

Supporting information

Table S1. Eutrophication evaluation results of 21 studied lakes

| Lake | TLI | Grade | Surpassing factors |
|------|-------|-----------------------|----------------------------|
| L1 | 64.17 | Medium eutrophication | TP、TN、SD、COD _{Mn} |
| L2 | 49.14 | Medium trophic | TP、TN、SD、COD _{Mn} |
| L3 | 54.15 | Light eutrophication | TP、TN、SD、COD _{Mn} |
| L4 | 50.68 | Light eutrophication | TP、TN、SD、COD _{Mn} |
| L5 | 49.44 | Medium trophic | / |
| L6 | 65.16 | Medium eutrophication | TP、TN、SD |
| L7 | 55.57 | Light eutrophication | TP、TN、SD、COD _{Mn} |
| L8 | 55.06 | Light eutrophication | TP、TN、SD、COD _{Mn} |
| L9 | 52.36 | Light eutrophication | TP、TN、SD、COD _{Mn} |
| L10 | 66.58 | Medium eutrophication | TP、TN、SD、COD _{Mn} |
| L11 | 58.66 | Light eutrophication | TP、TN、SD |
| L12 | 59.48 | Light eutrophication | TP、TN、SD、COD _{Mn} |
| L13 | 66.92 | Medium eutrophication | TP、TN、SD |
| L14 | 65.15 | Medium eutrophication | TP、TN、SD |
| L15 | 72.96 | Severe eutrophication | TP、TN、SD |
| L16 | 64.90 | Medium eutrophication | TP、TN、SD |
| L17 | 66.42 | Medium eutrophication | / |
| L18 | 60.10 | Medium eutrophication | TP、SD |
| L19 | 51.14 | Light eutrophication | TN、SD、COD _{Mn} |
| L20 | 61.71 | Medium eutrophication | TP、TN、SD、COD _{Mn} |
| L21 | 63.02 | Medium eutrophication | TP、TN、SD、COD _{Mn} |

Table S2. Health risk indicators for carcinogenic health for 21 studied lakes.

| Lake | CR _i | | | CR | Grade |
|------|-----------------|----------|----------|----------|-------|
| | Cr | As | Cd | | |
| L1 | | 6.73E-06 | 1.63E-07 | 6.89E-06 | II |
| L2 | | 6.35E-06 | 2.76E-07 | 6.63E-06 | II |
| L3 | | 1.23E-05 | 5.92E-08 | 1.24E-05 | III |
| L4 | | 7.07E-06 | 1.73E-07 | 7.24E-06 | II |
| L5 | | 2.48E-06 | 6.91E-08 | 2.55E-06 | II |
| L6 | | 1.16E-05 | 1.09E-07 | 1.17E-05 | III |
| L7 | <0.1 | 4.73E-06 | 8.39E-08 | 4.82E-06 | II |
| L8 | | 7.93E-06 | 7.40E-08 | 8.00E-06 | II |
| L9 | | 4.40E-06 | <0.1 | 4.40E-06 | II |
| L10 | | 1.11E-05 | 4.93E-08 | 1.12E-05 | III |
| L11 | | 6.13E-06 | 4.44E-08 | 6.18E-06 | II |
| L12 | | 7.77E-06 | 1.97E-08 | 7.79E-06 | II |
| L13 | | 1.17E-05 | 9.87E-08 | 1.18E-05 | III |
| L14 | | 7.06E-06 | 8.88E-08 | 7.14E-06 | II |

| | | | | |
|-----|----------|----------|----------|-----|
| L15 | 9.62E-06 | 1.04E-07 | 9.72E-06 | II |
| L16 | 1.02E-05 | 1.28E-07 | 1.04E-05 | III |
| L17 | 5.90E-06 | 2.47E-08 | 5.93E-06 | II |
| L18 | 4.19E-06 | 1.04E-07 | 4.30E-06 | II |
| L19 | 4.14E-06 | 4.44E-08 | 4.18E-06 | II |
| L20 | 2.44E-05 | 7.94E-07 | 2.52E-05 | III |
| L21 | 8.28E-06 | 2.47E-08 | 8.30E-06 | II |

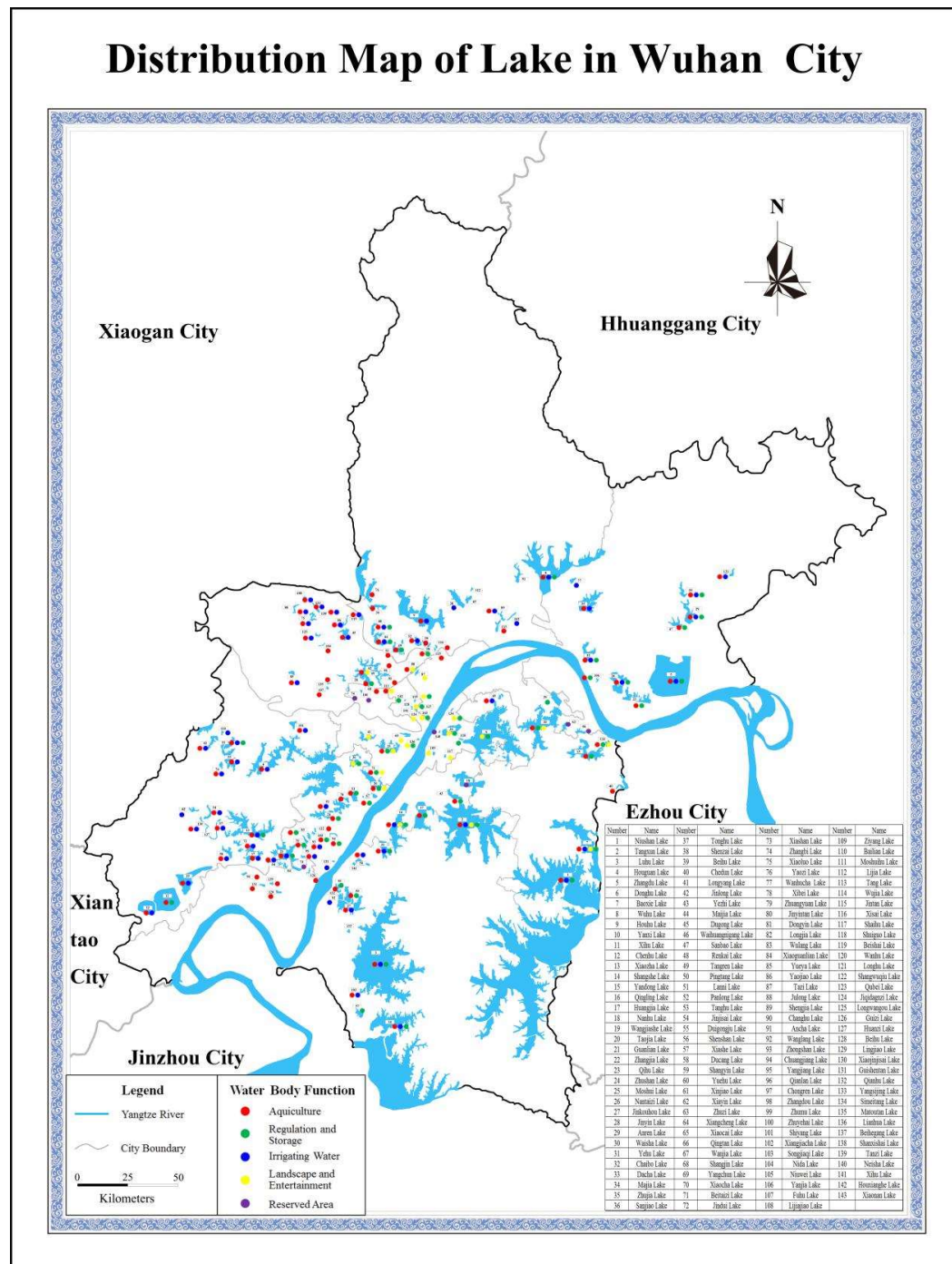


Fig. S1. Distribution map of lake in Wuhan city

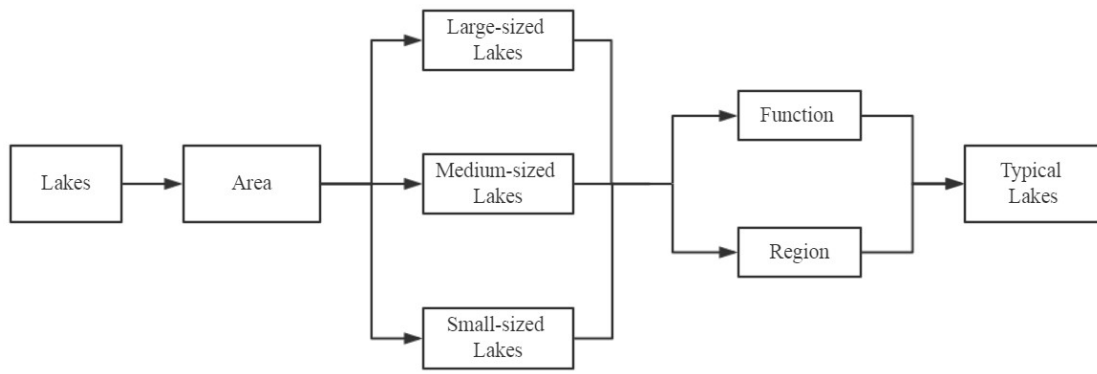


Fig. S2. The workflow of typical lake selection method