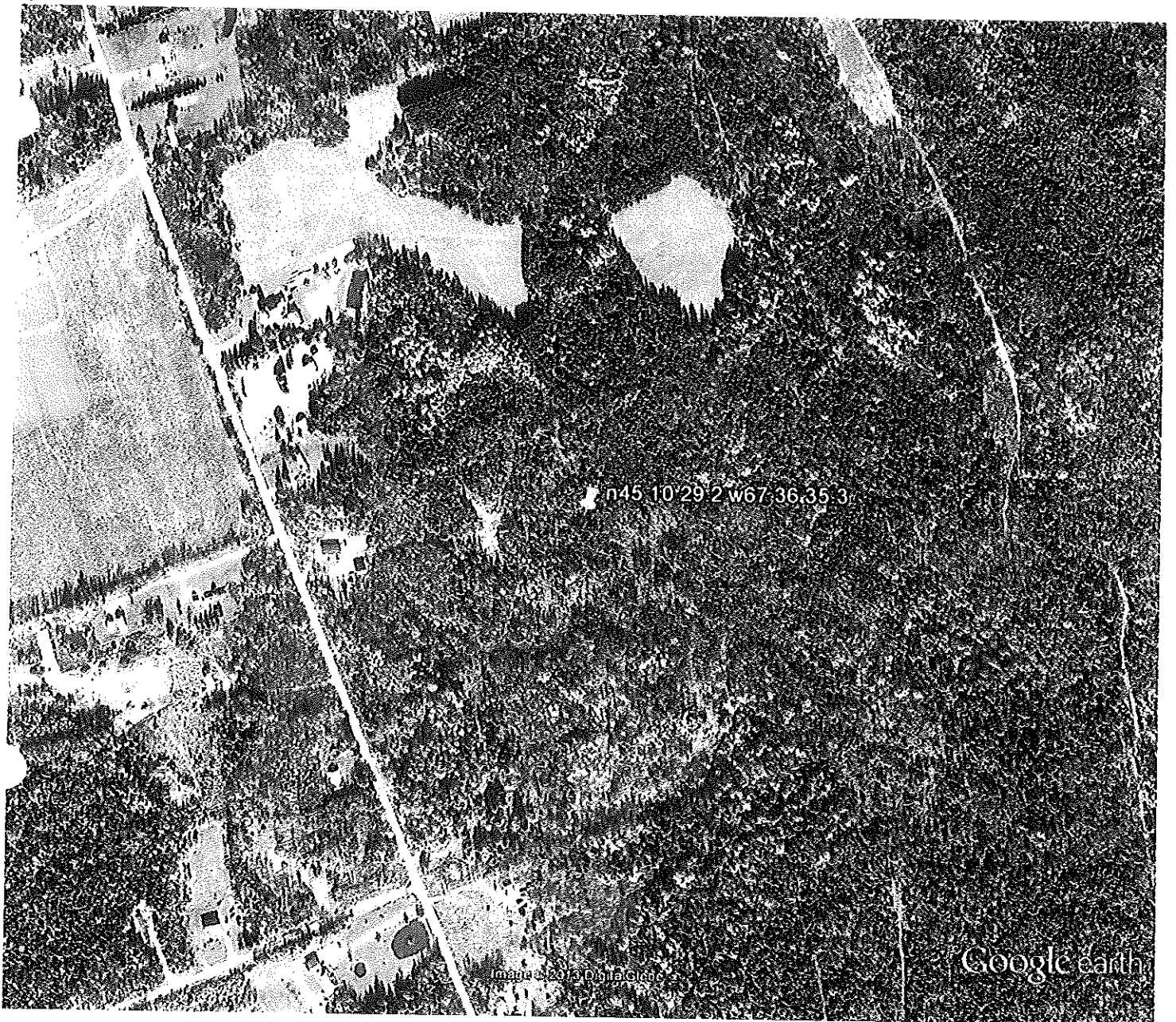


Topics to be Presented on the Big Lake Township Site

- Selection of Site
- Tower Design Selection
- Tower Lighting
- Scenic Assessment

Selection of Site

- Aerial view of tower location on Mr. Cochran's Property
- Distance of neighboring residences to tower
- Why site was located on Mr. Cochran's Property
- Effects on RF coverage if tower height is reduced from 250' to 190'
- FCC Antenna Registration Search



Google earth

feet
meters



Google earth





45 10 29.2 W67 36 35.3

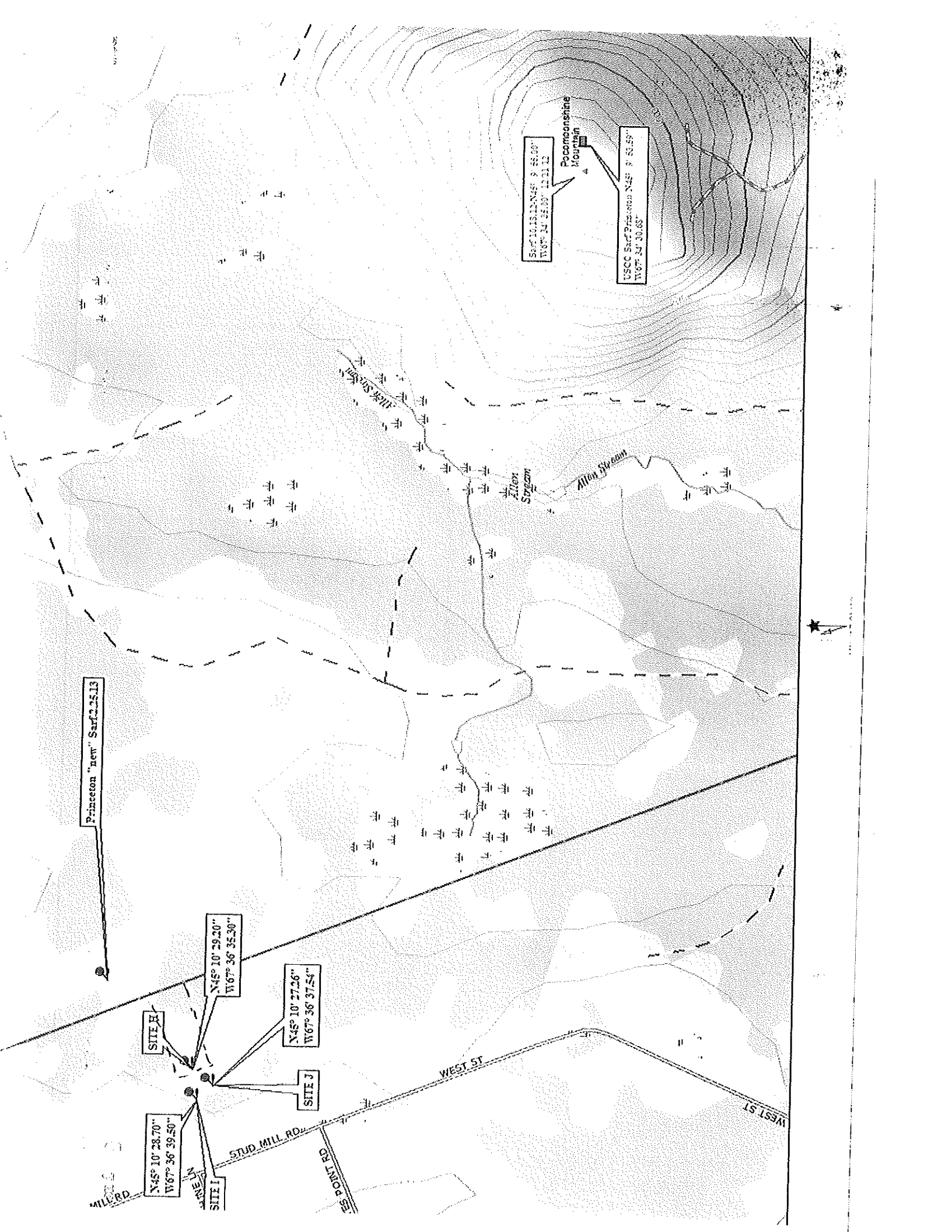
© 2014 Google

Image by Google: 9/17/2014

45°10'30.63" N 67°36'41.52" W

GOO

1996



Princeton "new" Surf 2.25.13

Surf 10.13.12, NAS: 9 66.00"
W67° 34' 25.00" 12.11.12

Pocomooshine Mountain

USCC Surf Princeton NAS: 9 65.59"
W67° 34' 30.65"

N45° 10' 29.20"
W67° 36' 35.30"

N45° 10' 27.26"
W67° 36' 37.54"

N45° 10' 28.70"
W67° 36' 39.50"

SITE R

SITE J

SITE I

MILL RD

STUD MILL RD

ES PORT RD

WEST ST

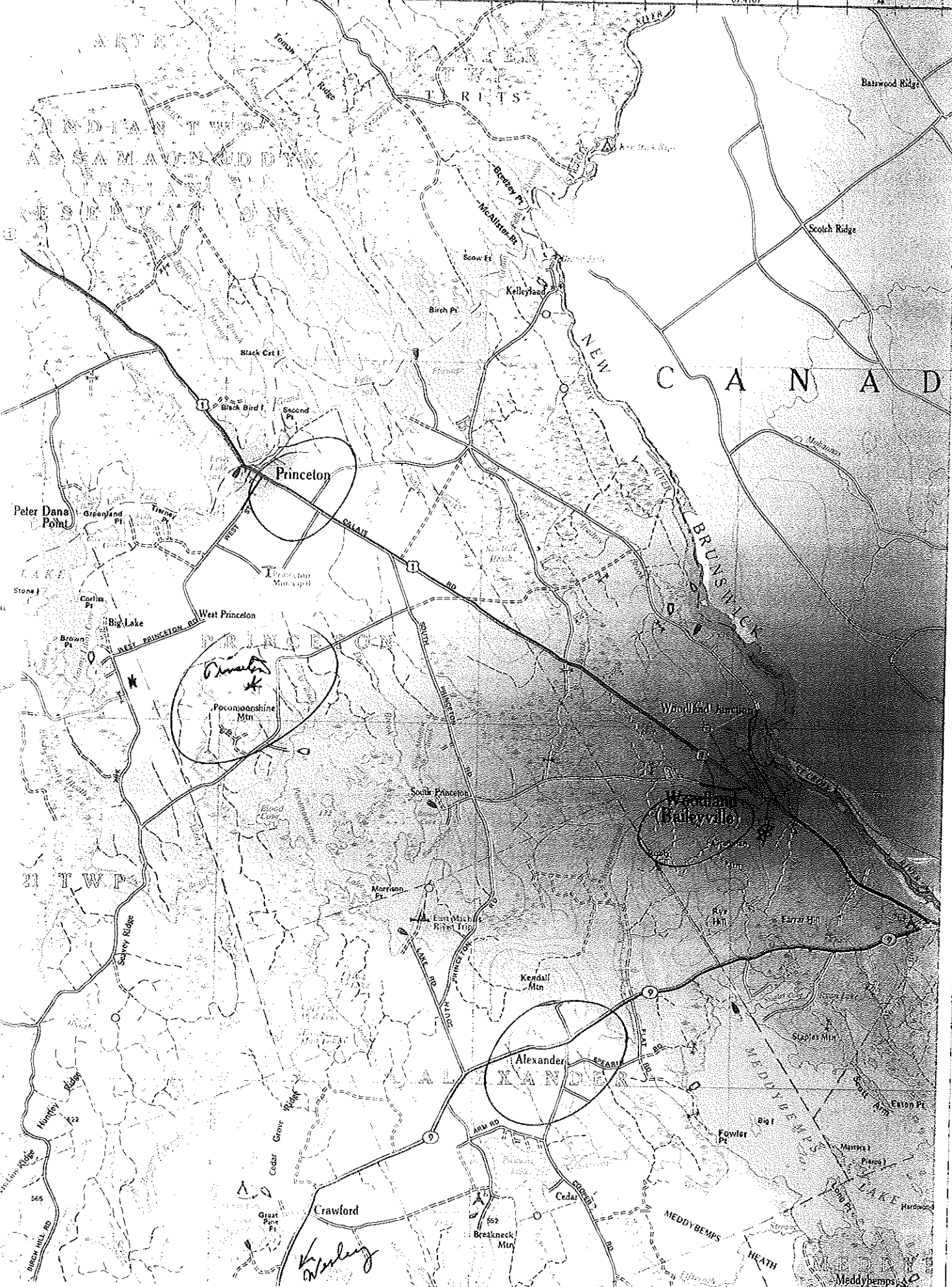
WEST ST

Proposed US Cellular Cell Tower in Princeton, Maine

US Cellular is proposing to build a cell tower off of West Street in Princeton Maine. This cell tower is designed to satisfy the following objectives:

1. Meet the coverage requirements agreed upon in the contract between the Federal Communication Commission (FCC) and US Cellular as part of the FCC's Auction 901.~
2. Provide new or improved cellular telephone and high-speed data services to the Town Areas of Princeton, Alexander, Crawford, Grand Lake Stream, and the Passamaquoddy Indian Township.
3. Provide improved cellular telephone and high-speed data coverage on US Route in area.
4. Provide improved cellular telephone and high-speed data coverage on Maine Route 9 in area.
5. Provide new or improved cellular telephone and high-speed data coverage on Big Lake Road, West Street, Yates Point Road, Stud Mill Road, Pocomoonshine Mountain Road, and South Princeton Road in Princeton.
6. Provide improved coverage at the Princeton Municipal Airport.
7. Provide improved coverage on Big Lake and Long Lake.
8. Provide improved coverage at the Indian Township School and the University of Maine Forestry Camp.
9. Provide a seamless network connection with the existing Topsfield, Baileyville, and Wesley cell towers.

The radio frequency propagation plots on the following pages provide a visual representation of the cellular telephone service improvements expected to be realized by adding the proposed Princeton cell tower to US Cellular's existing cellular network.



INDIAN TWP
AS SA MA ON ED D Y

NEW CANADA

PRINCETON

Woodville
(Baileyville)

ALEXANDER

Crawford

11 TWP

MEDDYBEMPS

W. W. W.

Existing US Cellular Coverage
February 2014

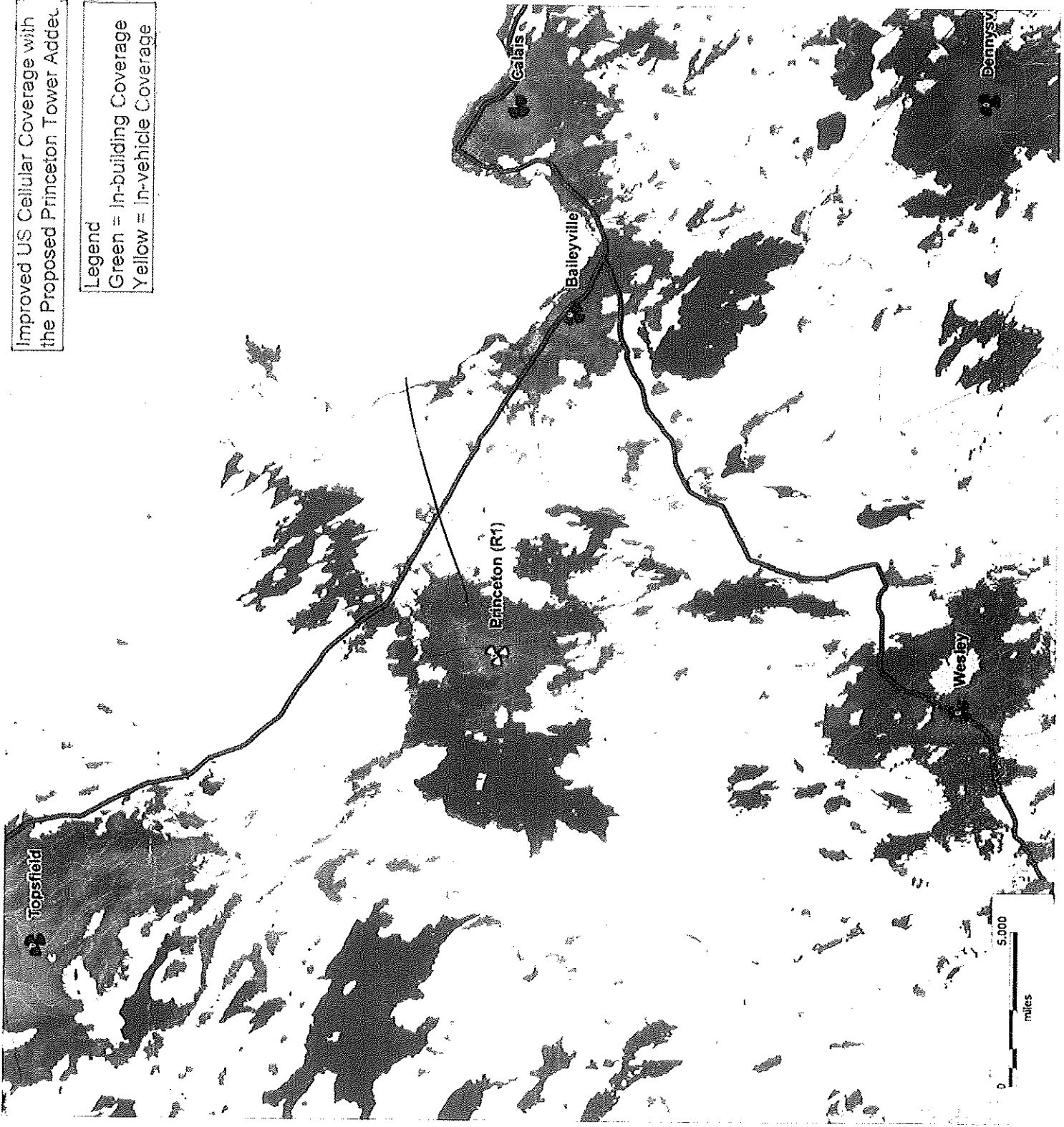
- Legend
Green = In-building Coverage
Yellow = In-vehicle Coverage



Improved US Cellular Coverage with
the Proposed Princeton Tower Adden.

Legend

- Green = In-building Coverage
- Yellow = In-vehicle Coverage



Justification for 250 ft vs. 190 ft Cell Tower in Princeton, Maine

To justify the need for a 250 foot tower versus a 190 foot tower in ^{Big Lake} Princeton, US Cellular will show the difference in predicted received signal power from the proposed 250 foot tower compared to a 190 foot tower.

The attached exhibit shows the percentage level of received power reduction caused by reducing the tower height to 190 feet.

The color legend for the exhibit is as follows:

- Yellow = greater than 25% reduction in received power
- Orange = greater than 50% reduction in received power
- Red = greater than 75% reduction in received power

A reduction in received signal power can result in dropped or missed voice calls. With regard to broadband wireless data, a reduction in received power will result in slower data speeds.

The exhibit also identifies several key geographical locations that will be affected by the reduction in tower height. Some of the key areas are as follows:

1. Parts of downtown Princeton, especially sections of Maine Street, Mill Street, West Street, and Lakeside Place will see a 50% reduction in received signal power.
2. Just over the bridge from Princeton into Indian Township, there is over 75% reduction in signal power.
3. The Indian Township School will see a 25% to 50% reduction in signal power.

Plot shows difference in received signal power from a 250ft vs 190ft tower



Legend
Yellow > 25% reduction
Orange > 50% reduction
Red > 75% reduction



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Antenna Structure Registration

[FCC](#) > [WTB](#) > [ASR](#) > [Online Systems](#) > [ASR Search](#)

[FCC Site Map](#)

Registration Search

ADVANCED SEARCH **HELP**

Search for a Registration

By Registration Number

all matches exact matches only

Narrow your search

State of Structure:

Owner ZIP Code:

The ASR Registration Search enables you to search for a wide range of licenses in the Antenna Structure Registration system. The "Search for a Registration" enables you to search on basic elements of a registration, including registration number, FAA study number, FRN, and licensee name. The "Search by Location" enables you to look up a registration based on the location and height of a structure. You can also use the advanced search to perform more sophisticated searches based on numerous criteria.

Search by Tower Location

Coordinate Search

Latitude ° ' "

Longitude ° ' "

Radius

Based on NAD83 (convert from NAD27)

Location of Structure

City

State

County(s)

ZIP Code

all matches exact matches only

Narrow Your Search

Overall Height Above Ground

Any height

Exact

Range to

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[FCC Site Map](#)

ASR Registration Search

Registration Search Results

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[New Search](#) [Refine Search](#) [Printable Page](#) [Query](#)
[Download](#) [Map Result\(s\)](#)

Displayed Results

Matches 1-1 (of 1)
1

= Pending Application(s)

Specified Search

Latitude='45-10-29.2 N', Longitude='67-36-35.3 W', Radius=9.7 Kilometers
 Overall Height Above Ground (AGL) from 45.7 to 106.7

Display:

Registration Number	Status	File Number	Owner Name	Latitude/Longitude	Structure City/State	Overall Height Above Ground (AGL)
1 1291173	Granted	A0893343	United States Cellular Corporation	45-10-29.2N 067-36-35.3W	Princeton, ME	78.0

Matches 1-1 (of 1)
1

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ASR Online Systems

[TOWAIR](#) - [CORES](#) - [ASR Online Filing](#) - [Application Search](#) - [Registration Search](#)

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Registration Search

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[Help](#) | [Tech Support](#)

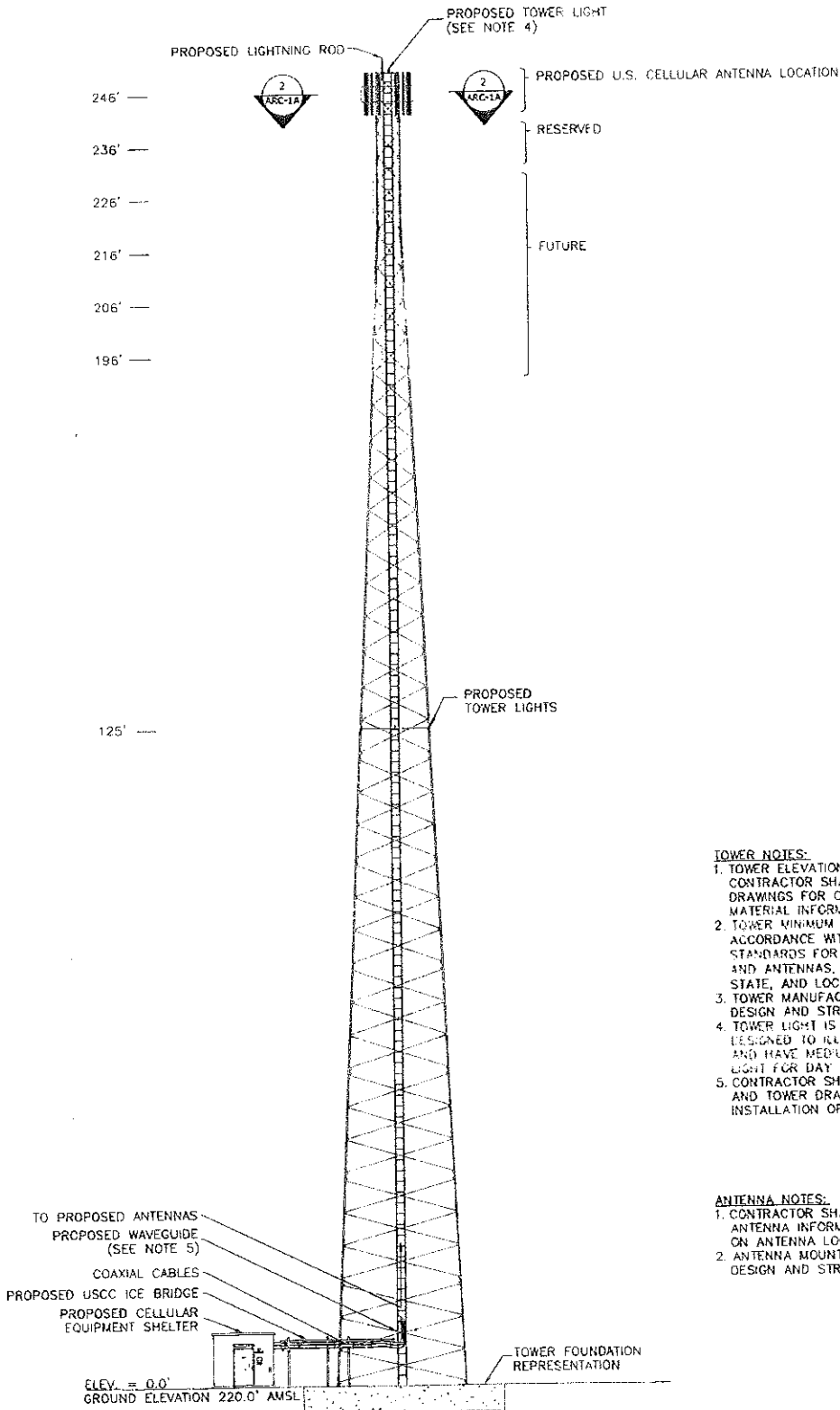
Federal Communications Commission
 445 12th Street SW
 Washington, DC 20554

Phone: 1-877-480-3201
 TTY: 1-717-338-2824
[Submit Help Request](#)

Tower Design Selection

Self-Supported Lattice Tower Design Selected (See attached Figure)

- Tower Design is in compliance with national tower design requirements and meets ANSI/TIA/EIA 222, Rev. G requirements.
- Self-Supported Lattice Tower design preferred over guy tower design by Fish and Wildlife for improved in flight migratory bird protection.
- Self-Supported Lattice Tower design is constructed from ductile structural steel members which on catastrophic loading beyond design conditions, i.e., tornadoes, hurricanes, etc., would experience a ductile (bending) mode of failure and would thus tend to fold over on itself with little or no impact on areas beyond the developed site.
- FCC and Local and State Government Advisory Committee Guidance categorize a cellular facility with a 250' Lattice Tower as a "categorically excluded designed facility". A categorically excluded facility indicates that because of the antenna power levels as used for cellular service and because of the proposed height of the antennas, operation of the facility will not result in rf exposure concerns and no future rf exposure measures are needed.
- A Third Party study, conducted for a cell tower carrier, on potential devaluation of properties in the area from the introduction of a cell tower facility in the area shows that property values do not experience devaluation.



TOWER NOTES:

1. TOWER ELEVATION PLAN SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL REFER TO TOWER MANUFACTURER DRAWINGS FOR COMPLETE INSTALLATION AND BILL OF MATERIAL INFORMATION.
2. TOWER MINIMUM DESIGN SPECIFICATIONS SHALL BE IN ACCORDANCE WITH ANSI/ISA/EIA 222-G "STRUCTURAL STANDARDS FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS, REVISION G" AND GOVERNING FEDERAL, STATE, AND LOCAL CODE REQUIREMENTS.
3. TOWER MANUFACTURER SHALL BE RESPONSIBLE FOR DESIGN AND STRUCTURAL COMPONENTS OF TOWER.
4. TOWER LIGHT IS A DUAL LIGHTING SYSTEM DESIGNED TO ILLUMINATE RED AT NIGHT TIME AND HAVE MEDIUM INTENSITY FLASHING WHITE LIGHT FOR DAY TIME AND TWILIGHT.
5. CONTRACTOR SHALL REFER TO THE TOWER MANUFACTURER AND TOWER DRAWINGS FOR CONFIGURATIONS AND INSTALLATION OF CABLES.

ANTENNA NOTES:

1. CONTRACTOR SHALL CONTACT USCC RF ENGINEER FOR ALL ANTENNA INFORMATION, ANTENNA AND AZIMUTHS SHOWN ON ANTENNA LOCATION SECTION FOR REFERENCE ONLY.
2. ANTENNA MOUNT MANUFACTURER SHALL BE RESPONSIBLE FOR DESIGN AND STRUCTURAL COMPONENTS OF ANTENNA MOUNTS.

1
CTV-2A

TOWER AND EQUIPMENT SHELTER ELEVATION

SCALE: NTS

Tower Lighting

- FAA Required Lighting for Tower
- Tower Lighting Specifications



FAA Marking/Lighting Requirement for Towers

Site Name	424342 - Princeton		
Site #	424342		
FAA Number	2014-ANE-49-OE		
Overall Structure Tip Height	256		
Structure Height	250	See appendixes for appurtenance application	
Marking Required	No		
Lighting Required	Yes		
FAA Chapters	4	8	12

Overall Requirement	White/ Medium Intensity With Red		
----------------------------	----------------------------------	--	--

Marking	Greater Than	But Not More Than	Band Width
orange			Not Required

Lighting	FAA's Standards			Day	Night
	Type	AGL Location	Style		
<TOP> White/ High Intensity					
3/4 White/ High Intensity					
2/3 White/ High Intensity					
1/2 White/ High Intensity					
1/3 White/ High Intensity					
1/4 White/ High Intensity					
<TOP> White/ Medium Intensity	L-865	250	E1	Yes	
3/4 White/ Medium Intensity					
2/3 White/ Medium Intensity					
1/2 White/ Medium Intensity					
1/3 White/ Medium Intensity					
1/4 White/ Medium Intensity					
<TOP> Red	L-864	250	E1		Yes
7/8 Red					
5/8 Red					
3/4 Red					
2/3 Red					
5/8 Red					
1/2 Red	L-810	125	E1		Yes
3/8 Red					
1/3 Red					
1/4 Red					
1/6 Red					
1/8 Red					

Lighting Type

- L-810
 - L-856
 - L-857
 - L-864
 - L-865
 - L-866
 - L-864/L-865
 - L-885
- FPM = Flashes Per Minute

Description

- Steady-burning Red Obstruction Light
- High Intensity Flashing White Obstruction Light (40FPM)
- High Intensity Flashing White Obstruction Light (60FPM)
- Flashing Red Obstruction Light (20-40FPM)
- Medium Intensity Flashing White Obstruction Light (40-FPM)
- Medium Intensity Flashing White Obstruction Light (60-FPM)
- Dual: Flashing Red Obstruction Light (20-40FPM) and Medium Red Catenary 60 FPM

SEE APPENDIXES FOR QUANTITY OF LIGHT TYPES PER LEVEL

TWR Lighting, Inc.

FAA STANDARD LIGHTING GUIDES

TYPE "D", "E", "ICAO" AND TYPE STROBE "A"

"D" SERIES

351'-500'
[108m-152m]



L-865 (Medium Intensity Strobe)

200'-350'
[61m-107m]



D-1

D-2/3

"E" SERIES

351'-500'
[108m-152m]



L-864/L-865 (Dual Red/White
Medium Intensity Strobe)



L-810 (Obstruction Light)



200'-350'
[61m-107m]



E-1

E-2/3

"ICAO" SERIES
See FAA "A" series

"A" SERIES STROBE

351'-500'
[108m-152m]



L-864 (Medium Intensity Strobe)



L-810 (Obstruction Light)



200'-350'
[61m-107m]



A-1

A-2/3

FOR MORE INFORMATION CONTACT US AT:

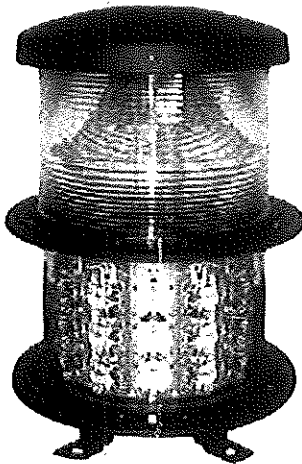
4350 Windfern Rd. #100 Houston, Tx. 77041-8943
Ph: 713-973-6905 Fax: 713-973-9352
Web Address: <http://www.twrlighting.com>
Email: sales@twrlighting.com
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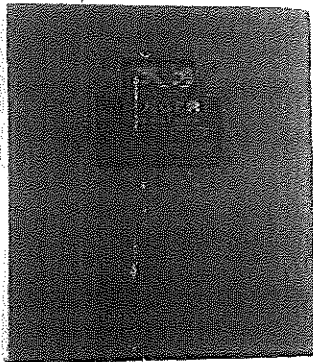
L864/L865 Dual Red(LED)/White(Strobe) (STLDBEACON2)
Medium Intensity Obstruction Light



Beacon Specifications

INTENSITY:	MEDIUM
HORIZONTAL COVERAGE:	360°
VERTICAL BEAM:	3° MIN.
FRESNEL OPTICS:	320 mm LENS
LAMP DESCRIPTION:	1-XENON FLASHTUBE & AN ARRAY OF LEDs
EFFECTIVE CANDELAS (DAY):	20,000 ± 25%
EFFECTIVE CANDELAS (NIGHT):	2,000 ± 25%
NUMBER OF FLASHES/MINUTE:	40 DAY / 30 NIGHT ± 2 FPM
FLASHHEAD DIMENSIONS:	28" X 17-1/2" (71.12 x 44.45 cm)
FLASHHEAD MATERIAL:	ACRYLIC
FLASHHEAD BASE MATERIAL:	ALUMINUM / BLUE POWDER COAT
POWER REQUIREMENTS:	100V - 240V AC 50/60 Hz
WATTAGE:	DAYMODE - 95 WATTS WHITE NIGHTMODE (BACKUP) - 35 WATTS
RED NIGHTMODE(LED)	40 WATT
WEIGHT:	80 lbs. (36.32 kg)
OPERATING TEMPERATURE:	-55°C TO +55°C
WIND LOAD:	CAAA = 2.1 ft ²
MOUNTING HOLES:	4 - 11/16" SPACED 90° ON 13.25"(33.65 cm)BOLT CIRCLE

Controller Specifications



LIGHTNING PROTECTION:	MOV, ISOLATION TRANSFORMER & SURGE PROTECTOR
ALARMS:	FORM "C," POWER FAIL, PHOTOCELL, RED BEACON FAIL, STROBE FAIL & SIDELIGHT FAIL.
SERVICE-RELATED FEATURES:	MODULAR CONSTRUCTION, TRAINING CLASSES & 24/7 TECHNICAL SUPPORT.
TRAINING	CLASSES, MONITORING & 24/7 TECHNICAL SUPPORT (Optional alarm monitoring system complete with real time on-screen diagnostic capability.)
OTHER EQUIPMENT NEEDED:	CABLE LIGHTING KIT
WARRANTY PERIOD FLASHTUBE:	2 YEARS LIMITED
WARRANTY PERIOD LED:	5 YEARS LIMITED
WARRANTY PERIOD CONTROLLER:	2 YEARS LIMITED
MEETS FAA:	AC-150/5345-43E
APPLICATIONS:	TOWERS, CHIMNEYS, COOLING TOWERS, BRIDGES, BUILDINGS, WIND TURBINES & CUSTOM STRUCTURES
ENCLOSURE:	FIBERGLASS NEMA 4X
DIMENSIONS (HxWxD):	18" x 16" x 9.25" (45.72 x 40.64 x 23.50 cm)
MOUNTING DIMENSIONS (HxWxD):	18.75" x 12" (47.62 x 40.64 cm)
WEIGHT:	45 lbs. (20.45 kg)
CABLE (Diameter / Weight Per 100 ft.):	5/8" ± 10% / 24 lbs. (15.875 mm / 10.9 kg)
E2/3DBSL	
DIMENSIONS (HxWxD):	29.52" x 19.68" x 11.81" (74.52 x 49.98 x 29.99 cm)
MOUNTING DIMENSIONS (HxWxD):	31.10" x 18.11" (78.99 x 45.99 cm)
WEIGHT:	115 lbs. (52.16 kg)

TWR Lighting, Inc.
4300 Windfern Rd.
Suite #100
Houston, Tx. 77041

P: 713-973-6905
F: 713-973-9352
www.twrlighting.com

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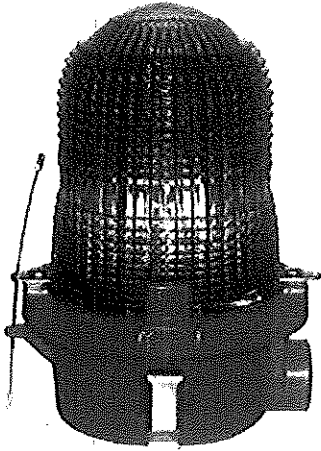


TWR Lighting, Inc. MARK®

Enlightened Technology®

OL1 LED FAA Type L-810 (OL1VLED)

LED Lighting Systems



Specifications

Intensity	Low
Horizontal Coverage	360°
Lamp Description	LED
Vertical Beam	10° Minimum
Effective Candelas	32.5 Minimum
Flashhead Height	7.5" (19.05 cm)
Flashhead Diameter	4.875" (12.38 cm)
Flashhead Lens Material	Fresnel Acrylic
Flashhead Base Material	Valox™ (RED) *Also available in cast aluminum painted red
Lamp Current	0.06 Amps
Hub Sizes	0.75" NPT, (1" Or 1.25" with enlarger)
Weight	120/240V 1.61lbs. (0.730 kg) 12/24/48VDC 1.25lb (0.567 kg)
Operating Temperature	-55°C to +55°C
Wind Load	CAAA 0.2 ft²

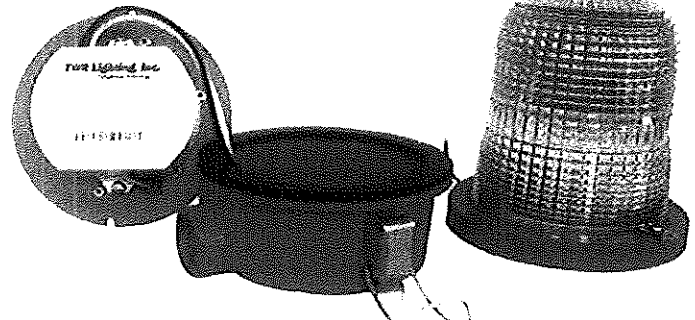
* LIMITED 5 YEARS WARRANTY

* 96% REDUCED ENERGY CONSUMPTION VERSES INCANDESCENT.

AVIATION CLEAR ACRYLIC FRESNEL

NO SPECIAL TOOLS ARE REQUIRED FOR INSTALLATION OR MAINTENANCE.

NEOPRENE GASKET FOR WEATHER PROOFING.



VALOX™ BASE AND STAINLESS STEEL LATCHES AND HARDWARE FOR CORROSION PROTECTION.

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4300 Windfern Rd.
Suite #100
Houston, Tx. 77041

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ALSO AVAILABLE IN BOTTOM HUB

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