



PLANNING & ZONING DEPARTMENT

Bethel Municipal Center, 1 School Street
Bethel, Connecticut 06801 (203) 794-8519

May 21, 2002

RECEIVED

MAY 23 2002
CONNECTICUT
SITING COUNCIL

By FAX and Regular Mail

Mr. S. Derek Phelps, Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

Re: EM-NEXTEL-009-020510
Notice of Intent to Modify Existing Telecommunications Facility

Dear Mr. Phelps:

Thank you for the opportunity to comment on the above-cited proposal, to be heard by the Siting Council this afternoon.

Please note that the address in Town of Bethel records for the subject property is **38 Spring Hill Lane**. Your record shows the address as 55 Spring Hill Lane.

The Planning and Zoning Commission reviewed an application for site plan amendments relative to the proposed modifications to the facility, and granted approval on November 27, 2001 for improvements to the driveway, erosion and sedimentation control measures, fencing and the structure at the base of the tower. The approval, with stipulations, is attached for your information and records. Adjoining neighbors expressed considerable interest during the approval process, and stipulations reflect requirements and improvements to accommodate some of their concerns.

Please be advised that the applicant has been cooperative and responsive to requests for information and details throughout the approval process.

If you have any questions, please call me at 794-8519.

Very truly yours,

Betty Brosius

Betty Brosius
Planning & Zoning Official

cc: First Selectwoman Judy Novachek
Michael Mannion, Chairman, P&ZC



PLANNING & ZONING COMMISSION

Bethel Municipal Center
1 School Street, Bethel, Connecticut 06801 *(203) 794-8519

November 29, 2001

Berliner Communications//Nextel Communications
20 Bushes Lane
Elmwood Park, NJ 07407
Att: John J. Noto

RE: Nextel Communications - 38 Spring Hill Lane

1. At the November 27, 2001 meeting of the Planning & Zoning Commission it was voted to **APPROVE** your application for a site plan special permit for an antenna attachment located on 38 The approval is based on plans dated 6/21/01 (electrical plan, sheet E-1 updated 6/28/01), by Tectonic/Keyes Associates, John Douglas Fuller, P.E. (CT Lic #21931).
2. An eight-foot fence with a gate shall be installed between the existing shed and the new structure, to enclose the tower and equipment. Plans are to be approved by the Planning & Zoning Office prior to any construction.
3. A 15-foot driveway apron shall be installed as per the recommendations of the Town Engineer. The driveway shall be improved and restored to the satisfaction of the Town Engineer, to accommodate construction activity as well as future use.
4. A locked gate shall be installed at the edge of the apron, approximately 15 feet from the edge of road pavement, to prevent unauthorized vehicles from using the driveway. Style of fencing for the gate shall be approved by Planning & Zoning Office staff.
5. Revised drawings incorporating these revisions shall be submitted to the Planning & Zoning Office in conjunction with applications for zoning and building permits for construction.
6. The contractor shall notify the Planning & Zoning Office with the date for commencement of construction.
7. The color and style of fence shall be determined by the Planning & Zoning Official.

Reasons: In granting this approval, the Commission states that the application is in substantial compliance with the requirements of Sec. 118-47.3 of the Zoning Regulations of the Town of Bethel.

BONDS to be posted in the following amounts by LOC, passbook, or cash:

15-foot driveway apron	\$1,000
Erosion & Sedimentation	\$2,000
	<hr/>
	\$3,000 total

Project is to commence within one year 11/27/02) and completed within three years(11/27/04). I have also attached a copy of the Legal Notice for your review. If you have any questions please call.

Sincerely,

Michael J. Mannion
Michael J. Mannion BC
Vice Chairman



STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

E-Mail: siting.council@po.state.ct.us

Web Site: www.state.ct.us/csc/index.htm

May 13, 2002

Honorable Judy Novachek
First Selectman
Town of Bethel
1 School Street
Bethel Municipal Center
Bethel, CT 06801-2105

RE: **EM-NEXTEL-009-020510** - Nextel Communications, Inc. notice of intent to modify an existing telecommunications facility located at 55 Spring Hill Road, Bethel, Connecticut.

Dear Ms. Novachek:

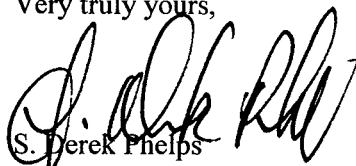
The Connecticut Siting Council (Council) received this request to modify an existing telecommunications facility, pursuant to Regulations of Connecticut State Agencies Section 16-50j-72.

The Council will consider this item at the next meeting scheduled for May 21, 2002, at 1:30 p.m. in Hearing Room Two, Ten Franklin Square, New Britain, Connecticut.

Please call me or inform the Council if you have any questions or comments regarding this proposal.

Thank you for your cooperation and consideration.

Very truly yours,


S. Derek Phelps
Executive Director

SDP/dsj

Enclosure: Notice of Intent

c: Betty Brosius, Planning & Zoning Official, Town of Bethel

NEXTEL[®]

May 8, 2002

Mr. Mortimer A. Gelston, Chairman
Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051

RECEIVED
MAY 10 2002
CONNECTICUT
SITING COUNCIL

Dear Chairman Gelston:

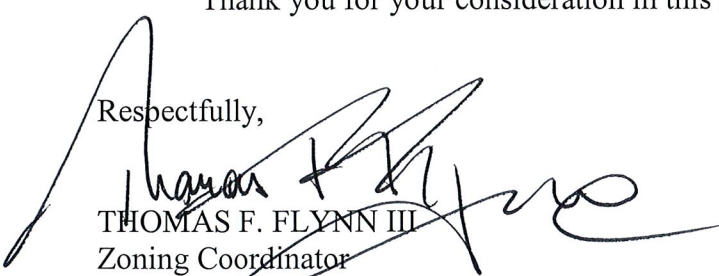
Please find enclosed and respectfully submitted, a request from Nextel Communications Inc. ("Nextel") to Modify an Exempt Tower and Associated Equipment at an existing telecommunications facility located on 55 Spring Hill Road, Bethel, Connecticut. This facility is located on property owned by Valley Communications Inc.. The tower is owned by Valley Communication and is currently used by Nextel Communications to provide wireless coverage.

Nextel wishes to share use of this facility in order to improve/expand wireless its system coverage and to avoid the possibility of constructing another telecommunications tower in the general area. Nextel currently uses the tower and wishes to replace its omni-directional antennas with panel antennas.

The attached information details how the addition of the proposed antennas and associated equipment at the tower site meet the criteria set forth in Section 16-50j-72(b)(2) of the Regulations of Connecticut State Agencies and therefore is an Exempt Modification pursuant to Section 16-50j-73 of the Regulation.

Thank you for your consideration in this matter.

Respectfully,


THOMAS F. FLYNN III
Zoning Coordinator
Nextel Communications Inc.

Enclosure

Cc: First Selectwoman Judith A. Novachek

**EXEMPT MODIFICATION
55 SPRING HILL ROAD
BETHEL, CONNECTICUT**

Pursuant to Section 16-50i(a)(5) of the Connecticut General Statutes and Section 16-50j-72(b)(2), as amended, of the Regulations of Connecticut State Agencies, Nextel Communications Inc., ("Nextel") hereby notifies the Connecticut Siting Council of its intent to modify an existing telecommunications facility located at 55 Spring Hill Road, Bethel, Connecticut.

BACKGROUND

This existing facility, located at 55 Spring Hill Road, Bethel, Connecticut consists of a 90-foot tall, guyed lattice tower that is owned by Valley Communications and is located on property also owned by Valley Communications Inc. The tower is currently used by Nextel Communications to provide service coverage to this section of Bethel, Routes 53, 58 and 302

Nextel desires to share use of this facility and thus avoid the potential need to construct an additional tower in the general area.

DISCUSSION

Nextel plans to install twelve (12) panel antennas center-lined at the 88-foot, 6 inch level of the tower (see Attachment A) and place a 10-foot by 20-foot equipment shelter inside the southeastern corner of the existing compound (see Attachment B). The tower has been structurally analyzed and found to be fully capable of supporting Nextel's antennas and its tower mounted hardware (Attachment C).

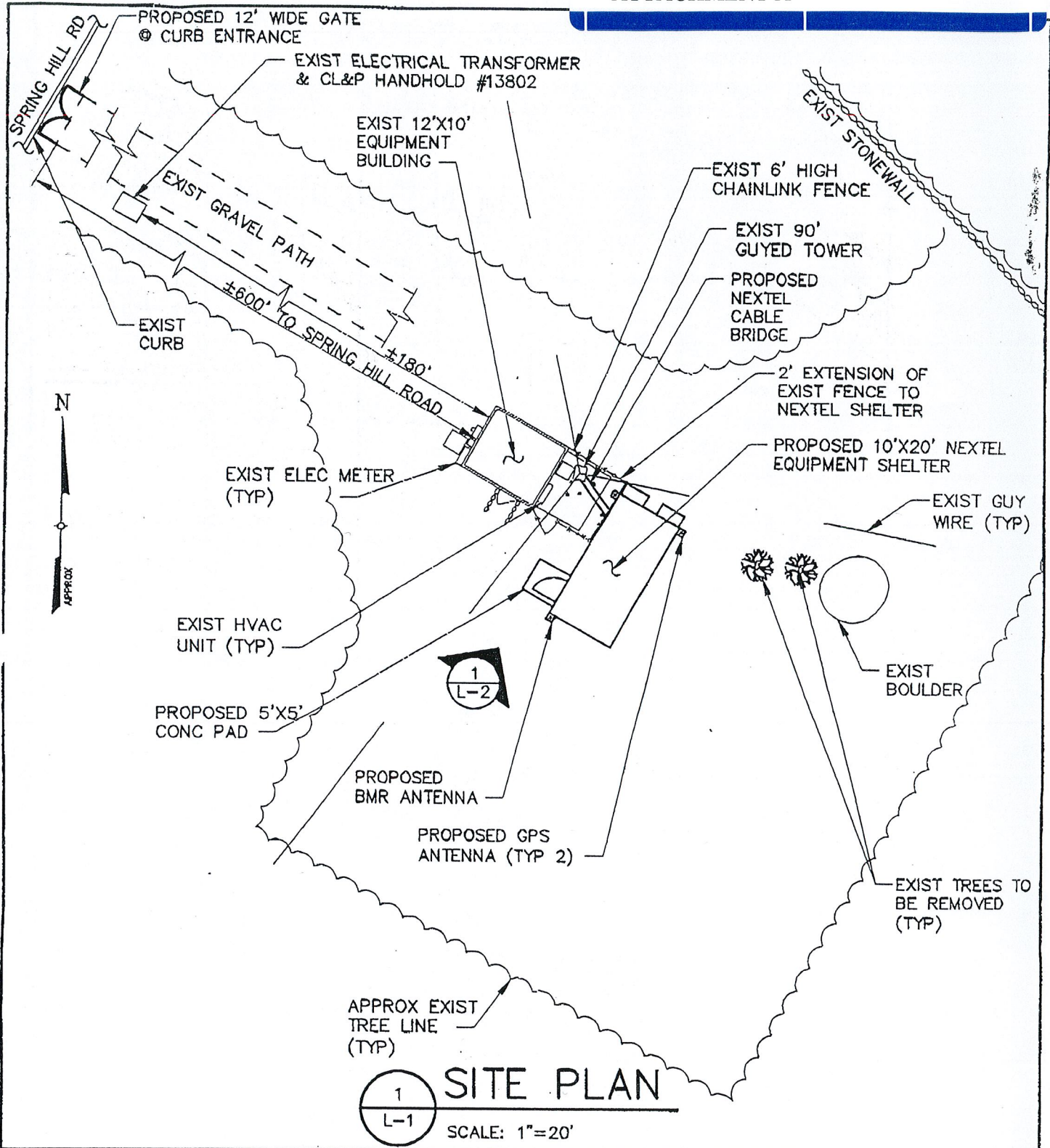
POWER DENSITY INFORMATION

The operation of Nextel's antennas will not increase the total radio frequency electromagnetic power density level to a level at (or even near) existing State and Federal Standards. "Worst case" calculations, measured to a point at the base of the tower, show the combined power levels for the existing AT&T and proposed Nextel antennas reach just .944617 % of the State/Federal standard in an uncontrolled access environment. (See Attachment D).

CONCLUSION

The proposed additions do not constitute a “modification” of an existing facility as defined in Connecticut General Statutes Section 16-50i(d) and are consistent with the exception criteria found in Section 16-50j-72(b)(2) of the Regulations of Connecticut State Agencies in that the addition of Nextel’s antennas and equipment will not increase the existing tower height or extend the boundaries of the site; will not increase noise levels by six (6) decibels or more at the site’s boundaries; and will not increase the total radio frequency electromagnetic radiation above the Standard set forth in Section 22(a)–162 of the Connecticut General Statutes. In summary, this proposed addition would not have a substantial adverse environmental effect.

For the reasons discussed above, Nextel respectfully requests that the Council acknowledge that this Notice of Modification meets the Council’s exemption criteria, and permit Nextel to share use of this facility.

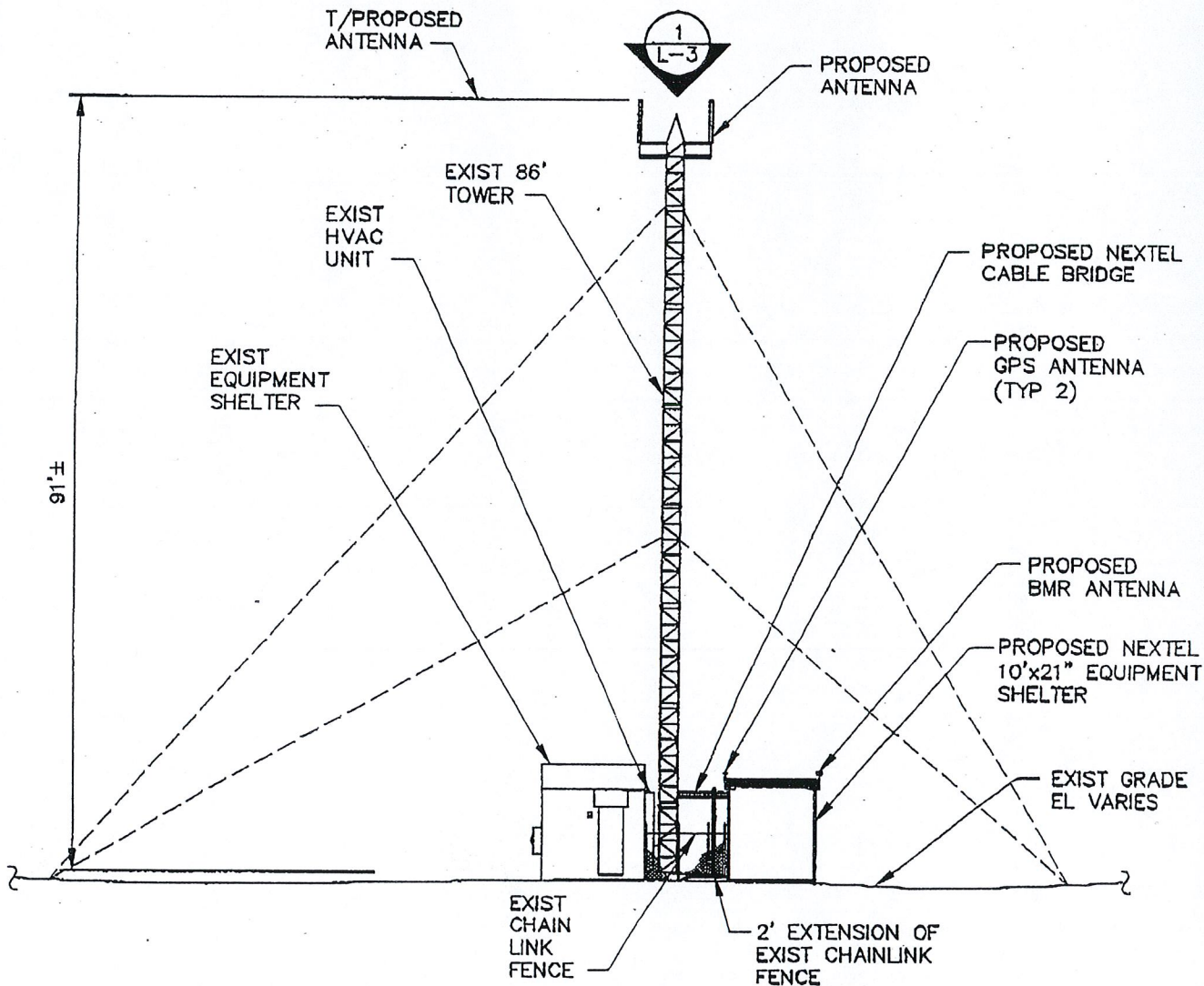


1 **SITE PLAN**
SCALE: 1"=20'

OWNER APPROVAL: _____ DATE: _____

PROJECT CONSULTANT		berliner		20 BUSHES LANE ELMWOOD PARK, NJ 07407 (201) 791-3200		BETHEL (CT-0914) SPRING HILL ROAD BETHEL, CT	
PROJECT ENGINEER		TECTONIC/KEYES ASSOCIATES		1344 SILAS DEANE HIGHWAY, SUITE 500 ROCKY HILL, CT 06067-1249			
ISSUED BY: <i>J. P. Sullivan</i>		W.O. 3014.0914		4/17/01		2/27/01	
				LEASE EXHIBIT		L-1	

NOTE: EXISTING ANTENNAS ARE NOT SHOWN FOR CLARITY



1
L-2 TOWER ELEVATION
SCALE: 1" = 20'

OWNER APPROVAL: _____

DATE: _____

PROJECT CONSULTANT

berliner

20 BUSHES LANE
ELMWOOD PARK, NJ 07407
(201) 791-3200

PROJECT ENGINEER

TECTONIC/KEYES ASSOCIATES

1344 SILAS DEANE HIGHWAY, SUITE 500
ROCKY HILL, CT 06067-1349

OFFICE: (860)643-2341
FAX: (860)257-4882

4/17/01

BETHEL (CT-0914)
SPRING HILL ROAD
BETHEL, CT

ISSUED BY: *[Signature]*

W.O. 3014.0914

2/27/01

LEASE EXHIBIT

L-2

Mr. Dick Peaston
Nextel Communications
100 Corporate Place
Rocky Hill, CT 06067

March 27, 2002

**RE: W.O. 3276.0914
BETHEL (CT-0914)
EXISTING GUYED TOWER
160 DEER RUN ROAD, BETHEL, CT
STRUCTURAL CAPACITY**

Dear Mr. Peaston:

Nextel Communications proposes to mount its antennas on an existing guyed tower at the above referenced site. At the request of Nextel, Tectonic Engineering has performed a structural analysis of the existing tower to evaluate its capacity to support the proposed antennas.

The analysis was performed in accordance with the 1999 Connecticut supplement to the BOCA National Building Code and the national standard ANSI/TIA/EIA-222-F-1996 "Structural Standards for Steel Antenna Towers and Antenna Supporting Structures."

The results of this analysis indicate that the existing tower requires structural reinforcement of existing bracing members in order to support the proposed antenna installations. No change in height or significant alterations to the existing structure are necessary.

The details of the tower reinforcement will be indicated on the Nextel construction drawings for this site. The reinforcing will be installed prior to the installation of the proposed Nextel antennas.

Once the reinforcing is completed, the tower will have sufficient capacity to support the proposed Nextel installation in addition to the existing installations in accordance with all applicable codes

3276.0914

2

March 27, 2002

The details of our analysis of this tower are presented in our structural analysis report dated March 28, 2001.

Please contact this office if you require any further information.

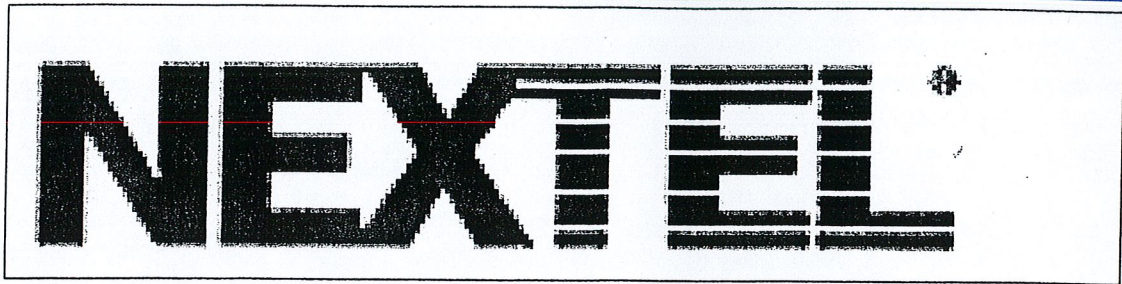
Sincerely,
TECTONIC ENGINEERING CONSULTANTS, P.C.



John D. Fuller, P.E.
Telecommunications Manager

Cc: File





**Report and Analysis
for RF Compliance
with FCC Regulations**

**CT0914
55 Spring Hill Road
Bethel, CT 06801**

Prepared by:

Yvan Joseph

November 5, 2001

INTRODUCTION

At the request of the town of Bethel Planning and Zoning Commission, Nextel Communications conducted an analysis for potential unsafe radio frequency (RF) exposure at Nextel's Tower site CT0914 / Bethel, located at 55 Spring Hill Road Bethel, CT. The request was made due to a proposed antenna modification. The analysis demonstrates that the Nextel contribution to the RF environment is minimal and is in accordance with the Federal Communications Commission guidelines as required by the Telecommunications Act of 1996.

This analysis is based on the current FCC guidelines with respect to maximum permitted exposure (MPE) levels. The FCC's RF exposure guidelines are incorporated in Section 1.1301 *et seq* of its rules and regulations. Those guidelines specify maximum permissible exposure levels for both occupational and general public exposure.

The FCC MPE limits represent the consensus of federal agencies and independent experts responsible for RF safety matters. Those agencies include the National Council on Radiation Protection and Measurements (NCRP), the Occupational Health and Safety Administration (OSHA), the National Institute for Occupational Safety and Health (NIOSH), the American National Standards Institute (ANSI), The Environmental Protection Agency (EPA), and the Food and Drug Administration (FDA). In formulating its guidelines, the FCC also considered input from the public and technical community - notably the Institute of Electrical and Electronic Engineers (IEEE).

The FCC makes it clear that the MPE limits apply only in accessible areas. Fundamentally, in areas that are considered normally inaccessible, the exposure issue is moot.

The areas surrounding the base of the tower were reviewed because they are accessible to workers providing maintenance and repair services. The RF exposure measurements were measured using the Wandel & Goltermann meter with Type 25 probe calibrated to display the percentage of the FCC uncontrolled occupational levels. Both the probe and meter are capable of broadband RF measurements covering a range of 300kHz to 40GHz. The measurement equipment automatically registers all RF levels within its frequency range and displays them as a percentage of the FCC's occupational/controlled limits. The equipment was last calibrated by the manufacturer on January 31, 2000. Calibration of the equipment is required every two years.

Theoretical calculations and analysis are based upon the FCC Office of Engineering & Technology (OET) Bulletin 65. Worst case assumptions were used to ensure safe-side estimates. The actual values will be significantly lower than calculated analytical values.

For potential exposure from multiple systems, the respective percentages of the MPE limits are added, and total percentage compared to 100 percent of the limit. If results are less than 100 percent the total exposure is in compliance. If it is over 100 percent, exposure mitigation measures are necessary to achieve compliance.

SITE INFORMATION

Site Data

Company Name	Nextel Communications
Contact Name	Dick Peaston
Contact Phone	203-223-1450
Site ID	CT0914
Site Name	Bethel
Site Address	55 Spring Hill Road Bethel, CT06801
Latitude	41 22' 10"
Longitude	73 23' 51"
Site Type	Sectorized
Tower / Building Height	Guy Tower
Site Status	Active

Technical Data

Radio Service Type	ESMR
Number of Sectors (if omni-directional #=1)	3
Transmit Frequency	851Mhz - 866Mhz
Number of Transmitters per sector	8
Number of Transmit Antennas per sector	-
Number of Receive Antennas per sector	-
Number of Transmit/Receive Antennas per sector (duplexed)	1
Max. ERP per Transmitter	100
Antenna Manufacturer	Decibel
Antenna Model	DB855DDH90

Antenna Gain (specify dBd or dBi)	9.5dBd
Antenna Type (directional or omni-directional)	Directional
Antenna Downtilt	0
AGL	86
Above Roof Height	n/a
Other Relevant Site Detail	-

FIELD MEASUREMENT RESULTS

WANDEL&GOLTERMANN EMR-300 S-0063

MEM#	VALUE	UNIT	RESULT	AXIS	TIME	DATE	CAL	PROBE	Duty Factor Adjusted	STATUS
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90	0 %		ACT	EFF	11:14:45	29-06-00	1	TYPE 25 B-0051		0 SAFE
91	0 %		ACT	EFF	11:14:46	29-06-00	1	TYPE 25 B-0051		0 SAFE
92	0 %		ACT	EFF	11:14:47	29-06-00	1	TYPE 25 B-0051		0 SAFE
93	0 %		ACT	EFF	11:14:47	29-06-00	1	TYPE 25 B-0051		0 SAFE
94	0 %		ACT	EFF	11:14:48	29-06-00	1	TYPE 25 B-0051		0 SAFE
95	0 %		ACT	EFF	11:14:49	29-06-00	1	TYPE 25 B-0051		0 SAFE
96	0 %		ACT	EFF	11:14:50	29-06-00	1	TYPE 25 B-0051		0 SAFE
97	0 %		ACT	EFF	11:14:50	29-06-00	1	TYPE 25 B-0051		0 SAFE
98	0 %		ACT	EFF	11:14:51	29-06-00	1	TYPE 25 B-0051		0 SAFE
99	0 %		ACT	EFF	11:14:52	29-06-00	1	TYPE 25 B-0051		0 SAFE
100	0 %		ACT	EFF	11:14:53	29-06-00	1	TYPE 25 B-0051		0 SAFE
101	0 %		ACT	EFF	11:14:54	29-06-00	1	TYPE 25 B-0051		0 SAFE
102	0 %		ACT	EFF	11:14:54	29-06-00	1	TYPE 25 B-0051		0 SAFE
103	0 %		ACT	EFF	11:14:55	29-06-00	1	TYPE 25 B-0051		0 SAFE
104	0 %		ACT	EFF	11:14:56	29-06-00	1	TYPE 25 B-0051		0 SAFE
105	0 %		ACT	EFF	11:14:57	29-06-00	1	TYPE 25 B-0051		0 SAFE
106	0 %		ACT	EFF	11:14:58	29-06-00	1	TYPE 25 B-0051		0 SAFE

THEORETICAL CALCULATIONS

This calculator assumes that all BR ERP's are the same. Enter the number of BR's in the field given and the sum of "Nextel's Total Exposure %" will be reflected at the bottom.

For Nextel-only tower sites, if the Worker and Public percentages are both less than 100% the site is in compliance and is recertified on 5-year intervals.

Contact Nextel RF Operations with questions.

Site Name: **Bethel** Site Number: **CT0914**

Site Address: **55 Spring Hill Road Bethel, CT 06801**

Site Coordinates: **41 22' 10" 73 23' 51"**

Instructions: Enter information into shaded fields only.

Frequency of BR (in MHz):	850.0000	# of BR's:	24
ERP per BR (in Watts) from Link Budget:	100	100,000.00 mW	
ERP Per BR (in dBW)	20.0		
RC Height Above Ground (in feet) [Y]:	86	→	2,621.3 cm
Distance Between Tower and Closest Point Worker Would Be* (in feet) [X1]:	1	→	30.5 cm
Distance Between Tower and Closest Point on Fence Line* (in feet) [X2]:	2	→	61.0 cm
Radial Distance to Worker Point of Interest (in feet) [R1]:	86.0	→	2,621.5 cm
Radial Distance to Public Point of Interest (in feet) [R2]:	86.0	→	2,622.0 cm
Angle from horizon to Worker Point of Interest (in degrees)	89.3		
Angle from horizon to Closest point on Fence Line (in degrees)	88.7		
Antenna centerline mechanical downtilt, if any (in degrees)	0.0		
Angle between antenna centerline and radial to Worker Point of Interest (in degrees)	89.3		
Angle between antenna centerline and radial to Closest Point on Fence Line (in degrees)	88.7		
Difference between maximum antenna gain and antenna gain along radial to Worker point of interest (in dB)	9.3		
Difference between maximum antenna gain and antenna gain along radial to Closest Point on Fence Line (in dB)	9.2		
ERP at antenna toward Worker Point of Interest (dBW)	10.7		
ERP at antenna toward Closest Point on Fence Line (dBW)	10.8		
ERP at antenna toward Worker Point of Interest (Watts)	11.749	→	11,749.0 mW
ERP at antenna toward Closest Point on Fence Line (Watts)	12.023	→	12,022.6 mW

Power Density @ Worker Point of Interest:	0.0002231 mW/cm ²	$S=(0.41)(ERP)/(\pi)(R1)^2$
Power Density @ Public Point of Interest:	0.0002230 mW/cm ²	$S=(0.41)(ERP)/(\pi)(R2)^2$

ANSI 1992 Standard MPE:

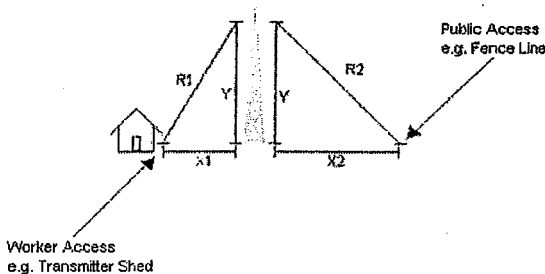
Controlled Environment (Worker):	2.833 mW/cm ²	(time-average of 6 minutes)
Uncontrolled Environment (Public):	0.567 mW/cm ²	(time-average of 30 minutes)

Nextel Signal Percentage of Total MPE per BR:

		Nextel's Total Exposure (sum of all BR's):
Controlled Environment (Worker):	0.007875 %	→ Worker: 0.189000 %
Uncontrolled Environment (Public):	0.039359 %	→ Public: 0.944617 %

Per-BR ERP required to produce 5% of MPE at Worker Point of Interest	2,645.5 watts
Per-BR ERP required to produce 5% of MPE at Closest Point on Fence Line	517.3 watts

* X1 refers to the horizontal distance between the base of the tower and the nearest point on the property that a worker would work for any length of time e.g. a transmitter shed. X2 refers to the horizontal distance between the base of the tower and the nearest point on the property line that the public could walk up to or have access e.g. closest point on fence line.



ENGINEERING ANALYSIS

Previous measurements of RF exposure performed throughout the fenced area surrounding the base of the tower was found not to exceed 100% of the FCC occupational/controlled and public/uncontrolled MPE limits.

The measurements taken demonstrate that the maximum potential exposure to radio frequency emissions is below the FCC recommended levels for both the occupational/controlled and public/uncontrolled environments. The maximum levels from all antennas reaches 0.0105%¹ of the controlled limits for safety. This is the cumulative result from all transmitters located on the tower. The maximum level of exposure from all transmitting antennas is almost 10000 times less than the FCC limit for exposure for occupational/controlled limits and almost 2000 times less than the FCC limit for exposure for public/uncontrolled limits.

Theoretical calculations and analysis for the proposed new antenna configuration demonstrate that the maximum potential exposure to radio frequency emissions is still below the FCC recommended levels for both the occupational/controlled and public/uncontrolled environments. The maximum calculated levels of exposure from the new Nextel antennas reaches 0.189% of the controlled limits for safety and 0.944% of the uncontrolled limits for safety. The maximum levels from the proposed Nextel antennas will be over 500 times less than the FCC limits for exposure for occupational/controlled limits and over 100 times less than the FCC limits for exposure for public/uncontrolled limits.

Again, worst case assumptions were used to ensure safe-side estimates. The actual values will be significantly lower than the calculated analytical values.

¹ All measurements have been adjusted to represent worst case assumptions by compensating with a duty factor (adjustments made to simulate busy hour conditions)

NEXTEL® RF Certification Form

This form certifies that a Nextel Communications, Inc. ("Nextel") engineer has evaluated a certain analog or digital mobile transmitter site and has determined that it complies with FCC Rule Section 1.1307 et. seq. and related OET Bulletin No. 65 governing radio-frequency ("RF") emissions. In particular, based on an engineering evaluation of the controlled areas of the site, the RF emissions are within the applicable Maximum Permissible Exposure ("MPE") limits. The original of this form should be kept with the market station files. A copy of the Form should be sent to Robert McNamara, Director of Regulatory Technology and Compliance, at the NSC.

Site Number: CT0914

Nextel Site Name: Bethel

Site Address: 55 Spring Hill Road

City and State: Bethel, CT

Site Compliance Procedure (Required)

A. The site complies with the FCC's Maximum Permissible Exposure ("MPE") standards, taking into account any nearby significant transmitting sources, based on (Check at least one box):

- Calculational methods based upon OET Bulletin 65 (attach copy)
- Computer simulations such as *RoofView* modeling software (attach copy)
- Actual field measurements (attach copy) in accordance with the following steps:

Step 1: A testing time was chosen in which all antennas were likely to be energized.

Step 2: A survey of the site was conducted before and after the Nextel equipment was constructed using RF power measurement meters.

Step 3: A sketch of the building rooftop (or site area) was made and measurements were recorded on the sketch (see attached). Photos were also taken (see attached).

B. Access to the RF controlled area is restricted in accordance with the Nextel RF Compliance and Safety Program, including, at a minimum, the posting of the Nextel RF hazard sign.

- In the case of an in-building system, check this box to certify that all distribution equipment is installed out of public reach. (Sections A & B above do not need to be completed if the system is an in-building system and the antennas are completely contained within the building structure).

Additional Information for Categorical Exclusion Purposes (Optional)

- Building Mounted/Rooftop Antennas** - the sum of the ERP of all operating frequencies does not exceed 1000 watts ERP.
- Non-Building Mounted/Non-Rooftop (Towers/Water-Towers/Monopoles)** - The distance from ground level to the lowest point of the antenna is at least ten meters OR the sum of the ERP of all operating frequencies does not exceed 1000 watts.
- Does Not Meet Categorical Exclusion.**

Required Signature

Printed name: Yvan Joseph

Date of evaluation: 11/05/2001

Signature: 