

# **EXHIBIT B**

# **Informal Objection to License Renewal for Radio Station KRPL, 1550 kHz AM**

**Facility ID Number: 21416**

**File Number: BR-20050922ACS**

**Submitted to:**

**Office of the Secretary  
Federal Communications Commission  
445 12<sup>th</sup> Street, SW  
Washington, DC 20554**

**Submitted by:**

**Residents Against High-Power Radio Interference  
c/o Sheila Weber  
2350 Douglas Road, # 25  
Ferndale, WA 98248**

**December 1, 2005**

# Contents

- ◆ Informal Complaint
- ◆ Attachments
  - A. Previous Correspondence
  - B. Comment Cards and Letters from Residents
  - C. Minutes from City and County Council Meetings
  - D. Newspaper Articles
  - E. Petitions to the Federal Communications Commission
- ◆ Enclosures
  - CD recording of interference with sound system at Whatcom New Life Assembly Church
  - Photos of KRPI antennas and studio
- ◆ Copies to:
  - Kevin J. Martin, Chairman, FCC
  - FCC Office of the Secretary
  - FCC Media Bureau
  - FCC Enforcement Bureau
  - U.S. Representative Rick Larsen
  - U.S. Senator Maria Cantwell
  - U.S. Senator Patty Murray
  - American Radio Relay League
  - Ferndale City Council
  - Whatcom County Council

## Basis for Complaint

- ◆ For the past 15 years, residents of Ferndale and Whatcom County have reported ongoing adverse effects from the 50,000-watt signal transmitted by radio station KRPI, 1550 kHz AM
  - Homes, businesses, schools, churches, organizations, and city government facilities have all been affected
  - Reports include daily interference with telephones, computer networks, communications systems, public address systems, and other electronic equipment, as well as vital health home monitoring systems
- ◆ This interference is not limited to a few individuals (Attachment E contains signatures of 1162 affected residents)
  - This interference is consistent with general population/uncontrolled exposure to RF radiation
- ◆ Therefore, Ferndale residents request that the FCC
  - Reduce approved power to 10,000 W daytime, and 10,000 W nighttime
  - Require KRPI to correct the blanketing interference and submit monthly reports to the FCC, and make copies available in the radio station's public file
  - Require the radio station to fence towers and post warning signs
  - Conduct an on-site investigation (or require KRPI to conduct Environmental Assessment) by an unbiased radio engineer, including measurement of the field strength of the signal power in affected residential and business areas
  - Make the results of the Environmental Assessment available to the public

# Radio Station KRPI

File Number: L 20050922ACS

- ◆ Broadcasts at 1550 kHz AM
- ◆ Facility ID: 21416
- ◆ License renewal application file number: BR-20050922ACS
- ◆ Renewal date: February 1, 2006
- ◆ Location
  - 5538 Imhof Road. Ferndale, Washington
  - In unincorporated Whatcom County adjacent to City of Ferndale (map on page 12)
- ◆ Operating power: 50,000 watts daytime, 10,000 watts nighttime
- ◆ Owners: BBC Broadcasting, Inc.
  - Bhag S. Khela, 10818 236<sup>th</sup> Street, Kent, WA, 98031
  - Sukhvinder S. Badh, 7251 Ash Street, Richmond, B.C. Canada

## Station Growth

- ◆ Radio station KRPI started as a small, church-related, nonprofit station with only one (1) transmitter tower, broadcasting daytime at 1,000 watts
- ◆ Through a series of ownership and call sign changes, KRPI has grown into a major commercial station with four 141-ft antenna towers operating at 50,000 watts daytime and 10,000 watts nighttime
  - Whatcom County issued building permit for three towers in 1980
  - The fourth tower was added in 1987 ("sometime prior to January 1988")
- ◆ 50,000 watts is excessive for the station's location in the middle of a small rural community
  - The station is only  $\frac{1}{4}$  to  $\frac{1}{2}$  mile from residential and business areas
  - The height of the towers is 141-ft, and the signal is beamed over a 300-ft hill; consequently, the residential and business areas on the hillside are bombarded with RF radiation
- ◆ Past license renewals have been based on specifications for the original 1,000 watt station, without regard for the effect of the higher power on the residents of Ferndale

**A current Environmental Assessment should be required, and the results should be made available to the public**

## Need for Environmental Assessment

- ◆ OET Bulletin 65, "Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields," (August 1997), provides for evaluating when RF radiation exceeds the FCC guidelines
- ◆ The FCC defines situations that warrant investigation, including the following guidelines that are applicable to the situation at KRPI
  - "( C ) High RF levels are produced at ground level in an area which could reasonably be expected to be used by the public (including trespassers)"
    - Requires warning signs and fences, currently not in place
  - "(D) High RF levels are produced at ground level in an area which is used or is likely to be used by people and to which the applicant cannot or does not restrict access"
    - As shown in the map on page 11, most of the City of Ferndale is located within a 2-mile radius of the radio station
    - Requires Environmental Assessment
  - "(E) High RF levels are produced in occupied structures..."
    - Some residents live within 1/4 to 1/2 mile from the transmitting towers
    - Requires Environmental Assessment
  - If, indeed, the Environmental Assessment determines that there are high RF levels in the surrounding community, it seems unquestionable that there are also "high RF levels in the offices, studios, and parking lot" at KRPI, since the studio is collocated with the towers

## Station History

Official records of KRPI's evolution from 1,000 watts to 50,000 watts are incomplete. The following table includes information available from the FCC database and the Whatcom County Planning Department.

Call Sign/Date	FCC File #	Action
KOQT 3/25/1980	BP-780804AF	"Minor change to licensed facility." Station moved from Bellingham, WA, to an existing facility at 5538 Imhoff Road in Ferndale, WA. Increase daytime power from 1,000 watts to 10,000 watts; add nighttime service with 10,000 watts. Major environmental action under Section 1.1305 of the rules petition for reconsideration filed August 4, 1978
8/5/1980	n/a	Whatcom County granted Conditional Use Permit for three 144-ft towers and a transmitter house
8/23/1980	n/a	Transfer of land ownership from Joanne Manner Gustafson to Richard R. Ellison and Leona M. Ellison
10/15/1980	n/a	Building permit for three 141-ft transmitting towers
1/26/1981	BR-19801001WT	License renewal granted
5/1/1981	BMP-19810304AK	Extension of time for changes
10/27/1981	BRC-19810151AT	Change station location to 5538 Imhoff Road, Ferndale
2/17/1982	B-19811015AB	License to cover BP-780804AF for changes



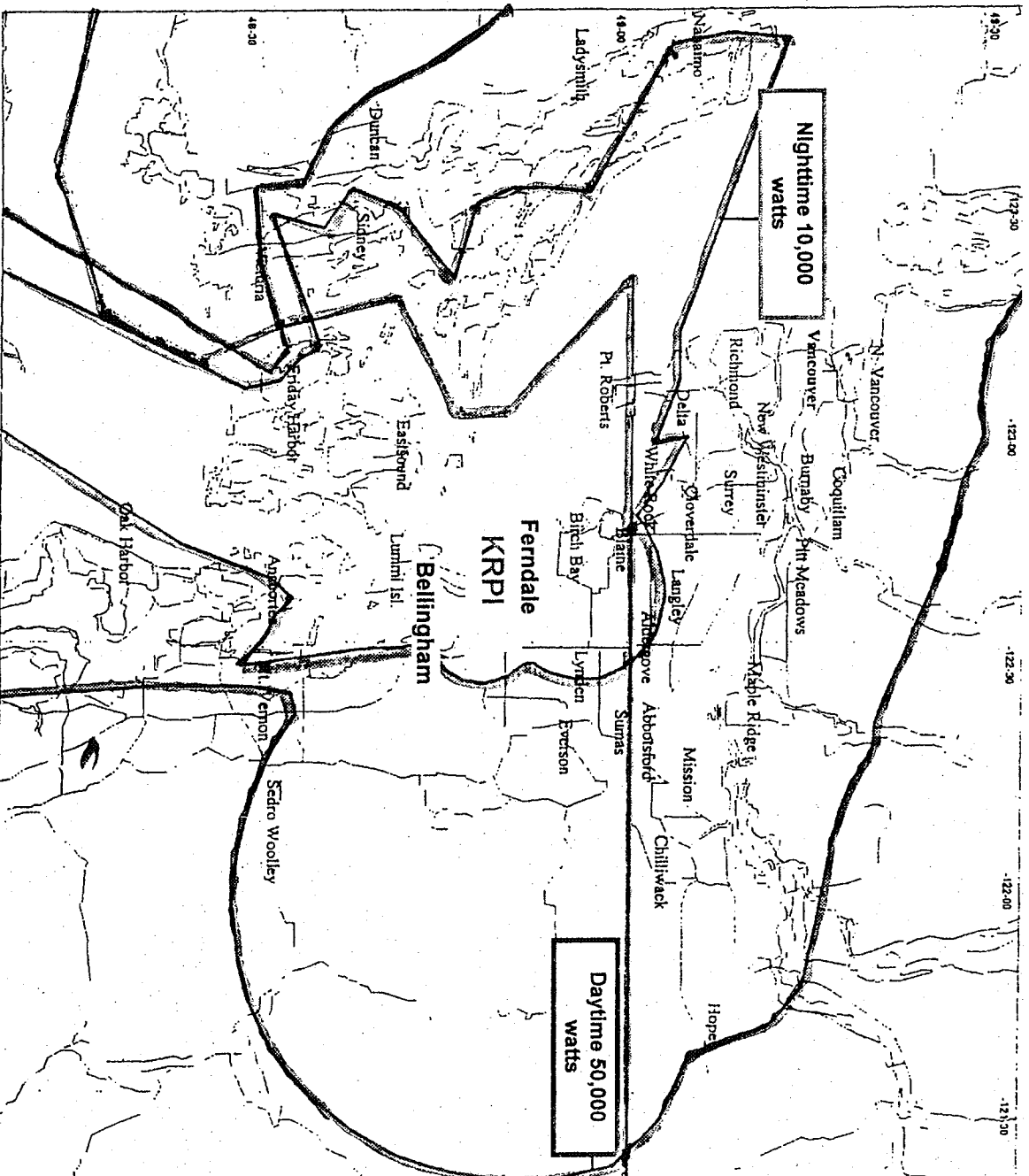
# Station History (Continued)

Call Sign/Date	FCC File #	Action
<b>KOQT</b> 3/27/1984	BR-RB1104UZ	License renewal granted
7/6/1984	BAL-19840619FB	Assignment of license from Help Ministries to Ferndale Radio Partnership
<b>KNTR</b> 10/22/1984	n/a	Change call sign to KNTR
10/2/1986	BP-19860324AB	Increase daytime power to 50,000 watts. Major environmental action under Section 1.1305
1987?	n/a	Fourth tower erected
4/6/1988	BMP-19880328AC	MP extension of time for changes
7/15/1988	n/a	Whatcom County required KNTR to submit a building permit for the fourth tower, which "was constructed some prior to January 1988."
10/17/1988	BMP-19890928AB	MP extension of time
4/13/1989	BMP-19890328AA	MP extension of time
5/30/1989	BRC-19890426AD	Approval for remote operation
4/30/1991	BR-19900911UF	License renewal granted
1/2/1992	BAL-19911125EA	Assignment of license from Ferndale Radio Partnership to Help Ministries
9/21/1995	BL-19890424AI	License to cover BP-860324AB as modification for changes

## Station History (Continued)

Call Sign/Date	FCC File #	Action
<b>KNTR</b> 1/16/1998	BAL-19971126EF	Assignment of license from Help Ministries to Pearl Broadcasting, Inc.
1/22/1998	BR-19970902WA	License renewal granted
3/16/1998	n/a	R & L Ellison sold property to Geranium, Inc.
<b>KCCF</b> 10/22/1998	n/a	Change call sign to KCCF
3/7/2002	n/a	Geranium, Inc. executed a quit-claim deed to Pearl Broadcasting
4/19/2002	BAL-20020308ABB	Assignment of license from Pearl Broadcasting, Inc., to BBC Broadcasting Company
7/5/2002	n/a	Pearl Broadcasting sold land to BBC Holdings
<b>KRPI</b> 8/9/2002	n/a	Change call sign to KRPI
8/23/2005	n/a	Change official mailing address to P.O. Box 3213, Ferndale WA, 98248
9/30/2005	BR20050922ACS	Application for license renewal
12/1/2005	n/a	Informal Objection submitted by Residents Against High-Power Radio Interference.

◆ This high power, however, is detrimental to the local community, Ferndale



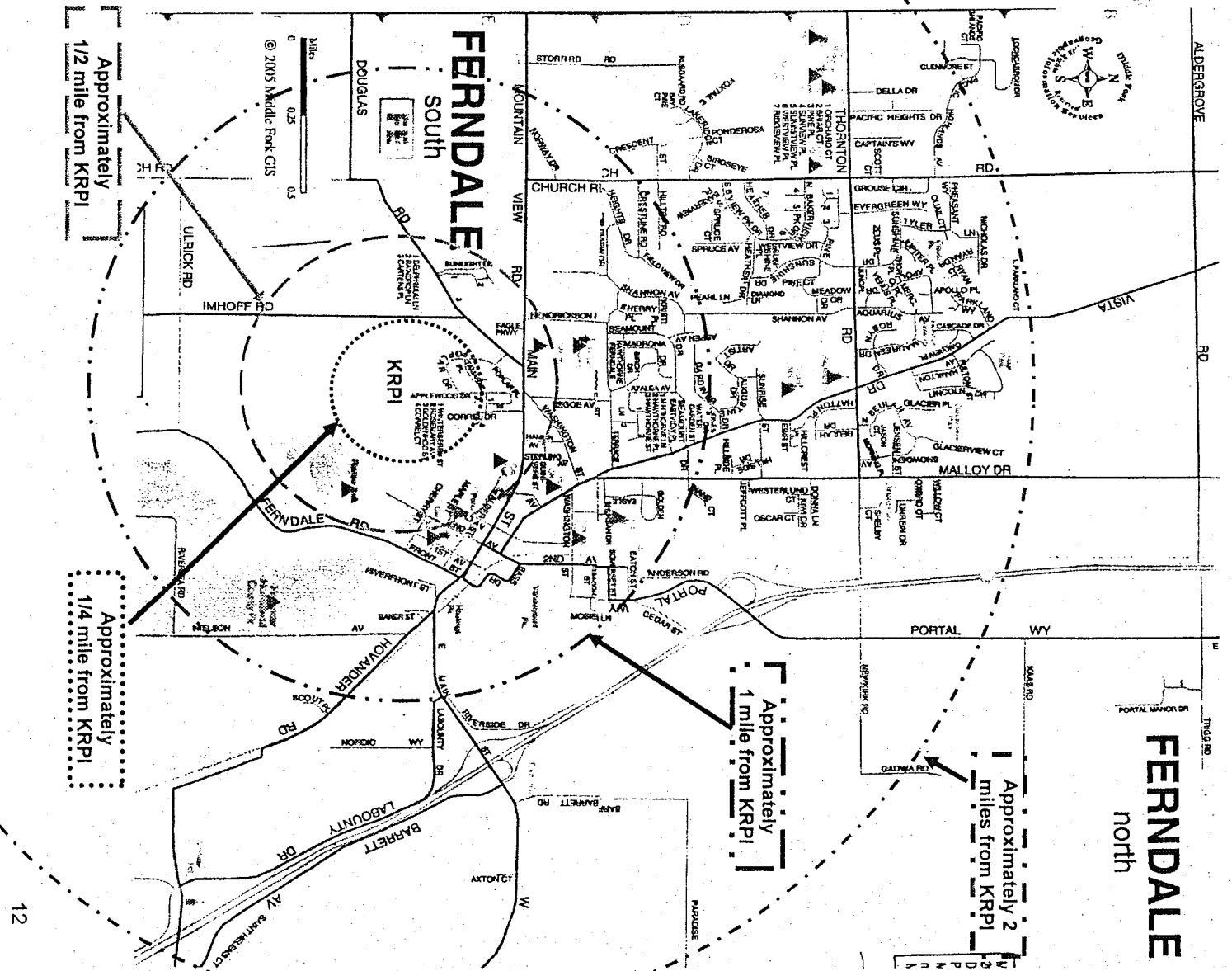
# Proximity to Ferndale

- ◆ KRPI is located only 1/4 mile from many residents and 1/2 mile from downtown businesses
- ◆ Nearly the entire city is less than 2 miles from the radio station
- ◆ This results in general population/uncontrolled exposure, requiring an Environmental Assessment
- ◆ Measurements must be taken not just at the base of the towers, but also in the affected areas, to evaluate whether exposure to RF radiation exceeds FCC guidelines

Street map of Ferndale showing KRPI's proximity to residential and business areas. Circles represent approximate distance from station, in miles. (See scale on map.)

## ▲ Schools and Government Buildings

Residents Against High-Power Radio Interference



# History of Complaints

- ◆ Community concerns include the following issues
  - Daily radio frequency interference (RFI)
  - Safety and health
    - RF burns
    - Fences and warning signs
    - Interference with vital home health monitoring systems
    - General population/uncontrolled exposure to excessively high RF
  - Technical issues
    - Topography of antenna site in relation to City of Ferndale
    - Effective radiated power (ERP)
    - “Dirty” signal combining spurious and harmonic components
    - Blanketing Interference
  - Effect on property values
  - Mitigation efforts
  - FCC monitoring

Attachment A includes previous correspondence with the FCC about the interference from KRPL. Attachment B includes current comments and letters from residents of Ferndale. Attachment C includes copies of minutes from the City Council and the Whatcom County Council, and Attachment D includes local newspaper articles regarding this issue.

# Radio Frequency Interference

To assess the extent of the problem, Residents Against High-Power Radio Interference held a public meeting on September 27. Numerous citizens complained of RFI affecting:

- ◆ Amateur radio stations
- ◆ Reception from other local radio stations
- ◆ Local and long-distance telephone reception, even after installation of filters
- ◆ Answering machines
- ◆ Computer systems (networking and Internet dial-up)
- ◆ Home health monitoring systems
- ◆ Doorbell
- ◆ Stove
- ◆ Shock from screen door
- ◆ Public address systems at schools, churches, and other organizations
- ◆ Electronic keyboards at the local schools, and electric organs
- ◆ CD player at a downtown business
- ◆ Portable radio equipment used for business
- ◆ Small business to mobile communications equipment

The following pages and Attachment B include statements and letters from affected residents. While these comments are largely anecdotal, they represent a significant number of complaints from a city with a population of fewer than 10,000.

## Statements from Residents

In addition to telephone/Internet interference and interference with other radio stations, residents reported more serious, and even life-threatening, problems

### ◆ Interference with home monitoring equipment

- "In May 2004, I was involved in a motor vehicle accident that resulted in a spinal cord injury that left me permanently paralyzed from the shoulders down and confined to a wheelchair. Our two story has since been modified to include a downstairs bedroom and bath...we have baby monitors in both my bedroom and my wife's upstairs bedroom to facilitate my getting her attention when I am immobile in bed and in need of assistance. One...condition brought on by spinal cord injuries...can become life threatening...When we have the monitors up to an adequate volume that would, if necessary, awaken my wife, we pick up radio interference. It sounds like we have the radio tuned to KRPL..."

*K. Hartz (pg B-8)*

- "This station...interferes with my baby monitor. The monitor picks up this station...I finally had to just stop using the monitor because it was too frustrating to have to fight over the noise to hear my baby..." *A. Owens (pg B-12)*

See Attachments A and B for complete letters and comment cards from affected citizens.

## Statements from Residents (Continued)

### ◆ Interference with computer networks

- “Radio station KRPI interferes with my livelihood... I am a single mom... who makes my living working at home... This radio station interrupts my telephone service constantly... I have had the telephone company out – only to tell me I could buy a filter with no guarantees that it will work...” *K Cooke (pg B-11)*

- [The radio station] “gave me two ‘frequency specific’ filters to install in-line on my two phone lines... It made no difference at all... As time went on, the interference became much worse... the interference was so bad That I could not get a clear enough signal to use my computer modem. As I was employed by a local Internet provider, this was obviously a significant problem. Many a time, a client calling in on my office (second) line could not hear me and I would lose hundreds of dollars of business. All because my clients could not hear me over the radio broadcast on my phone line.

“The interference has become steadily worse over the years... I currently have four filters on my single phone line... I cannot conduct business from this address and personal conversations are a challenge... most of the time my computer modem is incapable of even making... much less maintaining... a connection...” *V. Ayers (pg B-16)*

See Attachments A and B for complete letters and comment cards from affected citizens.



## Statements from Residents (Continued)

### ◆ Interference with public address systems

- "At my Eastern Star meeting at the Masonic Hall in Ferndale, it still interferes very loudly and clear on the sound system and microphones..." *R. Hansen (pg B-6)*
- "The audiotape recording of the Charter Review Commission meeting at the Ferndale Senior Activity Center on April 14, 2005, was overlaid by programming from the radio from 7:00 p.m. to 8:00 p.m. The voices of the speakers at the meeting could be heard faintly through the station broadcast. The recording equipment, a Marantz portable cassette recorder and a Nady Audio rack mixer, were plugged into an electrical outlet only, not any kind of sound system..." *D. Brown-Davis (See memo in Attachment A, pg A-58)*
- "Our congregation has been experiencing interference for many years. We have upgraded phones, sound systems, instruments, added filters and several gizmos that were supposed to make changes. We've had very limited success. Long before I came, maybe 15 or more years ago engineers from KRPI came to assess the situation and could not resolve the interference problems..."

"Every week, along with our music, announcements, drama productions and moments of silent prayer, we are joined by music, announcements, and commercials from KRPI AM... KRPI's signal is strong enough to interrupt services, funerals, or weddings because at moments of silence people start giggling over the very inappropriate timing of a commercial or song..." [a CD is included with examples recording KRPI's interference during services]. *M. Rody, Senior Pastor, Whatcom New Life Assembly (pg B-9)*
- "Our intercom system at Mt. View Elementary School also is affected and every school-wide announcement has KRPI in the background." *C. Larson (pg B-13)*
- The radio station eliminates any possibility of the Ferndale American Legion Post having a phone and small public address system. *R. Hartley (pg C-18)*

See Attachments A and B for complete letters and comment cards from affected citizens.

## Statements from Residents (Continued)

### ◆ Interference with electronic pianos and organs

- "In the 2002-2003 school year our school district bought a Yamaha MLE (Music in Education) set of 15 keyboards... The first time I set up the keyboards and turned them on, the radio station was so loud that I wasn't able to use this keyboard system. Thousands of dollars were spent on this system. The radio station volunteered to put shielding materials in each keyboard, but would mean they would have to open up all 15 keyboards, which would cancel the warranty. This was done anyway at no cost [to the school].

"The subsequent 2 sets of keyboards, the school district has to pay to have this work done. The electrician for the school district had to also make ground wires for each of the keyboards... I can still hear the radio station in some head phones... to make some recordings of students who auditioned for Elementary Honor Chorus, I had to go to another location, because the radio station could be heard on my recordings..."

*C. Larson, Elementary Music Specialist, Mt. View Elementary School (pg B-13)*

- "Clubhouse interference – electric organ." *J. Johnston (pg B-5)*
- "The organ at the clubhouse had to be moved due to station interference." *E. Warden (pg B-5)*

### ◆ Interference with mobile communications systems

- Have interference on the walkie-talkie at work." *J. Thompson (pg B-3)*
- "...Police and emergency vehicle communications may also be affected..." *(Letter from Ferndale City Council to Whatcom County Council; pg A-59)*

See Attachments A and B for complete letters and comment cards from affected citizens.

## Statements from Residents (Continued)

### ◆ Other interference

- “When I moved into my new home on Correll Drive I had difficulty with my touch lamp – it just came on by itself... I tested it in other outlets. When I got up in the morning, I found the lamp on, regardless of which outlet it was in... On two separate occasions I had the electricians come out the check the wiring... I purchased a new touch lamp... only to have the same problem... we began to note when the lamp turned on... and when radio station KRPI came on with full wattage... KRPI comes on around sunrise – so do our touch lamps!” *E. Wardein (pg B-14)*
- “I get a shock almost every time I open my storm door, which faces the wetlands and has the towers off to the right of my home.” *N. Pasinski (pg B-7)*
- “I had to turn off my front doorbell as the station was coming through it.” *P. Buchinski (pg B-4)*
- “I would like to express my pent-up frustrations and displeasures that have been building up for 15 years. I have for years experienced its [KRPI] coming over my phone conversations... My best story was when I built my brewery and the ‘Voice of the Lord’ came through the hot water heater, very bizarre...” *L. Zimmerman, Whatcom Brewing Co. (pg B-25)*

See Attachments A and B for complete letters and comment cards from affected citizens.

## City of Ferndale

---

- ◆ The City of Ferndale was required to spend at least \$16,000 (at taxpayer's expense) to shield city equipment from RFI
- ◆ In September 1998, City Hall was relocated to a building in close proximity to the broadcast facility
  - Due to RFI, the computer network was inoperative for up to two months
  - With the assistance of consultants and a radio engineer, the situation was rectified through shielding, filters, and physical relocation of certain system components
- ◆ In 1999, the Parks Department relocated to a facility that is  $\frac{3}{4}$  mile from the station towers
  - At times the phone system is virtually unusable
  - The fax will work only sporadically
  - Internet access is impossible

Refer to Attachment A for letter from Ferndale City Administrator to FCC, dated July 20, 2002 (pg A-30); and letter from Ferndale City County to Whatcom County Council, dated October 24, 2005 (pg A-60).

## City of Ferndale (Continued)

- ◆ The Police Department experienced intermittent telephone interference until the city recently replaced the telephone system
  - Planned relocation of the Police Department will require additional expenditure of thousands of taxpayer dollars for filters and shielding
  - Police and emergency vehicle communications may also be affected
- ◆ Whatcom County Fire District 7 reported similar ongoing problems with their telephones
- ◆ Public schools experience interference with public address systems and electronic keyboards. A radio engineer came from Seattle, but was unable to correct the problem (see letter on page B-13)

Refer to Attachment A for letter from Ferndale City Administrator to FCC, dated July 20, 2002 (pg A-30; and letter from Ferndale City County to Whatcom County Council, dated October 24, 2005 (pg A-60).

## Amateur Radio Stations

- ◆ James Kaufman is a licensed amateur radio operator, call sign W7UMH
  - Holds a commercial radio telephone license with radar endorsement
  - Able to operate from 1972 to 1999 with no problems
  - Home is about 1 mile north of KRPI
- ◆ In 1999, his equipment was inspected by the KCCF engineer, who found that everything was properly grounded and shielded
  - Collins S-line equipment and Barker-Williamson folded dipole with a 600 ohm 12-to-1 balun to keep RF off the coaxial cable
  - MPJ isolator to keep RF from radio station coming down shield of coaxial feed line to electronic equipment
- ◆ Mr. Kaufman states
  - "I can work low-band 75/80 meter band after KRPI reduces power to 10,000 watts at night
  - "During daytime, the 50,000 watts makes all higher bands useless, as it prevents tuning and high VSWR condition
  - "Measured power of the KRPI signal at the base of my 70-ft tower is 11 volts per centimeter with a voltmeter tower reference to ground..."

Mr. Kaufman has written to the FCC several times concerning this problem. Attachment A contains copies of this previous correspondence.

## Amateur Radio Stations (Continued)

- ◆ Dave Morgan was a licensed amateur, call sign W7CLU
  - Had complaints against KCCF from 1992 to 1998, because he could not operate his equipment
  - Used a tower and antenna array
  - Al Johnson and Gary Prowse, who worked on his tower, used to get RF burns on their fingers from the 50,000 watt station (see pages 27-28)
- ◆ Allen Johnson, call sign W7EKM, contacted ARRL
  - "Amateurs within a couple miles of the station cannot operate 160. 80. 40. meters because the signal raises the noise floor to a point that it paralyzes the receiver"
  - He also described RF burns he received previously (page 27)
  - ARRL headquarters, including their legal counsel, has agreed to look into the situation and report their findings. We are still waiting for the results

Attachment A contains copies of this correspondence.

## Safety

- ◆ At least two experienced, licensed amateur radio operators have received "RF burns" (often referred to as "thermal" effects)
- ◆ Residents in Correll Park, a senior housing ~1/4 mile from the station, are concerned about the effect of excessive RF on pacemakers and implanted metal wires and plates
  - Pacemaker manufacturers state that these devices are shielded, but patients should avoid going too close to the towers
    - How close is *too close*? Is 1/4 mile too close?
    - That depends on the level of RF to which people are continually exposed in their homes, and this testing needs to be done by the FCC or a designated, unbiased representative
- ◆ One nearby resident often receives a shock when she touches her front door
  - The door is a metal storm door and faces the wetlands with the radio towers to the right of her home (pg B-7)
  - The metal door could be resonating with a harmonic frequency and absorbing some of the resonated power; this is a frightening factor for potential RF burns
- ◆ The area around the radio towers is not securely fenced\*
- ◆ Warning signs are not posted
  - This creates a potentially life-threatening hazard for children, pets, wild animals, and anyone who may be walking in the area
  - Many individuals expressed concern for the safety of children and grandchildren who may easily wander into the brushy, flat, grassy areas of the antenna farm

\*See photos at back of this complaint.



## RF Burns

---

- ◆ RF burns are extremely hazardous
  - They damage tissue down to the bone, and must heal from the inside out
  - Three to four weeks is required for healing, depending on how severe the burn
- ◆ The FCC website describes RF burns as “biological effects”
  - Can result from animal or human exposure to RF energy
  - Result from rapid heating of biological tissue by very high levels of RF energy (principle of microwave ovens)
  - It has been known for many years that exposure to very high levels of RF radiation can be harmful
  - Tissue damage (RF burns) in humans could occur during exposure to high RF levels, because the body is unable to cope with or dissipate the excessive heat
  - The eyes and the testes are particularly vulnerable because of the relative lack of available blood flow to dissipate the excessive heat

## RF Burns (Continued)

- ◆ If conditions are right, RF burns can occur from touching commonly found items, such as wire fences and metal clotheslines
  - When personal ohm resistance is low and power from station reaches a high level of modulation, anyone touching a wire that is close to the resonant frequency's dimension of the radio station may get an RF burn
  - Many individuals may have experienced RF burns, but did not recognize them as such, or did not know the cause
- ◆ See pages 27-28 for first-person accounts of licensed amateur radio operators who received RF burns
- ◆ This issue of RF safety, which is covered under RF exposure rules adopted by the FCC in 1998, requires commercial stations applying for a license renewal to file an Environmental Assessment along with their application
  - We request that KRPI meet this requirement and make the report available to the community in the station's public file, which in the past has not been addressed

## RF Burns – First-Person Accounts

- ◆ Al Johnson has been a licensed amateur radio operator since 1956, call sign W7EKM (pg B-22)
  - Works for community agencies in a radio communications capacity: Whatcom County Division of Emergency Management, Whatcom County Search & Rescue, American Red Cross
  - 29 years experience as an electrical supervisor at Intalco, an aluminum refinery
  - Received RF burns on both hands while trying to cut an antenna for 160 meters
    - Thumb and first finger of each hand had 2 burns each: dark spot in the middle of a circle with gray ring on outside
    - To determine source of burns, used an AM radio tuned to 1550 kHz (KRPI, then KCCF) and the antenna analyzer
      - Held antenna and watched analyzer
      - Received another burn when station played music and modulated the signal very heavily
  - Took 3-4 weeks for his burns to heal

\*See letters in Attachment B.

## RF Burns – First-Person Accounts (Continued)

### ◆ Statement from Al Johnson

“The cause of RF burns is easy to explain with Ohm’s Law: In this case, I was the resistance (R) to ground through my body. E was the voltage being induced into the antenna wire. My resistance did not change; therefore the only variable was the voltage (which changes with increase and decrease of audio from the transmitter). When the voltage reached the critical level in the wire, current (I) flowed through my body to ground, causing burns.” (pg B-24)

### ◆ Gary Prowse also received RF burns while assisting Mr. Johnson with the work done on the radio tower for Dave Morgan (pg B-18)

- He removed a long wire antenna that was attached to the tower
- He says, “The wire had an insulator on the end, but on touching the bare wire itself, I received a very painful RF burn.
- “There is no question in my mind that this RF burn was caused by the local Ferndale AM radio station.”

\* See Attachment B.

## Danger of RF Burns

- ◆ In 2005, KRPI is operating with 50,000 watts, the same power that it did in 1996, when the reported RF burns occurred
  - In that instance, the burns occurred at a location 1 mile from the transmitting antenna
  - Affected residential and businesses are only  $\frac{1}{4}$  to  $\frac{1}{2}$  mile from the antenna
- ◆ What would be the magnitude of the burns if they were inflicted in a location that much closer to the same antenna?
  - If the receive antenna is in the main lobe of the transmitting wave front, for the same output, the burns would be much more severe, even life-threatening
  - Any conductor in the near field of the transmitting antenna that is insulated from ground would have voltage potential induced in it, and any available ground would cause a current path
- ◆ A thorough investigation by the FCC, or it's assigned radio engineer, could validate the SAFE level of power for this location and alleviate the fears of residents
  - We believe that 50,000 watts is excessive

## **Technical Factors Contributing to Interference**

- ◆ Several factors contribute to the RFI experienced by residents and businesses
  - The high (50,000 watt) input signal power
  - The topography of the antenna farm site in relation to the city of Ferndale
  - Effective radiated power (ERP), including gain produced by the phased vertical array
  - Harmonics (sub- and multiples of the primary 1550 kHz)
  - Blanketing Interference

## Topography of Antenna Farm Site

A major source of the problem in Ferndale is the high signal power combined with the siting of the antenna farm

- ◆ KRPI operates with four 141-ft directional, phased antenna arrays
- ◆ The antennas are located in a valley, and the radiated power is directed over a 300-ft hill to the north, in order to reach the target market in Southern British Columbia, Canada
- ◆ Consequently, much of the 50,000 watt signal is absorbed by the residential area on the hillside, resulting in re-radiation and general population/uncontrolled exposure
- ◆ One resident with 17 years of military service as a radio operator, said "They are releasing an uncontrolled ["dirty"] signal, and sending a barrage to get over the hill to the north"

## Effective Radiated Power

- ◆ Although KRPI is broadcasting at 50,000 watts, the ERP may exceed 50,000 watts
- ◆ The configuration of the transmitting phased antenna arrays results in a gain [measured in decibels per inch (dBi)]
  - This gain increases the ERP
  - The 50,000-watt signal *plus* gain will result in an ERP of more than 50,000 watts in the direction that the antenna is phased to radiate
- ◆ Since the signal is directed to the north, the residential and business areas of Ferndale could receive intermittent RF signals that, at times, exceed 50,000 watts, and could reach as high as 100,000 watts
- ◆ Reduction of power to 10,000 watts would result in a maximum intermittent ERP of 20,000 watts
  - This might not eliminate the RFI, but would greatly alleviate the problems faced daily by residents



## Harmonics

- ◆ The operating frequency, 1550 kHz, is not properly filtered, resulting in a “dirty” signal
  - Generates new harmonic frequencies 2/3/4/5/ (up to 10) times the fundamental frequency up through the high-frequency spectrum
  - Each sub-frequency also creates a certain amount of power for each sub-harmonic frequency of 775 kHz on the commercial AM band
    - This creates additional interference for many miles around the radio station
- ◆ Ferndale is inundated directly with 50,000 watts (or an ERP higher than 50,000 watts)
  - Phone lines, power lines, clotheslines, or any metal object will absorb some of the resonated power
  - Under specific conditions, anyone touching these metal “conductors” will receive RF burns (see pages 25 through 29)
    - If the length of the wire (or other object) is close to the resonant frequency of 1550 kHz or its major/minor harmonics, and if the environmental conditions are right, such burns will occur

# KRPI Harmonics from an Unfiltered Transmitter

- ◆ These measurements were taken by James Kaufman using a Kenwood TS-870 transceiver that covers from 540 kHz to 30,000 kHz frequency with a bar graph for checking measurements of KRPI's signal
- ◆ FCC has the necessary equipment to measure the signal at its monitoring facility on Loomis Trail Road, north of Ferndale
  - Although the FCC facility is now closed, the equipment is still there and controlled remotely from Maryland FCC
  - It should be noted that the FCC required KRPI to place a null in it's signal to avoid interference with the FCC facility, but the residents of Ferndale are still having to deal with the interference

Frequency	10,000 Watts 0 dB Signal	50,000 Watts 0 dB Signal
<b>Subharmonics</b>		
775 KHz	No Signal	No Signal
<b>High Frequency Harmonics</b>		
1550 KHz	5-9 +60 dB	5-9 +60 dB
3100 KHz	5-9 +20 dB	5-9 +30 dB
4650 KHz	5-9 +30 dB	5-9 +40 dB
6200 KHz	5-9 +20 dB	5-9 +20 dB
7750 KHz	5-9 dB	5-9 +20 dB
9300 KHz	5-9 dB	5-9 dB
10850 KHz	S-7 (Noise)	5-9 (Noisy AM)
12400 KHz	S-7 (Noise)	5-7 (Noisy AM)
13950 KHz	S-3 (Noise)	S-6 (Noisy AM)
15500 KHz	S-6 (Noise)	S-1 (Noise)

## Blanketing Interference

- ◆ FCC has acknowledged that complaints of interference began when the station increased its power from 10,000 watts to 50,000 watts
- ◆ In response to a complaint by Ms. June McQuarrie, in September 2003, the FCC (states:

“The situation you describe may be attributable to ‘blanketing’ interference, which can occur to radio and other electronic devices that are in close proximity to an AM transmitter. The staff of the Audio Division is well aware of similar complaints.. In 1989, after we authorized the station to increase power from 10 kW to 50 kW, we received multiple complaints of blanketing interference... We required the station to address the complaints and to file progress reports with the Commission on a monthly basis commencing in November 1989. We deferred action on the the KRPI (AM) license application while we monitored the station’s efforts to address the complaints... In a letter date of March 4, 1997, we notified the station that it could discontinue submitting the blanketing interference reports.” (pg A-48)
- ◆ It is evident from the numerous reports included in this Informal Complaint that the blanketing interference is still occurring
- ◆ We request that the FCC require KRPI to address the blanketing interference and again submit monthly reports to the FCC, and make copies available in the radio station’s public file

## Decline in Real Estate Values

- ◆ A realtor reported that sales have fallen dramatically in the area affected by the radio interference
  - People are not willing to purchase homes in this area
  - This leads to a decline in property values
- ◆ One homeowner also reported a decline in the value of his property due to RFI
- ◆ The residential area affected by RFI is undergoing rapid development, and new homes are under construction and in the planning stages
  - Correll Park is a senior housing development  $\frac{1}{4}$  mile from KRPL, and residents are severely affected by the radio interference
    - The complex has 68 homes and 22 condominiums, with 35 more scheduled to be built
  - Ariel Court, a new development under construction in the same area, will have 15 new homes affected by the interference

## KRPI's Mitigation Efforts

- ◆ KCCF offered to provide one free telephone filter per household and provided information from the FCC website about RFI. This undated letter is included in Attachment A (pg A-3). We do not know when the offer of a free filter was discontinued
- ◆ The KRPI engineer has responded to individual citizen complaints. Their "solution" is requiring each individual homeowner, business, organization, or government entity to install filters and shielding (at their own expense)
- ◆ Attachment A includes three letters from the KRPI engineer, in response to complaints. They all include the following caveat
  - "Radio station KRPI is most interested in helping its neighbors solve any RFI problems, but you should be aware that they are under no obligation to do so. The FCC website (fcc.gov) has excellent information about telephone interference from radio stations."
- ◆ Perhaps FCC should take another look at the regulation that absolves the station of any responsibility

Why should individuals, who have neither the technical expertise nor the equipment to assess the source of the RFI, be expected to do the job of a radio engineer?

## KRPI's Mitigation Efforts (Continued)

- ◆ "... The interference from KRPI vanished when the unshielded RCA type cables were disconnected. My plan to help you eliminate the RFI is to construct one set of filters designed to reduce the RF level fed to the keyboard. This... will prevent the keyboard from overloading and demodulating the radio signal..." *E-mail from David Harris to gdellinger@ferndale.wednet.edu re: Yamaha keyboards at Mountain View School (pg A-43)*
  - "Thousands of dollars were spent on this system. The radio station volunteered to put shielding materials in each keyboard, but that would mean they would have to open up all 15 keyboards, which would cancel the warranty. The was done anyway at no cost. The subsequent set of 2 keyboards, the school district had to pay to have this work done." *(pg B-13.)*
- ◆ "... Your new CD player (in common with most consumer audio products) did not have any reference to ground, which makes it prone to radio interference. By bonding the CD player chassis to the tuner/amplifier chassis, the ingress path for the strong radio signal from KRPI was eliminated..." *letter from David Harris, KRPI Chief Engineer, to Constantin Chiropractic Clinic, April 4, 2003 (pg A-42)*
  - "The station engineer came out several times, but was unable to solve the problem with our telephones. Our office telephone is okay, but we still have problems with the phone in the back. We can't use our fax machine..." *S. Constantin, telephone conversation November 29, 2005*

These letters are included in Attachments A and B..

## KRPI's Mitigation Efforts (Continued)

- ◆ "...the telephone lines ... are very long, and evidently not referenced to ground anywhere nearby, making for excellent radio antennas..." *letter from David Harris to Ferndale Vision Clinic, March 1, 2003 (pg A-41)*
  - The clinic still receives KRPI in the background on telephone calls... *telephone conversation on November 29, 2005*
- ◆ "Installing appropriate filters in the antenna feed-lines can...[mitigate or prevent induced RF voltages from reaching the antenna terminals of your equipment]. My first suggestion would be to install a multisection high-pass filter..." *letter from KCCF engineer, Dave Harris, to James Kaufman, April 30, 2001 (pg A-25)*

These letters are included in Attachments A and B.

## FCC Monitoring of KRPI's Signal

- ◆ In a letter dated November 28, 2005, Mike Rody, Senior Pastor of Whatcom New Life Assembly, noted:

"At our home, on the property of the church, we can tune in KRPI at several points on the AM dial; at both ends and in the middle. It also overwhelms our 900 MHz baby monitor... It doesn't matter where in the house we place the monitors or if we run it off battery...

"I wrote most of the letter above about two weeks ago, but wanted to add comment about changes we have noticed in KRPI's pattern of interference. There has been a change over the past 30 to 60 days. We no longer receive KRPI on our baby monitor throughout the night and we can only tune it in at the top and bottom of our AM dial, not at multiple places through the dial as before.

"This is an interesting turn of events for a radio station looking at license renewal. It gives one cause to consider if they are adjusting their business-as-usual procedures in order to slip under regulatory scrutiny. If this is the case, more stringent action should be taken and persistent monitoring should be put in place..." (pg B-9)



## KRPI's Stance and Our Response

- ◆ Andy Struiksma, manager of KRPI, spoke before a Whatcom County Council Special Committee of the Whole (pg C-12). He stated
  - "The main issue is whether the station is transmitting illegally. They are not..."
  - "He has a letter from an FCC inspector two years ago saying the station is in compliance. He suspects the FCC will say the same thing this time around."
- ◆ *Residents Against High-Power Radio Interference* believes that the "legal" FCC-approved 50,000 watts of power is excessive for our small rural community, and that this high power is resulting in excessive general population/uncontrolled exposure to RF/electromagnetic radiation
  - We have never alleged that the station is transmitting illegally; we are asking for a reduction in power to 10,000 watts
- ◆ Neither the methodology nor the results of previous FCC inspections are available in the station's public file
  - We request that the FCC inspector notify our group when the inspection is taking place, and that the results be placed in the station's public file

The station should be required to prove to the public if excessive radiation does not exist, rather than the public having to prove to the FCC that excessive general population/controlled exposure is present

## Value to Local Community

- ◆ According to the FCC web page, "The FCC strongly reaffirmed its goal of promoting localism... To analyze localism in broadcast markets, the FCC relied on two measures:
  - Local stations' selection of programming that is responsive to local needs and interests
  - Local news quality and quantity"
- ◆ KRPI's target market is largely across the border in Canada
  - This is the reason the station requires 50,000 watts
  - Most local Bellingham stations broadcast at 5,000 watts, with only one at 10,000 watts
- ◆ The value of KRPI's foreign language broadcasting to the local Ferndale community is nil
  - The language barrier means that, even if the station broadcasts occasional public service announcements or other programs in English, there will be few listeners in the United States
  - We do recognize KRPI's right to conduct business in Ferndale, however, the negative effects of the 50,000 watt signal power make it more of a liability than an asset

# History of Complaints

Attachment A includes previous correspondence with the FCC about the interference from KRPL. Minutes from the City Council and the Whatcom County Council are included in Attachment C, and local newspaper articles about this issue are provided in Attachment D. The following table provides a list of this documentation.

Date	
No date	Letter from KCCF to Ferndale residents, offering one free telephone filter (pg A-3)
9/13/1997	Letter from R. Ledig, Empire Telephone, to FCC Seattle Field Office (pg A-5)
2/21/2001	Letter from J. Kaufman to Radio Station KCCF (pg A-14)
2/22/2001	Letter from J. Kaufman to FCC Engineer, Kirtland, WA (pg A-15)
3/1/2001	Email from M. Miller to D. Harris, RE J. Kauffman RF Complaint (pg A-16)
3/9/2001	Comments to Ferndale City Council by J. Kaufman (pg A-18)
3/12/2001	Letter from J. Kaufman to Whatcom County Chief Executive, P. Kremer (pg A-19)
3/14/2001	Letter from J. Kaufman to FCC Chairman (pg A-20)
4/19/2001	Letter from FCC to U.S. Representative Rick Larsen (pg A-22)
4/24/2001	Letter from U.S. Representative Larsen to J. Kaufman (pg A-24)
4/30/2001	Letter from KCCF Engineer D. Harris to J. Kaufman (pg A-25)
5/2/2001	Letter from J. Kaufman to City Council Member M. Beller (pg A-26)
5/2/2002	Letter from U.S. Senator Maria Cantwell to J. Kaufman (pg A-27)

# History of Complaints (Continued)

Date	
5/19/2001	Letter from J. Kaufman to Industry Canada Pacific Region Office (pg A-28)
6/5/2002	Letter from R. Ledig, Empire Telephone, to FCC Seattle Field Office (pg A-7)
6/11/2002	Letter from State Senator G. Gardner to R. Ledig (pg A-10)
6/18/2002	Letter from U.S. Representative R. Larsen to FCC, re: complaint from R. Ledig (pg A-11)
6/18/2002	Reply from Industry Canada to J. Kaufman (pg A-29)
7/30/2002	Letter from Ferndale City Administrator R. Signett to FCC Chairman (pg A-30)
8/1/2002	Reply from FCC Enforcement Bureau to R. Larsen letter of 6/18 (pg A-12)
8/5/2002	Letter from Ferndale City Clerk L. Knutson to U.S. Senator Georgia Gardner (pg A-32)
8/5/2002	Letter from L. Knutson to Whatcom County Executive P. Kremen and County Council (pg A-33)
8/6/2002	Memo from L. Knutson to City Council and Mayor (pg A-34)
8/6/2002	Letter from L. Knutson to State Representative Kelli Linville (pg A-35)
8/6/2002	Letter from L. Knutson to State Representative Doug Erickson (pg A-36)
2/8/2003	Statement from J. Kaufman (pg A-37)
2/9/2003	Letter to Editor from J. Kaufman (pg A-38)
3/5/2003	Letter from L. Knutson to R. Martinez, in response to complaint about radio interference (pg A-39)
3/10/2003	Letter from J. McQuarrie to FCC, Office of the Secretary (pg A-40)
3/18/2003	Letter from KRPI Engineer, D. Harris, in response to complaint from Ferndale Vision Clinic (pg A-41)

# History of Complaints (Continued)

Date	
4/4/2003	Letter from KRPI Engineer, D. Harris, in response to complaint from Constantin Chiropractic Clinic (pg A-42)
No date	Email from KRPI Engineer, D. Harris, in response to complaint from Mountain View School (pg A-43)
8/5/2003	Letter from FCC Media Bureau to J. Kaufman ( pg A-44)
8/22/2003	Letter from J. Kaufman to FCC Chairman (pg A-45)
9/8/2003	Letter from U.S. Senator Maria Cantwell to J. Kaufman (pg A-46)
9/10/2003	Letter from City Council member S. Cole to Whatcom County Council (pg A-47)
9/22/2003	Reply from FCC Media Bureau to J. McQuarrie letter of 3/10 (pg A-48)
9/29/2003	Reply from County Council Member B. Brenner to S. Cole letter of 9/10 (pg A-50)
10/7/2003	Minutes of Whatcom County Council, Public Works and Capital Projects Committee (See pg C-3)
10/30/2003	Letter from J. Kaufman to FCC Enforcement Bureau (pg A-51)
11/5/2003	Letter from J. Kaufman to U.S. Senator Maria Cantwell (pg A-52)
1/20/2004	Reply from M. Cantwell to J. Kaufman letter of 11/5 (pg A-53) Attachment: letter dated 1/14 from FCC Media Bureau to M. Cantwell (pg A-54)
9/7/2005	Email from Al Johnson to ARRL and responses (pg A-57)
10/3/2005	Minutes of Ferndale City Council (See page C-9)

# History of Complaints (Continued)

Date	
10/18/2005	Minutes of Whatcom County Council Committee of the Whole, called to address issue of interference from KRPI (pg C-12)
10/20/1005	Memo from Jill Nixon, Administrative Clerk, to Barbara Brenner, Whatcom County Council Member (pg A-59)
10/24/2005	Minutes of Whatcom County Council (pg C-17)
10/24/2005	Letter from Ferndale City Council to Whatcom County Council (pg A-60)
10/24/2005	Statement of David Edmundson to Whatcom County Council (pg B-19)
10/24/2005	Statement of Allen Johnson to Whatcom County Council (pg B-22)
10/24/2005	Statement of James Kaufman to Whatcom County Council (pg B-21)
10/26/2005	Letter from Whatcom County Council to FCC (pg A-62)
10/27/2005	Letter from U.S. Representative Rick Larsen to FCC (pg A-64)
11/26/2005	Letter from Michael S. Rody, Whatcom New Life Assembly, to FCC (pg B-9)
11/27/2005	Letter from Lloyd Zimmermann, Whatcom Brewery, to FCC (pg B-25)
11/28/2005	Letter from Celeste Larson, Mt. View Elementary School, to FCC (pg B-13)
12/1/2005	Complaint from Residents Against High Power Radio Interference filed with FCC

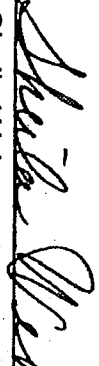
## Request to FCC


We, the residents of Ferndale, respectfully request that the FCC take the following steps before granting a license renewal to KRPI


- ◆ Reduce the station's operating power from 50,000 watts to 10,000 watts, thus alleviating most of the interference
- ◆ Require KRPI to correct the blanketing interference and submit monthly reports to the FCC, and make copies available in the radio station's public file
- ◆ Require the station to install 6-foot safety fences around transmitting towers and warning signs at the radio towers and station facilities
- ◆ Conduct an on-site Environmental Assessment by an *unbiased* radio engineer to
  - Measure the RF exposure in residential areas and downtown to verify whether the 50,000 watt signal is generating excessive general population/uncontrolled exposure
  - Inspect the station facilities and require the station to install safety fences and warning signs
  - Require KRPI to correct its "dirty signal," which overpowers other stations
- ◆ Make the results of the Environmental Assessment available to the community in the station's public file


# Submitted by

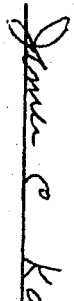
File Number: BR-20050922ACS


  
Sheila Weber  
2350 Douglas Road, #25  
Ferndale, WA 98248


  
Allen Johnson  
8186 Stein Road  
Custer, WA 98240  
jd

  
Sally Emerson  
2262 Seamount Drive  
Ferndale, WA 98248

  
Roger Ledig  
P.O. Box 2968  
Ferndale, WA 98248

  
James C. Kaufman  
5873 Madrona Drive  
Ferndale, WA 98248

  
David B. Edmondson  
3484 North Red River Road  
Ferndale, WA 98248

  
Judy Davis  
2350 Douglas Road, #10  
Ferndale, WA 98248

And the 1162 residents who signed the petitions included in Attachment E.