Land Use Introduction

The *MEECS Land Use Unit* will help students observe and analyze land use and land use planning challenges our society faces; the unit will also engage them in considering some of the possible solutions to these challenges. The unit is designed for grades 4 - 6 and supports Michigan Content Standards aligned science and social studies curricula. Lessons and activities can be adapted for other grades as well as for non-formal education programs.

Topics addressed in the unit include using air photos to identify land uses, mapping and measuring the land use changes in a community, comparing changes in agricultural land use in Michigan, comparing changes in forest land cover in Michigan, using tables and graphs to analyze changes in land use in Michigan counties, analyzing how land use conflicts are resolved in a democratic society, examining the values that different people hold for different types of land uses, and evaluating the role of land use as it interacts in the environment with air and water.

The land use choices that Michigan residents make, now and in the future, will have global environmental, economic, and social impacts for individuals and for our communities, the State of Michigan, and the United States. How can Michigan residents, businesses, and industry continue to meet their needs without compromising the ability of future generations to meet their needs? In order to ensure a sustainable future, Michigan residents must have the knowledge and skills necessary to make informed, data-based decisions about how one of our most important natural resources, the land, is being used currently and how it will be used in the future.

The land use challenges that we face as a state and as a country are increasing consumption and competition for the limited amount of available land. While our population is increasing at single digits, the amount of land being consumed for residential and suburban development is increasing in the double digits. Michigan's land is rapidly changing in the way it is used, and citizens of the State must be certain that the smartest possible choices are being made regarding how this valuable natural resource is used. Students will be encouraged to explore possible solutions to these challenges through a smart growth approach to land use planning.

The unit is designed using the following "Enduring Understandings":
Upon completion of the unit students will understand that:

1. Land is a vital natural resource that individuals and groups of people impact in many different ways.
2. Land is a limited natural resource and informed decisions must be made regarding how it is used.
3. Evidence suggests that land may be used in positive or negative ways.
4. Land use issues are addressed through government policies and rule of law in order to solve problems.
5. Knowledge of land use practices is often associated with water quality, ecosystem diversity, quality of life, and other environmental issues.
6. Individuals and organizations are responsible for rational and long-term land use planning within the community.
7. Individuals and organizations make choices in using natural resources such as land, and those choices have different impacts

The future of Michigan's environment, economy, and natural resources depends on the decisions that will be made by *today's* youth as *tomorrow's* decision-makers. The *MEECS Land Use Unit* will help Michigan students gain the knowledge and skills they need to become stewards of Michigan's environment and to help keep the Great Lakes State GREAT!

Land Use Overview

	Essential Questions	Core Lesson
1	How was the air photo taken? What does the air photo show?	**1. Observing Land Use –** Students identify land uses on aerial photographs of a location, taken at two different times. They discuss the changes between the two photographs and why these changes occurred.
2	How do people use the land? How can land use be measured? How can land use be classified?	**2. Measuring Land Use –** Students identify different land uses on an aerial photograph, classify land uses, and measure area. They discuss the use of science and technology in classifying and measuring land use.
3	How is the land in Michigan used? Who owns the land?	**3. Classifying Land Use –** Students analyze information about Michigan land use. The information is then classified and presented in graphs, tables, and diagrams.
4	Why do people use land differently? Why do land use conflicts occur? How do different land uses impact plant and animal life and people?	**4. Reflecting on How the Land Is Used –** Students read short vignettes for information about land use. They engage in a discussion about why land use is important in Michigan.
5	How is land use changing? Why is land use changing? Are the land use changes positive or negative?	**5. Analyzing Land Use Changes: State –** Students inquire about the changing agricultural land use in Michigan. Data for Michigan land use are graphed and analyzed to reveal past changes and project future changes.
6	How is land use changing? How is land use changing in different kinds of counties? Are the land use changes positive or negative?	**6. Analyzing Land Use Changes: County –** In this lesson students examine and graph data about land use patterns and trends in their local county.
7	Why do conflicts over land use occur? How are conflicts resolved in a civil society?	**7. Solving Land Use Conflicts –** This lesson introduces students to the process that people in the local community follow when they request a change in land use zoning.
8	What is the relationship between land use, water, and air? How does a change in land use affect water and air?	**8. Investigating Land Use, Water, and Air Relationships –** Students study the interactions of land use, water, and air that result in an ecosystem that reflects both human and natural impacts on land use.

Enhancements/Extensions

1 - Practice interpreting air photos.
- *My Neighborhood: How has it changed?* This land is Your Land (Kent Co. and MSU Extension).
- Creating a Bird's-Eye view of my house and yard.
- Identifying "land uses" at home
- Land use/land cover interpretation quiz

2 - Investigating land use globally.
- *Land Uses – There are so many!* This land is Your Land (Kent Co. and MSU Extension).

3 - Ownership vs. stewardship.

4 - Identifying values that impact land use.
- Farmland development.
- Investigating land use research.
- E-mail discussion with local resource planner.
- Opposing viewpoints on land use planning

5 - Research in farmland conservation/protection.
- Advocating a position on land stewardship.
- Examining what Michigan wants.

6 - Visit from a local official.
- Learning about counties.
- Design your own suburb.
- Walking neighborhood surveys.

7 - *Landopoly Surveys*, This Land Is Your Land (Kent Co. and MSU Extension)
- *Hear Ye! Hear Ye!* This Land Is Your Land (Kent Co. and MSU Extension)
- Land use debate.
- Interview a public official.
- Visit a local planning board.

8 - Exploring water and air quality in depth.
- Investigating Smart Growth.
- Visit from an environmental journalist
- *Dragonfly Pond* This Land Is Your Land (Kent Co. and MSU Extension)
- Creating a booklet on land use, water, and air.
- Investigating historic changes in land use
- Brownfields & Greenfields

Michigan Curriculum Standards and Benchmarks

1

- Generate questions about the world based on observation (SCI.I.1.E.1; SCI.I.1.MS.1).
- Develop strategies and skills for information gathering and problem solving (SCI.I.1.E.5).
- Use sources of information in support of scientific investigations (SCI.I.1.MS.5).
- Describe positive and negative effects of humans on the environment (SCI.III.5.E.4).
- Describe ways in which humans alter the environment (SCI.III.5.MS.6).
- Describe major features of the earth's surface (SCI.V.1.E.1).
- Organize social science information to make maps, graphs, and tables (SS.V.1.LE.2).

2

- Construct charts and graphs and prepare summaries of observations (SCI.I.1.E.6).
- Write and follow procedures in the form of step-by-step instructions, formulas, flow diagrams, and sketches (SCI.I.1.MS.6).
- Describe major features of the earth's surface (SCI.V.1.E.1).
- Describe the location, use, and importance of different kinds of resources and explain how they are created and the consequences of their use (SS.II.2.LE.2).
- Organize social science information to make maps, graphs, and tables (SS.V.1.LE.2).

3

- Generate questions about the world based on observation (SCI.I.1.E.1; SCI.I.1.MS.1).
- Describe major features of the earth's surface (SCI.V.1.E.1).
- Describe the location, use, and importance of different kinds of resources and explain how they are created and the consequences of their use (SS.II.2.LE.2).
- Organize social science information to make maps, graphs, and tables (SS.V.1.LE.2).

4

- Show how science concepts can be illustrated through creative expression such as language arts and fine arts (SCI.II.1.E.2).
- Show how common themes of science, mathematics, and technology apply in real-world contexts (SCI.II.1.MS.3).
- Describe positive and negative effects of humans on the environment (SCI.III.5.E.4).
- Describe ways in which humans alter the environment (SCI.III.5.MS. 6).
- Describe major features of the earth's surface (SCI.V.1.E.1).
- Describe the location, use, and importance of different kinds of resources and explain how they are created and the consequences of their use (SS.II.2.LE.2).
- Organize social science information to make maps, graphs, and tables (SS.V.1.LE.2).

5

- Generate questions about the world based on observation (SCI.I.1.E.1; SCI.I.1.MS.1).
- Construct charts and graphs and prepare summaries of observations (SCI.I.1.E.6).
- Write and follow procedures in the form of step-by-step instructions, formulas, flow diagrams, and sketches (SCI.I.1.MS.6).
- Develop an awareness of the need for evidence in making decisions scientifically (SCI.II.1.E.1.).
- Describe major features of the earth's surface (SCI.V.1.E.1).
- Describe the location, use, and importance of different kinds of resources and explain how they are created and the consequences of their use (SS.II.2.LE.2).
- Organize social science information to make maps, graphs, and tables (SS.V.1.LE.2).

6

- Generate questions about the world based on observation (SCI.I.1.E.1; SCI.I.1.MS.1).
- Construct charts and graphs and prepare summaries of observations (SCI.I.1.E.6).
- Write and follow procedures in the form of step-by-step instructions, formulas, flow diagrams, and sketches (SCI.I.1.MS.6).
- Develop an awareness of the need for evidence in making decisions scientifically (SCI.II.1.E.1.).
- Describe major features of the earth's surface (SCI.V.1.E.1).
- Describe the location, use, and importance of different kinds of resources and explain how they are created and the consequences of their use (SS.II.2.LE.2).
- Organize social science information to make maps, graphs, and tables (SS.V.1.LE.2).

Extension Lesson 6

- Generate questions about the world based on observation (SCI.I.1.E.1; SCI.I.1.MS.1).
- Construct charts and graphs and prepare summaries of observations (SCI.I.1.E.6).
- Write and follow procedures in the form of step-by-step instructions, formulas, flow diagrams, and sketches (SCI.I.1.MS.6).
- Develop an awareness of the need for evidence in making decisions scientifically (SCI.II.1.E.1.).
- Describe major features of the earth's surface (SCI.V.1.E.1).
- Describe the location, use, and importance of different kinds of resources and explain how they are created and the consequences of their use (SS.II.2.LE.2).
- Organize social science information to make maps, graphs, and tables (SS.V.1.LE.2).

7

- Develop an awareness of the need for evidence in making decisions scientifically (SCI.II.1.E.1).
- Describe some general limitations of scientific knowledge (SCI.II.1.MS.2).
- Describe positive and negative effects of humans on the environment (SCI.III.5.E.4).
- Describe ways in which humans alter the environment (SCI.III.5.MS.6).
- Describe major features of the earth's surface (SCI.V.1.E.1).
- Describe the location, use, and importance of different kinds of resources and explain how they are created and the consequences of their use (SS.II.2.LE.2).

8

- Develop an awareness of and sensitivity to the natural world (SCI.II.1.E.4; SCI.II.1.MS.5).
- Describe common patterns of relationships among populations (SCI.III.5.MS.1).
- Demonstrate ways to conserve natural resources and reduce pollution through reduction, reuse, and recycling of manufactured materials (SCI.V.1.E.6).
- Explain how technology changes the surface of the earth (SCI.V.1.MS.5).
- Describe the location, use, and importance of different kinds of resources and explain how they are created and the consequences of their use (SS.II.2.LE.2).

Extension Lesson 8

- Generate questions about the world based on observation (SCI.I.1.E.1; SCI.I.1.MS.1).
- Describe positive and negative effects of humans on the environment (SCI.III.5.E.4).
- Describe major features of the earth's surface (SCI.V.1.E.1).
- Describe the location, use, and importance of different kinds of resources and explain how they are created and the consequences of their use (SS.II.2.LE.2).
- Organize social science information to make maps, graphs, and tables (SS.V.1.LE.2).

Land Use Master Materials List

Lesson 1. Observing Land Use

Reproducible Materials

per class

- *Understanding Air Photographs* (transparency master)
- *1980 A-1 Air Photo Discussion in Pairs* (answer key)
- *1995 A-2 Air Photo Discussion in Pairs* (answer key)

per pair of students

- *Kite View Air Photograph* (student resource)
- *Shelby Township, MI, 1980 Air Photo* (student resource)
- *1980 A-1 Air Photo Discussion in Pairs* (student activity)
- *Shelby Township, MI, 1995 Air Photo* (student resource)
- *1995 A-2 Air Photo Discussion in Pairs* (student activity)

per student

- *Keeping Track* (student activity)

Materials in MEECS kit

per class

- MEECS Land Use CD-ROM (teacher resources)
- Shelby Township, MI, 1980 Air Photo
- Shelby Township, MI, 1995 Air Photo

To be supplied by teacher

per class

- *A Bird's-eye View* (optional teacher resource)
- hand lens (optional)

Lesson 2. Measuring Land Use and Land Cover

Reproducible Materials

per class

- *Air Photo 1 or Map 1: Land Use and Land Cover: The Imprint of People* (transparency master)
- *Air Photo 1 or Map 1: Land Use and Land Cover: The Imprint of People* (answer key)
- *Dot Planimeter* (transparency master)
- *Amount of Area for Each Land Use/Land Cover* (answer key)
- *Bar Graph of Land Use/Land Cover* (answer key)
- *Air Photo 2: Land Use/Land Cover Assessment* (answer key)
- *Amount of Each Land Use/Land Cover Assessment* (answer key)

per pair of students

- *Air Photo 1 or Map 1: Land Use and Land Cover: The Imprint of People* (student resource)
- *Dot Planimeter* (transparency master)
- *Amount of Area for Each Land Use/Land Cover* (student activity)
- *Bar Graph of Land Use/Land Cover* (student activity)

per student

- *Air Photo 2: Land Use/Land Cover Assessment* (student assessment)
- *Amount of Each Land Use/Land Cover Assessment* (student assessment)

Materials in MEECS kit

per class

- MEECS Land Use CD-ROM (teacher resources)
- Shelby Township, MI, 1995 Air Photo

per pair of students

- Dot Planimeter
- *Air Photo 1 or Map 1: Land Use and Land Cover: The Imprint of People*

To be supplied by teacher

per class

- *A Bird's-eye View* (optional teacher resource)
- a photograph or poster of a familiar person

per pair of students

- acetate pen

Lesson 3. Classifying Land Use

Reproducible Materials

per class

- *Land Use in Michigan* (transparency master)
- *Who Owns Michigan's Forests?* (transparency master)
- *Classifying Land Use Lesson Assessment* (answer key)

per pair of students

- *Land Use Measuring Stick for Michigan* (student activity)
- *Classifying Land Use Lesson Assessment* (student assessment)

per student

- *Threats to the Forest* (student activity)

Materials in MEECS kit

per class

- MEECS Land Use CD-ROM (teacher resources)
- *Michigan Land Stewardship & Land Use/Cover* map
- *Michigan Land Stewardship & Land Use/Cover* map (desktop size)

Lesson 4. Reflecting on How the Land Is Used

Reproducible materials

per class

- *Analyzing Land Use Readings* (answer key)
- *Analyzing the Impacts of Land Uses* (answer key)

per small group

- Enough copies of the following readings for one-fourth the class to have each: *A Farm in Michigan, A Visit to Comerica Park, A Visit to Seney National Wildlife Refuge, and Using the Forest in Many Ways* (student resource)

per student

- *Analyzing Land Use Readings* (student activity)
- A*nalyzing the Impacts of Land Uses* (student activity)
- *Lesson Assessment* (student assessment)

Materials in MEECS kit

per class

- MEECS Land Use CD-ROM (teacher resources) Student readings are recorded on the MEECS Land Use audio CD: *A Farm in Michigan, A Visit to Comerica Park, A Visit to Seney National Wildlife Refuge, and Using the Forest in Many Ways*
- Photo of farm, Comerica Park, Seney National Wildlife Refuge, and forest on MEECS Land Use CD-ROM

To be supplied by the teacher

per student

- highlighter

Lesson 5. Analyzing Land Use Changes: State

Reproducible materials
per class
- *Table 1: State of Michigan Agricultural Lands* (transparency master)
- *Line Graph of Changes in Michigan's Agricultural Lands* (transparency master, answer key)
- *Government's Role in Land Stewardship* (transparency master)
- *Michigan's Urban and Built-Up Land Use* (transparency master, answer key)
- *Table 2: State of Michigan Urban and Built-Up Land Use, 1978-2004* (transparency master)
- *State of Michigan Farmlands (Acres)* (answer key)

per student
- *Table 1: State of Michigan Agricultural Lands* (student resource)
- *Line Graph of Changes in Michigan's Agricultural Lands* (student activity)
- *Table 2: State of Michigan Urban and Built-Up Land Use, 1978-2004* (student resource)
- *Michigan's Urban and Built-Up Land Use, 1978-2004* (student assessment)
- *Michigan's Tart Cherry Production, 1999-2003* (student activity)
- *Tart Cherry Farms in Michigan* (student activity)
- *State of Michigan Farmlands (Acres)* (student activity)

Materials in MEECS kit
per class
- MEECS Land Use CD-ROM (teacher resources)
  - *Connecting Farm to City* (extension)

Lesson 6. Analyzing Agricultural Land Use Changes: County

Reproducible materials
per pair of students
- *County Land Use Data Bank: Agriculture* (student resource)
- *Acreage in Farmland by County* (student activity)
- *Community Data Sheet 1: Dexter* (student resource)
- *Community Data Sheet 1: Utica* (student resource)
- *Community Data Sheet 1: Ypsilanti* (student resource)
- *Comparing Two Michigan Communities* (student activity)
- *Land Use Grid* (transparency master/student activity)

Materials in MEECS kit
per class
- MEECS Land Use CD-ROM (teacher resources)
- *Human World*, Michigan County map
- *Human World,* Michigan County map (desktop size)

Extension Lesson 6. Analyzing Forestland Changes: County

Reproducible materials
per pair of students
- *County Land Use Data Bank: Forests* (student resource)
- *Number of Acres of Forests in _____ County* (student activity), three copies
- *Forest Land Change, 1993-2003* map (student resource)

Materials in MEECS kit
per class
- MEECS Land Use CD-ROM (teacher resources)
  - Michigan Forest History Time Line and Activities from *Green Gold*
- *Human World*, Michigan County map
- *Michigan Land Stewardship & Land Use/Cover* map

To be supplied by the teacher
per pair of students
- Calculator

Lesson 7. Solving Land Use Conflicts

Reproducible materials
per class
- *The Case of the Parking Spaces* play script (student resource), 11 copies
- *Zoning Board of Appeals Minutes* (teacher resource)
- *Questions from the Play* (transparency master)
- *Questions from the Play* (answer key)
- *Making a Land Use Decision: Hidden Forest Estates* (transparency master)
- *Making a Land Use Decision: Hidden Forest Estates Assessment Scoring Guide* (teacher resource)

per student
- *Making a Land Use Decision: Hidden Forest Estates* (student assessment)

Materials in MEECS kit
per class
- MEECS Land Use CD-ROM (teacher resources)

To be supplied by the teacher
per student
- Small paper ballot

Lesson 8. Investigating Land Use, Water, and Air Relationships

Reproducible materials

per class

- *Mini-Poster: Obtaining Information* (answer key)
- *Land Use Effects on Water and Air* (answer key)
- *Scoring Small Group Discussions* (teacher resource)
- *Performance Criteria for Assessing Discussion* (teacher resource)

per small group

- *Mini-Poster: Obtaining Information* (student activity)
- *Land Use Effects on Water and Air* (student activity)
- *Score Sheet for Group or Individual Student Discussion* (student resource)

per student

- *Tell the Story of a Pollutant* (student activity)
- *Comparing Land Use, Air, and Water Assessment* (student assessment)

Materials in MEECS kit

per class

- MEECS Land Use CD-ROM (teacher resources)
- *Michigan's Land, Air and Water* poster

per small group

- *Michigan's Land, Air, and Water* poster (desktop)
- *Michigan's Land, Air, and Water* mini-poster

To be supplied by the teacher

per class for pollution demonstrations

- 2 jars – one for water pollution and one for air pollution
- dish detergent, dirt
- matches and strips of paper
- safety glasses
- table salt, spoon, jar or glass

per small group

- self-adhesive notes (4 different colors, 6 notes per group)

Extension Lesson 8. Brownfields and Greenfields

Reproducible materials

per class

- photographs of brownfield and greenfield lands with captions (transparency masters) or projected photographs from the MEECS Land Use CD-ROM
- *Criteria for Making a Land Use Decision* (transparency master)
- *Making a Land Use Decision* (answer key)

per pair of students

- *Lakeside Factory* and *Green Acres* (student resource) (half the class will have each reading)

per student

- *Making a Land Use Decision* (student activity)
- *Community Map Analysis* (student assessment)

Materials in MEECS kit

per class

- MEECS Land Use CD-ROM (teacher resources)
- photographs of brownfield and greenfield lands with captions (transparency masters) or projected photographs from the MEECS Land Use CD-ROM
- *Michigan Land Stewardship & Land Use/Cover* map

To be supplied by the teacher

per class

- sticky note flags in two separate colors

Michigan Content Standards and Benchmarks Correlations for Land Use Unit

X- Addresses/Supports

		1. Observing Land Use	2. Measuring Land Use and Land Cover	3. Classifying Land Use	4. Reflecting on How the Land Is Used	5, Analyzing Land Use Changes: State	6. Analyzing Agricultural Land Use Changes: County	7. Solving Land Use Conflicts	8. Investigating Land Use, Water, and Air Relationships
Science	I.1.E.1 Generate questions about the world based on observation	X		X		X	X		
	I.1.E.5 Develop strategies and skills for information gathering and problem solving	X							
	I.1.E.6 Construct charts and graphs and prepare summaries of observations		X			X	X		
	II.1.E.1 Develop an awareness of the need for evidence in making decisions scientifically					X	X	X	
	II.1.E.2 Show how science concepts can be illustrated through creative expression such as language arts and fine arts				X				
	II.1.E.4 Develop an awareness of and sensitivity to the natural world								X
	III.5.E.4 Describe positive and negative effects of humans on the environment	X			X			X	
	V.1.E.1 Describe major features of the earth's surface	X	X	X	X	X	X	X	
	VI.1.E.6 Demonstrate a way to conserve natural resources and reduce pollution through reduction, reuse, and recycling of manufactured materials								X
	I.1.MS.1 Generate questions about the world based on observation	X		X		X	X		
	I.1.MS.5 Use sources of information in support of scientific investigations	X							
	I.1.MS.6 Write and follow procedures in the form of step-by-step instructions, formulas, flow diagrams, and statements		X			X	X		
	II.1.MS.2 Describe some general limitations of scientific knowledge							X	
	II.1.MS.3 Show how common themes of science, mathematics, and technology apply in real-world contexts				X				
	II.1.MS.5 Develop an awareness of and sensitivity to the natural world								X
	III.5.MS.1 Describe common patterns of relationships among populations								X
	III.5.MS.6 Describe ways in which humans alter the environment	X			X			X	
	V.1.MS.5 Explain how technology changes the surface of the earth								X
Social Studies	II.2.LE.2 Describe the location, use, and importance of different kinds of resources and explain how they are created and the consequences of their use		X	X	X	X	X	X	X
	V.1.LE.2 Organize social science information to make maps, graphs, and tables	X	X	X	X	X	X		

Land Use Unit Development Team

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Grade 4

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Grade 4

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CLK Elementary
Public Schools of CLK
Grade 4

Amanda Wilkie
Greater Lansing Islamic School
Ingham, MI
Grades 5-8

Land Use Teacher Trainers

Kristin Anderson Malloy
Morley Stanwood Community Schools
Stanwood Elementary
Grade 4

Marjane Baker
Plymouth-Canton Community Schools
Tonda Elementary
Grades 3-5

Pam Bunch
Lenawee County K-12 Schools
Stubnitz Environmental Education Center
Adrian, MI
Grades K-12

John Clark
Ithaca Public Schools
Ithaca North Elementary
Grades 3-6

Kathleen Deckert
Lakeshore Public Schools
Violet Elementary School
Grade 4

Kathy Dickens
Elkton-Pigeon-Bay Port Laker Schools
Laker Middle School
Grades K-8

Margo Dill
Regional Math & Science Center
Allendale, MI

Michele Glenn
Detroit Public Schools
Cadillac Middle School
Grades K-8

Greg Jacobs
Clear Lake Education Center
Escanaba, MI

Alissa Jordan
Detroit Public Schools
Clark Elementary School
Grade 4

Becky Josephson-Gorinac
Sanilac County Science/Math Center
at Sanilac ISD
Peck, MI

Constance Josvai
Manistee Area Public
John F. Kennedy Elementary
Grade 5

Terri Laysell
Huron-Clinton Metroparks
Environmental Discovery Center
White Lake, MI

Jennifer Malinowski
Great Lakes Renewable Energy
Association
Dimondale, MI
Grades K-12

Emily McKenna
Belding Area Schools
Belding Middle School
Grade 7

Linda O'Brian
Seaborg Center
Marquette, MI
Grades K-9

Bruce Patterson
Harrison Community Schools
Hillside Elementary School
Grade 5th/Preservice (CMU)

Wes Stevenson
Lapeer ISD
Lapeer, MI
Grades 4-5

Michelle Svoboda
Comstock Park Public Schools
Mill Creek Middle School

Lisa Swartz-Medina
St. Mary-Hannah School
Diocese of Gaylord
Grades 4-6

Bob Tallman
SVSU Regional Math/Science Center
Saginaw, MI
Grades K-12

Jennifer Tapolcai
Clear Lake Education Center
Manistique, MI 49854
Grades K-12

Jessica Wagenmaker (Luxford)
Holton Public Schools
Holton Middle School
Grade 7

Betty Jo Winters
Addison Community Schools
Addison Elementary
Grade 4

Tom Yaeger
Angell Elementary
Ann Arbor Public Schools
Grades 4-5