# STATE OF CONNECTICUT

*CONNECTICUT SITING COUNCIL*

Ten Franklin Square
New Britain, Connecticut 06051
Phone: (860) 827-2935
Fax: (860) 827-2950

December 5, 2001

Stephen J. Humes
LeBoeuf, Lamb, Greene & MacRae
Goodwin Square
225 Asylum Street
Hartford, CT 06103

RE: **EM-VOICESTREAM-011-011029** - VoiceStream Wireless Corporation notice of intent to modify an existing telecommunications facility located at 1021 Blue Hills Avenue, Bloomfield, Connecticut.

Dear Attorney Humes:

At a public meeting held on November 29, 2001, the Connecticut Siting Council (Council) acknowledged your notice to modify this existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies, with the condition that waveguide cables are installed in an 8 by 3-foot cable deep configuration as specified by a Professional Engineer.

The proposed modifications are to be implemented as specified here and in your notice dated October 29, 2001. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Any deviation from this format may result in the Council implementing enforcement proceedings pursuant to General Statutes § 16-50u including, without limitation, imposition of expenses resulting from such failure and of civil penalties in an amount not less than one thousand dollars per day for each day of construction or operation in material violation.

Thank you for your attention and cooperation.

Very truly yours,

Mortimer A. Gelston
Chairman

MAG/laf

c: Honorable Faith McMahon, Mayor, Town of Bloomfield
Thomas B. Hooper, Director of Planning, Town of Bloomfield
Ronald C. Clark, Nextel Communications
Christopher B. Fisher, Esq., Cuddy & Feder & Worby LLP
Michele G. Briggs, SNET Mobility LLC
Christine Belvin, LCC International, Inc.

# LeBoeuf, Lamb, Greene & MacRae
L.L.P.

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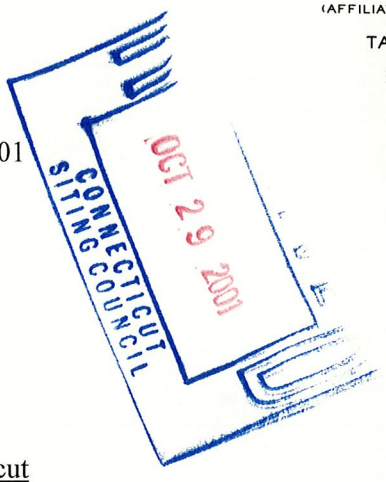
October 29, 2001




Joel Rinebold, Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051

Re: Notice of Exempt Modification
1021 Blue Hills Avenue, Bloomfield, Connecticut

Dear Mr. Rinebold:

Please be advised that LeBoeuf, Lamb, Greene & MacRae, L.L.P. represents Omnipoint Communications, Inc. ("VoiceStream"), a subsidiary of VoiceStream Wireless Corporation in the above-referenced matter. VoiceStream intends to remove its existing antennas at the one hundred twenty seven foot (127'-0") centerline above ground level ("AGL") location and replace them with twelve (12) new panel antennas at the same one hundred twenty seven foot (127'-0") centerline AGL location on the existing tower, creating a total of twelve (12) panel antennas and related equipment at the existing facility in Bloomfield. The tower is located adjacent to the Bloomfield Fire Department. Please accept this letter as notification, pursuant to R.C.S.A. § 16-50j-73, of construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to the Bloomfield Mayor, Faith McMahon and the Bloomfield Town Manager, Louie Chapman, Jr.

**Background**

Effective as of the May 31, 2001 merger between Deutsche Telekom AG and VoiceStream Wireless Corp., the corporate structure of VoiceStream has changed.[1] VoiceStream holds the "A block" "Wideband PCS" license for the 2-GHz PCS frequencies for the greater New York City area, including the entire State of

[1]The corporate structure of VoiceStream is as follows: Omnipoint Communications, Inc. ("Omnipoint") is a 95.4% subsidiary of Omnipoint Finance, LLC (hereinafter, "OF"). OF is a wholly owned subsidiary of Omnipoint Finance Holding, LLC (hereinafter, "OFH"). OFH is a subsidiary of Omnipoint Wireless Corporation (hereinafter "VS"), which owns all of the outstanding common shares of OFH. VS is a wholly owned subsidiary of T-Mobile International AG (hereinafter "T-Mobile"). T-Mobile is a wholly owned subsidiary of Deutsche Telekom AG (American Depositary Receipts traded in U.S. on the NYSE: DT).

Connecticut. VoiceStream is licensed by the Federal Communications Commission (FCC) to provide PCS wireless telecommunications service in the State of Connecticut, which includes the area to be served by the proposed installation.

**Discussion**

The existing facility consists of a one hundred twenty five foot (125'-0") galvanized steel, self supporting lattice tower manufactured by F.A. Nudd and related equipment located at 1021 Blue Hills Avenue in Bloomfield. The coordinates for the site are **41°-49'-15" N** and **72°-42'-47" W**.

VoiceStream plans to update its existing antenna cluster with an updated cluster of three sectors with up to four antennas per sector, constituting a total of twelve (12) panel-type antennas on the existing tower. Currently, the tower holds six (6) VoiceStream panel antennas at a centerline of one hundred twenty seven feet (127'-0") AGL. Nextel currently has equipment at the approximate one hundred twenty foot (120'-0") elevation AGL on the tower. AT&T currently has equipment at the approximate one hundred seven foot (107'-0") elevation AGL on the tower. Cingular currently has equipment at the approximate ninety seven foot (97'-0") elevation AGL on the tower. The tower also contains various whip and communications antennas, as well as Bloomfield Fire Department antennas. VoiceStream's proposal calls for the removal of its existing six panel antenna array. This configuration would be replaced by twelve (12) new panel antennas at the same centerline AGL. A tower elevation is shown in drawing LE-3, attached as part of Exhibit B. The model number for each new antenna is EMS-RR90-17-02DP. A structural analysis of the tower has been completed and is attached as Exhibit D. As stated in the structural analysis, the existing tower and its foundation have sufficient capacity to support the proposed VoiceStream installation. One new Nortel S8000 equipment cabinet will be added to the existing cabinet. To accommodate the new cabinet a new concrete pad will be added adjacent to the existing single cabinet's concrete pad (see site plan, drawing LE-2, attached as part of Exhibit B). The tower and related equipment compound are set within a fenced corner alcove created by the Fire Department buildings. The antennas will be fed by 1-5/8" coaxial cables routed up the tower, adjacent to the existing cables via the existing VoiceStream cable bridge.

The planned modifications to the Bloomfield facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1. The proposed modification will not increase the height of the tower and will not extend the boundaries of the existing compound area. The enclosed tower drawings confirms that the planned changes will not increase the overall height of the tower or change the dimensions of the compound.

2. The installation of VoiceStream equipment, as reflected on the attached site plan, will not require an extension of the site boundaries. VoiceStream's proposed equipment cabinet will be added to the one already existing and located entirely within the existing compound.

3. The proposed modification to the facility will not increase the noise levels at the existing facility by six decibels or more. VoiceStream's equipment is self-contained and requires no additional heating, ventilation or cooling equipment.

4. The operation of the additional antennas will not increase the total radio frequency (RF) power density, measured at the site boundary, to a level at or above the applicable standard. The "worst-case" RF

power density calculations, for a point at the site boundary, are attached hereto as Exhibit D. VoiceStream has based its calculations regarding other carriers on information obtained from the Connecticut Siting Council files. However, VoiceStream believes the Sprint MPE calculation of 29.7358% to be in error and has not included this figure in its calculations. VoiceStream is attempting to rectify this situation with Sprint.

For the foregoing reasons, VoiceStream respectfully submits that the proposed addition of antennas and equipment at the Bloomfield facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Thank you for your consideration of this matter.

Respectfully submitted,

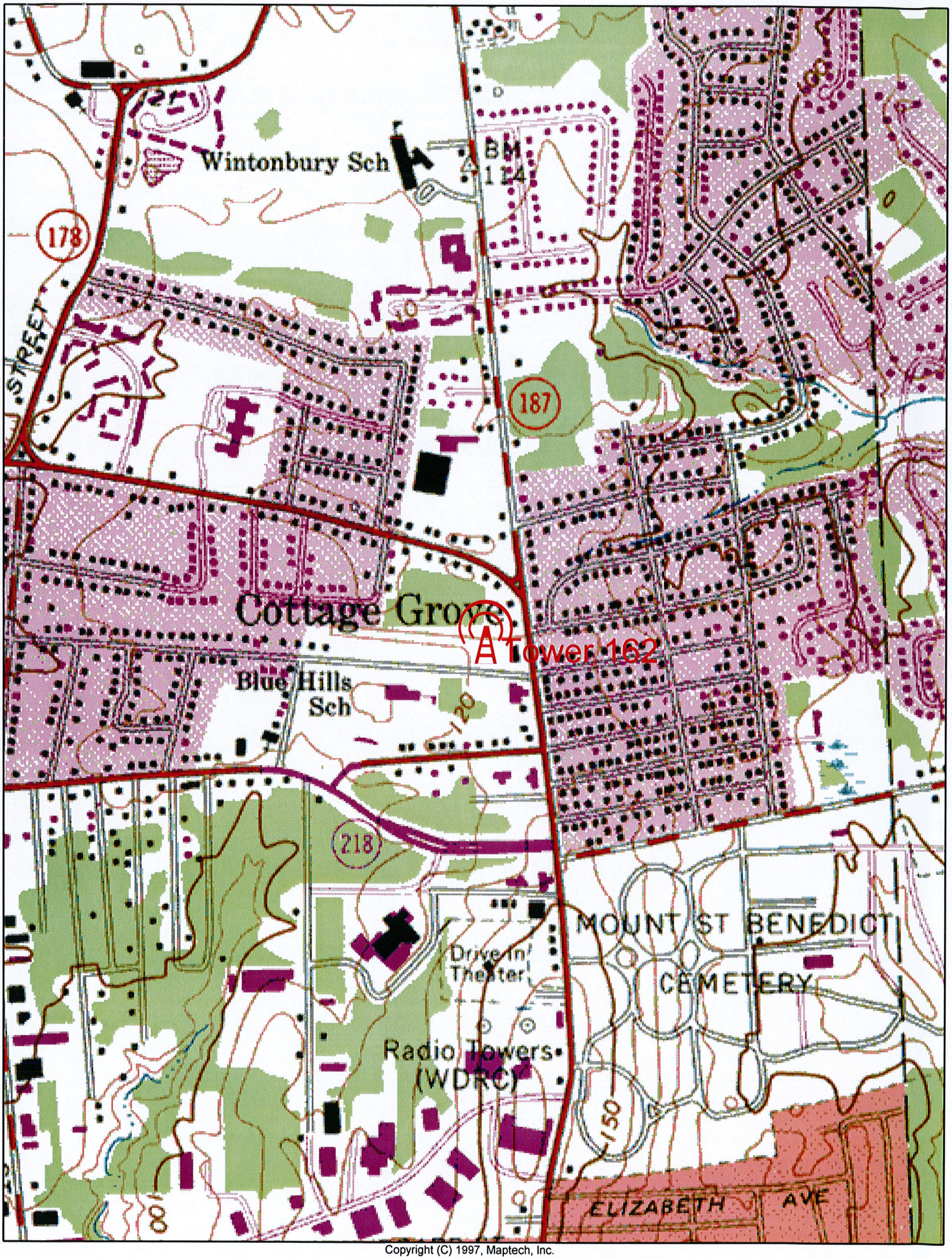
VOICESTREAM WIRELESS CORPORATION

By: _____
Its Counsel
Stephen J. Humes
Diane W. Whitney

Attachments
cc: Bloomfield Mayor, Faith McMahon
Bloomfield Town Manager, Louie Chapman, Jr.

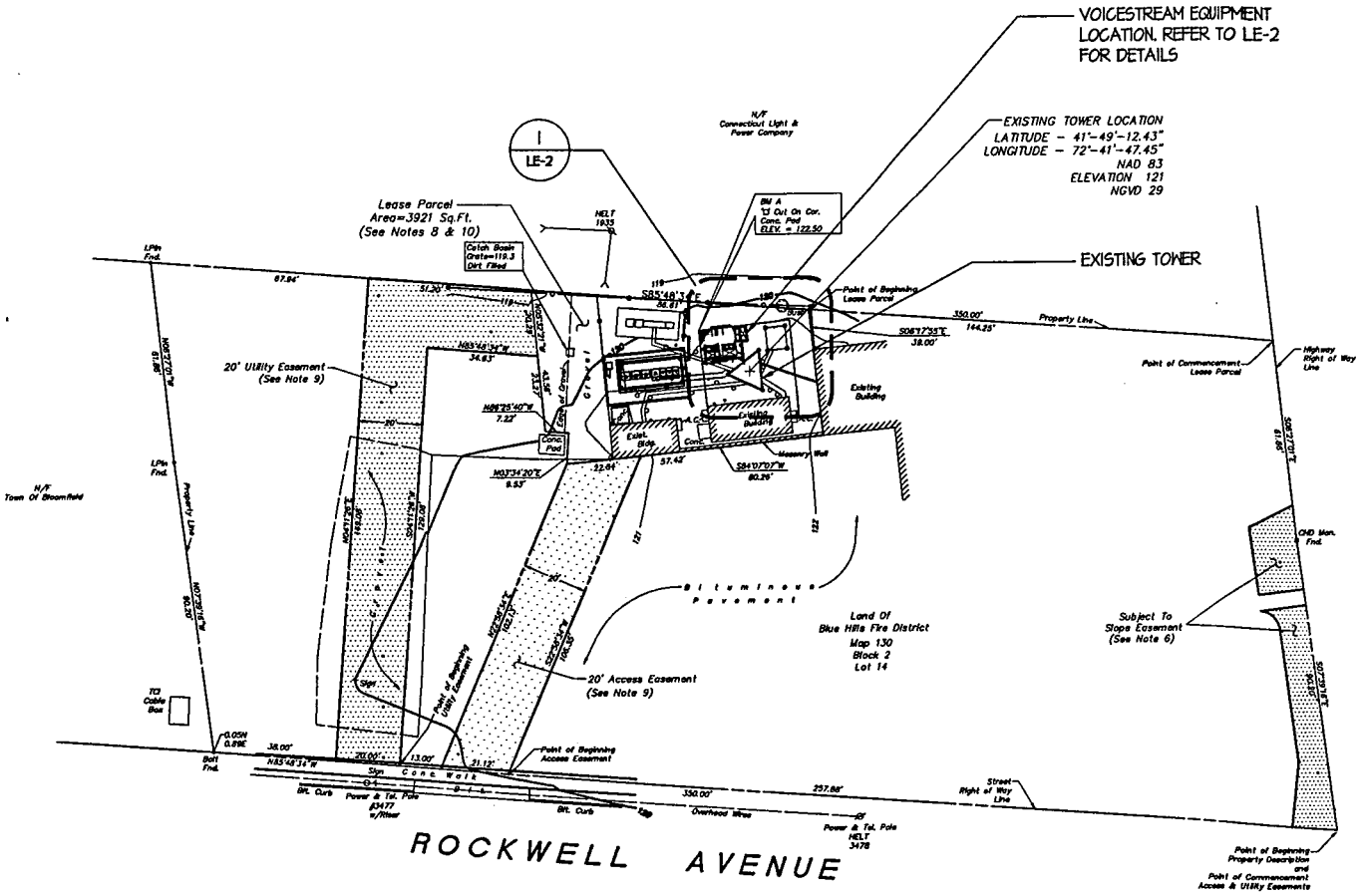
# Exhibit A

## Site Map
## 1021 Blue Hills Avenue
## Bloomfield, Connecticut



# Exhibit B

## Design Drawings
## 1021 Blue Hills Avenue
## Bloomfield, Connecticut




1 / LE-2

NORTH

ALPHA SECTOR 60 DEG.

GAMMA SECTOR 300 DEG.

BETA SECTOR 180 DEG.

ANTENNA ORIENTATION KEY

APPROXIMATE ADDITIONAL VOICESTREAM LEASE AREA REQD: 58 SQ. FEET

1 / LE-1 SITE PLAN

SCALE: 1" = 60'-0"

0 30 60 120


URS

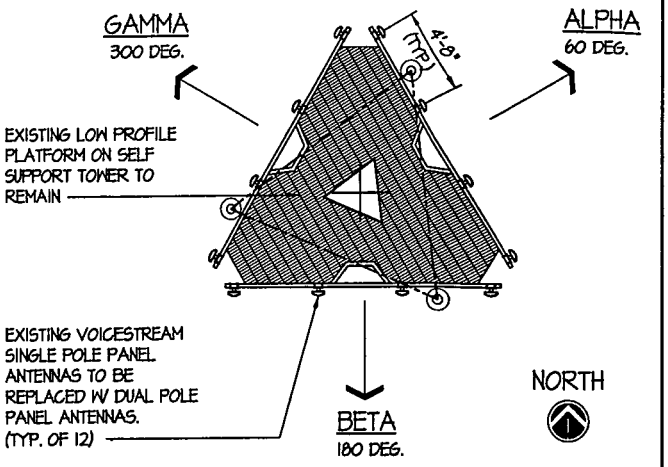
URS CORPORATION AES
795 BROOK STREET, BLDG 5
ROCKY HILL, CT. 06067
1-(860)-529-8882

OMNIPOINT COMMUNICATIONS INC.
a subsidiary of
VoiceStream Wireless
100 FILLEY STREET, BLOOMFIELD, CT 06002
TEL: 860-692-7100 FAX: 860-692-7159

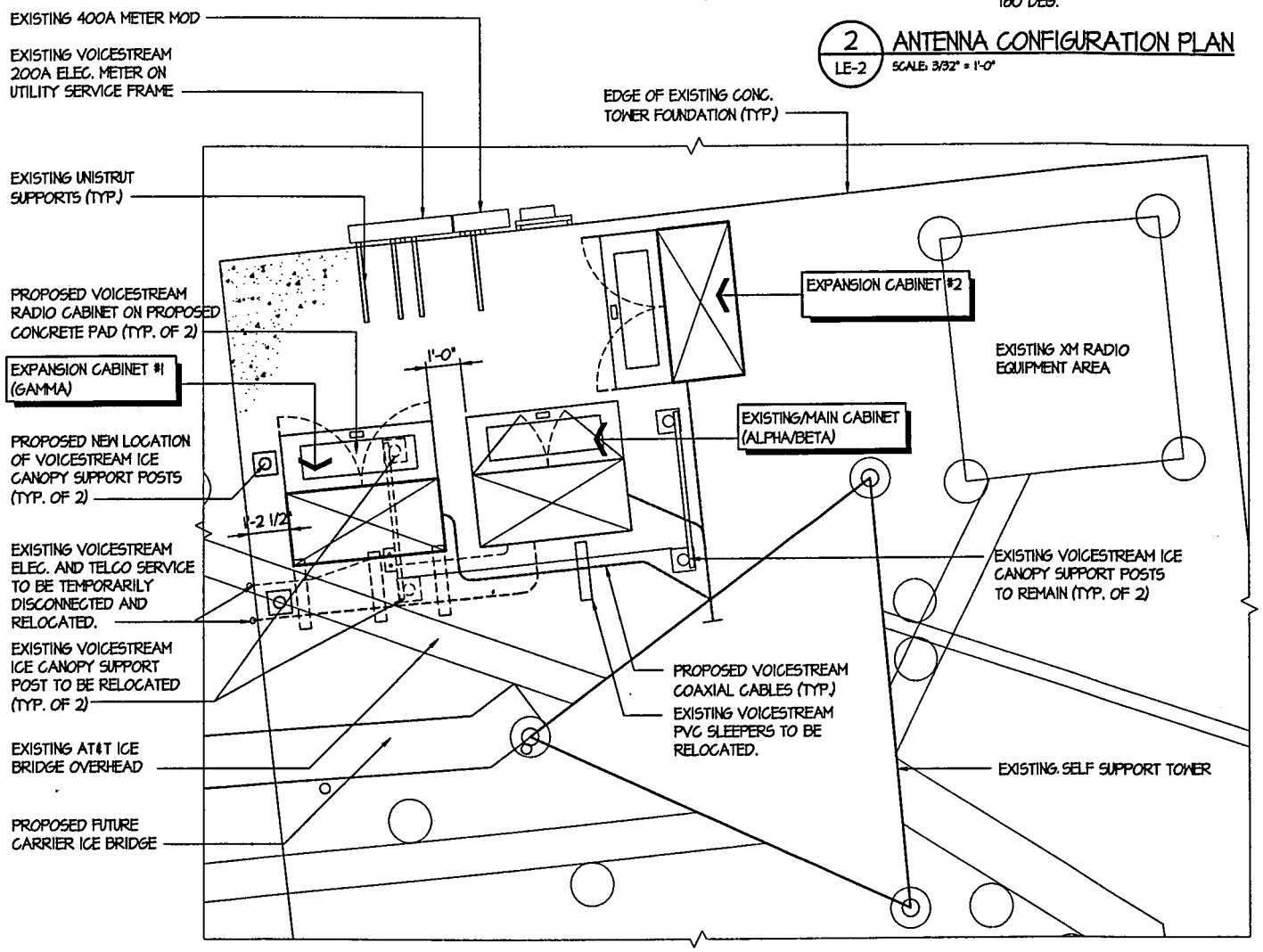

SITE NAME: CT 11-162B
BLOOMFIELD FIRE DEPARTMENT

SITE ADDRESS: 1021 BLUE HILLS AVENUE
BLOOMFIELD, CONNECTICUT 06002

| | | |
|---|---|---|
| SCALE: AS NOTED | DRAWN BY: JES | DWG. NO. LE-1 |
| DATE: 09/24/01 | CHECKED BY: | |
| REV.: 1 10/15/01 | APPROVED BY: | |
| FILE NO.: LE-1 | URS JOB NO.: 38204336 | DWG. 1 OF 3 |




2 / LE-2 ANTENNA CONFIGURATION PLAN
SCALE: 3/32" = 1'-0"




1 / LE-2 PARTIAL SITE PLAN
SCALE: 1" = 5'-0"

0 2.5 5 10

APPROXIMATE ADDITIONAL VOICESTREAM LEASE AREA REQD: 58 SQ. FEET

NOTE: PROPOSED VOICESTREAM COAXIAL CABLES SHALL LOCATIONS ON EXISTING TOWER SHALL BE COORDINATED WITH ENGINEERS STRUCTURAL ANALYSIS REPORT.

URS
URS CORPORATION AES
795 BROOK STREET, BLDG 5
ROCKY HILL, CT. 06067
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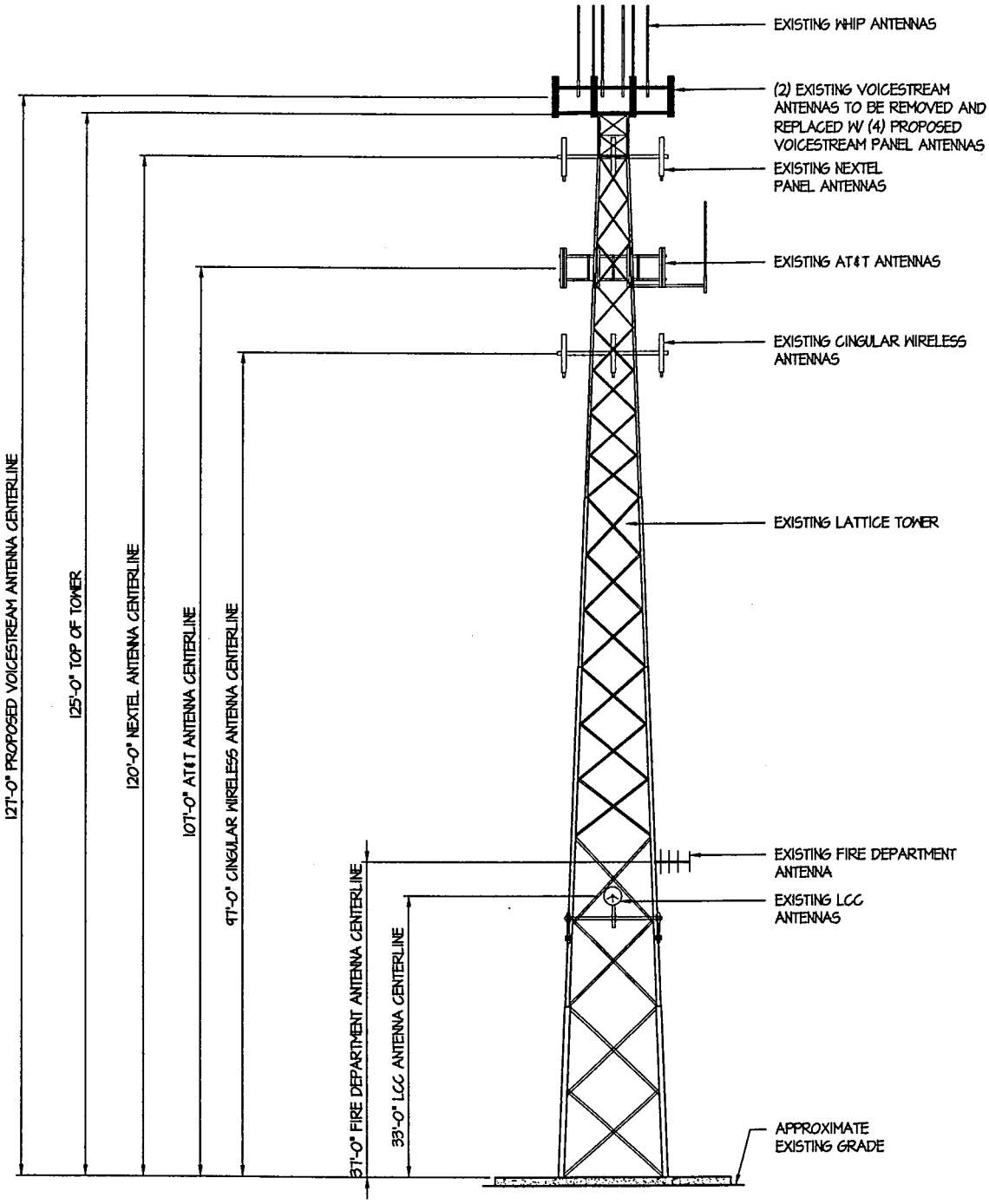
OMNIPOINT COMMUNICATIONS INC.
a subsidiary of
VoiceStream
100 FILLEY STREET, BLOOMFIELD, CT 06002
TEL: 860-692-7100 FAX: 860-692-7159

SITE NAME: CT 11-162B
BLOOMFIELD FIRE DEPARTMENT

SITE ADDRESS:
1021 BLUE HILLS AVENUE
BLOOMFIELD, CONNECTICUT 06002

SCALE: AS NOTED | DRAWN BY: JRH
DATE: 04/24/01 | CHECKED BY:
REV.: 1 10/15/01 | APPROVED BY:
FILE NO.: LE-2 | URS JOB NO.: 13020436

DWG. NO. LE-2
DWG. 2 OF 3




1 / LE-3 TOWER ELEVATION

SCALE: 1" = 20'-0"

URS
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795 BROOK STREET, BLDG 5
ROCKY HILL, CT. 06067
1-(860)-529-8882

OMNIPOINT COMMUNICATIONS INC.
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SITE ADDRESS:
1021 BLUE HILLS AVENUE
BLOOMFIELD, CONNECTICUT 06002

SCALE: AS NOTED | DRAWN BY: JES | DWG. NO. LE-3
DATE: 09/24/01 | CHECKED BY:
REV.: 1 10/15/01 | APPROVED BY:
FILE NO.: LE-3 | URS JOB NO.: 13020436 | DWG. 3 OF 3

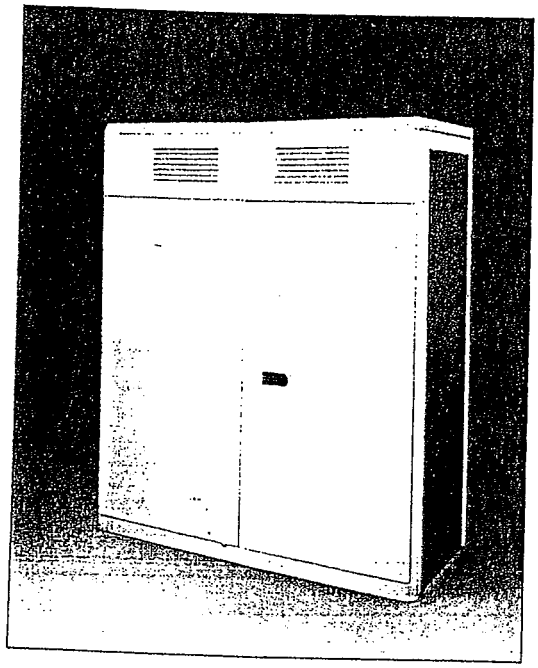
# Exhibit C

# Equipment Specifications
# 1021 Blue Hills Avenue
# Bloomfield, Connecticut

GSM 900 / DCS 1800 / PCS 1900

NORTEL
NORTHERN TELECOM

# S8000 Outdoor Base Transceiver Station



*Nortel's S8000 Outdoor Base Transceiver Station has been designed to meet the economic and performance requirements of network operators. Based on a highly integrated RF and digital design, the S8000 Outdoor Base Transceiver Station represents a major technology advancement and delivers all the benefits of a compact, modular, high quality and high performance product.*

## Nortel's S8000 Outdoor BTS: Radio Performance Leadership - Reduced Site Acquisition and Operating Costs

### Installation

- The S8000 Outdoor Base Transceiver Station (BTS) offers compact packaging and requires minimal floor space, only .88 sq m (9.5 sq ft.). Front only access keeps total space required, including maintenance access, to only 1.8 sq m (19.4 sq ft ) per cabinet.

### Transmission

- Integrated drop and insert connection to the Base Station Controller (BSC) and signaling concentration on the A-bis interface provide significant transmission cost reduction.
- Optional integrated digital microwave radio.

### Maintenance

- Highly reliable technology, redundant architecture and integrated battery backup ensure high availability service.
- Front access and interconnections, as well as powerful fault detection, help reduce lifetime maintenance costs.

### Industry leading performance

- New RF technology and advanced digital processing techniques provide very high receive sensitivity (-108 dBm guaranteed) and improved diversity gain (up to 6 dB). This provides higher resistance to interference, as well as, improved speech quality and cell coverage.
- Nortel's proven experience in frequency hopping, 1*3 frequency reuse, sophisticated microcellular handover algorithms and support of half-rate vocoders enables the operator to maximize use of available spectrum and deploy fewer cell sites.

### Fast network deployment

- The S8000 BTS can be shipped fully equipped and tested, which provides fast network roll out to meet operator time to market requirements.

### Modular and flexible configuration

- The S8000 supports eight transceivers (TRX) per cabinet in Omni and sectored configurations. The typical one cabinet S222 configuration may be expanded up to S332 or S422 without an additional cabinet.

## Technical Data

| | | |
|---|---|---|
| • Frequency range | | 900 MHz GSM |
| | | 900 MHz GSM extended |
| | | 1800 MHz DCS |
| | | 1900 MHz PCS |
| • Receive sensitivity (guaranteed) | | -108 dBm |
| • Dimensions | Height | 1600 mm / 5 ft. 3 in. |
| | Width | 1350 mm / 4 ft. 5 in. |
| | Depth | 650 mm / 2 ft. 1 in. |
| • Weight | Fully equipped | 600 kg / 1300 lbs. |
| • Capacity | | 8 TRX per cabinet |
| | | up to 3 cabinets |
| • Configuration | Trisectorial | up to S888 |
| | Omnidirectional | up to O16 |
| • Amplifier output power | | 30 W (± 1.5 dB) |
| • Power control | Static | 6 steps of 2 dB |
| | Dynamic | 15 steps of 2 dB |
| • Frequency hopping | | RF synthesized |
| | | baseband |
| • Supported vocoders | | Full rate |
| | | Enhanced full rate |
| | | Half rate |
| • Encryption algorithms | | A5/1 A5/2 |
| • Power supply | | 230V AC 50/60 Hz |
| • Power back-up | | Integrated battery back-up plus optional battery cabinet allows provisioning up to 8 hours back-up time. |
| • Operating temperature range | | -40°C to +50°C |
| | | -40°F to +122°F |

For more information,
please contact your local Nortel account representative.


*In the USA:*
Northern Telecom
2221 Lakeside Boulevard
Richardson TX 75082
USA
Telephone: 1-800-4 NORTEL
1-800-466-7838 or (214) 684-5935
http://www.nortel.com/wireless

*In Canada:*
Northern Telecom
2920 Matheson Boulevard East
Mississauga ON L4W 4M7
Canada
Telephone: 1-800-4 NORTEL

*In the Caribbean and Latin America:*
Northern Telecom (CALA) Corporation
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Sunrise FL 33323
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Publication Reference S8O.INS.0696
Printed in France




NORTEL
NORTHERN TELECOM

# 3 CABINET DESCRIPTION

## 3.1 PHYSICAL CHARACTERISTICS

### 3.1.1 S8000 Outdoor BTS

#### 3.1.1.1 BTS cabinet

***Dimensions***

The BTS S8000 Outdoor has the following dimensions:

- height: 160 cm (63 in.)
- width: 135 cm (52.8 in.)
- depth: 65 cm (25.6 in.)

***Weight***

The weight of the cabinet when empty, that is, without its battery, fan units or boards, is 164 kg (361 lb). Depending on the configuration, a fully equipped cabinet weighs approximately 480 kg (1056 lb) with ACU unit or 440 kg (968 lb) with DACS unit.

These weights do not include the plinth.

***Operating temperature***

To operate correctly, the BTS requires a temperature greater than –40°C (–40°F) and less than +50°C (+122°F).

***Consumption***

BTS input voltage:

- GSM 900/1800
  - nominal voltage contained between 220V AC and 240V AC
  - minimum voltage: 220 – 10% = 198V AC
  - maximum voltage: 240 + 6% = 254V AC
- GSM 1900 (with DACS)
  - nominal voltage: 208V AC to 240V AC
  - minimum voltage: 208 – 10% = 187V AC
  - maximum voltage: 240 + 6% = 254V AC
- GSM 1900 (with ACU and/or the power system six–rectifier type)
  - nominal voltage: 240V AC
  - minimum voltage: 240 – 10% = 187V AC
  - maximum voltage: 240 + 6% = 254V AC

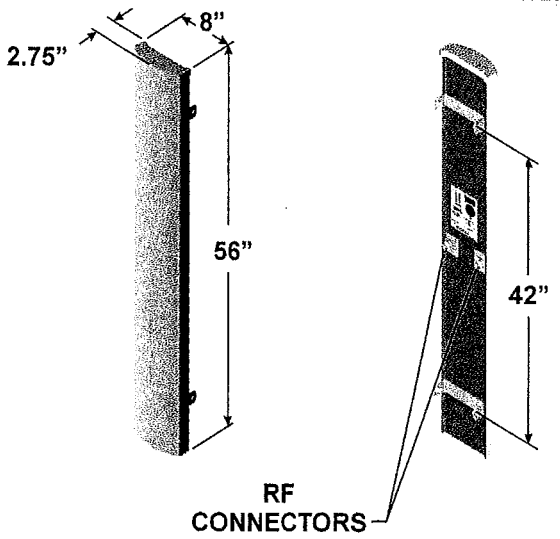
NON - PREMIUM BTS ONLY

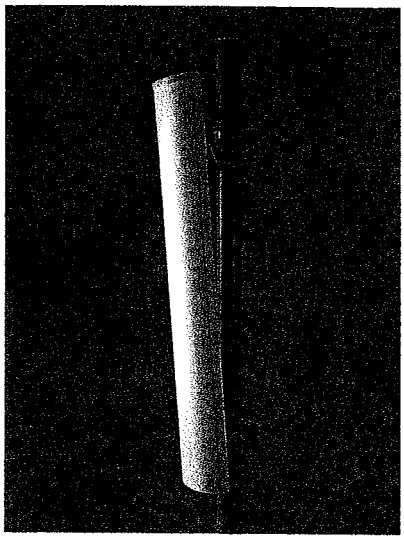
EMS WIRELESS

OptiRange™

# RR90-17-XXXP

1850 MHz - 1990 MHz (P)



- 90° beamwidth
- 16.5 dBi gain
- ±45° DualPol™
- 56 inch

## SPECIFICATIONS

### Electrical

| | |
|---|---|
| Azimuth Beamwidth | 90° |
| Elevation Beamwidth | 6° |
| Gain | 16.5 dBi (14.4 dBd) |
| Polarization | Slant, ±45° |
| Port-to-Port Isolation | ≥ 30 dB |
| Front-to-Back Ratio | ≥ 25 dB (≥ 30 dB Typ.) |
| Electrical Downtilt Options | 0°, 2°, 4°, 6° |
| VSWR | 1.35:1 Max |
| Connectors | 2;Type N or 7-16 DIN (female) |
| Power Handling | 250 Watts CW |
| Passive Intermodulation | <-147 dBc (2 tone @ +43 dBm {20W} ea.) |
| Lightning Protection | Chassis Ground |

### Mechanical

| | |
|---|---|
| Dimensions (L x W x D) | 56in x 8in x 2.75in (142 cm x 20.3 cm x 7.0 cm) |
| Rated Wind Velocity | 150 mph (241 km/hr) |
| Equivalent Flat Plate Area | 3.1ft² (.29 m²) |
| Front Wind Load @ 100 mph (161 kph) | 90 lbs (400 N) |
| Side Wind Load @ 100 mph (161 kph) | 31 lbs (139 N) |
| Weight | 18 lbs (8.2 kg) |

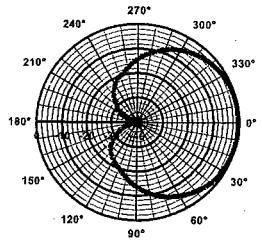
Note: Patent Pending and US Patent number 5, 757, 246.

Values and patterns are representative and variations may occur. Specifications may change without notice due to continuous product enhancements. Digitized pattern data is available from the factory or via the web site www.emswireless.com and reflect all updates.

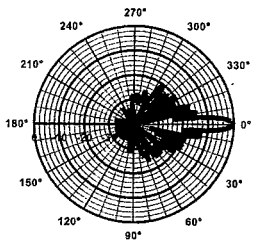
## MOUNTING OPTIONS

| Model Number | Description | Comments |
|---|---|---|
| MTG-P00-10 | Standard Mount (Supplied with antenna) | Mounts to Wall or 1.5 inch to 5.0 inch O.D. Pole (3.8 cm to 12.7 cm) |
| MTG-S02-10 | Swivel Mount | Mounting kit providing azimuth adjustment. |
| MTG-DXX-20* | Mechanical Downtilt Kits | 0° - 10° or 0° - 15° Mechanical Downtilt |
| MTG-CXX-10* | Cluster Mount Kits | 3 antennas 120° apart or 2 antennas 180° apart |
| MTG-C02-10 | U-Bolt Cluster Mount Kit | 3 antennas 120° apart , 4.5" O.D. pole. |
| MTG-TXX-10* | Steel Band Mount | Pole diameters 7.5" - 45" |

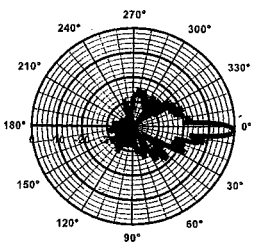
* Model number shown represents a series of products. See mounting options section for specific model number.



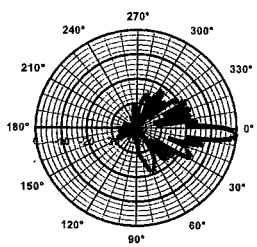

Azimuth



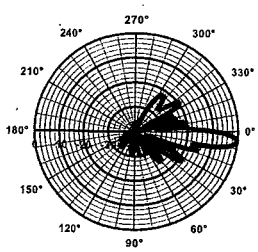

Elevation
0° Downtilt




Elevation
2° Downtilt




Elevation
4° Downtilt




Elevation
6° Downtilt

# Exhibit D

## Structural Analysis
## 1021 Blue Hills Avenue
## Bloomfield, Connecticut

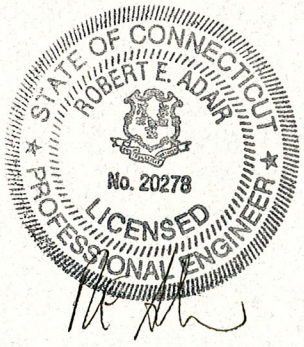
ALL-POINTS TECHNOLOGY CORPORATION, P.C.

# STRUCTURAL ANALYSIS REPORT
# 125' SELF-SUPPORTING TOWER
# BLUE HILL AVENUE
# BLOOMFIELD, CONNECTICUT

Prepared for
VoiceStream Wireless

**VoiceStream Site #CT-11-162**

September 5, 2001




APT Project #CT107120

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**STRUCTURAL ANALYSIS REPORT**
**of**
**125' SELF-SUPPORTING TOWER**
**BLOOMFIELD, CONNECTICUT**
**prepared for**
**VoiceStream Wireless**

## EXECUTIVE SUMMARY:

All-Points Technology Corp., P.C. (APT) performed a structural analysis of this 125-foot self-supporting tower. The analysis was performed with the replacement of a six panel antenna array with a twelve-panel array installed on the existing platform at 125-feet.

Our analysis indicates the tower and foundation are capable of supporting the proposed antennas.

## INTRODUCTION:

A structural analysis was performed on the above-mentioned communications tower by APT for VoiceStream Wireless. The tower is located at 1021 Blue Hill Avenue in Bloomfield, Connecticut. Robert E. Adair, P.E. previously inspected the tower on June 25, 2001 to record information regarding antenna inventory and appurtenances. Tower drawings and member sizes were provided by VoiceStream.

The structure is a 125-foot galvanized steel, self-supporting tower manufactured by F.A. Nudd. The analysis was performed with the following antenna inventory:

| Antenna | Elev. | Leg | Mount | Coax. |
|---|---|---|---|---|
| 20' Omnidirectional whip - Super Stationmaster | 128 | - | Rotatable platform | 7/8" |
| (2) 20' Omnidirectional whips - 455DT3 & 455-6 | 128 | - | Rotatable platform | (2) 7/8" |
| (2) 8' Omnidirectional whips - Andrew PG1N0F | 128 | - | Rotatable platform | (2) 7/8" |
| 6' Omnidirectional whip - Til-Tek 2350-DAB | 128 | - | Rotatable platform | 1-5/8" |
| **(12) RR90-17DP panels** (proposed) | 128 | - | Rotatable platform | **(24) 1-5/8"** |
| (9) DB844H90 panels | 120 | All | (3) 10' sector mounts | (9) 1-1/4" |
| (12) ALP 7184.14 panels | 107 | All | (3) 12' sector mounts | (12) 1-5/8" |
| 8' Omnidirectional whip - Andrew PG1N0F | 105 | NE | Pipe - 10' x 2-3/8" | 7/8" |
| (9) ALP 7120.16 panels | 97 | All | (3) 10' sector mounts | (9) 7/8" |
| 3' Yagi | 37 | NE | Leg | 1/2" |
| 2' satellite dish with radome | 33 | W | Pipe - 4' x 2-7/8" | 1/2" |

## STRUCTURAL ANALYSIS:

### Methodology:

The structural analysis was done in accordance with EIA/TIA-222-F, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures; and the American Institute of Steel Construction (AISC), Manual of Steel Construction, Allowable Stress Design, Ninth Edition.

The analysis was conducted using a wind speed of 80 miles per hour and one-half inch of radial ice over the entire structure and all appurtenances. The EIA/TIA Standard requires a minimum wind speed of 80 miles per hour for Hartford County, Connecticut. The tower was analyzed by calculating the resultant wind loading and associated maximum bending moments, shear forces, and axial loads. The moments and forces were used to calculate stresses in leg and bracing members, which were compared to allowable stresses according to AISC.

Two loading conditions were evaluated in accordance with EIA/TIA-222-F to determine the tower's capacity. The more demanding of the two cases is used to calculate the tower capacity:

- Case 1 = Wind Load (without ice) + Tower Dead Load
- Case 2 = 0.75 Wind Load (with ice) + Ice Load + Tower Dead Load

In addition, the TIA/EIA standard permits a one-third increase in allowable stresses for towers less than 700-feet tall. Allowable stresses of tower members were increased by one-third when computing the load capacity values shown below.

### Analysis:

Analysis of the tower was conducted in accordance with the criteria and antenna inventory outlined above. Our analysis determined the existing tower is capable of supporting the proposed antennas. The following table summarizes the results of the analysis based on compressive stresses of individual leg members:

| Elevation | Capacity |
|---|---|
| 0-20' | **61%** |
| 20'-40' | **85%** |
| 40'-60' | **62%** |
| 60'-80' | **58%** |
| 80'-100' | **70%** |
| 100'-120' | **65%** |
| 120'-125' | **11%** |

**Bracing Members:**

Bracing members are installed in an X-brace configuration, with each compression member paired with a corresponding tension member. Bracing was evaluated by calculating bracing member's allowable compression and tension forces and assessing each tower section's ability to resist shear forces.

Bracing members were determined to be appropriately sized based on comparison of calculated vs. allowable tower shear.

**Base Support:**

Evaluation of the existing base foundation, a 29' square by 4'-3" thick mat according to F.A. Nudd calculations, was performed using reactions calculated under the proposed loading. The foundation was found to be adequate to support the proposed antennas.

Base reactions imposed with the additional antennas were calculated as follows:

| | |
|---|---|
| Tension: | 179.4 kips |
| Compression: | 192.3 kips |
| Total Shear: | 27.5 kips |
| Overturning Moment: | 2005.8 ft-kips |

## CONCLUSIONS AND RECOMMENDATIONS:

Our structural analysis indicates the 125-foot self-supporting tower and foundation located on Blue Hill Avenue in Bloomfield, Connecticut are capable of supporting the antenna loading proposed by VoiceStream Wireless.

APT recommends that waveguide cables be installed in an 8 cable wide by 3 cable deep configuration to minimize wind load as shown in the waveguide drawing in Appendix A.

## LIMITATIONS:

This report is based on the following:

1. Tower is properly installed and maintained.
2. All members are in new condition.
3. All required members are in place.
4. All bolts are in place and are properly tightened.
5. Tower is in plumb condition.
6. All tower members were properly designed, detailed, fabricated, and installed and have been properly maintained since erection.

All-Points Technology Corp., P.C. (APT) is not responsible for any modifications completed prior to or hereafter which APT is not or was not directly involved. Modifications include but are not limited to:

1. Replacing or strengthening bracing members.
2. Reinforcing leg members in any manner.
3. Adding or relocating stabilizers.
4. Installing antennas and/or mounting brackets or side arms.
5. Extending tower.

APT hereby states that this document represents the entire report and that it assumes no liability for any factual changes that may occur after the date of this report. All representations, recommendations, and conclusions are based upon the information contained and set forth herein. If you are aware of any information which is contrary to that which is contained herein, or you are aware of any defects arising from the original design, material, fabrication and erection deficiencies, you should disregard this report and immediately contact APT. APT disclaims all liability for any representation, recommendation, or conclusion not expressly stated herein.

# Exhibit E

# Power Density Calculations
# 1021 Blue Hills Avenue
# Bloomfield, Connecticut

VOICESTREAM WIRELESS CORPORATION
100 Filley St, Bloomfield, CT 06002-1853
Phone: (860) 692-7100
Fax: (860) 692-7159

# Technical Memo

To: Haider Syed
From: Giri Lakshmanan Radio Engineering Consultant
cc: Mike Fulton
Subject: Power Density Report for CT-11-162B
Date: 18-Oct-01

## 1. Introduction:

This report is the result of an Electromagnetic Field Intensities (EMF - Power Densities) study for the Voicestream Wireless Corporation PCS antenna installation on an Existing Lattice Tower at 1021 Blue Hilss Avenue, Bloomfield, Hartford, CT. This study incorporates the most conservative consideration for determining the practical combined worst case power density levels that would be theoretically encountered from several locations surrounding the transmitting location.

## 2. Discussion:

The following assumptions were used in the calculations:

1) The emissions from Voicestream Wireless transmitters are in the 1930-1950 MHz frequency band.
2) The antenna cluster consists of three sectors, with 4 antennas per sector. The model number for each antenna is EMS EMS-RR90-17-02DP.
3) The antenna height is 125 ft.
4) The maximum transmit power from each sector is 2654.12 Watts Effective Radiated Power (EiRP). assuming 8 channels per sector.
5) All the antennas are simultaneously transmitting and receiving, 24 hours a day.
6) Power levels emitting from the antennas are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
7) The average ground level of the studied area does not significantly change with respect to the transmitting location.

Equations given in "FCC OET Bulletin 65, Edition 97-01" were then used with the above information to perform the calculations.

## 3. Conclusion:

Based on the above worse case assumptions, the power density calculations from the VoiceStream Wireless Corporation PCS antenna installation on an Existing Lattice Tower at 1021 Blue Hilss Avenue, Bloomfield, Hartford, CT, is 0.037267 mw/cm^2. This value represents only 3.7267% of the Maximum Permissible Emission (MPE) standard of 1000 microwatts per square centimeter (uw/c^2) set forth in the FCC/ANSI/IEEE C95.1-1991.
Furthermore, the proposed antenna location for VoiceStream Wireless will not interfere with existing public safety telecommunications, AM band and FM band radio broadcast, TV, Police Communication, HAM Radio communications and other signals in the area.

# Worst Case Power Density

**Region 11 - Connecticut**
**Power Density Calculation**

**Site: CT-11-162B**
**Site Address: 1021 Blue Hills Avenue, Bloomfield**
**Town: Hartford**
**Pole Height: 130FT**
**Tower Style: an Existing Lattice Tower**

| | | |
|---|---|---|
| **Base Station TX output** | 20 | W |
| **Number of channels** | 8 | |
| **Antenna Model** | EMS-RR90-17-02DP | |
| **Cable Size** | 1 5/8 | " |
| **Cable Length** | 145.00 | ft |
| **Antenna Height** | 125.00 | ft |
| **Ground Reflection** | 1.6 | |
| **Frequency** | 1930.00 | MHz |
| **Jumper & Connector loss** | 2.62 | dB |
| **Antenna Gain** | 16.5 | dBi |
| **Cable Loss per foot** | 0.0116 | Loss per/ft |
| **Total Cable Loss** | 1.682 | dB |
| **Total Attenuation** | 4.302 | dB |
| **Total EIRP per channel** | 55.21 | dB |
| **(In Watts)** | 331.76 | W |
| **Total EIRP per sector** | 64.24 | dB |
| **(In Watts)** | 2654.12 | W |
| **nsg** | 12.198 | |
| **Power Density (S) =** | **0.037267** | **mW / cm$^2$** |
| **% MPE =** | **3.7267%** | |

*Equation Used :*

$$S = \frac{(1000)(grf)^2(Power)*10^{(nsg/10)}}{4\pi(R)^2}$$

*Office of Engineering and Technology (OET) Bulletin 65, Edition 97-01, August 1997*

## *Power Density Analysis Table*

**: CT43XC848 (Cottage Grove) - SBA Tower, 1021 Blue Hills Avenue, Bloomfield, CT 06002.**
**rst Case Power Density Analysis of Sprint PCS Antennas @ Base of Tower. Assumes Max ERP & No Antenna Pattern Adjustment.**

| Operating Frequency (MHz) | Number of Trans. | Effective Radiated Power (ERP) Per Transmitter (Watts) | Total ERP (Watts) | Antenna Height (Feet) | Distance From Base of Tower (Feet) | Calculated Power Density (mW/cm²) | Maximum Permissable Exposure* | %MPE |
|---|---|---|---|---|---|---|---|---|
| 1962.5 | 11 | 568.36 | 6251.96 | 87 | 0 | 0.297358 | 1 | 29.7358% |
| 1962.5 | 11 | 568.36 | 6251.96 | 87 | 50 | 0.223528 | 1 | 22.3528% |
| 1962.5 | 11 | 568.36 | 6251.96 | 87 | 100 | 0.128107 | 1 | 12.8107% |
| 1962.5 | 11 | 568.36 | 6251.96 | 87 | 150 | 0.074851 | 1 | 7.4851% |
| 1962.5 | 11 | 568.36 | 6251.96 | 87 | 200 | 0.047315 | 1 | 4.7315% |
| 1962.5 | 11 | 568.36 | 6251.96 | 87 | 250 | 0.032121 | 1 | 3.2121% |
| 1962.5 | 11 | 568.36 | 6251.96 | 87 | 300 | 0.023068 | 1 | 2.3068% |
| 1962.5 | 11 | 568.36 | 6251.96 | 87 | 350 | 0.017304 | 1 | 1.7304% |
| 1962.5 | 11 | 568.36 | 6251.96 | 87 | 400 | 0.013432 | 1 | 1.3432% |
| 1962.5 | 11 | 568.36 | 6251.96 | 87 | 450 | 0.010714 | 1 | 1.0714% |
| 1962.5 | 11 | 568.36 | 6251.96 | 87 | 500 | 0.008738 | 1 | 0.8738% |

***Requirements set forth in OET Bulletin 65. Based on NCRP Report No. 86 and ANSI/IEEE C95.1-1992.**

**Site: CT43XC848 (Cottage Grove) - SBA Tower, 1021 Blue Hills Avenue, Bloomfield, CT 06002.**
**Cumulative Power Density Analysis of Sprint PCS & Other Co-location Antennas**

| Operator | Operating Frequency (MHz) | Distance to Target (ft) | Calculated Power Density (mW/cm²) | Maximum Permissible Exposure (mW/cm²) | Fraction of MPE |
|---|---|---|---|---|---|
| *Sprint PCS* | 1962.5 | 87 | 0.297358 | 1.0000 | 29.7358% |
| *AT&T Wireless - PCS*[1] | 1950 | 107 | NA | NA | 3.9000% |
| *Voice Stream - PCS*[1] | 1950 | NA | NA | NA | 6.9000% |
| *Others from previous reports*[1] | NA | NA | NA | NA | 28.7750% |
| **Total Percentage of Maximum Permissible Exposure** | | | | | **69.3108%** |

[1] **Information taken from the Power Density Information prepared by AT&T Wireless.**
***Requirements set forth in OET Bulletin 65. Based on NCRP Report No. 86 and ANSI/IEEE C95.1-1992**

# STATE OF CONNECTICUT

*CONNECTICUT SITING COUNCIL*

Ten Franklin Square
New Britain, Connecticut 06051
Phone: (860) 827-2935
Fax: (860) 827-2950

October 31, 2001

Honorable Faith McMahon
Mayor
Town of Bloomfield
Town Hall
800 Bloomfield Avenue
P. O. Box 337
Bloomfield, CT 06002-0337

RE: **EM-VOICESTREAM-011-011029** - VoiceStream Wireless Corporation notice of intent to modify an existing telecommunications facility located at 1021 Blue Hills Avenue, Bloomfield, Connecticut.

Dear Mayor McMahon:

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 tentatively scheduled for Thursday, November 29, 200 at 1:30 p.m. in Hearing Room One, 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,

Joel M. Rinebold
Executive Director

JMR/RM/grg

Enclosure: Notice of Intent

c: Thomas B. Hooper, Director of Planning, Town of Bloomfield
Louie Chapman, Jr., Town Manager, Town of Bloomfield

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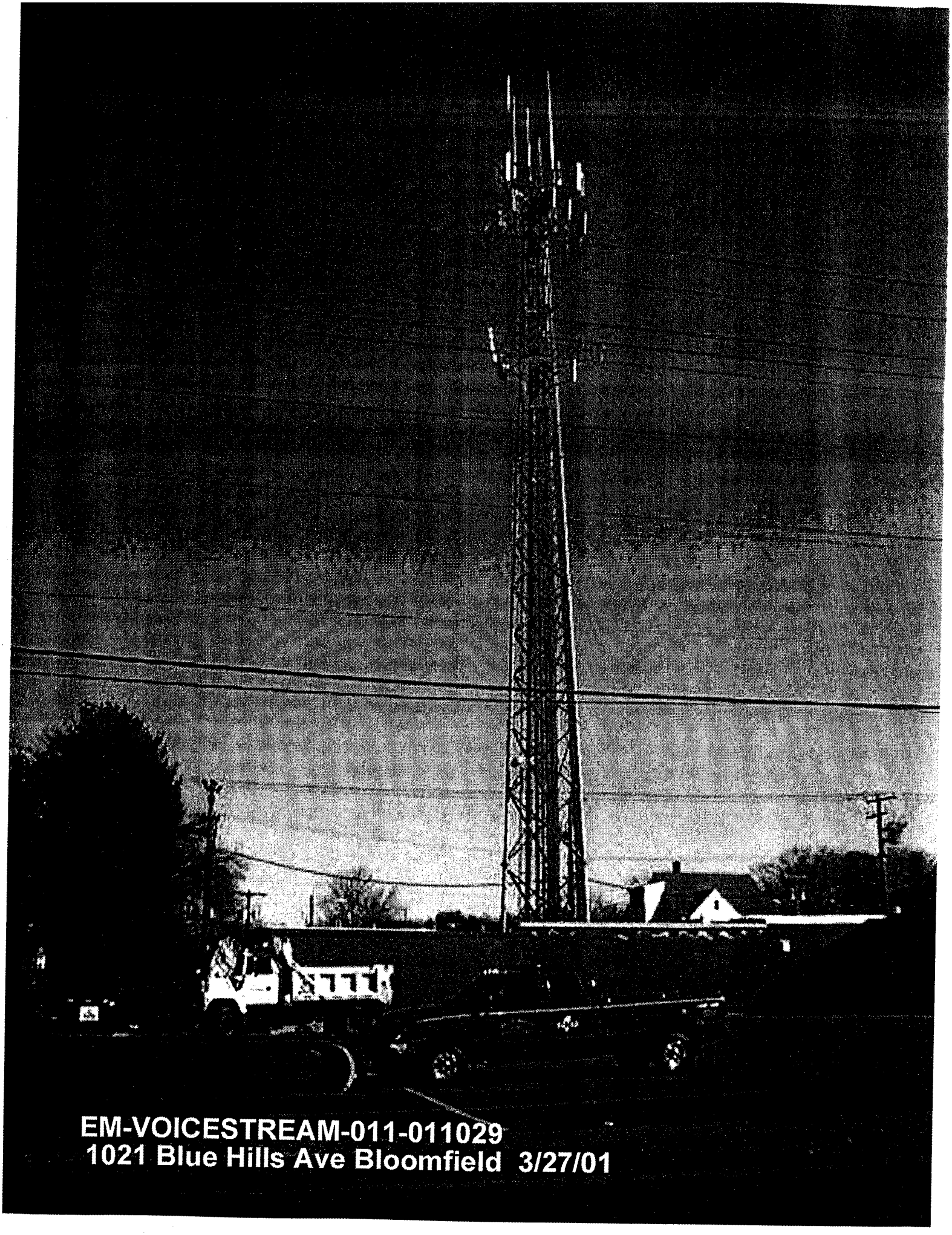

EM-VOICESTREAM-011-011029
1021 Blue Hills Ave Bloomfield 3/27/01