Exercise 6 – Point data and accuracy assessment
20 Points

Accuracy assessment using point field data

Found buried in the ground during the Ho Science Center excavation five years ago was a list of point locations and their land cover type from back in 1935. Lucky for us, each point is labeled as building, forest, non-forest, and water. Since these data are old, they are referenced to the New York State Plane coordinate system (central zone) and the units of the eastings and northings are feet (the metric system didn't exist then). Not surprisingly, their datum is NAD27 (hopefully you can guess why). I have transcribed the information into a tab delimited text file (field_data.txt – included in zip file).

Your task is to use these data to assess the accuracy of your classification from last week's digitizing lab. More specifically, please generate an error matrix for your classification. The tutorial preceding this exercise should provide you with the techniques you need to collect the data for this assessment. You need to think through how one constructs an error matrix. Remember that the field.txt file tells you what was actually at each point in 1935 (Field Data). Your digitized map tells you what YOU thought was there in 1935 (Recorded Data).

What to hand in:

Please hand in an error matrix table for your data and a brief summary of your results (200 words or fewer). Be sure to summarize important information in the error matrix (overall error rate, individual rates, etc.). For example, which class was most/least accurate? Which classes were most often confused? Demonstrate your understanding of the difference between the producer accuracy and the user accuracy while describing the results. Speculate why these errors occur for the different land cover classes. Use the example on the next page as a template of your table.

Finally, I wonder if the total area of your digitized Colgate land cover is the same as the area of the Colgate outline (ColgateCampusClip) that you used to clip the land use. It should be, but you might be surprised. Open the ColgateCampusClip attribute table and create a new field (name=AreaAcres, type=float, accept defaults for the precision and scale). Right-mouse on the new field and select Calculate Geometry. Click Yes when the warning window comes up. Work through the windows to calculate area in US acres of ColgateCampusClip (making sure you use the coordinate system of the data frame). Compare this to the total area you calculated from your land cover map. Briefly explain any differences between those numbers, if any.

In the Lab example,
Producer = you
User = Colgate

User accuracy: aka **commission error**
Producer accuracy: aka **omission error**

Actual (e.g., field observation)

	A	B	C	D	E	Total	User/consumer accuracy (%)
A	80	4	0	15	7	106	75.4
B	2	17	0	9	2	30	56.7
C	12	5	9	4	8	38	23.7
D	7	8	0	65	0	80	81.3
E	3	2	1	6	38	50	76.0
Total	104	36	10	99	55	304	
Producer accuracy (%)	76.9	47.2	90.0	65.7	69.1		

Recorded (e.g., digitized)

80/106=75.4%

80/104=76.9%

Overall accuracy: sum of all ☐s divided by 304: **68.8%**

Highlighted diagonal cells