

Simulation 1 Lakes Park Data from Two Days at Three

Name

Background

the same freshwater environment or a similar environment. measurements are taken and recorded, water quality experts -- called limnologists -- analyze the data by comparing it with other data, either from be taken using very simple tests or more complex technology. After the influence a freshwater environment can be measured. These measurements can The "abiotic" parts or factors discussed in Part 1: Abiotic Factors that

Date

County, pictured above. The same water quality expert analyzed the five abiotic factors below from the same place, using the same equipment. The differences are the time of year and weather. Following is data gathered from two days at Three Lakes Park in Henrico

Materials

Graph

Day 1: Fall

Procedure

Graph the data for this fall day for each abiotic factor.

Analyze the graphs for the day and draw conclusions.

Day 2: Spring
Graph the data for this spring day for each abiotic factor.
Analyze the graphs for the day and draw conclusions. Compare the two days.

Answer the questions following the data tables.

Abiotic Factors

A. Dissolved Oxygen (DO mg/l)
B. Temperature (°C)
C. pH (no units)

D. Total Dissolved Solids (TDS mg/l)
E. Turbidity (Secchi Disk, cm)

Data - Day 1: Fall

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2:30	2:00	1:30	1:00	12:30	12:00	11:30	11:00	10:30
ω	5	5	7	7	6	9	9	10
16	15.5	15	14.4	14	14.4	13.7	13.2	12
6.7	7	7.5	7	6.8	7.0	7.3	7	. 7
159	155	141	133	157	154	150	140	132
43	44	39	38	43	40	39	44	41

Data - Day 2: Spring

Day 9:30	A. DO (mg/l)	B. Temp. (°C)	C. pH	D. TDS- Nitrates (mg/l)
9:30	14	11	6.7	143
10:00	13	11	7	135
10:30	12	12	. 7	132
11:00	12	13.2	7	140
11:30	11	13.7	7.3	150
12:00	10	16	6.6	154
12:30	6	13	6	300
1:00	6	12	5.3	510
1:30	6	12	5.4	520
2:00	7	11	5.2	493
2:30	8	11	5.3	509

Graph Results

Day 1: Fall

- 1. After the abiotic measurements for Day 1 are graphed, analyze the graphs:
- a. Finish this sentence: The dissolved oxygen (A) generally (increases, from 9:30 am until 2:30 pm.
- b. Finish this sentence: The temperature (B) generally (increases, decreases) from 9:30 am until 2:30 pm.
- c. Compare graphs A (DO) and B (temperature). Finish this sentence. As the temperature of the water increases during the day (B), the amount of dissolved oxygen (decreases, increases)
- d. Look at graphs C, D, and E. Finish these sentences: For this one day at Three Lakes Park, the pH of the water generally (increased, decreased, generally (increased, decreased, stayed the same) stayed the same) and the turbidity generally (increased, decreased, stayed the same) the total dissolved solids

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Day 2: Spring

- 2. Which parts of taking these measurements are the same (remained constant)
- as Day 1? (see introduction)

 3. Which parts of taking these measurements are different? Could these be controlled? How?
- 4. After the abiotic measurements for Day 2 are graphed, analyze the graphs by answering these questions:
- a. Compare the graphs from Day 1 and Day 2. How are they similar? How are they different?
- b. If Day 1 is a "normal," sunny fall day, how would you compare Day 2 using similar words? How does your data confirm your statement?
- c. Was there an "incident?" What do you think happened?
- d. When did it happen?
- e. What was the effect?
- 5. Summarize Day 2 by completing the following sentence: On Day 2: Spring the dissolved oxygen (generally, abruptly)_____(decreased, day)_____; and the turbidity (Secchi disk readings) (generally, abruptly)____ (decreased, increased) at (time of day)____ The dramatic changes between Day 1 and Day 2 could have been from abruptly) the temperature (decreased, increased) increased) the total dissolved solids (generally, (increased, decreased) increased) (decreased, increased) at (time of _at (time of day) then (decreased, ; the pH

Conclusion

Abiotic factors as indicators of water quality are subject to changes. These changes can be hourly, daily, weekly, monthly, or yearly. Sudden changes in water environment. should be sampled and analyzed at regular intervals in order to understand that the water quality in that environment at that particular moment. Water quality freshwater environment. Sampling water one time only gives a "snapshot" of and human influences can have a dramatic effect on the quality of water in a weather patterns, succession (natural changes to the environment over time),

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Simulation 1
Graphs for Data from two days at Three

Turbidity cm

Lakes Park

7.5 7.25 7.0 6.75 6.25 6.25 5.75

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9:30 am

9:30 am

10:00 am

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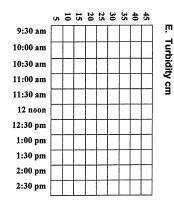
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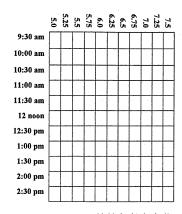
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12 noon 12:30 pm 1:00 pm 1:30 pm 2:00 pm 2:30 pm





C. PH

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