



July 22, 2019

VIA IBFS

International Bureau
Federal Communications Commission
445 12th Street, NW
Washington, DC 20554

Re: GCI Communication Corp., Chevak Earth Station, License E180787
Supplement to Pending License & STA Applications
IBFS File Nos. SES-LIC-20180608-01392, SES-STA-20190404-00491

To Whom it May Concern:

Severe weather-related service disruptions to the microwave radio system located in Chevak, AK, instigated GCI Communication Corp.'s ("GCI") filing for a 60-day emergency STA on April 23, 2018 to immediately operate a C-Band fixed satellite earth station in this location (*see* IBFS File No. SES-STA-20180423-00391 (filed April 23, 2018)) ("Initial STA"). GCI's request was granted on April 25, 2018.

On June 8, 2018, GCI filed an application for a license to operate a C-Band fixed satellite earth station at Chevak, AK, Call Sign E020088 (the "License") (*see* IBFS File No. SES-LIC-20180608-01392 (filed June 8, 2018)) (the "License Application"). GCI has been granted extensions of the Initial STA,¹ and most recently filed an extension request on April 4, 2019, which remains pending (*see* IBFS File No. SES-STA-20190404-00491) (the "STA Extension Application") (the License Application and STA Extension Application, collectively the "Applications"). GCI also submitted a waiver request of the current filing freeze in conjunction with the Applications.² Pursuant to discussions with FCC International Bureau Staff, GCI submits this letter to supplement the pending Applications.

¹ *See* IBFS File No. SES-STA-20180423-00391 (granted Apr. 25, 2018); IBFS File No. SES-STA-20180620-01772 (granted July 31, 2018); IBFS File No. SES-STA-20180914-02716 (granted Sept. 21, 2018); IBFS File No. SES-STA-20181119-03269 (granted Nov. 30, 2018); IBFS File No. SES-STA-20190128-00044 (granted Feb. 8, 2019).

² *See Temporary Freeze on Applications for New or Modified Fixed Satellite Service Earth Stations and Fixed Microwave Stations in the 3.7-4.2 GHz Band*, Public Notice, DA 18-398 (rel. Apr. 19, 2018).

GCI's Critical C-Band Operations in Chevak

Grant of the requested Applications is necessary to provide important services to the rural Alaska village of Chevak, including:

- Yukon Kuskokwim Health Corporation (YKHC)- Telehealth Services: Satellite data circuit supporting an internal/private point-to-point data network extension from YKHC Subregional Clinics. YKHC has health clinics in both Chevak and Hooper Bay (a subregional clinic), which GCI serves from this location. Uses of the satellite circuit likely include Voice-Over Internet Protocol (VoIP) calling, video teleconferencing, internal/private systems/records access, e-mail and other forms of communications.
- Kashunamiut School District in Chevak – Distance Learning Services: Satellite data circuit primarily supporting Internet access serving the Chevak school. Secondary access (not hosted by GCI but likely utilized by the school) via this Internet “pipe” include VoIP calling, video teleconferencing, internal/private systems/records access, etc.
- Lower Yukon School District (LYSD) – Distance Learning Services: Satellite data circuit primarily supporting Internet access serving the Hooper Bay school. Secondary access (not hosted by GCI but likely utilized by the school) via this Internet “pipe” include VoIP calling, video teleconferencing, internal/private systems/records access, etc.
- Federal Aviation Administration (FAA) – Federal Government Assistance: Satellite data circuits in both Chevak and Hooper Bay transport images from weather cameras to assist pilots in determining real-time local weather conditions throughout the state in an effort to reduce weather-related aviation incidents and last-minute changes to flight patterns.
- GCI's Rural Wireless system: Satellite data circuit supporting GCI's cellular/rural wireless system to provide wireless services in both Chevak and Hooper Bay, including wireless 911, subscriber authentication, voice trunking, wireless data, etc.
- Critical Long-Distance Voice Service: GCI offers Measured Toll Service (“MTS”) for consumers and businesses using the C-Band spectrum via trunking over the microwave radio system. For Chevak and Hooper Bay, this allows residents to contact state troopers and other emergency officials at all times via wireline 911 (for the Kusilvak or Kusilvac Census Area), but especially in critical situations.

Overview of Severe Weather in Chevak, AK

GCI's C-Band earth station in the rural Alaskan village of Chevak is only used in circumstances when the existing GCI TERRA C-Band microwave radio system experiences degraded service, which cuts-off communications to approximately 2300 Alaskans in Chevak and Hooper Bay (another rural Alaskan village served in tandem to the Chevak village). The microwave system is the primary link to communications in these villages, supporting a variety of critical services described above.

The GCI TERRA C-Band microwave radio system utilizes a mountaintop microwave repeater location on Askinuk mountain. This site routinely experiences severe icing conditions the winter and spring months. This severe icing has significantly damaged the microwave radio antennas and

waveguides , leading to link degradations and service outages. Below are two annotated pictures (from 2018) showing the relative positions of the microwave radio antennas on this tower and the links served from this site (Figure 1) and the type of severe icing that is common on the Askinuk mountain tower (Figure 2). In an effort to account for the severe weather, GCI previously reduced the height of the Askinuk tower by nearly 70-feet in order to reduce the risk of falling ice and to minimize the damage that it causes to GCI's microwave radio antennas and waveguides however, despite this effort, GCI's TERRA services are still severely impacted and disrupted.

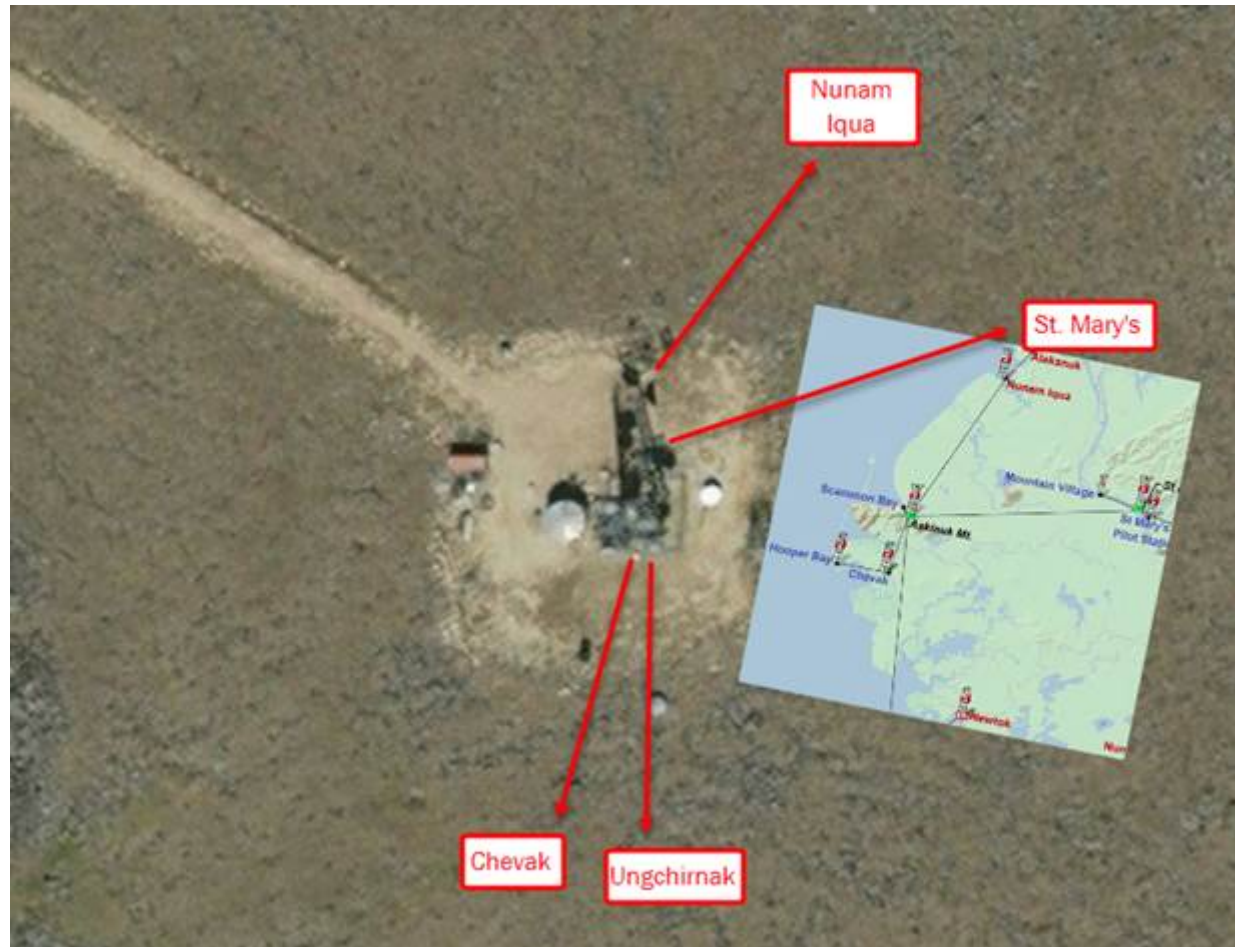


Figure 1: Askinuk Mt. Aerial Photo (Bing) w/ Deltanet/TERRA Inset (annotated)

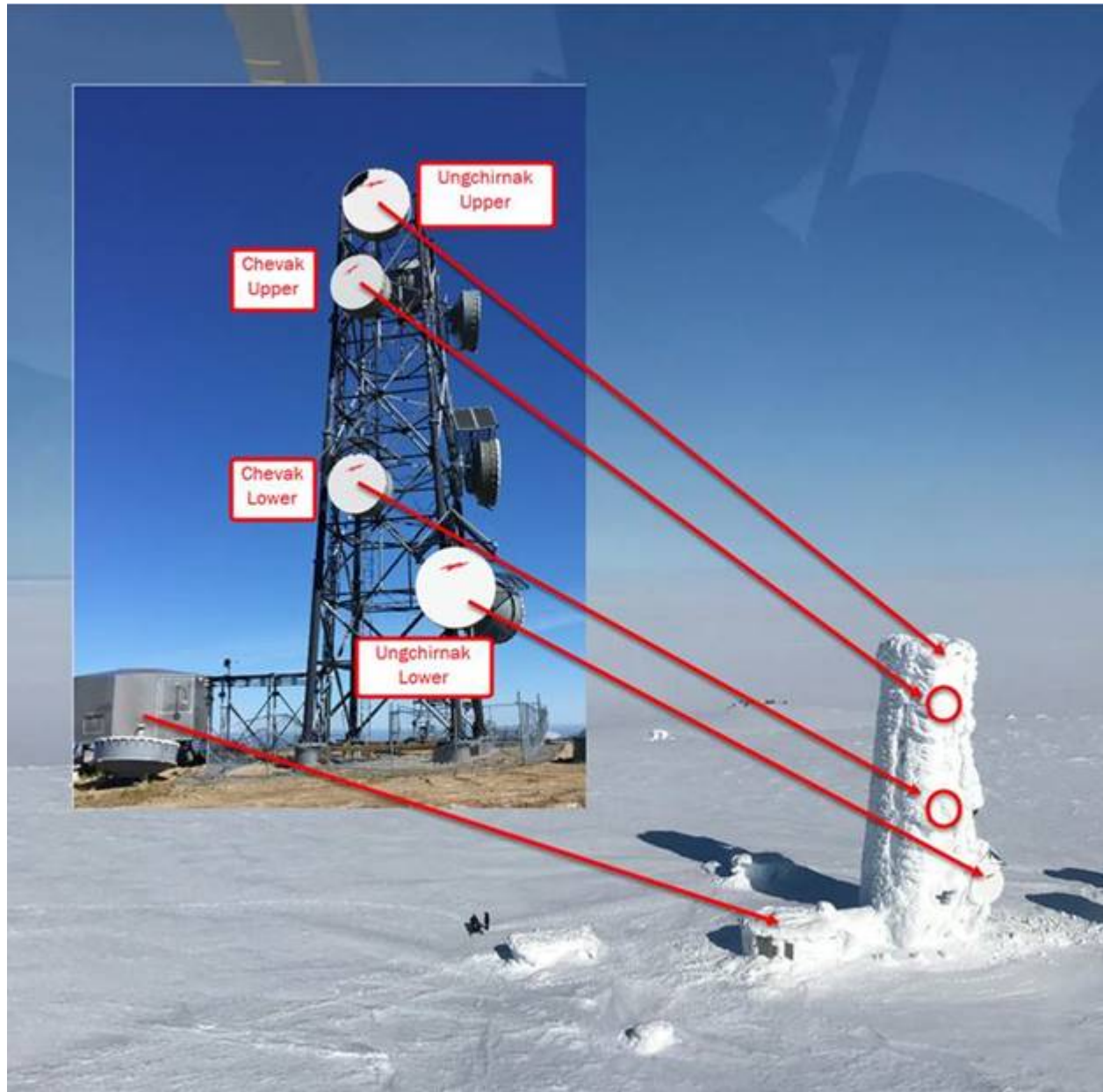


Figure 2: Askinuk Tower; Summer and Winter (3/15/2018) (annotated)

There are no Suitable Transmission Alternatives to the C-Band during the Chevak Winter Season

GCI explored alternative methods of providing service to Chevak prior to seeking a waiver of the Filing Freeze to file for an STA and license to operate on the C-Band. The result of this assessment is that the C-Band is the exclusive means to provide telecommunications services into the remote

village of Chevak (and affecting approximately 2300 western Alaskans) when the severe weather renders the microwave link unreliable, which has occurred consistently over the past two winters.

Alternative Satellite Bands: Prior to seeking the Initial STA, GCI initially intended to temporarily operate in this area using flyaway Ku-Band VSAT stations, however these emergency deployments proved unable to withstand the high wind and severe weather in this area of Alaska. As a general matter, the currently available Ku- and Ka-band options are not realistic alternative options due to (a) the limited lower link availability resulting from more challenging propagation conditions and higher link margins required for Ku- or Ka-band fading;³ (b) the prohibitively high cost associated with replacing or upgrading ground segment equipment; and, (c) the lack of available Ku- or Ka-band satellites having satisfactory coverage over the state of Alaska - in other words, there is not enough capacity or coverage of Ku-band satellites to move all of the C-Band services and there is minimal, if any, Ka-Band coverage in Chevak. For these reasons, the available alternative satellite bands are not currently an option to replace GCI's TERRA C-Band microwave radio system in Chevak during episodes of severe icing.

Fiber: Utilizing existing or deploying new fiber is also not a suitable alternative for GCI's services in Chevak. The nearest location to Chevak that has existing fiber-optic facilities) is in Nome, AK, which is hundreds of miles away from Chevak, and across the Bering Sea. The shortest distance between Nome and Chevak includes both over-land and subsea components, making the route a difficult one (financially, environmentally, reliably, etc.). To connect to that existing fiber would require a new subsea fiber to be buried deep into hundreds of miles of arctic ocean floor and to lay terrestrial fiber (either across the tundra or buried below the tundra), making the route a difficult one (financially, environmentally, reliably, etc.). GCI investigated this possibility and realized that there are significant challenges associated with such an effort that realistically prohibit such an effort.

- Deploying a new fiber along the coast would run over the Arctic tundra and would need to be safeguarded against damage caused by the complex and changing structure of permafrost, which can range in thickness from a single meter to many hundreds of meters. And, it would require permitting in a national wildlife refuge, which is generally not permitted.⁴ In addition, uneven freezing and thawing at or near the surface can result in dramatic changes to landforms, such as ice wedges (i.e., growing cracks in the ground) and pingos (i.e., small hills that arise quickly due to subsurface pressures), which can damage buried fiber optic cable.⁵

³ For instance, weather characteristics such as rain, snow, or fog may cause signal fade on these satellite bands. This is especially concerning in Alaska, where snowfall could occur anytime from September to June, and its natural attributes make it even more difficult to rely on other satellite bands.

⁴ Much of the land in rural Alaska is protected by numerous federal and state laws that limit human activity, including the Alaska National Interest Lands Conservation Act, the National Wildlife Refuge System Administration Act, the National Wildlife Refuge System Improvement Act of 1997, the Wilderness Act, the Wild and Scenic Rivers Act, the Marine Mammal Protection Act, and the Arctic Refuge Comprehensive Conservation Plan.

⁵ U.S. Fish & Wildlife Serv., *Ice Wedges, Polygons, and Pingos*, <https://www.fws.gov/refuge/arctic/permcycle.html> (last visited July 17, 2019) (describing the process by

- A subsea fiber would be required to run hundreds of miles in the sea and would need to be safeguarded against additional elements, including ice and rough sea floors.⁶

Both of these options are not viable alternatives in the instance that the Chevak station freezes up and GCI must restore services in the middle of the Alaskan winter. In short, if it were feasible to install fiber to serve Chevak, then GCI would have already done so.

Given the critical services being provided via C-Band in Chevak and the lack of alternatives methods of serving this remote community, GCI urges the Commission to grant its waiver requests and ultimately grant GCI a permanent C-Band earth station license in Chevak.

Please direct any questions to the undersigned.



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which the permafrost cycles through these changes); Nat'l Snow & Ice Data Ctr., *All About Frozen Ground – How Does Frozen Ground Affect Land?* https://nsidc.org/cryosphere/frozenground/how_fg_affects_land.html (last visited July 17, 2019) (describing how freezing and thawing in the Arctic can change the shape of the land).

⁶ Submarine fiber, particularly in Alaska's cold and icy waters carries inherent risk. The more ice that accumulates, the higher the probability of cuts to the fiber, resulting in decreased reliability.