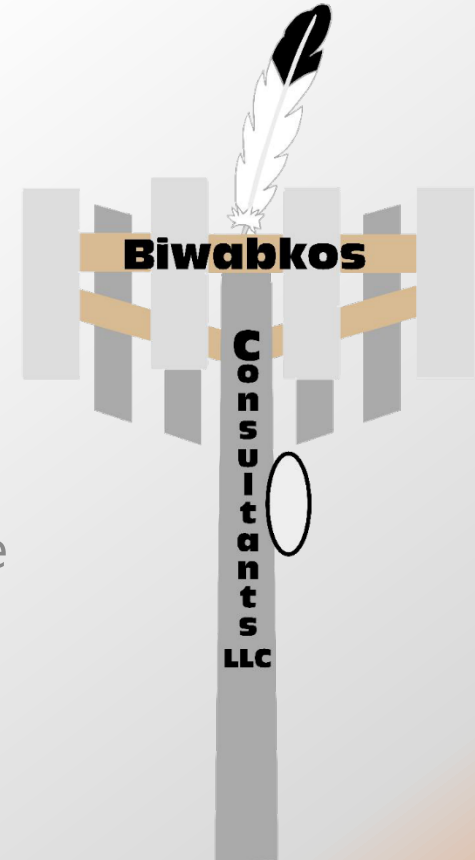


WIRELESS NETWORK CONSULTING

ID-5107 The Sheriff / Verizon THE-SHERIFF Site
Capacity Cell Split

RF DESIGN ANALYSIS



Coverage vs Capacity

- † **Capacity is providing bandwidth or processing capacity to service the customers in the area.**
 - Areas where large numbers of users are in a specific geographic areas
 - Areas where users are demanding higher data rates for services
 - Areas with a large amount of indoor users
- † **Coverage is Providing Service where service does not exist, calls drop, or “no service”.**
 - Areas where sites are farther apart
 - Areas where terrain or buildings block signals
 - Areas where indoor service is low or nonexistent

Objective of new site

† Coverage

- Provide coverage to the residents along the NE side of Ponderay
- Provide coverage to the airport and along N Boyer Road and Great Northern Road

† Capacity

- Offload neighbor sites that are over capacity and providing low throughput per user in the areas to the on the North side of Sandpoint and Ponderay
- Provide capacity for services along N Boyer Road and Great Northern Road

† Why is this site important?

- 96% of Americans own a Cellular Phone
- 57% of American Homes rely exclusively on cellular phones
- 84% or more of 9-1-1 emergency calls are made from wireless devices

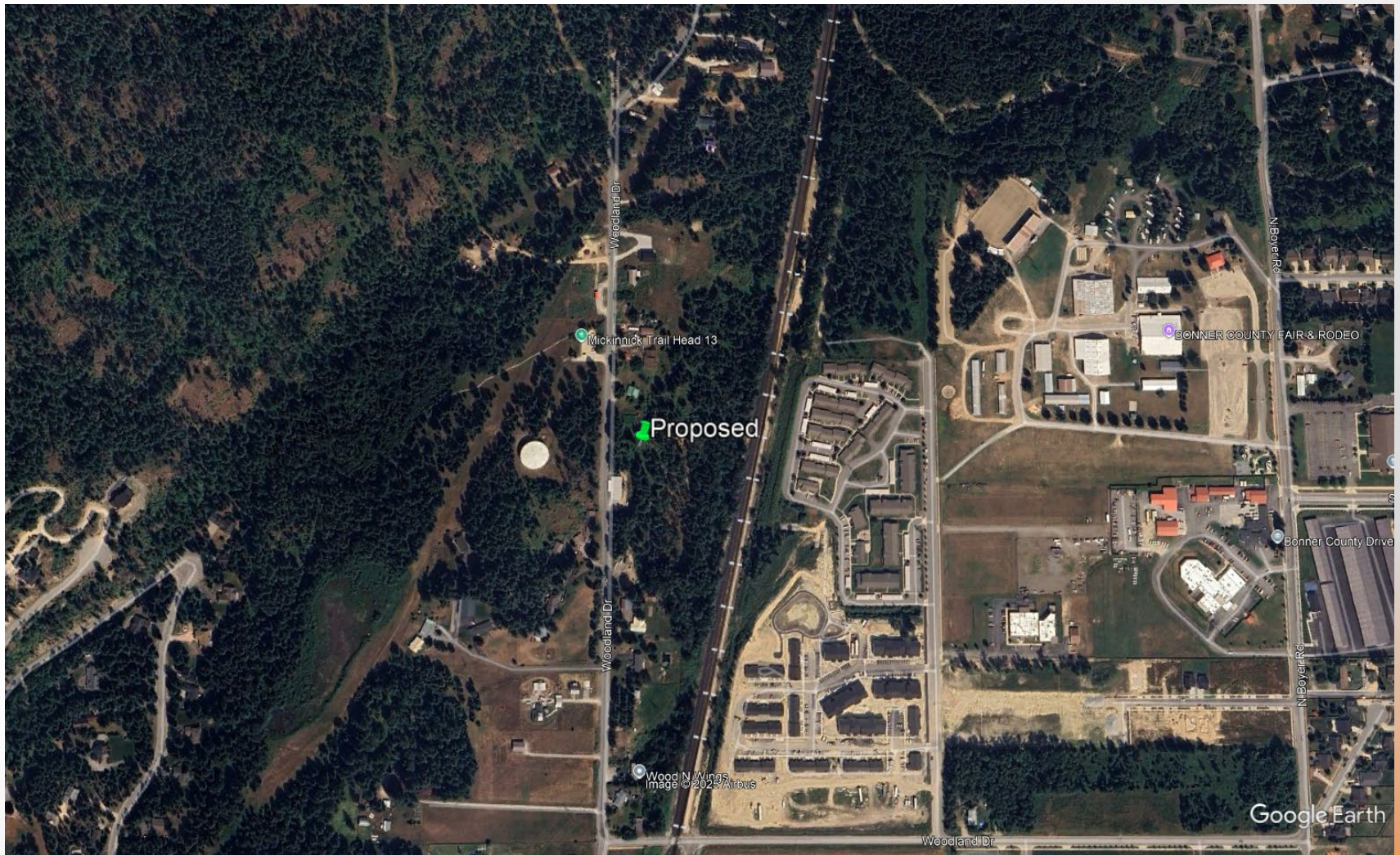
Proposed Site

- † 74' Monopole Tower
 - With 4' lightning rod
 - 365 Woodland Drive, Sandpoint, ID 83864
 - Latitude: 48.309661 N (NAD83)
 - Longitude: -116.567397 W (NAD83)
 - Ground Elevation: 2200.5' (NAVD88)
 - Anchor tenant is Verizon
 - Antenna Centerline at 69' AGL

Why here?

- † The sites covering Sandpoint are over capacity.
- † There is a lack of throughput per user in the area.
- † Lack of services in the surrounding commercial/suburban area
- † Lack of coverage around the airport
- † Lack of coverage on the North side of town
- † Significant amount of increased network use in the suburban and rural areas of Idaho

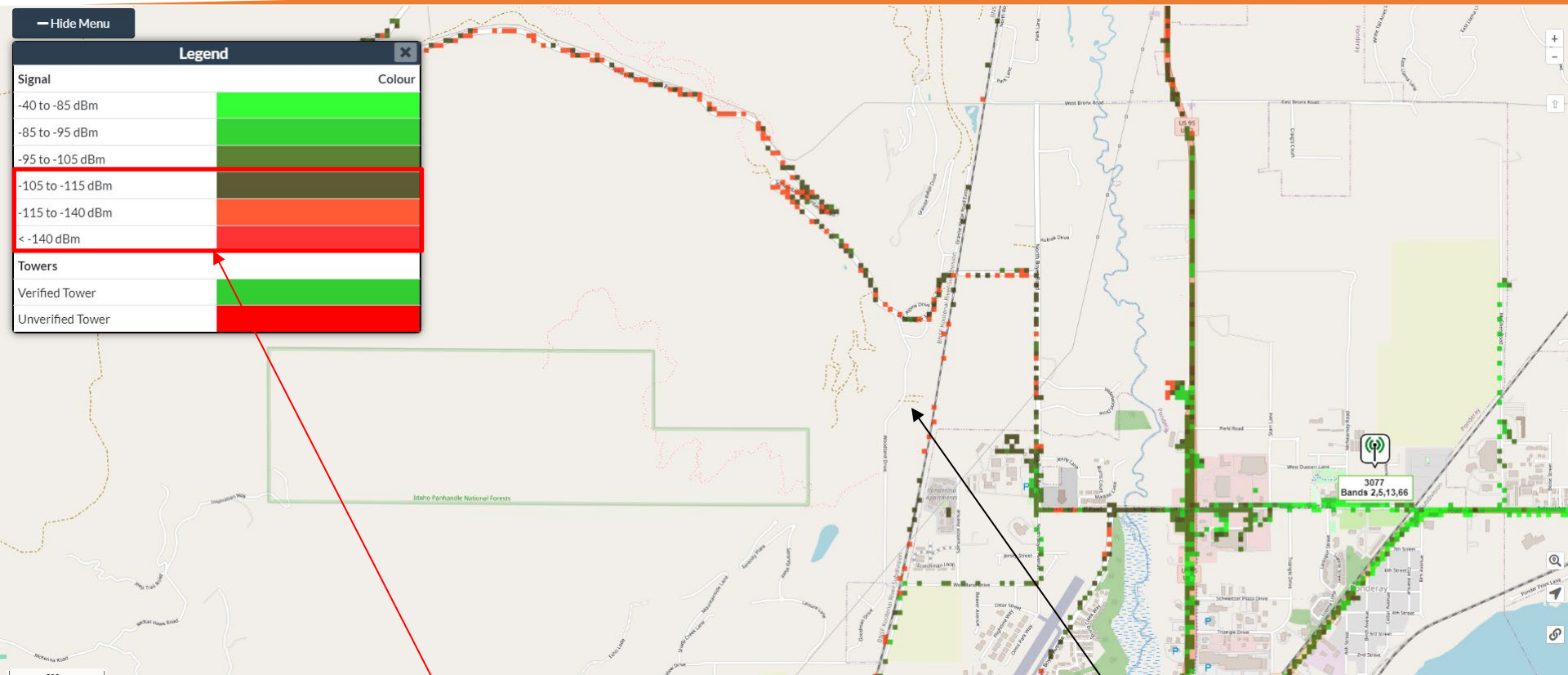
Zoom – proposed site



Distance from proposed to Verizon neighbor sites



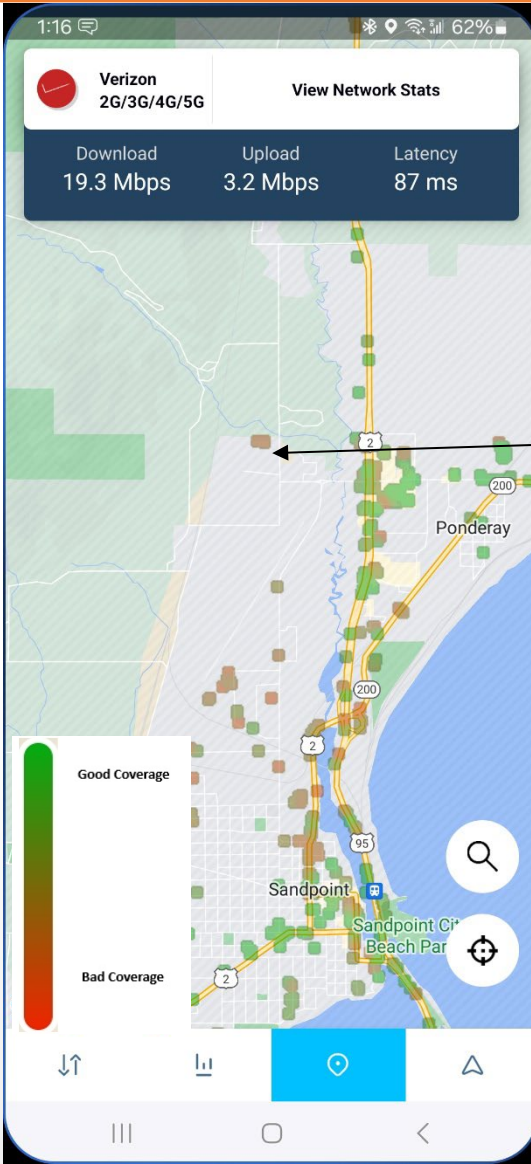
Verizon CellMapper



Poor Service Quality

Proposed Site

Open Signal Verizon Quality Map



This map shows mobiles reporting quality of their connections to the network. This is crowdsource data from Verizon users made available by the OpenSignal App:

<https://www.opensignal.com/apps#section-os-app>

Green data points show good coverage and red data points show bad coverage and lack of data points show no coverage

Notice the lack of data points around the proposed area this is indicative of bad coverage. The area is a mix of bad coverage with some good coverage to the East



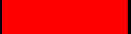
Proposed Site

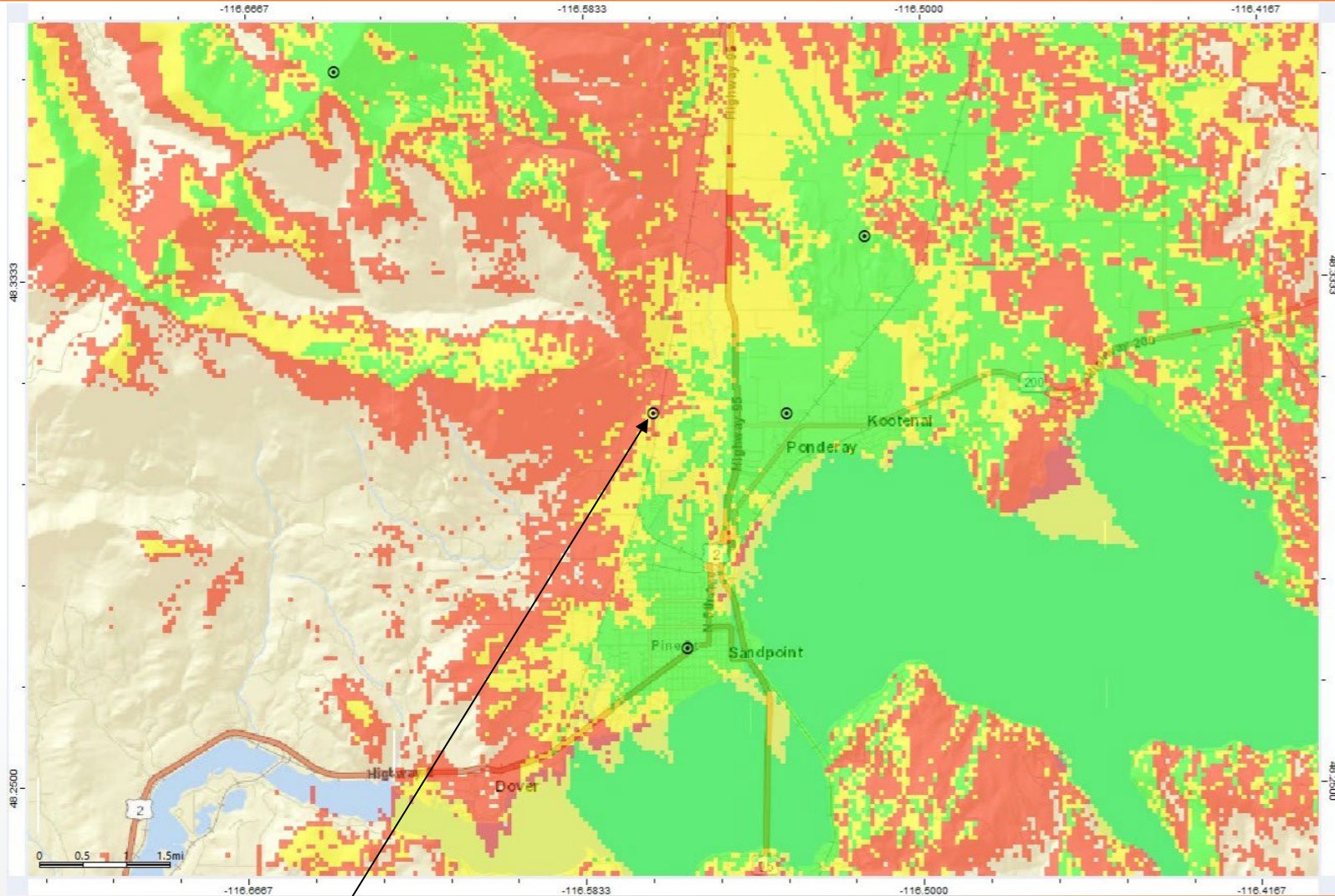
The area is showing a below outdoor service near the proposed and in vehicle to the East of the proposed

2024

RSRP - Current Coverage

700 MHz - low band




LEGEND	
	Indoor ≥ -85 dbm
	In-Vehicle ≥ -95 dbm
	On-Street ≥ -106 dbm

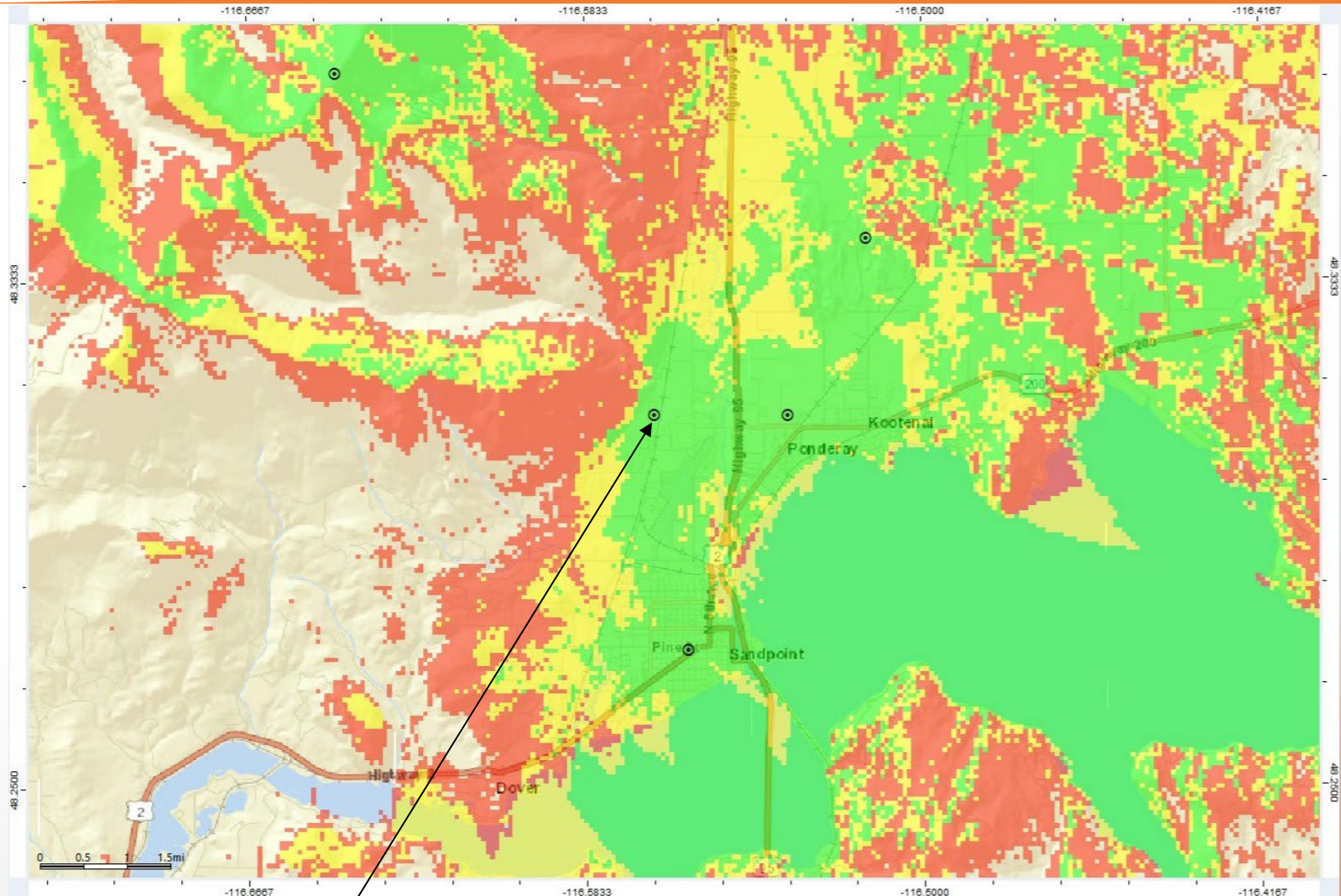


Proposed Site

2024

RSRP – Proposed Coverage 700 MHz - low band




LEGEND	
	Indoor \geq -85 dbm
	In-Vehicle \geq -95 dbm
	On-Street \geq -106 dbm

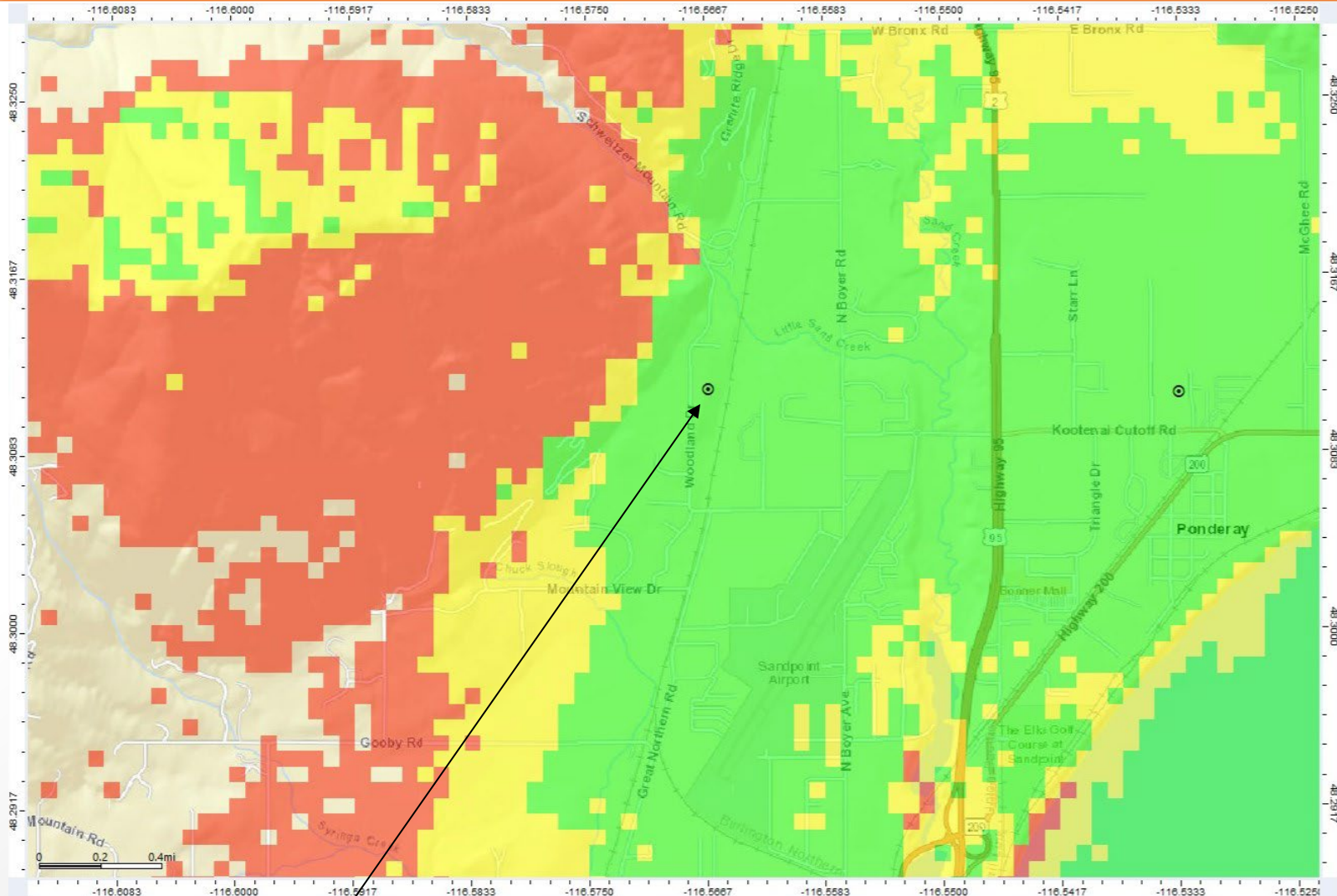


Proposed Site

2024

RSRP - Proposed Coverage 700 MHz - low band (Zoom)



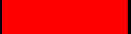
LEGEND	
	Indoor ≥ -85 dbm
	In-Vehicle ≥ -95 dbm
	On-Street ≥ -106 dbm

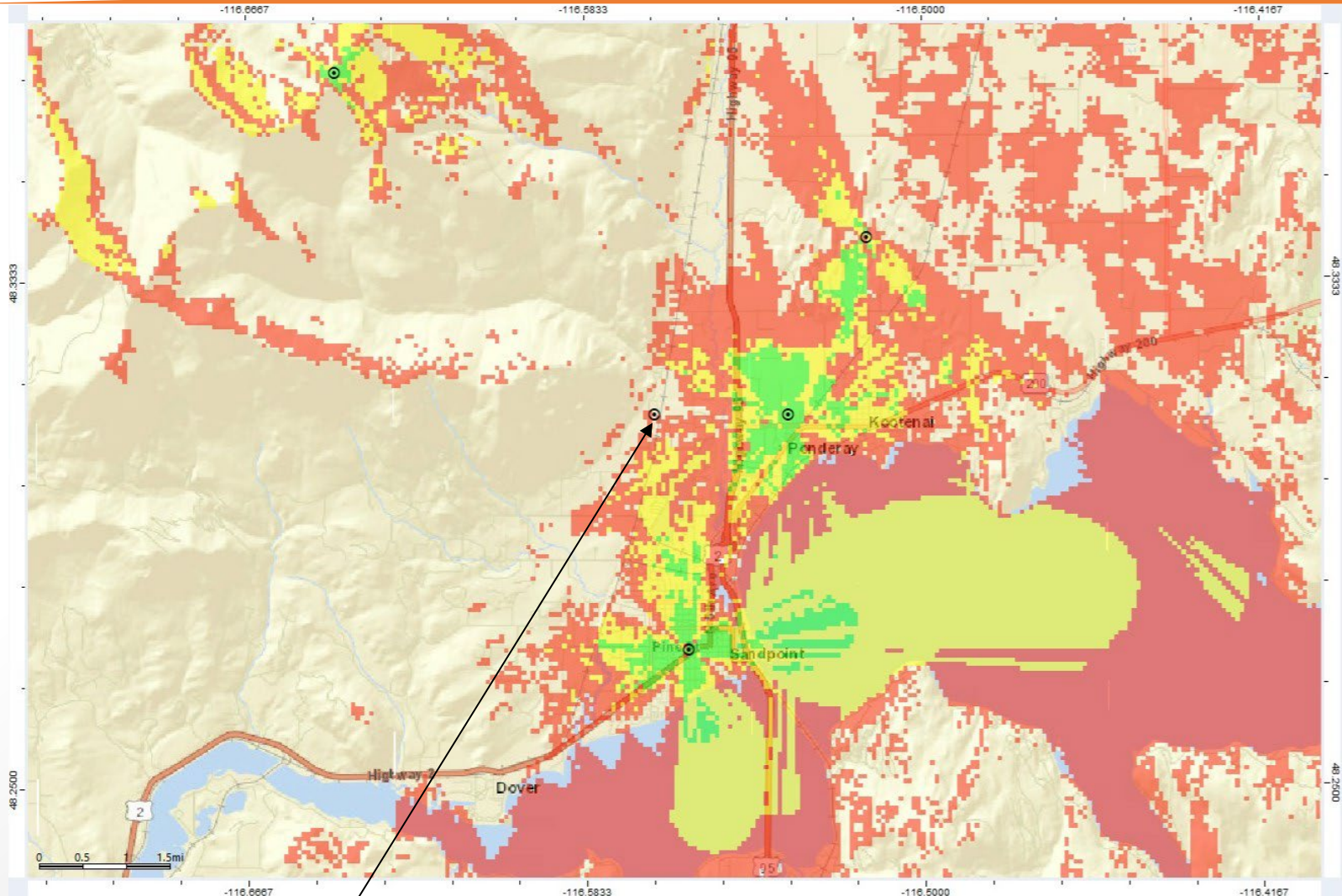


Proposed Site

RSRP - Current Coverage

2100 MHz - mid band




LEGEND	
	Indoor ≥ -85 dbm
	In-Vehicle ≥ -95 dbm
	On-Street ≥ -106 dbm

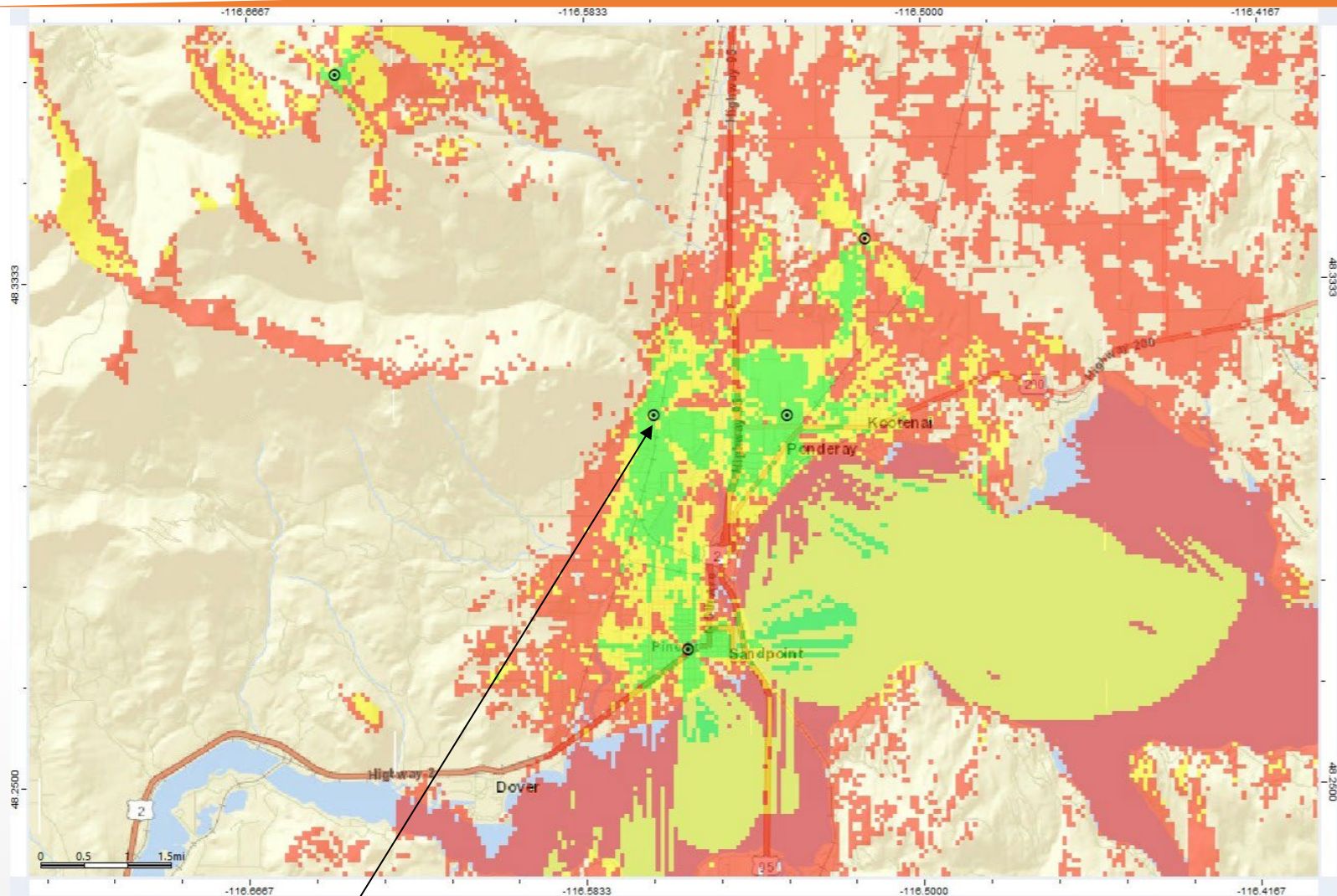


Proposed Site

2024

RSRP – Proposed Coverage 2100 MHz - mid band




LEGEND	
	Indoor ≥ -85 dbm
	In-Vehicle ≥ -95 dbm
	On-Street ≥ -106 dbm

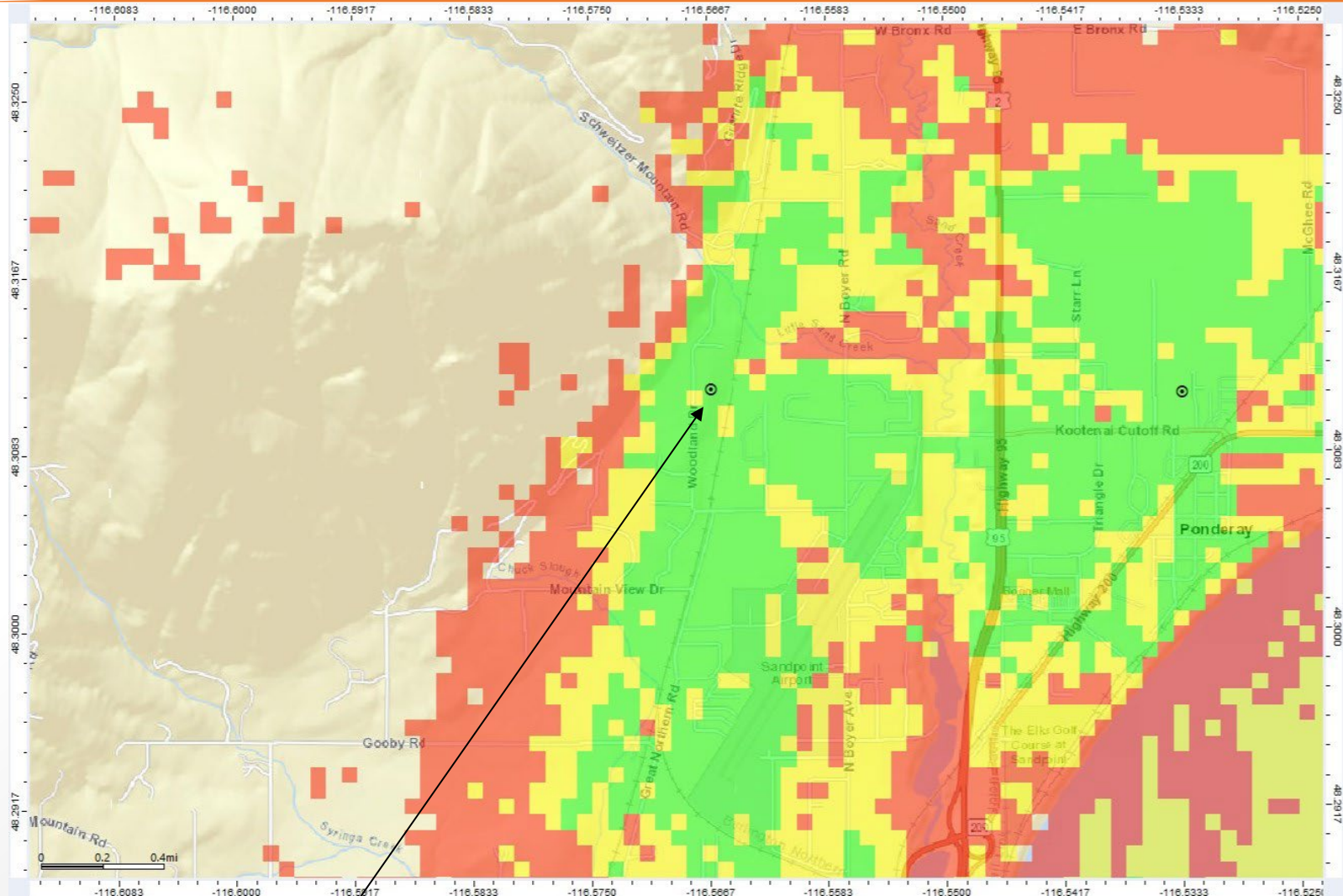


Proposed Site

2024

RSRP – Proposed Coverage 2100 MHz - mid band (Zoom)

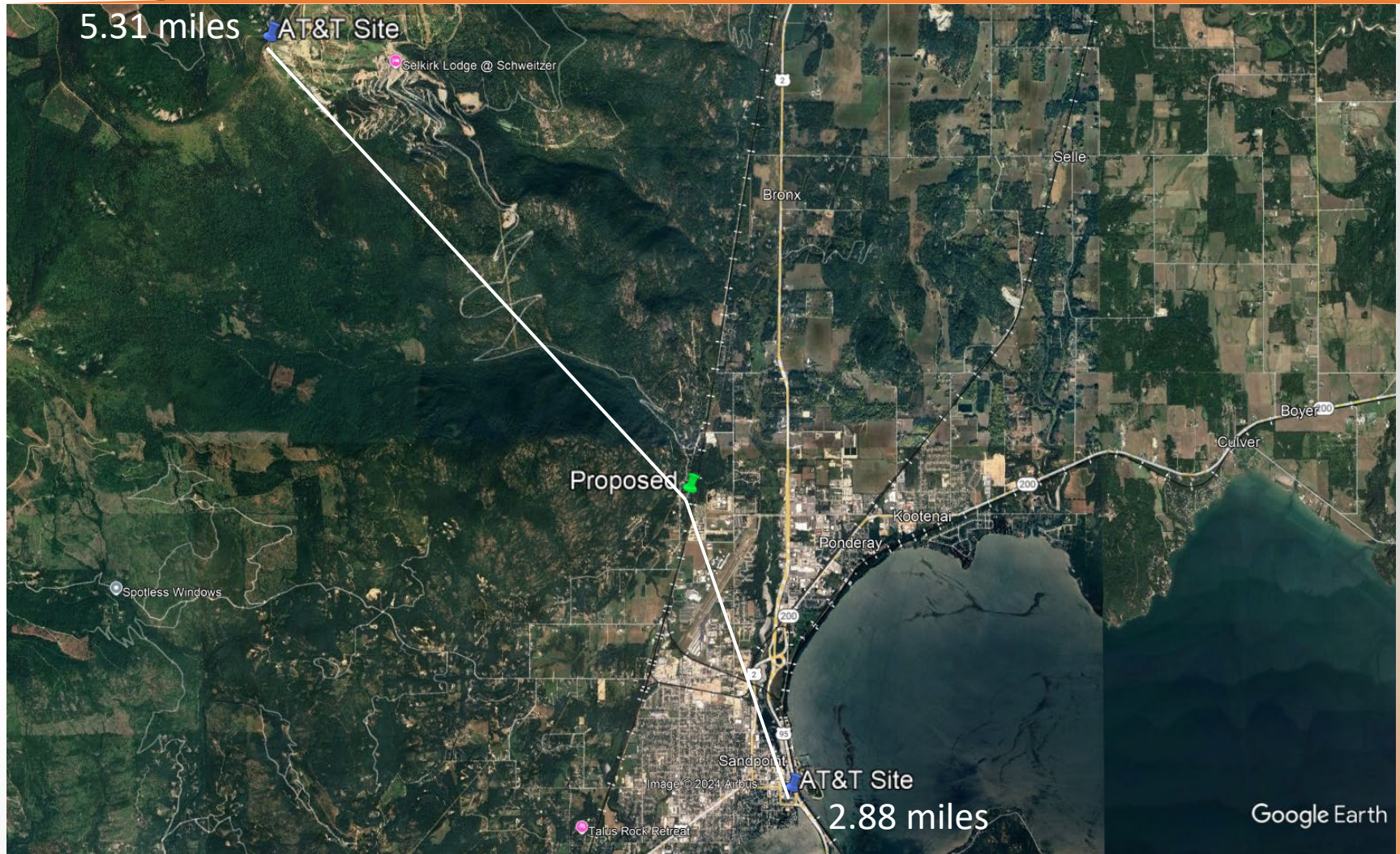
LEGEND	
	Indoor \geq -85 dbm
	In-Vehicle \geq -95 dbm
	On-Street \geq -106 dbm



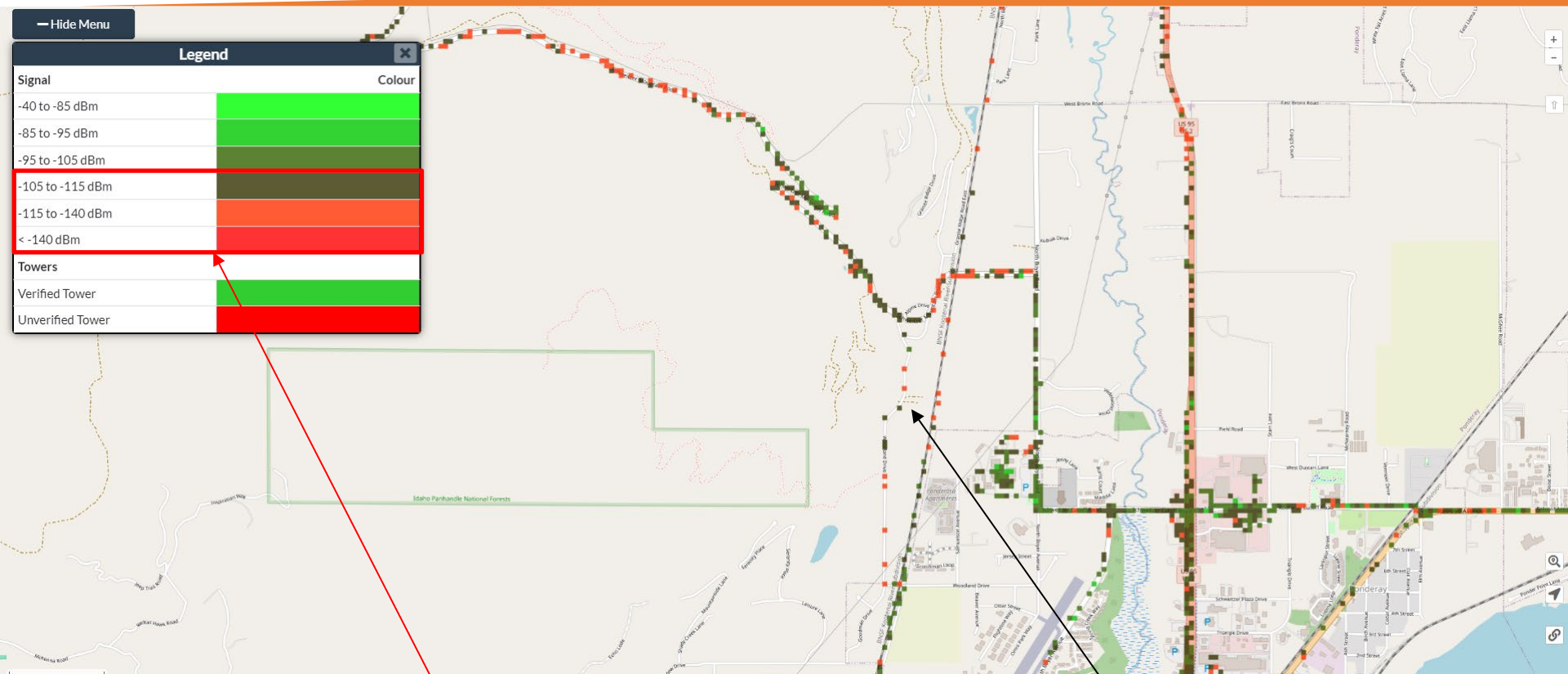
Proposed Site

2024

Distance from proposed to AT&T neighbor sites



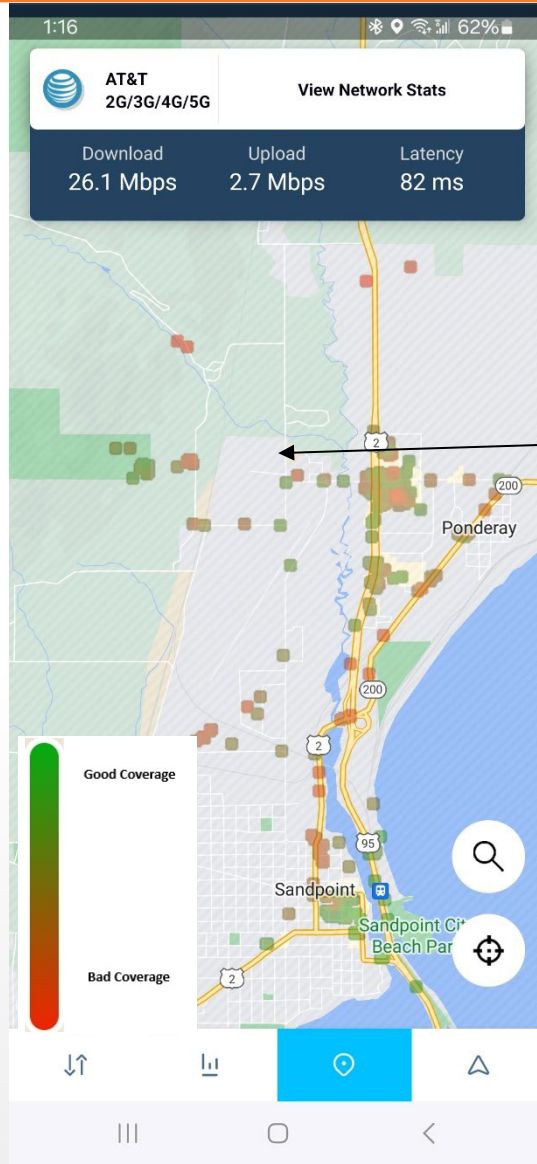
AT&T CellMapper



Poor Service Quality

Proposed Site

Open Signal AT&T Quality Map



This map shows mobiles reporting quality of their connections to the network. This is crowdsource data from AT&T users made available by the OpenSignal App:

<https://www.opensignal.com/apps#section-os-app>

Green data points show good coverage and red data points show bad coverage and lack of data points show no coverage

Notice the amount of bad coverage points for AT&T users in the area around the proposed and lack of coverage points is indicative of poor service

AT&T US
LTE RSRP

- > -80.0 dBm
- 90.0..-80.0 dBm
- 100.0..-90.0 dBm
- 110.0..-100.0 dBm
- 120.0..-110.0 dBm
- < -120.0 dBm

500 m
2000 ft

Proposed Site

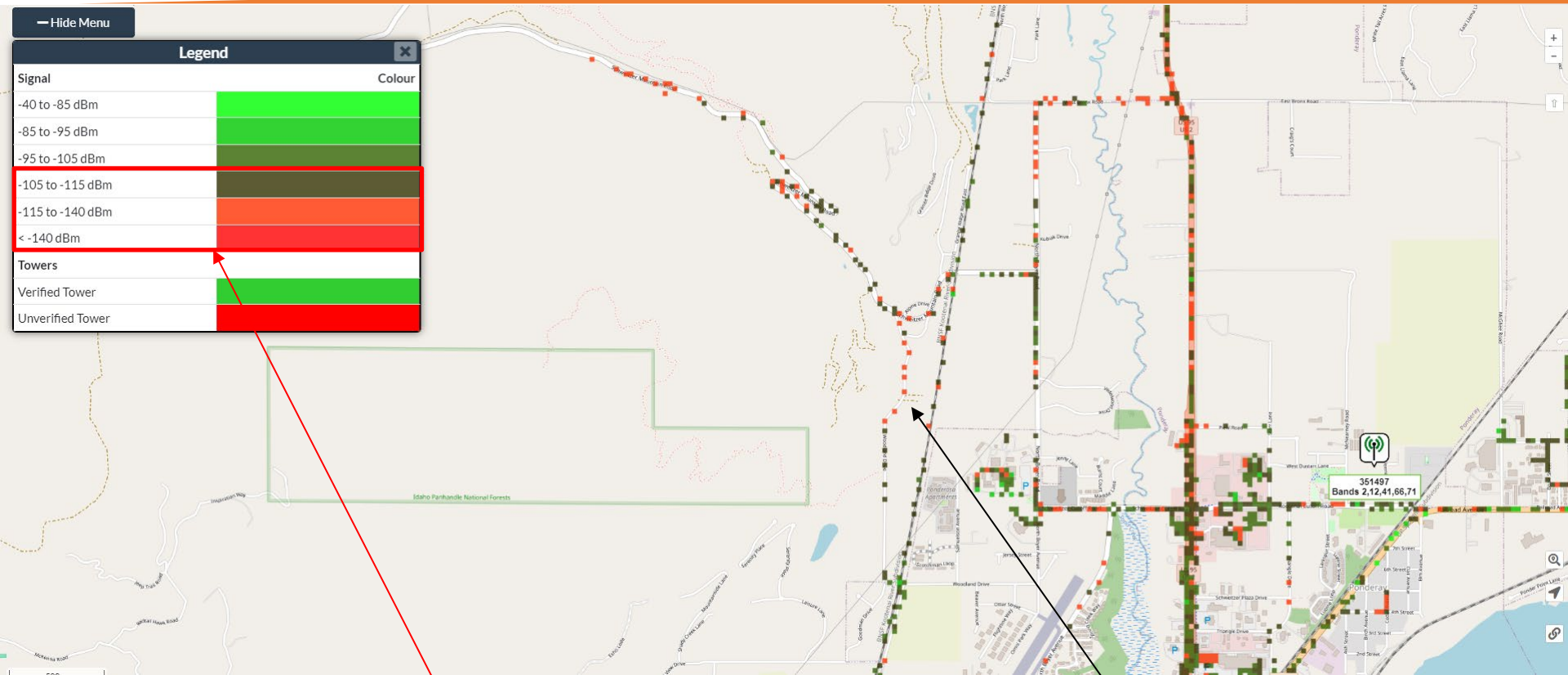
The area is showing a significant number of mobiles reporting less than outdoor service

2024

T-Mobile Sites



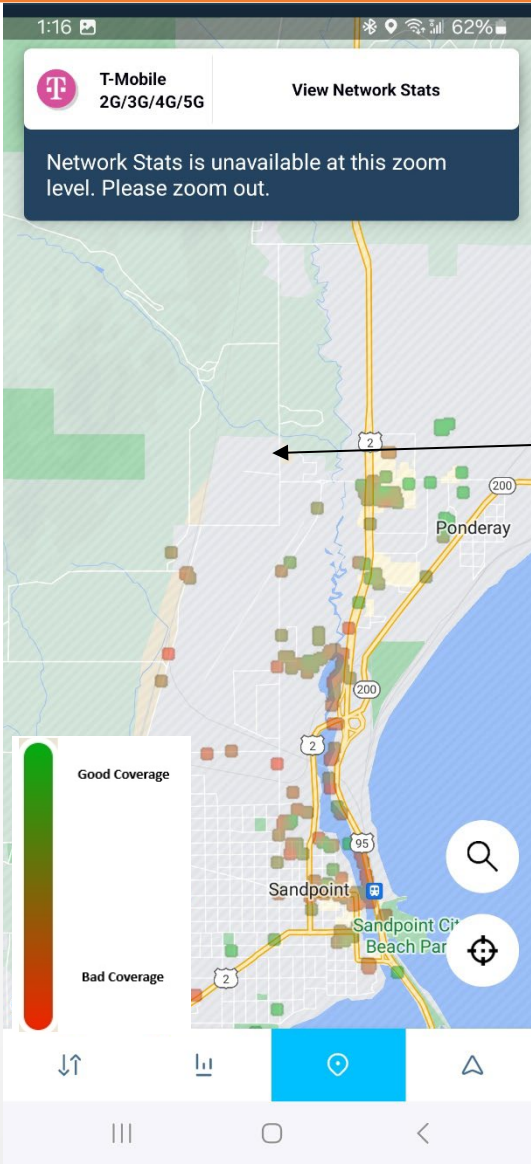
T-Mobile CellMapper



Poor Service Quality

Proposed Site

Open Signal T-Mobile Quality Map



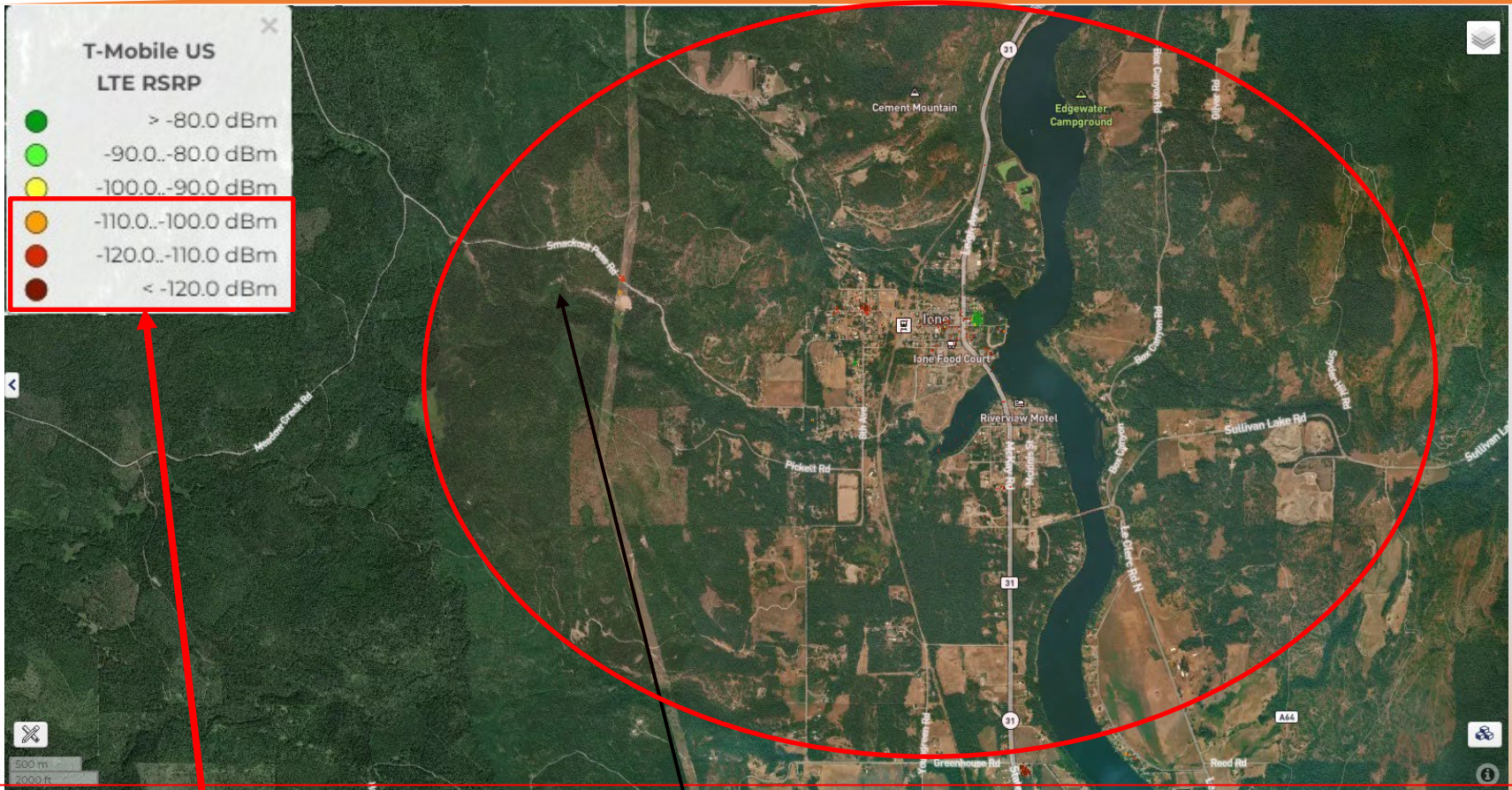
This map shows mobiles reporting quality of their connections to the network. This is crowdsource data from T-Mobile users made available by the OpenSignal App:

<https://www.opensignal.com/apps#section-os-app>

Green data points show good coverage and red data points show bad coverage and lack of data points show no coverage

Notice the lack of data points which is indicative of poor service as mobiles cannot connect to the network. The data points around the area are mostly bad coverage

Ookla T-Mobile 4G



Less than on Street Coverage

Proposed Site

The area in the red circle is what the proposed site would impact

The area is showing a significant number of mobiles reporting less than outdoor service

2024

Analysis

- † The area is lacking in wireless coverage for all (3) of the major carriers.
- † This area is lacking in throughput per user for Verizon
- † Verizon has the closest site at 1.49 miles to the East and it does not provide quality service in the area of the proposed
- † This proposed site would provide good service for the customers North of Sandpoint
- † Tower is designed to allow for multiple tenants

Recommendation

- † Recommend approval of the proposed at the height requested for Verizon to provide high quality service to the area