

Elevation QC Report

Project: OR_CVO-NEWBERRY-DEL1_2010

Contractor: Watershed Sciences

Data Delivery Date: 06/23/2011

Date Data Reviewed: 07/05/2011

Reviewer: Hannah Boggs

Total Square Miles Reviewed: 49.03 square miles

Elevation Type: LIDAR **Format:** LAS

Grid Spacing: 3.0 feet

Tile size: 7.5' by 7.5'

Projection: LCC **Datum:** NAD83 **Units:** International Feet

Licensing: Public Domain **Metadata:** Project Level

Materials Received:

LAS

All_Points (classified LAS)

Grounds (Bare Earth LAS)

Shapefiles:

Ground Control Points

(Newberry_RTK_Area1.shp)

Tiling Scheme Shapefile for LAS

(Newberry_0_75_QUADS_OGIC.shp)

Tiling Scheme Shapefile for DEM

(Newberry_7_5_QUADS_OGIC.shp)

Project Footprint Shapefile

(Newberry_Study_Area1.shp)

Processing Bin Shapefile

(Newberry_Processing_Bins.shp)

Rasters:

Digital Elevation Models (DEM's)

Ground Density Rasters

Intensity files

Highest Hit (1st returns)

Metadata:

DEM metadata (will function as project metadata) (xml format)

Metadata for all shapefiles delivered (xml format)

Metadata for all other delivered rasters (xml format)

Data report for entire project from Watershed sciences (.pdf format)

Data acceptance report from DOGAMI (.pdf format)

Vertical Accuracy Test Performed: No **Test Point Source:** None

RMSE: See below

Vertical Accuracy Notes:

Reviewer was unable to conduct a Vertical Accuracy test due to a lack of check points that were of a higher accuracy than the LiDAR data.

Vertical Accuracy of the data was calculated by the contractor. Contractor used Real Time Kinematic (RTK) ground survey points. Reviewer approves collection method, distribution, and amount of points collected for this dataset. There were 1,209 well distributed RTK points.

Reported RMSE is 0.04 meters, 0.12 feet.

Reported standard deviation (2 sigma): 0.07 meters, 0.23 feet.

Please see QC Review Summary and NED processing Steps on the following two pages.

DELIVERABLES:

Trajectory files were not received. All other deliverables were received. Reviewer checked completeness and formatting in Global Mapper and ArcMap. Deliverables sent matched formatting required by project guidelines reported in the "OLC Newberry Delivery 1 Acceptance Report".

METADATA:

Metadata for the DEM datasets that will function as the project level metadata were run through the Metadata Parser in ArcCatalog. While general information is included and the metadata files reference the FGDC Content Standards for Digital Geospatial Metadata, the metadata parser came up with 25 errors. Metadata is in xml format. These errors will be detailed later in this document.

Reviewer fixed as many errors as possible and created a new project level metadata file for the NED titled OR_CVO-Newberry-Del1_2010.xml. This is the best use metadata file for this project. It is located under the METADATA - Documents folder.

LAS:

Reviewer loaded the classified LAS "all returns" into Global Mapper. LAS was tiled in a 100th quad scheme. Classifications reviewer was able to see in Global Mapper included unclassified and ground.

Reviewer loaded the LAS "grounds" into Global Mapper. LAS conformed to the 100th quad tiling scheme. Global Mapper showed both "unclassified" and "ground" classification for these points.

DIGITAL ELEVATION MODELS:

Reviewer loaded the ArcGrids into a Global Mapper Catalog for review. Reviewer used the projection, Lambert Conformal Conic NAD 83 International Feet, (which matches vector data files delivered) for the review. The data was examined at an average scale of 1:5000 throughout the project area.

There was no requirement for treatment of waterbodies or double line streams. There are double line streams present that have not been forced to drain downhill. Reviewer created a shapefile documenting double line streams that have not been forced to drain downhill. Examples will be provided below.

Bare earth surface is good. Through the majority of the project, there is not excessive "over-editing" of the bare earth points. All vegetation and bridges appear to be removed properly. Most building were removed properly, however, reviewer found some buildings not removed. Examples are provided below. The surface is free from very high points that are most likely noise, and quilting. Artifacts near edges are present, examples are provided below.

The reviewer created a single shapefile documenting these potential issues which is stored in the "Other" folder. The shapefile is named OR_CVO-Newberry-Dell_2010_DEMQC.shp.

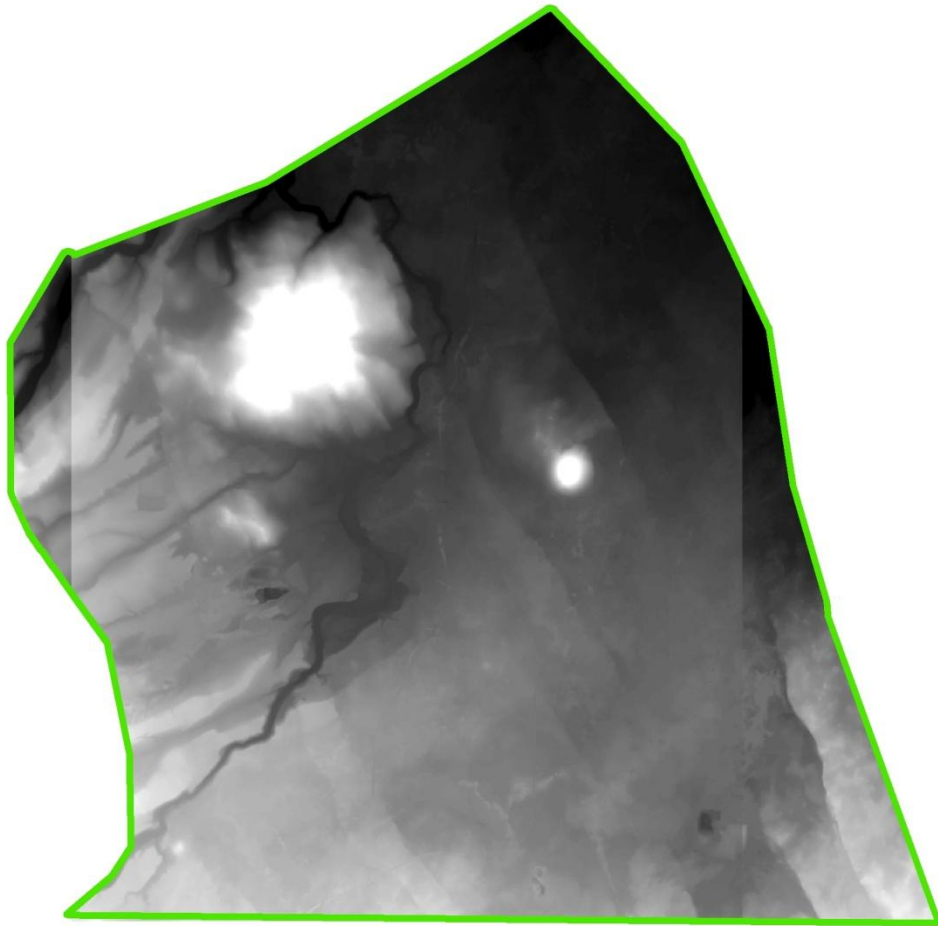
This data is recommended for NED 1/9th.

PROCESSING STEP FOR THE NED :

Reviewer loaded the ArcGrids into ArcMap. Using the Mosaic to Raster Model, reviewer created a large ArcGrid file. Reviewer loaded all provided DEM datasets into the Mosaic To New Raster model. The reviewer used the 32 bit signed parameter, and the blend method because there were over-lapping tiles. Reviewer kept original projection and resolution (Lambert Conformal Conic, NAD 83, International Feet, 3 foot resolution).

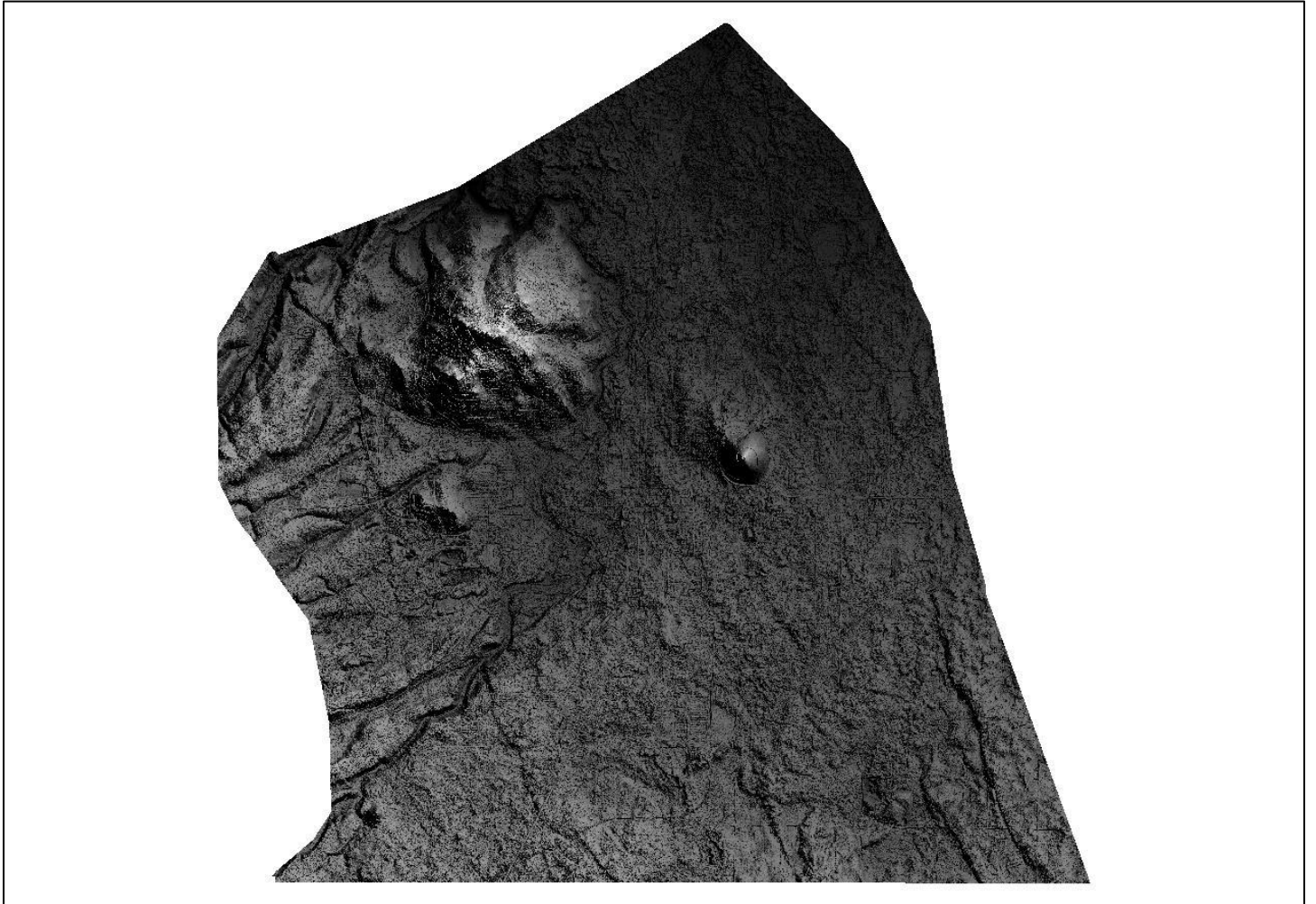
OR_CVO-Newberry-Del1_2010: Project Area

Scale = 1:100,000



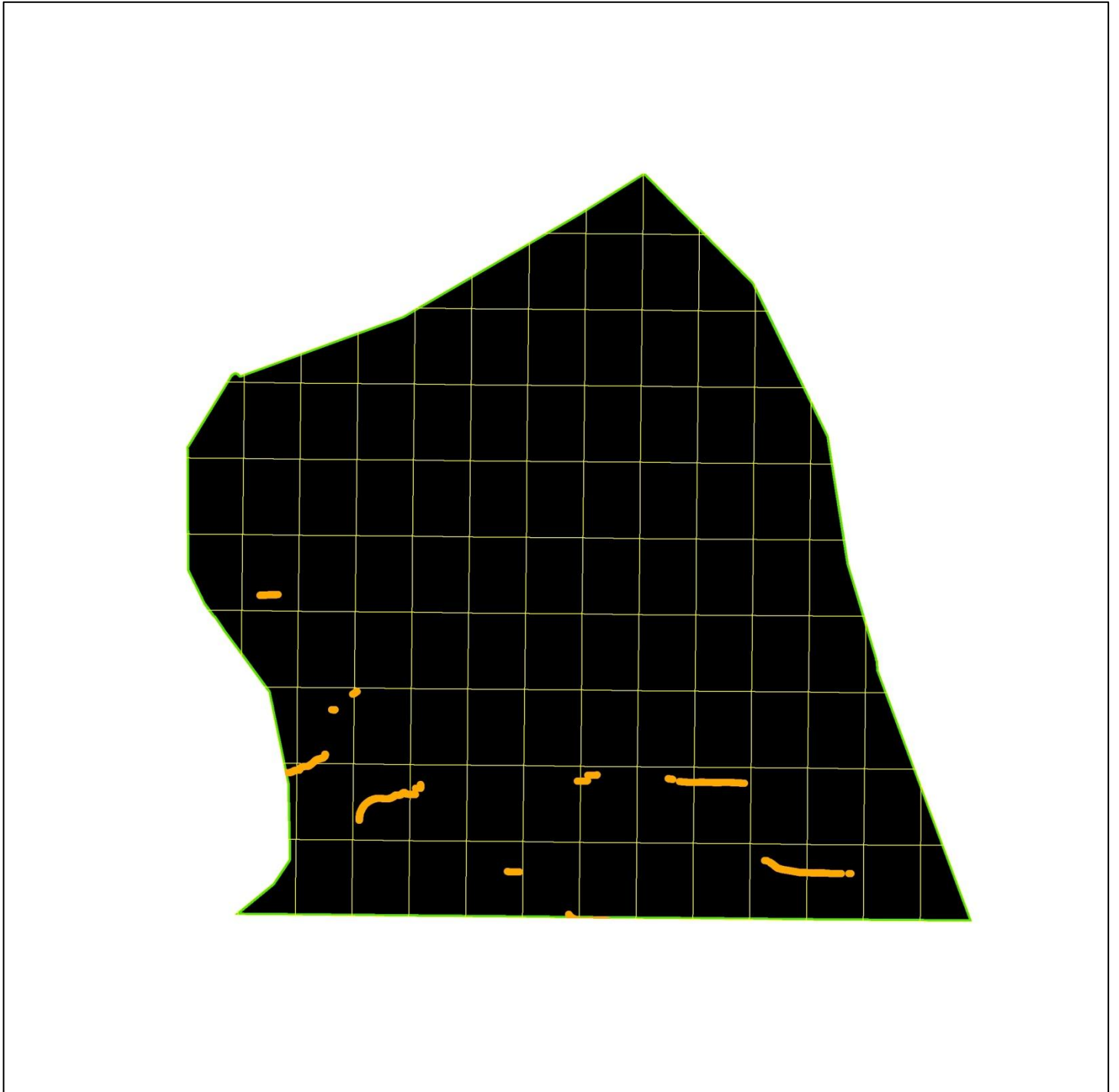
OR CVO-Newberry-Del1 2010: Project Area Hillshade

Scale = 1:61,180



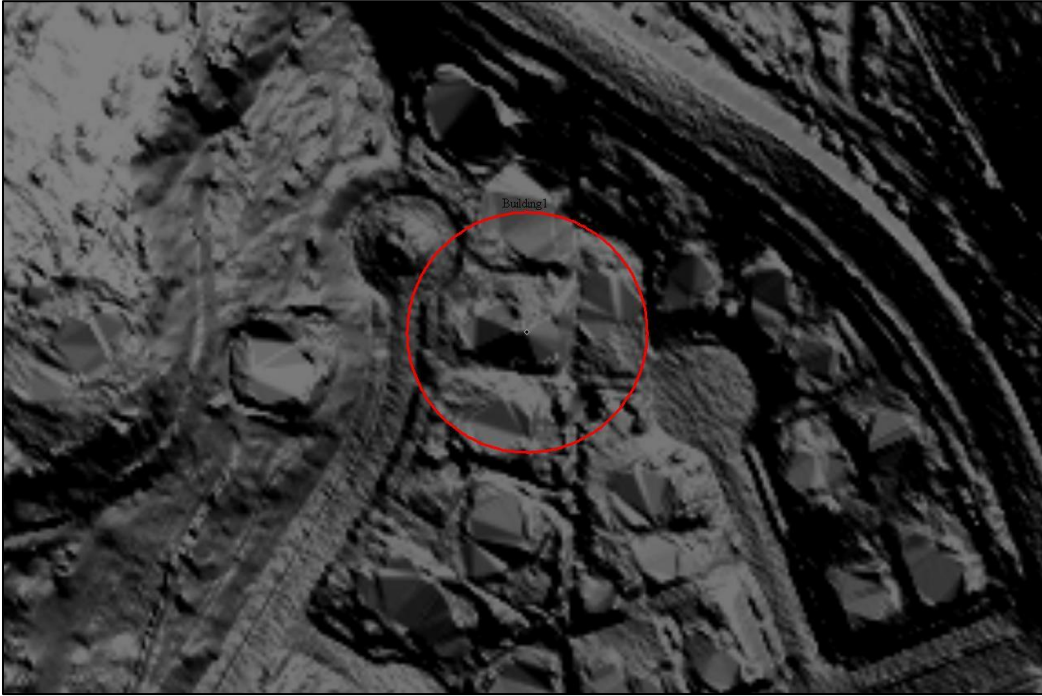
OR_CVO-Newberry-Del1_2010: Project Footprint, LAS tiling scheme, and RTK Points

Scale = 1:90,577



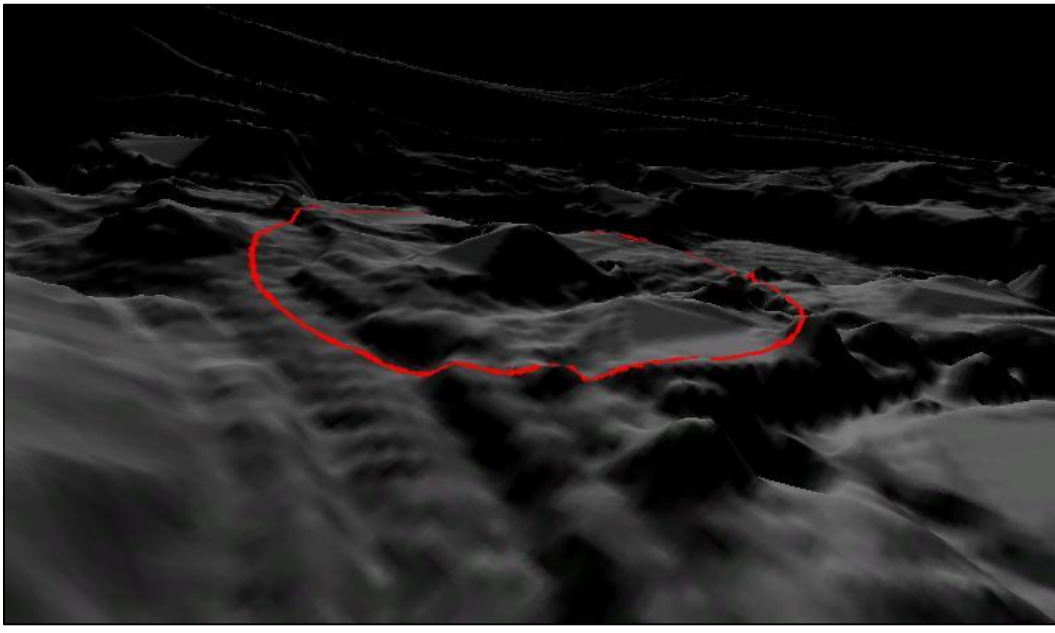
OR CVO-Newberry-Del1 2010: Example of Building Not Flattened

Scale = 1:744



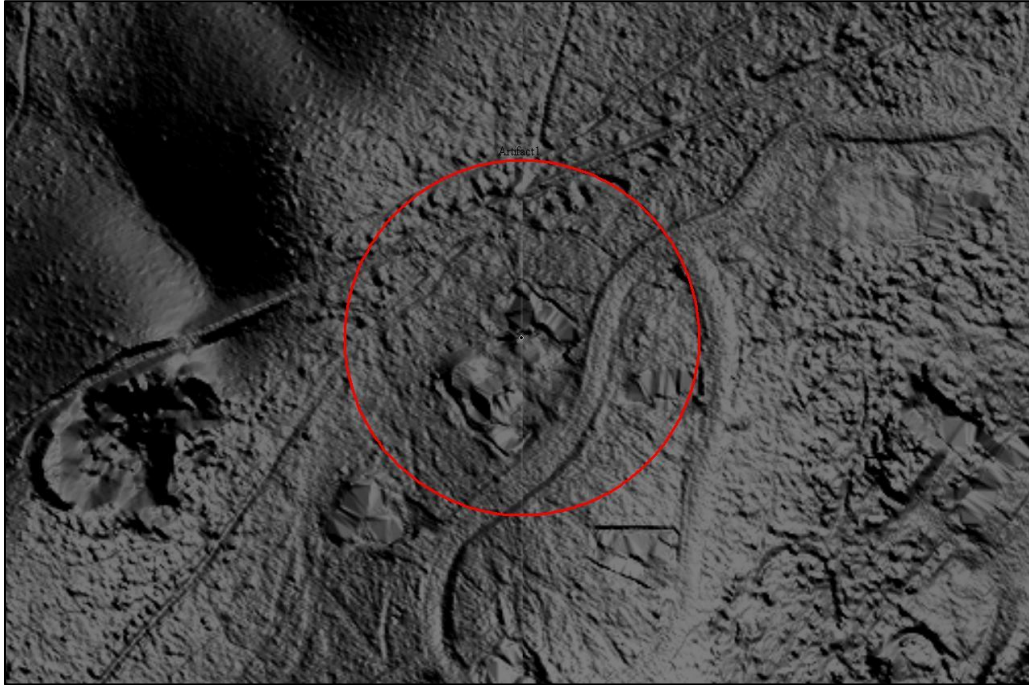
OR OLC-CVO-Shasta 2010: Example of building Not Flattened (3D)

Scale = 1:744



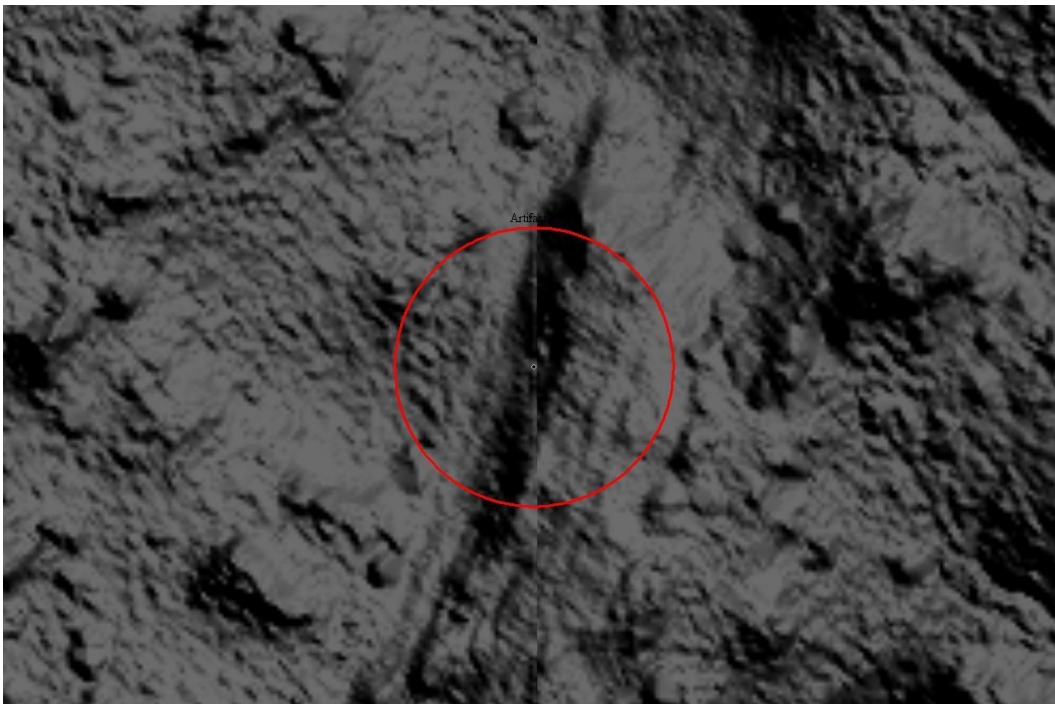
OR_CVO-Newberry-Del1_2010: Example of Artifact

Scale = 1:925



OR_CVO-Newberry-Del1_2010: Example of Artifact (2)

Scale = 1:676



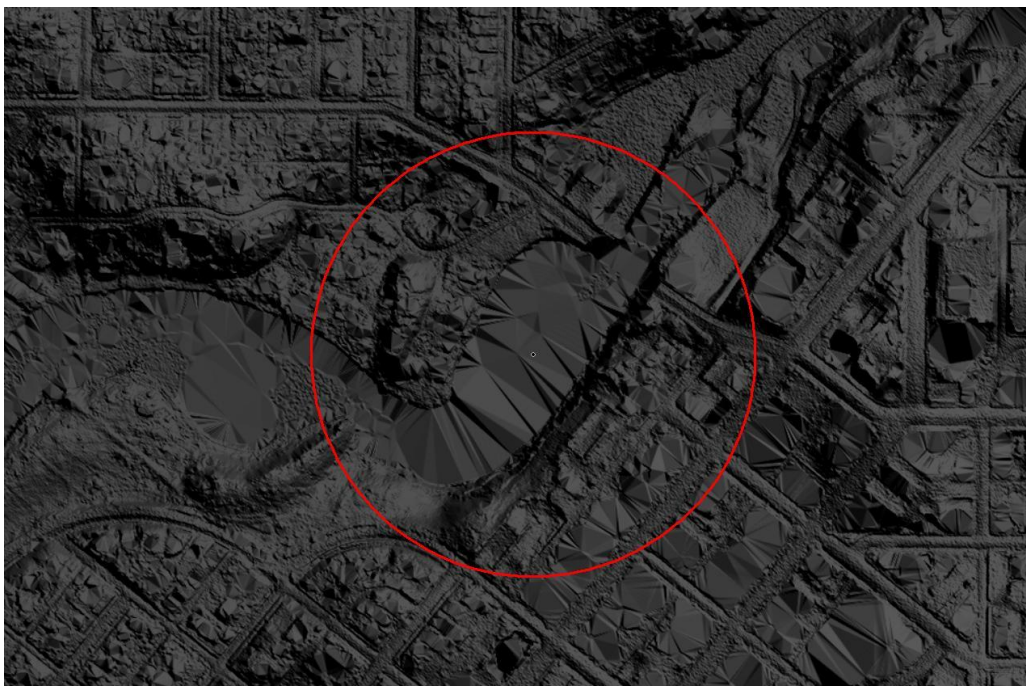
OR_CVO-Newberry-Del1 2010: Example of Double Line Stream Not Forced to Flow Downstream

Scale = 1:2321



OR_CVO-Newberry-Del1 2010: Example of Double Line Stream Not Forced to Flow Downstream (2)

Scale = 1:2751



OR_CVO-Newberry-Del1 2010: Errors Found in Metadata Parser

```
Executing: mp
G:\CVO_NEWBERRY_CRATER\CVO_NEWBERRY_DEL1\RASTER\RASTERS_BARE_EARTH\be_44121a2\metadata.x
ml # # #
Start Time: Thu Jul 07 07:15:03 2011
Running script mp...
mp
G:\CVO_NEWBERRY_CRATER\CVO_NEWBERRY_DEL1\RASTER\RASTERS_BARE_EARTH\be_44121a2\metadata.x
ml
: mp 2.9.6 - Peter N. Schweitzer (U.S. Geological Survey)
: Info: input file =
G:\CVO_NEWBERRY_CRATER\CVO_NEWBERRY_DEL1\RASTER\RASTERS_BARE_EARTH\be_44121a2\metadata.x
ml
: Error (line 10): improper value for Publication_Date
: Error (line 22): improper value for Beginning_Date
: Error (line 22): improper value for Ending_Date
: Error (line 48): Place_Keyword_Thesaurus is required in Place
: Error (line 84): Horizontal_Positional_Accuracy_Report is required in
Horizontal_Positional_Accuracy
: Error (line 85): Horizontal_Positional_Accuracy_Value is required in
Quantitative_Horizontal_Positional_Accuracy_Assessment
: Error (line 89): Vertical_Positional_Accuracy_Report is required in
Vertical_Positional_Accuracy
: Error (line 91): improper value for Vertical_Positional_Accuracy_Value
: Error (line 97): Process_Date is required in Process_Step
: Error (line 102): Process_Date is required in Process_Step
: Error (line 137): Entity_Type_Label is required in Entity_Type
: Error (line 137): Entity_Type_Definition is required in Entity_Type
: Error (line 137): Entity_Type_Definition_Source is required in Entity_Type
: Error (line 147): Attribute_Definition is required in Attribute
: Error (line 147): Attribute_Definition_Source is required in Attribute
: Error (line 147): Attribute_Domain_Values is required in Attribute
: Error (line 150): Attribute_Definition is required in Attribute
: Error (line 150): Attribute_Definition_Source is required in Attribute
: Error (line 150): Attribute_Domain_Values is required in Attribute
: Error (line 155): Distribution_Liability is required in Distribution_Information
: Error (line 157): Contact_Voice_Telephone is required in Contact_Information
: Error (line 162): Address_Type is required in Contact_Address
: Error (line 172): Fees is required in Standard_Order_Process
: Error (line 173): Digital_Transfer_Option is required in Digital_Form
: Error (line 174): Format_Name is required in Digital_Transfer_Information
: 25 errors: 21 missing, 4 bad_value
Completed script mp...
Executed (mp) successfully.
End Time: Thu Jul 07 07:15:04 2011 (Elapsed Time: 1.00 seconds)
```

**OR CVO-Newberry-Del1 2010: NGTOC corrected Metadata, Remaining Errors Found in
Metadata Parser**

```
Executing: mp
G:\CVO_NEWBERRY_CRATER\CVO_NEWBERRY_DEL1\RASTER\RASTERS_BARE_EARTH\be_44121a2\metadata.x
ml # # #
Start Time: Thu Jul 07 07:42:42 2011
Running script mp...
mp
G:\CVO_NEWBERRY_CRATER\CVO_NEWBERRY_DEL1\RASTER\RASTERS_BARE_EARTH\be_44121a2\metadata.x
ml
: mp 2.9.6 - Peter N. Schweitzer (U.S. Geological Survey)
: Info: input file =
G:\CVO_NEWBERRY_CRATER\CVO_NEWBERRY_DEL1\RASTER\RASTERS_BARE_EARTH\be_44121a2\metadata.x
ml
: Error (line 102): Process_Date is required in Process_Step
: Error (line 137): Entity_Type_Label is required in Entity_Type
: Error (line 137): Entity_Type_Definition is required in Entity_Type
: Error (line 137): Entity_Type_Definition_Source is required in Entity_Type
: Error (line 147): Attribute_Definition is required in Attribute
: Error (line 147): Attribute_Definition_Source is required in Attribute
: Error (line 147): Attribute_Domain_Values is required in Attribute
: Error (line 150): Attribute_Definition is required in Attribute
: Error (line 150): Attribute_Definition_Source is required in Attribute
: Error (line 150): Attribute_Domain_Values is required in Attribute
: Error (line 155): Distribution_Liability is required in Distribution_Information
: Error (line 172): Fees is required in Standard_Order_Process
: Error (line 173): Digital_Transfer_Option is required in Digital_Form
: Error (line 174): Format_Name is required in Digital_Transfer_Information
: 14 errors: 14 missing
Completed script mp...
Executed (mp) successfully.
End Time: Thu Jul 07 07:45:01 2011 (Elapsed Time: 0.00 seconds)
```

Scale = 1:90,577

