1. The soils contest can consist of judging 4 land areas using the “FFA Land Judging Scorecard” and instructions. The information in the “FFA Land Judging Scorecard Instructions” will be the subject matter guide.

2. Teams will be composed of four members with the top three scores counting.

3. Contestants will record their answers from their soils scorecard onto a scantron form to be computer scored. Each contestant will receive multiple choice questions relating to the judged pits. The correct answers for each soil site used may be available after completion of the contest and will be posted on the FFA Web Site. The winners will be announced at the Awards Ceremony.

4. Tiebreakers- The official judge or faculty chair shall determine the order of total pit scores that will be used to break ties.

5. 1st Place team or alternate may represent Minnesota at the National Soil Contest in Oklahoma.

6. Materials available for FFA Land Judging are posted on the FFA website- https://cde.ffa.umn.edu/

   b. FFA Land Judging Instructions — (2006)
GRADING THE SCORECARD

Several general rules apply to grading the scorecard. A master scorecard is used to indicate acceptable answers. Never record a minus score for any part.

Parts 1, 2, & 3  
A. The point assignment is two points for correctly recording each depth with a range of 1" above and 1" below being correct. Where boundaries are indistinct or variable, the official judge will allow for appropriate variation in the answers.  
B. Allow four points for correctly identifying the correct color in parts 1 & 2.  
C. Allow 5 pts for identifying the correct texture in parts 1, 2 & 3.  
D. Allow 2 pts for identifying the correct gravel and rock.

Part 4  
Allow 3 pts each for identifying the correct steepness and correct landscape position. If the wrong box is checked or if a correct answer is not marked, the score for that part is zero. Judges may allow an alternative choice or award partial credit if the choice is considered difficult or borderline.

Part 5  
Allow six points if the correct class number is circled. If more than one number is circled, the score is zero. If the circle is one class from the correct answer, allow three points credit. No credit allowed between classes IV and V and between V and VI. Three points is allowed between class IV and VI.

Part 6  
A. thru D. Allow 2 pts each for identifying the correct answer. If the wrong box is checked or if a correct answer is not marked, the score for that part is zero.  
E. Allow 1 pt. For each correct answer in 1-a.b.c; and 2-a.b.c. Allow 4 pts. for 3 and 6 pts for 4. If the wrong box is checked or if a correct answer is not marked, the score for that part is zero.

Part 7  
Allow two points each for parts A. Amount of erosion and B. Kind of erosion. If the wrong box is checked or if a correct answer is not marked, the score for that part is zero.

Part 8  
Allow 3 pts each for A. Water Erosion and 3 pts for B. Wind Erosion. Only one answer is allowed in each section. If the wrong box is checked, if two boxes are checked, or if a correct answer is not marked, the score for that part is zero.

Part 9  
Allow 5 pts. for identifying the correct Drainage Required. If the wrong box is checked or if a correct answer is not marked, the score for that part is zero.

Part 10  
Allow two pts each for identifying the correct fertilizer and lime recommendations. If the wrong box is checked or if a correct answer is not marked, the score for that part is zero.

Part 11  
Land Use Limitations

Each USE will be scored and totaled individually as follows:

Limitations - Allow three points for correct answers.

Land Features - Allow one point for every correct answer in each column. If the wrong box is checked or if a correct answer is not marked, the score for that part is zero.
<table>
<thead>
<tr>
<th>Name</th>
<th>School</th>
<th>Number</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>9/18</td>
</tr>
</tbody>
</table>

**Part 1: Surface Soil**

A. Thickness in Inches

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

B. Color

<table>
<thead>
<tr>
<th></th>
<th>Dark</th>
<th>Medium</th>
<th>Light</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

C. Texture

<table>
<thead>
<tr>
<th></th>
<th>Coarse</th>
<th>Moderately Coarse</th>
<th>Fine</th>
<th>Very Fine</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

D. Gravel and Rock

<table>
<thead>
<tr>
<th></th>
<th>None to Few</th>
<th>Gravelly</th>
<th>Very Gravelly</th>
<th>Extremely Gravelly</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Part 2: Subsurface Soil**

A. Thickness in Inches

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
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<tbody>
<tr>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

B. Color

<table>
<thead>
<tr>
<th></th>
<th>Bright</th>
<th>Mottled</th>
<th>Dull</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

C. Texture

<table>
<thead>
<tr>
<th></th>
<th>Coarse</th>
<th>Moderately Coarse</th>
<th>Fine</th>
<th>Very Fine</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

D. Gravel and Rock

<table>
<thead>
<tr>
<th></th>
<th>None to Few</th>
<th>Gravelly</th>
<th>Very Gravelly</th>
<th>Extremely Gravelly</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Part 3: Underlying Material**

A. Thickness in Inches

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

D. Air and Water Movement (Subsoil Permeability)

<table>
<thead>
<tr>
<th></th>
<th>Very Rapid</th>
<th>Rapid</th>
<th>Moderate</th>
<th>Slow</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Part 4: Topography**

A. Steepness of Slope

<table>
<thead>
<tr>
<th></th>
<th>Nearly level - 2% or less</th>
<th>Gently sloping - 3 - 6%</th>
<th>Moderately sloping - 7-12%</th>
<th>Strongly sloping - 13 to 18%</th>
<th>Steep - Greater than 18%</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

B. Landscape Position

<table>
<thead>
<tr>
<th></th>
<th>Upland</th>
<th>Terrace - Footslope</th>
<th>Bottom land - Flood Plains</th>
<th>Depressional Area - No Outlet</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Part 5: Land Capability Classification**

- **Class I**: Land suitable for crops
- **Class II**: Cultivated land suitable for crops except for Class 5
- **Class III**: Land suitable for permanent vegetation
- **Class IV**: Land suitable for permanent vegetation except for Class 6 and Class II

| Score 6 points for correct answer - 3 points for 1 class off between Class IV and VI. |
|---------------------------------|---------------------------------|
| 6                              |                                 |

**Part 6: Interpretation of Soil Features**

A. Type of Material that Limits Its Depth

<table>
<thead>
<tr>
<th></th>
<th>None - No limiting materials</th>
<th>Bedrock - Soft or hard</th>
<th>Hardpan - Cemented</th>
<th>Very gravelly sand or high water table</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

B. Parent Material

<table>
<thead>
<tr>
<th></th>
<th>Bedrock - Soft or hard</th>
<th>Alluvium /Outwash/Lacustrine</th>
<th>Tilt/Loess/Aeolian Sand</th>
<th>Organic materials - Peat or muck</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

C. Depth Favorable for Roots & Water Penetration

<table>
<thead>
<tr>
<th></th>
<th>Very Deep - 60 inches or more</th>
<th>Deep - 40 through 59 inches</th>
<th>Moderately Deep - 20 through 39 Inches</th>
<th>Shallow - less than 20 inches</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Part 3: Parent Material - Continued**

B. Texture

<table>
<thead>
<tr>
<th></th>
<th>Coarse</th>
<th>Moderately Coarse</th>
<th>Medium</th>
<th>Fine</th>
<th>Very Fine</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

C. Gravel

<table>
<thead>
<tr>
<th></th>
<th>None to Few</th>
<th>Gravelly</th>
<th>Very Gravelly</th>
<th>Extremely Gravelly</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Part 6: Interpretation of Soil Features**

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<th>Very gravelly sand or high water table</th>
</tr>
</thead>
<tbody>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

B. Parent Material

<table>
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<th>Shallow - less than 20 inches</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Part 7 Accelerated Erosion

<table>
<thead>
<tr>
<th>Amount of Erosion</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>No erosion evident (less than 2 inches)</td>
<td></td>
</tr>
<tr>
<td>Deposition (2 inches or greater)</td>
<td></td>
</tr>
<tr>
<td>Erosion present (2 inches or greater)</td>
<td></td>
</tr>
</tbody>
</table>

### Part 8 - Need for Erosion Control

<table>
<thead>
<tr>
<th>Kind of Erosion</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Active gully</td>
<td></td>
</tr>
<tr>
<td>Wind erosion</td>
<td></td>
</tr>
<tr>
<td>Sheet or rill</td>
<td></td>
</tr>
</tbody>
</table>

### Part 9 - Drainage Required

<table>
<thead>
<tr>
<th>Type of Drainage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>None required</td>
<td></td>
</tr>
<tr>
<td>Surface and/or tile</td>
<td></td>
</tr>
</tbody>
</table>

### Part 10 - Fertilizer and Lime Recommendations

<table>
<thead>
<tr>
<th>Fertilizer Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogen pounds per acre</td>
<td></td>
</tr>
<tr>
<td>Phosphorous pounds per acre</td>
<td></td>
</tr>
<tr>
<td>Potassium pounds per acre</td>
<td></td>
</tr>
<tr>
<td>Lime tons per acre</td>
<td></td>
</tr>
</tbody>
</table>

### Part 11 - Land use Limitation (Points are for each section)

<table>
<thead>
<tr>
<th>Use</th>
<th>Limitation</th>
<th>% Slope</th>
<th>Surface Soil Texture</th>
<th>Flooding</th>
<th>Internal Drainage Class</th>
<th>Permeability Class</th>
<th>Depth to Bedrock (Inches)</th>
<th>Underlying Material (Shrink Swell Potential)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Dwelling (lawns, foundations, basements)</td>
<td>Slight</td>
<td>0 to 6.0</td>
<td>Medium, moderate, coarse</td>
<td>None</td>
<td>Well drained</td>
<td>Coarse, medium</td>
<td>More than 60</td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>6.1 to 12.0</td>
<td>Coarse, fine, very</td>
<td>Somewhat poorly</td>
<td>Moist</td>
<td>Moist to rapid</td>
<td>Coarse</td>
<td>40 to 60</td>
</tr>
<tr>
<td></td>
<td>Severe</td>
<td>More than 12.0</td>
<td>Any flooding</td>
<td>P poorly</td>
<td>Very slow</td>
<td>Less than 40</td>
<td>Very fine</td>
<td>Very fine</td>
</tr>
<tr>
<td>8</td>
<td>Septic tank absorption fields</td>
<td>Slight</td>
<td>0 to 6.0</td>
<td>None</td>
<td>Moist</td>
<td>Moist to rapid</td>
<td>More than 60</td>
<td>Coarse, medium</td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>6.1 to 12.0</td>
<td>Moist</td>
<td>Moderately drained</td>
<td>Moist to rapid</td>
<td>Coarse</td>
<td>40 to 60</td>
<td>Fine texture</td>
</tr>
<tr>
<td></td>
<td>Severe</td>
<td>More than 12.0</td>
<td>Any flooding</td>
<td>P poorly</td>
<td>Very slow</td>
<td>Less than 40</td>
<td>Very fine</td>
<td>Very fine</td>
</tr>
<tr>
<td>8</td>
<td>Farm lagoons and holding basins</td>
<td>Slight</td>
<td>0 to 2.0</td>
<td>None</td>
<td>Moist</td>
<td>Moist to rapid</td>
<td>More than 60</td>
<td>Coarse, medium</td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>2.1 to 8.0</td>
<td>Moist</td>
<td>Moderately drained</td>
<td>Moist to rapid</td>
<td>Coarse</td>
<td>40 to 60</td>
<td>Fine texture</td>
</tr>
<tr>
<td></td>
<td>Severe</td>
<td>More than 8.0</td>
<td>Any flooding</td>
<td>P poorly</td>
<td>Very slow</td>
<td>Less than 40</td>
<td>Very fine</td>
<td>Very fine</td>
</tr>
</tbody>
</table>
Pit Number ____________________________
Lime Area ___________________________ Flooding ________________
pH _______ SMP Buffer Index ___ Assumed Field Size ___ Acres
P Test __________________________ lb./acres available phosphorus
Subsoil Phosphorus Level ________________
K Test __________________________ lb./acres exchangeable potassium
Subsoil Potassium Level _______ Manure Applied ___ Tons/Acre
Corn Yield Goal _________________________ bu./acres
Crop to be planted __________________________
Past Crop ____________________________
Original Surface Soil Depth ________ inches
Slope Length __________________________ feet
Depth to permanent water table __________________
Minnesota Soils Scorecard Questions for Pits 1 - 4 Scantron # 105481
Use your soils scorecard to fill out the answers on your scantron
Bubble in the front side of the sheet for Pit 1 (# 1-45) and Pit 2 (#51-95) and
Bubble in the back side of the sheet for Pit 3 (# 1-45) and Pit 4 (51-95)

Pits 1 & 3 Questions

Part 1: Surface soil
1. Surface Soil: Thickness in inches (2 pts)
   A. 
   B. Answers to be determined
   C. by pit and placard
   D. with a 3 inch range.
   E.

2. Surface Soil Color (4 pts)
   A. Dark
   B. Medium
   C. Light

3. Surface: Soil Texture (5 pts)
   A. Coarse
   B. Moderately Coarse
   C. Medium
   D. Fine
   E. Very Fine

4. Surface: Gravel and Rock (2 pts)
   A. None to Few
   B. Gravelly
   C. Very Gravelly
   D. Extremely Gravelly

Part 2: Subsurface Soil
5. Subsurface Soil: Thickness in inches (2 pts)
   A. 
   B. Answers to be determined
   C. by pit and placard
   D. with a 3 inch range
   E.

6. Subsurface: Soil Color (4 pts)
   A. Bright
   B. Mottled
   C. Dull

7. Subsurface: Texture (5 pts)
   A. Coarse
   B. Moderately course
   C. Medium
   D. Fine
   E. Very Fine

8. Subsurface: Gravel and Rock (2 pts)
   A. None to Few
   B. Gravelly
   C. Very Gravelly
   D. Extremely Gravelly

Part 3: Underlying Material
9. Parent Material: Thickness in inches (2 pts)
   A.
   B. Answers to be determined
   C. by pit and placard
   D. with a 3 inch range
   E.

10. Underlying Material: Texture (5 pts)
    A. Coarse
    B. Moderately course
    C. Medium
    D. Fine
    E. Very Fine

11. Underlying Material: Gravel (2 pts)
    A. None to Few
    B. Gravelly
    C. Very Gravelly
    D. Extremely Gravelly

Part 4: Topography
12. Steepness of slope (3 pts)
    A. Nearly level - 2% or less
    B. Gently sloping - 3 - 6 %
    C. Moderately sloping - 7 - 12 %
    D. Strongly sloping - 13 - 18 %
    E. Steep - Greater than 18 %
13. Landscape position (3 pts)
A. Upland  
B. Terrace – Footslope  
C. Bottom land – Flood Plains  
D. Depressional Area – No outlet

Part 5: Land Classification
14. Land Capability Classification (6 pts)
A. Class I or II  
B. Class III  
C. Class IV  
D. Class V  
E. Class VI, VII, or VIII

Part 6: Interpretation of Soils Features
15. Type of Material that Limits Depth (2 pts)
A. None- No limiting materials  
B. Bedrock – Soft or hard  
C. Hardpan – Cemented  
D. Very gravelly sand or high water table

16. Parent Material (2 pts)
A. Bedrock – Soft or hard  
B. Alluvium/ Outwash/ Lacustrine  
C. Till/ Loess/ Aeolian Sand  
D. Organic Materials – Peat or Muck

17. Depth favorable for roots & water (2 pts)
A. Very deep- 60 inches or more  
B. Deep- 40 – 59 inches  
C. Moderately Deep- 20 – 39 inches  
D. Shallow- less than 20 inches

18. Air and water movement (2 pts)
A. Very Rapid  
B. Rapid  
C. Moderate  
D. Slow

E. Total Available Water Capacity
Available water in horizon/ inch of soil
19. a. Surface Horizon (1 pt)
A. 0.05  
B. 0.15  
C. 0.20

20. b. Subsoil Horizon (1 pt)
A. 0.05  
B. 0.15  
C. 0.20

21. c. Underlying material Horizon (1 pt)
A. 0.05  
B. 0.15  
C. 0.20

Available Water Capacity per Horizon
22. a. Surface Horizon (1 pt)
A. 0.0- 2.0  
B. 2.1 – 4.0  
C. 4.1 – 6.0  
D. 6.1 – 8.0  
E. over 8.0

23. b. Subsoil Horizon (1 pt)
A. 0.0- 2.0  
B. 2.1 – 4.0  
C. 4.1 – 6.0  
D. 6.1 – 8.0  
E. over 8.0

24. c. Underlying material (1 pt)
A. 0.0- 2.0  
B. 2.1 – 4.0  
C. 4.1 – 6.0  
D. 6.1 – 8.0  
E. over 8.0

25. 3. Total available water capacity (5 ft. of soil) (4 pts.)
A. Very low – less than 3 inches  
B. Low – 3.1 to 6 inches  
C. Moderate – 6.1 to 9 inches  
D. High – Over 9 inches

26. 4. Internal drainage (4 pts.)
A. Well drained  
B. Moderately well drained  
C. Somewhat poorly drained  
D. Poorly or very poorly drained

Part 7 – Accelerated erosion
27. Amount of erosion (2 pt.)
A. No erosion evident (less than 2 inches)  
B. Deposition (2 inches or greater)  
C. Erosion present (2 inches or greater)
28. Kind of erosion (2 pts.)
   A. None
   B. Active gully
   C. Wind erosion
   D. Sheet or rill

Part 8 – Need for erosion control
29. Water erosion (3 pts.)
   A. None to slight
   B. Crop cover, sod cover and conservation tillage
   C. Contour, strip crop and conservation tillage
   D. Grass waterways and gully control
   E. Woodland/perm. pasture, wildlife or recreation

30. Wind erosion (3 pts.)
   A. None to slight
   B. Mulch tillage, cover crop

Part 9
31. Drainage required (5 pts.)
   A. None required
   B. Surface and/or tile

Part 10 – Fertilizer and lime recommendations
32. Nitrogen pounds per acre (2 pts)
   A. Over 161
   B. 121-160
   C. 81-120
   D. 41-80
   E. 0-20

33. Phosphorous pounds per acre (2 pts.)
   A. Over 81
   B. 61-80
   C. 41-60.
   D. 21-40
   E. 0-20

34. Potassium pounds per acre (2 pts.)
   A. Over 181
   B. 136-180
   C. 96-135
   D. 46-90
   E. 0-45

35. Lime tons per acre (2 pts.)
   A. 8.5 or more
   B. 6.5-3.0
   C. 4.5-5.0
   D. 2.5-4.5
   E. 0.0-2.0

Part 11 – Land Use limitation
36. Dwellings (lawns), foundations, basements (3 pts)
   A. Slight
   B. Moderate
   C. Severe

Use limitation
37. Septic tank absorption fields (3 pts.)
   A. Slight
   B. Moderate
   C. Severe

Use limitation
38. Farm lagoons and holding basins (3 pts.)
   A. Slight
   B. Moderate
   C. Severe

39. % Slope (3 pts.)
   A. Zero to 2.0
   B. 2.1 to 6.0
   C. 6.1 to 12.0
   D. More than 12.0

40. Surface Soil Texture (1 pt.)
   A. Medium, moderate, coarse
   B. Coarse, fine, very fine

41. Flooding (3 pts.)
   A. None
   B. Any flooding

42. Internal Drainage Class (3 pts.)
   A. Well drained, moderate well drained
   B. Somewhat poorly drained
   C. Poorly drained

43. Permeability Class (2 pts)
   A. Vary rapid to rapid
   B. Moderate
   C. Slow to Very slow

44. Depth to Bedrock (Inches) (3 pts)
   A. More than 60
   B. 40 to 60
   C. Less than 60

45. Underlying Material (Shrink swell) (1pt)
   A. Coarse, mod. coarse, medium texture
   B. Fine texture
   C. Very fine texture
Minnesota Soils Scorecard Questions for Pits 1 - 4 Scantron # 105481
Use your soils scorecard to fill out the answers on your scantron
Bubble in the front side of the sheet for Pit 1 (#1-45) and Pit 2 (#51-95) and
Bubble in the back side of the sheet for Pit 3 (#1-45) and Pit 4 (51-95)

Pits 2 & 4 Questions

Part 1: Surface soil
51. Surface Soil: Thickness in inches (2 pts)
   A. 
   B. Answers to be determined
   C. by pit and placard
   D. with a 3 inch range.
   E. 

52. Surface Soil Color (4 pts)
   A. Dark
   B. Medium
   C. Light

53. Surface: Soil Texture (5 pts)
   A. Coarse
   B. Moderately Coarse
   C. Medium
   D. Fine
   E. Very Fine

54. Surface: Gravel and Rock (2 pts)
   A. None to Few
   B. Gravelly
   C. Very Gravelly
   D. Extremely Gravelly

Part 2: Subsurface Soil
55. Subsurface Soil: Thickness in inches (2 pts)
   A. 
   B. Answers to be determined
   C. by pit and placard
   D. with a 3 inch range
   E. 

56. Subsurface: Soil Color (4 pts)
   A. Bright
   B. Mottled
   C. Dull

57. Subsurface: Texture (5 pts)
   A. Coarse
   B. Moderately course
   C. Medium
   D. Fine
   E. Very Fine

58. Subsurface: Gravel and Rock (2 pts)
   A. None to Few
   B. Gravelly
   C. Very Gravelly
   D. Extremely Gravelly

Part 3: Underlying Material
59. Parent Material: Thickness in inches (2 pts)
   A. 
   B. Answers to be determined
   C. by pit and placard
   D. with a 3 inch range
   E. 

60. Underlying Material: Texture (5 pts)
   A. Coarse
   B. Moderately course
   C. Medium
   D. Fine
   E. Very Fine

61. Underlying Material: Gravel (2 pts)
   A. None to Few
   B. Gravelly
   C. Very Gravelly
   D. Extremely Gravelly

Part 4: Topography
62. Steepness of slope (3 pts)
   A. Nearly level - 2% or less
   B. Gently sloping - 3 - 6 %
   C. Moderately sloping - 7 - 12 %
   D. Strongly sloping - 13 - 18 %
   E. Steep - Greater than 18 %
63. Landscape position (3 pts)
A. Upland
B. Terrace – Footslope
C. Bottom land – Flood Plains
D. Depressional Area – No outlet

Part 5: Land Classification
64. Land Capability Classification (6 pts)
A. Class I or II
B. Class III
C. Class IV
D. Class V
E. Class VI, VII, or VIII

Part 6: Interpretation of Soils Features
65. Type of Material that Limits Depth (2 pts)
A. None- No limiting materials
B. Bedrock – Soft or hard
C. Hardpan – Cemented
D. Very gravelly sand or high water table

66. Parent Material (2 pts)
A. Bedrock – Soft or hard
B. Alluvium/ Outwash/ Lacustrine
C. Till/ Loess/ Aeolian Sand
D. Organic Materials – Peat or Muck

67. Depth favorable for roots & water (2 pts)
A. Very deep- 60 inches or more
B. Deep- 40 – 59 inches
C. Moderately Deep- 20 – 39 inches
D. Shallow- less than 20 inches

68. Air and water movement (2 pts)
A. Very Rapid
B. Rapid
C. Moderate
D. Slow

E. Total Available Water Capacity
Available water in horizon/ inch of soil
69. a. Surface Horizon (1 pt)
A. 0.05
B. 0.15
C. 0.20

70. b. Subsoil Horizon (1 pt)
A. 0.05
B. 0.15
C. 0.20

71. c. Underlying material Horizon (1 pt)
A. 0.05
B. 0.15
C. 0.20

Available Water Capacity per Horizon
72. a. Surface Horizon (1 pt)
A. 0.0- 2.0
B. 2.1 – 4.0
C. 4.1 – 6.0
D. 6.1 – 8.0
E. over 8.0

73. b. Subsoil Horizon (1 pt)
A. 0.0- 2.0
B. 2.1 – 4.0
C. 4.1 – 6.0
D. 6.1 – 8.0
E. over 8.0

74. c. Underlying material (1 pt)
A. 0.0- 2.0
B. 2.1 – 4.0
C. 4.1 – 6.0
D. 6.1 – 8.0
E. over 8.0

75. 3. Total available water capacity  
(5 ft. of soil) (4 pts.)
A. Very low – less than 3 inches
B. Low – 3.1 to 6 inches
C. Moderate – 6.1 to 9 inches
D. High – Over 9 inches

76. 4. Internal drainage (4 pts.)
A. Well drained
B. Moderately well drained
C. Somewhat poorly drained
D. Poorly or very poorly drained

Part 7 – Accelerated erosion
77. Amount of erosion (2 pt.)
A. No erosion evident (less than 2 inches)
B. Deposition (2 inches or greater)
C. Erosion present (2 inches or greater)
78. Kind of erosion (2 pts.)
   A. None
   B. Active gully
   C. Wind erosion
   D. Sheet or rill

Part 8 – Need for erosion control
79. Water erosion (3 pts.)
   A. None to slight
   B. Crop cover, sod cover and conservation tillage
   C. Contour, strip crop and conservation tillage
   D. Grass waterways and gully control
   E. Woodland/perm. pasture, wildlife or recreation

80. Wind erosion (3 pts.)
   A. None to slight
   B. Mulch tillage, cover crop

Part 9
81. Drainage required (5 pts.)
   A. None required
   B. Surface and/or tile

Part 10 – Fertilizer and lime recommendations
82. Nitrogen pounds per acre (2 pts.)
   A. Over 161
   B. 121- 160
   C. 81- 120
   D. 41- 80
   E. 0- 20

83. Phosphorous pounds per acre (2 pts.)
   A. Over 81
   B. 61- 80
   C. 41- 60.
   D. 21- 40
   E. 0- 20

84. Potassium pounds per acre (2 pts.)
   A. Over 181
   B. 136- 180
   C. 96- 135
   D. 46- 90
   E. 0- 45

85. Lime tons per acre (2 pts.)
   A. 8.5 or more
   B. 6.5- 8.0
   C. 4.5- 6.0
   D. 2.5- 4.5
   E. 0.0- 2.0

Part 11 – Land Use limitation
86. Dwellings (lawns), foundations, basements (3 pts)
   A. Slight
   B. Moderate
   C. Severe

Use limitation
87 Septic tank absorption fields (3 pts.)
   A. Slight
   B. Moderate
   C. Severe

Use limitation
88. Farm lagoons and holding basins (3 pts.)
   A. Slight
   B. Moderate
   C. Severe

89. % Slope (3 pts.)
   A. Zero to 2.0
   B. 2.1 to 6.0
   C. 6.1 to 12.0
   D. More than 12.0

90. Surface Soil Texture (1 pt.)
   A. Medium, moderate, coarse
   B. Coarse, fine, very fine

91. Flooding (3 pts.)
   A. None
   B. Any flooding

92. Internal Drainage Class (3 pts.)
   A. Well drained, moderate well drained
   B. Somewhat poorly drained
   C. Poorly drained

93. Permeability Class (2 pts)
   A. Vary rapid to rapid
   B. Moderate
   C. Slow to Very slow

94. Depth to Bedrock (inches) (3 pts)
   A. More than 60
   B. 40 to 60
   C. Less than 60

95. Underlying Material (Shrink swell) (1 pt)
   A. Coarse, mod. coarse, medium texture
   B. Fine texture
   C. Very fine texture