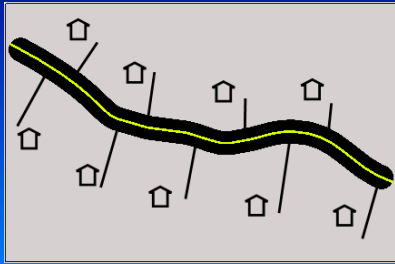
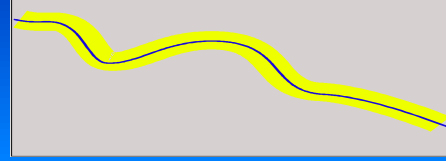


## Querying by Location



## Buffers

- A buffer is an extension of the area around a feature. Examples:
  - ▶ A zone within a given distance of a stream.
  - ▶ A zone within a given distance of a park where no industry is allowed.



## Overlays

- An overlay is the intersection or union of two areas. Examples
  - ▶ An area with an elevation below sea level and average income below the poverty line. (The Lower 9th Ward in New Orleans.)
  - ▶ An area of Dubuque County with steep slopes or highly erodible soils.



## Excel Exercise

Purpose: To determine how a spatial query works

- Check your email for an excel file.
- Open it and look at the X and Y data.
- Construct histograms of Na and coliform counts and determine descriptive statistics.
  - ▶ For the histograms, set your bins rather than using Excel's default values
  - ▶ For the coliform counts, try evenly spaced bins and then try geometrically increasing (0,1,10, 100, etc.)

## Excel Exercise

Continued

- On the accompanying chart, note that some of the data is contained in a rectangle and some in a circle.
- Devise methods on the data page to extract the two data subsets. Consider
  - Sorting methods and
  - distance calculations

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## Excel exercise

- Buffer: How would you buffer either the rectangle or circle by 50 feet?
  - Which additional points will be included?
- Overlay: Examine the columns for Na and coliform.
  - If high sodium ( $>25\text{mg/L}$ ) and high coliform counts ( $>100$  colonies) together indicate probable sewage contamination, which samples are likely to be contaminated with sewage?
  - If very high sodium ( $>50\text{mg/L}$ ) and very low coliform counts ( $<25$  colonies) indicate brine contamination, which samples are likely to be contaminated with brine.
  - Plot the solutions.

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## Exercise in the book

- You should be completing exercises in chapter 12 today.
- Your next test is in three weeks, so stay on schedule: You need to have finished through chapter 17 by April 11th.

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