



GROUND WATER CONTAMINATION

WHEN YOU WERE MY AGE, WHAT WAS THIS PLACE LIKE?

▶ Grades 7-12 ◀

▶ OBJECTIVES

- Discover the historical development patterns in a selected neighborhood, preferably one near a public water supply well or one dependent on private wells.
- Appreciate the cumulative effects of decisions over time. Students will begin to realize how decisions that communities make (or fail to make) today can affect the quality of life in the future.

▶ INTERDISCIPLINARY SKILLS

Social Studies,
Environmental Impact
Studies, History,
Communications
(Interviewing Skills),
Research Skills

▶ ESTIMATED TIME

30 minutes to introduce assignment

15 minutes per team for oral reports

Allow students 2 to 3 weeks to complete the assignment, including research and interviews



TEACHING STRATEGY

1. To spark interest in this project, you may want to dig up copies of old newspaper articles announcing the development of a major landmark in the community (e.g., shopping center, housing project) and show it to the class. Ask the students if they recall land use changes in the community that took place as they were growing up.
2. Explain that the purpose of this exercise is to explore land use changes over time. By conducting research and interviews, the students will have an opportunity to learn about their community and how it has changed over the years. Then they will consider how those changes might have affected the community and its resources.
3. Select areas for study (e.g., whole community, section of town, one parcel of land) by the class. Preferably, select at least one area near a public well, in an area dependent on private wells, or an area near a river, wetland lake, or coastal water. Students should work in teams, with each team investigating a different area.
4. Have the teams identify individuals in the community who would be good candidates from whom to obtain information about the area (e.g., parents, grandparents, neighbors, town officials, historical society members). Once they have completed their list of possible interviewees, have the students contact these individuals by phone or in person to introduce themselves and schedule interviews.
5. Discuss interviewing skills in terms of preparing for and conducting the interviews.
6. Have the students brainstorm a list of possible questions to ask during their interviews. Remind them that most of the questions should be directed at discovering how land use has changed over time.

▶ MATERIALS

- Paper/pen
- Tape recorder (optional)
- Video camera/VCR (optional)
- Camera (optional)
- Maps of selected areas (e.g., topographic, land use, road)

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Possible Questions

1. How long have you lived in this community?
2. Can you describe what this area was like over time (e.g., the past 50, 30, 25, 15, 10, 5 years)? How was the land used?
3. What did your parents/grandparents do for a living? Did they work in the town or somewhere else?
4. What roads existed when you were a child? What roads have been added? Widened?
5. Has the water quality in your well and in the nearest river, lake, or estuary changed over time? If so, in what way?
6. Has construction in the vicinity of the community's water supply well increased during your lifetime? If so, where and in what way?
7. With respect to conducting the interviews: One way to help people remember the changes in the area is to provide them with copies of articles and pictures from old newspapers to spark conversation. A topographic map of the area also provides a reference point for the interview. By comparing older USGS topographic maps with newer ones, students and interviewees will be able to note changes in development density, roads, and so on. Older versions of these maps can sometimes be found at local planning departments, libraries, or historical societies and then copied. Town planning offices generally have existing land use maps as well, and may also keep older versions. Students may want to bring tracing paper to the interview so that they can sketch out overlays of past road patterns and land uses with the help of the interviewees.
8. Have each team make an oral report to the class on what was learned through the interview. Have the students discuss how land use changes may have affected ground water and surface water quality in the area and how these changes may have affected the community's water supply (e.g., increased or decreased water demands, improved or decreased water quality, potential for contamination of the ground and surface water).
9. Explore this question: What can we learn from the past that could be applied to today's land use decisions?

Alternate Teaching Strategy

Divide the class into teams of 3-4 students. Have some teams pursue information about land use in the past (as described above). Have one team find out about local ordinances that affect land use. (See supplementary activity #2.) Have one team of artistic students work on the mural. (See supplementary activity #3.) Have one team prepare a pop-



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ulation density map. (See supplementary activity #4.) Have one team collect current articles on land use. (See supplementary activity #5.) Assign any of the other supplementary activities as needed.

Supplementary Activities

1. Record interviews on tape or video. Transcribe the interviews in a book form, including an introductory text and an evaluation of what has happened in the area. Alternatively, produce a video that documents the land use history of the area through interviews and narrative. Both approaches should zero in on the effects of land use decisions on water quality and water supplies.
2. Research and report on local ordinances that may have affected local development (e.g., a subdivision, zoning, wetlands). These ordinances may designate areas in a community where different land uses (e.g., business, industry, residential) can locate. There may also be special regulations to protect the community's water supply (often called a ground water management district, wellhead protection area district, aquifer protection district, or water supply district). Are these measures adequate? Discuss current land use decisions. (Consider interviewing your local planning office or local water supplier.)
3. Prepare a wall mural that shows "before" and "after" scenes as described by the interviewees and as discovered through primary research. (Option: Make a collage of old and current photographs.)
4. Using United States census records or local census records, prepare population density maps for the area 50 years ago, 25 years ago, and today.
5. Collect articles about land use issues (e.g., new businesses, malls, landfills, apartments, septic system problems) from current newspapers. Discuss how the decisions being made today may have an impact on the environment in the future.
6. Explore the impact of various land uses (e.g., landfills, highways, parking lots, agriculture) on other aspects of the environment besides water quality (e.g., air quality, forestry, wildlife habitats).
7. Contrast current land uses with early land uses by Native Americans and European settlers. How have the changes affected the demand for and the quality of water?
8. Attend a public meeting where land use decisions are being discussed (e.g., planning board, zoning board, conservation commission, wetlands board).

This activity is adapted from Massachusetts Coastal Zone Management and Massachusetts Marine Educators. "Land Use/Oral Histories," *Charting Our Course: The Massachusetts Coast at an Environmental Crossroads*. Boston: Massachusetts Coastal Zone Management. C-8.