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ABSTRACT

This activity is one of a series of 17 teacher-developed instructional activities for geography at the secondary-grade level described in SO 009 140. This activity investigates environmental quality employing the problem-solving technique. Using a map which shows the proposed route of the cross-Florida barge canal as a focal point, the teacher leads a classroom discussion on the government's reasons for constructing the canal and draws from the students' hypotheses and/or problems regarding environmental change, land use, and planning. The students then develop a model for testing their hypotheses. Students can compare their model with one provided in the materials, called Model for Solving Environmental Quality Problems. Using data from maps and charts, students discuss the general requirements for the canal and the cultural and physical changes which are likely to occur when the canal is built. A culminating evaluation activity involves students in a discussion of the use of models and maps in problem solving. (Author/DB)

National Council for Geographic Education

INSTRUCTIONAL ACTIVITIES SERIES IA/S-8

CANALERS AND CONSERVATIONISTS: THE PROJECTED CROSS-FLORIDA CANAL

by

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Students inductively develop and test a model for solving problems relating to environmental quality.

Input Steps:

1. Figure 1 is used as a focal point to provide descriptive background on the government's reasons for constructing the Cross-Florida Barge Canal.

2. Use Figure 1 and draw from the students several hypotheses and/or problems regarding environmental change, land use, and planning. For example:

   a. The building of such a structure will affect a complex set of natural and cultural phenomena.
   b. Construction will cause a change in the environment at a rate and to a degree greater than normal.
   c. Wholistic land use planning is a necessary step in the construction of such a project. (Good generalization but not finished.)
   d. The significance of the physical environment is a function of the attitudes, objectives, and technical skills of man.
   e. Such a change in the physical environment will have negative effects on the ecosystems involved.

3. Have students inductively develop a model for testing above hypotheses and use the Model for Solving Environmental Quality Problems to test their model. (Note! The student's model may be different but as good as this one. Use theirs.)

4. Use Figures 2 and 3 and maps from a systematic atlas of the U.S. to collect data to fit the requirement for cultural and physical data. Historical land use must be generalized as active use from 1860 to 1930 for forestry, hunting and fishing, minor agriculture and tourist use of the river for excursions upstream to Silver Springs. Presently, the area is in extensive recreation, retirement, and National Forest use and ownership.

5. Discuss the classes idea of what the natural river valley would look like. Value this as good to poor landscape.

Intervening Variable Step:

1. Use Figures 2 and 3 again as the general requirements for the canal are discussed:

   Minimum Depth - 12 feet
   Minimum Bottom Width - 150 feet
   Five Locks - 84 feet x 600 feet
   Two Dams

2. The elevation change of the river in the sector discussed in this activity is from 10 to 20 feet above sea level. The small dotted lines on Figure 3 show the 20-foot contour line.

3. Have the class list, from looking at Figure 3, cultural and physical changes which are likely to occur due to the existence of the canal, i.e.,
   a. Large reservoir
   b. Destroy forest
   c. Hurt fishing and hunting
   d. Create recreation opportunities
   e. Eutrophication of reservoir
   f. Costs
   g. Economic benefits
   Note: Some items may be seen as good by some people, bad by others.

Output Stage:

1. Use Figure 4 to further check generalizations and hypotheses developed.

2. Check for new data.

3. Evaluate the Cross-Florida Barge Canal Project.
   a. Points for Canalers
   b. Points for Conservationists
   c. Discuss students' output (students may not agree) against President Nixon's decision to stop a $164,000,000 project after it was one-third completed.

Evaluation:

Have students discuss use of a model in problem solving.
Have students discuss use of maps in problem solving.

Model For Solving Environmental Quality Problems

1. Input: Recognition of Problem of Land Use Change

   A. Historical Background

   B. Inventory and Analysis of Existing Phenomena
      1. Physical Features
      2. Cultural Features

II. Intervening Variables:

A. Superimpose Cross-Florida Barge Canal On The Map
B. Affecters of Future Land Use

III. Output:

A. Evaluation
B. Decisions
C. Construction of Functional Land Use Map

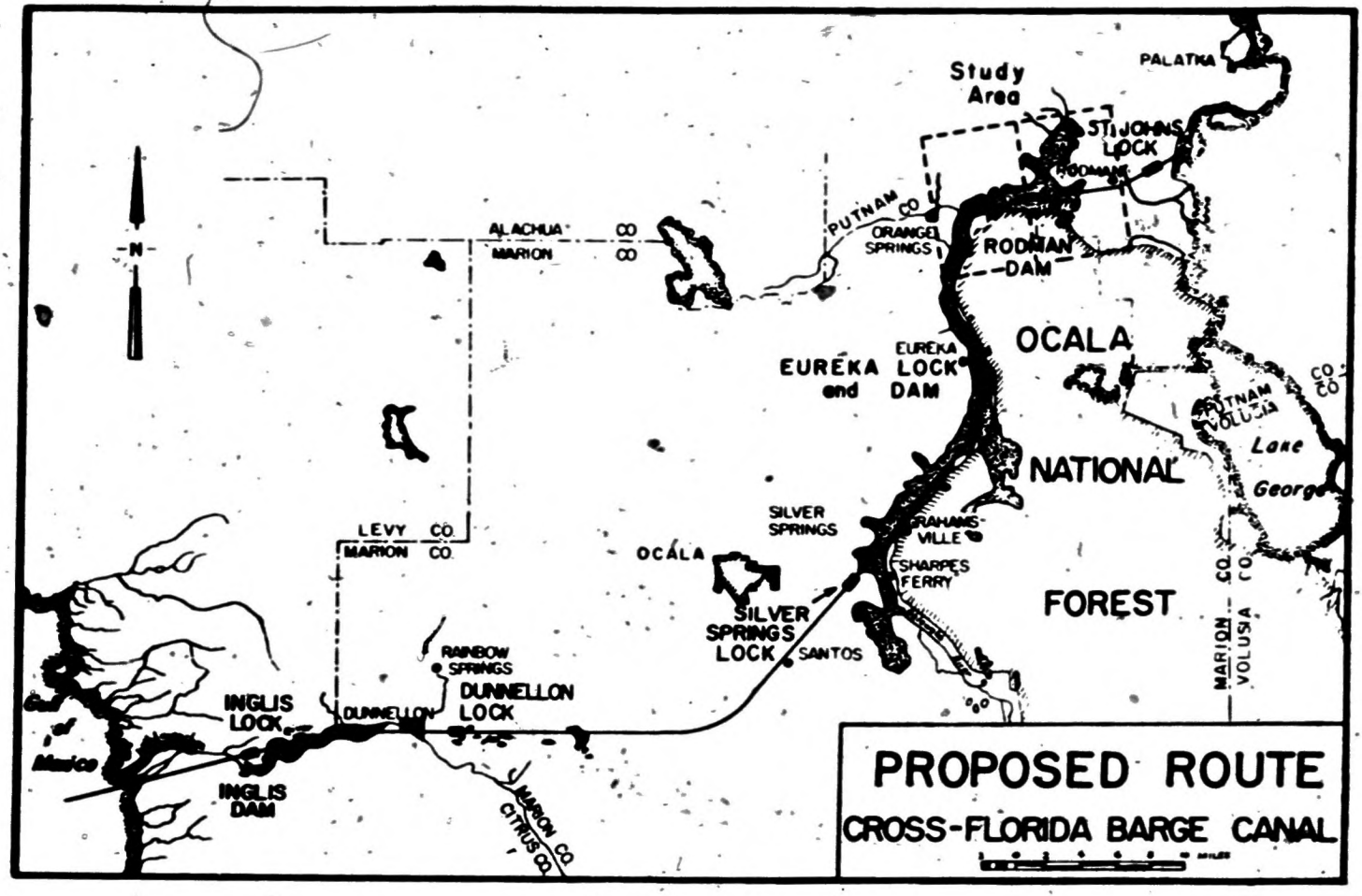
Study Area
PALATKA
ST JOHNS LOCK
RODMAN DAM
PUTNAM CO
ORANGE SPRINGS
ALACHUA CO
MARION CO
EUREKA LOCK and DAM
OCALA
NATIONAL
FOREST
Lake George
VOLUSIA CO
SILVER SPRINGS
GRAHAMS VILLE
SHARPES FERRY
SILVER SPRINGS LOCK
SANTOS
LEVY CO
MARION CO
RAINBOW SPRINGS
DUNNELLON LOCK
DUNNELLON
INGLIS LOCK
INGLIS DAM
Gulf of Mexico
MARION CO
CITRUS CO
PROPOSED ROUTE
CROSS-FLORIDA BARGE CANAL

Figure 1

INVENTORY MAPS
LEGEND

- Proposed Cross-Florida Barge Canal
- Boundary of Study Area
- Boundary of Soil Associations
- Level of Proposed Reservoirs
- Electric Power Line
- Paved Roads
- Dirt Roads
- Abandoned Dwelling
- Dwelling
- Farmers Dwelling

- Restaurant
- Service Station
- Grocery
- General Store
- Motel
- Church
- Trailer Park (Number indicates trailers)
- Fire Tower
- Thoroughbred Horse Farm
- Abandoned Rock Quarry
- Fish Camp
- Auto Junk Yard
- Used Car Sales
- Tourist Shop
- Bar
- Tourist Attraction
- Sewerage Disposal Plant
- Gas Pipeline
- Power Relay Station
- Cemetery
- Lumber Yard
- Stone Works
- Real Estate Office
- Tool and Die Co.
- Nursery
- Vacant Building
- Dolomite Quarry
- State Roadside Park
- Elevation Point
- Camp Site
- Abandoned Clay Pit

LAND IN NATURAL VEGETATION

- Dry Sand Scrub
- Pine Flatwood
- Upland Pine and Oak
- Hardwood Forest
- Swamp Forest
- Coastal Salt Water Marsh
- Hardwood Hammock

CULTURAL LAND USES

- Platted Residential or Commercial
- Unimproved to Semi-improved Pasture
- Improved Pasture
- Citrus
- Peaches
- Planted Pine
- Watermelon
- Corn

SOIL ASSOCIATIONS

1. Nearly level, acid, excessively drained, more than 40 inches sand surface
3. Nearly level, acid, somewhat excessively drained, more than 30 inches sand surface
4. Undulating, slightly acid, well drained, more than 30 inches fine sand surface underlain by limestone
5. Nearly level, slightly acid, well drained, more than 60 inches sand surface influenced by phosphatic materials
8a. Nearly level, slightly acid, moderately well drained, less than 40 inches sand surface influenced by phosphatic materials
12. Nearly level, acid, moderately well drained, more than 40 inches sand surface over sandy clay loam
13a. Nearly level, strongly acid, poorly drained, more than 40 inches sand surface over organic pan
19. Nearly level, acid, somewhat poorly drained, sandy loam with clay pan at less than 30 inches
21. Nearly level, slightly acid, somewhat poorly drained, less than 30 inches sand surface over limestone or marl
22. Nearly level, acid, poorly drained, more than 30 inches sand surface
26. Level, poorly drained, organic soils, 12 inches or more peat or muck
27. Fresh water marsh and swamp, highly organic
28. Salt water marsh and swamp, mostly sand

Figure 2

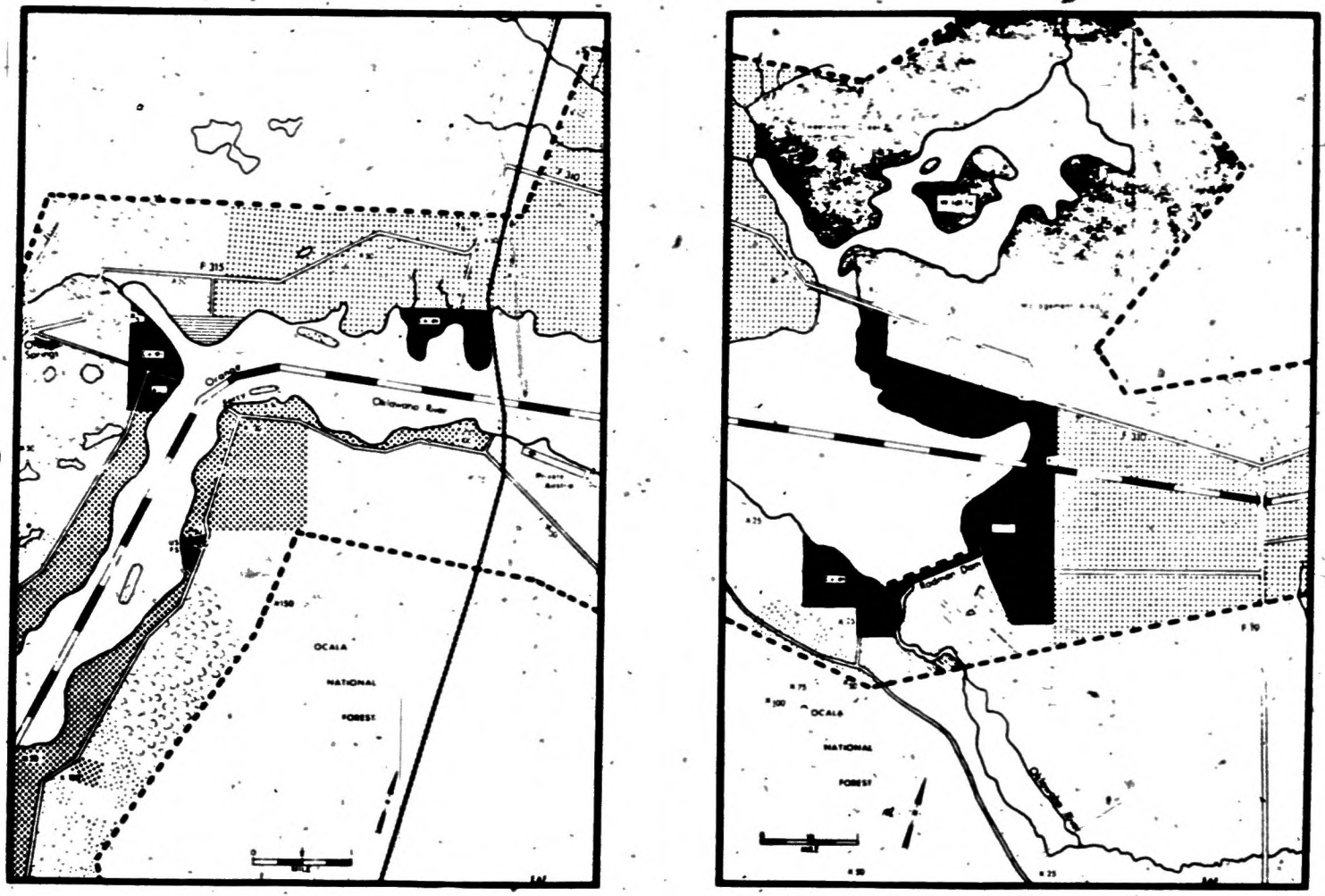

Figure 3

Figure 4