

June 2017
FM Translator K284CG
Olympia, Washington Channel 284D
Allocation Study

250 Mile Window CP Modification

This application is being filed to modify a "250 Mile Modification" construction permit for FM translator K284CG for use with AM station KBUP.

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 attached 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.

SEARCH PARAMETERS

FM Database Date: 170607

Channel: 284A 104.7 MHz
 Latitude: 47 0 21
 Longitude: 122 56 36
 Safety Zone: 50 km
 Job Title: K284CG OLYMPIA

Page 1

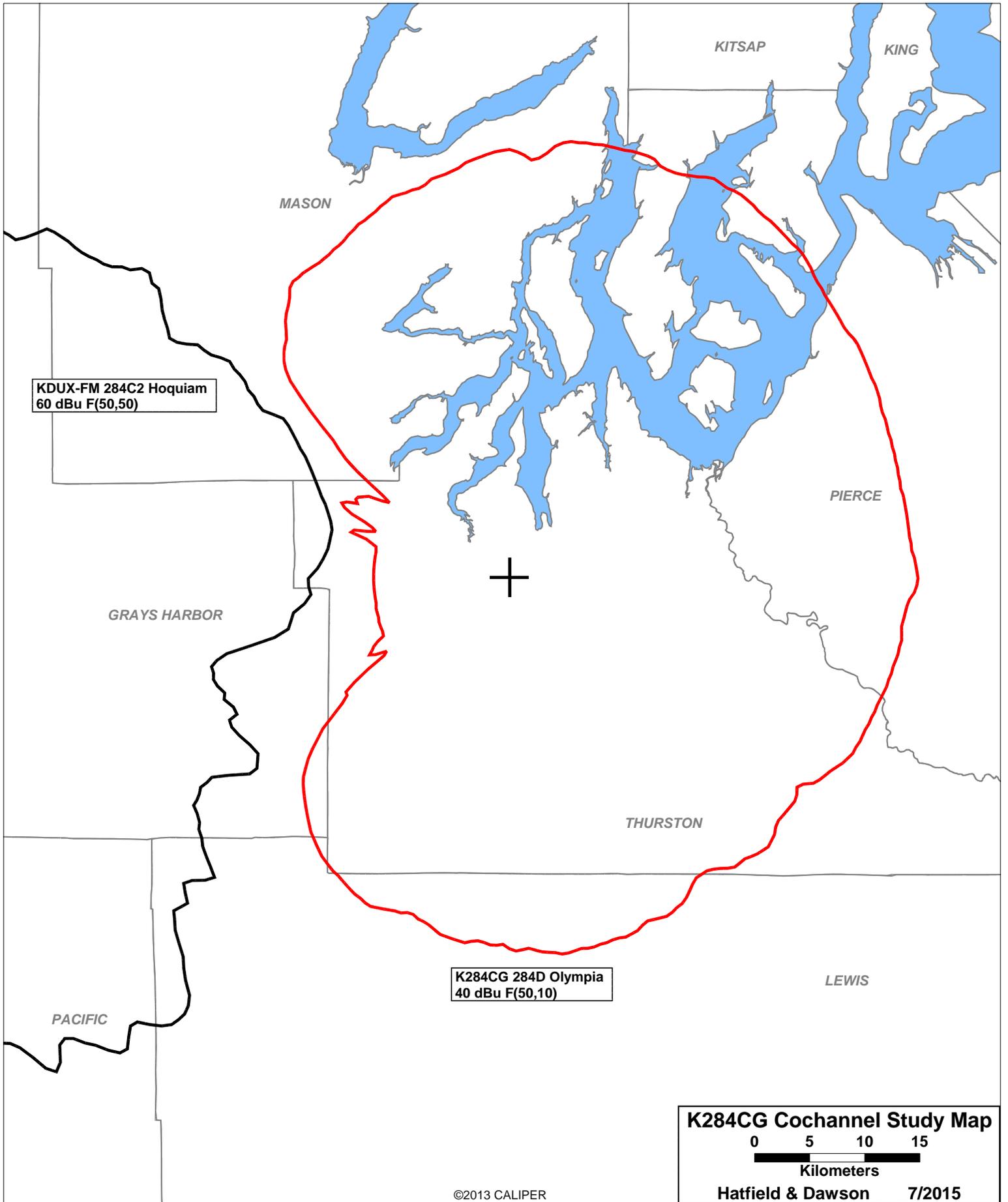
Call Status	City St	FCC File No.	Channel Freq.	ERP(kW) HAAT(m)	Latitude Longitude	Bearing deg-True	Dist (km)	Req (km)
K280GE CP	ABERDEEN WA	BPFT-51005ABT	281D 104.1	0.250 0.0	46-56-00 123-43-57	262.6	60.60 0.00	0 TRANS
K281CI LIC	LAKESWOOD WA	BLFT-61005ABU	281D 104.1	0.020 0.0	47-09-55 122-35-45	55.9	31.79 0.00	0 TRANS
K281CI CP	LAKESWOOD WA	BPFT-61006ADB	281D 104.1	0.250 0.0	47-09-55 122-35-45	55.9	31.79 0.00	0 TRANS
K281AD LIC	OLYMPIA WA	BLFT-931228TD	281D 104.1	0.050 94.0	47-03-10 122-50-45	54.7	9.06 0.00	0 TRANS
KMNT LIC	CHEHALIS WA	BLH-50720AEZ	282C3 104.3	2.350 322.0	46-33-18 123-03-27	189.9	50.87 8.87	42 CLOSE
K283BT LIC	ASTORIA OR	BLFT-30403AAL	283D 104.5	0.070 140.0	46-11-05 123-50-45	217.4	114.52 0.00	0 TRANS
KLSW LIC	COVINGTON WA	BLED-60509ABE	283C2 104.5	6.700 400.0	47-32-35 122-06-25	46.3	87.02 -18.98	106 SHORT
NEW CP	WHITE SALMON WA	BNPH-51013ADJ	283C1 104.5	5.300 951.0	45-38-56 121-43-17	147.7 SS	177.78 44.78	133 CLEAR
KDUX-FM LIC	HOQUIAM WA	BLH-40506ACW	284C2 104.7	31.000 110.0	46-56-01 123-43-49	262.6	60.42 -105.58	166 SHORT
K284BM LIC	LONGVIEW WA	BLFT-80228ABE	284D 104.7	0.041 263.0	46-10-55 122-57-01	180.3	91.59 0.00	0 TRANS
K284CG CP MOD	OLYMPIA WA	BMPFT-60129ACM	284D 104.7	0.250 114.0	47-03-54 122-56-52	357.1	6.59 0.00	0 TRANS
KKRV LIC	WENATCHEE WA	BLH-20205AAA	284C2 104.7	6.500 403.0	47-28-44 120-12-49	74.7	213.26 47.26	166 CLEAR
KUBE LIC	EATONVILLE WA	BLH-20117AAM	285C3 104.9	17.000 124.0	46-50-24 122-15-27	109.2 SS	55.40 -33.60	89 SHORT

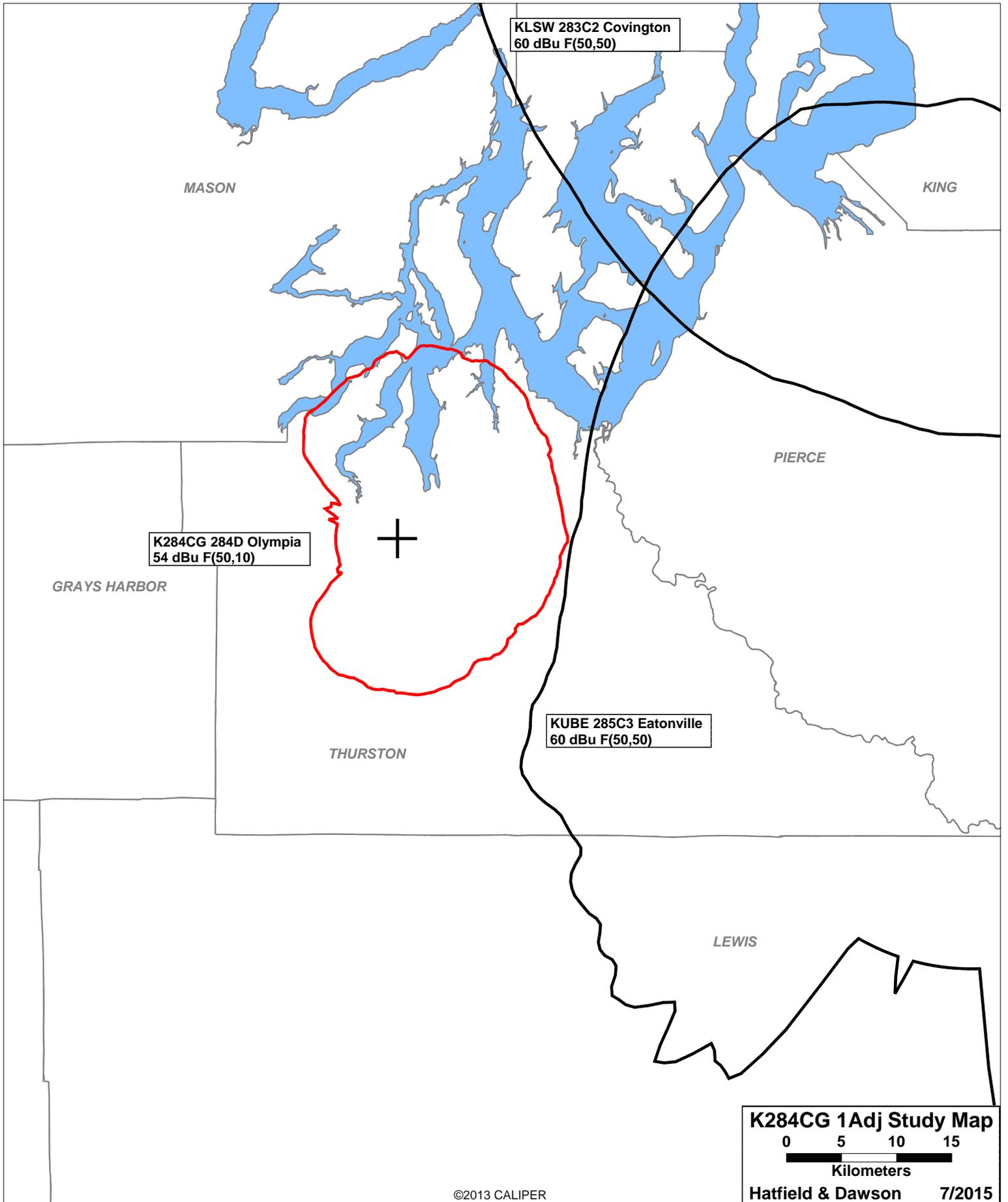
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SEARCH PARAMETERS                               FM Database Date: 170607
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Call Status	City St	FCC File No.	Channel Freq.	ERP(kW) HAAT(m)	Latitude Longitude	Bearing deg-True	Dist (km)	Req (km)
KHUH-LP APP	SEATTLE WA	BMPL-70524ABN	285L1 104.9	0.015 76.2	47-36-48 122-18-14	35.3	83.06 27.06	56 CLEAR
KCFL-LP LIC	ABERDEEN WA	BLL-50403ABH	286L1 105.1	0.041 47.0	46-57-02 123-48-01	264.9	65.49 36.49	29 CLEAR
KCMS LIC	EDMONDS WA	BLH-10212AAE	287C1 105.3	54.000 385.0	47-32-40 122-06-26	46.2	87.11 12.11	75 CLEAR

==== END OF FM SPACING STUDY FOR CHANNEL 284 ====





KLSW 283C2 Covington
60 dBu F(50,50)

MASON

KING

PIERCE

K284CG 284D Olympia
54 dBu F(50,10)

GRAYS HARBOR

KUBE 285C3 Eatonville
60 dBu F(50,50)

THURSTON

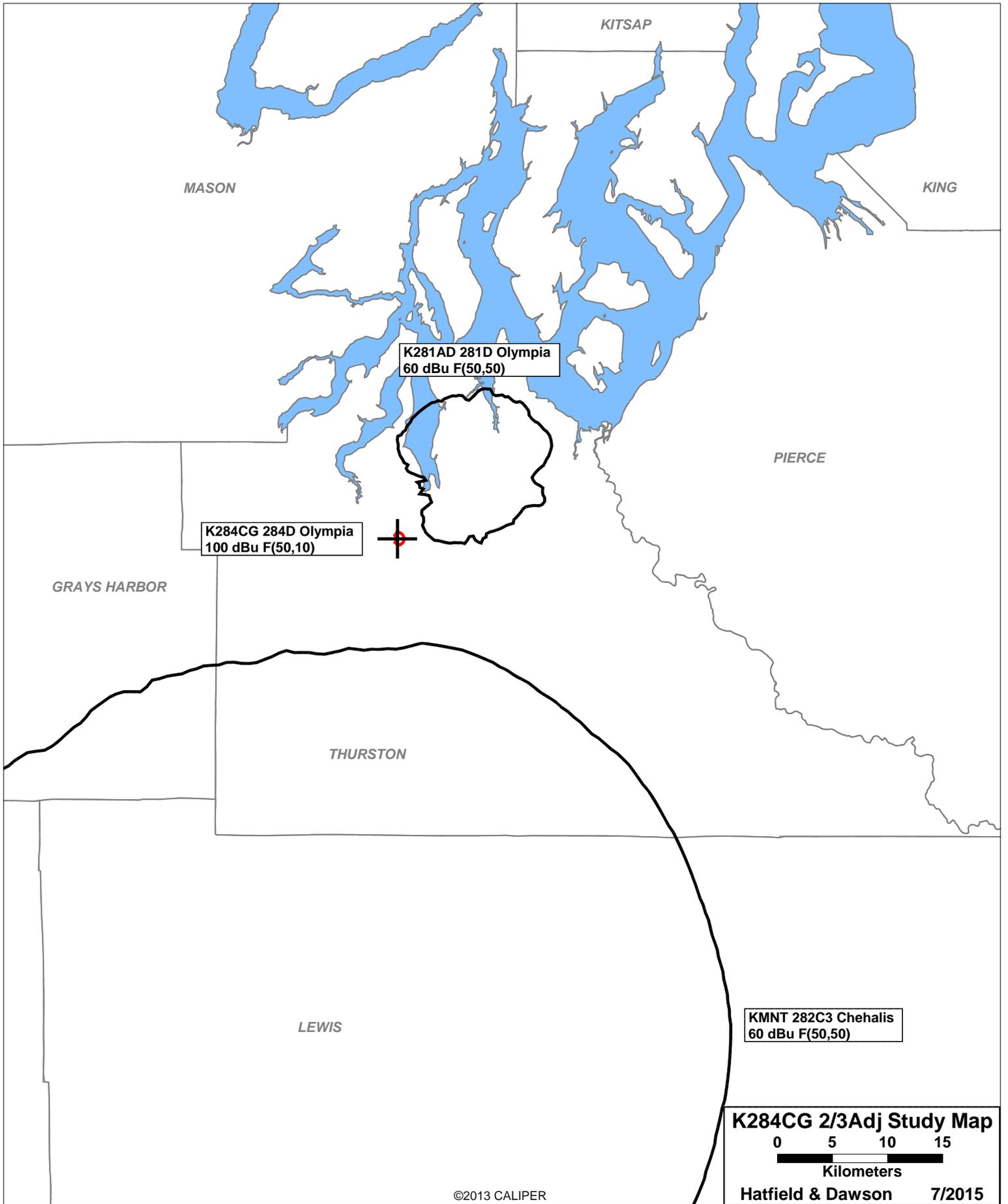
LEWIS

K284CG 1Adj Study Map

0 5 10 15

Kilometers

Hatfield & Dawson 7/2015



June 2017
FM Translator K284CG
Olympia, Washington Channel 284D
RF Exposure Study

Facilities Proposed

The proposed operation will be on Channel 284D (104.7 MHz) with a maximum lobe effective radiated power of 70 watts. Operation is proposed with an antenna to be mounted on an existing tower on Bush Mountain.

The FCC Antenna Structure Registration Number for the proposed tower is 1050704.

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 of K284CG 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 any 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.

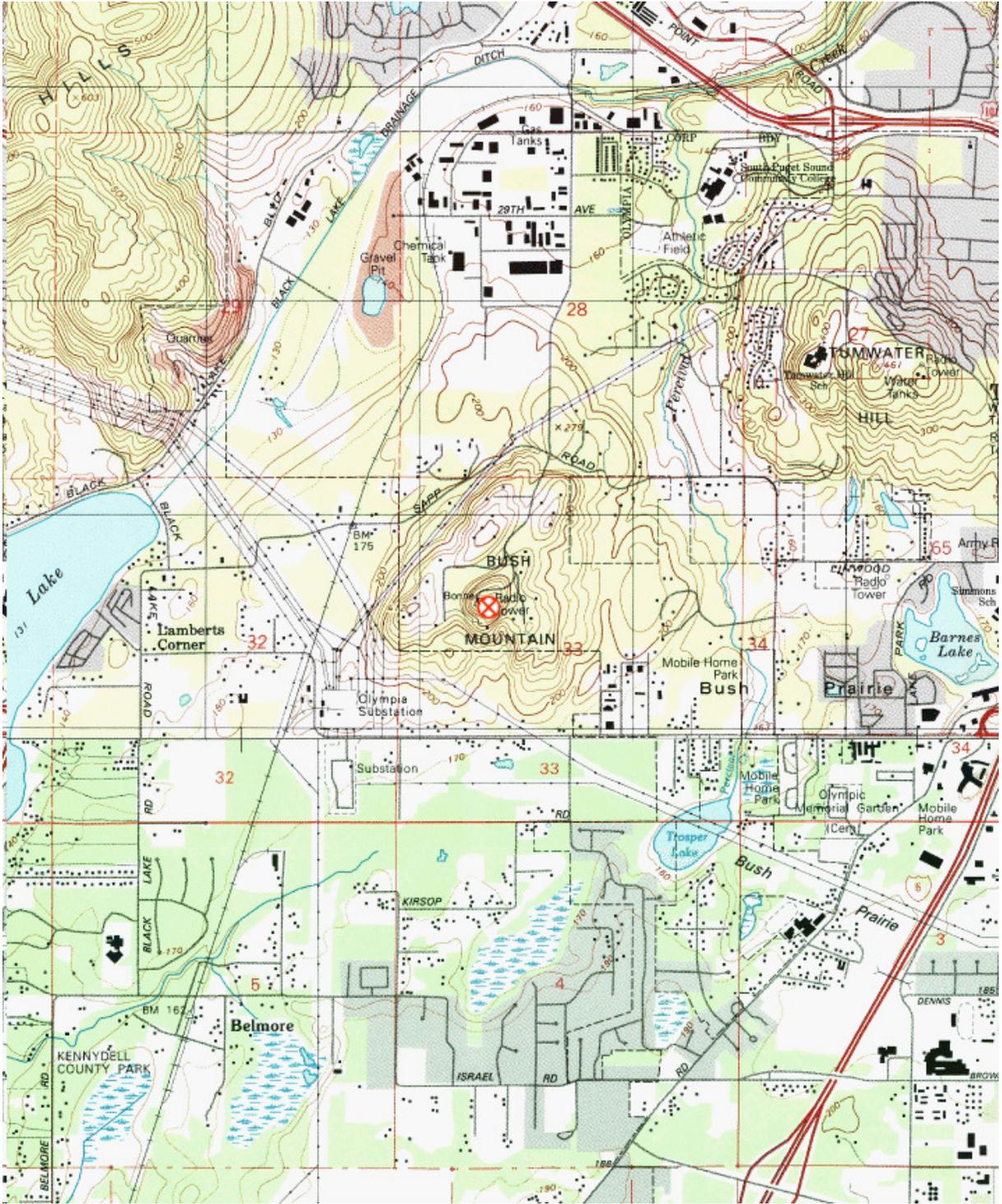
D is the distance in meters from the center of radiation to the calculation point.

Calculations of the power density produced by the K284CG antenna system have been made assuming that the antenna will radiate 100% power straight down to a point 2 meters above ground

at the base of the tower (35 meters below the antenna). Under this worst-case assumption, the highest calculated ground level power density from K284CG occurs at the base of the antenna support structure. At this point the power density is calculated to be $3.8 \mu\text{W}/\text{cm}^2$, which is 0.4% of $1000 \mu\text{W}/\text{cm}^2$ (the FCC standard for controlled environments) and 1.9% 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 of K284CG 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 exposure in excess of FCC guidelines.



Transmitter Site Map

Hatfield & Dawson Consulting Engineers