GNSS Solutions - Customizing the Coordinate List & Geoid09

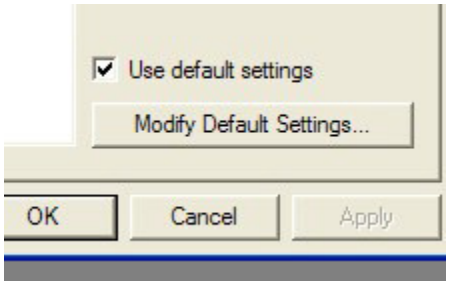
Objectives:

Create useful coordinate system definitions for the place where the work is done.

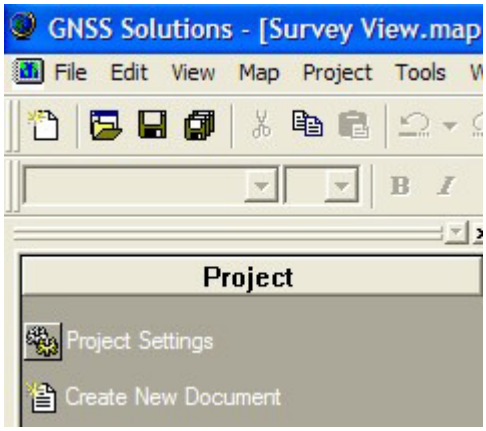
Use the Geoid09 model to compute NAVD88 orthometric heights

Procedures:

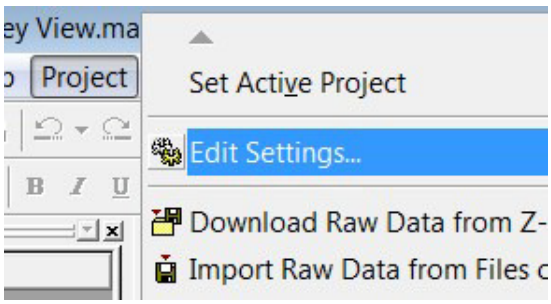
There are several pathways to the dialog boxes that allow customization of the coordinate systems in GNSS Solutions beginning with an opportunity to Modify Default Settings when the project is created.



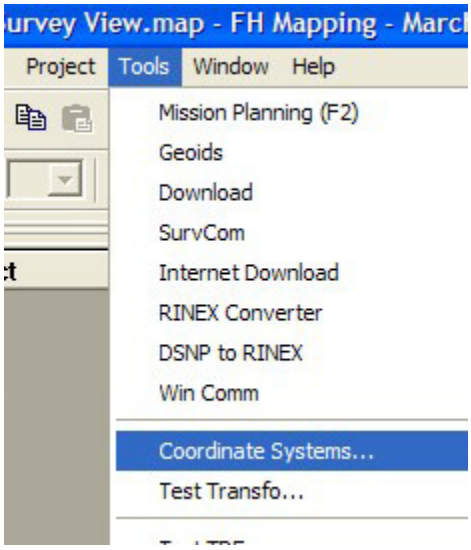
After the project is created there are still some ways to select a different coordinate system or create one. Under Project choose Project Settings.



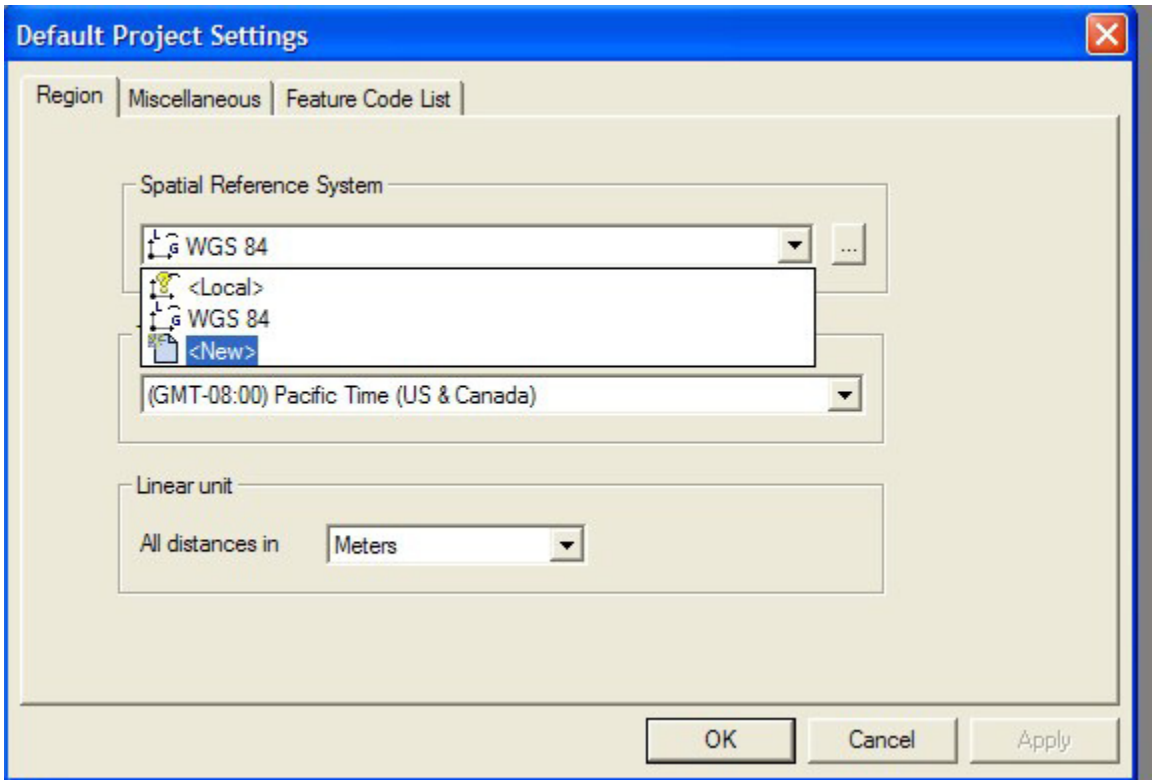
Using the Project pull down menu choose Edit Settings.



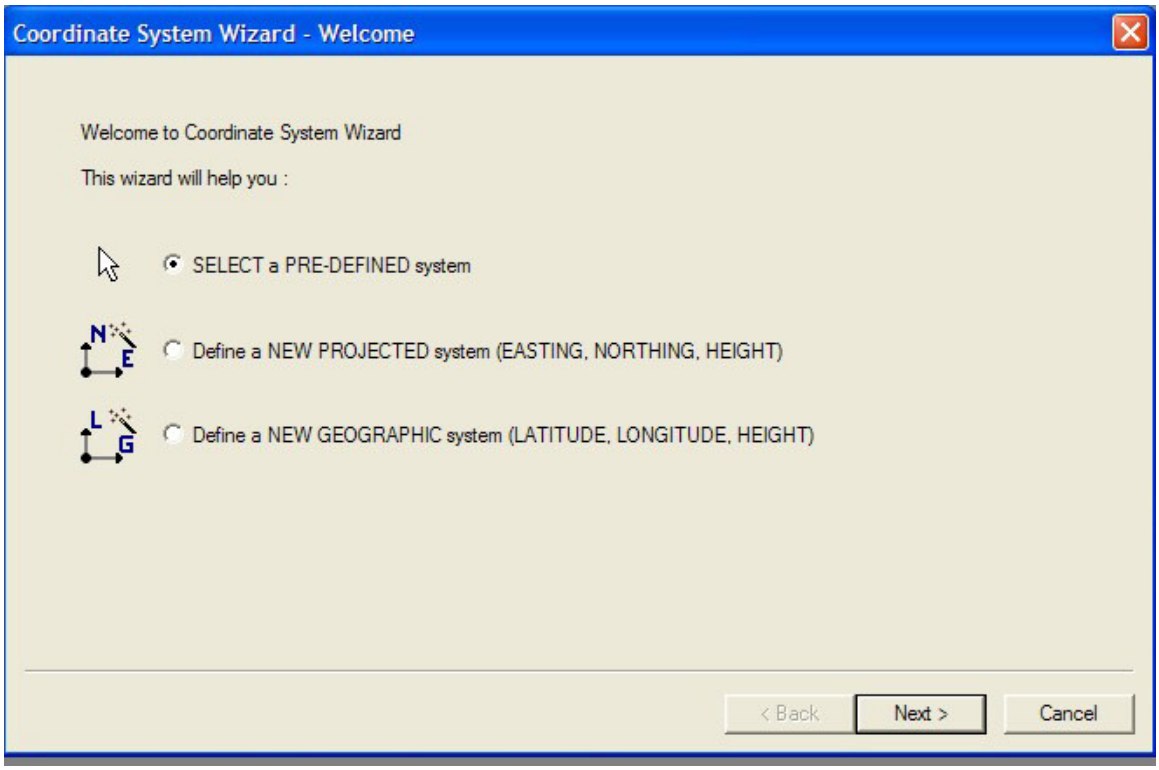
Manage coordinate systems another way using the Coordinate Systems selection under the Tools pull down menu.



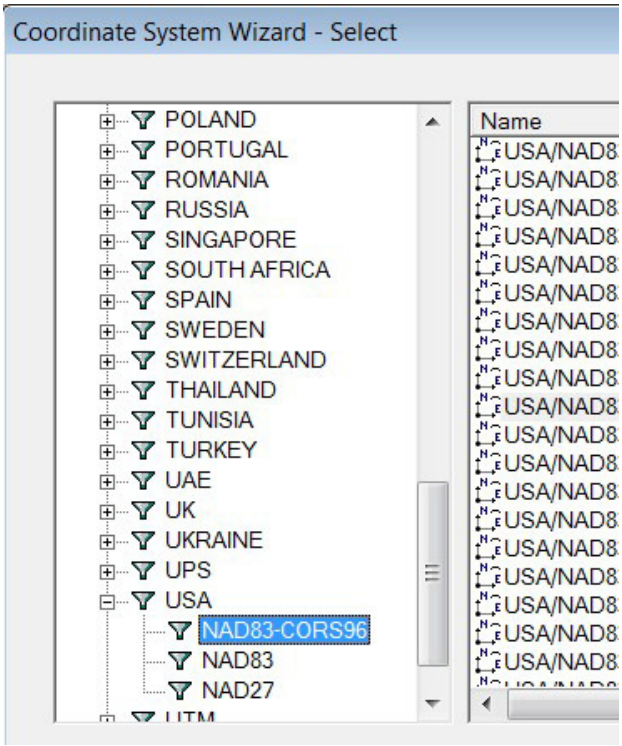
This will illustrate the use of Modify Default Settings at the time the project is created The Default Project Settings dialog box offers the choice of <New>.



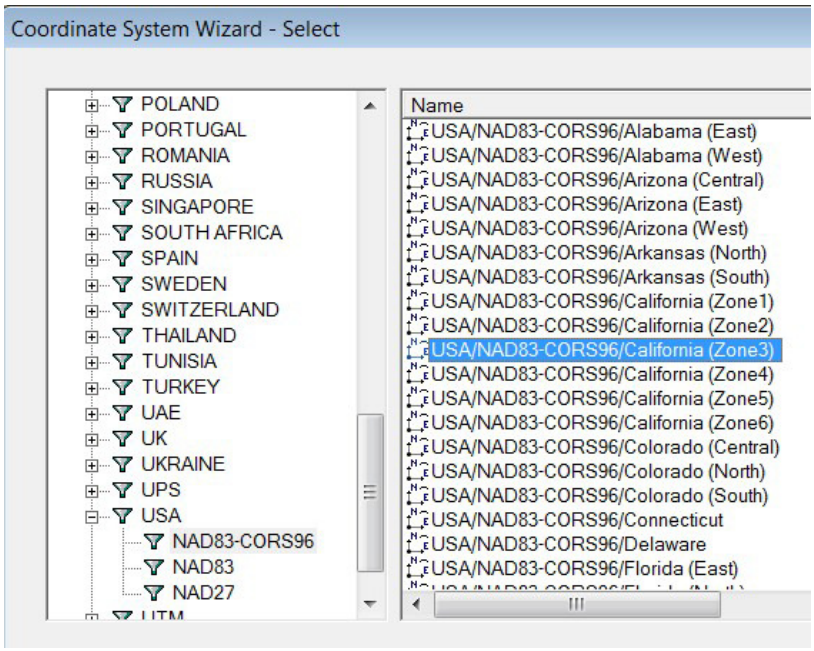
In the Coordinate System Wizard box choose Select a Pre-Defined system and click Next >



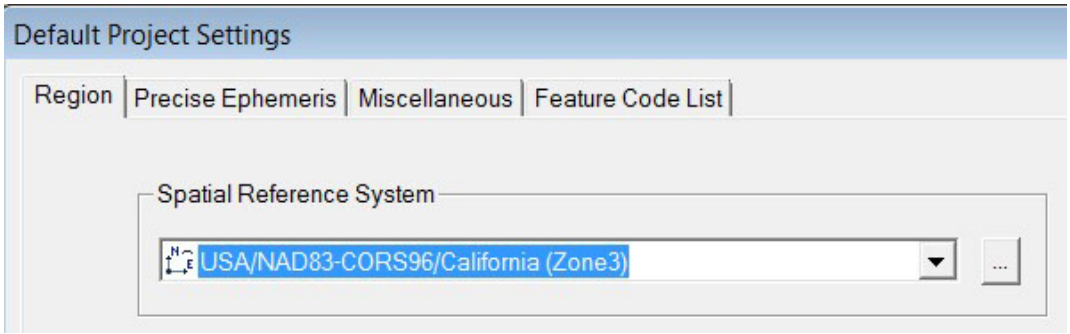
The choice for this project area is NAD83 - CORS96



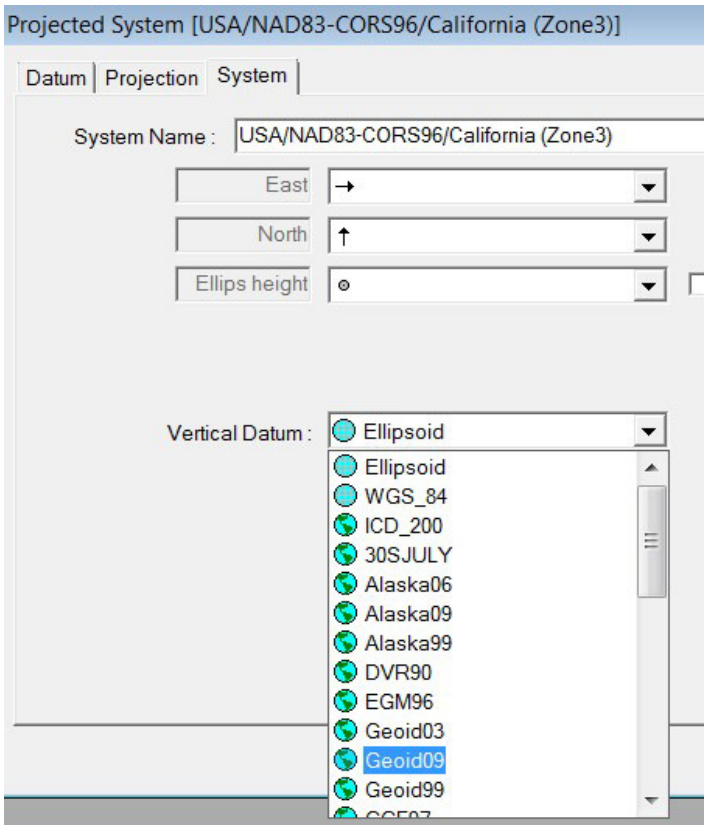
The state plane coordinate map projection for the work area is USA/NAD83-CORS96/California (Zone3).



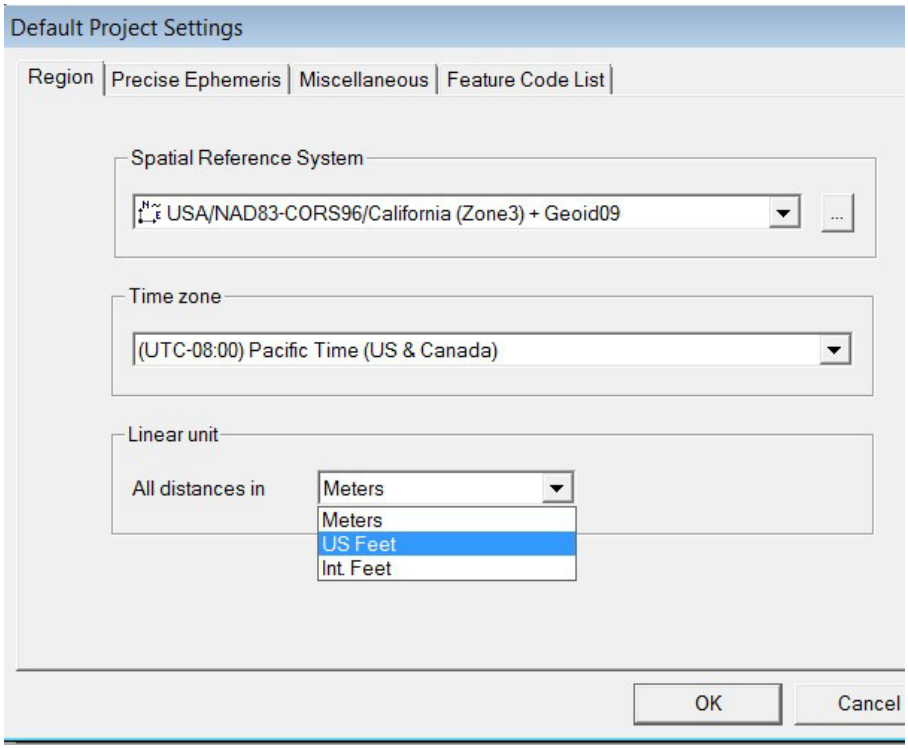
A click on the Finish button shows that the coordinate system has been selected but this is not done yet. If elevations are the objective the Geoid09 model needs to be applied to the ellipsoid heights that are the basis of the datum definition. There is a rectangular button with three dots in it to the right of the selected Spatial Reference System. A click on this button reveals choices.



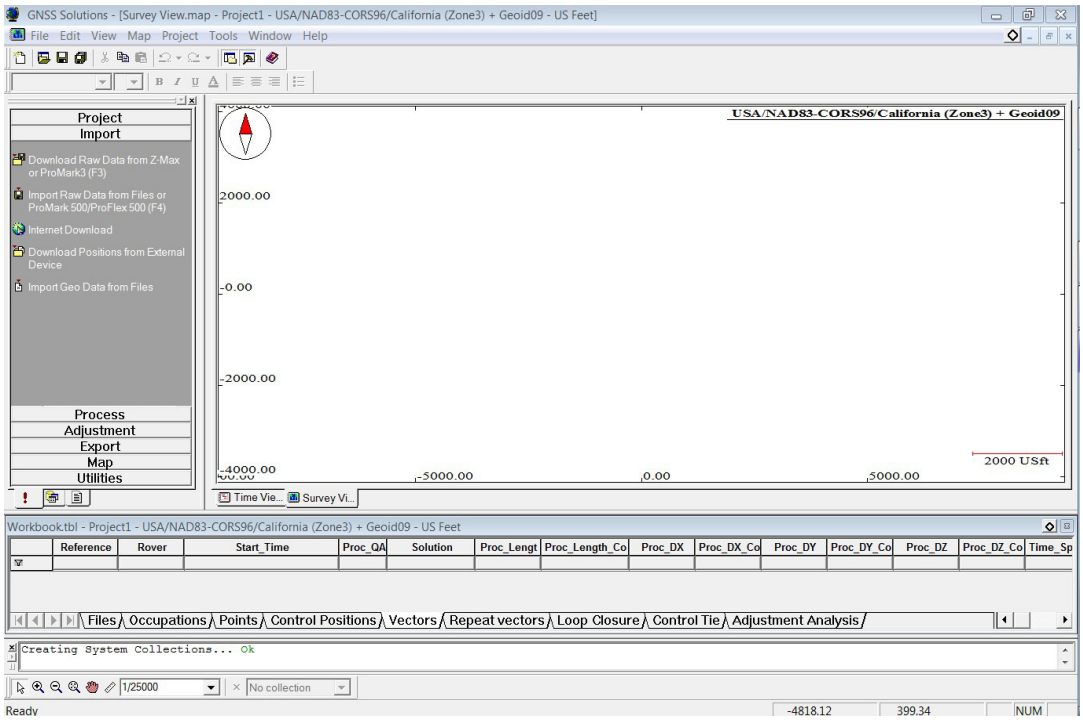
By selecting the Geoid09 model from the vertical datum list the elevations in the project will be related to NAVD88 orthometric heights. Edit the system name to make it meaningful. This is something that can be used on many projects.



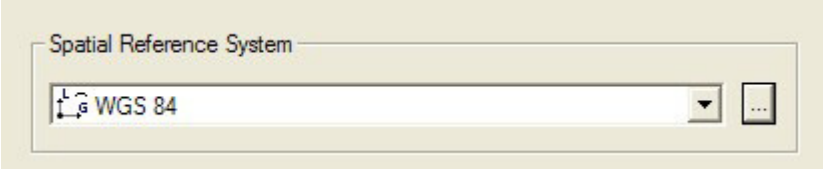
A click on the OK button shows the selected coordinate system and provides an opportunity to choose the units of measure. The US Survey Foot is appropriate for the work in Santa Clara County, California. Another click on the OK button and the project begins.



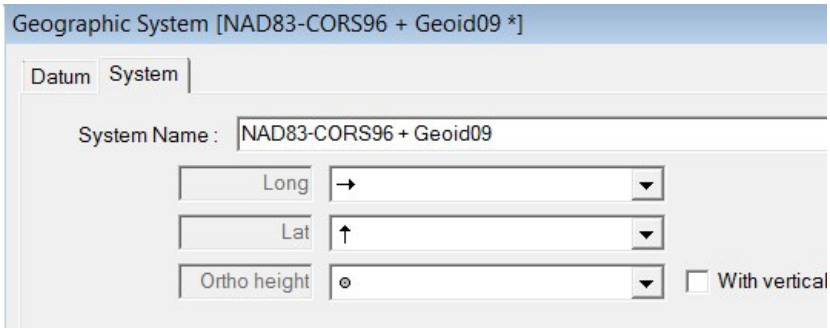
The selected coordinate system name is revealed at the top of the GNSS Solutions window and again in the Survey View and Workbook Table. The meaningful name given to the coordinate system definition matters as work proceeds.



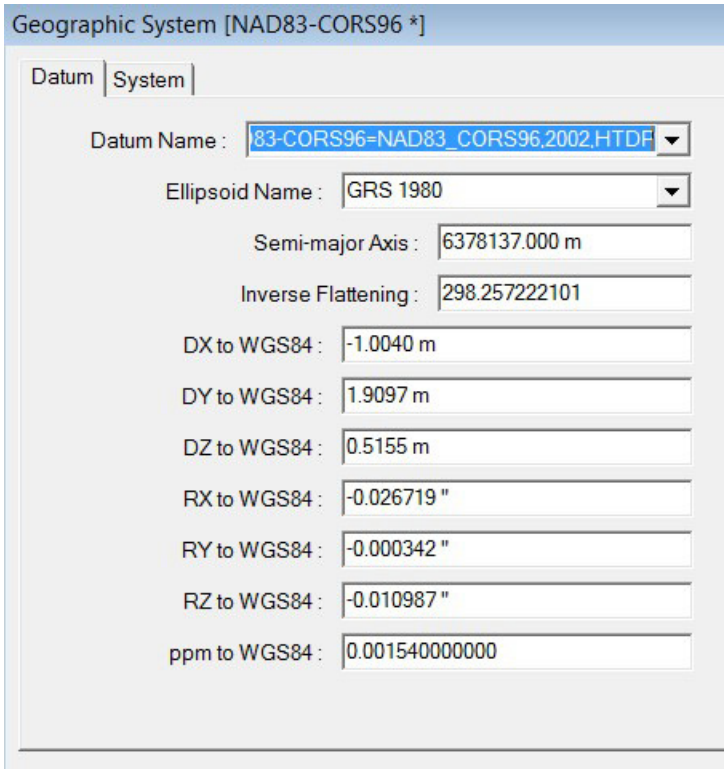
WGS84 is not the appropriate choice for mapping in the project area. Remember the rectangular button with the three dots? Choose WGS84 and make modifications to fit the objective.



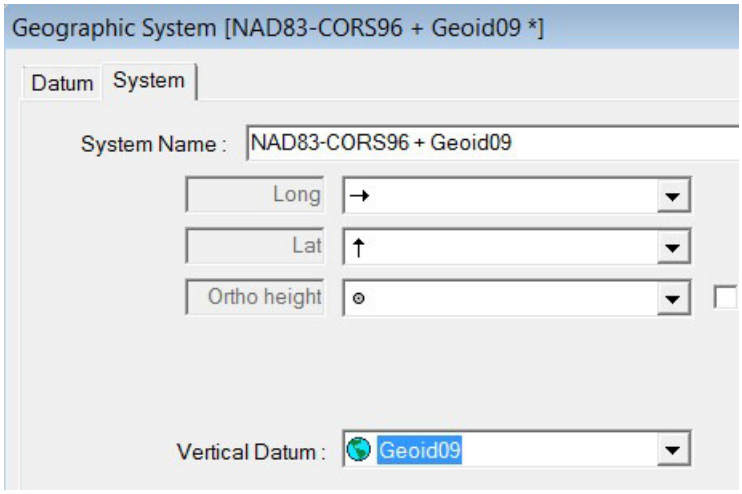
What meaningful name will be assigned to the new datum definition?



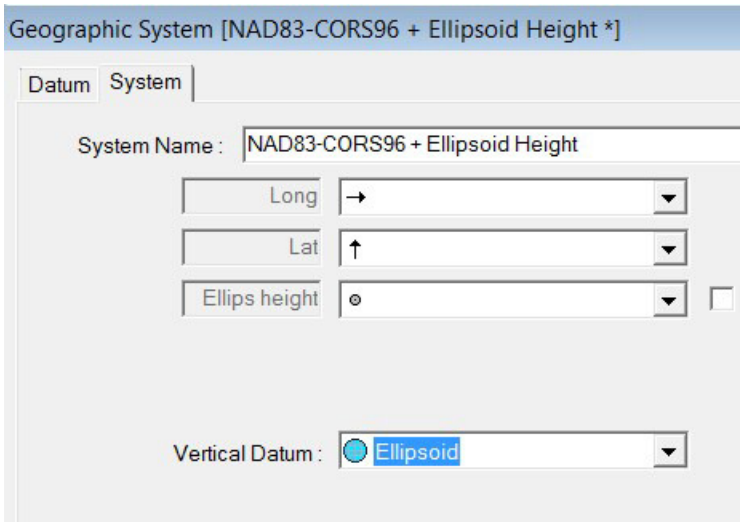
A click on the datum tab allows the choice of NAD83-CORS96 using the GRS80 ellipsoid.



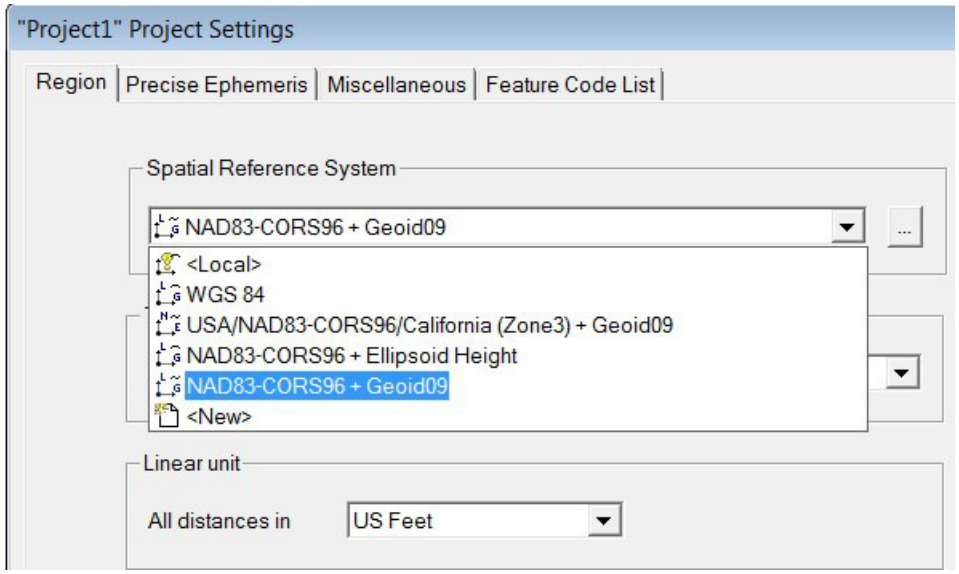
Click on the System tab to edit the System Name and choose the Geoid09 model. A click on OK and the new datum is added to the list of coordinate system choices.



Hold it! Don't move a muscle! Elevations may not be the objective. Make another definition modification using that little button with the dots to choose NAD83-CORS96 with Ellipsoid Heights. Click on OK to add it to the coordinate system list with the appropriate name assigned.



Now the coordinate system list includes those basic definitions that will support projects in Santa Clara County, California.



Internet Resources:

The internet provides resources to expand what we know about datums, coordinate systems, and geoid models. The writer is most familiar with surveying in the USA but has awareness of some other national resources too.

USA

http://www.ngs.noaa.gov/PUBS_LIB/develop_NSRS.html

http://www.ngs.noaa.gov/cgi-bin/spc_zones.prl

http://www.ngs.noaa.gov/PUBS_LIB/ManualNOSNGS5.pdf

http://www.ngs.noaa.gov/PUBS_LIB/FundSPCSys.pdf

http://www.ngs.noaa.gov/NationalReadjustment/

http://www.ngs.noaa.gov/GEOID/

http://www.ngs.noaa.gov/TOOLS/

http://www.ngs.noaa.gov/PC_PROD/WorkShops/

http://www.ngs.noaa.gov/CORS/

http://www.fgdc.gov/

Canada

http://www.geod.nrcan.gc.ca/index_e.php

http://www.geod.nrcan.gc.ca/publications/index_e.php

http://www.geod.nrcan.gc.ca/software/index_e.php

Mexico

http://www.inegi.gob.mx/inegi/default.aspx

Australia

http://www.ga.gov.au/

http://www.ga.gov.au/geodesy/

Philippines

http://www.namria.gov.ph/home.asp

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