.2	102.8
-5	0.969	234.7	166.4	165.7	105.5
-4	0.980	240.1	168.2	167.8	108.3
-3	0.989	244.5	169.8	169.6	111.1
-2	0.995	247.5	170.8	170.7	114.0
-1	0.999	249.5	171.5	171.5	117.0
0	1.000	250.0	171.7	171.7	120.0

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Notus, Idaho Channel 233D
RF Exposure Study

Facilities Proposed

The proposed operation will be on Channel 233D (94.5 MHz) with an effective radiated power of 250 watts. Operation is proposed with an antenna to be mounted on an existing tower with FCC Antenna Structure Registration Number 1254837.

RF Exposure Calculations

OET Bulletin 65 Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields (Edition 97-01) states in part that:

When performing an evaluation for compliance with the FCC's RF guidelines all significant contributors to the ambient RF environment should be considered. . . For purposes of such consideration, significance can be taken to mean any transmitter producing more than 5% of the applicable exposure limit (in terms of power density or the square of the electric or magnetic field strength) at accessible locations.

As will be demonstrated below, the proposed operation will produce less than 5% of the applicable exposure limit for both controlled and uncontrolled environments. Thus, the proposed facility is categorically excluded from the requirement of further study. Therefore, pursuant to §1.1307(b)(3) of the Commission's Rules no calculations are required for the other FM and TV facilities in the vicinity, and precise calculations are made only with regard to the levels from this proposal.

The power density calculations shown below were made using the techniques outlined in OET Bulletin No. 65. "Ground level" calculations in this report have been made at a reference height of 2 meters above ground to provide a worst-case estimate of exposure for persons standing on the ground in the vicinity of the tower. The equation shown below was used to calculate the ground level power density figures from each antenna.

$$S(\mu W / cm^2) = \frac{33.40981 \times AdjERP(Watts)}{D^2}$$

Where: *AdjERP(Watts)* is the maximum lobe effective radiated power times the element pattern factor times the array pattern factor.

D is the distance in meters from the center of radiation to the calculation point.

Ground level power densities have been calculated for locations extending from the base of the tower to a distance of 1000 meters. Values past this point are increasingly negligible.

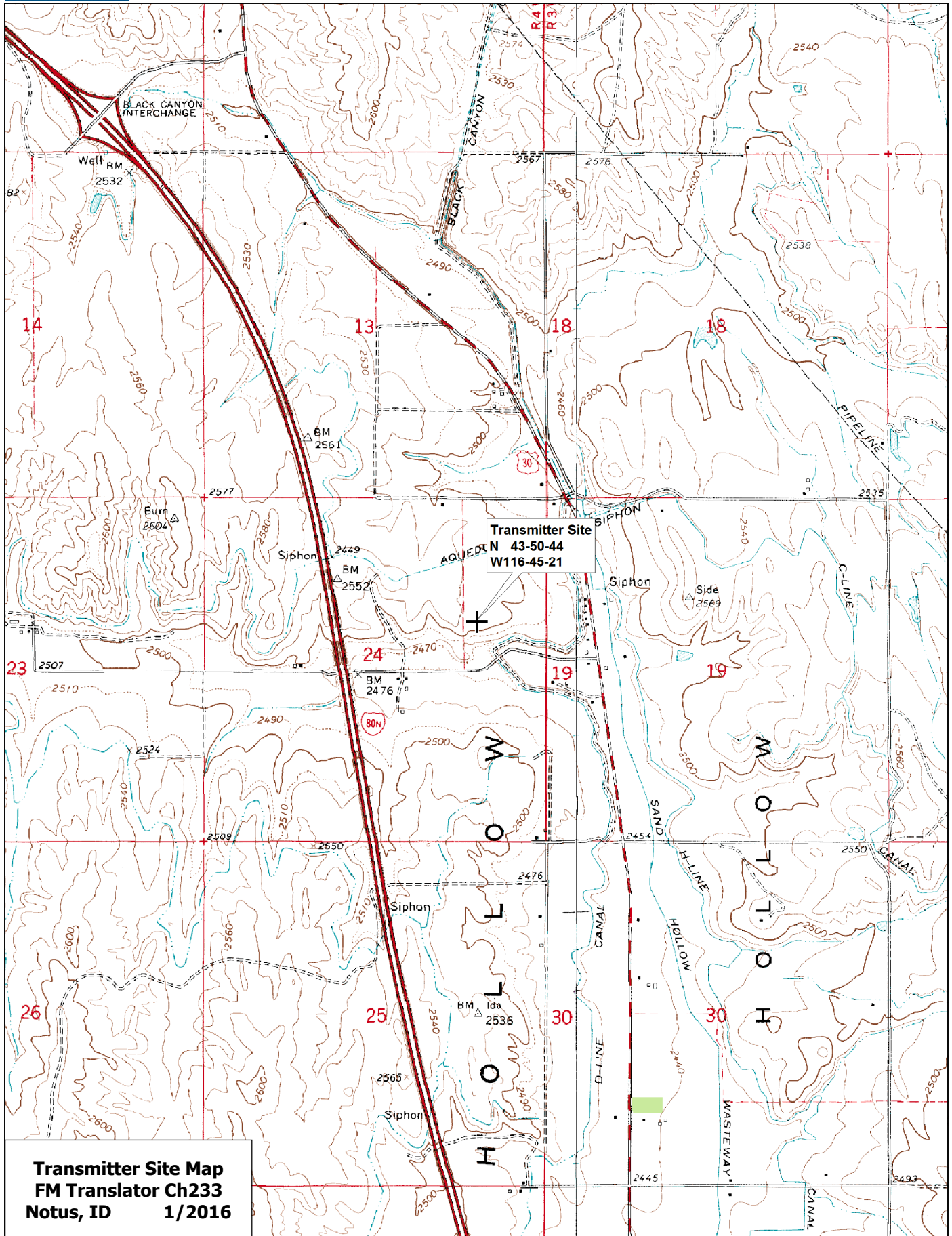
Calculations of the power density produced by the proposed antenna system have been made assuming that the antenna will radiate 100% power straight down to a point 2 meters above ground

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at the base of the tower (118 meters below the antenna). Under this worst-case assumption, the highest calculated ground level power density occurs at the base of the antenna support structure. At this point the power density is calculated to be $1.2 \mu\text{W}/\text{cm}^2$, which is 0.6% of $200 \mu\text{W}/\text{cm}^2$ (the FCC standard for uncontrolled environments).

These calculations show that the maximum calculated power density produced at two meters above ground level by the proposed operation alone is less than 5% of the applicable FCC exposure limit at all locations between 1 and 1000 meters from the base of the antenna support structure. Section 1.1307(b)(3) of the Commission's Rules excludes applications for new facilities or modifications to existing facilities from the requirement of preparing an environmental assessment when the calculated emissions from the applicants proposed facility are predicted to be less than 5% of the applicable FCC exposure limit. Therefore, the proposed facility is in compliance with Section 1.1301 *et seq* and no further analysis of RF exposure at this site is required in this application.

The permittee/licensee in coordination with other users of the site must reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency radiation in excess of FCC guidelines.



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