

EXHIBIT E

RF Report
Proposed Wireless Facility



CT1843
92 Greens Farms Road
Westport, CT 06880

August 23, 2021

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1. Overview

This RF Report has been prepared on behalf of AT&T Mobility in support of its application to the Connecticut Siting Council for the installation and operation of a wireless facility located at 92 Greens Farms Road in Westport, CT. The proposed facility consists of ground-based equipment cabinets, and antennas mounted to a proposed 120' monopole.

This report concludes that the proposed site will provide additional capacity and coverage improvement to Westport in order to improve deficient service areas along Interstate-95, Greens Farms Road, Hillspoint Road, and the surrounding roads, businesses, and neighborhoods in the proximity of the proposed site.

Included in this report is: a brief summary of the site's objectives, maps showing AT&T's neighboring sites, and predicted Radio Frequency coverage maps of the subject site and the surrounding sites in AT&T's network.

2. Introduction

To maintain a reliable and robust communications system for the individuals, businesses, public safety workers and others who use its network, AT&T deploys a network of cell sites (also called wireless communications facilities) throughout the areas in which it is licensed to provide service. These cell sites consist of antennas mounted on structures, such as buildings and towers, supported by radio and power equipment. The receivers and transmitters at each of these sites process signals within a limited geographic area known as a "cell."

Mobile subscriber handsets and wireless devices operate by transmitting and receiving low power radio frequency signals to and from these cell sites. Handset signals that reach the cell site are transferred through land lines (or other means of backhaul transport) and routed to their destinations by sophisticated electronic equipment. In order for AT&T's network to function effectively, there must be adequate overlapping coverage between the "serving cell" and adjoining cells. This not only allows a user to access the network initially, but also allows for the transfer or "hand-off" of calls and data transmissions from one cell to another, and prevents unintended disconnections or "dropped calls."

AT&T's antennas also must be located high enough above ground level to allow transmission (a.k.a. propagation) of the radio frequency signals above trees, buildings, and other natural or man-made structures that may obstruct or diminish the signals. Areas without adequate radio frequency coverage have substandard service, characterized by dropped and blocked calls, slow data connections, or no wireless service at all, and are commonly referred to as coverage gaps.

The size of the area potentially served by each cell site depends on several factors including the number of antennas used, the height at which the antennas are deployed, the topography of the surrounding land, vegetative cover, and natural or man-made obstructions in the area. The actual service area at any given time also depends on the number of customers who are on the network in range of that cell site. As customers move throughout the service area, the transmission from the phone or other device is automatically transferred to the AT&T facility with the best reception, without interruption in service, provided that there is overlapping coverage between the cells.

Each cell site must be primarily designed to strike a balance between the overall geographic coverage area it will serve, and the site's capacity to support the usage within the coverage footprint. In rural areas, cell sites are generally

designed to have broader coverage footprints because the potential traffic is sparser and distributed over a larger area. In more densely populated suburban and urban environments, the capacity to handle calls and data transmissions is of increasing concern, and cell sites must limit their coverage footprint to an area where the offered network traffic can be supported by the radio equipment and resources. Due to the aggressive historical and projected growth of mobile usage, particularly for mobile data (42% in 2016-2017, 35% CAGR 2016-2021 in North America)¹, instances arise where the usage demand can no longer be supported by the site(s) serving an area, and new facilities must be integrated to provide capacity relief to the overloaded sites.

We have concluded that by installing the proposed wireless communication facility on the proposed monopole tower at 92 Greens Farms Road at an antenna centerline height of 120' AGL (above ground level), AT&T will be able to provide additional capacity and coverage improvement to residents, businesses, and traffic corridors within Westport that are currently located within deficient service areas of AT&T's network.

3. AT&T Mobility Coverage and Capacity Objectives

In order to expand and enhance their wireless services throughout New England, AT&T must fill in existing coverage gaps and address capacity, interference, and high-speed broadband issues. As part of this effort, AT&T has determined that significant gaps in service exist in and around sections of the Town of Westport, CT, as described further below.

AT&T currently operates wireless facilities similar to the proposed facility within Westport and the surrounding cities/towns. Due in large part to the distances between the existing sites, the intervening topography, and volume of user traffic in the area, these existing facilities do not provide sufficient coverage to portions of Westport. Specifically, AT&T determined that much of south-west Westport is without reliable service in the following areas and town roads², including but not limited to:

- Interstate-95;
- Greens Farms Road;
- Hillspoint Road
- The surrounding roads, businesses, and neighborhoods in the proximity of the proposed site and the above-mentioned roads.

¹ "Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2016-2021", February 7, 2017, Cisco Systems, Inc. <http://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/mobile-white-paper-c11-520862.html>

² Traffic counts are sourced from the Massachusetts Department of Transportation, Transportation Data Management System.

4. Pertinent Site Data

Table 1 below details the site-specific information for the on-air AT&T macro-sites used to perform the coverage analysis and generate the coverage plots provided herein.

Site Name	Address	City/State	Location		Antenna Height (ft AGL)	Structure Type	Status
			Latitude	Longitude			
CT2103	26 Maple	Westport/CT	41.1234	-73.3131	131	Monopole	On-Air
CT2119	651 Pequot Avenue	Southport/CT	41.1334	-73.2876	85	Steeple	On-Air
CT2132	344 Strawberry Hill Avenue	Norwalk/CT	41.1283	-73.3902	347	Lattice	On-Air
CT2147	800 Post Road East	Westport/CT	41.1375	-73.3344	133	Lattice	On-Air
CT2153	9 Crescent Park Road	Westport/CT	41.1402	-73.3472	120	Monopole	On-Air
CT5080	22 Riverside Avenue	Westport/CT	41.1397	-73.3644	59/69	Rooftop	On-Air
CT5278	21 Charles Street	Westport/CT	41.1197	-73.3719	102	Rooftop	On-Air
CT1843	92 Greens Farms Road	Westport/CT	41.1236	-73.3450	120	Monopole	Proposed
CT2094	2 Allen Raymond Lane	Westport/CT	41.1629	-73.3731	100	Monopole	On-Air
CT2107	180 Bayberry	Westport/CT	41.1717	-73.3285	100	Monopole	On-Air
CT2128	3965 Congress Street	Fairfield/CT	41.1884	-73.2991	128	Monopole	On-Air
CT2305	986 Old Academy Road	Fairfield/CT	41.1769	-73.2923	90	Steeple	On-Air
CT5055	499 Main Avenue	Norwalk/CT	41.1514	73.4259	128	Rooftop	On-Air
CT2115	25 Van Zant Street	Norwalk/CT	41.1013	-73.4079	60	Rooftop	On-Air
CT5014	50 Washington Street	Norwalk/CT	41.0995	-73.4197	177	Rooftop	On-Air
CT5015	24 Belden Avenue	Norwalk/CT	41.1180	-73.4159	121/141	Rooftop	On-Air
CT5243	200 Connecticut Avenue	Norwalk/CT	41.1044	-73.4325	120	Rooftop	On-Air
CT2151	173 ½ West Rocks Road	Norwalk/CT	41.1439	-73.4183	111	Watertank	On-Air
CT2137	2150 Post Road	Fairfield/CT	41.1408	-73.2697	59	Rooftop	On-Air
CT5022	100 Reef Road	Fairfield/CT	41.1395	-73.2572	130	Monopole	On-Air
CT2120	55 Walls Road	Fairfield/CT	41.1478	-73.2515	70	Rooftop	On-Air

Table 1: AT&T Mobility Site Information Used in Coverage Analysis³

³ Some sites listed in this table are outside the plot view but are included for completeness of information.

5. Coverage Analysis and Propagation Plots

The radio frequency coverage plots provided in this report were produced using deciBel Planner™, a Windows-based RF propagation computer modeling program and network planning tool. The software takes into account the geographical features of an area, land cover, antenna models, antenna heights, RF transmitting power and receiver thresholds to predict coverage and other related RF parameters used in site design and wireless network expansion.

The plots included as attachments show coverage based on the minimum required signal strength needed to support reliable 4G LTE service in this area. All other areas (depicted in white) fall within coverage areas characterized by poor voice and data quality, slow data speeds, latency⁴, and the substantial likelihood of unreliable service.

While AT&T holds licenses in the 700 MHz, 850 MHz (Cellular), 1900 MHz (PCS), 2100 MHz (AWS), and 2300 MHz (WCS) bands, this report focuses on the 700 MHz layers, which are representative of the 4G LTE service most readily available to AT&T subscribers in Westport, and are the spectrum layers that are essential to AT&T's ability to address the coverage needs for their 4G LTE service offerings. It is relevant to note that the 700 MHz coverage layer, which serves as the “base” layer for the LTE service, has a substantially larger coverage footprint due to the propagation characteristics of the frequency band. The 1900 MHz, 2100 MHz, and 2300 MHz overlay layers will have incrementally smaller footprints and are used by AT&T to manage capacity.

The following paragraphs discuss each of the AT&T maps attached hereto.

Attachment 1 titled “CT1843 - Existing 700 MHz LTE Coverage” shows the coverage provided to Westport from the “On-Air” sites listed in Table 1. The green and yellow shaded areas represent the minimum desired level of coverage for much of this area on the 700 MHz network layers, respectively. As such, the deficient areas of 700 MHz coverage are defined by the unshaded or “white” areas. As shown in this plot, the surrounding AT&T macro-sites are unable to provide adequate coverage to Westport.

Attachment 2 titled “CT1843 - 700 MHz LTE Coverage with Proposed Site” shows the composite coverage with the proposed "CT1843" facility. As shown by the additional areas of coverage in comparison with the Attachment 1, the proposed facility will provide coverage improvement at the 700 MHz layer in the areas of Interstate-95, Greens Farms Road, Hillspoint Road.

- ~ 1900 additional residents⁵ within the surrounding area at the 700 MHz frequency;
- The surrounding roads, neighborhoods, and business areas within the proximity of the proposed site and the above-mentioned roadways.

Attachment 3 titled “CT1843 – Area Terrain Map” details the topographical features around the proposed “CT1843” site. These terrain features play a key role in dictating both the unique coverage areas served from a given location, and the coverage gaps within the network. This map is included to provide a visual representation of the terrain variations that must be considered when determining the appropriate location and design of a proposed wireless facility. The purple, blue, and green shades correspond to lower elevations, whereas the yellow, red and grey shades indicate higher elevations.

⁴ In data transfer it is the delay or lapse in the time between initiating a request from the wireless device and receiving the response.

⁵ Population counts are based upon 2010 U.S. Census residential data. Please note that this does not include any visitors in the area.

Attachment 4 titled “CT1843 - Neighbor Sites & Radial Distances” provides a “zoomed-out” view of the subject area showing the locations of AT&T’s existing sites within Westport relative to the proposed facility, as well as other AT&T sites in neighboring cities and towns that may be contributing to the aggregate coverage in Westport.

6. Summary

In undertaking its build-out of 4G LTE service in Fairfield County, AT&T has determined that an additional facility is needed to provide reliable service and additional capacity throughout Westport, CT. AT&T determined that installing the proposed wireless communications facility at 92 Greens Farms Road in Westport at an antenna centerline height of 120 feet (AGL) will provide additional capacity and coverage needed in the targeted coverage areas including key roadways such as Interstate-95, Greens Farms Road, Hillspoint Road, and the surrounding roads, businesses and neighborhoods in the proximity of the proposed site. In addition to providing service to the targeted areas of Westport, AT&T is providing enhanced services for Public Safety and meeting E911 compliance for the State of Connecticut. Without the installation of the proposed site, AT&T will be unable to improve and expand their existing 4G LTE wireless communication services in this area of Westport; therefore, AT&T respectfully requests that the Connecticut Siting Council act favorably upon the proposed facility.

7. Statement of Certification

I certify to the best of my knowledge that the statements in this report are true and accurate.



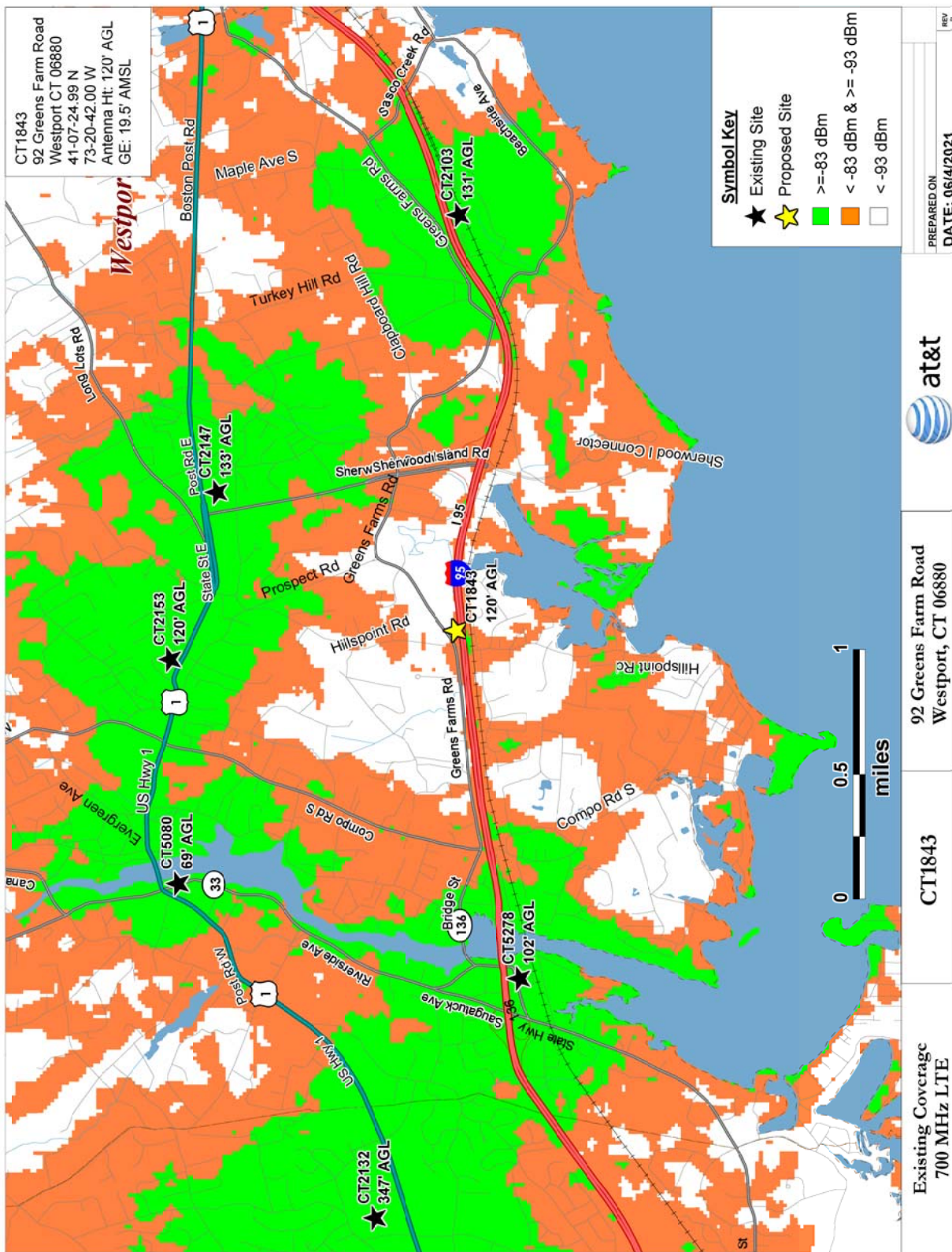
Martin J. Lavin
Senior RF Engineer
C Squared Systems, LLC

August 23, 2021

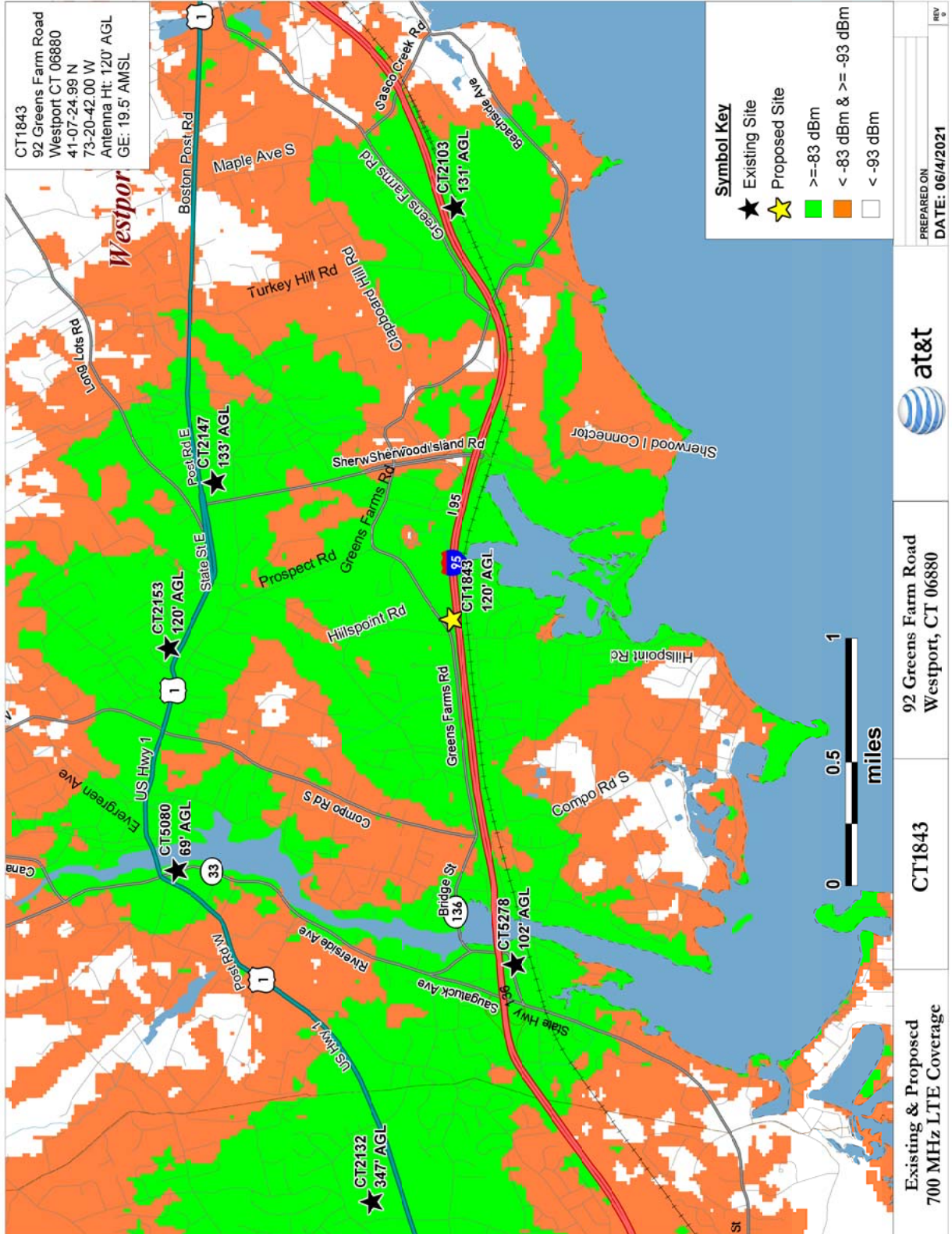
Date

8. Attachments

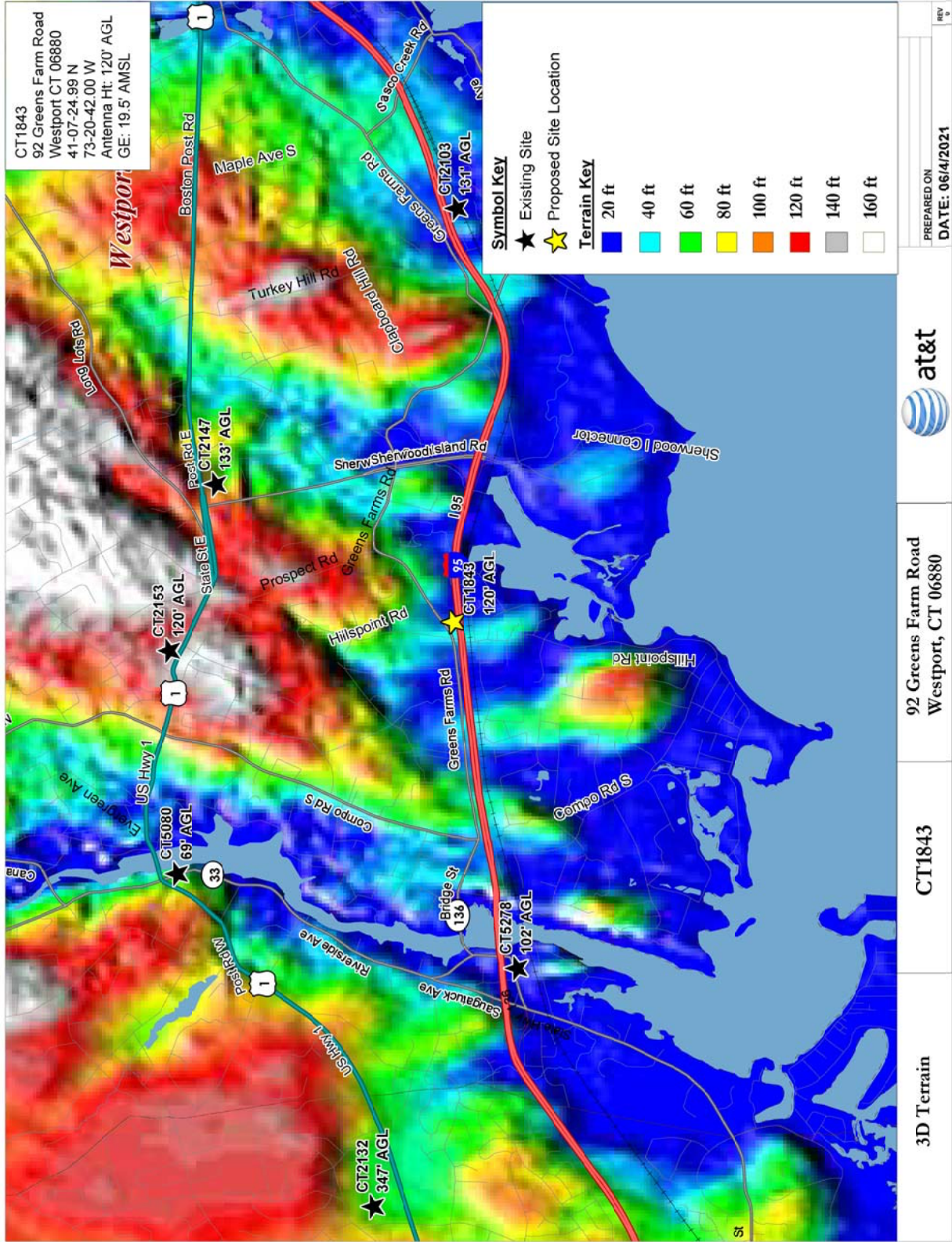
Attachment 1: CT1843 – Existing 700 MHz LTE Coverage



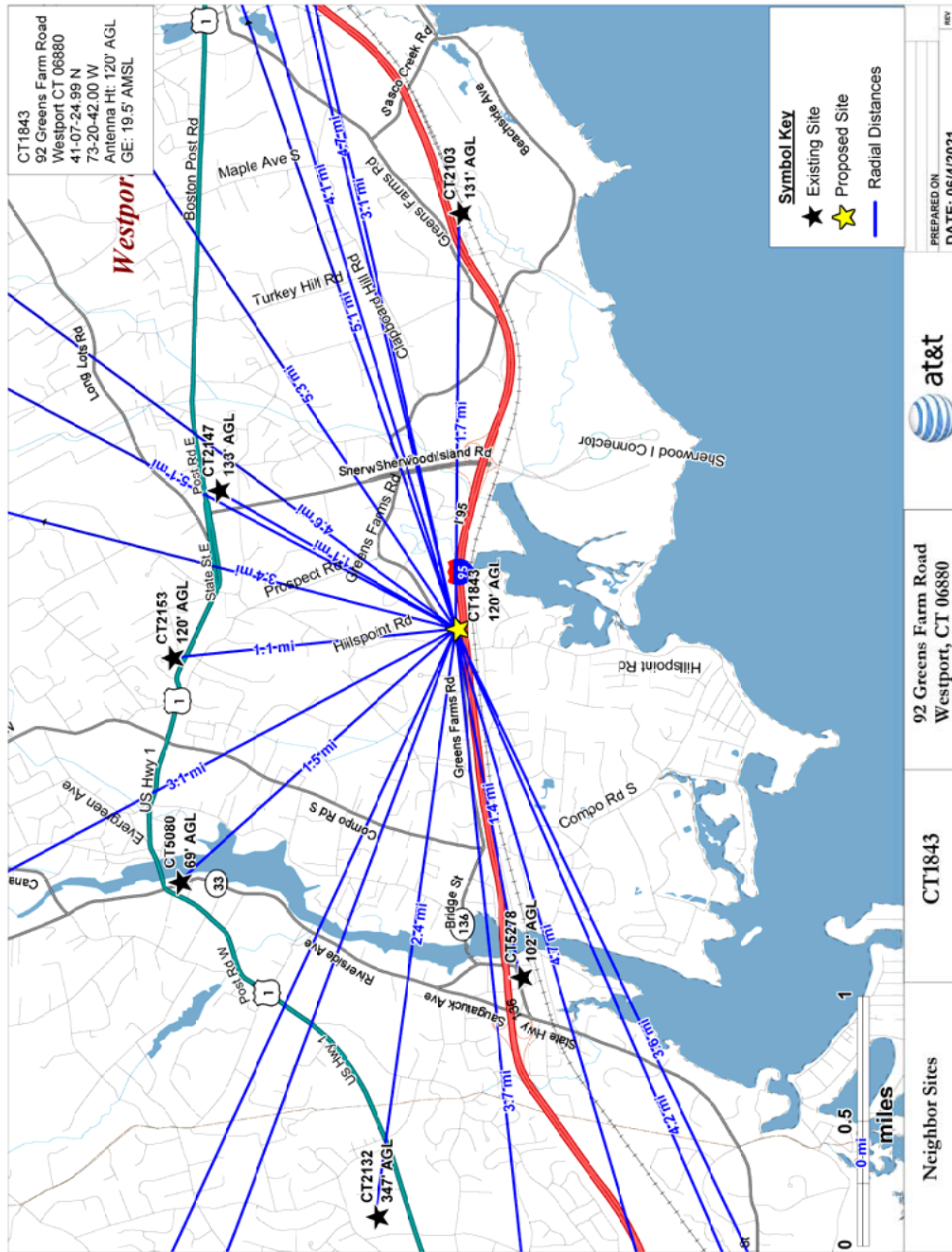
Attachment 2: CT1843 – 700 MHz LTE Coverage with Proposed Site



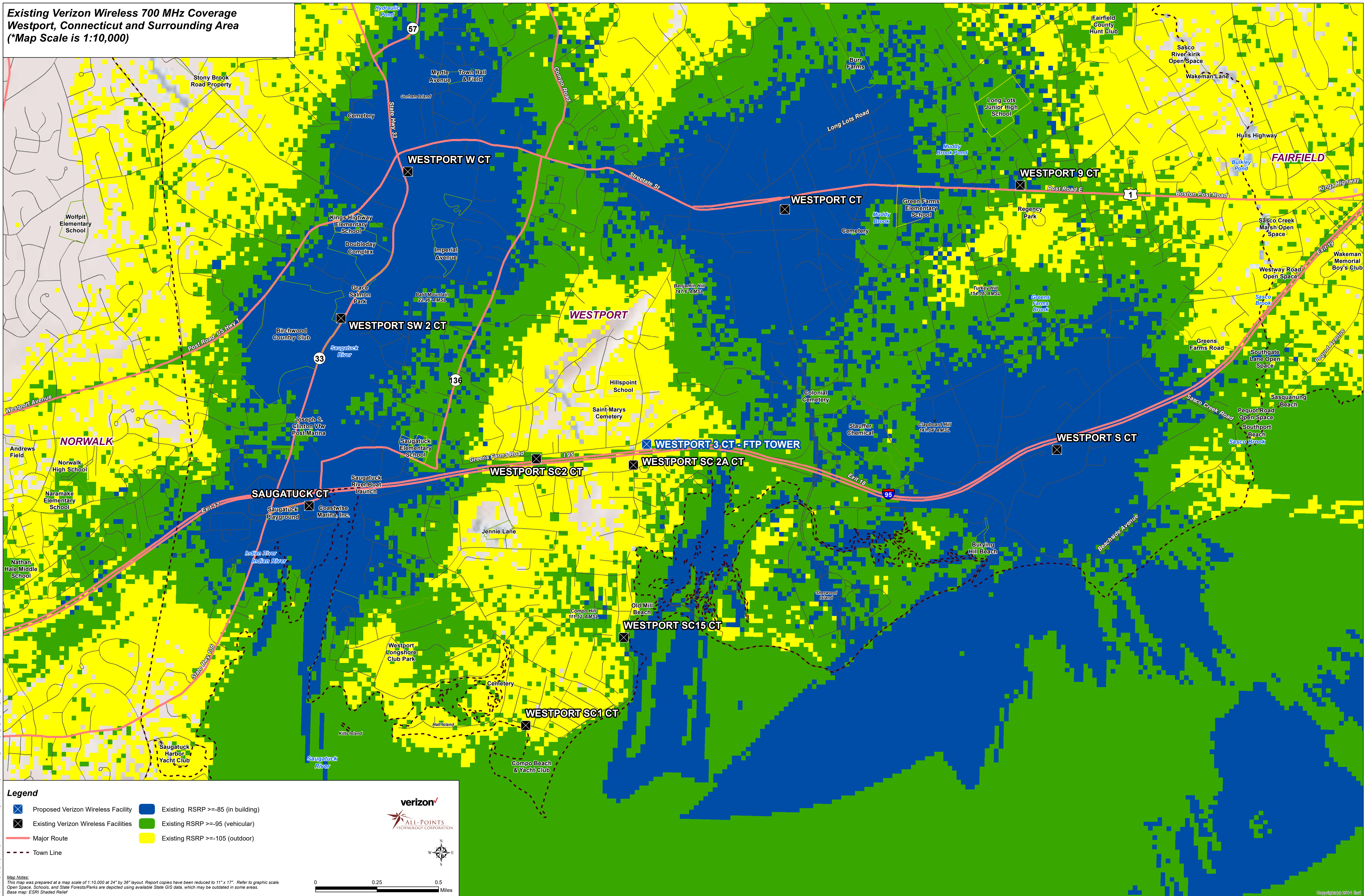
Attachment 3: CT1843 – Area Terrain Map



Attachment 4: CT1843 – Neighbor Sites & Radial Distances



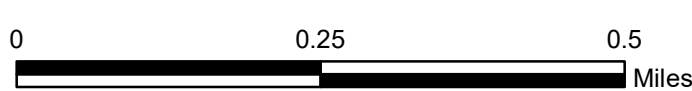
**Existing Verizon Wireless 700 MHz Coverage
Westport, Connecticut and Surrounding Area
(*Map Scale is 1:10,000)**



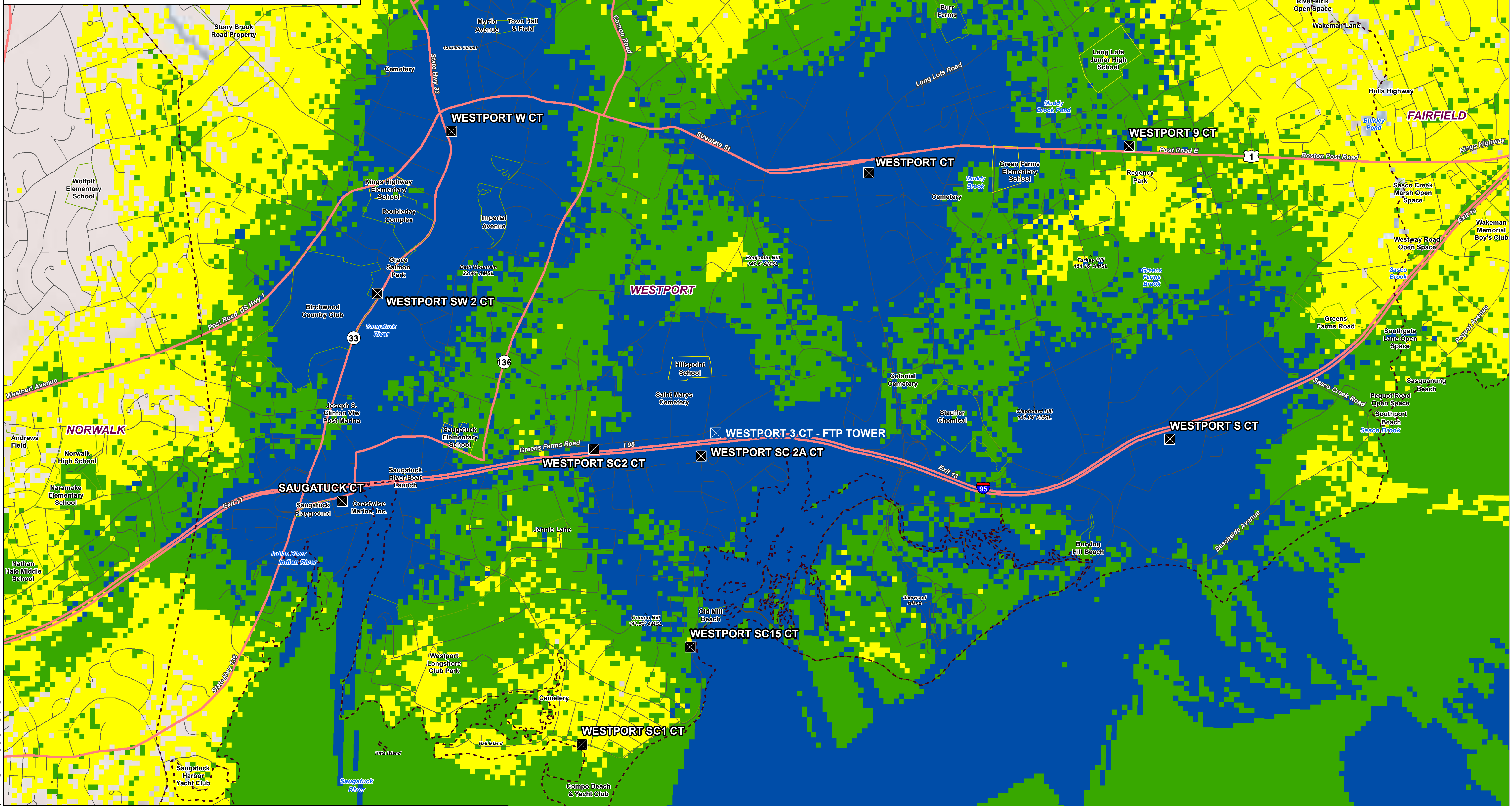
Legend

- ✕ Proposed Verizon Wireless Facility
- ✕ Existing Verizon Wireless Facilities
- Major Route
- - - Town Line
- Existing RSRP >=-85 (in building)
- Existing RSRP >=-95 (vehicular)
- Existing RSRP >=-105 (outdoor)

Map Notes:
 This map was prepared at a map scale of 1:10,000 at 24" by 36" layout. Report copies have been reduced to 11" x 17". Refer to graphic scale.
 Open Space, Schools and State Forests/Parks are depicted using available State GIS data, which may be outdated in some areas.
 Base map: ESRI Shaded Relief



**Existing and Proposed Verizon Wireless 700 MHz Coverage
Westport, Connecticut and Surrounding Area
(*Map Scale is 1:10,000)**



Legend

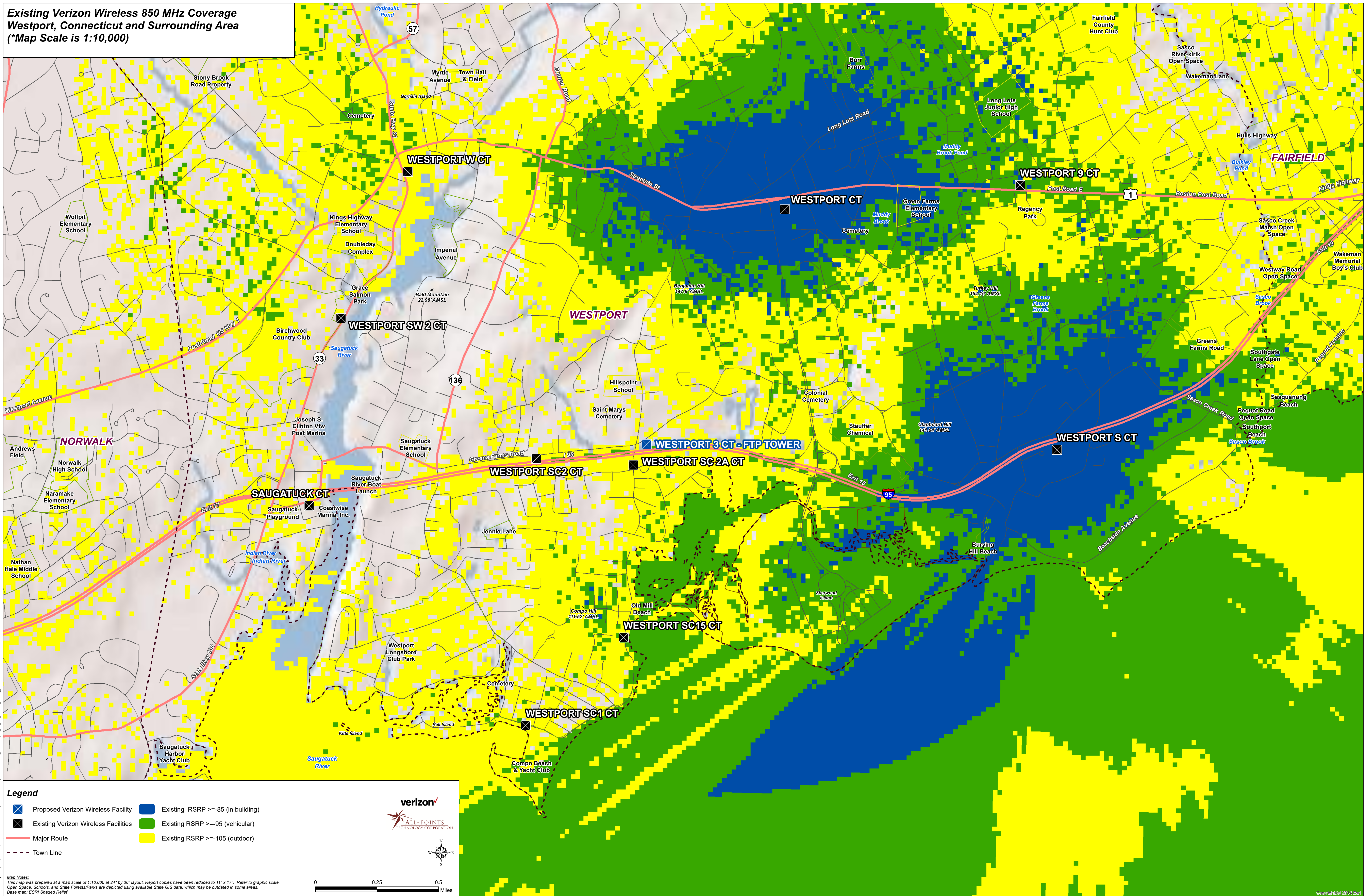
- ✕ Proposed Verizon Wireless Facility
- ✕ Existing Verizon Wireless Facilities
- Major Route
- - - Town Line
- Existing and Proposed RSRP >=-85 (in building)
- Existing and Proposed RSRP >=-95 (vehicular)
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Base map: ESRI Shaded Relief

verizon
ALL-POINTS
TECHNOLOGY CORPORATION

0 0.25 0.5 Miles

**Existing Verizon Wireless 850 MHz Coverage
Westport, Connecticut and Surrounding Area
(*Map Scale is 1:10,000)**



Legend

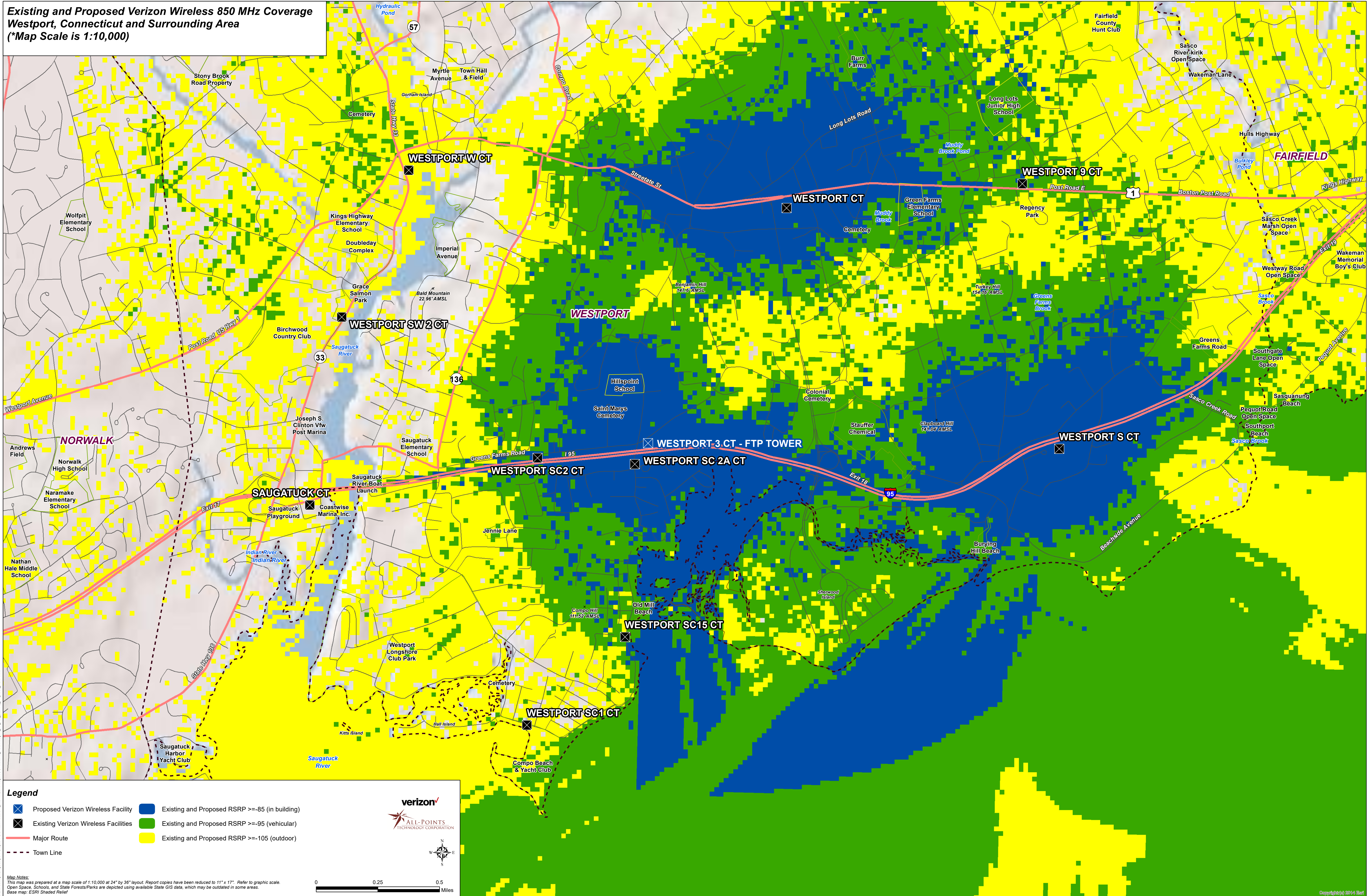
- ✕ Proposed Verizon Wireless Facility
- ✕ Existing Verizon Wireless Facilities
- Major Route
- - - Town Line
- Existing RSRP >= -85 (in building)
- Existing RSRP >= -95 (vehicular)
- Existing RSRP >= -105 (outdoor)

Map Notes:
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 Open Space, Schools, and State Forests/Parks are depicted using available State GIS data, which may be outdated in some areas.
 Base map: ESRI Shaded Relief

verizon
 ALL-POINTS
 TECHNOLOGY CORPORATION

0 0.25 0.5 Miles

**Existing and Proposed Verizon Wireless 850 MHz Coverage
Westport, Connecticut and Surrounding Area
(*Map Scale is 1:10,000)**



Legend

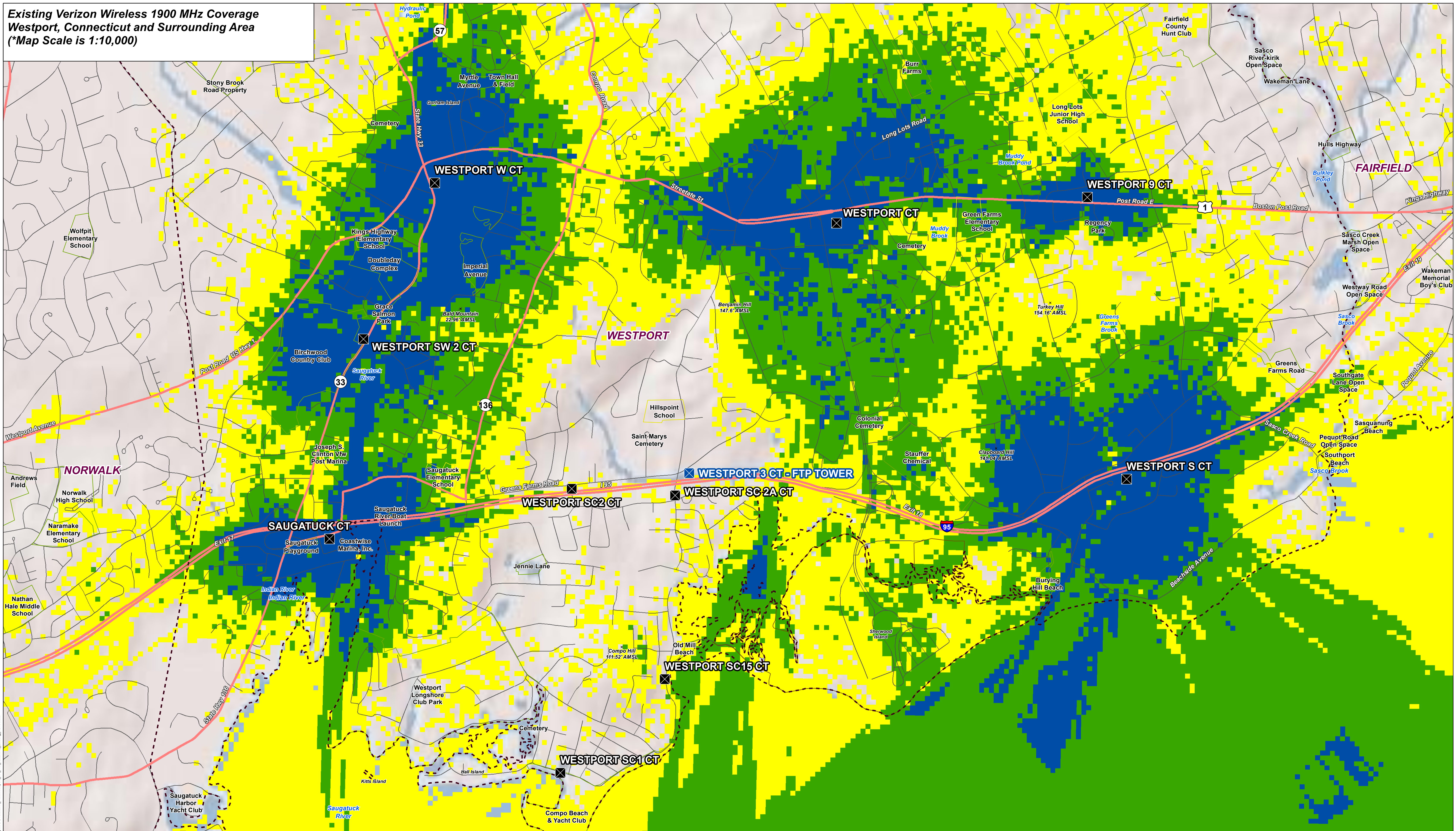
- X Proposed Verizon Wireless Facility
- X Existing Verizon Wireless Facilities
- Major Route
- - - Town Line
- Existing and Proposed RSRP >=-85 (in building)
- Existing and Proposed RSRP >=-95 (vehicular)
- Existing and Proposed RSRP >=-105 (outdoor)

Map Notes:
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 Base map: ESRI Shaded Relief

verizon
 ALL-POINTS
 TECHNOLOGY CORPORATION

0 0.25 0.5 Miles



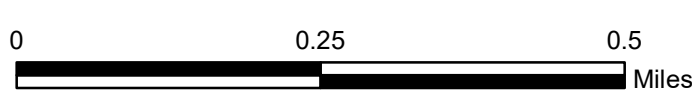
**Existing Verizon Wireless 1900 MHz Coverage
Westport, Connecticut and Surrounding Area
(*Map Scale is 1:10,000)**



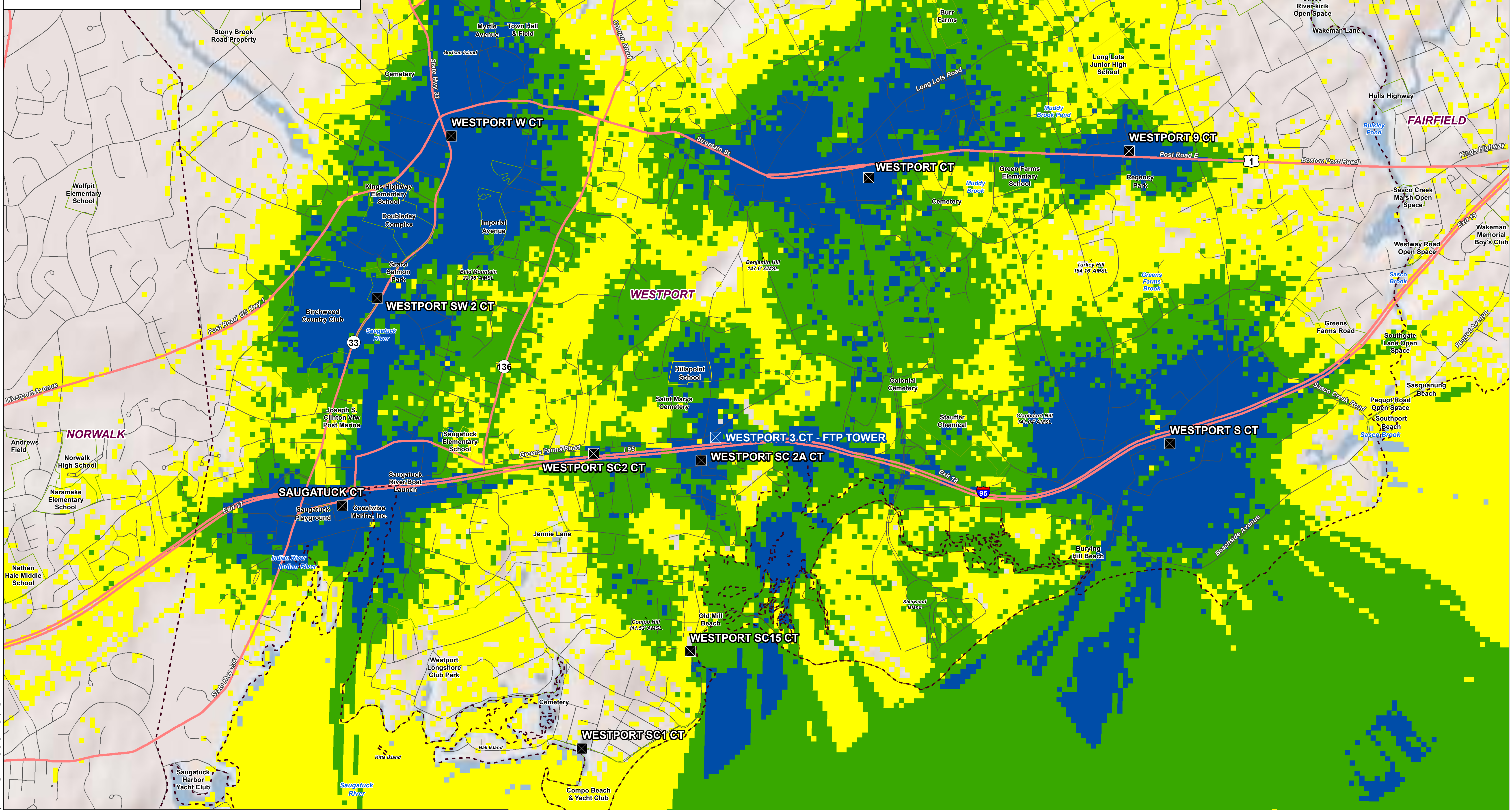
Legend

- ✕ Proposed Verizon Wireless Facility
- ✕ Existing Verizon Wireless Facilities
- Major Route
- - - Town Line
- Existing RSRP >= -85 (in building)
- Existing RSRP >= -95 (vehicular)
- Existing RSRP >= -105 (outdoor)

Map Notes:
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 Open Space, Schools and State Forests/Parks are depicted using available State GIS data, which may be outdated in some areas.
 Base map: ESRI Shaded Relief




 0 0.25 0.5 Miles

**Existing and Proposed Verizon Wireless 1900 MHz Coverage
Westport, Connecticut and Surrounding Area
(*Map Scale is 1:10,000)**



Legend

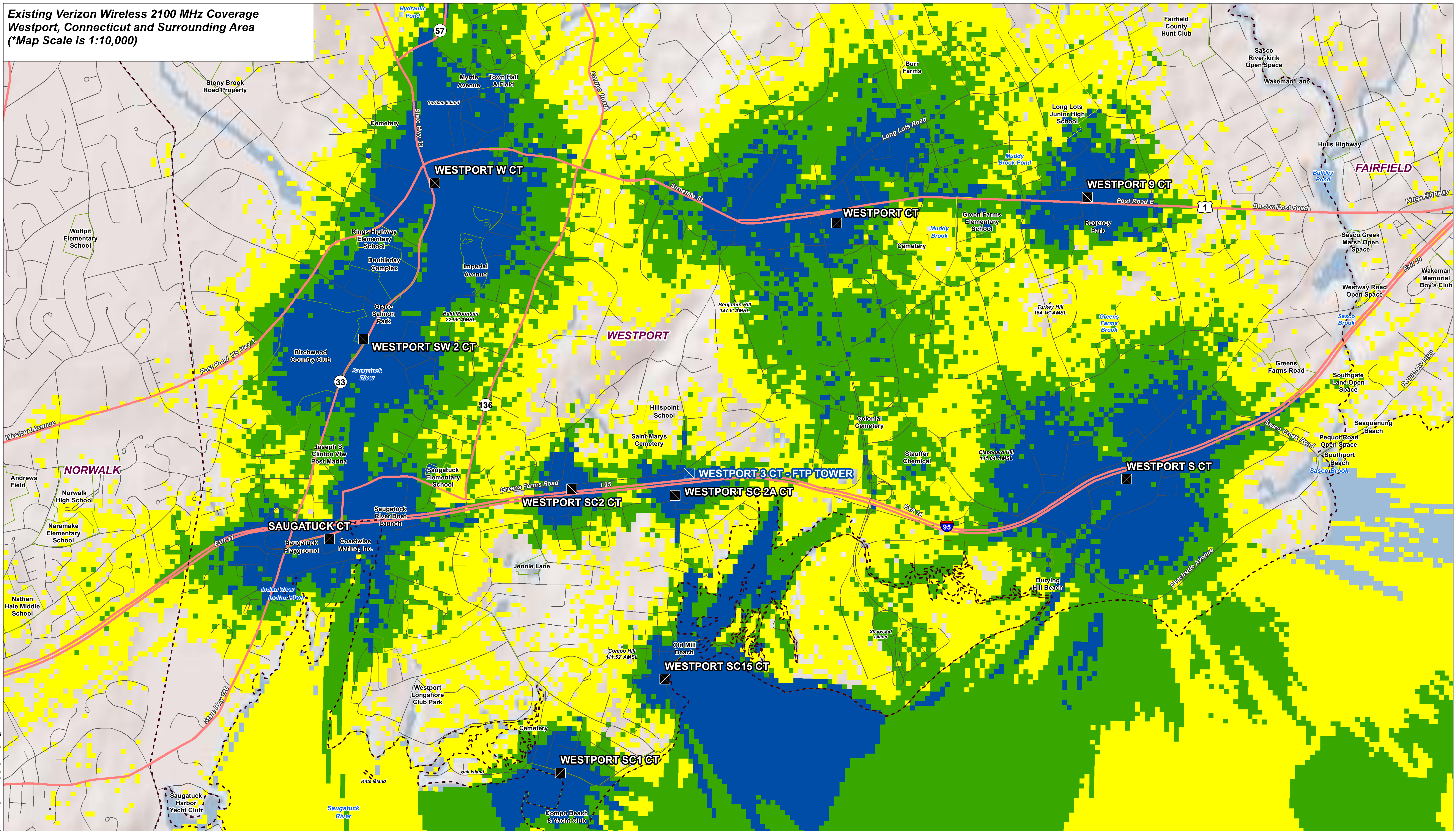
- ✕ Proposed Verizon Wireless Facility
- ✕ Existing Verizon Wireless Facilities
- Major Route
- - - Town Line
- Existing and Proposed RSRP >= -85 (in building)
- Existing and Proposed RSRP >= -95 (vehicular)
- Existing and Proposed RSRP >= -105 (outdoor)

Map Notes:
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 Base map: ESRI Shaded Relief

verizon
 ALL-POINTS
 TECHNOLOGY CORPORATION

0 0.25 0.5 Miles



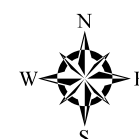
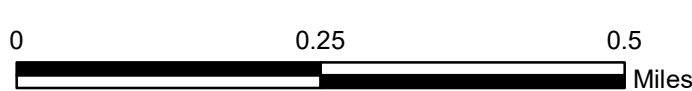
**Existing Verizon Wireless 2100 MHz Coverage
Westport, Connecticut and Surrounding Area
(*Map Scale is 1:10,000)**



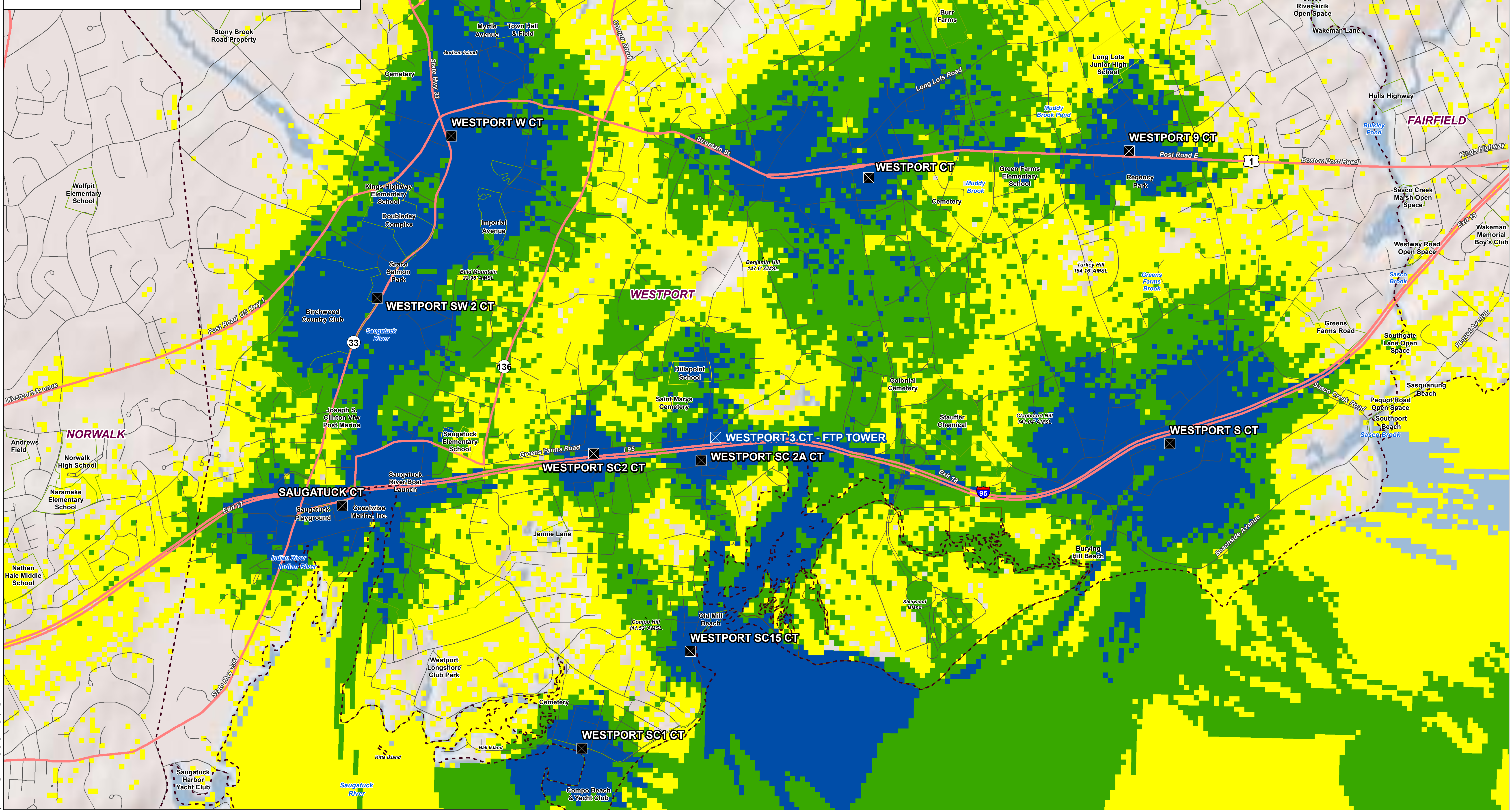
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- X Proposed Verizon Wireless Facility
- X Existing Verizon Wireless Facilities
- Major Route
- - - Town Line
- Existing RSRP >= -85 (in building)
- Existing RSRP >= -95 (vehicular)
- Existing RSRP >= -105 (outdoor)

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 Base map: ESRI Shaded Relief



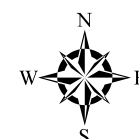
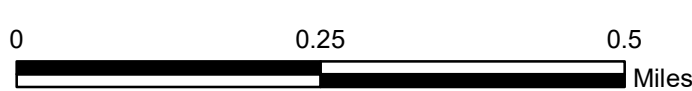
**Existing and Proposed Verizon Wireless 2100 MHz Coverage
Westport, Connecticut and Surrounding Area
(*Map Scale is 1:10,000)**



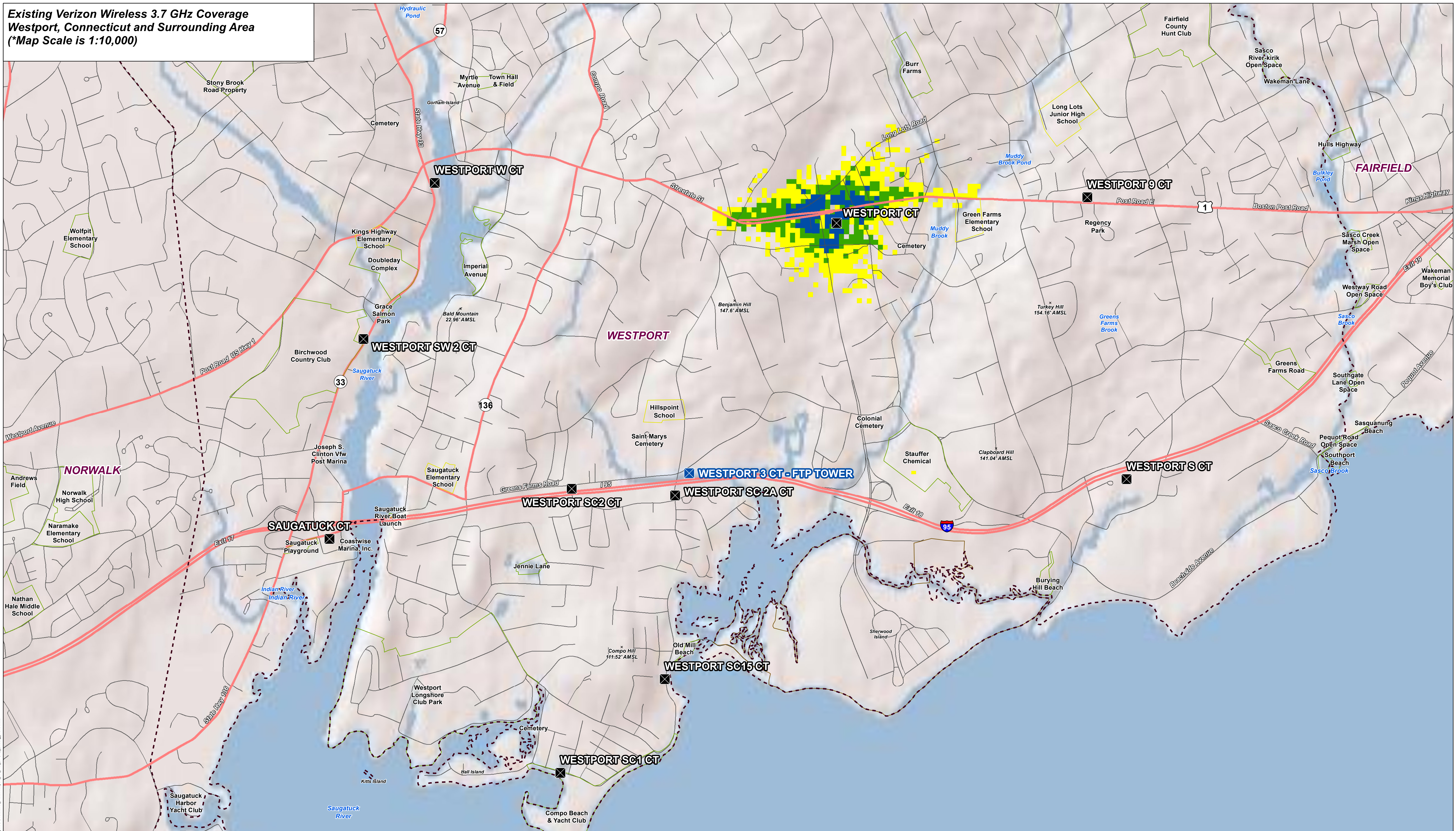
Legend

- ✕ Proposed Verizon Wireless Facility
- ✕ Existing Verizon Wireless Facilities
- Major Route
- - - Town Line
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- Existing and Proposed RSRP >=-95 (vehicular)
- Existing and Proposed RSRP >=-105 (outdoor)

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 Base map: ESRI Shaded Relief

**Existing Verizon Wireless 3.7 GHz Coverage
Westport, Connecticut and Surrounding Area
(*Map Scale is 1:10,000)**



Legend

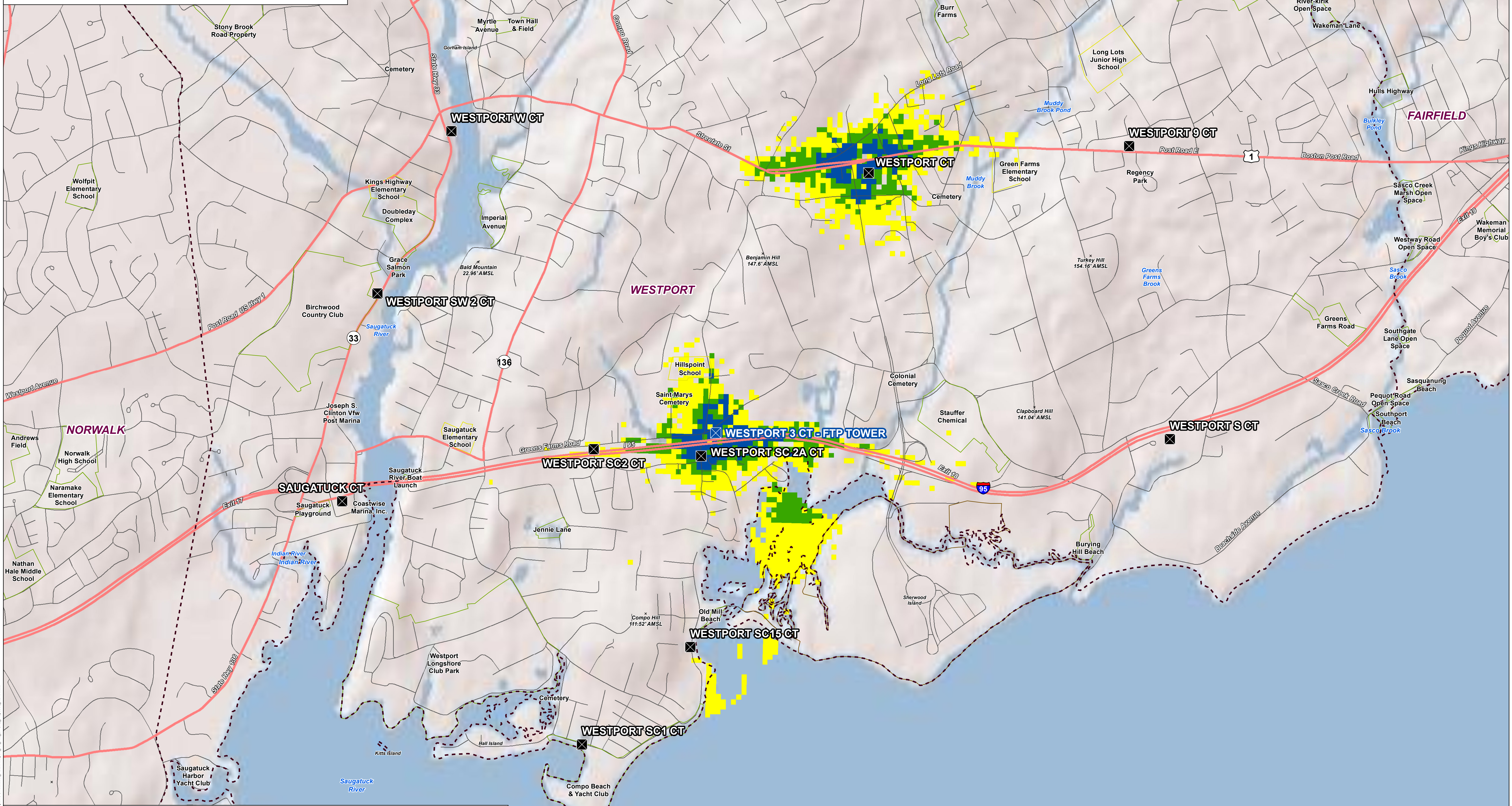
- X Proposed Verizon Wireless Facility
- Existing Verizon Wireless Facilities
- Major Route
- - - Town Line
- Existing RSRP >= -85 (in building)
- Existing RSRP >= -95 (vehicular)
- Existing RSRP >= -105 (outdoor)

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Base map: ESRI Shaded Relief

Verizon
ALL-POINTS
TECHNOLOGY CORPORATION

0 0.25 0.5 Miles

**Existing and Proposed Verizon Wireless 3.7 GHz Coverage
Westport, Connecticut and Surrounding Area
(*Map Scale is 1:10,000)**



Legend

- X Proposed Verizon Wireless Facility
- Existing Verizon Wireless Facilities
- Major Route
- - - Town Line
- Existing and Proposed RSRP >=-85 (in building)
- Existing and Proposed RSRP >=-95 (vehicular)
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Base map: ESRI Shaded Relief

verizon
ALL-POINTS
TECHNOLOGY CORPORATION

0 0.25 0.5 Miles