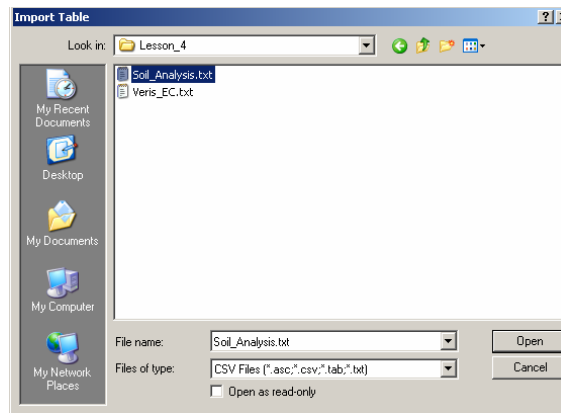# Lesson 4 - Visualization and Analysis of Soil Data
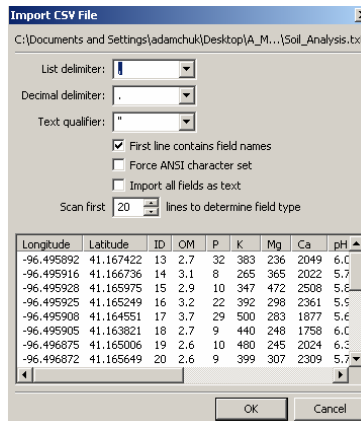
Exercise 4-2

Objective: Import and display the soil organic matter (OM) data layer and overlay it with field and soil type boundaries.
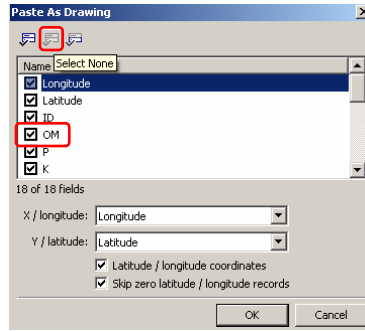
1. **File-Open** *Project_4-1.map*.

2. Select **File-Import-Table** and navigate to the desired text file. In the **Import Table** dialog box, select *CSV Files (*.asc,*.tab,*.txt)* in the **Files of type** box and navigate to the *Soil_Analysis.txt* file to open. Click **Open**.
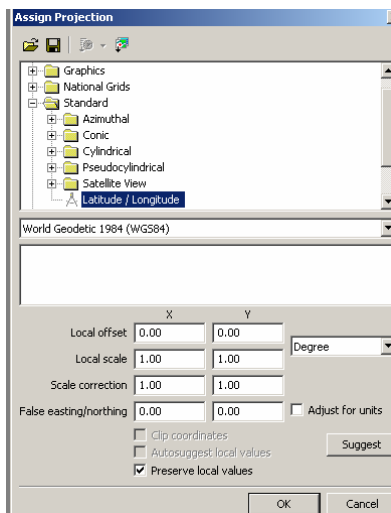

3. In the popup **Import CSV File** dialog box, click **OK**. *The comma delimited structure of the file and the header line are identified automatically.*
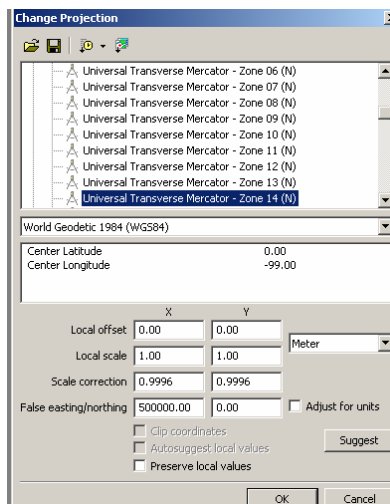

4. Right click the *Soil_Analysis* table component in the **Project** pane and click **Copy**. Right click any empty location in the **Project** pane and select **Paste As-Drawing**. In the popup **Paste As Drawing** dialog box, click the *Select None* icon and then check the checkbox next to **OM**. Click **OK**.

5. Right Click on the ***Soil_Analysis 2*** drawing component in the **Project** pane and select **Assign Projection.** In the popup **Assign Projection** dialog box, click **OK**.
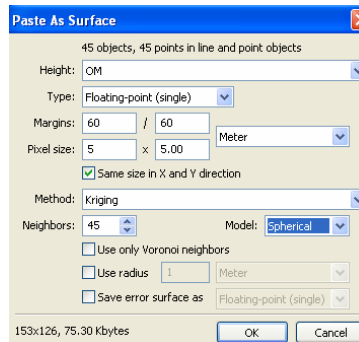

6. Right Click on the ***Soil_Analysis 2*** drawing component again and select **Change Projection.** In the popup **Change Projection** dialog box, navigate to ***Universal Tranverse Mercator - Zone 14 (N)***. Click **OK**.
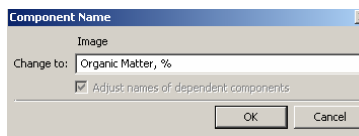
Changing projection prior to interpolation is important to be able to specify the pixel (grid cell) size in linear units.

7. Once more, right click **Soil_Analysis 2** drawing component in the **Project** pane and select **Copy**. Right click on any empty location in the **Project** pane and select **Paste As-Surface**. In the popup **Paste As Surface** dialog box, choose **OM** in the **Height** box. Set the **Margins** at **60** by **60** and the **Pixel size at 5** by **5**. Specify **Spherical** for **Model** for the **Method** of **Kriging** and click **OK**.
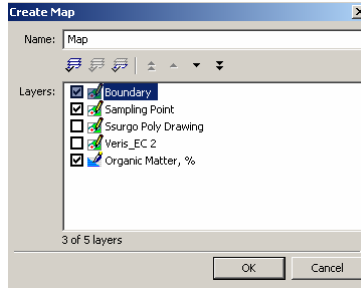

*Specifying margins is necessary to allow data extrapolation as all sampling locations are away from the field boundary. The farthest distance is between **50** and **60** m. It is recommended that a constant pixel size be maintained as with other interpolated surfaces. **Kriging** is believed to be the best interpolation technique for a sparse data set.The **Spherical** model has been observed for many semivariograms of popular soil properties.*

8. Right click the **Soil_Analysis 3** surface component in the project pane and choose **Rename**. In the popup **Component Name** dialog box type **Organic Matter, %** in the **Change to** box and click **OK**.

9. Right click the **Soil Analysis_2** drawing component in the **Project** pane and choose **Rename**. In the popup **Component Name** dialog box type **Sampling Point** in the **Change to** box and click **OK**.

10. Right click any empty location in the **Project** pane and select **Create-Map**. In the popup **Create Map** dialog box, type **OM Map** in the **Name** box, check the checkboxes next to the **Boundary**, **Sampling Point** and **Organic Matter, %** components. Click **OK**.
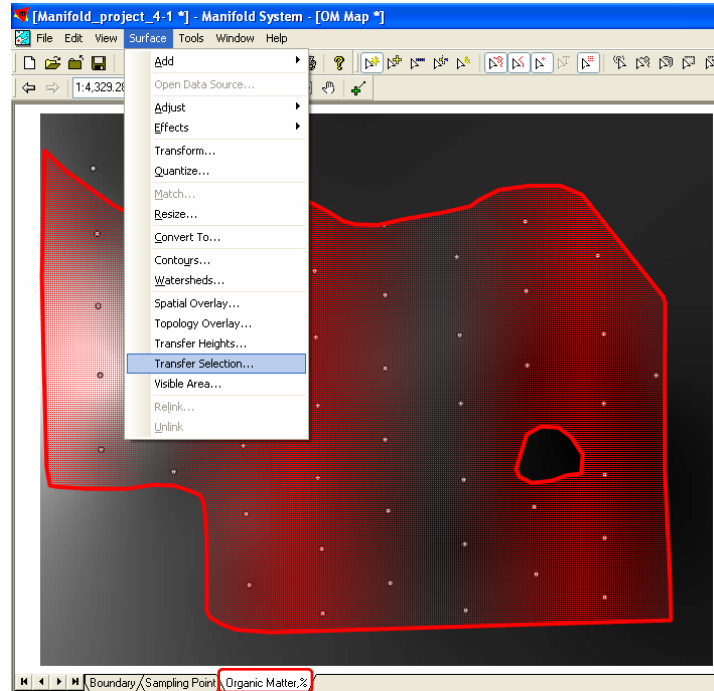
11. Double-click the **OM Map** component in the **Project** pane. Expand the map using the **Maximize** button, and click the **Zoom To Fit** icon.
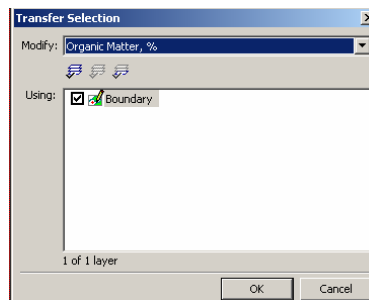

12. Click inside the boundary to select the field area. *The selected area turns red.*
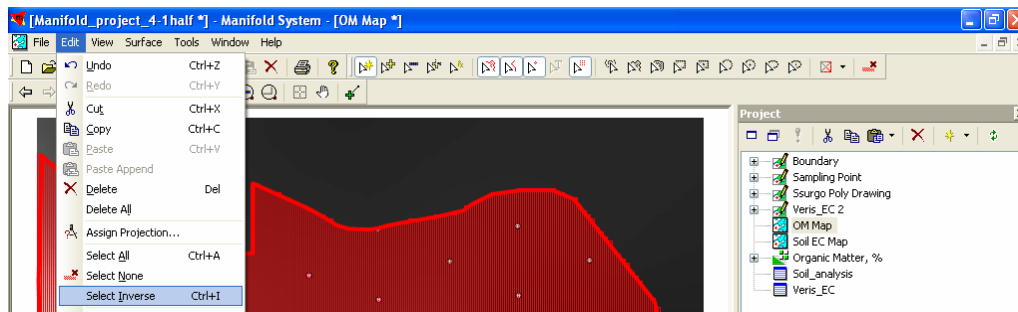

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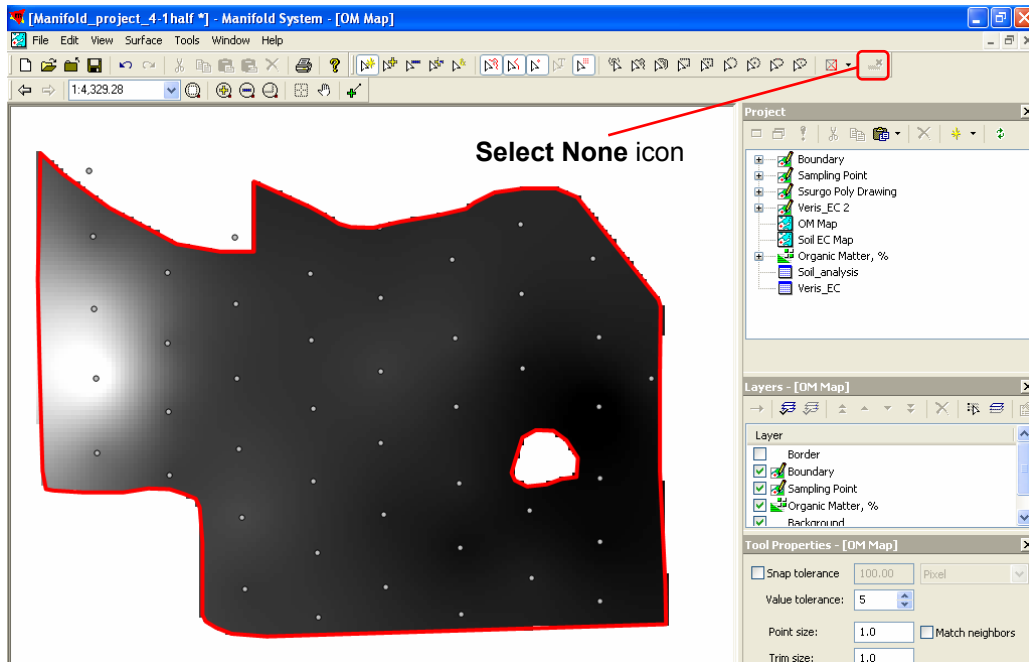13. Click the ***Organic Matter, %*** tab. From the **Surface** menu select **Transfer Selection**.

In the popup **Transfer Selection** dialog box, click **OK**. *This action will select every pixel of the interpolated OM surface that is located inside the field boundary.*
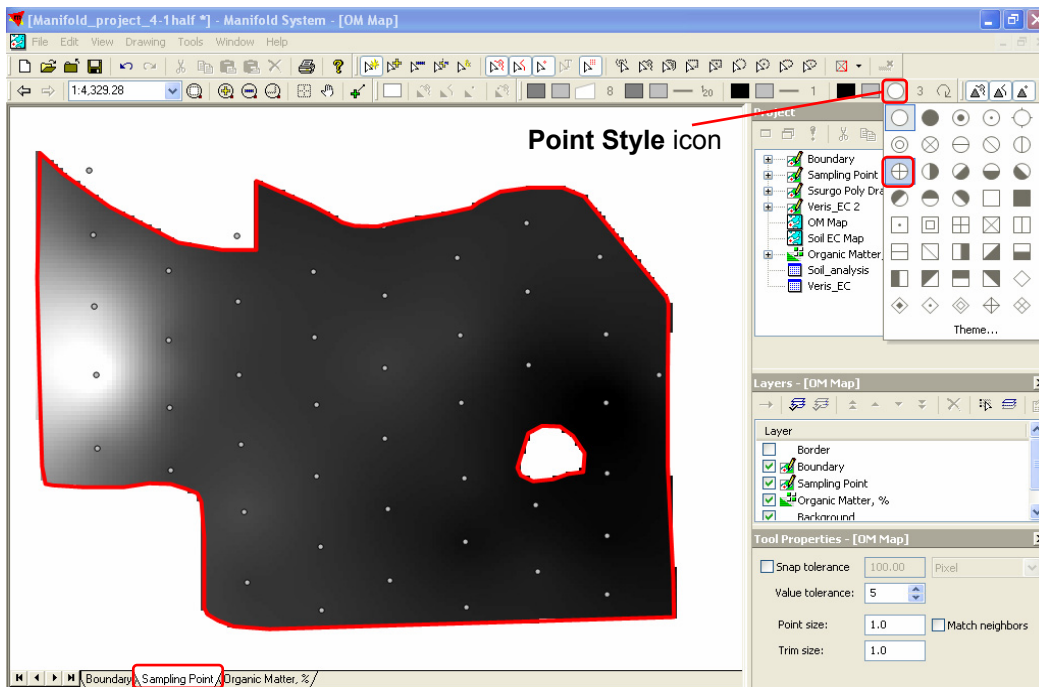

14. From the **Edit** menu choose **Select Inverse** and press the **Delete** key. *This will remove every pixel located outside the field's boundary.*
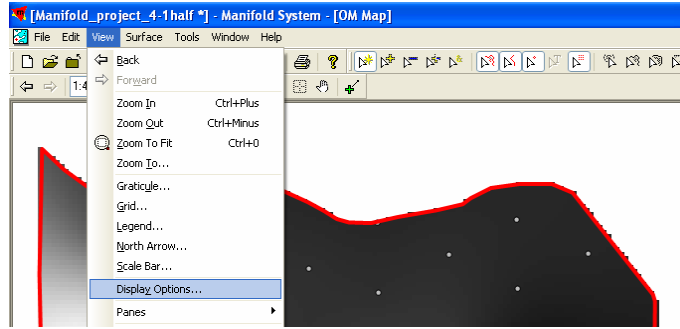
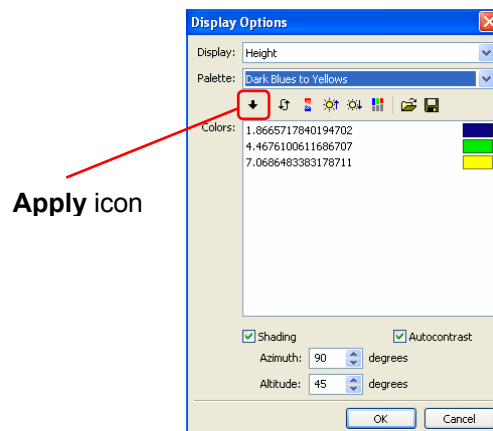15. Click on the **Boundary** tab. Click the **Select None** icon.

16. Click the **Sampling Point** tab. Click the **Point Style** icon and select the circle with cross style.
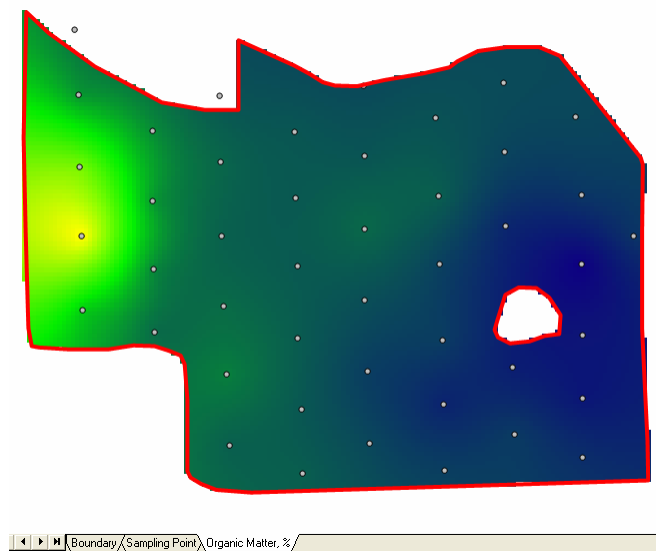

17. Click the **Organic Matter, %** tab. From the **View** menu select **Display Options**.

18. In the popup **Display Options** dialog box select ***Dark Blues to Yellow*** in the **Palette** box. Click the **Apply** icon and click **OK**.

The final map of **Organic Matter** *will be as shown:*

19. **File-Save As** ***Project_4-2.map***.