

Michigan Envirothon

Manual

Your Guide to Participating in the Michigan Envirothon!



**Register NOW and Be Part
of the Competition!**

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The Michigan Envirothon program is offered by the Michigan Association of Conservation Districts and the seventy-nine Conservation Districts of Michigan in conjunction with the following Envirothon partners and sponsors:

Canon Envirothon & Canon USA, Inc.
 Consumers Energy & Consumers Energy Foundation
 DTE Energy Foundation
 Michigan Department of Natural Resources and Environment
 Soil & Water Conservation Society
 Michigan State University
 Plum Creek Foundation
 USDA Farm Service Agency
 USDA Forest Service
 USDA Natural Resources Conservation Service
 Weyerhaeuser Company Foundation

Please visit www.michiganenvirothon.org or e-mail mienvirothon@macd.org for more information concerning the Michigan Envirothon.

Welcome to the Michigan Envirothon

Envirothon is an exciting and challenging way for high school students, and their adult advisors, to learn about natural resources. Michigan Envirothon is designed to foster critical thinking, wise stewardship and community involvement.

The purpose of Envirothon is to provide environmental education to high school students and their adult advisors throughout the state of Michigan. Teams of five students with up to one alternate member study seven different subject areas throughout the year, in preparation for a statewide competition held annually. The teams are also required to complete a Community Outreach Project as part of the competition. The Michigan Envirothon program presents environmental education in a unique, motivating and exciting way! The program emphasizes hands-on learning in the outdoors; field trips and one-on-one training with resource professionals is highly encouraged. Learning objectives, correlated with Michigan High School Content Expectations, are set forth for each of the subject areas, and resource professionals aid in preparing resource materials for teams to use in their studies. In the Community Outreach Project portion of the Envirothon, teams identify an environmental issue in their community and then address that issue through hands-on problem solving and community education. Teams are encouraged to partner with resource agencies, local government, their schools and others to develop a strong and effective project.

The Envirothon Challenge While studying the Envirothon subject areas and completing the Community Outreach Project, along with learning a lot, teams are preparing for the statewide natural resource competition. Regional reviews are held in the spring during one day to prepare and qualify teams for the two-day State Competition, which occurs in May. At the State Competition, teams receive subject review with Resource Professionals, and afterwards are tested in each subject area at four to five outdoor eco-stations. Teams are also required to complete a written summary on their Community Outreach Project and give an oral presentation to a panel of judges. Test and Project scores are combined to determine an overall winning team. Teams are recognized for excellence in each subject area, and for their Community Outreach Project. Winning teams are awarded with scholarships, plaques, ribbons, and other prizes. The First Place overall team goes on to represent Michigan at the Canon Envirothon, North America's largest high school environmental education competition, a five-day event held in the summer involving forty-five States and ten Canadian Provinces.

Michigan Envirothon Goals and Objectives

- To cultivate in high school students a desire to learn about our natural resources.
- To develop a greater appreciation for our reliance upon the natural environment.
- To provide students with an experience in environmental activities to enable them to become environmentally aware adults.
- To develop the student's knowledge of the effects individual actions can have on the environment.
- To explore the interactions and interdependencies of our environment.
- To make students aware of local resource organizations/agencies available to assist them with environmental matters.

2011 Envirothon Timeline and Checklist

- September 2010 – February 2011 **Form a team:** Michigan Envirothon teams may be comprised of up to nine students (five team members and up to four alternate members). Teams may be formed by school districts, home school groups, career centers, Girl/Boy Scout groups, FFA, 4-H, church groups and/or environmental clubs. Team advisors are not required to have any special training; they just need to be an adult interested in working with the students and helping them prepare for competition. Assistance is often available through the local Conservation District (see www.macd.org for a directory) and other groups.
- September 2010 – March 2011 **Choose a Community Outreach Project:** Guidelines for the Community Outreach Projects, including Scoring Criteria, begin on Page 5 of the 2011 Michigan Envirothon manual.
- October 2010 - February 18, 2010 **Register with the Michigan Envirothon office:** There is a registration fee per team that covers resource materials and the Regional Envirothon Competition. The earlier a team is registered, the more time they will have to study the learning objectives and work on their community outreach project.
\$100: Registration, Nov. 1 – Feb. 8
\$130: Late registration, Feb 8 – Feb 28
Please contact the Michigan Envirothon Coordinator at mienvirothon@macd.org for the Team Registration Form.
- February 18 **Release/Health Forms:** Release/Health Forms (Page 28 of manual) must be on file with the Michigan Envirothon office before students and advisors can participate in any Envirothon event.
- March 9 **Region 2 Competition:** Boardman River Nature Center, Traverse City.
 March 13 **Region 6 Competition:** Indian Springs Metropark, White Lake.
 March 16 **Region 4 Competition:** Fort Custer Training Center, Augusta.
 March 20 **Region 5 Competition:** Kresge Environmental Education Center, Lapeer
 March 23 **Region 1 Competition:** Seney National Wildlife Refuge, Seney.
 March 27 **Region 3 Competition:** Hartwick Pines, Grayling.
- April 25 **Written Summaries for Community Outreach Projects Due:** One point per day will be deducted for late reports.
- May 9-11 **Michigan Envirothon State Competition:** The 2011 Michigan Envirothon State Competition will be held at the Ft. Custer Environmental Training Center in Augusta, Michigan.
- July 22– July 28 **Canon Envirothon 2012, 25th Anniversary competition!** The 2012 Canon Envirothon will be hosted at Susquehanna University Selinsgrove, Pennsylvania.

Regional Michigan Envirothon

The Michigan Envirothon Board of Directors has divided the State into six Regions. Training and testing events that will be held in each Region and are referred to as Regional Competitions and are typically held during March. Some Regional Competitions may be combined if the number of teams from each Region is small. Performance in one of the Regional Competitions determines which teams are eligible to compete in the State Competition. To qualify, a team must earn a score of at least 30 (50%) on the Regional Test, and must turn in a one-page summary of its Community Service Project. Participation in the State Competition is limited to twenty-four teams. If less than this number register state-wide, all teams scoring at least 30 (50%) on the Regional Test and turn in a one-page summary of its Community Service Project, will be eligible to participate in the State Competition. If more than twenty-four teams register state-wide, the two teams with the highest test scores in that Region, and are otherwise eligible, will advance to the State Competition. The remaining places in the list of twenty-four teams advancing to the State Competition will be determined by ranking all remaining teams from all Regions in order of their Regional Test Scores, and selecting the teams with the highest test scores until the list of twenty-four teams is complete. If there is a tie at the twenty-fourth place, test scores on the Environmental Issue will be compared and teams with the highest scores selected. If a tie remains, scores on individual subject matter areas will be used to select the eligible team(s), starting with the scores on the Agriculture subject matter area, and proceeding through the other subject matter areas in alphabetical order (Aquatic Ecology, Energy, Forestry, Soils & Geology, Wildlife) until the desired number of teams has been identified.

Teams are expected to do the following prior to arriving at their Regional Envirothon:

- Study resource materials provided by the Michigan Envirothon and from any other sources to cover the Learning Objectives for each subject area.
- Start work on their Community Outreach Project. Each team is required to bring a one-page description of its Community Outreach Project to the Regional competition and turn it in at the time of on-site registration.
- Make contact with their local Conservation District and other organizations for assistance.

The Regional Envirothon will consist of the following components:

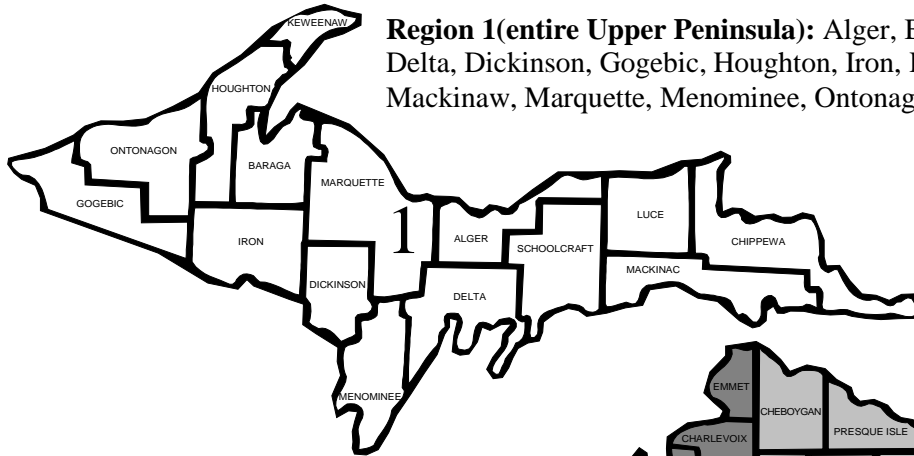
- Review sessions covering the Envirothon subject areas.
- A test at the end of the day to determine which teams will advance to the State Competition in May (or used as practice if all teams will be advanced).
- A one-page summary of a team's Community Service Project turned in at the time of on-site registration. While it is recognized that work on many projects does not begin until after the Regional Competition, a one-page description of the project must be turned-in to qualify for advancement to the State Competition.
- The two teams at each Regional submitting the best one-page Community Service Project summaries will each be provided the opportunity to make an oral presentation of its project as a means of enhancing preparation for the State Competition.
- Training sessions will be held outside when weather permits, and hands-on activities will be preferred over lecture style presentations when possible. Teams should be prepared for this format of training before arriving at their Regional event (dress appropriately).

Teams are required to participate in their own area Regional Envirothon, unless otherwise approved prior to the event. Exceptions to this rule must be approved in advance by submitting a written request by February 12, 2010 stating a valid reason for wanting to participate in another Regional Envirothon. Requests will be reviewed by the Michigan Envirothon Board and will be approved or denied prior to the Regional Envirothon event.

Sample schedule of a Regional Envirothon event:

8:30 - 9:00 AM	Registration & Welcome
9:00 - 11:45 AM	Subject Reviews & Special Presentations
11:45 - 12:15 PM	Lunch
12:20 - 2:15 PM	Subject Review Stations
2:15 - 2:45 PM	Test
2:45 - 3:15 PM	Community Outreach Project presentation practice
3:15 - 3:30 PM	Awards and safe travel home!

Michigan Envirothon Regions



Region 1(entire Upper Peninsula): Alger, Baraga, Chippewa, Delta, Dickinson, Gogebic, Houghton, Iron, Keweenaw, Luce, Mackinaw, Marquette, Menominee, Ontonagon, and Schoolcraft

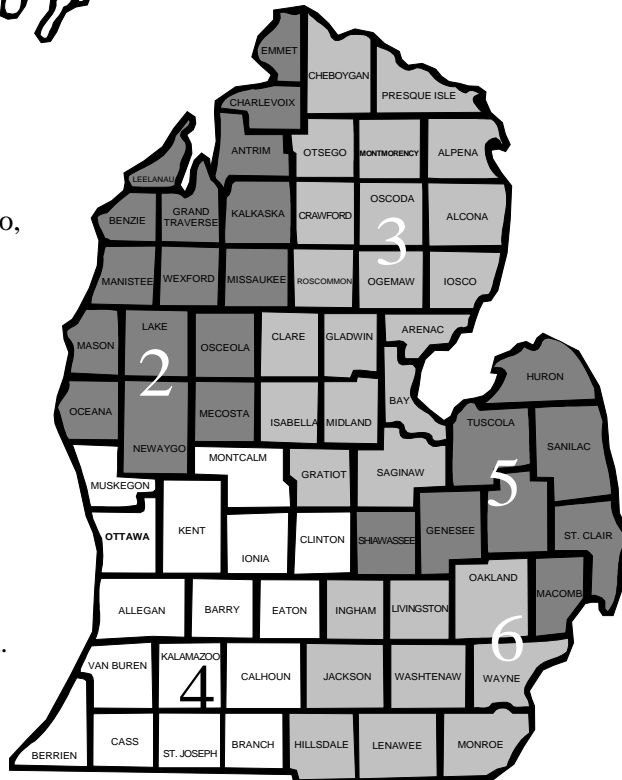
Region 2: Antrim, Benzie, Charlevoix, Emmet, Grand Traverse, Kalkaska, Lake, Leelanau, Manistee, Mason, Mecosta, Missaukee, Newaygo, Osceola, and Wexford

Region 3: Alcona, Alpena, Arenac, Bay, Cheboygan, Clare, Crawford, Gladwin, Gratiot, Iosco, Isabella, Midland, Montmorency, Ogemaw, Oscoda, Otsego, Presque Isle, Roscommon, and Saginaw

Region 4: Allegan, Barry, Berrien, Branch, Calhoun, Cass, Clinton, Eaton, Ionia, Kalamazoo, Kent, Montcalm, Muskegon, Ottawa, St. Joseph, and Van Buren

Region 5: Genesee, Huron, Lapeer, Macomb, St. Clair, Sanilac, Shiawassee, and Tuscola

Region 6: Hillsdale, Ingham, Jackson, Lenawee, Livingston, Monroe, Oakland, Washtenaw and Wayne



Michigan Envirothon - Community Outreach Project

Overview

Michigan Envirothon teams must undertake a Community Outreach Project to address an environmental/natural resource issue in their community. Students must identify an issue they feel is a priority in their community, and then develop a project to address that issue. In this component of the competition, which makes Michigan unique among the other state/provincial Envirothon programs, students develop their own environmental empowerment model for their future involvement in environmental issues. Team projects are judged in both the written and oral presentation formats, by a panel of selected judges, and account for 20-25% of the overall State Competition score.

The Task

Identify an environmental project that your team can design and implement to make a positive environmental impact in your local area. That impact can be made through community education, hands-on problem solving, other creative methods you design, or often a mixture of all of these. Your team should design a project that includes as much community involvement and awareness as possible on a specific environmental issue such as; drinking/surface water quality, scrap tire disposal, wildlife habitat, farmland preservation, waste management, etc. Utilize creative methods for financing and completing the work involved with your project. The project does not need to be completely finished before the Envirothon State Competition, but you should have a timetable for the completion of the project. All submissions must include some project work to be eligible for judging. Projects may be used for two consecutive years by one team, but any projects lasting longer than two years will not be considered for submission in the competition. A school or group that has multiple teams may use the same project, but each team must submit separate written summaries and give separate oral presentations. In this situation, it is recommended that each team focus on a different aspect of the project.

Step One: Selecting an Issue

1. Make a list of environmental issues that have an impact in your community that your team would like to and be able to address. Pick a few possibilities, if necessary, and explore the issues a little further.
2. Brainstorm for projects that could address the issues. If the possible projects for a particular issue seem unrealistic considering your goals, you may decide to address another issue.
3. Decide on an issue based on the goal of the projects, and on the criteria listed throughout pages 6-13 of this manual. You should have community impact while addressing the issue.

Step Two: Issue Investigation

1. Investigate by using all means possible including: materials provided by Envirothon, your team advisor and/or your local Conservation District, books/magazines/newspapers, Internet resources (make sure they're valid), written data on your county/city, etc.
2. Meet with and interview experts on the topic in your community from agencies/groups such as your local Conservation District, your local government, Michigan Departments of Agriculture, Natural Resources, and Environmental Quality, USDA Natural Resources Conservation Service and many others.

Michigan Envirothon - Community Outreach Project (cont.)

3. Meet with and interview local residents who are directly impacted by the issue. A survey or questionnaire can give you some statistics to use in your investigation.

Step Three: Issue Refinement

1. Decide which of your project ideas is the best method for addressing the issue. Consider these questions: Who is the audience? What do you hope the audience will learn/gain from your project? Can you measure the results and how?

Step Four: Details

1. Decide what resources you need to complete the project, including if you need assistance from other groups and outside financial support.
2. Decide how you are going to measure and document the impact your project has had on the environment, the knowledge of your audience, or both.
3. Outline a plan for writing your project summary, and for the oral presentation(s) you will give. Know what you need to complete the summary and presentation as you move along with your project. This prep-work may make things much easier for your team when you begin to prepare for the State Competition.

Step Five: Project Implementation

1. Secure the necessary partnerships and/or sponsorships for implementing your project. Acquire all the materials needed and begin implementing your project. Gather documentation of your work such as photographs, videotapes, letters of support/agreement, written data, etc. to include with your project display and/or for visual aids.
2. Notify your local media that you have developed a Community Outreach Project as a component of your participation in the Michigan Envirothon. Provide details of the issue, project goals and implementation work. Don't forget to recognize your partners, sponsors, and any other groups and individuals that have provided assistance.

Step Six: Project Evaluation

1. Evaluate your project by considering these questions: Were the project goals met? What did your team members learn by working on the project? Would you continue or expand the project if possible? and What did your community learn/gain from the project?

Other items that Judges will look for:

- Innovative projects.
- Creative solutions to community problems.
- Community involvement in the project. For example: surveys of residents, inviting residents to participate in the project, newspaper articles and involvement of environmental/natural resource agencies and/or groups.
- Solutions (realized or potential) to the problem.
- Written summaries and oral presentations that follow the outline of the judges scoring sheets.
- Proper grammar/spelling, neatness and formatting.
- Timelines that include a target date for the completion of your project.

Michigan Envirothon - Community Outreach Project (cont.)

The following projects were successfully completed by the 22 teams that competed at the 2010 State Competition:

- A comprehensive school energy audit and greening effort to reduce energy usage and costs.
- Two projects that promoted and demonstrated the use of rain barrels as a way to conserve water.
- Three rain garden installations.
- Installation and promotion of a community butterfly garden.
- Two water quality monitoring/advocacy projects.
- One overhaul of a community recycling program.
- One sustainable woodlot management improvement & community demonstration project.
- One raptor rehabilitation project.
- Five invasive species management and control projects- including honeysuckle, coltsfoot, garlic mustard, phragmites and purple loostrike.
- One lakeshore management project that promoted proper riparian management practices.
- Implementation of stormdrain labeling throughout a community.
- Development of an education to educate youth about natural resources.
- Promotion of proper lawn care techniques and a campaign to stop needless lawn care pollution.

Written Summary – Description and Directions:

Requirements: Typed using double-spaced paragraph and 12 pt. font, maximum 2 pages (or one sheet front & back). 8 ½” x 11” sheet size only. Please note that written summaries submitted for the State Competition will not be returned.

Your summary should include the following information:

- Michigan Envirothon Community Outreach Project: Written Summary Cover Page (given on page 31 of this manual)
- Demonstrate a need for the project. What is the environmental issue and how/why is it impacting the environment and your community?
- Explain how you decided to focus your project, and what tasks were included in your project. Were there other options to address the environmental issue, and if so, why did you choose the option you did?
- List and describe any partners you had in the project.
- List any costs associated with implementing your project (time, money, materials, equipment). How were those costs covered?
- Describe the results of your project. Results can be realized or anticipated (please make sure to clarify the difference).
- Describe how the project was publicized.

- Describe the community's acceptance of your project and feedback that you received from the community. Will your project have a long-term impact on the community or are there plans to continue your project within the community?
- List and describe any other aspects of your project that you feel will give the judges a better understanding of your project prior to your oral presentation.

References/Bibliography (not included in the 2 page total above):

- On a separate page(s), list resources and references used for your project. For example, the references you use may be technical references, fact sheets, interviews with Resource Professionals, and/or may include the references provided by Michigan Envirothon in your team's Resource Packet.

Written Summary and List of References/Bibliography are due to the Michigan Envirothon office by Wednesday, April 25, 2012. One point per day will be taken off for late submissions, any submissions received on or after May 1, 2012 will receive zero out of five points possible (see score sheet). You may also e-mail your summary and list of references/bibliography; please contact Michigan Envirothon prior to doing this to make proper arrangements. Project judges will be reading and scoring this summary prior to your oral presentation.



Michigan Envirothon

Community Outreach Project

Judges' Scoring Sheet for Written Summary & List of References

Scale for Scoring	
0	Not at all
1	Poor or Poorly
2	Fair or Slightly Well
3	Good or Fairly Well
4	Excellent or Very Well
5	Outstanding

Team Number:

Final Score:

Judge Number:

Written Summary and List of References/Bibliography	Circle Score
A. Team addressed/identified a specific environmental problem and related issues	0 1 2 3 4 5
B. Team demonstrated how/why the issue is important to the environment and the community	0 1 2 3 4 5
C. Organization of Subject Matter	
• Written summary was well organized and easy to follow	0 1 2 3 4 5
• Award three points if Written Summary is 2 pages or less (award zero points if Written Summary is longer than 2 pages)	0 3
D. Subject Matter	
• Team presented a viable and reasonable solution, or steps to reaching a viable solution, to the problem(s) that the environmental issue caused	0 1 2 3 4 5
• Team took appropriate actions to implement the project	0 1 2 3 4 5
• Team considered the interested/affected groups when deciding on the project tasks, and partnered with those groups appropriately	0 1 2 3 4 5
• Teams described project costs (time, money, materials, equipment, etc.), if any, and how those costs were covered	0 1 2 3 4 5
• Team presented a list of results realized and/or anticipated results	0 1 2 3 4 5
• Team described how the project was publicized	0 1 2 3 4 5
• Team discussed community acceptance/feedback of the project, long-term impacts, and future activities	0 1 2 3 4 5
E. Award two points if List of References/Bibliography was provided (award zero points if List of References/Bibliography was missing)	0 2
F. Award five points if Written Summary was submitted by the April 30, 2010, deadline (determined by Michigan Envirothon office)	0 1 2 3 4 5
Final Score (60 points maximum)	

Michigan Envirothon - Community Outreach Project (cont.)

Rules for the Oral Presentations:

1. Only students of the five-member team are allowed to participate in the oral presentation. Alternative members are not allowed to participate in the presentation but they may watch as long as they do not speak or otherwise interrupt the presentation or question & answer portion.
2. Advisors are allowed to watch their team's presentation, but they may not speak or otherwise interrupt the presentation or question & answer portion.
3. Audio/visual equipment (such as laptops & projectors for PowerPoint presentations) may be used during the oral presentations. Any requests for the use of audio/visual equipment must be made to the Michigan Envirothon office no later than April 29, 2011. If a team is using audio/visual equipment, they must meet with the audio/visual coordinator prior to their presentation time.
4. Upon introducing themselves, teams will have ten minutes to give their presentation; introduction of the team and individual team members will not count as part of the ten-minute presentation. A presentation timer/monitor will be in the room keeping time and teams will be asked to stop their presentation at ten minutes if they have not already. Judges will have five minutes to ask the team questions after the presentation, teams will then be excused and the judges will have five minutes to score the presentation before the next team arrives.
5. Students will be standing (unless they cannot due to physical disability or injury) while they give their presentation, while a panel of four to five judges will be seated in front of them.

Suggestions for Developing Successful Oral Presentations:

- Reference the judges scoring sheet provided for the oral presentation (given on pages 11 & 12 of this manual) while developing your presentation.
- Have all team members participate in the presentation.
- Practice, practice, practice! Teams can practice giving their presentation to classmates, the local Conservation District Board members, the school board, or anywhere else they can find an audience. Teams typically feel more comfortable while presenting to the Envirothon judges if they have practiced their presentation in front of other groups.

Displays:

Community Outreach Project displays are not required, but they are strongly encouraged. Project displays allow other Envirothon teams and the many volunteers present to learn about all of the projects and the great things that are being done by Envirothon teams in communities throughout Michigan. Displays may also be useful to teams while making their oral presentation, if the display is referenced during the presentation. If the display is made to set on a table, it should be able to fit onto a 6-foot tabletop. Though no points will be awarded for displays as part of the Envirothon competition, a People's Choice Award will be conducted and a prize will be awarded to all team members on the team with the chosen display.



Michigan Envirothon
 Community Outreach Project
 Judges' Scoring Sheet for Oral Presentations

Scale for Scoring

0	Not at all
1 or 2	Poor or Poorly
2 or 4	Fair or Slightly Well
3 or 6	Good or Fairly Well
4 or 8	Excellent or Very Well
5 or 10	Outstanding

Team Number:

Oral Presentation Score:

Judge Number:

Part I: Introduction (30 points maximum)	Circle Score
A. Team addressed/identified specific environmental problem and related issues	0 1 2 3 4 5
B. Team demonstrated how/why the issue is important to the environment	0 2 4 6 8 10
C. Team demonstrated how/why the issue is important to the community	0 2 4 6 8 10
D. Team identified interested/affected groups	0 1 2 3 4 5
Part I Subtotal:	

Part II: Subject Matter (70 points maximum)	Circle Score
A. Organization of Subject Matter	
• Overall organization of the presentation	0 1 2 3 4 5
• Flow of information (introduction, body, conclusion)	0 1 2 3 4 5
B. Importance of Problems and Practices	
• Team demonstrated an understanding of the environmental, social, economic, and political issues impacting the community regarding the identified environmental issue	0 2 4 6 8 10
• Team presented a viable and reasonable solution, or steps to reaching a viable solution, to the problem(s) that the environmental issue caused	0 2 4 6 8 10
• Team considered the interested/affected groups when deciding on the project tasks, and partnered with those groups appropriately.	0 1 2 3 4 5
• Team took appropriate actions to implement the project	0 1 2 3 4 5
• Team measured, or will measure, the results of the project	0 1 2 3 4 5

Continued on the next page . . .

Part II: Subject Matter (continued)						
C. Conclusion						
• Team presented a clear and concise summary in their conclusion	0	1	2	3	4	5
• Team discussed community acceptance/feedback of the project	0	2	4	6	8	10
• Team presented a list of results realized and/or anticipated results	0	2	4	6	8	10
Part II Total:						

Part III: Presentation (40 points maximum)					Circle Score		
A. Overall Presentation: Team members demonstrated effective public speaking skills							
• Team members used eye contact and appropriate gestures		0	1	2	3	4	5
• Team members incorporated originality and creativity into the presentation		0	1	2	3	4	5
B. Presentation Time: Team made effective use of their time							
• Add up to five points if the presentation was accomplished in the allotted time scale and the team made effective use of their time. (Time scale is 7-10 minutes.)		0	1	2	3	4	5
5 pts.: 7-10 minutes	4 pts.: 5-6 minutes	3 pts.: 3-4 minutes	2 pts.: 0-2 minutes	1 pt.: More than 10 minutes			
C. Award Two points for each team member verbally participating in the presentation (all students demonstrated speaking skills)							
		0	2	4	6	8	10
D. All team members demonstrated thorough knowledge of the environmental issue and the project							
		0	1	2	3	4	5
E. Questions were answered logically and concisely by all *Judges are encouraged to ask specific questions of individual team members							
		0	2	4	6	8	10
Part III Total:							

Final Score		
Total Points for Part I	(30 maximum)	
Total Points for Part II	(70 maximum)	
Total Points for Part III	(40 maximum)	
Total Points for Written Summary & List of References (60 maximum)		
Final Score (200 points maximum)		
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Michigan Envirothon Rules & Regulations (Last Amended September 2009)

1. Team members must be enrolled in grades 9-12 or age equivalent (13 – 19) during the school year of the competition. Teams will consist of five members. At least three team members must be in attendance at the State Competition.
2. Alternate team members may substitute for regular team members in the Regional or State Envirothon if the alternate is properly registered. Such substitutions must be for the entire competition, and the regular team member may not replace the "alternate" part way through the competition. Alternates who accompany their teams but are not required as replacements for regular team members may attend the competition for the experience this provides. Please note, if an alternate does attend they cannot go with their team during testing or participate in the Community Outreach Project oral presentation.
3. Teams must be accompanied to all Envirothon events by an adult advisor. One advisor must be present for every five students at the Michigan Envirothon State Competition. Teams with mixed genders will need one male and one female advisor. If teams fail to meet this requirement the team may be disqualified. Advisors will be responsible to assure that teams display proper conduct during all Envirothon sponsored events.
4. Teams are required to participate in their own area Regional Envirothon, unless otherwise approved prior to the event. Exceptions to this rule must be approved in advance by submitting a written request by February 18, 2011 stating a valid reason for wanting to participate in another Regional Envirothon. Requests will be reviewed by the Michigan Envirothon Board and will be approved or denied prior to the Regional Envirothon event.
5. A maximum of twenty-four teams will be allowed to compete at the State Competition. To qualify for the State Competition, a team must have a minimum score of 30 (50%) on the Regional test. If more than twenty-four teams meet this criterion, the top two teams with a score of 30 or better, located in each Envirothon Region, will qualify. This may provide as many as twelve of the twenty-four teams allowed. All remaining places will be filled by placing all remaining teams having scored 30 or better on the Regional test in a common pool and selecting those teams having the highest scores. In the event of a tie for the 24th place at the State Competition, scores on subject matter questions will be used to determine the winner, starting with scores on the Current Issue. If teams remain tied, scores on the subject matter areas will be considered, in alphabetical order, Agriculture, Aquatic Ecology, Energy, Forestry, Geology and Soils, Wildlife, until the 24th team is identified.
After the Registration deadline has passed, the Coordinator will provide the Board of Directors with a list of all applications received. After reviewing the list, the Board may adjust the requirements for qualification for the State Competition, including lowering the minimum score required. All registered teams will be promptly notified of any changes made by the Board.
After all Regional Competitions have been completed, if there are fewer than 24 qualified teams, any team that entered a Regional Competition but failed to receive the minimum score may petition the Board for permission to compete at the State Competition. To facilitate this process, the Coordinator shall notify all teams eligible to petition of the number of vacancies available.
6. Team members are not to use or possess any electronic devices, such as cell phones, DVD players, cameras, audio recorders/players, video recorders, or computers during competition. Simple calculators will be permitted upon approval and/or provided by Michigan Envirothon.
7. All scores are final the day of competition.

8. Costs for transportation to & from the competition, and lodging and meals at the competition will be the responsibility of the participants, unless noted otherwise.
9. Use of snuff, tobacco, drugs (except for those that are prescribed and listed on the Envirothon Health/Release Form) and/or alcohol is PROHIBITED during all Envirothon sponsored events.
10. Release/Health forms must be submitted to the Envirothon office by February 18, 2011. Teams without all of their participants' health forms submitted to the Envirothon office by February 12th will not be allowed to participate in the Envirothon competition. Registration refunds will not be made after February 28, 2011. Partial refunds may be granted to teams who submit written notice of withdrawal by February 28th.
11. The team with the highest cumulative point total will win the event. Tie breaker procedure will be determined prior to each Envirothon competition.
12. The use of identification keys is prohibited unless provided by the Envirothon regional or state competition resource professionals.
13. A Grievance Committee has been established to hear complaints. If team members, advisors, or others wish to make a grievance or complaint (e.g. violation of rules, cheating, event procedures) during competition, this must be done as soon as possible following the incident and before the winners are announced. Complaints may be made to group or station leaders, and they will report back to the Grievance Committee. Group or station leaders may ask the team member or advisor to make their complaint or grievance in writing.
14. Awards for the state and regional competitions will vary from year to year. A list of awards will be available prior to the competition.
15. Envirothon rules and regulations are subject to change. Revisions will be sent in writing to team advisors prior to competition.
16. Any suggestions for program improvements need to be put in writing and submitted to the Envirothon office. These suggestions will be addressed within thirty working days from the date they are received.
17. The written project summary is due April 29, 2011. One point per day will be taken off for late papers. Projects may only be used by a team for two consecutive years. Projects conducted for more than two consecutive years will not be accepted.

Canon Envirothon Mission Statement and Goals & Objectives

Mission Statement

The mission of the Canon Envirothon is to develop knowledgeable, skilled and dedicated citizens who are willing to work towards achieving and maintaining a natural balance between the quality of life and the quality of the environment. This is accomplished by developing in young people an understanding of the principles and practices of resource management and ecology and through practice dealing with complex resource management decisions. The Canon Envirothon program fosters a working partnership with resource professionals and the general public to promote goals of environmental education in grades 9-12 and recognizing students who achieve excellence in environmental and natural resource knowledge and skills.

Goal 1:

To promote a desire to learn more about the natural environment and develop knowledge and skills to apply the basic principles and practices of resource management and ecology.

Objectives:

- a. Basic knowledge and awareness.
- b. Analysis skills and resource management.

Goal 2:

To promote stewardship of natural resources and develop critical thinking skills, cooperative problem-solving skills, and decision making skills of students to balance the quality of life and the quality of the environment.

Objectives:

- a. Identification of environmental problems.
- b. Issue investigation.
- c. Comprehension of different points of view.
- d. Ability to generate alternative solutions.
- e. Evaluation of personal positions.
- f. Ability to think ahead.
- g. Ability to communicate.

Goal 3:

To provide students with experience in environmentally oriented activities to enable them to become environmentally aware, action oriented citizens.

Objectives:

- a. Knowledge of strategies used in environmental/natural resource management.
- b. Working with resource management agencies and organizations.
- c. Evaluating the effect of personal actions.
- d. Ability to work along and with others to solve environmental problems.

Michigan Envirothon Learning Objectives

The learning objectives set forth by the Michigan Envirothon are those concepts and skills that the Envirothon teams will be tested in. Resource materials and training with Resource Professionals provided by the Michigan Envirothon are intended to cover the learning objectives. Teams are encouraged to search for additional resources that may also address these objectives. Teams are also encouraged to request training from local Resource Professionals in an effort to address the learning objectives.

Agriculture

1. Look at food and fiber production in Michigan and obtain an understanding of the essential human needs we obtain from our natural resources.
2. Understand the importance of agriculture in Michigan as a major land use.
3. Look at land use trends, the importance of agricultural lands to other natural components of Michigan, and look at the impact of land use policies on land use for agriculture.
4. Understand the basic glossary of agricultural terms and agricultural land use practices.
5. Look at the trend in agriculture - how we got to where we are today - small farms to industrial farming to a sustainable agriculture movement.
6. Sustainable agriculture relies upon four parts. Understand these four parts: a) agricultural product profitability, b) agricultural practices compatible with the environment, c) energy efficiency in agricultural practices, and d) a system which is supportive of rural and urban communities.

Understand examples of sustainable agriculture practices and methods: maintenance and improvement of soil / prevention of erosion, rotational grazing, composting, crop rotation, manure spreading, organic farming, cover crop use, integrated pest management, and value-added production.

Aquatic Ecology

1. Identify the processes and phases for each part of the water cycle.
2. Describe the chemical and physical properties of water and explain their importance for freshwater and saltwater ecosystems.
3. Discuss methods of conserving water and reducing point and non-point source pollution.
4. Analyze the interaction of competing uses of water supply: hydropower, navigation, wildlife, recreation, waste assimilation, irrigation, industry and others.
5. Identify common aquatic organisms through the use of the key.
6. Delineate the watershed boundary for a small water body.
7. Be able to explain the different types of aquifers and how each type relates to water quality and quantity.
8. Briefly describe the benefits of wetlands, both their function and value.
9. Describe the changes to the aquatic ecosystem based on alteration to the aquatic habitat.
10. Know methods used to assess and manage aquatic environments and utilize water quality information to assess the general water quality of a given body of water (includes sampling techniques & water quality parameters used to monitor point and non-point source pollution).
11. Be familiar with major methods and laws used to protect water quality (surface and ground water) and utilize this information to make management decisions to improve the quality of water in a given situation.

Energy

1. Energy is an essential human need we obtain from our natural resources. What is energy? What are our needs for energy? Understand the different sources of energy - sun, coal, oil, gas, hydro, geothermal, nuclear - and look at how supply and demand are related to our choices of energy resources.
2. Understand that energy conservation is a consequence of our choices. Become familiar with some ways to practice energy conservation - insulation, efficient products, decisions and choices.
3. Become familiar with different energy measurement terminology and basic terms when talking about energy.
4. Learn about “alternative energy” - solar, biomass, geothermal, wind, etc.
5. Understand the different energy requirements for different types of transportation - cars, trucks, buses, airplanes, trains, boats, etc.
6. Identify and study current issues concerning energy production, uses, etc.

Forestry

1. Identify common trees without a key and identify specific or unusual species of trees or shrubs through the use of a key.
2. Understand forest ecology concepts and factors affecting them, including the relationship between soil and forest types, tree communities, regeneration, competition, disturbance and succession.
3. Understand the cause/effect relationship of factors affecting tree growth and forest development (climate, insects, soils, microorganisms, etc.).
4. Understand how wildlife habitat relates to forest communities, forest species, forest age structure, snags and den trees, availability of food, and riparian zones.
5. Understand the value of trees in urban and suburban settings and factors affecting their health and survival.
6. Understand how the following issues are affected by forest health and management: biological diversity, forest fragmentation, air quality, rural development, fire and recreation.
7. Understand basic forest management concepts and tools such as: how various silvicultural practices are utilized, the use of tree measuring devices, use of technology, and best management practices.
8. Identify complex factors which influence forest management decisions (economical, social, ecological and urban interface).
9. Apply silviculture concepts and methods to develop general management recommendations for a particular situation and management goals.

Soils/Geology

1. Recognize soil as an important resource.
2. Describe basic soil properties and formation factors.
3. Understand soil drainage classes and know how wetlands are defined.
4. Determine basic soil properties and limitations, such as mottling and permeability, by observing a soil pit or soil profile.
5. Identify types of soil erosion and discuss methods for reducing erosion.

6. Utilize soil information, including soil surveys, in land use planning.
7. Discuss how soil is a factor in, or impacted by, non-point source pollution.

Wildlife

1. Identify common wildlife species and wildlife signs (keys will be used for more extensive identification).
2. Identify basic wildlife survival needs.
3. Describe specific adaptations of wildlife to their environment and role in the ecosystem.
4. Describe predator/prey relationships and examples.
5. Describe the potential impact of the introduction of non-native species.
6. Describe the major factors affecting threatened and endangered species and methods used to improve the populations of these species.
7. Describe ways that habitat can be improved upon for specific species by knowing their requirements.
8. Discuss the concepts of carrying capacity and limiting factors.
9. Discuss various ways the public and wildlife managers can help in the protection, conservation, management, and enhancement of wildlife populations.
10. Describe food chains/webs and cite examples.
11. Describe factors that limit or enhance population growth.
12. Evaluate a given habitat for its suitability for designated species, give a description of their habitat needs.

Correlations to Michigan Content Expectations

A. Michigan Envirothon Learning Objectives Aligned with Michigan High School Content Expectations

Agriculture

- Social Studies
 - WHG.CG2 – Resources – Explain the changes over the past 50 years in the use, distribution, and importance of natural resources on human life, settlement, and interactions by describing and evaluating:
 - change in spatial distribution and use of natural resources
 - the difference in ways societies have been using and distributing natural resources
 - social, political, economic, and environmental consequences of the development, distribution, and use of natural resources
 - major changes in networks for the production, distribution, and consumption of natural resources including growth of multinational corporations, and governmental and non-governmental organizations
 - the impact of humans on the global environment

Aquatic Ecology

- Earth Science
 - E2.4B – Explain how the impact of human activities on the environment can be understood through the analysis of interactions between the four Earth systems.
 - E4.p1A – Describe that the water cycle includes evaporation, transpiration, condensation, precipitation, infiltration, surface runoff, groundwater, and absorption.
 - E4.p1B – Analyze the flow of water between the elements of a watershed, including surface features and ground water.
 - E4.p1C – Describe the river and stream types, features, and process including cycles of flooding, erosion, and deposition as they occur naturally and as they are impacted by land use decisions.

Correlations to Michigan Content Expectations (continued)

- E4.p1D – Explain the types, process, and beneficial functions of wetlands.
- E4.1B – Explain the features and process of groundwater systems and how the sustainability of North American aquifers has changed in recent history qualitatively using the concepts of recharge, residence time, inputs, and outputs.
- E4.1C – Explain how water quality in both groundwater and surface systems is impacted by land use decisions.
- E4.2A – Describe the major causes for the ocean’s surface and deep water currents, including the prevailing winds, the Coriolis effect, unequal heating of the earth, changes in water temperature and salinity in high latitudes, and basin shape.
- E4.2B – Explain how interactions between the oceans and the atmosphere influence global and regional climate.
- Biology
 - L3.p1A – Provide examples of population, community, and ecosystem.
 - L3.p3B – Distinguish between the living (biotic) and nonliving (abiotic) components of an ecosystem.
 - L3.p3C – Explain how biotic and abiotic factors cycle in an ecosystem.
 - B3.4A – Describe ecosystem stability. Understand that if a disaster such as flood or fire occurs, the damaged ecosystem is likely to recover in stages of succession that eventually result in a system similar to the original one.
 - B3.4C - Examine the negative impact of human activities.
 - B3.5B – Explain the influences that affect population growth.
 - B3.5e – Recognize that and describe how the physical or chemical environment may influence the rate, extent, and nature of population dynamics within ecosystems.
 - L5.p1A - Define a species and give examples.
 - L5.p1B – Define a population and identify local populations.

- L5.p2A – Explain, with examples, that ecology studies the varieties and interactions of living things across space while evolution studies the varieties and interactions of living things across time.
- Physics
 - P4.2B – Name devices that transform specific types of energy into other types.
- Chemistry
 - P4.p2B – Identify a pure substance based on unique chemical and physical properties.
 - P4.2C – Separate mixtures based on the differences in physical properties of the individual components.
- Social Studies
 - C6.1.1 – Identify and research various viewpoints on significant public policy issues.
 - C6.1.4 – Address a public issue by suggesting alternative solutions or courses of action, evaluating the consequences of each, and proposing an action to address the issue or resolve the problem.

Correlations to Michigan Content Expectations (continued)

Energy

- Earth Science
 - E2.2B – Identify differences in the origin and use of renewable and nonrenewable sources of energy.
 - E2.4A – Describe renewable and nonrenewable sources of energy for human consumption, compare their effects on the environment, and include overall costs and benefits.
- Physics
 - P4.2A – Account for and represent energy transfer and transformation in complex processes.
 - P4.2D – Explain why all the stored energy in gasoline does not transform to mechanical energy of a vehicle.
 - P4.2f – Identify and label the energy inputs, transformations, and outputs using qualitative or quantitative representations in simple technological systems to show energy conservation.

Forestry

- Biology
 - L3.p1A – Provide examples of a population, community, and ecosystem.
 - L3.p3C – Explain how biotic and abiotic factors cycle in an ecosystem.
 - L3.p4A – Recognize that, and describe how, human beings are part of the Earth’s ecosystems. Note that human activities can deliberately or inadvertently alter the equilibrium in ecosystems.
 - B3.2A – Identify how energy is stored in an ecosystem.
 - B3.2B – Describe energy transfer through an ecosystem, accounting for energy lost to the environment as heat.
 - B3.2C – Draw the flow of energy through an ecosystem. Predict changes in the food web when one or more organisms are removed.

- B3.3A – Use a food web to identify and producers, consumers, and decomposers and explain the transfer of energy through trophic levels.
- B3.4A – Describe ecosystem stability. Understand that if a disaster such as a flood or fire occurs, the damaged ecosystem is likely to recover in stages of succession that eventually result in a system similar to the original one.
- B3.4B – Recognize and describe that a great diversity of species increases the chance that at least some living organisms will survive in the face of cataclysmic changes in the environment.
- B3.4C – Examine the negative impact of human activities.
- B3.5e – Recognize that and describe how the physical or chemical environment may influence the rate, extent, and nature of population dynamics within ecosystems.

Correlations to Michigan Content Expectations (continued)

Soils/Geology

- Earth Science
 - E2.1B – Analyze the interactions between the major systems that make up the Earth.
 - E2.3d – Explain how carbon moves through the Earth system and how it may benefit or harm society.
 - E2.4B – Explain how the impact of human activities on the environment can be understood through the analysis of interactions between the four Earth systems.
 - E3.p1B – Explain how physical and chemical weathering leads to erosion and the formation of soils and sediments.
 - E4.p1C – Describe the river and stream types, features, and process including cycles of flooding, erosion, and deposition as they occur naturally and as they are impacted by land use decisions.
 - E4.p1D – Explain the types, process, and beneficial functions of wetlands.
 - E4.1C – Explain how water quality in both groundwater and surface systems is impacted by land use decisions.

Wildlife

- Biology
 - L3.p1A – Provide examples of a population, community, and ecosystems.
 - L3.p2A – Describe common relationships among organisms and provide examples of producer/consumer, predator/prey, or parasite/host relationship.
 - L3.p2B – Describe common ecological relationships between and among species and their environments.
 - L3.p3D – Predict how changes in one population might affect other populations based upon their relationships in a food web.
 - B3.2C – Draw the flow of energy through an ecosystem. Predict changes in the food web when one or more organisms are removed.

- B3.4B – Recognize and describe that a great diversity of species increases the chance that at least some living organisms will survive in the face of cataclysmic changes in the environment.
- B3.4C – Examine the negative impact of human activities.
- B3.5B – Explain the influences that affect population growth.
- B3.5C – Predict the consequences of an invading organism on the survival of other organisms.
- B3.5d – Describe different reproductive strategies employed by various organisms and explain their advantages and disadvantages.
- B3.5e – Recognize that and describe how the physical or chemical environment may influence the rate, extent, and nature of population dynamics within ecosystems.

Correlations to Michigan Content Expectations (continued)

B. Michigan Envirothon Community Outreach Learning Objectives Aligned with Michigan High School Content Expectations

Community Outreach Project

- Earth Science, Biology, Physics, Chemistry (E, B, P, C)
 - 1.1A – Generate new questions that can be investigated in the laboratory or field.
 - 1.1C – Conduct scientific investigations using appropriate tools and techniques.
 - 1.1D – Identify patterns in data and relate them to theoretical models.
 - 1.1h – Design and conduct a systematic scientific investigation that tests a hypothesis. Draw conclusions from data presented in charts or tables.
 - 1.2A – Critique whether or not specific questions can be answered through scientific investigations.
 - 1.2B – Identify and critique arguments about personal or societal issues based on scientific evidence.
 - 1.2C – Develop an understanding of a scientific concept by accessing information from multiple sources. Evaluate the scientific accuracy and significance of the information.
 - 1.2f – Critique solutions to problems, given criteria and scientific constraints.
 - 1.2g – Identify scientific tradeoffs in design decisions and choose among alternative solutions.
 - 1.2j – Apply science principles or scientific data to anticipate effects of technological design decisions.
 - 1.2k – Analyze how science and society interact from a historical, political, economic, or social perspective.
- Social Studies
 - P1.1 – Use close and critical reading strategies to read and analyze texts pertaining to social science; attend to nuance, make connections to prior knowledge, draw inferences, and determine main idea and supporting details.

- P1.2 – Analyze point of view, context, and bias to interpret primary and secondary source documents.
- P2.1 – Understand the scientific method of inquiry to investigate social scientific and historical problems.
- P2.2 – Read and interpret data in tables and graphs.
- P2.3 – Know how to find and organize information from a variety of sources; analyze, interpret, support interpretations with evidence, critically evaluate, and present the information orally and in writing; report investigation results effectively.
- P2.4 – Use multiple perspectives and resources to identify and analyze issues appropriate to the social studies discipline being studied.
- P2.5 – Use deductive and inductive problem-solving skills as appropriate to the problem being studied.
- P3.1 – Clearly state an issue as a questions of public policy, trace the origins of an issue, analyze various perspectives, and generate and evaluate possible alternative resolutions.

Correlations to Michigan Content Expectations (continued)

- P4.2 – Demonstrate knowledge of how, when, and where individuals would plan and conduct activities intended to advance views on matters of public policy, report the results, evaluate effectiveness.
- P4.3 – Plan and conduct activities intended to advance views on matters on public policy, report the results, and evaluate effectiveness.
- C6.1.1 – Identify and research various viewpoints on significant public policy issues.
- C6.1.2 – Locate, analyze, and use various forms of evidence, information, and sources about a significant public policy issue, including primary and secondary sources, legal documents, non-text based information, and other forms of political communication.
- C6.1.3 – Develop and use criteria in analyzing evidence and position statements.
- English Language Arts
 - CE1.1.2 – Know and use a variety of prewriting strategies to generate, focus, and organize ideas.
 - CE1.2.1 – Write, speak, and use images and graphs to understand and discover complex ideas.
 - CE1.2.2 – Write, speak, and visually represent to develop self-awareness and insight.
 - CE1.3.4 – Develop and extend a thesis, argument, or exploration of a topic by analyzing differing perspectives and employing a structure that effectively conveys the ideas in writing.
 - CE1.3.7 – Participate collaboratively and productively in groups fulfilling roles and responsibilities, posing relevant questions, giving and following instructions, acknowledging and building on ideas and contributions of others to answer questions or to solve problems, and offering dissent courteously.
 - CE1.4.1 – Identify, explore, and refine topics and questions appropriate for research.

- CE1.4.2 – Develop a system for gathering, organizing, paraphrasing, and summarizing information; select, evaluate, synthesize, and use multiple primary and secondary resources.
- CE1.4.3 – Develop and refine a position, claim, thesis, or hypothesis that will be explored and supported by analyzing different perspectives, resolving inconsistencies, and writing about those differences in a structure appropriate for the audience.
- CE1.4.4 – Interpret, synthesize, and evaluate information/findings in various print sources and media to draw conclusions and implications.
- CE2.3.1 – Read, listen to, and view diverse texts for multiple purposes such as learning complex procedures, making work-place decisions, or pursuing in-depth studies.
- CE3.2.4 – Critically interpret primary and secondary research-related documents.

Correlations to Michigan Content Expectations (continued)

- Mathematics
 - L1.2.1 – Use mathematical symbols to represent quantitative relationships and situations.
 - L1.2.4 – Organize and summarize a data set in a table, plot, chart, or spreadsheet; find patterns in a display of data; understand and critique data displays in the media.
 - L2.3.1 – Convert units of measurement within and between systems; explain how arithmetic operations on measurements affect units, and carry units through calculations correctly.

Community Outreach Written Summary and Oral Presentation

- Earth Science, Biology, Physics, Chemistry (E, B, P, C)
 - 1.1E – Describe a reason for a given conclusion using evidence from an investigation.
 - 1.1g – Use empirical evidence to explain and critique the reasoning used to draw a scientific conclusion or explanation.
- Social Studies
 - P1.4 – Communicate clearly and coherently in writing, speaking, and visually expressing ideas pertaining to social science topics, acknowledging audience and purpose.
 - P1.5 – Present a coherent thesis when making an argument, support with evidence, articulate and answer possible objections, and present a concise, clear closing.
 - Write persuasive/argumentative essays expressing and justifying decisions on public policy issues.
 - C6.1.4 – Address a public issue by suggesting alternative solutions or courses of action, evaluating the consequences of each, and proposing an action to address the issue or resolve the problem.

- C6.2.7 – Participate in a service-learning project, reflect upon experiences, and evaluate the value of the experience to the American ideal of participation.
- English Language Arts
 - CE1.1.3 – Select and use language that is appropriate for the purpose, audience, and context of the text, speech, or visual representation.
 - CE1.3.2 – Compose written and spoken essays or work-related text that demonstrate logical thinking and the development of ideas for academic, creative, and personal purposes: essays that convey the author’s message by using an engaging introduction, well-constructed paragraphs, transition sentences, and a powerful conclusion.
 - CE1.3.5 – From the outset, identify and assess audience expectations and needs; consider the rhetorical effects of style, form, and content based on that assessment; and adapt communication strategies appropriately and effectively.
 - CE1.4.7 – Recognize the role of research, including student research, as a contribution to collective knowledge, selecting an appropriate method or genre

Correlations to Michigan Content Expectations (continued)

- through which research findings will be shared and evaluated, keeping in mind the needs of the prospective audience.
- CE1.5.1 – Use writing, speaking, and visual expression to develop powerful, creative, and critical messages.
 - CE1.5.2 – Prepare spoken and multimedia presentations that effectively address audiences by careful use of voice, pacing, gestures, eye contact, visual aids, audio, video technology.
 - CE4.1.3 – Use a range of linguistic applications and styles for accomplishing different rhetorical purposes (e.g., persuading others to change opinions, conducting business transactions, speaking in a public forum, discussing issues informally with peers).
 - CE4.1.4 – Control standard English structures in a variety of contexts (e.g., formal speaking, academic prose, business, and public writing) using language carefully and precisely.

2011 Canon Envirothon Environmental Issue: Nonpoint Source Pollution/Low Impact Development

Nonpoint source pollution, unlike pollution from industrial and sewage treatment plants, can come from many different sources. Stormwater runoff carries pollutants into our streams, rivers, reservoirs and other bodies of water.

These pollutants include:

- Excess fertilizers, herbicides, and insecticides from residential areas
- Oil, grease, and toxic chemicals from urban runoff
- Sediment from improperly managed construction sites, crop and forest lands, and eroding stream banks
- Bacteria and nutrients from pet wastes and faulty septic systems

An estimated 60 percent of current water pollution is attributed to stormwater runoff. Nonpoint source pollution can contaminate drinking water, destroy wildlife habitat, close beaches, kill fish and cause many other serious environmental and public health problems. Every year, millions of dollars are spent to restore and protect areas damaged by nonpoint source pollutants. Stormwater has been identified as one of the leading sources of pollution for all waterbody types in the United States. Furthermore, the impacts of stormwater pollution are not static; they usually increase with more development and urbanization.

One of the most exciting new trends in managing stormwater runoff is the increased use of **Low Impact Development (LID)** to help protect and restore water quality. LID comprises a set of approaches and practices that are designed to reduce runoff of water and pollutants from the site at which they are generated. By means of infiltration, evapotranspiration, and reuse of rainwater, LID techniques manage water and water pollutants at the source and thereby prevent or reduce the impact of development on rivers, streams, lakes, coastal waters, and ground water.

LID is an approach to land development (or re-development) that works with nature to manage stormwater as close to its source as possible. LID employs principles such as preserving and recreating natural landscape features, minimizing effective imperviousness to create functional and appealing site drainage that treat stormwater as a resource rather than a waste product. There are many practices that have been used to adhere to these principles such as bioretention facilities, rain gardens, vegetated rooftops, rain barrels, and permeable pavements. By implementing LID principles and practices, water can be managed in a way that reduces the impact of built areas and promotes the natural movement of water within an ecosystem or watershed. Applied on a broad scale, LID can maintain or restore a watershed's hydrologic and ecological functions. LID has been characterized as a sustainable stormwater practice by the Water Environment Research Foundation and others.

Canon 2012 NPS/ LID Learning Objectives

1. Define Low Impact Development (LID).
2. Define nonpoint source pollution.
3. Explain the impacts of land use on watersheds.
4. Understand the limitations and benefits of conventional stormwater management design versus LID.
5. Identify and apply LID Best Management Practices (BMPs) and selection criteria.
6. Explain how soils, wildlife, forestry, and aquatics affect and are affected by nonpoint source pollution (and its reduction) and LID.
7. Identify how LID is used to manage stormwater.
8. Explain the impacts urban sprawl has on nonpoint source pollution and how LID can be used to manage and reduce nonpoint source pollution.
9. Analyze pros and cons of the application of LID Best Management Practices.
10. Understand the relationship between LID hydrologic controls (i.e. retention ponds, swales, etc.) and water quality benefits.
11. Provide examples of what individuals and communities can do to implement LID at home.

Incentives for Teams to Help Reduce Participation Costs

(A) Teams participating in competition can offset costs by presenting to other high schools, promote Michigan Envirothon and help us recruit more teams:

- Teams that make presentation(s) to other high schools receive a **\$25 discount** from their 2011 state competition team registration fee.
- Teams that successfully recruit one or more teams from other high schools receive a **\$75 discount** from their 2011 state competition registration fee.

In order to receive the discount teams must contact and receive approval from the Michigan Envirothon (ME) office prior to making presentations. Promotional material (PowerPoint overview, brochures, annual report, list of community service projects, etc.) are available by contacting the ME office.

(B) Michigan Envirothon Window Cling:

Teams interested in registering for the 2012 Michigan Envirothon have now the opportunity to sell Michigan Envirothon promotional window clings to help raise funds for their team. 2012 Michigan Envirothon window clings are purchased wholesale from MACD for and sold by teams as a fundraiser for \$6 ea. For information on order 2012 window clings, please contact Michigan Envirothon or visit our website.

Michigan Envirothon Release/Health Form

All students, advisors, and volunteers must complete this form to participate in any Michigan Envirothon event. **Please submit no later February 18, 2012.**

Team Name & Advisor Name: _____

Attendees Full Name: _____ Date of Birth: _____

Home Address: _____ City: _____ Zip: _____

Home Phone: _____ Alternate Phone: _____

Email Address: _____

Emergency Contact Person: _____

Relationship to Attendee: _____ Phone Number: _____

Insurance Provider: _____ Name of Insured: _____

Group Number: _____ Policy Number: _____

Allergies (medication, food, etc.): _____

Medical Conditions (diabetes, asthma, etc.): _____

Medications currently being taken: _____

***Please place your initials in the spaces provided, stating that you agree to the following three statements:**

_____ I understand this event may be strenuous and adverse weather conditions may occur. Nevertheless, I assume the risk involved. In the event of an accident, I authorize the Michigan Envirothon to provide emergency medical attention for me during all Michigan Envirothon sanctioned events. I have been assured that all reasonable care will be taken to prevent incident, therefore, I will not hold Michigan Envirothon liable should an accident occur.

_____ I have read the rules and regulations of the Michigan Envirothon and agree to them.

_____ I give my consent to the use of any photos and videos taken of me by officials of the Michigan Envirothon, or their representatives, to be used for editorial or promotional uses only.

Signature of Participant: _____ Date: _____

- The statement below is for use by parent/guardian of minors under the age of 18-
I, _____ (parent/guardian), give permission for my child, _____, to travel to Michigan Envirothon events in the care of _____ (team advisor) for the purpose of attending and participating in Michigan Envirothon events.

Signature of Parent/Guardian: _____ Date: _____

Envirothon Team Registration/Roster Form

Registration November 1 through February 08 - \$100.00 *Late Registration: February 08 – February 28 \$130*

PLEASE FILL OUT ALL LINES

Team Name: _____ School: _____

Team Advisor: _____ M / F E-mail: _____

Address: _____ City: _____ Zip: _____

Work Phone: _____ Fax: _____

Home/Cell Phone: _____ Preferred Contact Method: _____

If by phone, best days/times to call: _____

Team Co-Advisor: _____ M / F E-mail: _____

Team Members

Team Captain _____ M / F Grade: _____

E-mail: _____ Home/Cell Phone: _____

Team Member #2 _____ M / F Grade: _____

Team Member #3 _____ M / F Grade: _____

Team Member #4 _____ M / F Grade: _____

Team Member #5 _____ M / F Grade: _____

Alternate Team Member

1. _____ M / F Grade: _____

CHECK – Payable to Michigan Envirothon. *Registration will be processed upon receipt of payment.*

Credit Card: please include credit card information or contact the Michigan Envirothon Office at:
mienvirothon@macd.org or call (517) 324-4421 ▪ (517) 930-7449

Please make checks payable to: **Michigan Envirothon**

Mail completed registration form & payment to:

Attn: Michigan Envirothon c/o Michigan Association of Conservation Districts
3001 Coolidge Rd., Suite 250 • East Lansing, MI 48823

REMINDERS:

Late Registration: February 08 – February 28 \$130

****No refunds for team withdrawals will be granted after February 28.****

***Teams with less than 5 members will not be eligible to compete at the Canon Envirothon.**



Michigan Envirothon

Inspiring Environmental Stewardship in
Michigan's High School Students



Michigan Envirothon Community Outreach Project

WRITTEN SUMMARY COVER PAGE

Team Name:

School:

Conservation District:

Environmental Issue Addressing:

Project Type:

Total Project Cost:

Number of Presentations Given:

Number of Students Reached Through Project:

Number of Adults Reached Through Project:

Number of Volunteers Recruited:

Partnering Agencies and Organizations:

COVER EXAMPLE

Michigan Envirothon Community Outreach Project WRITTEN SUMMARY COVER PAGE

Team Name: Green Heroes

School: Eastern High School

Conservation District: Ingham

Project Type: Compost installation and education in Lansing Schools.

Environmental Issue Addressing: Organic waste makes up one third of Lansing Schools garbage. By creating a composting program Green Heroes will reduce the school's solid waste, extend the life of a leaching field and septic tank if a garbage disposal system has been in use (or reduce nitrogen loading to the local sewage treatment facility), educate the school community about benefits of composting and create a useful product (finished compost) for landscaping projects.

Total Project Cost: \$750.00

Number of Presentations Given: 4

Number of Students Reached Through Project: 300

Number of Adults Reached Through Project: 50

Number of Volunteers Recruited: 10

Partnering Agencies and Organizations:

Rotary Charities, Ingham Conservation District, Lansing School Board, and Lansing Kitchen Staff