

LPFM Improvement Study

KPPS-LP

Saint Louis Park, MN

April 19, 2021

Executive Summary

The proposed relocation of K250BY from Plymouth to downtown Minneapolis would provide much greater flexibility for a relocation of KPPS-LP.

Introduction

This study was commissioned by Central Baptist Theological Seminary of Minneapolis ("CBT"), the licensee of WCTS (AM) and FM Translator K250BY. The study is provided by CBT pro-bono to Park Public Radio ("PPR"), the licensee of LPFM station KPPS-LP.

The purpose of the study is to determine whether KPPS-LP can be modified in a manner consistent with FCC Rules and practices in view of the impending loss of its transmitter site and the proposed relocation of K250BY to the IDS building in Minneapolis.

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Background

Minor change applications for FM facilities are processed by the FCC on a first-come, first-served basis. All applications filed on the same day are considered to be contemporaneous, regardless of the time of the filing on that day.

All applications are required to protect previously existing currently-licensed stations, unexpired construction permits, and previously filed applications. The requirements of protection are described by rules that apply to the class of station being proposed.

Channels and Frequencies

The FM service was in many ways an outgrowth of the VHF television service. For the public “Channel 6” is a lot easier to recognize than its frequency usage “82-88 MHz” or perhaps its center frequency, “85 MHz”.

Although the public knows FM stations by their frequencies (97.1, 103.9) or frequency-related slogans (“K-99”, “Q-104”), the FM engineering community works with channel numbers.

FM channels run from the rarely used channel 200 (87.9 MHz) to the top-of-band channel 300 (107.9 MHz).

A complete list is provided as an attachment. This report deals with channels, rather than frequencies, but occasionally adds a frequency in parentheses where it helps further understanding.

Allocation Standards

Stations that are on the same frequency are considered to be “co-channel.”

Stations that are separated by 200 kHz (0.2 MHz) are considered to be “first-adjacent.” That is to say that stations on 93.5 and 93.7 MHz are first-adjacent.

Stations that are separated by 400 kHz or 600 kHz (0.4 or 0.6 MHz) are considered to be “second-adjacent” or “third-adjacent,” respectively.

Applications for LPFM stations such as KPPS-LP are evaluated primarily with regard to their distance from other stations. These distances are specified based on the frequency separation, type of station (full-service, LPFM, or translator), and for full-service stations, the Class of the

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station. There is an avenue for a waiver of the separation requirements for stations that are second-adjacent. In such cases a showing of non-interference is required.

Applications for translators such as K250BY are evaluated based on contour overlap with other stations.

This dichotomy of distance-based allocation in the LPFM service and contour-overlap based allocation in the translator service often results in situations in which a translator applicant can propose a transmitter site that is significantly closer to an existing LPFM station than the LPFM spacing rules would permit. The LPFM rules allow for such a “short-spacing” situation by permitting an existing LPFM station to relocate to another site that is also short-spaced, as long as the short-spacing is not made worse.

Channel Changes

LPFM stations are permitted to move to any of the 100 channels in the FM band, provided that a showing of reduced interference caused and/or received can be made. Thus, it may be possible to find a channel on which a more optimal solution may be proposed.

Skywaves undertook a full-band study, which revealed that the only possible channels in the vicinity of the current KPPS-LP transmitter are channel 205 and the present channel 248. As will be described below, PPR determined – and Skywaves concurs – that channel 205, while possible, is not a practical solution.

The study produced 100 maps, one per channel. They are included as an attachment to this study.

KQEP-LP

This station was on channel 250, co-channel with K250BY and second-adjacent to KPPS-LP. Its licensee failed to file a renewal application, and its license expired at 3:00AM local time on April 1, 2021.

The demise of KQEP-LP opened up an opportunity for a relocation of K250BY to the IDS Center, a far better site for covering the metropolitan area than its present location on the campus in Plymouth.

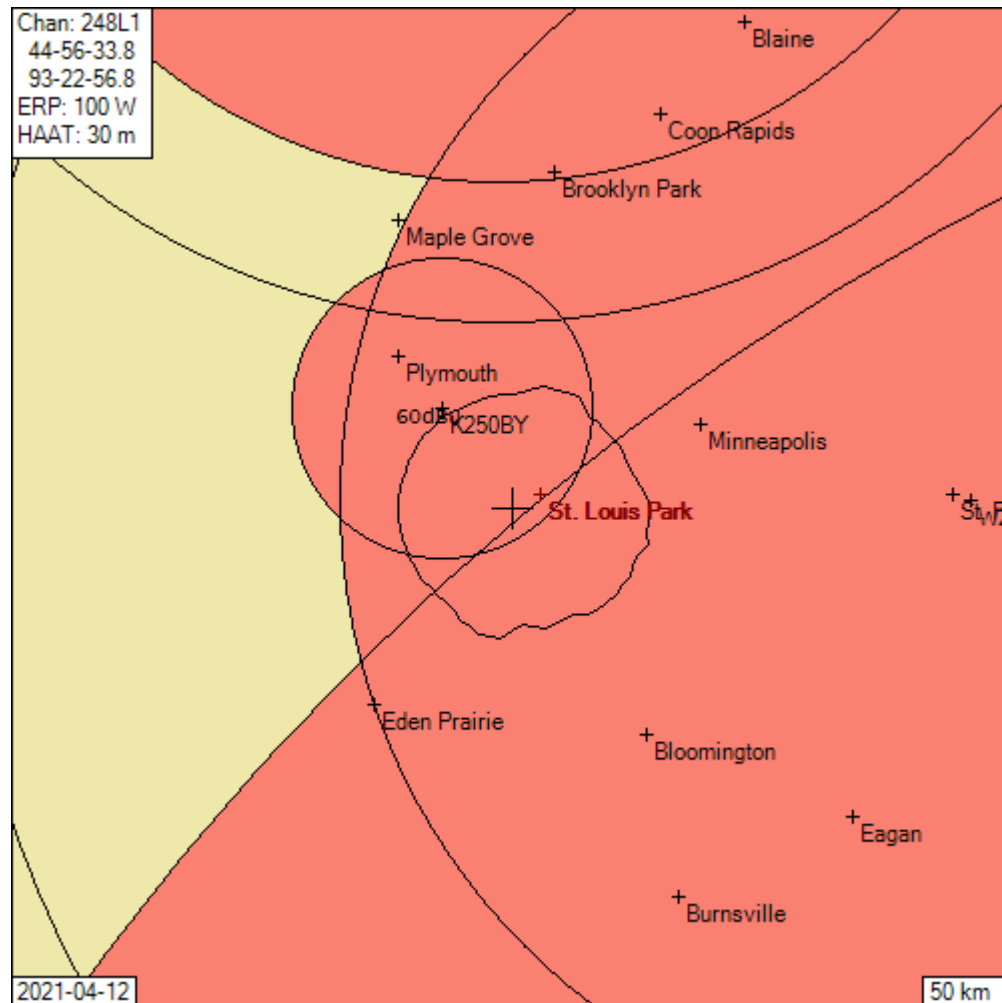
KPPS-LP Today

KPPS-LP is short-spaced to K250BY and W248CU, FM translators that were proposed after the KPPS-LP proposal. These applications protected KPPS-LP according to the translator rules.

In the case of K250BY, there is no requirement to protect KPPS-LP because the translator rules contain no contour protection requirements with respect to existing second-adjacent LPFM stations. However, a second-adjacent spacing requirement in the LPFM rules with respect to existing translators requires KPPS-LP to be at least 8 km from K250BY. It is actually 6.12 km from K250BY's transmitter in Plymouth, a short-spacing of 1.88 km.

W248CU is co-channel with KPPS-LP. KPPS-LP is required to be 32 km from W248CU, but is only 22.91 km away, a short-spacing of 9.09 km.

On the following plot, KPPS-LP is shown to be short-spaced as described above:



The reddish tint indicates areas that are short-spaced for KPPS-LP. Yellow areas are permissible, but according to the FCC's simplified LPFM rules, they are areas in which co-channel and/or first-adjacent interference may occur. (Although there are none on this plot, green areas would indicate permissible areas that the FCC would consider to be interference-free.)

Second-adjacent interference, where it occurs at all, occurs generally within a very small area around the transmitter site of the interfering station.

In the case of K250BY, its protected contour does not come near the KPPS-LP transmitter site, so a second-adjacent interference showing would be simple.

In addition, KPPS-LP is short-spaced to second-adjacent KTCZ-FM, a 100 kW station that predates it. The nature of the second adjacent interference waiver is such that a stronger

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protected signal makes the interference standard easier to meet. KPPS-LP's application demonstrated compliance with the interference requirement, and the application was granted with a second-adjacent interference waiver.

With respect to W248CU, which came after KPPS-LP, that translator uses a directional antenna pattern to protect KPPS-LP from interference. Had W248CU been in existence at the time of KPPS-LP's original application, the channel would have been unavailable. Since the short-spacing did not come about from any action on the part of KPPS-LP, it can be maintained or reduced in a relocation of KPPS-LP. Effectively, this makes the present 22.91 km spacing a limit on the location of KPPS-LP.

KPPS-LP March 2018 Application

Three years ago, PPR filed an application to change KPPS-LP to channel 205 (88.9 MHz). That application included a second-adjacent interference showing with respect to KBEM. Because KBEM is a much lower power station than KTCZ, meeting the interference standard is possible, but requires a location on a tall tower. In its March 2021 application (described below) PPR acknowledges that it will be impractical to actually build what was proposed in this application.

KPPS-LP March 2021 Application

The March 31, 2021 application of PPR proposed a change from channel 248 to channel 249. That would make KPPS-LP first-adjacent and short-spaced to both W248CU and K250BY.

The FCC Rules with respect to LPFM short-spacing cases specifically prohibit new co-channel and first adjacent short-spacing. Therefore, channel 249 is not available to KPPS-LP in the vicinity of Saint Louis Park, and we expect this application to be dismissed. For reasons described below, we recommend that PPR request that its application be dismissed.

K250BY Application

On April 1, 2021, Central Baptist Theological Seminary of Minneapolis filed an application to relocate K250BY to the IDS Center in Minneapolis. Under this proposal, the KPPS-LP license and K250BY would remain second-adjacent. The sites are separated by 9.44 km, and the LPFM separation requirement is 21 km. As noted above, translators do not have any second-adjacent protection requirements to existing LPFMs, and so this application is acceptable with regard to KPPS-LP. From the KPPS-LP perspective, it is short-spaced by 11.56 km.

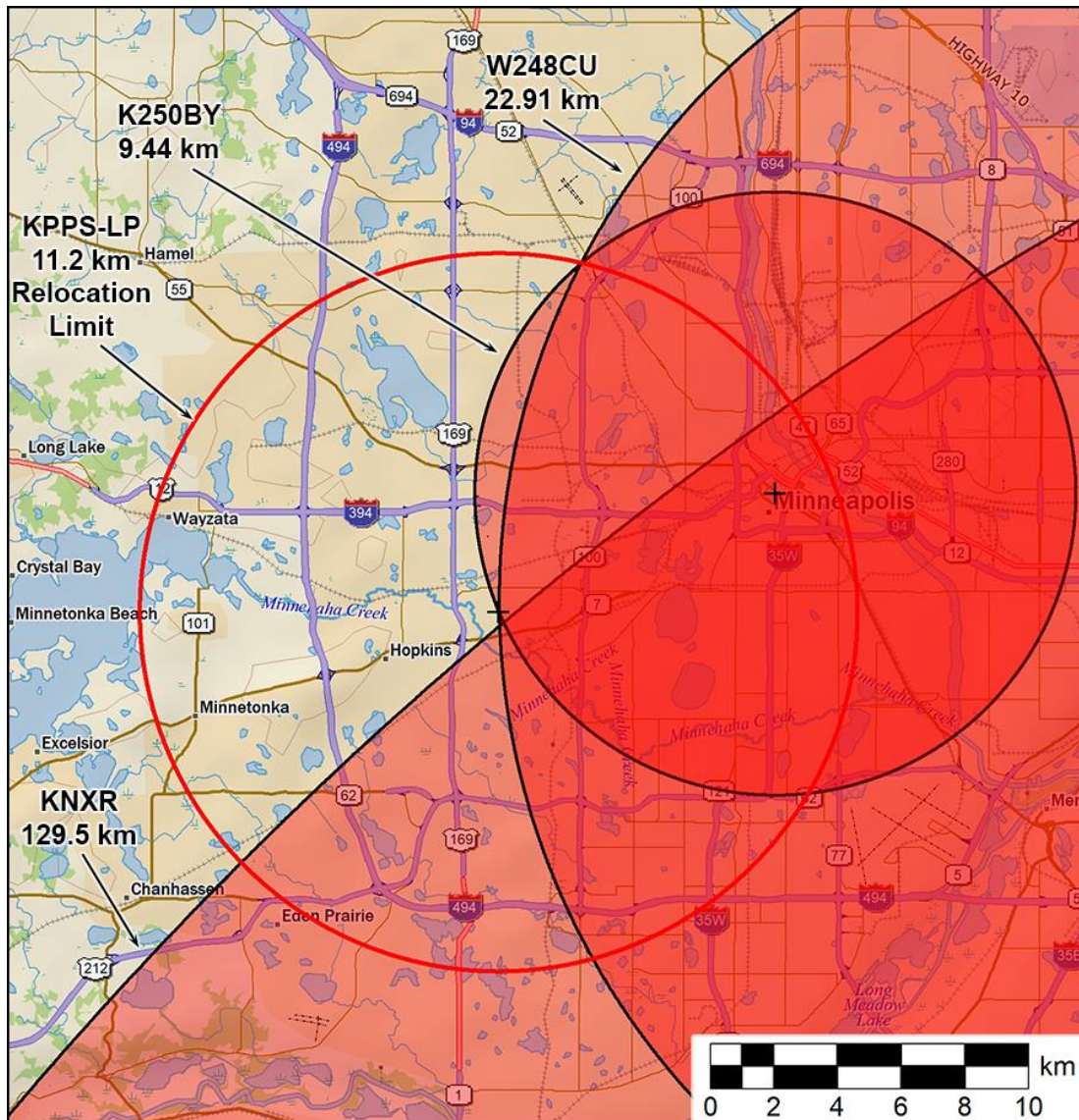
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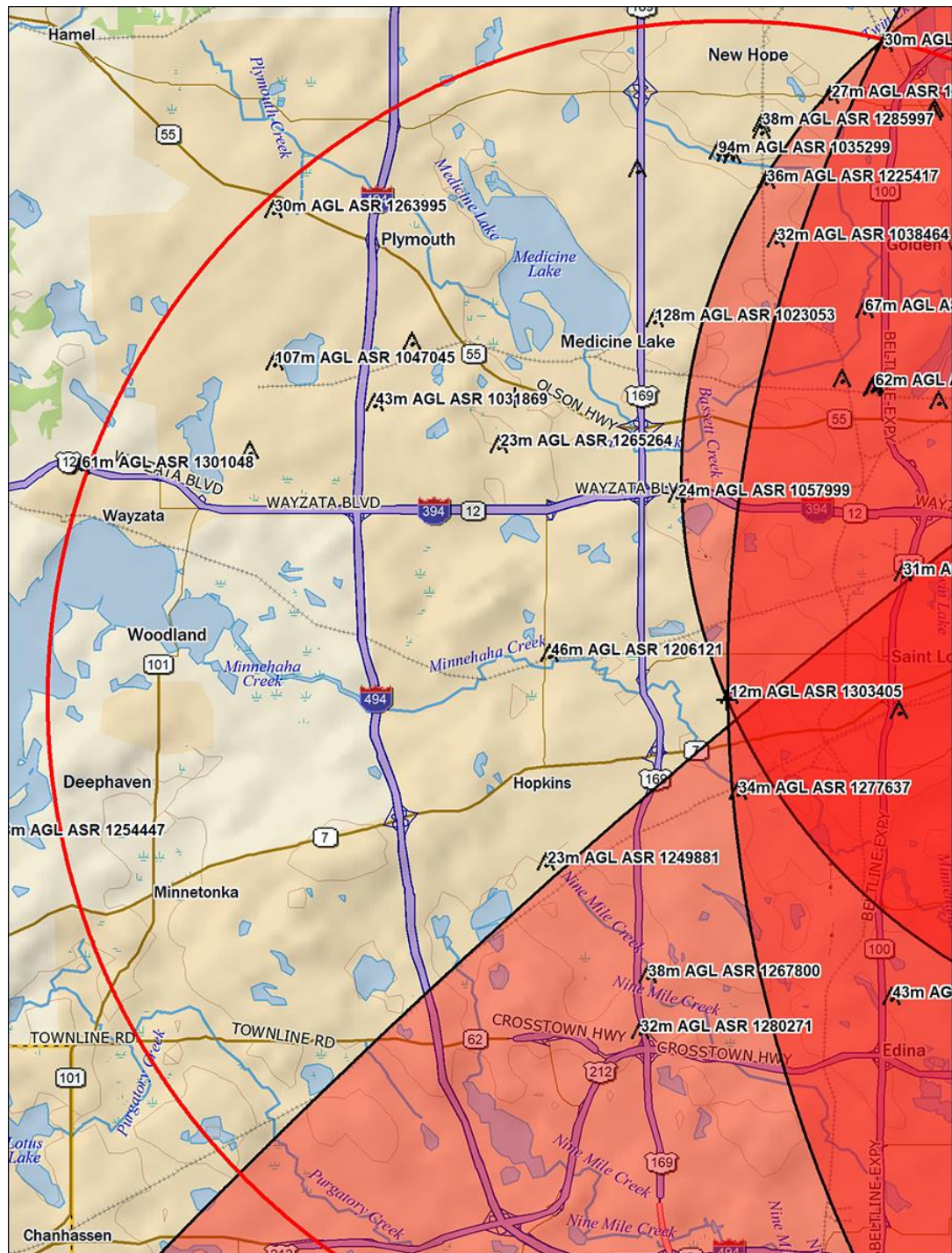
The filled circles represent the required distance from each conflicting station or application. The present site meets the requirements with respect to KNXR. The circles drawn around K248CU and the two K250BY records represent the current spacing from these short-spaced stations, and thus the relocation limits with respect to each. Two areas are potentially usable: one triangular area to the north near New Hope, and a very narrow corridor running southwest from the current transmitter site that expands greatly as you move farther south and west.

Once the K250BY application is granted and the new facility on the IDS Center is built and licensed, the Plymouth site will no longer require protection. The resulting plot looks like this:



This results in a large area in which to place the KPPS-LP transmitter.

This plot overlays FCC-registered towers in the region. Elevations are in meters about ground:



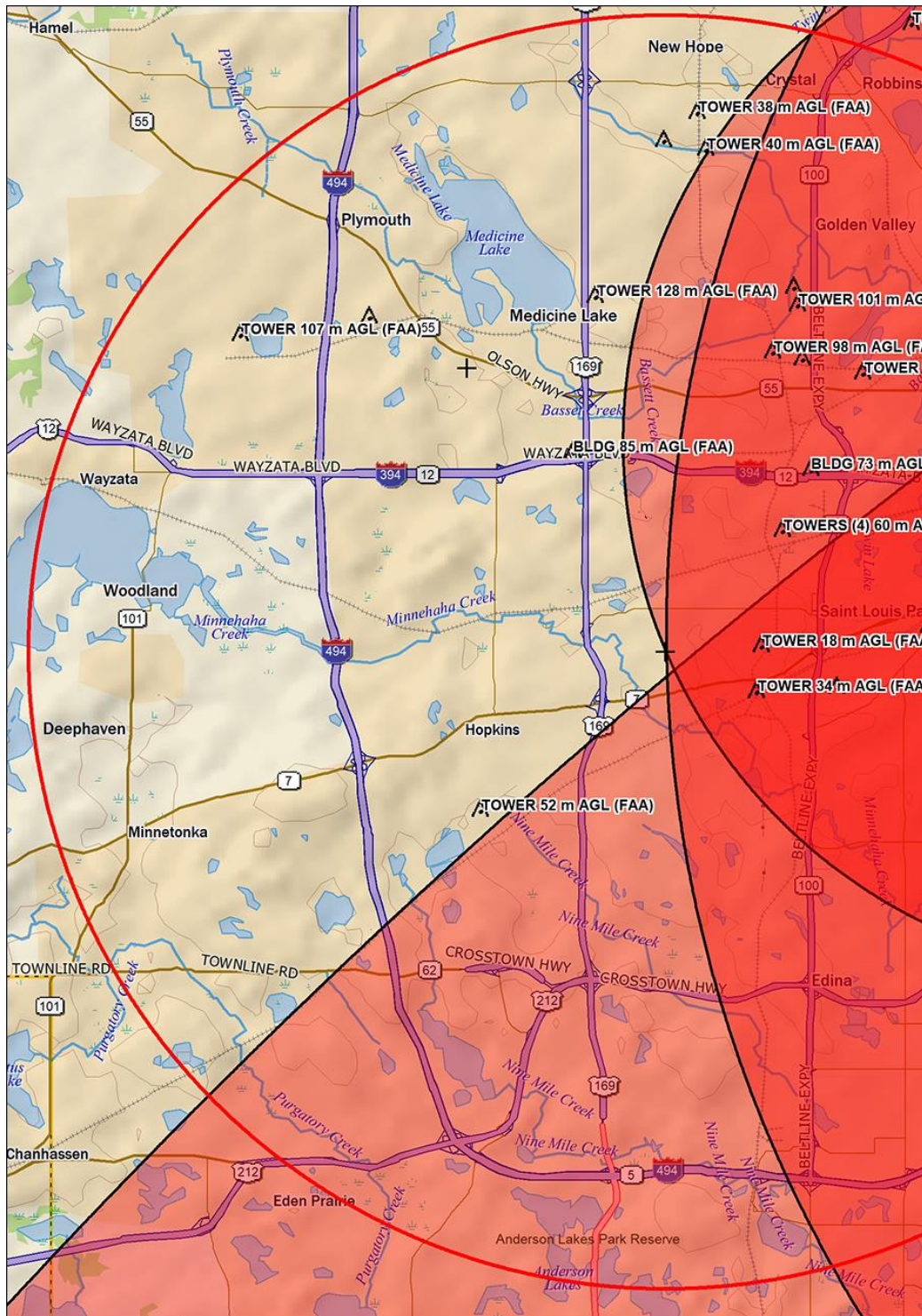
ASR 1303405 is the current KPPS-LP tower. There are many others in the open area, and this does not show other structures that may be usable.

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Here is a map that plots FAA Obstructions, which may include towers, buildings, and other obstacles to aviation, generally over 200' in height:



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It is beyond the scope of this study to pick out particular towers, buildings, and other structures. Google Earth Pro with the free CavellMertz.com plug-in is an excellent and very efficient way to search for possible locations.

Recommendations

Skywaves recommends the following actions for PPS with the aim of providing an optimal outcome for both licensees:

1. Request dismissal of the PPS application filed on March 31, 2021. This will speed up the K250BY application process at the FCC.
2. Select a transmitter site in the area that will be opened up by the relocation of K250BY to the IDS Center.
3. Contact the owner or agent for the site. A new requirement in LPFM applications is a statement that the applicant has “reasonable assurance” that the site is available for the facility being proposed. The name and contact information for the person providing reasonable assurance must be disclosed on the application.
4. Prepare an application to relocate KPPS-LP to that location, but do not file it until the license application is filed for K250BY.
5. Legal counsel is determining whether the appropriate filing date is when the K250BY license application is filed, or when it is granted.

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Full-Band FM Channel Study

This attachment consists of individual plots for each of the 100 FM channels.

Channel-to-frequency conversion is included in another attachment.

Three fill colors are used in the plots:

- The reddish “salmon” color is used in areas where a new LPFM proposal would be prohibited.
- The yellow areas are permissible for a new LPFM proposal. In these areas, a new LPFM station can be expected to receive inbound interference under the simplified rules for LPFM stations.
- The green areas are permissible for a new LPFM proposal. In these areas, a new LPFM station can be expected *not* to receive inbound interference under the simplified rules for LPFM stations.

In addition, each area is bound by a black circle or arc.

Each plot includes a blue 11.2 km circle about the current KPPS-LP transmitter site. This represents the 11.2 km relocation limit for LPFM stations. Any yellow or green area within this circle represents a potential location for a relocated KPPS-LP transmitter.

The attachment is a PDF file. Open it in Adobe Acrobat or Acrobat Reader, and you should be able to use thumbwheel on your mouse to “run the movie” through all the channels.

The FCC’s simplified rules for describing interference and non-interference areas do not reflect real-world propagation accurately.

In reality, all FM stations receive and generate interference that varies according to many factors, including terrain, buildings and other obstructions, and propagation characteristics that may vary from day-to-day and hour-to-hour.

Existing LPFM stations are able to use the rule allowing existing “short-spacing” violations to be maintained or reduced when relocating on the same channel. Therefore, the plot for channel 248 does not describe the actual limitations on that channel for KPPS-LP. Please see the study for detailed information with regard to KPPS-LP and channel 248.

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