

<b>Title of Lesson Plan</b>	Land Use Change Over Time
<b>Prepared By (first and last name)</b>	Kevin Setterholm
<b>City and State</b>	Lino Lakes, MN
<b>Grade Level(s)</b>	6, 7, 8
<b>Keywords (subjects covered)</b>	Land Use, Local History, Urban Sprawl, Change Over Time, Suburban Development, GIS
<b>Brief Description</b>	Students will use historical aerial photographs, current aerial photographs and GIS technology to analyze the change of land use over time in their community.
<b>Total Time Required</b>	Two 50-minute periods
<b>Setting</b>	GIS Computer Lab, geography, history, environmental education
<b>Lesson Objectives/Goals</b>	Students will analyze changing land use in a growing suburb through the use of GIS and aerial photography.
<b>Materials Needed</b>	Geographical Information System 1950 Digital Orthophotograph of community 2005 Digital Orthophotograph of community
<b>Standards Addressed</b>	The processes, patterns, and functions of human settlement.  How to apply geography to interpret the past, present and plan for the future.  Students will analyze how changes in transportation affected settlement of the state.  Students will explain the changing situation of the state's largest cities and suburbs and analyze associate effects
<b>Procedure</b>	I. Group students into pairs. Assign one student a 1950 aerial photograph of the community and the other student a 2005 aerial photograph of the community.  II. Project a image of an aerial photograph with an

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<p><b>Procedure con't</b></p>	<p>LCD projector and help students identify roads, streams, drainage ditches, business, schools, homes, farms, open space, farm fields, forests, lakes and ponds.</p> <p>III. Instruct pairs to agree upon symbols (color/pattern) for the following land uses: Road/Street, Stream/Ditch, Business/School, Housing, Farm, Open/Field, Forest, Lake/Pond.</p> <p>IV. Instruct students to use the GIS to create a land use map based off of their assigned aerial photograph. The students should do this by drawing polygons around different land uses on top of the aerial photos based on the categories listed in Step III.</p> <p>V. Instruct the students to use the X-Tools ArcView extension to calculate the number of acres for each land use type of their assigned community time period.</p> <p>VI. On a table, have the pairs fill in the total number of miles of roads and streams for the 1950 and 2005 land use maps. Then have the students predict how many miles of roads and stream there will be in 2055.</p> <p>VII. On a table, have the pairs fill in the total number of acres of businesses, housing, farms, fields, forest and lakes from the 1950 and 2005 land use maps. Then have the student predict the number of acres of each land use category there will be in 2055.</p> <p>VIII. Have pairs work together to answer the following questions.</p>
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<b>Procedure con't</b>	<p>A. What were the major changes in land use between 1950 and 2005?</p> <p>B. What type of land use had the greatest loss?</p> <p>C. What type of land use had the greatest gain?</p> <p>D. What changes occurred in roads and streets?</p> <p>E. Why do you think these changes took place over the 55-year period?</p> <p>F. What are the effects, both positive and negative that have occurred because of these changes?</p> <p>G. Explain how these changes in land use may have affected water quality in the community, wildlife habitat in the community, and quality of life in the community.</p> <p>H. Explain how the land use in the community may change in the next 50 years and explain why you believe that these changes will take place.</p>
<b>Assessment</b>	<p>Challenge students to imagine the future of their community on the basis of the trends they discovered in their research. For example, if green space is disappearing, how much longer will there still be green areas in your community? How might such trends affect the community's visual character? Have students discuss what they foresee as the greatest challenges for the future of the community.</p>
<b>Literature Cited/References</b>	
<b>Forestry Tour Attended</b>	Lake States

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