

# ***Excel for Hydrology***

## ***Section 4***



### ***Conditional Formatting***

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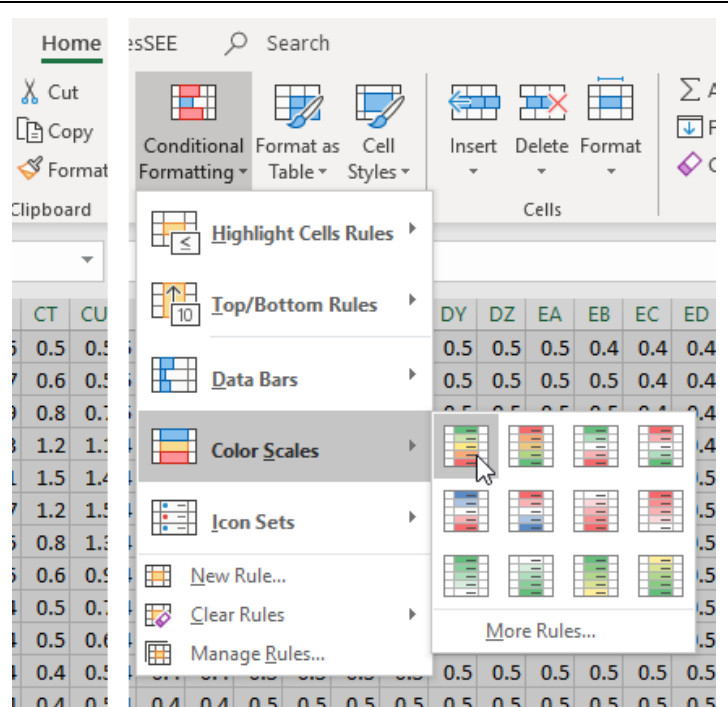
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## 04\_ConditionalFormatting

Conditional formatting serves as a quick check for 2D arrays.

### Quick shading of arrays – 01\_PRISM\_4.0km.NV.xlsx

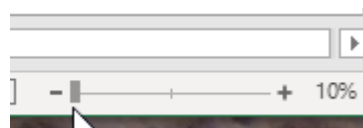
Select range A1:EM168.  
Select Home tab on ribbon,  
Select “Conditional Formatting”,  
Select first option under “Color Scales.”



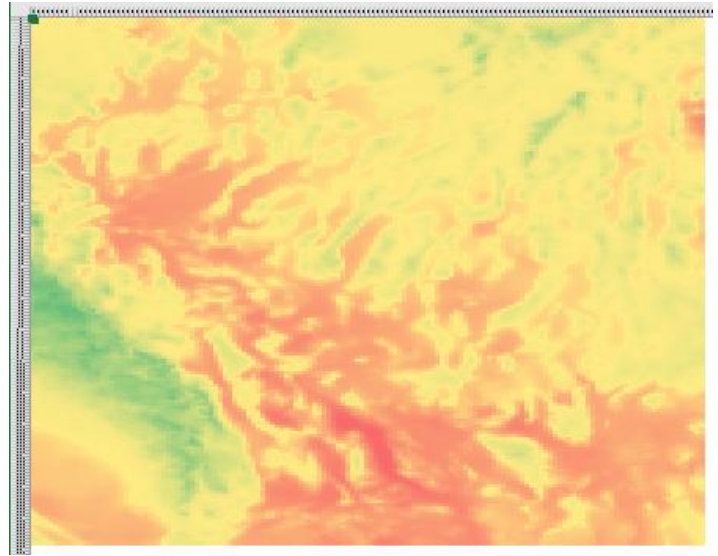
Selected range will be shaded.

	A	B	C	D	E	F	G	H	I	J
1	0.9	0.9	0.8	0.8	0.8	0.9	1	0.9	0.9	0.8
2	0.9	0.8	0.9	0.8	0.8	0.9	1	0.9	0.9	0.8
3	0.9	0.8	0.9	0.9	0.8	0.8	0.9	0.9	0.9	0.8
4	0.9	0.9	1	0.9	0.9	0.9	0.9	0.9	1	0.9
5	0.9	0.9	1	0.9	0.9	0.9	0.9	0.9	1	0.9
6	1	0.9	1	0.9	0.9	1	0.9	0.9	1.1	1
7	1	1	1	0.9	0.9	0.9	0.9	0.9	1	1
8	1	1	1	0.9	0.9	0.9	0.9	1	1	0.9

Reduce zoom enough that entire array is visible in window, **ctrl+wheel**

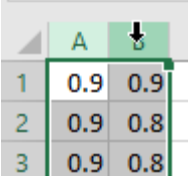
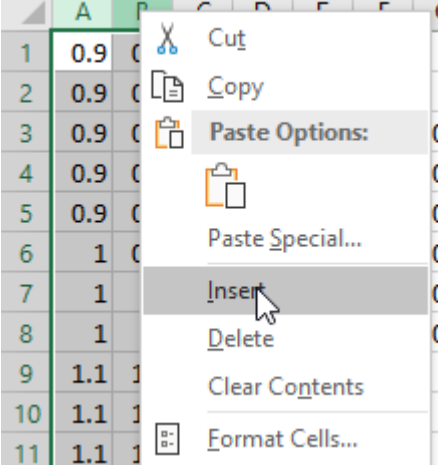
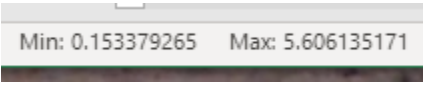
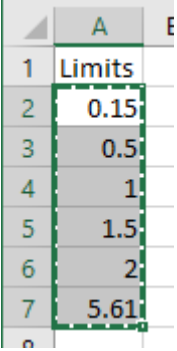


Inspect array for lows, highs, and patterns to ensure array is correct.



Shading can be more controlled with specified bands and changed easily if limits are defined in cells.

## 01\_PRISM\_4.0km.NV.xlsx – Specified shading of arrays

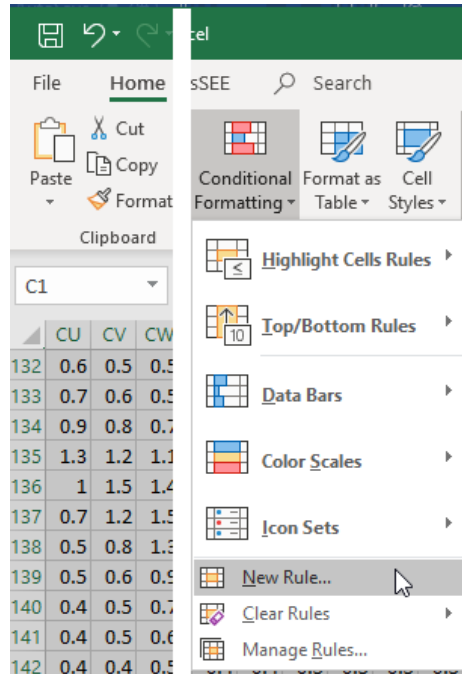
<p>Insert 2 new columns by, Highlighting columns <b>A</b> and <b>B</b>.</p>	
<p>Right-click while arrow (↓) appears. Select Insert option on form.</p>	
<p>Select range of precipitation and note minimum and maximum precipitation rates are 0.15 and 5.61 ft/yr in the Status Bar.</p>	
<p>Specify 0.15, 0.5, 1, 1.5, 2, and 5.61 ft/yr in the range A2:A7 to define ranges to be shaded.</p>	

Select range C1:EO168.

Select Home tab on ribbon,

Select “Conditional Formatting”,

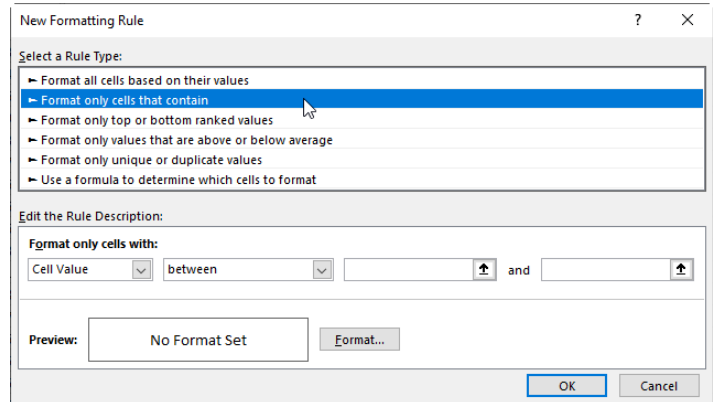
Select “New Rule...”



“New Formatting Rule” form will appear.

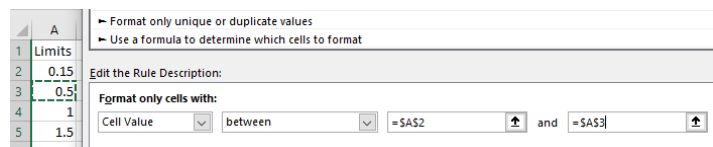
Select 2<sup>nd</sup> option,

“Format only cells that contain.”

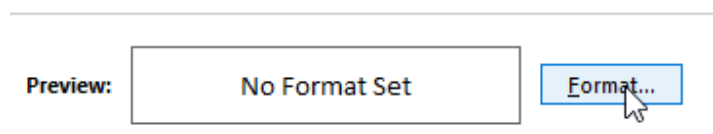


Edit rule description to read,

Cell value between =\$A\$2 and =\$A\$3.



Select Format... on “New Formatting Rule” form to specify shading, font, etc. of conditional format.

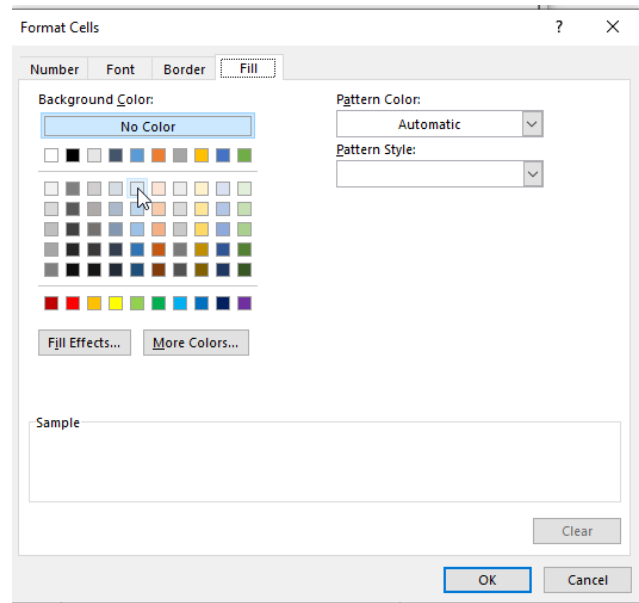


Format cells form will appear.

Select Fill tab.

Select a light blue.

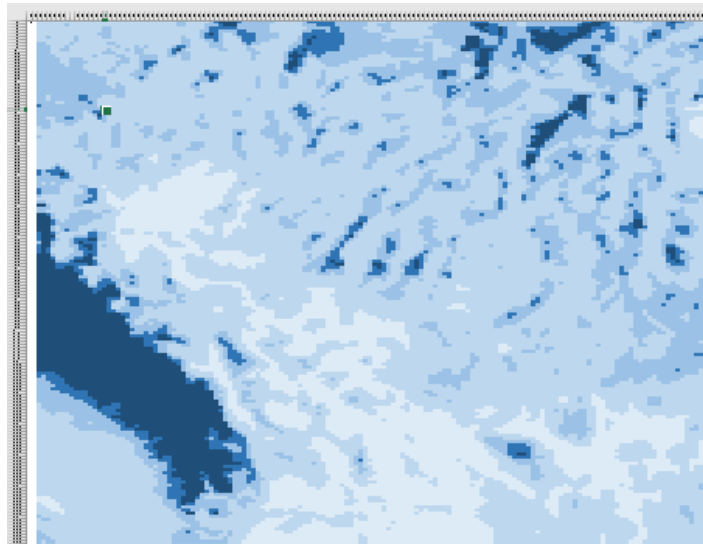
Select OK on forms until all forms are closed.



Shading has been specified for precipitation rates between 0.15 and 0.5 ft/yr as defined in cells \$A\$2 and \$A\$3.



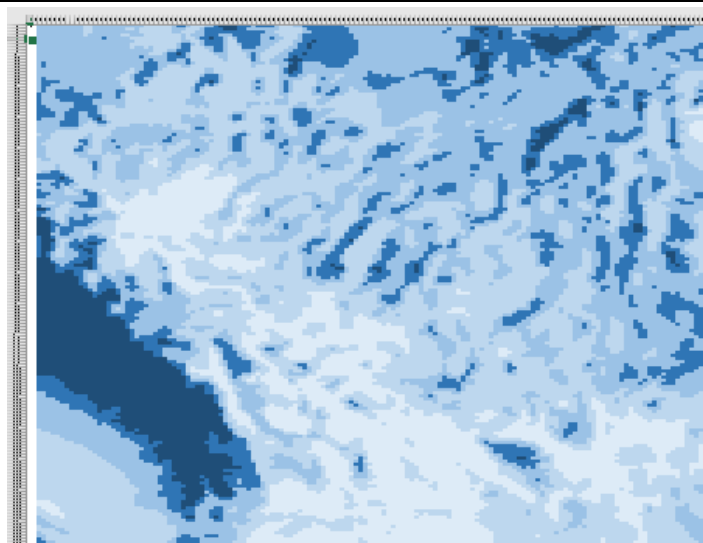
Repeat until all ranges are defined.



Change values in column A to manipulate color breaks.

Cell A4 changed from 1.0 to 0.8

Cell A5 changed from 1.5 to 1.2





Every other row in a table can be shaded for readability with conditional formatting, where conditions are specified with a user-defined equation.

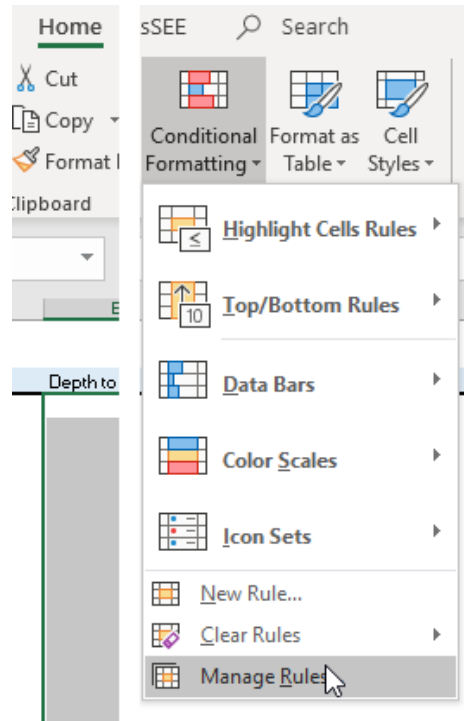
## 02\_CHV\_StandardizedLOG.xlsm – Alternate shading of rows

Select range B4:D49.

Select Home tab on ribbon,

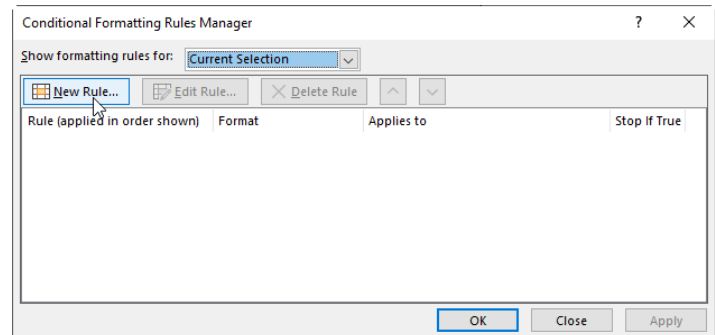
Select “Conditional Formatting”,

Select “Manage Rules”.



Conditional Formatting Rules Manager form will appear.

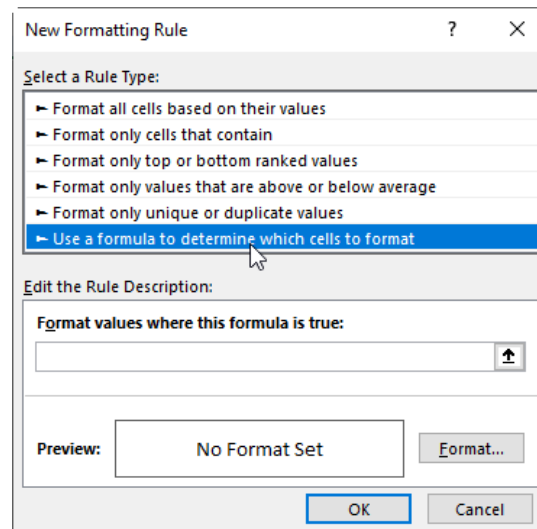
Click “New Rule...”



“New Formatting Rule” form will appear.

Select last option,

“Use a formula to determine which cells to format.”



New Formatting Rule

Select a Rule Type:

- Format all cells based on their values
- Format only cells that contain
- Format only top or bottom ranked values
- Format only values that are above or below average
- Format only unique or duplicate values
- Use a formula to determine which cells to format

Edit the Rule Description:

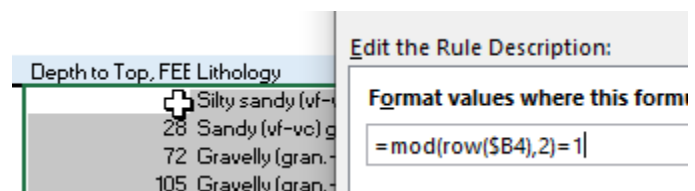
Format values where this formula is true:

Preview: No Format Set

OK Cancel

Enter equation in “Format values where this formula is true:”, which is  
 $\text{=mod}(\text{row}(\$B4),2)=1$

\$B4 is the upper, left corner of the selected area and is fixed with respect to column B.



Edit the Rule Description:

Format values where this formula is true:

$\text{=mod}(\text{row}(\$B4),2)=1$

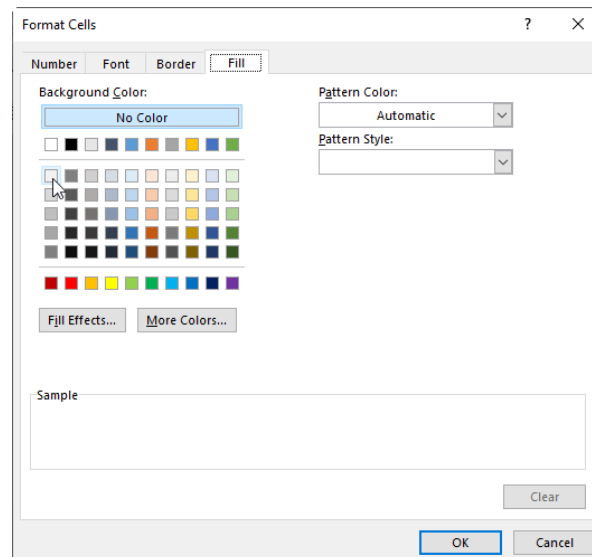
Click “Format...” button

Format cells form will appear.

Select Fill tab.

Select lightest grey.

Select OK on forms until all forms are closed.



Format Cells

Number Font Border Fill

Background Color:

No Color

Pattern Color: Automatic

Pattern Style:

Fill Effects... More Colors...

Sample

Clear

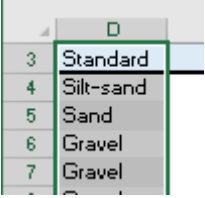
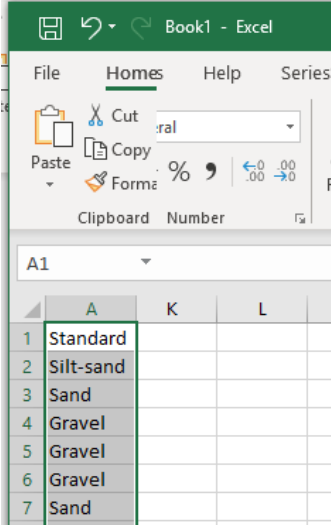
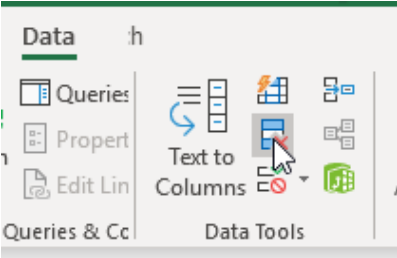
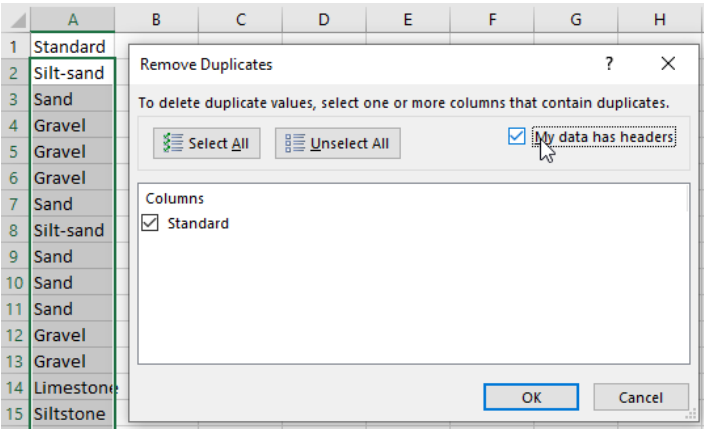
OK Cancel

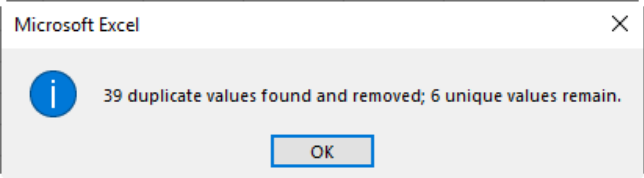
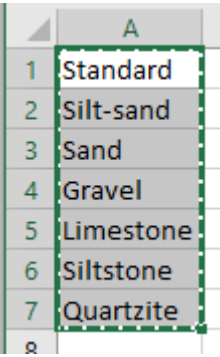
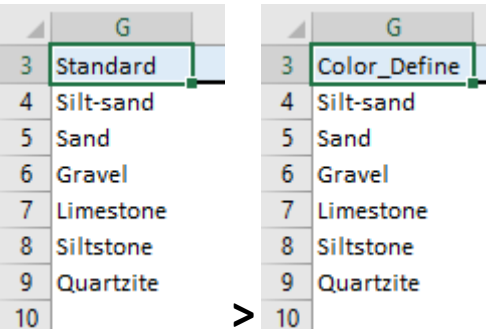
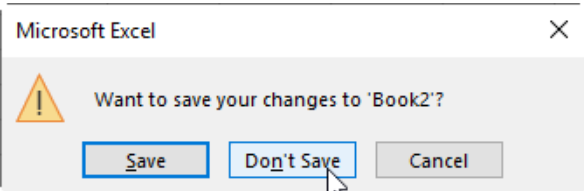
Every other row is shaded grey.

	B	C	D
3	Depth to Top, FEE Lithology		Standard
4	0 Silty sandy (vf-vc) gravel (gran.-cob.) w/ minor clay		Silt-sand
5	28 Sandy (vf-vc) gravel (gran.-lg. peb.)		Sand
6	72 Gravelly (gran.-lg. peb.) sandy (vf-vc) silt with minor clay		Gravel
7	105 Gravelly (gran.-md. peb.) sandy (vf-vc) clayey silt		Gravel
8	139 Gravelly (gran.-md. peb.) sandy (vf-vc) silty clay		Gravel
9	156 Slightly gravelly (gran.-md. peb.) sandy (vf-vc) clayey silt		Sand
10	177 Silty sandy (vf-vc) gravel (gran.-md.) w/ minor clay; hematite & siderite		Silt-sand
11	194 Slightly gravelly (gran.-md. peb.) sandy (vf-vc) clayey silt; hematite & sid		Sand
12	209 Sandy (vf-vc) gravel (gran.-md. peb.) minor clay lenses at 230'; hematite		Sand

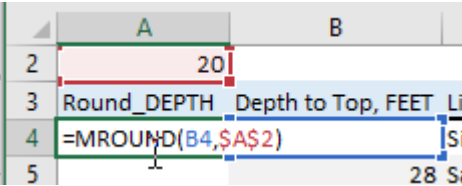
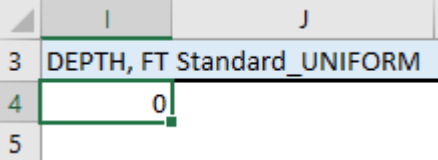
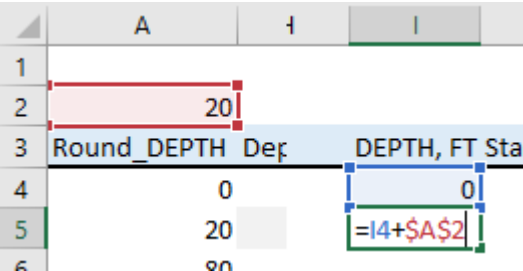
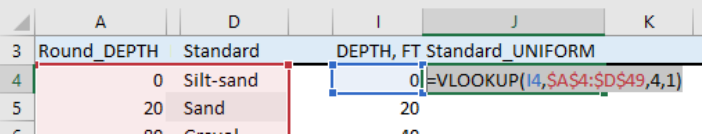
Determine the number of unique lithologic classes with the “Remove Duplicates” tool.

### List of unique standard descriptions – 02\_CHV\_StandardizedLOG.xlsm

<p>Select range D3:D48, Copy range.</p>	
<p>Open a new workbook (<b>Alt, F, N, L</b>) Paste Special as values in new book.</p>	
<p>Select pasted range. Select Data tab on ribbon, Select “Remove Duplicates” tool, (<b>Alt, A, M</b>)</p>	
<p>“Remove Duplicates” form will appear. Check “My data has headers.” Click OK.</p>	

<p>Information box will appear and report the number of unique values. 6 in this example.</p> <p>Click OK and dismiss the box.</p>	
<p>List of unique entries with header “Standard” in cell A1 are in the range A1:A7.</p> <p>Copy range into memory.</p>	
<p>Return to workbook 02_CHV_StandardizedLOG.xlsm,</p> <p>Paste Special as Values in cell G3.</p> <p>Change header from “Standard” to “Color_Define” in cell G3.</p>	
<p>Close the new workbook without saving.</p>	

## 02\_CHV\_StandardizedLOG.xlsm – Create log with uniform depths

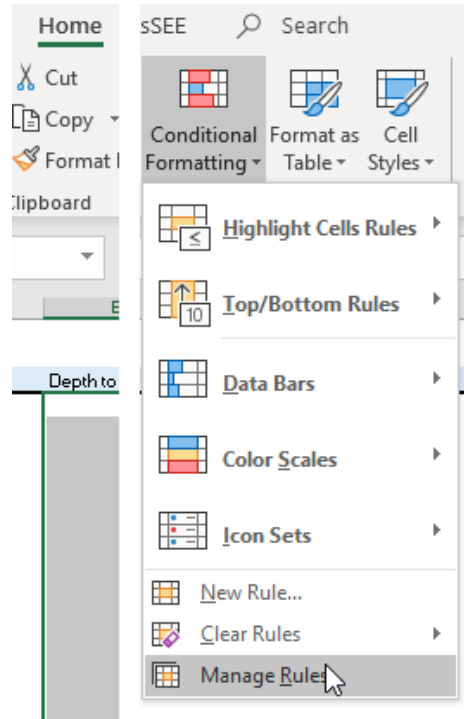
<p>Specify rounding increment of 20 in cell A2.</p> <p>Add rounded depths in cell A4 with, =MROUND(B4,\$A\$2)</p> <p>Copy equation to range A4:A49.</p>	
<p>Specify heading DEPTH, FT and Standard_UNIFORM in cells I3 and J3.</p> <p>Enter first depth of 0 in cell I4.</p>	
<p>Add depth increment equation, =I4+\$A\$2 to cell I5.</p> <p>Copy cell I5 to range I5:I68.</p>	
<p>Add equation to return standard lithology in cell J4, which is =VLOOKUP(I4,\$A\$4:\$D\$49,4,1)</p> <p>Copy cell J5 to range J5:J68.</p>	

Select range J5:J68.

Select Home tab on ribbon,

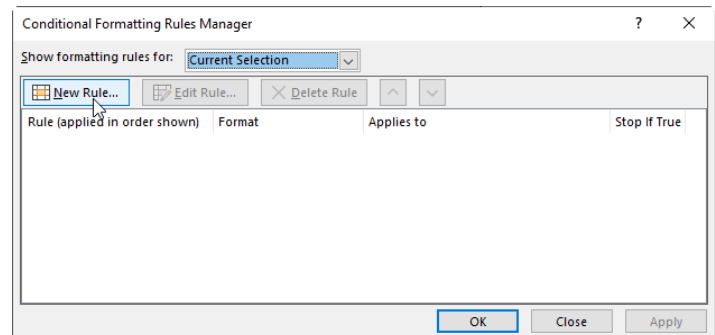
Select “Conditional Formatting”,

Select “Manage Rules”.



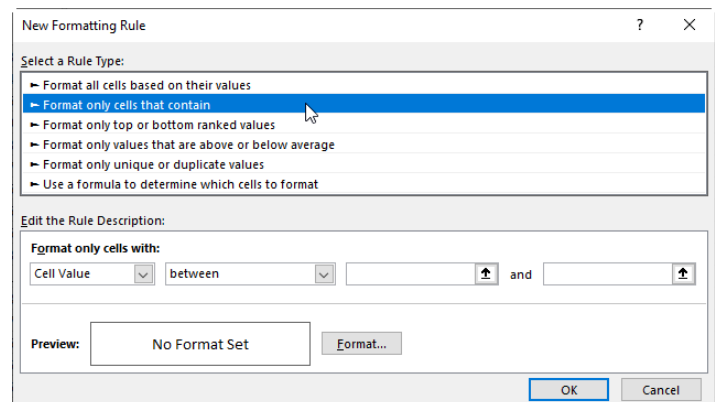
Conditional Formatting Rules Manager form will appear.

Click “New Rule...”



“New Formatting Rule” form will appear.

Select 2<sup>nd</sup> option,  
“Format only cells that contain.”



Edit rule description to read,  
Cell value equal to =\$G\$4.

Select Format... on “New Formatting Rule”  
form to specify shading, font, etc. of  
conditional format.

Format cells form will appear.

Select Fill tab.

Select a gold for gravel.

Select OK on forms until all forms are closed.

Shading has been specified for cells with  
Gravel as defined in cell \$G\$4.

DEPTH, FT	Standard_UNIFORM
0	Silt-sand
20	Sand
40	Sand
60	Sand
80	Gravel
100	Gravel
120	Gravel
140	Gravel
160	Sand
180	Silt-sand

Repeat until a color is assigned to all 6 lithologic classes.

	G	H	I	J
3	Color_Define		DEPTH, FT	Standard_UNIFORM
4	Gravel		0	Silt-sand
5	Limestone		20	Sand
6	Quartzite		40	Sand
7	Sand		60	Sand
8	Silt-sand		80	Gravel
9	Siltstone		100	Gravel
10			120	Gravel
11			140	Gravel
12			160	Sand
13			180	Silt-sand
14			200	Sand
15			220	Sand
16			240	Gravel
17			260	Gravel
18			280	Gravel
19			300	Limestone
20			320	Limestone

Add formatting to improve appearance of depths.

Specify depth display increment of 100 in cell I1.

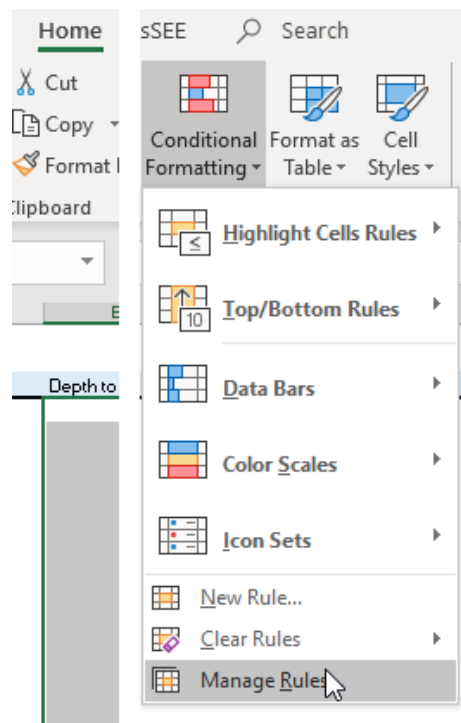
	H	I	J
1		100	
2			
3		DEPTH, FT	Standard_UNIFORM
4		0	Silt-sand
5		20	Sand

Select range I5:I68.

Select Home tab on ribbon,

Select “Conditional Formatting”,

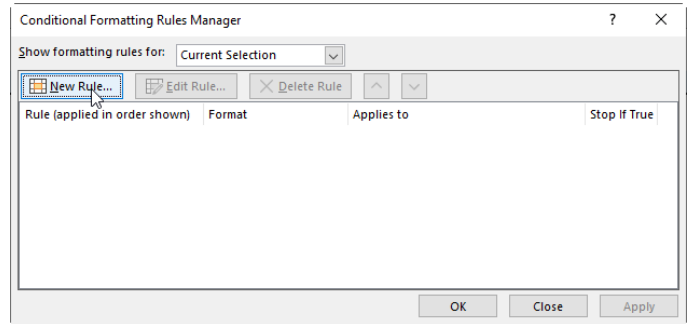
Select “Manage Rules”.





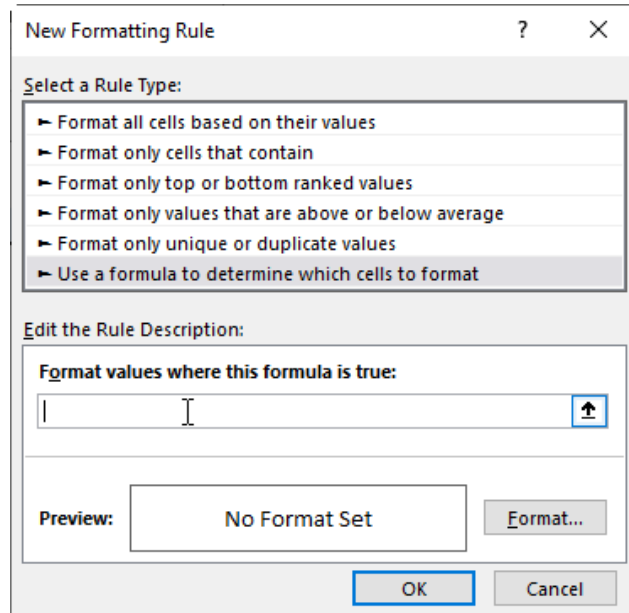
Conditional Formatting Rules Manager form will appear.

Click “New Rule...”



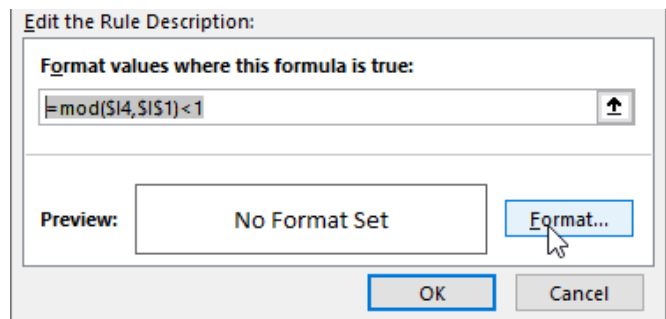
“New Formatting Rule” form will appear.

Select last option,  
“Use a formula to determine which cells to format.”



Edit rule description to read,  
Cell value equal to =mod(\$I4,\$I\$1)<1.

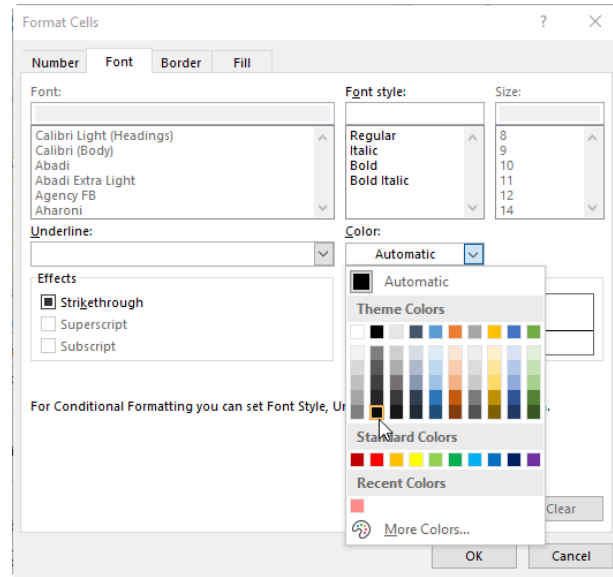
Select Format... on “New Formatting Rule”  
form to specify shading, font, etc. of  
conditional format.



Format cells form will appear.

Select Font tab.

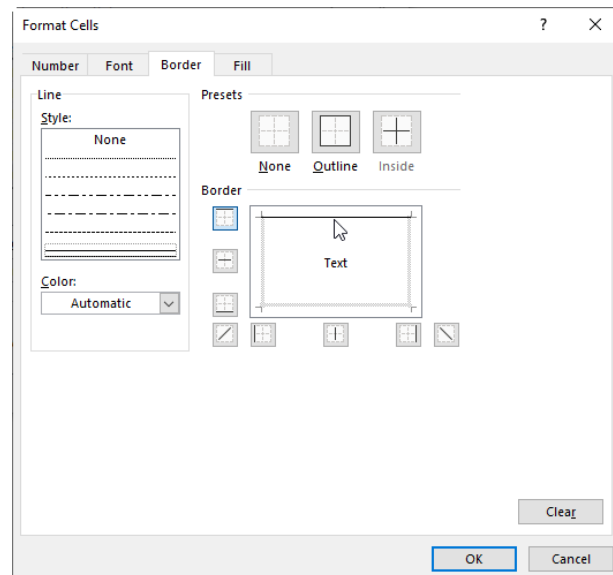
Select a black font for the text.



Select Border tab.

Apply solid border to upper edge of conditionally formatted cells.

Select OK on forms until all forms are closed.

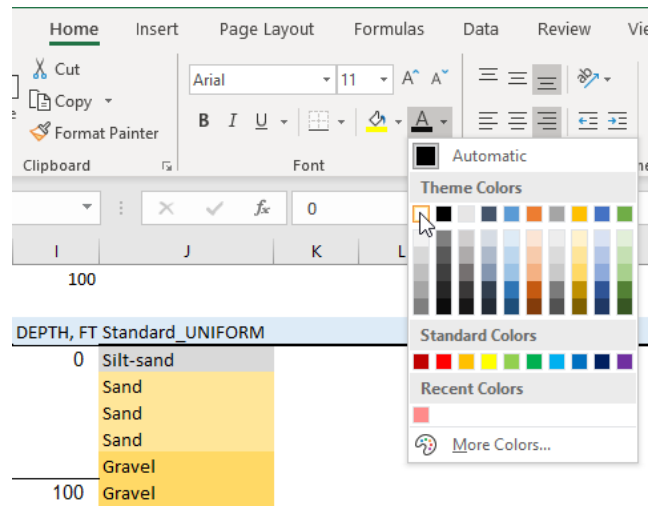


Top of depth intervals are formatted conditionally.

Range I5:I68 remains selected.

	H	I	J
1		100	
2			
3		DEPTH, FT Standard_UNIFORM	
4		0	Silt-sand
5		20	Sand
6		40	Sand
7		60	Sand
8		80	Gravel
9		100	Gravel

Select Home tab on ribbon,  
Select "Font Color",  
Specify a white font.



Bold all depths (**Ctrl+b**)  
Standardized log is final result.

3	DEPTH, FT Standard_UNIFORM	
4	0	Silt-sand
5		Sand
6		Sand
7		Sand
8		Gravel
9	100	Gravel
10		Gravel
11		Gravel
12		Sand
13		Silt-sand
14	200	Sand

Colors and depth scales are added with a VBA macro on the LithALL page.  
  
Colors are defined in the list of unique lithologies and applied programmatically to standardized log lithologies in column J.

G		H	I	J
		100		
COLOR 4				
Color_Define	DEPTH	Standard_UNIFORM		
Gravel	0	Silt-sand		
Limestone		Sand		
Quartzite		Sand		
Sand		Sand		
Silt-sand		Gravel		
Siltstone	100	Gravel		
		Gravel		
		Gravel		
		Sand		
		Silt-sand		
	200	Sand		
		Sand		