GEOINFORMATION ASSIGNMENT

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TASK

A nature conservation organisation wants to re-cultivate some of the canals in Lower Saxony and Bremen to establish new habitats for some dragonfly species and other insects which are dependent on water. They have to be protected by the Habitats Directive.

The target insects are sensitive to contaminations of aluminium, cadmium and traffic pollution. The NGO wants to know which sections of the canals are suitable for their project in Lower Saxony or Bremen. The objective is to find the five biggest optional areas for next steps in planning.

The steps that were taken into consideration before finalising the suitable area are:

- The sections should be located inside areas where the measured Al value of the samples is lower than 550µg/g and the value of Cd is lower than 0.3µg/g.
- The sections should be inside a proximity of 150m around waterways (fclass: canal), which are 10m in width.
- There should be a distance of 250m to the railway (width: 6m) and some specific roads (fclass" = 'motorway', 'motorway_link' … 'primary‘, 'primary_link‘, 'secondary‘, 'secondary_link'), which should be 12m in width for calculation.
- Suitable areas without gaps should be located near to (max. 5km or more if nothing is in the near of) but not inside Natura 2000 sites.
- The areas should be located outside of urban areas.

Ans - In our search of finding the biggest optional areas we created a map with different layerings in order to find the optimal locations keeping in mind all the conditions provided.
In the map being presented,

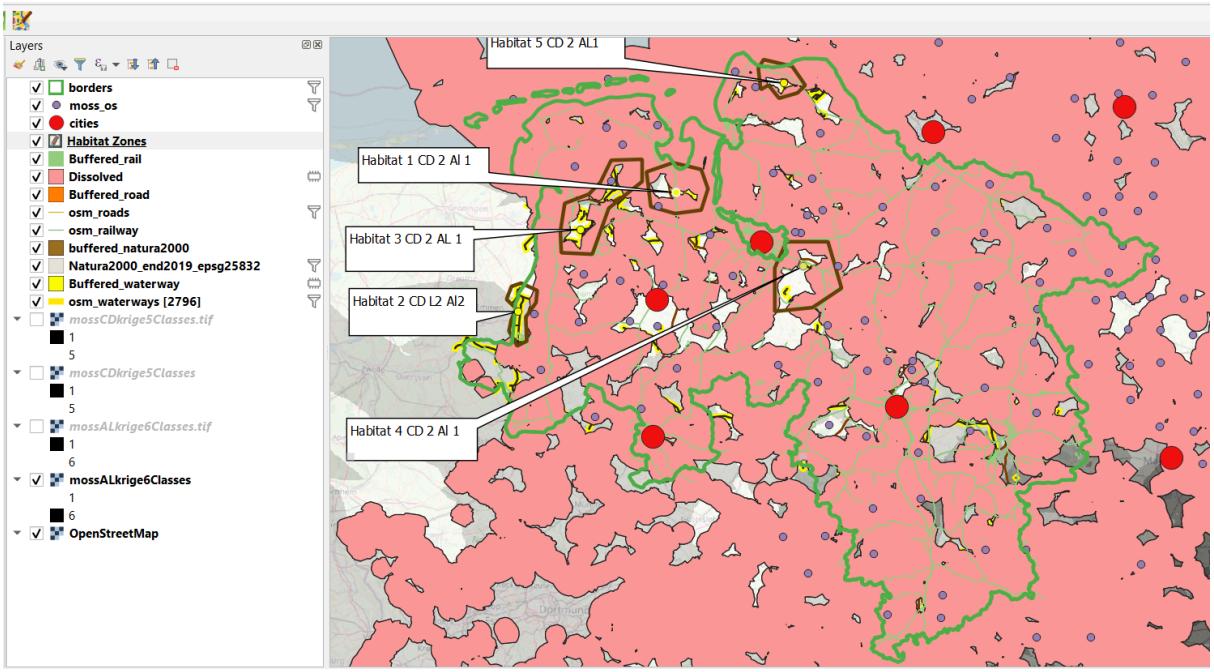
- The State boundary is depicted with the colour Green showing both Bremen and Lower Saxony.

- The Railway lines are shown in the Light Green colour with a buffered region of 250 m around the line.
- Waterways are displayed at a buffer of 150 m around the canal with the colour Yellow
- The Orange line shows the Highway/Motorway with a buffer of 250 m around it.
- The Big Red dots depict the urban cities of the area, where it would be difficult to match the required conditions.
- With the colour Pink, the region which lies within the 5 km areas of Natura 2000 sites have been shown.
- The Violet dots depict the cities that have shown the moss survey to have Al and Cd concentration of less than 550µg/g and 0.3µg/g respectively.

  Filter Criteria : “AL” < 550 µg/g AND “CD” < 0.30 µg/g
- The CRS used for the complete process was EPSG: 31463.

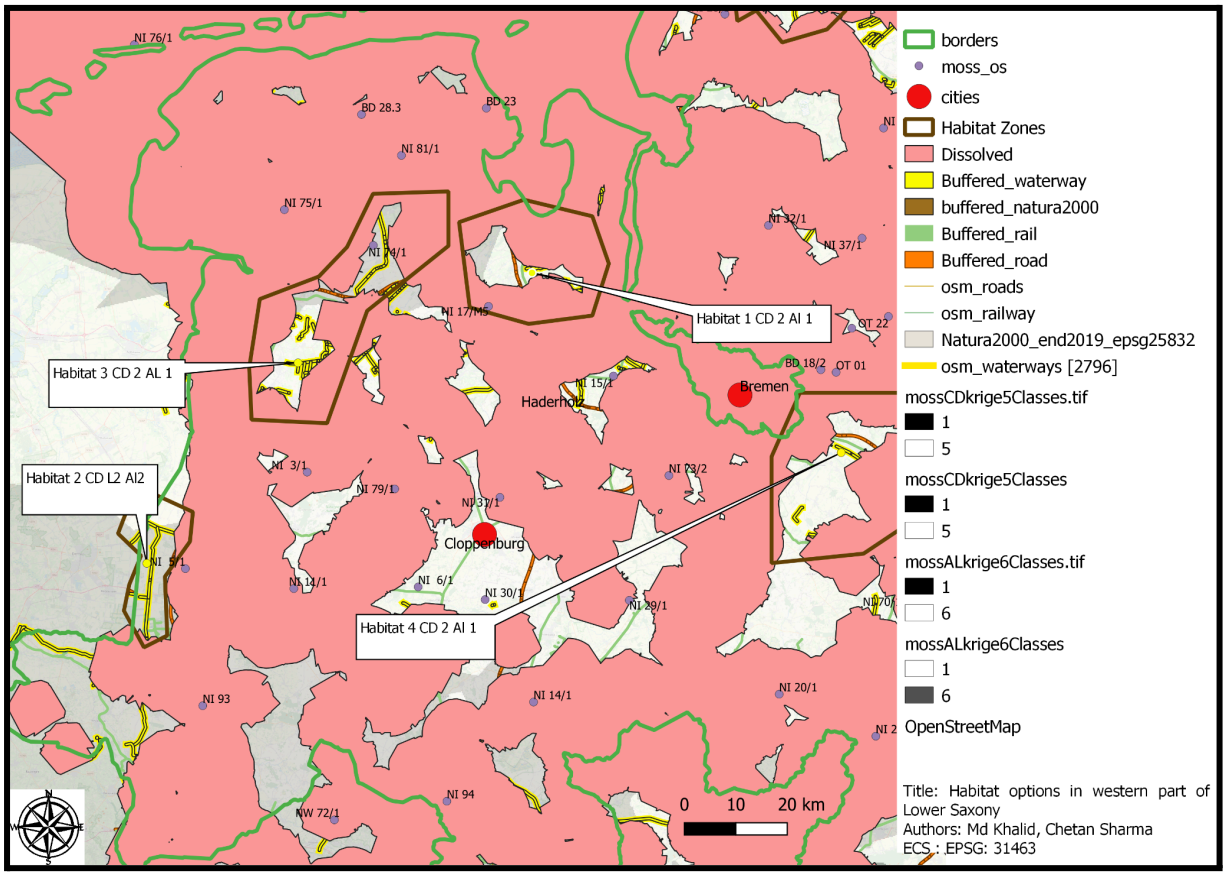
Q. Create two maps: a) One map of Lower Saxony with the islands and Bremen showing the areas where the Al and the Cd pollution is lower than or equals the determined values and the resulting areas for renaturation (make use of a higher width for the outline and an eye-catching colour and label in order to highlight the areas).

Ans -



- In order to find the areas that have the lowest or equivalent values to the values that have been determined, we found 9 habitats from which we selected the top 5 locations on the basis of Al and Cd pollution levels.
- In the map shown, there are the 5 top areas that are selected and named Habitat from 1 to 5 along with the mention of the pollution levels in each habitat.
- All the selected areas have a Cd pollution level of 2 and Al pollution level of either 1 or 2, which lies under the determined values.
- The CRS used is EPSG: 31463.

b) One map which shows some of the resulting areas for renaturation (zoom to an appropriate level in the western part of lower Saxony). Write some sentences about the area (short description) inside the documentation.
Ans -



In the shown map, the selected areas as the habitat which are best suited as per the conditions provided.
In order to explain the criterias, the western most area is chosen which lies around the border of the state - Habitat 2. This location matches all the criterias provided, i.e.

- It is located inside areas where the measured Al value of the samples is lower than 550μg/g (Level 2) and the value of Cd is lower than 0.3μg/g (Level 2).
- The area is within 150m of the waterways (Canals).
- There is a distance of 250 m to the railway lines.
- The area is in a distance of 5 km or more from the Natura 2000 sites.
- The location is away from the urban cities
