Soil Study and Land Evaluation

Wisconsin - 2009

Event Planning Guide

Site Selection and Preparation

1. Select the Site:

Host site should be able to provide a variety of soil types and land formations. Make sure that landowner is fully aware that four large pits (five if practice pit is provided on site) will be dug on the property. When siting the pits, avoid places that would cause excessive crop damage, pose a safety hazard, or where machinery routinely travels.

2. BEFORE DIGGING:

a. Contact Diggers Hotline (1-800-242-8511) to ensure that no utilities are damaged during the digging.

b. NRCS requires a cultural resources review for any ground-disturbing activity that has the potential to affect or diminish a historic property in which NRCS conducts or provides financial assistance. However, if NRCS does not conduct and does not provide financial assistance for a ground-disturbing activity, a cultural resources review is not required. If a ground-disturbing activity is conducted by and financed by an outside entity, that outside entity is responsible for site selection and making the determination of whether a cultural resources review is needed.

National Cooperative Soil Survey program activities that involve no ground disturbance or are limited to small-scale field investigations, such as small shovel holes, auger holes, probe holes, and core holes, typically do not have the potential to impact cultural resources. Larger scale field investigations, however, such as soil investigation pits, may have the potential to affect historic properties.

If ground disturbance meets the definitions for a cultural resource review contact the state cultural resources coordinator.

Complete both a and b as soon as the judging site has been selected.

3. Locating and Digging the Pits

Many factors must be considered when selecting pit sites. The list below includes the major factors, but each site and each host site will present new variables and challenges. Advance planning and forethought will help eliminate many potential problems.

a) Avoid areas that will present judging problems, such as areas of unnatural deposition, unnatural compaction, construction sites, and roads. Sites should be as natural as possible with the only disturbance from agricultural operations.

b) Avoid areas that may present “hairsplitting” judging decisions such as slope category ties and variable positions in the landscape.

c) Pits should be located in a pattern that allows five minutes of foot travel time between them. In extreme cases, pits can be in pairs, judged as pairs, then allow for more time between the sets.

d) Try to dig the pits in a North – South direction to allow the sun to illuminate the control area of the profile where official judging occurs. This area must be clearly marked off-limits for contestants. With ribbon or string, identify the control area. This area is approximately 10” wide to the full depth of the pit. Pits should not be dug more than two weeks in advance of an event. Event location MUST be kept confidential. Dig pits 4 feet deep and 3 feet wide, with walk-in access from both ends. To guard against pit collapse, in sandy or other unstable soils, slope back side of pit a minimum of 1:1 slope (i.e. 4’ deep = 4’ slope).

e) Select a site that allows for vehicle access near the pits, if possible.

Hosting the Event – Items to Consider

1. **Four pits** will need to be dug, preferably with a backhoe. At least one experienced judge should be present during the pit digging to approve each pit. An additional pit for practice near the registration area is optional. However, a practice pit must be provided for State contests and be manned by the official judge during a time period before the event begins. Practice pit should be naturally occurring soil and land forms, and not mechanically altered.

2. **Judging Officials**: Designate one Official Judge for the event, assisted by a judging staff to include one NRCS Soil Scientist and one Soil Conservationist at a minimum. Additional soil conservationists, university professors, university students, and retired ag teachers are recommended. At least one official **MUST** be familiar with the current version of the Handbook.

3. **Pit Information Cards:** Each pit will have a Pit Information Card provided by the judges with pertinent information. Pit Information Cards must be prominently posted at each pit. Use of heavy grade 11x17 paper, covered with clear contact film, is recommended.

4. **Score Cards:** Provide each contestant with a folder with four color-coded score cards. The color of each card will match the color of the Pit Information Card. Heavy grade 8½ x 11" paper is recommended. Team name and number, and member (contestant) name and number will be placed on the cards. Additionally, if the contest is divided among senior, junior, or 4-H divisions, indicate this on the scorecard. Teams will be divided only one member to a pit.

***Score Card Example**:*

Cards for Team No. 26, member A

1 – A – 26 – (pink)

1 means this is A's card for the first pit to be judged.

A is the first team member (alphabetical by last name.)

26 is the school or group number

(pink) all cards for Site #1 are the same color

2 – A – 26 (blue) A's card for Site #2 3 – A – 26(yellow) A's card for Site#3 4 – A – 26 (green) A's card for Site#4

Cards for Team No. 26, member B

1 – B – 26 (pink) B's card for Site #1

2 – B – 26 (blue) B's card for Site #2

3 – B – 26 (yellow) B's card for Site #3

4 – B – 26 (green) B's card for Site #4

5. **Team Scorecards/Envelopes** are used to record team score and will be posted at scoring area. Each team will be provided with one 10x13" envelope for completed scorecards.

6. A **Scoring Area** will be provided by event host that is sheltered from wind, rain, or inclement weather. Provide ample space for official scorers and recorders.

   The Scoring Area will double as pre-contest **registration area**. Teams will all need to register prior to the start.

7. **Staffing**: Select four Pit Monitors to supervise contestants and enforce no-talking, no-cheating rules. Pit Monitors must be briefed on rules and consequences for contestants before each contest. Introduce the Pit Monitors before departing for the site. Also, select four Pit Guides to lead contestants from Pit to Pit. Select one or more couriers to transfer score cards from the contest site to the scoring areas.

8. **Transportation** to contest site: Host will either provide transportation or inform each team they are responsible for their own. Host chapter provides transportation for the State Contest.

9. One or two portable toilets at the Registration Area are recommended.

10. **Timing:** Allow adequate time to complete judging of each pit.

Suggestion for State contests:

- Total time 21 minutes
- First 7-minute period, half of contestants are in the pit, half of contestants are out
- Second 7-minute period rotate contestants opposite of first period
- Third 7-minute period is open to all contestants to be in or out of the pit.
- Approximately 5 minutes for travel to next pit will be allotted.

Suggestion for Local contests

- Use 5-minute periods instead of 7 min.
- Keep travel time at 5 minutes

11. **Equipment** State Contest Hosts provide the following: (for local or area contests, please notify teams in advance if any changes to these equipment guidelines)

- Scorecards and folder
- Digging tool used for observing texture and structure
- A container labeled with topsoil and subsoil
- Water bottle for adding moisture to soil
- Contestants will need to provide their own No. 2 pencils

12. Prohibited Behaviors

- No incremental rulers of any kind allowed
- No mechanical tools for slope determination allowed
- No communication of any kind allowed, i.e. voice, electronic or otherwise. cell phones must be turned off except for emergencies.
- No written or marked notes.

There will be no warning from the Pit Monitors for any of the above infractions, nor any appeal. Infractions of any kind will result in score card confiscation and a score of 0 for the contestant on that pit.

13. Make-up of Team Score and Tie Breakers.

Individual scores: An individual score will consist of the combined score of 4 sites, maximum possible is 400 points.

Team scores will consist of the combined individual scores of the three highest individuals or 3 highest pit scores of a 3 or 4 contestant team. Maximum possible is 1200. Contest officials will make pre-contest decision regarding team scores.

Official Scoring for Tiebreaking

Individual Scores

1. Highest score any pit
2. Highest combined score any two pits
3. Highest combined score any three pits
4. Score will remain tied if this does not determine placement

Team Scores

1. Highest placement by individual team member
2. Highest combined placement of two individual team members
3. Highest combined placement of three individual team members
4. Highest combined placement of four individual team members
5. Score will remain tied if this does not determine placement

Judging Criteria

Part I. Site

Position in the landscape is determined by pit location. Place pit where location is describable. Site area must be clearly marked with flags or stakes.

Slope is determined by the location of the slope stakes. Use different colored flags or stakes than site area. Stakes should be 100 or 50 measured feet apart. Give %slope answer on pit information card if slope length is <50 measured feet. Slope MUST be determined with a clinometer or other mechanical means and verified by the official judge.

Type and degree of erosion or deposition is computed from information obtained from the Pit Information Card. Judges must determine depth of original topsoil and record on Pit Information Card.

Surface and subsoil texture and structure is determined from predominant horizons. If two horizons are of equal predominance, points may be given for more than one category. At the **State Contest**, samples of surface soil and of subsoil must be placed in containers at pit site by contest officials. Water bottles to aid in texturing will also be placed at pit side. Containers may need to be refreshed during the contest but ONLY by contest officials. Samples of surface and sub-surface soils are recommended at all contests.

Soil Profile If depth of pit and soil profile does not reach 80 inches, assume bottom of profile extends to 80 inches unless otherwise noted on Pit Information Card.

Soil test report answers are obtained from information on the pit information card. Judges are to determine levels of pH, N, P, K and indicate on the Pit Information Card.

Part II. Soil Limitations

Low available water capacity is determined by a number of factors, including amount of stones or rocks by volume. If volume of stones or rocks by volume is too near 50% to distinguish except by mechanical analysis, judges will indicate percentage stoniness. Percentages higher or lower than 50% that can be visibly determined will not be listed.

Stoniness is a limitation if volume of stones in the top 10” of profile is greater than 50%. If volume of stones in top 10” of profile is too near 50% to distinguish except by mechanical analysis, judges will indicate percentage used to determine answer. Percentages higher or lower than 50% that can be visibly determined will not be listed.

Part III. Land Capability Classes

a) Class V land will not be applicable in Wisconsin. A contestant who marks Class V will get 0 points regardless of correct classification. For purposes of scoring, Class VI will be the next closest class to Class IV and vice versa.

b) If Dominant Soil Texture is difficult to determine visually, judges will note DST on Pit Information Card.

Part IV. Conservation Practices for Long Term Use

a) With the advancements in Managed Rotational Grazing techniques, much Class I-IV land is no longer in harvestable row crops but now in grass covered grazing land. Judges must indicate if land is to be considered as traditional cropland or as grazing land as appropriate. Such indication will dictate whether Renovate or Improve Pasture and Eliminate or Manage Grazing is an appropriate answer.

b) While the value of permanent fence lines that are overgrown with trees and shrubs for wildlife habitat is well documented, not all fence lines are suitable for wildlife.

c) The water quality benefits of grass filter strips and riparian buffers are well documented. And even though the establishment of riparian buffers includes planting trees and shrubs, the practice is primarily a water quality practice and not a forestry practice. Therefore, Improve Timber Stand or Plant Adaptive Trees (#8)* is NOT an appropriate practice for these sites. However, Improve Fish and Wildlife Habitat (#11)* WOULD be an appropriate practice and should be selected for these sites.

d) Invasive plant and animal species present a tremendous threat to Wisconsin's natural resources. Contestants will be asked if any marked plants inside the site area are one of the six nominated invasive plant species. Judges will have the option of marking a variety of plants in the site area. If any of the marked plants is an invasive, Control Invasive Species will be selected. Judges will indicate on the Pit Information Card that the potential of invasives exists and how many plants have been marked. Contestants should look for plants identified with a colored ribbon.

e) Marketable timber production may be the goal on certain Class VI, VII or VIII land. If that is the case or the situation is unclear, judges should indicate as such on the pit information card. Contestants should mark Improve Timber Stand or Plant Adaptive Trees (#8*), Eliminate or Manage Grazing (#7)*, and Improve Fish and Wildlife Habitat (#11)*.

* Numbers refer to Part IV of the Scorecard.

Note to Judges: Judges must indicate on Pit Information Card if the land should be considered as either cropland, pastureland woodland or wildlife land as appropriate.