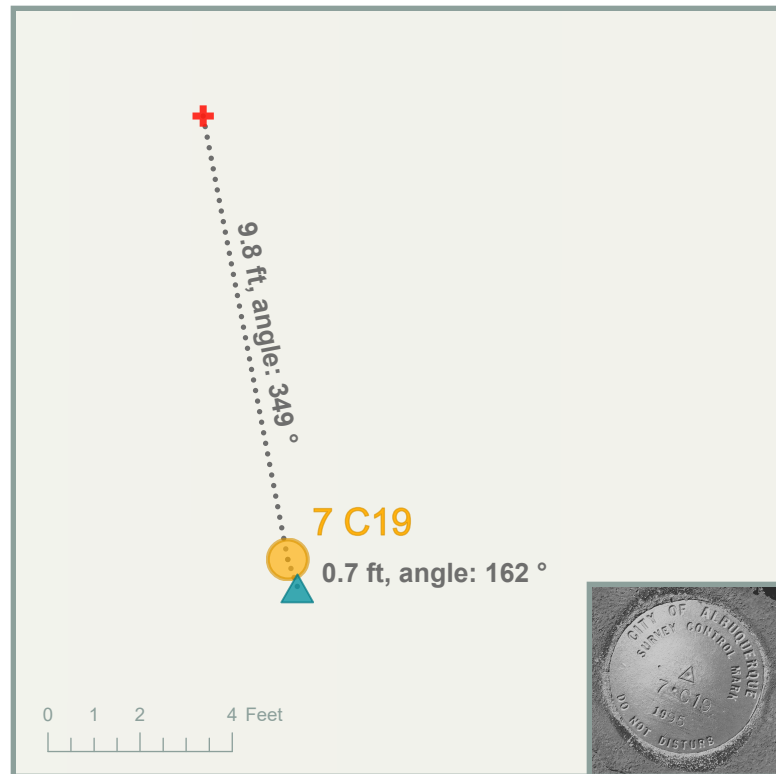
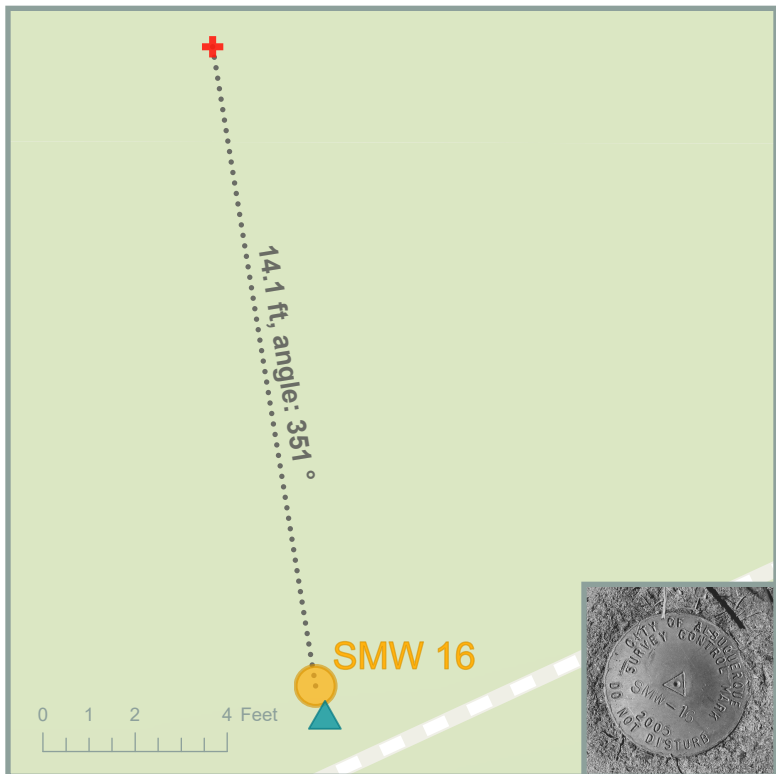
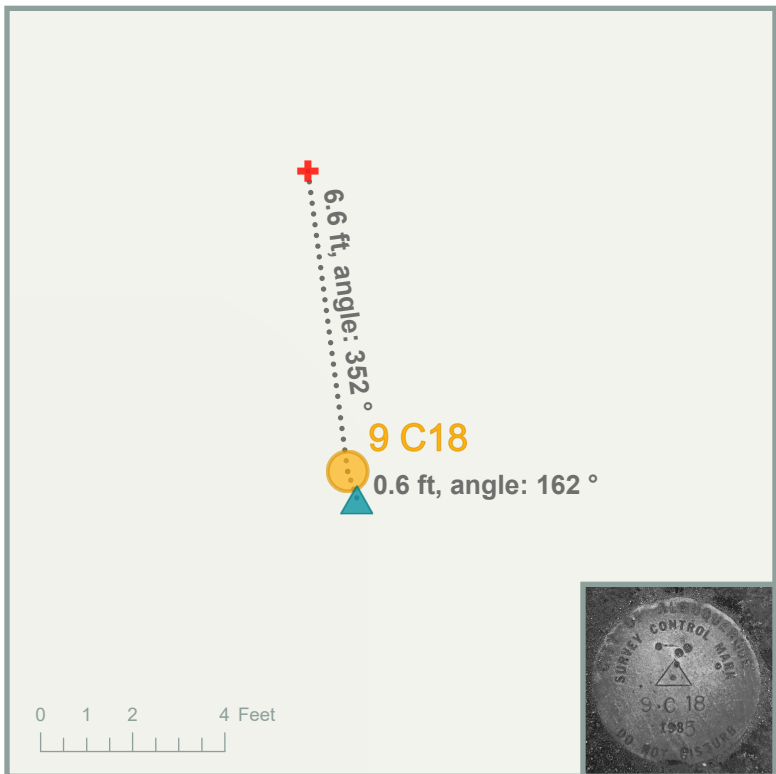
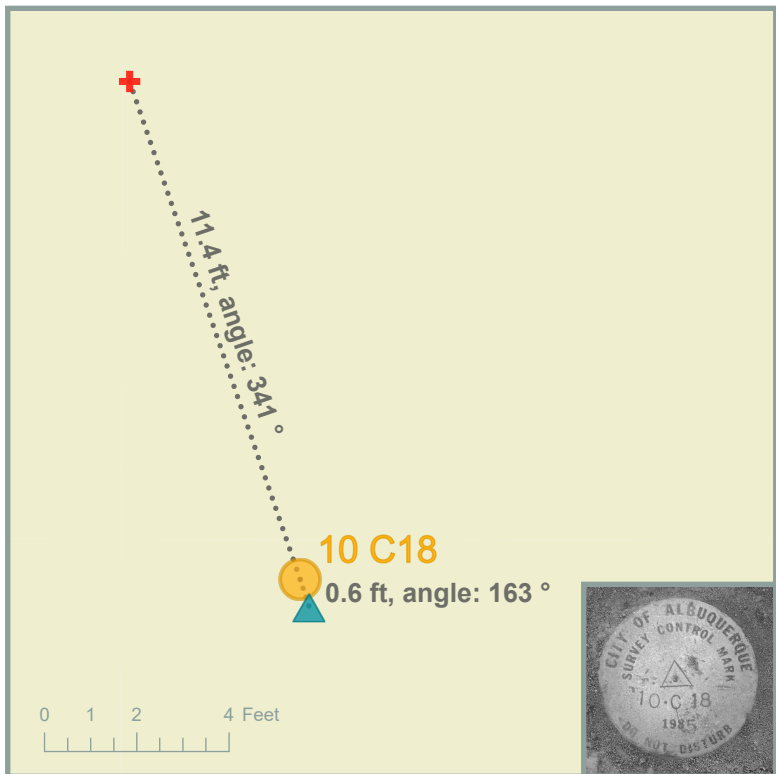
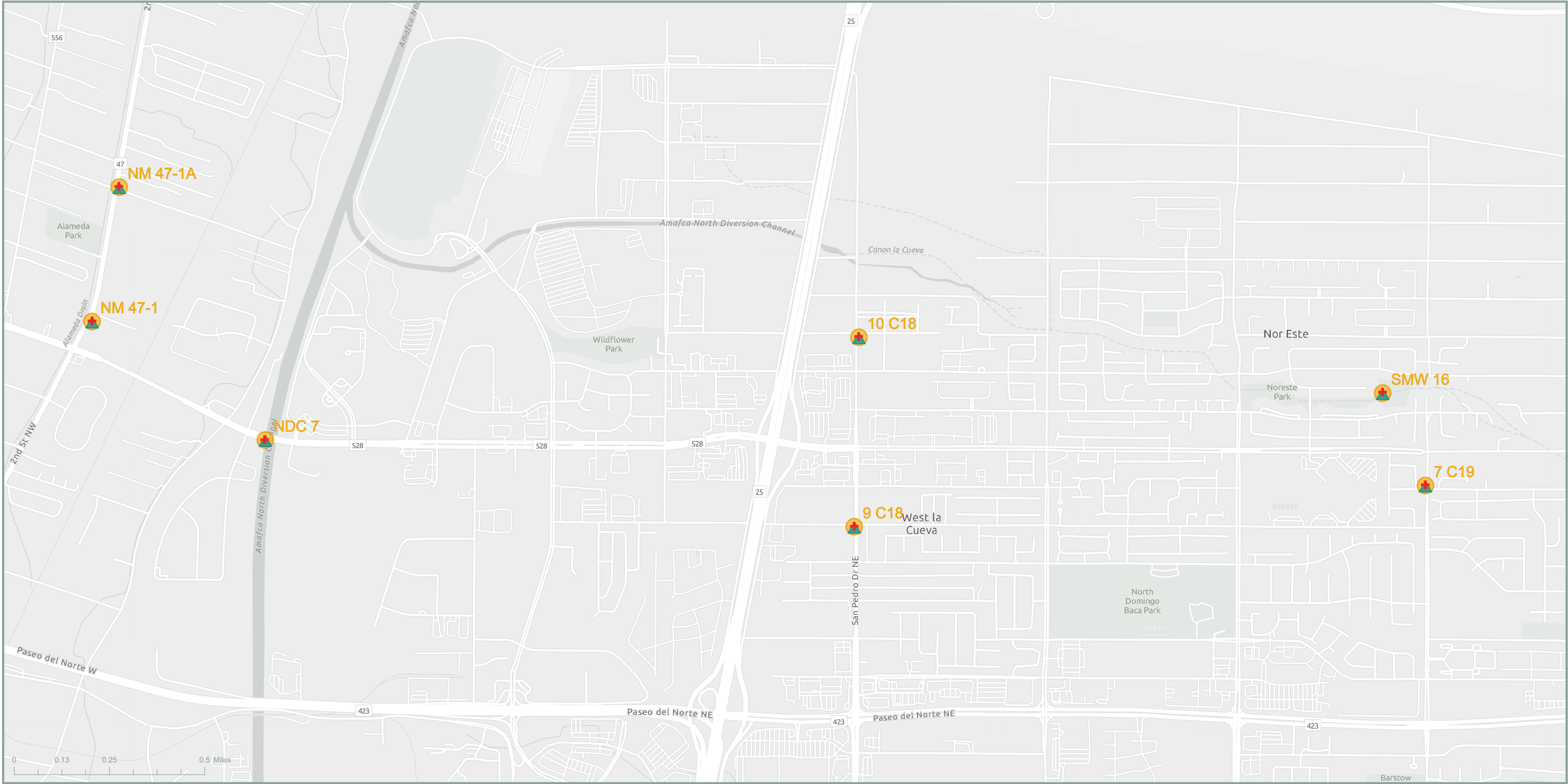
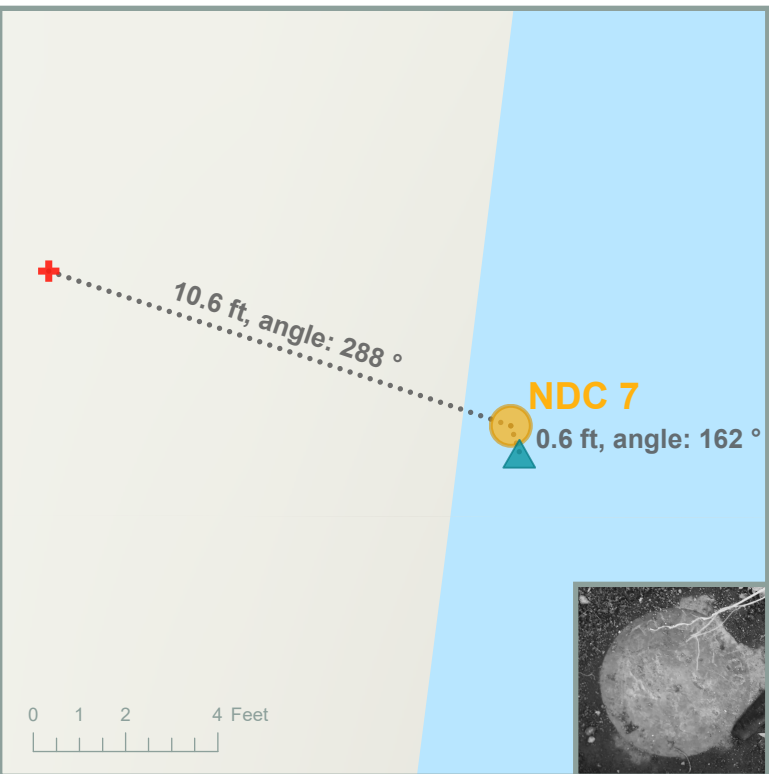
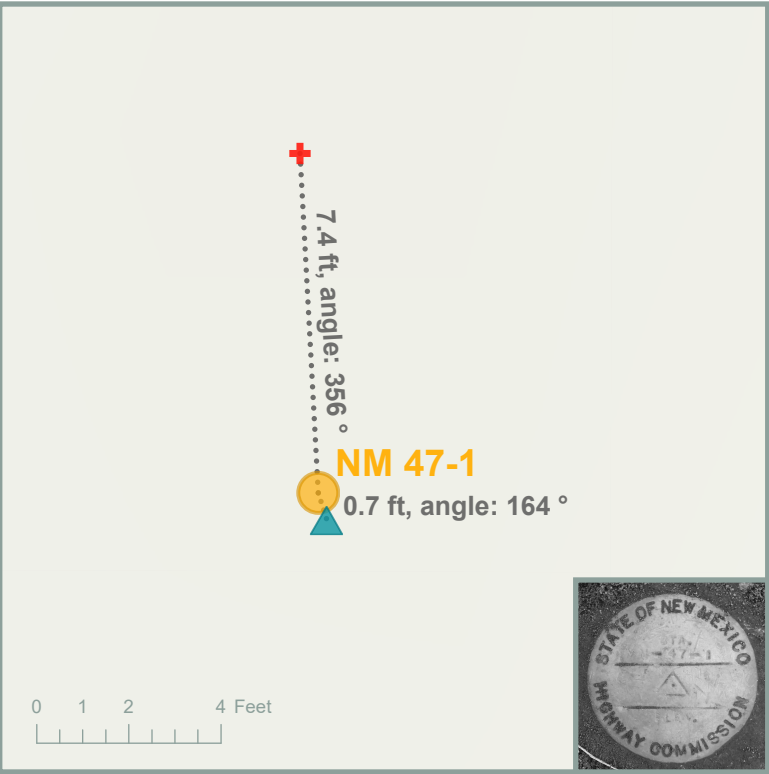
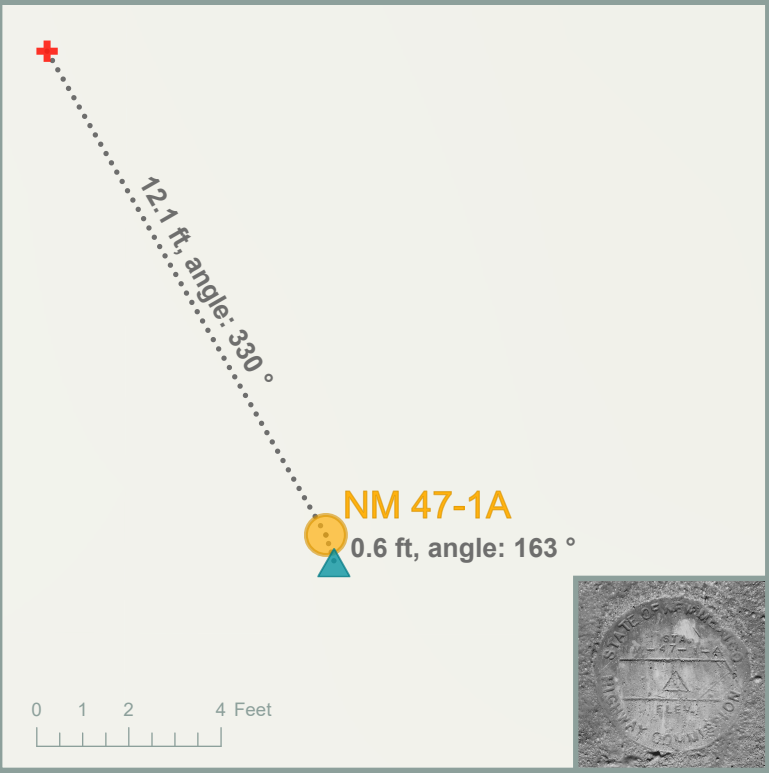


# Comparison of mapping and survey grade GPS receivers

A comparison and evaluation of the positional accuracy of mapping and survey grade GPS receivers relative to published survey control monuments in northern Albuquerque.

- Mapping GPS coordinates
- Survey GPS coordinates
- Published monuments



Point location data was collected at seven control monument locations using a mapping grade Trimble TDC100 series handheld GNSS receiver (“Mapping GPS coordinates”) and a survey grade Carlson BRx6 GNSS receiver (“Survey GPS coordinates”) in order to compare the positional accuracy of survey and mapping grade receivers against known published survey control monuments along New Mexico State Road 528 in northern Albuquerque.

Horizontal accuracy of the mapping grade coordinates fell within 14’ of the published control points with an average offset of 10.3’. Curiously, all seven points collected by the mapping grade GPS erred toward the northwest. Satellite geometry, atmospheric conditions, and the overall design and capability of the Trimble TDC receiver likely impacted the level of accuracy of the mapping GPS coordinates.

Unsurprisingly, the survey grade Carlson BRx6 receiver was far more accurate and precise. The survey GPS coordinates fell within a foot of the published control points, on average within 8”. The survey grade receiver likely has advanced capabilities to correct errors and maintain precision, enabling it to easily outperform the mapping grade receiver.

Comparing the performance of different types of receivers to known control points helps illustrate the capabilities and limitations of GPS equipment and provide insights when selecting GPS technology for professional projects, particularly when high-accuracy data is needed for applications such as urban planning, land management, and infrastructure development.

Monument ID	Agency	Type	Mapping GPS		Surveying GPS	
			Direction	Distance (ft)	Direction	Distance (ft)
NM 47-1	NMDOT	Brass cap in concrete	N3°04'58"W	7.4	S17°37'25"E	0.7
NM 47-1A	NMDOT	Brass cap in concrete	N29°57'17"W	12.1	S17°17'55"E	0.6
NDC 7	AMAFCA	Brass cap in concrete	N71°29'23"W	10.6	S18°05'36"E	0.6
10 C18	City of Albuquerque	Aluminum cap in concrete	N18°54'10"W	11.4	S18°20'47"E	0.6
9 C18	City of Albuquerque	Aluminum cap in concrete	N7°32'29"W	6.6	S18°57'50"E	0.6
SMW 16	City of Albuquerque	Aluminum cap in concrete	N9°09'03"W	14.1	S18°58'26"E	0.7
7 C19	City of Albuquerque	Aluminum cap in concrete	N10°48'11"W	9.8	S19°23'04"E	0.7

### Equipment and sources

Mapping GPS: Trimble TDC100 Series handheld GNSS receiver  
Survey GPS: Carlson BRx6 GNSS receiver  
Data source: City of Albuquerque Survey Monuments  
Software: ArcGIS Pro 3.4.0