Importing Data from USGS National Map Viewer

Previous versions of AutoCAD Civil 3d have made it very simple to import image and surface from Google Earth. While the Google earth import is easy to use, it has several limitations

- Google Earth surfaces are limited in the number of points they will import. If your surface passes this limit, you will receive dumbed-down data to stay within the limit.
- Google Earth photos are not orthorectified. If you are working on a long, narrow corridor this becomes apparent quickly. The center of any image you import will be close to the correct location, but the edges can be off by quite a bit. (see below)



1-Image from Being Civil blog - See Credits

An alternative is USGS data from the National Map Viewer. It has many advantages including:

- Multiple data sources
- No limit of the amount of data you can download (no max point limit)

There are many different resolutions of surface information in the **National Elevation Dataset (NED)**. The NED data available comes in many resolutions depending on where you are in the country. More than one resolution is often available so be sure to choose the most appropriate based on your project. The National Elevation Dataset is replacing the previously used Digital Elevation Model (DEM). If you have imported a DEM before, importing a NED is similar.

The USGS National Map viewer can display many USGS products including:

- US Topo maps
- Geographic Names
- Structures
- Transportation
- Government Boundaries
- Index maps (Map indices)
- Land Cover

- Elevation Availability (Index)
- Elevation Contours
- Imagery
- Scanned Topo Maps
- Reference Polygons

We will be working on downloading the NED Data, and Imagery.

Working With the National Map Viewer (NMV)

Launch the NMV in your browser. NMV works in Firefox, Chrome and Internet Explorer 7 or higher. Browse to



<u>http://viewer.nationalmap.gov/viewer/</u> This will launch a window similar to Google Earth, with a view of the lower 48 states (and parts of other countries too)

First let's zoom to our area of interest. I am going to start by typing a zip code into the search bar, in this case, 98443 and push the search button. I am then going to zoom to the area I want to download. In this case, the gravel pit at the intersection of Canyon Road E & Pioneer Way East.

These contours are cleaned up for large scale display. The data we can download will have much more information.



Now click on the Download Data button at the topright of the screen.



Active Tool: Download Data



A new menu will appear. Select the Click Here and give the program a bounding box. This will define the extents of the data you wish to download. After you finish drawing the bounding box, a new menu will appear. This is showing you the available information you can download. We will select Elevation and Orthoimagery.



USGS Available Data for download

This shows the Available Elevation Data for download. Keep in mind the NED Data comes in several resolutions, and formats. We will download the 1/9th arc second data in Arc Grid format.

Use the **checkboxes** to select specific format of products you want under each theme. Click on the products to preview their footprints on the map. Products will be added to the Cart on the left side of the screen.

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	Product	Date	Resolution	Туре	Format	Metadata	
	National Elevation Dataset (NED) 1/9 Arc Second	20102011	1/9 arc second	Dynamic	ArcGrid	é l	-
	National Elevation Dataset (NED) 1/9 Arc Second	20102011	1/9 arc second	Dynamic	GridFloat	á l	
	National Elevation Dataset (NED) 1/9 Arc Second	20102011	1/9 arc second	Dynamic	GeoTIFF	é l	=
	National Elevation Dataset (NED) 1/9 Arc Second	20102011	1/9 arc second	Dynamic	BIL_16IN	é l	
	National Elevation Dataset (1 arc second) Pre-packaged Float format	Best Available	1 arc second	Staged	GridFloat	á l	
	National Elevation Dataset (1 arc second) Pre-packaged ArcGrid format	Best Available	1 arc second	Staged	ArcGrid	é l	
_	National Elevation Dataset (1/3 arc	Reet					Ŧ
Ort	thoimagery (8 products)						

Click on the Orthoimagery tile, and we can select the imagery data set to download.

In the case as you can see on the right, it is your choice if a more recent photo outweighs a higher resolution photo.

We will select the NAIP (4 band) UTM Zone 10N in the GeoTIFF format, and then press next.

Use the checkboxes to select specific format of products you want under each theme. Click on the products to preview their footprints on the map. Products will be added to the Cart on the left side of the screen. Elevation (8 products) Orthoimagery (8 products) Product Date Band Resolution Туре Format Metadata Best NAIP (4 Band) UTM Zone 10N 4B Dynamic GeoTIFF É. 1 meters Available Best Dynamic JPG NAIP (4 Band) UTM Zone 10N 4B 1 meters Ê Available Best NAIP (4 Band) UTM Zone 10N 4B Dynamic IMG É 1 meters Available Best NAIP (4 Band) UTM Zone 10N 4B Dynamic JPG2000 1 meters É Available May 2009 0.3m Color 2009 0.3 meter GeoTIFF É Color Staged Orthoimagery - Seattle, WA May 2009 0.3m Color 2009 Color 0.3 meter Staged JPG 1 Orthoimagery - Seattle, WA May 2009 0.3m Color 2009 Color 0.3 meter IMG Staged imagen/ Seattle M/A Back Next

USGS Available Data for download

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The USGS is using a virtual shopping cart model for shipping their products. While it calls it a shopping cart, the downloads from the site are 100% free. This delivery method is expected to change in 2013 to a straight downloading of products. After you checkout, and enter your email address (twice), click the place order button.

You will then get order ID #. You will receive a download link in your inbox.



Received Email:

USGS 🎲 The National Map

Thank you for your recent data order placed with The National Map Viewer. Below are the details of your order with specific instructions.

Order ID: 343120

Elevation - Below are the links to download the data you requested. Due to the size of raster data, your request may have been broken into chunks. The chunks are listed below, and in the near future, this message will include a map to locate the chunks.

Product	Extracted by	Format	Download Link
National Elevation Dataset (NED) 1/9 Arc	Current Extent/(-122.374, 47.187), (-	ArcGrid	<u>Click here to</u>
Second 1/1	122.324, 47.207)		download

Orthoimagery - Below are the links to download the data you requested. Due to the size of raster data, your request may have been broken into chunks. The chunks are listed below, and in the near future, this message will include a map to locate the chunks.

Product	Extracted by	Format	Download Link
NAIP (4 Band) UTM Zone 10N	Current Extent/(-122.374, 47.187), (-122.324,	GeoTIFF	<u>Click here to</u>
1/1	47.207)		download

Download footprint data: KML

NOTE: Your order has been processed by the The National Map 2.0 Viewer and Download toolset. Please contact the Service Desk at <u>thm_help@usgs.gov</u> with comments or issues. If you have a problem with any of the products, forward this e-mail to the Service Desk and indicate which product did not work as expected.

Kindest Regards, The National Map Viewer and Download Team <u>tnm_help@usgs.gov</u> <u>http://nationalmap.gov</u>

After receiving your delivery e-mail, you can download the desired products. We are going to start with the NED data. Click on the download link. The program will route you to an 'extractor' web page. Wait a minute or so for the computer to do its work. Then it should download the requested NED Data. Keep in mind the order will refer to the NED data as Raster data. We are used to seeing raster used to describe an image. In this case raster is referring to information created on a grid.

After the data extraction is complete, save the ZIP file on your computer.

Importing NED Data into Civil 3d

In Civil 3d, begin a new drawing. Start with a template that defines the surface styles you will wish to use.

In order to use this drawing to import our NED data, we have to define a coordinate system for the drawing. Change the Drawing Settings, Units and Zone tab, to include a coordinate system for this drawing.

Imperial to Metric conversion:	Scale:
US Survey Foot(39.37 Inches per Meter)	▼ 1" = 20'
Scale objects inserted from other drawings	Custom scale:
Set AutoCAD variables to match	20
USA, Washington	•
anes, South Zone, US Foot	
	US Survey Foot(39.37 Inches per Meter) Scale objects inserted from other drawings Set AutoCAD variables to match USA, Washington anes, South Zone, US Foot de: WA83-SF anes, South Zone, US Foot

ype:	Surface layer:
TIN surface	• 0
Properties	Value
Information	
Name	EG-NED
Description	NED DAta
Style	Contours 1' and 5' (Design)
Render Material	ByLayer

Then create a new surface to display the NED Data.

Go into the surface collection in the Toolspace, pick DEM Files and select Add...

The file you are looking for will most likely be called **w001001.adf.**



The current drawing coordinates are at the bottom of the page, you need to input the coordinate system of the NED file.

Add DEM File	~
DEM file name:	
esktop\National Map\1-121763590\1-	121763590\1-121763590\w001001.adf
DEM file information:	
Data Element Value	A
Description Estimated Point Total 1060000 Coordinate System Type UTM Zone 0 Horizontal Datum NA Vertical Datum NA	=
Properties	Value
🗆 DEM file	
CS Code:	
Description	
Projection	
Datum	
Use custom null elevation	No
Null elevation	100000000000000000000000000000000000000
Current drawing	
CS Code:	WA83-SF
Description	NAD83 Washington State Planes, South Zone, US Foot
Projection	LM
Datum	NAD83
	OK Cancel Help