

Tennessee FFA Association

**Environmental and
Natural Resources
Handbook**

2017-2021

Purpose

Environmental and natural resource education has a responsibility to educate the public and prepare students to enter careers in the environmental and natural resource industry. The purpose of the Tennessee Environmental and Natural Resource Career Development Event is to foster student interest, promote environmental and natural resource instruction in the agricultural education curriculum and provide recognition for those who have demonstrated skills and competencies as a result of environmental and natural resource instruction.

Event Rules

- Each team will be comprised of four members. All four scores will be used to determine the total team score.
- Participants must come to the event prepared to work in adverse weather conditions. The event will be conducted regardless of the weather. Participants should have rainwear, warm clothes and appropriate footwear. FFA Official Dress is NOT required for this event.
- Under no circumstance will any participant be allowed to handle any of the items in the identification portion of the practicums. Any infraction of this rule will be sufficient to eliminate a team from the event.
- Participants will be assigned to group leaders who will escort them to various event-staging sites. Each participant is to stay with his or her assigned group leader throughout the event or until told to change leaders by the event superintendent.
- All participants will be given an identification number by which they will be designated throughout the event.
- All written material will be furnished for the event. No written materials such as tests, problems and worksheets shall be removed from the site.
- No team, team member or team coach shall visit the event facilities to observe plant materials and facilities within one week of the event. Any team, team member or coach reported and proven to do so will cause the elimination of the team from the Tennessee FFA Environmental and Natural Resource CDE.

Event Format

EQUIPMENT

Equipment that will be provided by the participant:

- A transparent, clear clipboard with no notes attached
- Two sharpened No. 2 pencils
- All other tools equipment will be furnished for the event

Participants must use the tools and equipment furnished at the event.

INDIVIDUAL ACTIVITIES

OBJECTIVE WRITTEN EXAM — 60 MINUTES (100 POINTS)

The written exam will consist of fifty questions and will come from the past five years previous National FFA ENR Written Exam Questions found on FFA.ORG. A test bank of the previous five years tests will be maintained and updated annually on tnffa.org under the Downloads Tab. Each question will count two points.

PRACTICUMS

Identification (100 points)

Students will identify fifty items these may be pelts, bone, actual specimens, photos, footprint casts, scat from the following combined areas:

- Equipment list
- Native species list
- Invasive/non-native species list

Waste Management (100 points)

- Participants will be presented with a scenario (agricultural producer, neighborhood, office building, manufacturing plant, etc.,) that generates waste material creating environmental threats.

- Participants will evaluate the nature of waste output to identify plausible options for reducing the rate of waste generation, recycling or providing potential alternative uses for the waste, treating the waste or disposing of the waste.
- Participants should be able to identify at least one benefit and one deterrent for each possible option that is offered.

Soil Profile (100 points)

- Students will be furnished with a scorecard, an interpretation guide and a pre-dug soil pit or core/monolith to judge. The participants will identify soil horizons, textures, percentage coarse fragments, pH, horizon colors, slope, geologic origin, soil permeability, irrigation suitability and soil structure types of the soil present in the given example.
- Using the information from the scorecard and interpretation guide, the student will then identify the most appropriate use for the given area and the erosion control practice that best fits the designated use for the land.

Scoring

ACTIVITY	Individual Points	Total Team Points
Written Exam	100	400
Identification	100	400
Waste Management	100	400
Soil Profile	100	400
TOTAL POINTS	400	3,700

TIEBREAKER

TEAM

- Highest team activity score
- Highest practicum scores
- Highest combined identification score

INDIVIDUAL

- Highest exam score
- Highest practicum scores
- Highest identification score

References

This list of references is not intended to be all-inclusive.

Other sources may be utilized, and teachers are encouraged to make use of the very best instructional materials available. The following list contains references that may prove helpful during event preparation.

- For past test materials and preparation documents log onto [FFA.org](http://www.FFA.org)
- Managing Our Natural Resources. Camp and Daughtery. Delmar Publishers, Inc. 2009. Albany NY.
- Land Judging in Oklahoma. J.H. Stiegler, 4-H Member's Guide, Oklahoma Cooperative Extension Service, Division of Agricultural Sciences and Natural Resources, Oklahoma State University. 4H.HPS.101
- Environmental Science: Fundamentals and Applications. Cengage learning. 2007
- Applied Environmental Science: <https://www.FFA.org/thecouncil/resources>
- Tennessee 4-H Land Judging Guide - <http://bioengr.ag.utk.edu/Extension/ExtPubs/LandJudgingGuidePB727.pdf>

Identification List

100 points

EQUIPMENT

WATER QUALITY

- 101. refractometer
- 102. secchi disk
- 103. water meter for physical/chemical parameters (pH, conductivity and/or DO)

AQUATIC

- 104. bottom dredges
- 105. fish measuring board
- 106. plankton net
- 107. seines
- 108. sieves

WILDLIFE

- 109. animal tags/bands
- 110. mammal traps
- 111. snake/reptile stick
- 112. radio telemetry unit

NATIVE SPECIES

WILDLIFE

- | | | |
|---------------------|--------------------|---------------------|
| 201. armadillo | 213. fox squirrel | 225. pocket gopher |
| 202. badger | 214. gray squirrel | 226. porcupine |
| 203. beaver | 215. gray wolf | 227. prairie dog |
| 204. bighorn sheep | 216. grizzly bear | 228. pronghorn |
| 205. bison | 217. jack rabbit | 229. raccoon |
| 206. black bear | 218. mole | 230. red fox |
| 207. blacktail deer | 219. moose | 231. skunk |
| 208. bobcat | 220. mountain goat | 232. weasel |
| 209. chipmunk | 221. mountain lion | 233. whitetail deer |
| 210. cottontail | 222. mule deer | 234. woodchuck |
| 211. coyote | 223. muskrat | |
| 212. elk | 224. opossum | |

WEATHER

- 113. wind speed meters
- 114. barometer

SOILS

- 115. abny level
- 116. push probe
- 117. soil auger
- 118. soil color book

BIRDS

- | | | |
|-----------------------|-----------------------|-----------------------|
| 301. bald eagle | 310. mourning dove | 319. pelican |
| 302. blue jay | 311. great blue heron | 320. purple martin |
| 303. bluebird | 312. great horned owl | 321. quail |
| 304. brown thrasher | 313. golden eagle | 322. red-tailed hawk |
| 305. Canada goose | 314. hummingbird | 323. sand hill crane |
| 306. canvasback duck | 315. kestrel | 324. blue-winged teal |
| 307. cardinal | 316. least tern | 325. turkey |
| 308. Cooper's hawk | 317. mallard duck | 326. whooping crane |
| 309. Crissal thrasher | 318. osprey | 327. wood duck |

REPTILES/AMPHIBIANS

- | | | |
|--------------------------------|-------------------------|-------------------------|
| 401. alligator | 408. coral snake | 415. gray tree frog |
| 402. alligator snapping turtle | 409. corn snake | 416. rattlesnake |
| 403. black rat snake | 410. cottonmouth | 417. red eared slider |
| 404. bullfrog | 411. crocodile | 418. ring neck snake |
| 405. collared lizard | 412. fence lizard | 419. rubber boa snake |
| 406. common snapping turtle | 413. garter snake | 420. scarlet king snake |
| 407. copperhead snake | 414. green anole lizard | 421. Woodhouse's toad |

FISH AND OTHER AQUATIC ANIMALS

- | | | |
|----------------------|-----------------------|------------------------------|
| 501. blue catfish | 508. crappie | 515. smallmouth bass |
| 502. bream/bluegill | 509. crayfish | 516. sturgeon |
| 503. brown trout | 510. flathead catfish | 517. trout |
| 504. carp | 511. largemouth bass | 518. walleye |
| 505. channel catfish | 512. lobster | 519. yellow bullhead catfish |
| 506. clam | 513. salmon | |
| 507. crab | 514. shrimp | |

INVASIVE/NON-NATIVE SPECIES

PLANTS

- | | | |
|-----------------------|--------------------------|-------------------------|
| 601. broom snake weed | 606. Himalaya blackberry | 611. melaleuca |
| 602. cheatgrass | 607. hydrilla | 612. mimosa tree |
| 603. Chinese tallow | 608. juniper | 613. purple loosestrife |
| 604. cogongrass | 609. kudzu | 614. Russian olive |
| 605. English ivy | 610. leafy spurge | 615. saltcedar |

ANIMALS

- | | | |
|-------------------------------|------------------|-------------------------|
| 701. Asiatic clam | 709. feral hog | 715. ring neck pheasant |
| 702. Asian long-horned beetle | 710. feral horse | 716. sea lamprey |
| 705. Chinese mitten crab | 711. fire ant | 717. tilapia |
| 706. chukkar | 712. gopher | 718. zebra mussel |
| 707. English sparrow | 713. Norway rat | |
| 708. European starling | 714. nutria | |

Water Analysis Scorecard

100 points

NAME _____

MEMBER NUMBER _____

CHAPTER _____

STATE _____

Your job today is to analyze the given water sample. You will need to find the given levels of the following possible factors: nitrites, dissolved oxygen, nitrates, pH, phosphates, water hardness, chlorine, ammonia and the current temperature. Using this information indicate if the water quality is suitable for the given species. Indicate the limiting factors and explain ways this water quality can be improved. (Each year, you will test for four of the categories listed above.)

CATEGORY	Answers	Possible Points	Total Points
1		10	
2		10	
3		10	
4		10	
Indicate if the quality of the sample is suitable for the following use:		10	
Indicate the limiting factor(s):		25	
How can water quality be improved?		25	
TOTAL:		100	

Soil Profile Scorecard

100 points

NAME _____

MEMBER NUMBER _____

CHAPTER _____

STATE _____

PART 1 (60 POINTS)

Soil Factors – Part 1 (Check Appropriate Box)		Soil Factors – Part 1 (Check Appropriate Box)	
Points		Points	
	<p>Texture Sur. Sub.</p> <p><input type="checkbox"/> <input type="checkbox"/> 1. Coarse</p> <p><input type="checkbox"/> <input type="checkbox"/> 2. Moderately Coarse</p> <p><input type="checkbox"/> <input type="checkbox"/> 3. Medium</p> <p><input type="checkbox"/> <input type="checkbox"/> 4. Moderately Fine</p> <p><input type="checkbox"/> <input type="checkbox"/> 5. Fine</p> <p>Depth of Soil</p> <p><input type="checkbox"/> 1. Deep</p> <p><input type="checkbox"/> 2. Moderately Deep</p> <p><input type="checkbox"/> 3. Shallow</p> <p><input type="checkbox"/> 4. Very Shallow</p> <p>Slope</p> <p><input type="checkbox"/> 1. Nearly Level 0-1%</p> <p><input type="checkbox"/> 2. Gently Sloping 1-3%</p> <p><input type="checkbox"/> 3. Moderate Sloping..... 3-5%</p> <p><input type="checkbox"/> 4. Strongly Sloping..... 5-8%</p> <p><input type="checkbox"/> 5. Steep 8-15%</p> <p><input type="checkbox"/> 6. Very Steep > 15%</p> <p>Erosion – Wind and Water</p> <p><input type="checkbox"/> 1. None to Slight</p> <p><input type="checkbox"/> 2. Moderate</p> <p><input type="checkbox"/> 3. Severe</p> <p><input type="checkbox"/> . Very Severe</p>		<p>Permeability</p> <p><input type="checkbox"/> 1. Rapid</p> <p><input type="checkbox"/> 2. Moderate</p> <p><input type="checkbox"/> 3. Slow</p> <p><input type="checkbox"/> 4. Very Slow</p> <p>Surface Runoff</p> <p><input type="checkbox"/> 1. Rapid</p> <p><input type="checkbox"/> 2. Moderate</p> <p><input type="checkbox"/> 3. Slow</p> <p><input type="checkbox"/> 4. Very Slow</p> <p>Major Factors That Keep Area Out of Class 1</p> <p><input type="checkbox"/> 1. Texture</p> <p><input type="checkbox"/> 2. Depth</p> <p><input type="checkbox"/> 3. Slope</p> <p><input type="checkbox"/> 4. Erosion</p> <p><input type="checkbox"/> 5. Permeability</p> <p><input type="checkbox"/> 6. Runoff</p> <p><input type="checkbox"/> 7. Wetness</p> <p><input type="checkbox"/> 8. Flooding</p> <p><input type="checkbox"/> 9. None</p> <p>Land Capability Class</p> <p><input type="checkbox"/> 1. Class I</p> <p><input type="checkbox"/> 2. Class II</p> <p><input type="checkbox"/> 3. Class III</p> <p><input type="checkbox"/> 4. Class IV</p> <p><input type="checkbox"/> 5. Class V</p> <p><input type="checkbox"/> 6. Class VI</p> <p><input type="checkbox"/> 7. Class VII</p> <p><input type="checkbox"/> 8. Class VIII</p>
	Points		Points

TOTAL POINTS PART 1

Soil Profile Scorecard

PART 2 (40 POINTS)	
Recommended Treatment – Part 1 (Check Appropriate Box)	
Points	
	<p>Vegetative</p> <ul style="list-style-type: none"> <input type="checkbox"/> 1. Row crop/occasional soil conserving crop <input type="checkbox"/> 2. Row crop/frequent soil conserving crop <input type="checkbox"/> 3. Row crops not more than 2 out of 4 years <input type="checkbox"/> 4. Row crops not more than 1 out of 5 years <input type="checkbox"/> 5. Return crop residue to the soil <input type="checkbox"/> 6. Practice conservation tillage <input type="checkbox"/> 7. Establish recommended grass or grasses and legumes <input type="checkbox"/> 8. Proper pasture and range management <input type="checkbox"/> 9. Protect from burning <input type="checkbox"/> 10. Control grazing <input type="checkbox"/> 11. Plant recommended trees <input type="checkbox"/> 12. Harvest trees selectively <input type="checkbox"/> 13. Use only for wildlife or recreation area <p>Mechanical</p> <ul style="list-style-type: none"> <input type="checkbox"/> 14. Control brush or trees <input type="checkbox"/> 15. Terrace and farm on contour <input type="checkbox"/> 16. Maintain terraces <input type="checkbox"/> 17. Construction diversion terraces <input type="checkbox"/> 18. Install drainage system <input type="checkbox"/> 19. Control gullies <input type="checkbox"/> 20. No mechanical treatment needed <p>Fertilizer and Soil Amendments</p> <ul style="list-style-type: none"> <input type="checkbox"/> 21. Soil amendments <input type="checkbox"/> 22. Phosphorous [P] <input type="checkbox"/> 23. Potassium [K] <input type="checkbox"/> 24. Nitrogen [N] <input type="checkbox"/> 25. Fertilizer or soil amendments not needed
	TOTAL POINTS PART 2 (40 POINTS POSSIBLE)
	TOTAL POINTS PART 1(60 POINTS POSSIBLE)
	GRAND TOTAL POINTS – 100 (POINTS POSSIBLE)

JUDGE'S NAME

JUDGE'S SIGNATURE

DATE