

WYQS and WCQS
Asheville, North Carolina, and Mars Hill, North Carolina
Application for Coordinated Community of License Change
by
Western North Carolina Public Radio, Inc.

Exhibit: Section 307(b) Showing for Community of License Change

October 2023

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Declaration

I declare, under penalty of perjury, that I am a technical consultant to broadcasting and other communications systems, that I have over twenty-five years of experience in the engineering of broadcast and other communications systems, that I am familiar with the Federal Communications Commission's Rules found in the Code of Federal Regulations Title 47, that I am a Professional Engineer registered in North Carolina, that I have prepared or supervised the preparation of the attached Exhibit: Section 307(b) Showing for Community of License Change, for Western North Carolina Public Radio, Inc., and that all of the facts therein, except for facts of which the Federal Communications Commission may take official notice, are true to the best of my knowledge and belief.



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18 October 2023

Narrative

This Exhibit provides details the proposed modification of noncommercial FM facilities of WYQS to specify Asheville, North Carolina from Mars Hill, North Carolina, and a related proposed modification of noncommercial FM facilities of WCQS from Asheville, North Carolina, to Mars Hill, North Carolina. This Exhibit establishes that the proposal provides preferential arrangement of services under Section 307(b). Figure 1 shows the present and proposed 60 dBu F(50,50) contours for the licensed and proposed facilities for WYQS, and the contour for the licensed WCQS facilities, along with the community boundaries.

The modification of WYQS from Class A to Class C3 is made possible by moving to a site South of the licensed site. From the current licensed WYQS site, there is no rules compliant directional antenna which would permit an upgrade to Class C3.

Preferential Arrangement of Services

These applications proposes modifying WYQS to provide service to Asheville, North Carolina, on channel 213 as a Class C3 facility, and modifying WCQS to provide service to Mars Hill, North Carolina, on channel 201 as a Class C3 facility. No technical changes are proposed for WCQS.

Present arrangement: Mars Hill 213A, Asheville 201C3

Proposed arrangement: Mars Hill 201C3, Asheville 213C3

This proposal is evaluated under Priority 4, other public interest reasons. There is a significant increase in population and area served.

Facility	Licensed	Proposed	Increase	Percent
WYQS Population	38,473	331,774	293,301	762%
WCQS Population	443,063	443063	-	-
Total Population	481,536	774,837	293,301	61%

Facility	Licensed	Proposed	Increase	Percent
WYQS Area (sq. km.)	1,396.2	2,252.8	856.6	61.4%
WCQS Area (sq. km.)	4,688.2	4,688.2	-	-
Total Area (sq. km.)	6,084.4	6,941.0	856.6	14.7%

Change of Local Service to Mars Hill, North Carolina

WYQS is currently the only primary aural service licensed to Mars Hill, North Carolina. These applications propose modifying WYQS to serve Asheville, North Carolina, and modifying WCQS to serve Mars Hill, North Carolina. Mars Hill, North Carolina, would continue to have one local aural service. The service would now be provided by a Class C3 facility. Figure 2 provides the WCQS licensed 60 dBu F(50,50) contour along with the Mars Hill community boundary, showing compliance with §73.315, principal community coverage. Figure 2 also shows the 60 dBu F(50,50) contour for the measured directional antenna pattern of WCQS, confirming that the directional antenna as installed complies with principal community coverage.

The modification of WYQS creates loss and gain areas, as shown on Figure 2. Those are:

	Population	%	Area (sq. km.)	%
Gain Area	318,151	827%	2028.9	145%
Loss Area	24,850	65 %	1172.2	84 %

When the backfill allocation of WCQS is considered, the area losing local Mars Hill service, shown on Figure 2, is:

	Population	%	Area (sq. km.)	%
Loss Area	6,913	18 %	365.29	26.2 %

Intra-Urban Area Move

This move involves an increase in the portion of the Asheville, North Carolina Urbanized Area. WYQS is licensed to serve a portion of the Asheville UA. On 2 February 2022 WYQS was granted a construction permit, file number 0000160523, for modified facilities which would serve more than 50% of the UA. This application replaces that unbuilt CP. The relevant population, area, and percentages follow.

Facility	Population	% UA	Area	% UA
Licensed	3,446	1.2	13.84	2.5
CP 0000160523	212,746	74.4	439.63	67.8
Proposed	251,488	88.0	546.25	84.2

Figure 3 shows the Asheville Urbanized Area with the licensed, previously authorized, and proposed contours for WYQS. The licensed contour for WCQS is also shown.

Well Served Loss Area

No gray or white areas are created by this modification. The entire area which will lose service is covered by more than 13 full time services, including nine (9) full service FM facilities, each of which covers all of the loss area. Those facilities are:

Call Sign	Class	Community	ST	ERP (kW)	HAAT (m)	Facility ID
WNCW	C	Spindale	NC	17	926	29262
WMIT	C	Black Mountain	NC	36	942	5970
WOXL-FM	C2	Biltmore Forest	NC	9.5	339	37242
WKSF	C	Old Fort	NC	53	786	2947
WTMT	C2	Weaverville	NC	9.5	339	72070
WETS-FM	C	Johnson City	TN	66	692	18253
WXBQ-FM	C	Bristol	VA	75	683	6876
WTFM	C	Kingsport	TN	70	696	27489
WQUT	C	Johnson City	TN	100	457	67673

Figure 4 shows the licensed and proposed WYQS coverage areas and the nine full service FM facilities that cover the entire licensed coverage area. Figure 4A shows the licensed WYQS coverage area and other full service AM and FM facilities. All of the loss area is served by at least 13 full service facilities, with a maximum of 25 full service facilities.¹ The population groupings are:

Number of Services	Population	Percent
13-15	5,656	23%
16-20	13,073	53%
21-25	6,121	25%
Total	24,850	

¹ Two reserved band noncommercial FM full service FM facilities serve the entire loss area. In addition, one non-reserved band noncommercial full service FM facility serves the entire loss area.

Well Served Gain Area

The Gain area is also well served. The entire area is covered by more than 16 full time services, including nine (9) full service aural facilities (eight FM and one AM) each of which has primary grade service over the entire gain area. Those facilities are:

Call Sign	Class	Community	ST	ERP (kW)	HAAT (m)	Facility ID
WCQS	C3	Asheville	NC	1.9	356	71923
WNCW	C	Spindale	NC	17	926	29262
WTPT	C	Forest City	NC	93	619	4677
WOXL-FM	C2	Biltmore Forest	NC	9.5	339	37242
WKSF	C	Old Fort	NC	53	786	2947
WTMT	C2	Weaverville	NC	9.5	339	72070
WMIT	C	Black Mountain	NC	36	942	5970
WESC-FM	C	Greenville	SC	100	610	4679
WWNC		Asheville	NC	5	N/A	2946

Figure 5 shows the proposed WYQS coverage area and the nine full service FM facilities that cover the entire proposed coverage area. Figure 5A shows the licensed WYQS coverage area and other full service AM and FM facilities.

All of the gain area is served by at least 16 full service facilities, with a maximum of 28 full service facilities. The population groupings are:

Number of Services	Population	Percent
16-20	409	0.1%
21-25	302,858	95.2%
26-28	14,884	4.7%
Total	318,151	

Allocations Considerations

Service from the licensed WYQS transmitter site is constrained by facilities on the same and adjacent facilities, and the limits on directional antennas in §73.316 of the FCC Rules. There have recently been some changes in nearby facilities which make it possible to provide service to a larger population and area, contingent on a move to the South of the licensed site. In particular, there are changes to co-channel WZQS, Cullowhee, North Carolina, and second adjacent channel WEPR, Greenville, South Carolina.

Transmitter Site Considerations

The State of North Carolina, and the Counties of Buncombe and Madison, have restrictive ordinances on the siting of towers. In particular, the tops of ridges above 3,500 feet (1,067 meters) are not permitted areas for any construction which is higher than the ridgeline and visible from the surrounding area. With the Appalachian Mountain terrain, it is almost impossible to propose any new structures which could provide expanded coverage while serving the existing community of Mars Hill, North Carolina.

WNCPRI secured permission to use a tower for the Construction Permit application, file number 0000160523. Since that application was filed, the tower owner has leased space to additional tenants, reducing the space available. That necessitates a different antenna and a more expensive transmitter. The site proposed for the current proposal is owned by the applicant, and could use a less expensive antenna. Eliminating a leased additional site also reduces costs, and enables the applicant to provide noncommercial services more efficiently.

Source of Data

Transmitter location, effective radiated power, directional antenna pattern, and elevation data are extracted from the Commission's LMS. All contours for existing and proposed facilities are calculated using height above average terrain calculated at one degree horizontal increments. The contours were evaluated using terrain extracted from the FCC 30 Meter Terrain database, high resolution 1 arc-second terrain data covering the United States, formatted by V-Soft Communications to work with its allocation and mapping programs.

Population data is from 2020 U.S. Census data files. Population is counted by considering the location of the centroid of each census block. The data for each block is counted if it falls within the area being counted. Urban Area and City Area are from 2020 U.S. Census data files.

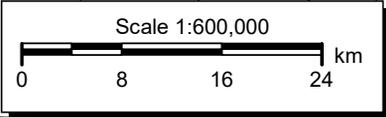
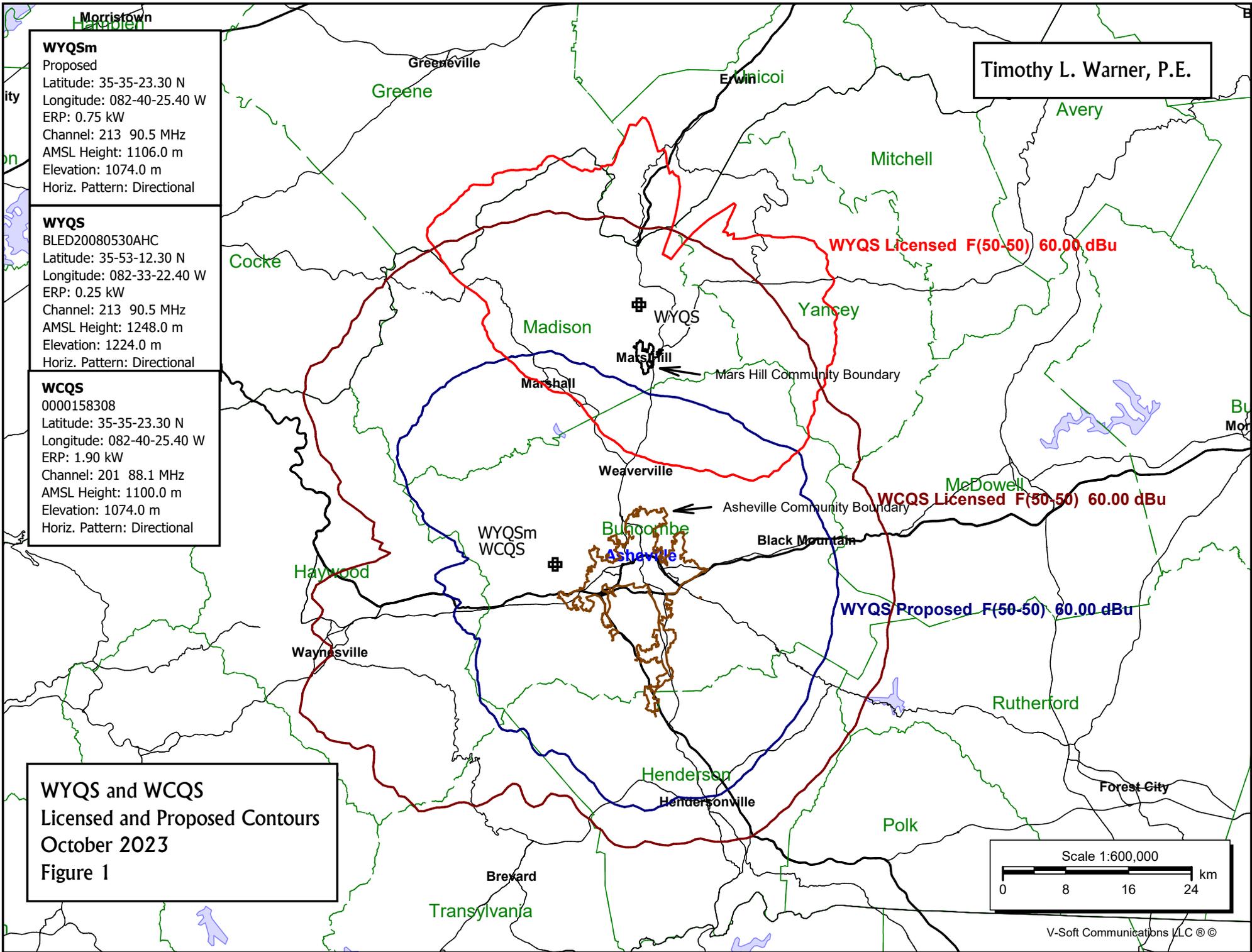
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WYQSm
Proposed
Latitude: 35-35-23.30 N
Longitude: 082-40-25.40 W
ERP: 0.75 kW
Channel: 213 90.5 MHz
AMSL Height: 1106.0 m
Elevation: 1074.0 m
Horiz. Pattern: Directional

WYQS
BLED20080530AHC
Latitude: 35-53-12.30 N
Longitude: 082-33-22.40 W
ERP: 0.25 kW
Channel: 213 90.5 MHz
AMSL Height: 1248.0 m
Elevation: 1224.0 m
Horiz. Pattern: Directional

WCQS
0000158308
Latitude: 35-35-23.30 N
Longitude: 082-40-25.40 W
ERP: 1.90 kW
Channel: 201 88.1 MHz
AMSL Height: 1100.0 m
Elevation: 1074.0 m
Horiz. Pattern: Directional

WYQS and WCQS
Licensed and Proposed Contours
October 2023
Figure 1



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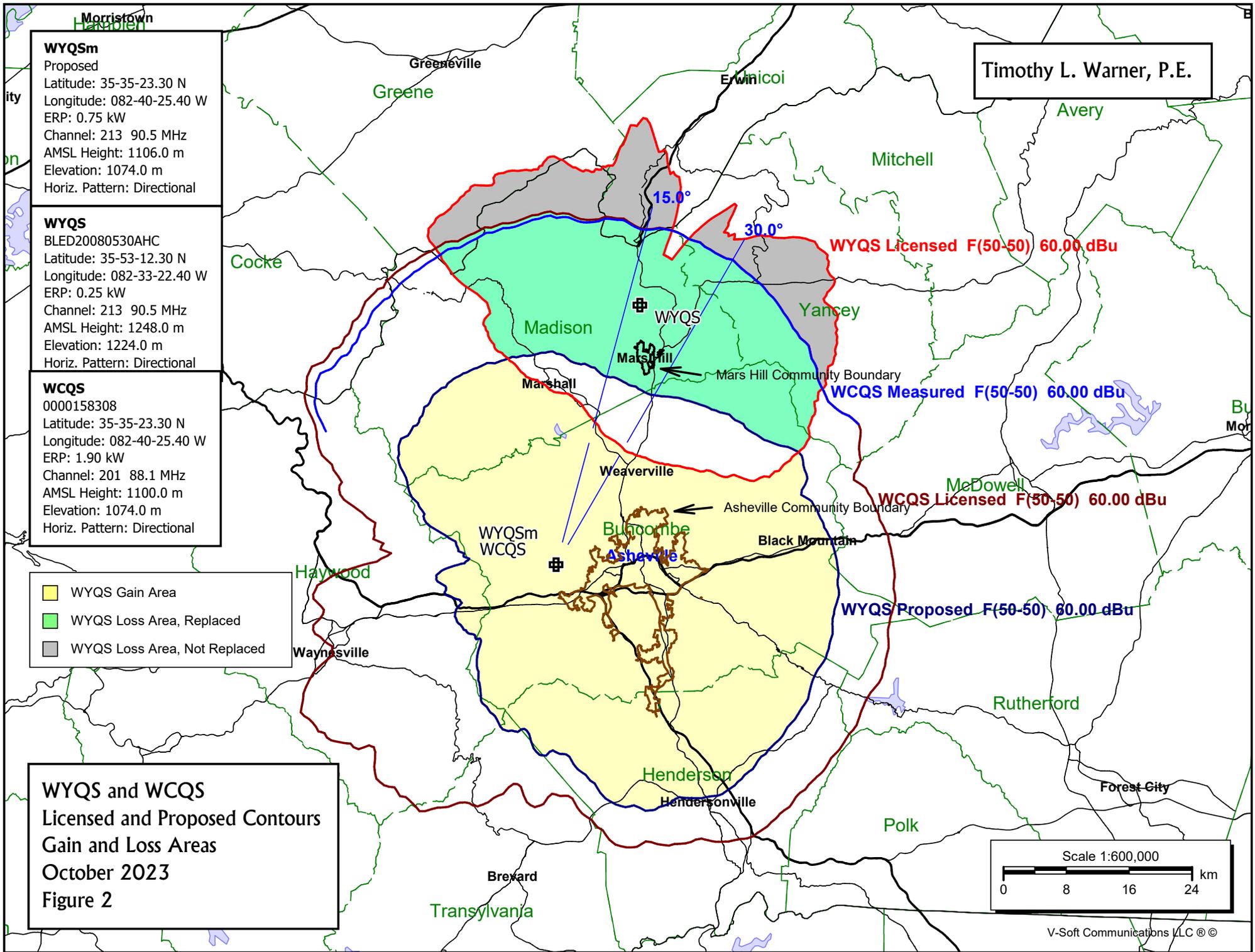
WYQSm
Proposed
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Longitude: 082-40-25.40 W
ERP: 0.75 kW
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Channel: 201 88.1 MHz
AMSL Height: 1100.0 m
Elevation: 1074.0 m
Horiz. Pattern: Directional

- WYQS Gain Area
- WYQS Loss Area, Replaced
- WYQS Loss Area, Not Replaced

WYQS and WCQS
Licensed and Proposed Contours
Gain and Loss Areas
October 2023
Figure 2



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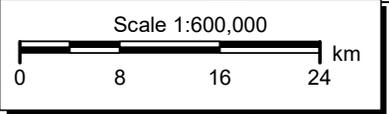
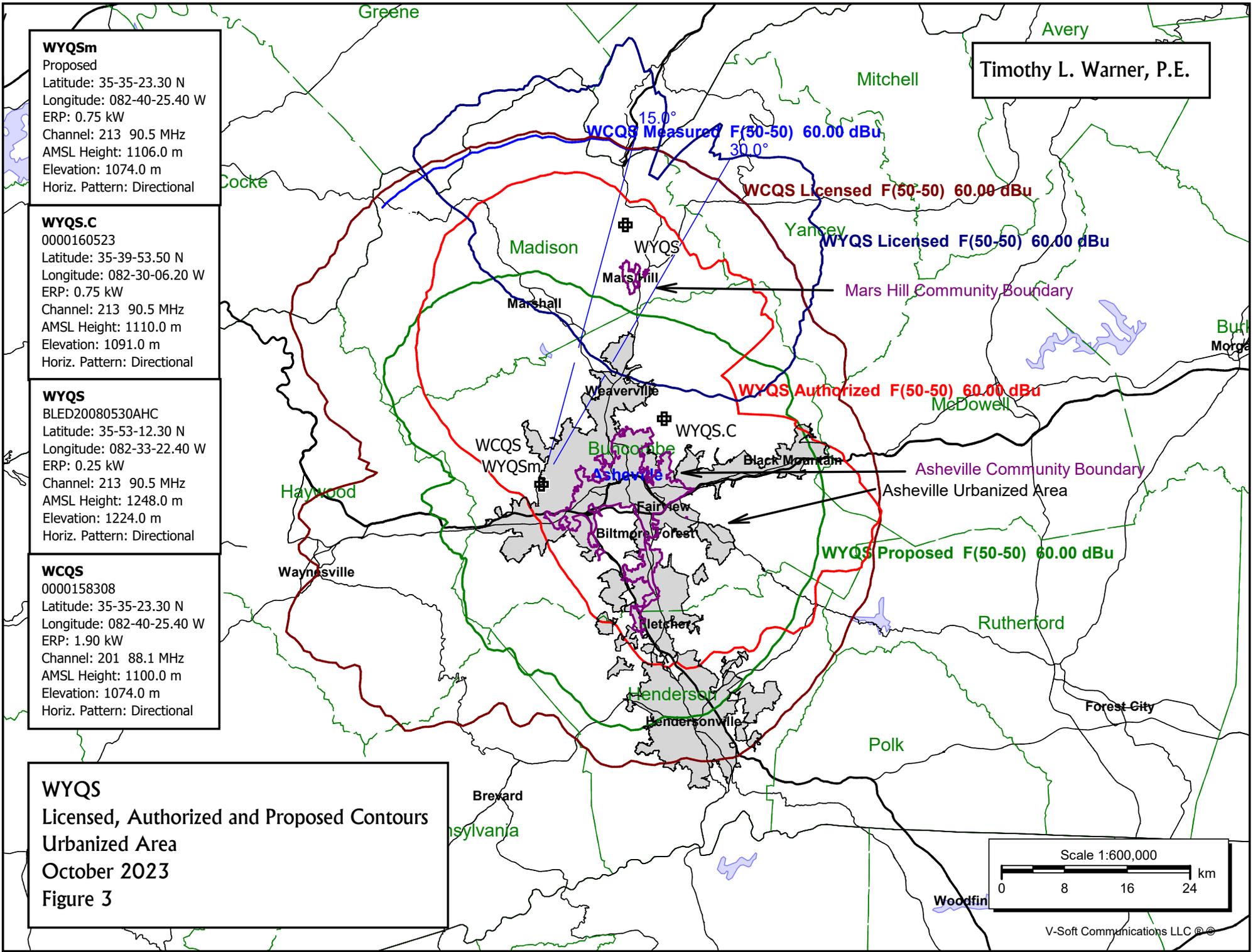
WYQSm
Proposed
Latitude: 35-35-23.30 N
Longitude: 082-40-25.40 W
ERP: 0.75 kW
Channel: 213 90.5 MHz
AMSL Height: 1106.0 m
Elevation: 1074.0 m
Horiz. Pattern: Directional

WYQS.C
0000160523
Latitude: 35-39-53.50 N
Longitude: 082-30-06.20 W
ERP: 0.75 kW
Channel: 213 90.5 MHz
AMSL Height: 1110.0 m
Elevation: 1091.0 m
Horiz. Pattern: Directional

WYQS
BLED20080530AHC
Latitude: 35-53-12.30 N
Longitude: 082-33-22.40 W
ERP: 0.25 kW
Channel: 213 90.5 MHz
AMSL Height: 1248.0 m
Elevation: 1224.0 m
Horiz. Pattern: Directional

WCQS
0000158308
Latitude: 35-35-23.30 N
Longitude: 082-40-25.40 W
ERP: 1.90 kW
Channel: 201 88.1 MHz
AMSL Height: 1100.0 m
Elevation: 1074.0 m
Horiz. Pattern: Directional

WYQS
Licensed, Authorized and Proposed Contours
Urbanized Area
October 2023
Figure 3

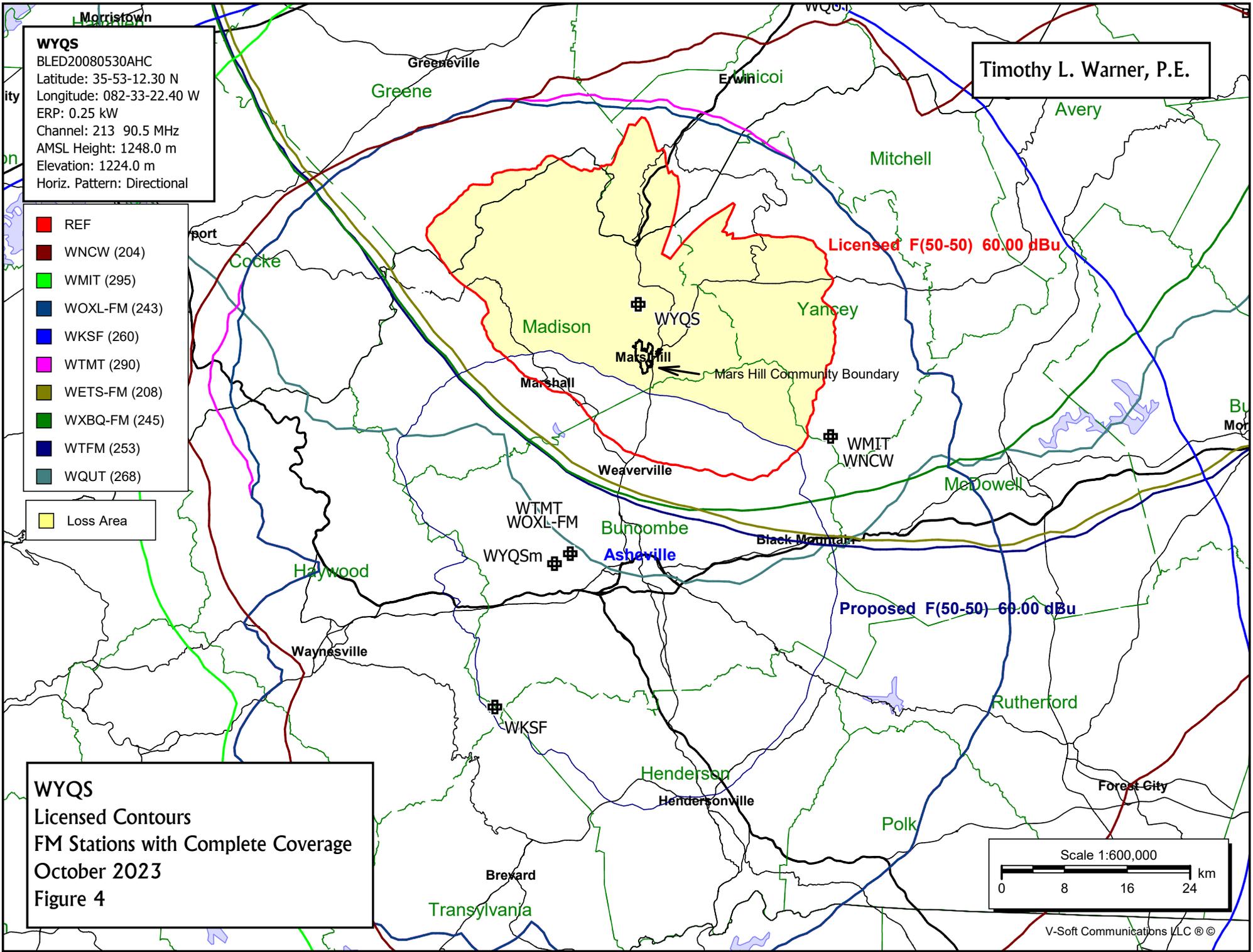


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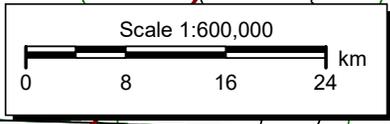
WYQS
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Latitude: 35-53-12.30 N
Longitude: 082-33-22.40 W
ERP: 0.25 kW
Channel: 213 90.5 MHz
AMSL Height: 1248.0 m
Elevation: 1224.0 m
Horiz. Pattern: Directional

- REF
- WNCW (204)
- WMIT (295)
- WOXL-FM (243)
- WKSF (260)
- WTMT (290)
- WETS-FM (208)
- WXBQ-FM (245)
- WTFM (253)
- WQUT (268)

Loss Area



WYQS
Licensed Contours
FM Stations with Complete Coverage
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Figure 4



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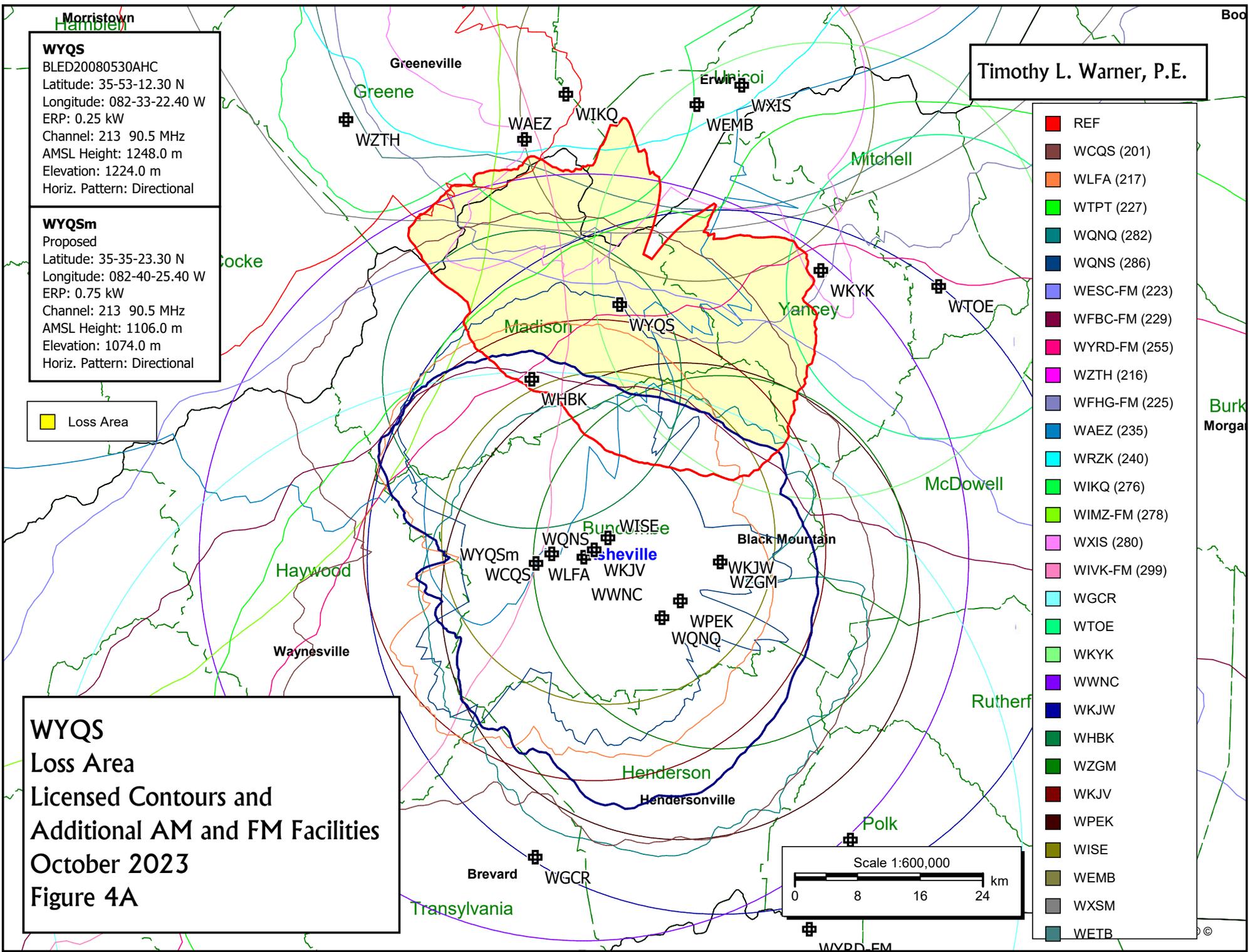
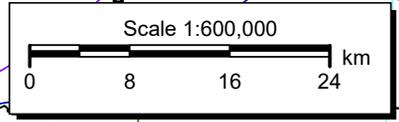
WYQS
BLED20080530AHC
Latitude: 35-53-12.30 N
Longitude: 082-33-22.40 W
ERP: 0.25 kW
Channel: 213 90.5 MHz
AMSL Height: 1248.0 m
Elevation: 1224.0 m
Horiz. Pattern: Directional

WYQSm
Proposed
Latitude: 35-35-23.30 N
Longitude: 082-40-25.40 W
ERP: 0.75 kW
Channel: 213 90.5 MHz
AMSL Height: 1106.0 m
Elevation: 1074.0 m
Horiz. Pattern: Directional

 Loss Area

-  REF
-  WCQS (201)
-  WLFA (217)
-  WTPT (227)
-  WQNQ (282)
-  WQNS (286)
-  WESC-FM (223)
-  WFBC-FM (229)
-  WYRD-FM (255)
-  WZTH (216)
-  WFHG-FM (225)
-  WAEZ (235)
-  WRZK (240)
-  WIKQ (276)
-  WIMZ-FM (278)
-  WXIS (280)
-  WIVK-FM (299)
-  WGCR
-  WTOE
-  WKYK
-  WWNC
-  WKJW
-  WHBK
-  WZGM
-  WKJV
-  WPEK
-  WISE
-  WEMB
-  WXSM
- WETB

WYQS
Loss Area
Licensed Contours and
Additional AM and FM Facilities
October 2023
Figure 4A



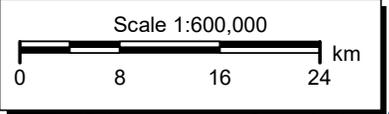
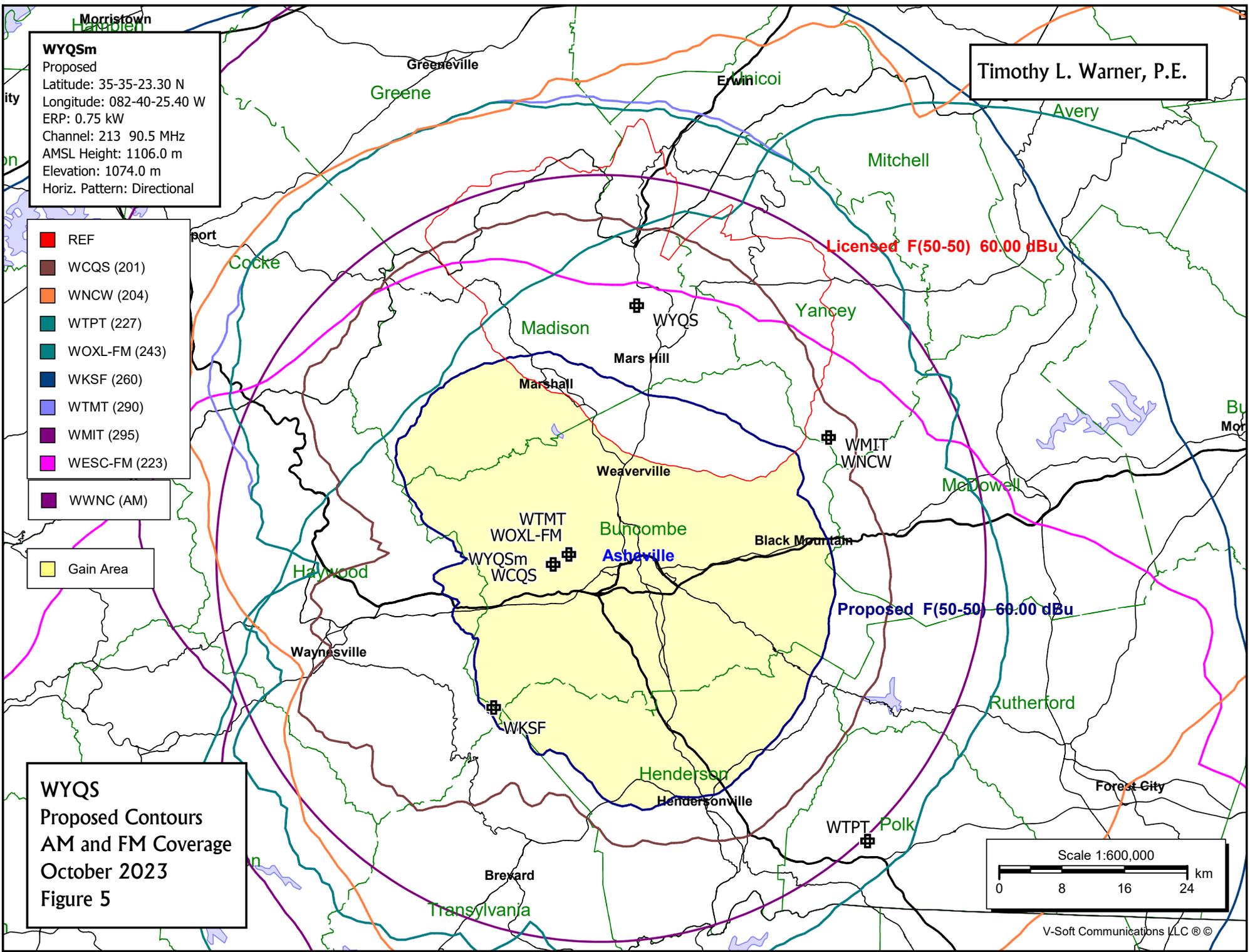
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WYQSm
Proposed
Latitude: 35-35-23.30 N
Longitude: 082-40-25.40 W
ERP: 0.75 kW
Channel: 213 90.5 MHz
AMSL Height: 1106.0 m
Elevation: 1074.0 m
Horiz. Pattern: Directional

- REF
- WCQS (201)
- WNCW (204)
- WTPT (227)
- WOXL-FM (243)
- WKSF (260)
- WTMT (290)
- WMIT (295)
- WESC-FM (223)
- WWNC (AM)

Gain Area

WYQS
Proposed Contours
AM and FM Coverage
October 2023
Figure 5



- WYQSm (213)
- WYQS (213)
- WMYI (273)
- WLFA (217)
- WQNQ (282)
- WQNS (286)
- WEPR (211)
- WFBC-FM (229)
- WJMZ-FM (297)
- WETS-FM (208)
- WAEZ (235)
- WTFM (253)
- WQUT (268)
- WWST (271)
- WIMZ-FM (278)
- WIVK-FM (299)
- WXBQ-FM (245)
- WESC
- WCSZ
- WWOL
- WGCR
- WYSE
- WPTL
- WKYK
- WHKP
- WKJV
- WSQL
- WWQT
- WHBK
- WZGM
- WSKY
- WKJV
- WTZQ
- WPEK
- WISE
- WRGC

WYQSm
 Proposed
 Latitude: 35-35-23.30 N
 Longitude: 082-40-25.40 W
 ERP: 0.75 kW
 Channel: 213 90.5 MHz
 AMSL Height: 1106.0 m
 Elevation: 1074.0 m
 Horiz. Pattern: Directional

WYQS
 BLED20080530AHC
 Latitude: 35-53-12.30 N
 Longitude: 082-33-22.40 W
 ERP: 0.25 kW
 Channel: 213 90.5 MHz
 AMSL Height: 1248.0 m
 Elevation: 1224.0 m
 Horiz. Pattern: Directional

Loss Area

WYQS
 Proposed Contour
 Additional AM and FM Coverage
 October 2023
 Figure 5A

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