THE LAND PLAN CHALLENGE

Summary	Students use maps to plan towns, being conscious of water resources, and then learn how their town fits into the larger community.
Source	*Brought to Windows to the Universe by staff member Lisa Gardiner via Ecoreach at the University of Georgia and the Colorado Mountain Club.*
Grade Level	4-9
Time	Prep: 20 minutes Class time: 50 minutes
Student Learning Outcomes	• Students will learn that planning a town requires group decision-making. • Students will learn what services and resources a town needs and that land planning to protect water resources is important. • Students will learn that land planning is most effective over a large area and with the cooperation of many communities.
National Science Standards	• K-4: Content Standard A: Inquiry • K-4: Content Standard F: Science in Personal and Social Perspectives • 5-8: Content Standard A: Inquiry: Partial Inquiry • 5-8: Content Standard D: Structure of the Earth System • 5-8: Content Standard F: Science in Personal and Social Perspectives: Populations, Resources, and Environments

Materials
- One or more sets of the *six map templates* (see preparation section below)
- One set of town pieces for each map - cut apart and laminated (see page 3)
- One land plan key for each map (see page 4)
- Vis-à-vis markers (overhead markers) if using laminated materials.
- Masking tape
- Scissors

Preparation:

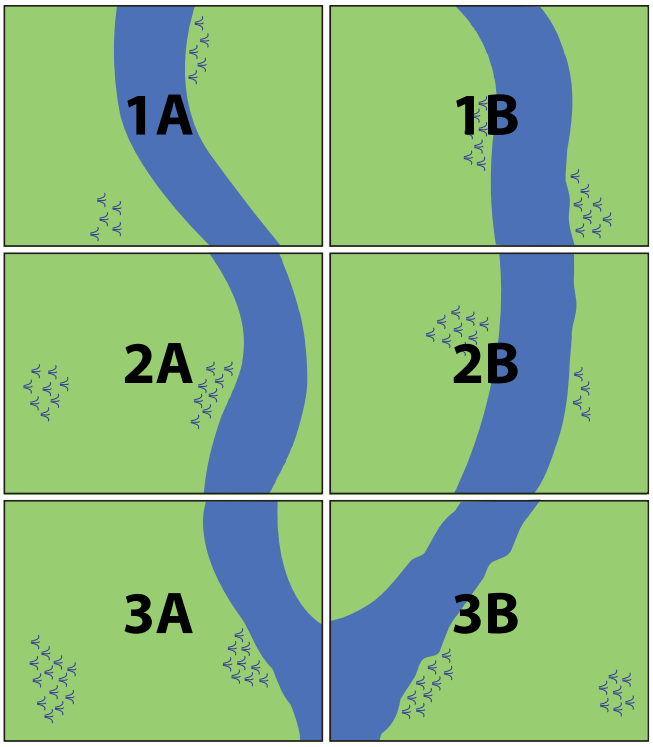
1. Download and print the ***map templates*** from: http://www.windows.ucar.edu/teacher_resources/land/maps.html. To use the activity more than once, laminate the materials you print. You will need enough maps so that each student pair or group has one. You will need multiples of the six maps depending on the size of your class and size of student groups (i.e., 6 maps, 12 maps, or 18 maps.) Mark the back of each map with its letter and number combination to help students organize them into a larger map at the end of the activity. You may also want to indicate different sets with a symbol on the back.
2. Print and cut apart a set o***f town pieces*** (page 3) to be used with each map. Laminate for repeated use as well. It is helpful to have bags in which to store the pieces to keep each town's pieces separate.
3. Copy the ***land plan key*** (page 4) for each group.

Directions:

1. In this activity, the six maps of each set fit together to make a larger map, however students should not recognize this until the end of the activity. Thus, have maps arranged into a stack (so that students do not suspect they all fit together) as you introduce the concept of land planning. If possible, show students a copy of your area's land plan (often available from city planners).
2. Give a map to each student group (groups of two or three work well). Point out the waterway and wetlands on the map. Tell students that their challenge is to work in a group to plan a town that they would want to live in. Their town needs to fit within the limits of their map. Give each group a key and a collection of the little buildings and other features that they will need to include in their town. The town needs to contain all the little buildings

(and more items as they wish - see the key (page 4) for optional items), and planning should try to protect water resources.

3. If you have laminated the maps and buildings, give each group a vis-à-vis marker to draw on the other things they want in their town. (The marker will wash off with water at the end of the activity.) If your maps are not laminated, students can write on them, but the maps can only be used once.
4. Allow groups approximately 20 minutes to make their towns. Allow them the freedom to add items they would want in their town. Have students secure buildings to their map with masking tape loops on the back of each. (Make sure they also name their town and record the name on their key.)
5. Take 10 minutes to have each group briefly present their town to the others. Instruct them to share their towns name and why they think their town is a great place to live.
6. Have students find the code on the back of their map and fit maps together into a larger map for each set. (If you are using more than one set, you will have more than one larger map.) The diagram at right shows how maps fit together.
7. Guide students to look at how their town fits into the larger environment. Ask students if they knew what was off the edges of their map. How do nearby towns affect planning? Ask students if they are satisfied with how nearby towns have been planned.
8. Discuss as a group how we can tell which way the river flows. (Except in a delta, rivers flow together making larger rivers downstream, so the rivers in these maps flow from the top to bottom of the illustration on the right.) Discuss how pollution from towns upstream affect the part of the river that is downstream and the towns that are downstream.
9. Brainstorm ways in which towns can cooperate. Have student groups negotiate with other towns to improve overall planning.



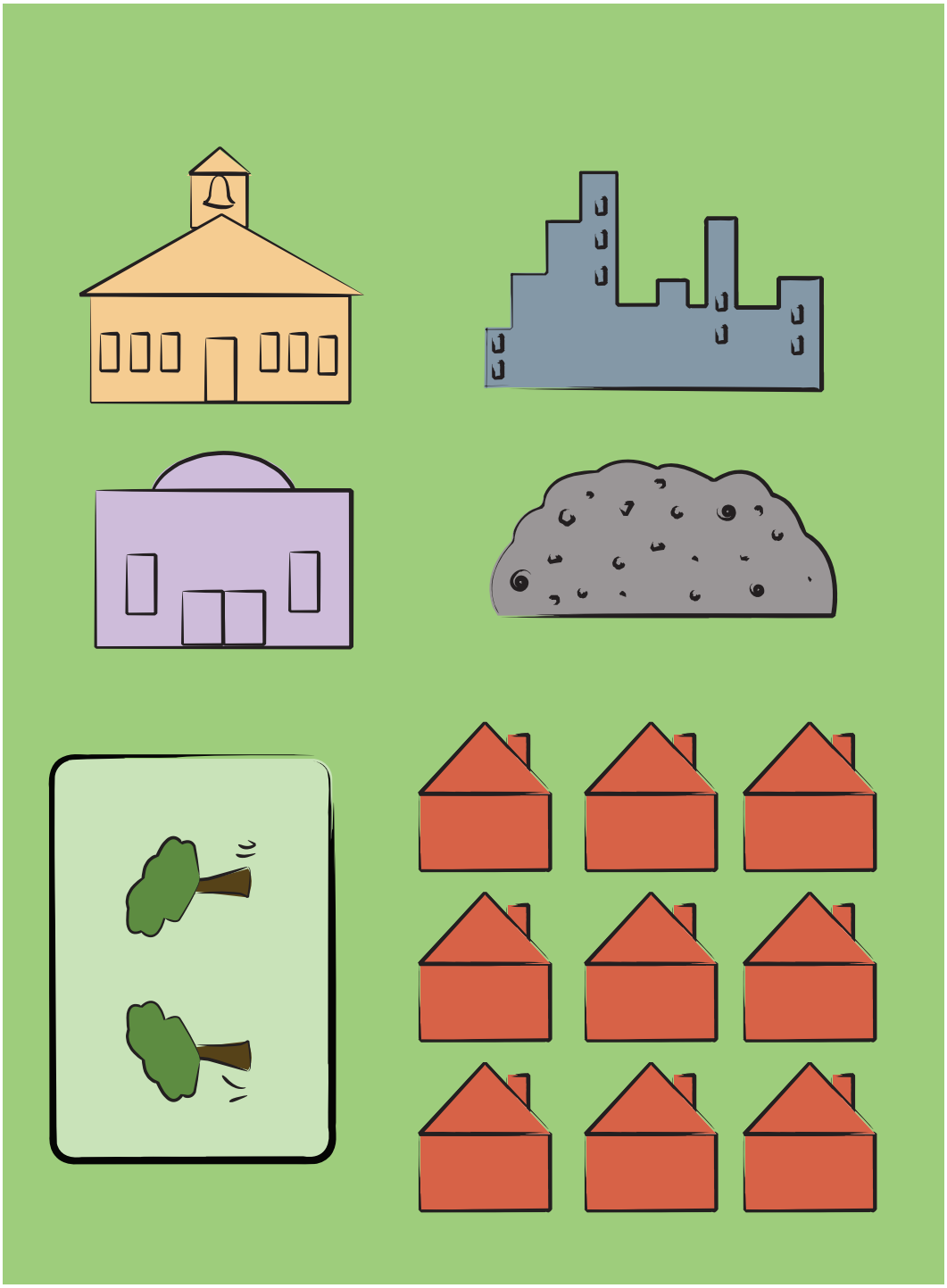
The six maps fit together into a larger landscape. When students are making their towns they do not know what is beyond the borders of the map.

Extensions:
Have students research how their town was and is planned and how their town deals with new development and the preservation of natural spaces.

Background Information:
The saying, "your rights end where the other persons nose begins" describes, in simple terms, how our legal system often defines the limits of our freedoms, However, in many cases, including land planning, actions in one community affect another without "noses" ever seeming to come into contact. Towns may affect other towns without even stepping off their property. For instance, a power plant upstream may contaminate the water downstream. A trash dump planned in one town to avoid the densely populated sections, may wind up adjacent to the next-door town's park.
This activity not only touches on the importance of land planning, water and wetland conservation, but it also illustrates an important concept in mapping. That is, what is beyond the edges of your map can be very important.

This activity can be adapted to fit the needs of teachers covering social studies, water rights, conservation, watershed science, or geography curriculum. It is flexible enough to form at a variety of levels and classroom formats.

Resources from Windows to the Universe:
- Rivers (http://www.windows2universe.org/earth/Water/river.html)
- Water and the Water Cycle (http://www.windows2universe.org/earth/Water/overview.html)
- Introduction to Maps Classroom Activity (http://www.windows2universe.org/teacher_resources/teach_mapintro.html)



Town Pieces

Instructions: Each student group working on the Land Plan Challenge activity will need a set of all the items above. If you are working with one set of the six maps, then you will need six copies of this page. If you are working with two sets of the six maps, then you will need 12 copies of this page.

Print in color, laminate, and then cut all items apart (including the houses). To save time, cut them square instead of following the shape. This will leave a little green around each.

You can print this page from the web by going to: http://www.windows2universe.org/teacher_resources/land/pieces.pdf

Our town name: _____

Key to Map

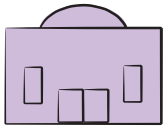
Land

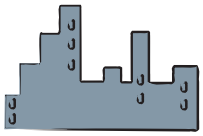
Water

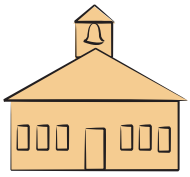
Wetlands

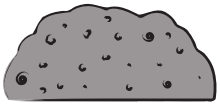
Key to Town

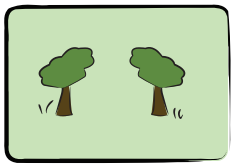

House


Store


Power plant


School


Trash dump


Park

Other things in our town:

Chose what you'd like to add to your town and draw these into the map with a vis a vis marker.

- ☐ Roads
- ☐ Shops
- ☐ Restaurant or cafe
- ☐ Apartment building
- ☐ Fire/police station
- ☐ University
- ☐ Zoo or museum
- ☐ Mall
- ☐ Farm
- ☐ City hall
- ☐ Hospital
- ☐ Bridge
- ☐ Church/ Synagogue
- ☐ Train station and tracks
- ☐ Airport
- ☐ Bus station
- ☐ Bike paths
- ☐ Other _____