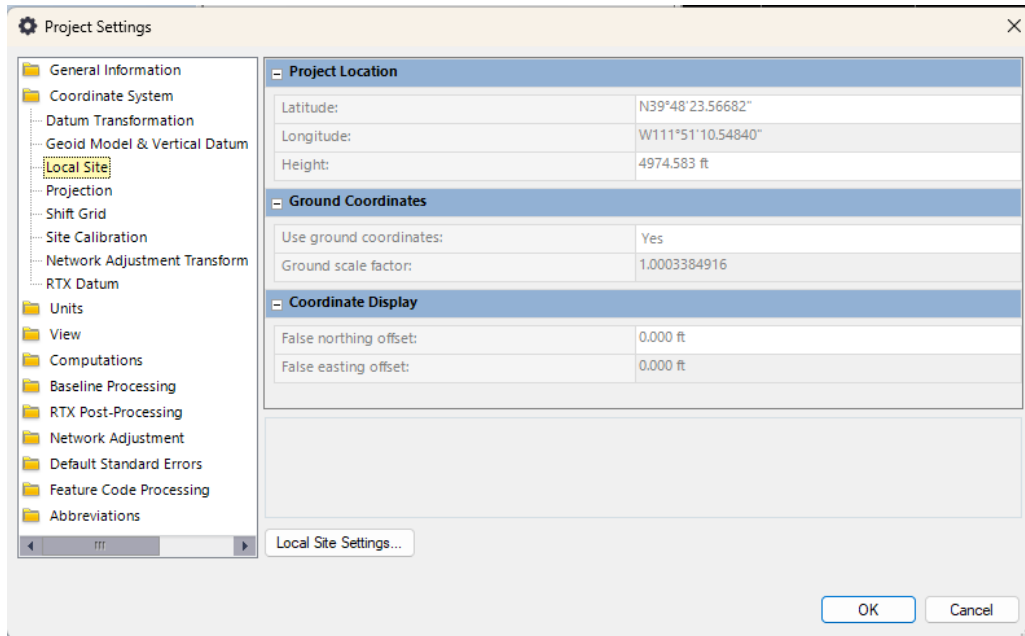
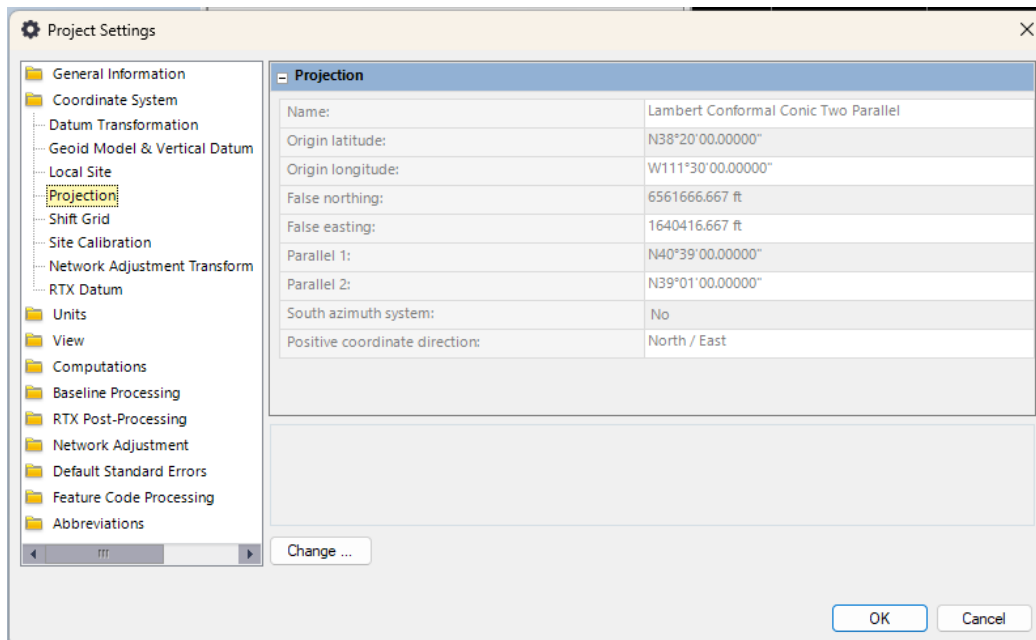


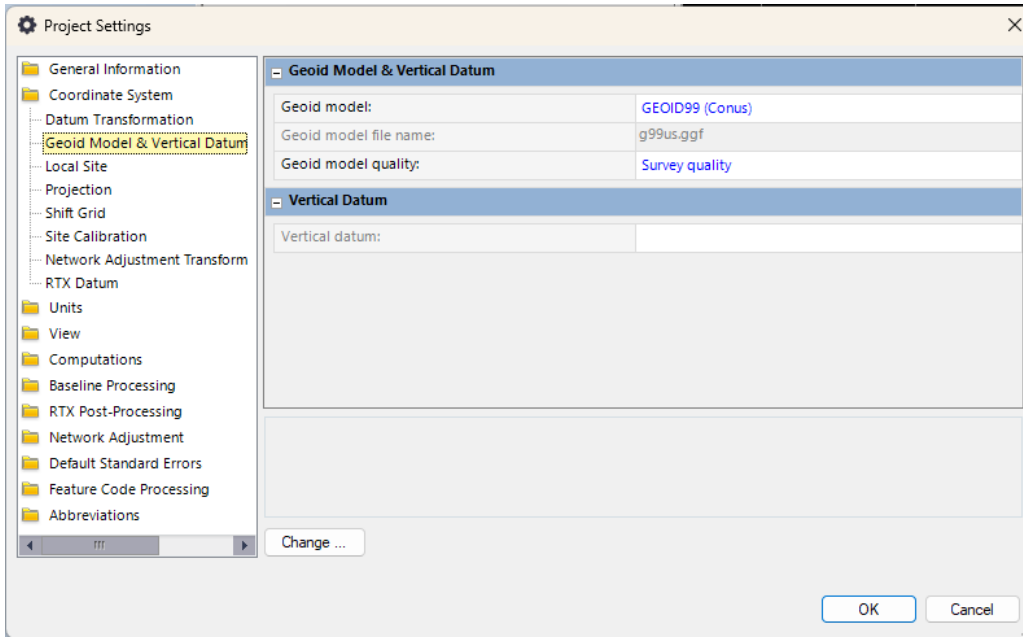
Open DC file in TBC. View the Coordinate System:



It is a Single Point Localization.

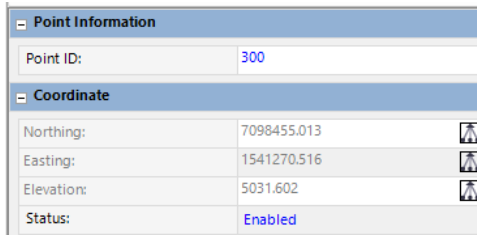


The underlying projection is Utah Central.

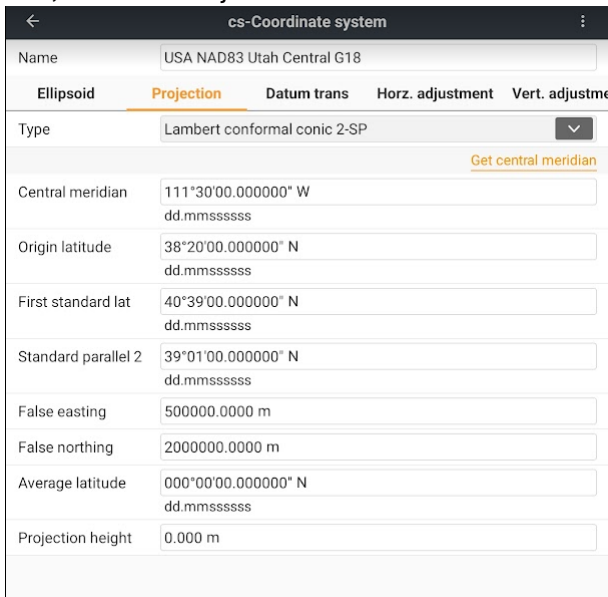


The DC projection uses Geoid 1999 which is obsolete. There should be no issues switching to Geoid18, and it would be irresponsible to not do so.

The projected coordinates of the local point are:



In LandStar, make a new job with Utah Central NAD83 and Geoid18 as the base system:



← cs-Coordinate system

Name: USA NAD83 Utah Central G18

Ellipsoid Projection Datum trans Horz. adjustment **Vert. adjustment**

Type: No adjustment

Geoid file: Geoid2018US.CGD

Interpolation method: Bi-linear

Next enter the base point, using the Lat/Lon/EllipsoidHeight:

← cs-Edit point

Normal Attributes Multimedia

Name: 1

Code: >

Description: project base

Type: Enter

Format: Local Lat/Lon/H

Local Lat: 39°48'23.566820" N

Local Lon: 111°51'10.548400" W

Local H (ellipsoid): 4974.583 USft

Survey time: 2024-02-12 09:43:41

Go to: Project > Single Point Localization:

← cs-Single point localization

Use single point localization:

Project GNSS Base Point

Local Lat: 39°48'23.566820" N
dd.mmssssss

Local Lon: 111°51'10.548400" W
dd.mmssssss

Local H (ellipsoid): 4974.583 USft

Project Base Local Coordinate

North (N): 7098455.0127 USft

East (E): 1541270.5164 USft

Elevation: 5032.076 USft

Basis of Bearings

Geodetic(True North)

Grid north

Manual

Results

Elevation SF: 0.999762063558


Grid SF: 0.999898943364


Combined SF

Grid to ground: 1.000339083972

Ground to grid: 0.999661030967

Calculate Accept

Use the top list button  to recall the Origin point #1 Lat/Lon/ellipsoid height.

Use the bottom list button  to recall the Origin point #1 projected position (this is the State Plane Coordinate System value.)

Click **Calculate** at the bottom. Click **Accept** to enter the Single Point Localization system.

Notice that LS8 computes the Grid to Ground Scale factor slightly differently than Trimble:

1.000339083972 1.0003384916 -0.000000592

LS8 is correct, it appears that Trimble is using an Ellipsoid Reduction Factor that does not match the NGS method.

Converted Coordinate						
Reference Frame:NAD83(2011)						
Lat-Lon-Height		SPC		UTM/USNG		XYZ (m)
Latitude	N39° 48' 23.56682" N394823.56682 39.8065463389	Zone	UT C-4302	Zone	12	X -1,826,752.617
		Northing	2,163,613.415 (m) 7,098,455.013 (usft) 7,098,469.210 (ift)	Northing (m)	4,406,634.037	Y -4,554,999.226
Longitude	E248° 08' 49.45160" W1115110.54840 -111.8529301111	Easting	469,780.193 (m) 1,541,270.516 (usft) 1,541,273.599 (ift)	Easting (m)	426,988.610	Z 4,062,478.596
Ellipsoid Height (usft)	4974.583	Convergence (dms)	-00 13 33.89	Convergence (dms)	-00 32 45.84	
		Scale factor	0.99989894	Scale factor	0.99966563	
		Combined factor	0.99966115	Combined factor	0.99942789	
				USNG	12SVK2698906634	

The difference results in a 0.0031 foot difference per mile. If this is an issue, you can hand enter the Trimble value.

You can verify that this system is identical by entering a point at a random distance from the origin point.

Grid Coordinate	
Northing:	7118455.013
Easting:	1541270.516
Elevation:	5045.000
Local Coordinate	
Latitude:	N39°51'41.17090"
Longitude:	W111°51'11.56017"
Height:	4987.942

Then hand enter this point as a second point in LandStar:

cs-Add point	
Name	3
Code	
Type	Enter
Coordinate format	Local Lat/Lon (dd.mmssssss)
Local Lat	39.5141170900 N
Local Lon	111.5111560170 W
Local H (ellipsoid)	4987.942 USft
Description	test pt llh

Viewing the resulting projected location:

Name	North (N)[USft]	East (E)[USft]	Elevation[USft]	Description	Code
1	7098455.0127	1541270.5164	5032.076	project base	
2	7118455.0130	1541270.5160	5045.000	test pnt	
3	7118455.0248	1541270.5161	5045.340	test pt llh	

The difference in scale factor over 20,000 feet is exposed.