附件

|  |  |
| --- | --- |
|  | 附表1 忻州盆地地下水水化学测试结果（单位：mg/L）Table 1 Hydrochemical compositions of water samples from Xinzhou Basin(in mg/L) |
| 编号 | Na | K | Mg | Ca | Si | B | Sr | Al | Fe | Li | Rb | Cs | HCO3- | CO32- | SO42- | Cl- | F- | Br- | NO3- |
| W01 | 193 | 2.5 | 0.2 | 8.8 | 26.7 | 0.28  | 0.2 | 0.05 | 0.05 | 0.14 | 0.02 | n.d. | 68.4 | 3.1 | 134 | 133 | 11.7 | 1.0 | 4.4 |
| W02 | 204 | 3.8 | 0.1 | 10.2 | 29.6 | 0.29  | 0.3 | 0.09 | 0.06 | 0.15 | 0.03 | 0.01 | 40.0 | 2.5 | 172 | 168 | 13.7 | 1.6 | 1.3 |
| W03 | 166 | 2.8 | 0.3 | 11.0 | 22.8 | 0.23  | 0.3 | 0.06 | 0.05 | 0.12 | 0.03 | 0.01 | 90.2 | 3.9 | 125 | 122 | 10.9 | 0.9 | 0.5 |
| W04 | 197 | 6.2 | 0.1 | 14.7 | 33.4 | 0.41  | 0.4 | 0.06 | 0.05 | 0.24 | 0.08 | 0.03 | 41.5 | 2.1 | 125 | 222 | 11.5 | 1.6 | 0.9 |
| W05 | 141 | 4.6 | 0.8 | 13.9 | 24.1 | 0.25  | 0.3 | 0.05 | 0.04 | 0.18 | 0.05 | 0.02 | 112 | 2.0 | 79 | 113 | 7.9 | 1.1 | 9.0 |
| W06 | 228 | 6.9 | 0.1 | 17.6 | 33.8 | 0.42  | 0.4 | 0.08 | 0.04 | 0.26 | 0.09 | 0.03 | 45.4 | 1.7 | 153 | 257 | 11.0 | 1.6 | 2.4 |
| W07 | 176 | 32.6 | 0.5 | 16.9 | 20.7 | 0.61  | 0.3 | 0.06 | 0.28 | 0.20 | 0.01 | n.d. | 55.6 | 3.3 | 138 | 202 | 10.1 | 1.3 | 2.8 |
| W08 | 177 | 6.6 | 0.9 | 17.1 | 34.1 | 0.33  | 0.4 | 0.05 | 0.03 | 0.24 | 0.03 | 0.01 | 97.5 | 2.0 | 105 | 171 | 8.9 | 1.3 | 3.8 |
| W09 | 173 | 5.2 | 0.1 | 11.2 | 33.6 | 0.36  | 0.3 | 0.08 | 0.05 | 0.23 | 0.04 | 0.02 | 86.4 | 4.2 | 94 | 162 | 9.2 | 1.3 | 7.6 |
| M01 | 197 | 5.4 | 2.0 | 106 | 19.3 | 0.46  | 0.7 | 0.08 | 0.08 | 0.12 | 0.06 | n.d. | 128 | 0.4 | 513 | 121 | 4.4 | 0.9 | 11.1 |
| M02 | 218 | 7.6 | 2.4 | 129 | 18.9 | 0.51  | 0.8 | 0.08 | 0.06 | 0.12 | 0.03 | n.d. | 75.1 | 0.4 | 689 | 148 | 4.6 | 1.0 | 4.7 |
| M03 | 276 | 6.3 | 1.2 | 151 | 21.9 | 0.58  | 1.0 | 0.09 | 0.07 | 0.17 | 0.06 | 0.01 | 31.8 | 0.4 | 748 | 195 | 4.6 | 1.2 | 0.0 |
| M04 | 186 | 4.5 | 2.9 | 38.0 | 13.2 | 0.40  | 0.3 | 0.1 | 0.26 | 0.07 | 0.03 | n.d. | 136 | 1.9 | 295 | 115 | 4.9 | 0.9 | 0.3 |
| M05 | 225 | 2.9 | 0.1 | 42.8 | 17.3 | 0.56  | 0.3 | 0.05 | 0.03 | 0.23 | 0.03 | n.d. | 20.2 | 1.2 | 311 | 246 | 10.8 | 2.2 | 0.8 |
| M06 | 258 | 3.2 | 0.1 | 53.7 | 17.9 | 0.70  | 0.3 | 0.08 | 0.05 | 0.22 | 0.02 | n.d. | 12.6 | 1.1 | 355 | 249 | 10.1 | 2.2 | 0.0 |
| E01 | 372 | 9.2 | 1.5 | 299 | 26.2 | 1.36  | 1.7 | 0.15 | 0.09 | 0.16 | 0.10 | 0.01 | 13.2 | 0.2 | 1205 | 398 | 4.9 | 1.8 | 2.2 |
| E02 | 259 | 7.5 | 5.6 | 180 | 27.5 | 0.97  | 1.1 | 0.08 | 0.07 | 0.11 | 0.07 | 0.01 | 68.1 | 0.3 | 789 | 230 | 3.8 | 1.2 | 8.0 |
| E03 | 317 | 8.8 | 1.9 | 252. | 27.0 | 1.23  | 1.5 | 0.08 | 0.08 | 0.15 | 0.08 | 0.01 | 67.0 | 0.3 | 973 | 309 | 3.6 | 1.4 | 5.6 |
| CG01 | 16.3  | 5.2  | 8.6  | 43.1  | 11.5  | 0.13  | 0.4  | - | - | n.d. | n.d. | n.d. | 213 | 0.8 | 3.9  | 5.2  | 0.4 | 0.8 | 6.1  |
| CG02 | 24.6  | 1.0  | 22.3  | 101  | 12.3  | 0.11  | 0.7  | - | - | 0.01 | n.d. | n.d. | 285 | 0.2 | 70.5  | 23.5  | 0.3 | 0.6 | 47.6  |
| CG03 | 17.2  | 0.5  | 11.7  | 46.5  | 10.7  | 0.08  | 0.4  | - | - | n.d. | n.d. | n.d. | 247 | 0.4 | 5.7 | 6.4  | 0.4 | 0.9  | 10.7  |
| CG04 | 16.4  | 0.4  | 12.4  | 51.7  | 10.1  | 0.07  | 0.4  | - | - | n.d. | n.d. | n.d. | 230 | 0.5 | 6.7  | 11.1  | 0.4 | 0.7  | 20.5  |
| CG05 | 21.9  | 0.7  | 11.8  | 52.3  | 11.4  | 0.08  | 0.4  | - | - | n.d. | n.d. | n.d. | 262 | 0.4 | 9.5 | 8.2  | 0.5 | 0.6  | 8.2  |
| CG06 | 20.2  | 0.8  | 11.5  | 45.0  | 10.9  | 0.09  | 0.4  | - | - | n.d. | n.d. | n.d. | 229 | 0.6 | 5.3  | 5.3  | 0.5 | 0.6  | 10.3  |
| CG07 | 11.4  | 1.1  | 9.5  | 49.8  | 11.3  | 0.04  | 0.3  | - | - | n.d. | n.d. | n.d. | 196 | 0.4 | 6.1  | 5.4  | 0.4 | 0.7 | 10.8  |
| CG08 | 90.5  | 2.3  | 31.0  | 172  | 11.6  | 0.06  | 0.9  | - | - | n.d. | n.d. | n.d. | 294 | 0.2 | 126  | 138  | 0.9 | 2.7 | 187  |
| CG09 | 19.6  | 1.8  | 11.0  | 48.7  | 12.3  | 0.05  | 0.4  | - | - | n.d. | n.d. | n.d. | 218 | 0.4 | 5.1  | 4.3  | 0.5 | 0.9 | 6.5  |
| CG10 | 13.8  | 2.3  | 9.2  | 45.0  | 10.7  | 0.05  | 0.3  | - | - | n.d. | n.d. | n.d. | 236 | 1.3 | 4.8  | 5.0  | 0.4 | 0.9 | 7.8  |
| CG11 | 10.5  | 1.9  | 8.9  | 40.5  | 10.2  | 0.05  | 0.2  | - | - | n.d. | n.d. | n.d. | 179 | 0.4 | 9.9  | 5.1  | 0.5 | 0.5 | 5.2  |
| CG12 | 13.3  | 1.9  | 30.0  | 135  | 8.0  | 0.03  | 2.2  | - | - | n.d. | n.d. | n.d. | 225 | 0.6 | 113  | 31.8  | 0.2 | 0.6 | 95.2  |
| CG13 | 18.4  | 1.4  | 10.1  | 50.6  | 10.6  | 0.05  | 0.3  | - | - | n.d. | n.d. | n.d. | 202 | 0.6 | 18.4  | 8.7  | 0.5 | 0.6 | 12.2  |
| CG14 | 24.4  | 3.5  | 35.9  | 185  | 7.4  | 0.05  | 2.7  | - | - | n.d. | n.d. | n.d. | 304 | 0.4 | 236  | 37.3  | 0.3 | 0.5 | 95.4  |
| CG15 | 354  | 2.8  | 125  | 330  | 12.9  | 0.22  | 4.2  | - | - | n.d. | n.d. | n.d. | 334 | 0.4 | 1155  | 220  | 3.3 | 0.4 | 457 |
| CG16 | 19.6  | 1.4  | 14.6  | 52.0  | 9.2  | 0.05  | 0.8  | - | - | n.d. | n.d. | n.d. | 195 | 0.7 | 37.1  | 17.7  | 0.9 | 0.5 | 11.7  |
| CG17 | 12.5  | 0.9  | 10.8  | 64.4  | 11.3  | 0.03  | 0.4  | - | - | n.d. | n.d. | n.d. | 212 | 0.8 | 30.2  | 7.9  | 0.5 | 0.4 | 11.8  |

附表2 忻州盆地花岗岩（L03、L05）样品单颗粒锆石U-Pb同位素结果

Table 2 Single-particle zircon U-Pb isotope results of granite samples (L03, L05) from Xinzhou Basin

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 测点编号 | Pb(10-6) | Th(10-6) | U(10-6) | Th/U | 同位素比值 | 同位素年龄 |
| 207Pb/206Pb | ±1σ | 207Pb/235U | ±1σ | 206Pb/238U | ±1σ | 207Pb/206Pb | ±1σ | 207Pb/235U | ±1σ | 206Pb/238U | ±1σ |
| L03 | 　 | 　 | 　 | 　 | 　 | 　 | 　 | 　 | 　 | 　 | 　 | 　 | 　 | 　 | 　 | 　 |
| 1 | 18.19  | 23.26  | 36.39  | 0.64  | 0.1387  | 0.0037  | 7.4718  | 0.1984  | 0.3898  | 0.0042  | 2210.8  | 46.5  | 2169.6  | 23.8  | 2122.0  | 19.5  |
| 2 | 19.70  | 21.86  | 39.03  | 0.56  | 0.1344  | 0.0031  | 7.4642  | 0.1720  | 0.4023  | 0.0043  | 2166.7  | 40.7  | 2168.7  | 20.7  | 2179.4  | 19.9  |
| 3 | 21.51  | 20.19  | 44.19  | 0.46  | 0.1350  | 0.0029  | 7.3756  | 0.1462  | 0.3961  | 0.0041  | 2164.5  | 41.7  | 2158.0  | 17.8  | 2150.9  | 19.2  |
| 4 | 25.91  | 32.37  | 52.13  | 0.62  | 0.1329  | 0.0027  | 7.1968  | 0.1450  | 0.3918  | 0.0042  | 2136.1  | 35.2  | 2136.1  | 18.0  | 2131.1  | 19.6  |
| 5 | 27.45  | 26.48  | 56.14  | 0.47  | 0.1305  | 0.0029  | 7.2095  | 0.1560  | 0.4006  | 0.0045  | 2105.6  | 39.0  | 2137.7  | 19.4  | 2171.6  | 20.6  |
| 6 | 51.26  | 44.98  | 105.60  | 0.43  | 0.1313  | 0.0027  | 7.2417  | 0.1377  | 0.3996  | 0.0040  | 2116.7  | 35.6  | 2141.7  | 17.0  | 2167.2  | 18.4  |
| 7 | 31.45  | 36.15  | 63.02  | 0.57  | 0.1334  | 0.0029  | 7.4077  | 0.1655  | 0.4014  | 0.0040  | 2142.9  | 37.8  | 2161.9  | 20.0  | 2175.3  | 18.4  |
| 8 | 16.74  | 17.73  | 34.78  | 0.51  | 0.1327  | 0.0030  | 7.1550  | 0.1614  | 0.3901  | 0.0042  | 2200.0  | 39.0  | 2130.9  | 20.1  | 2123.3  | 19.5  |
| 9 | 23.97  | 28.50  | 49.01  | 0.58  | 0.1324  | 0.0030  | 7.1956  | 0.1651  | 0.3930  | 0.0042  | 2131.5  | 34.7  | 2136.0  | 20.5  | 2136.7  | 19.4  |
| 10 | 40.06  | 45.17  | 80.68  | 0.56  | 0.1324  | 0.0027  | 7.3001  | 0.1501  | 0.3985  | 0.0040  | 2131.5  | 35.3  | 2148.8  | 18.4  | 2162.2  | 18.3  |
| 11 | 30.69  | 34.46  | 63.51  | 0.54  | 0.1314  | 0.0029  | 7.1349  | 0.1521  | 0.3948  | 0.0048  | 2116.4  | 38.6  | 2128.4  | 19.0  | 2144.9  | 22.2  |
| 12 | 17.18  | 17.37  | 35.21  | 0.49  | 0.1331  | 0.0029  | 7.3567  | 0.1612  | 0.4004  | 0.0043  | 2139.8  | 43.5  | 2155.7  | 19.6  | 2170.8  | 19.9  |
| 13 | 15.80  | 20.91  | 31.60  | 0.66  | 0.1342  | 0.0030  | 7.4156  | 0.1701  | 0.4004  | 0.0046  | 2153.4  | 38.6  | 2162.8  | 20.6  | 2170.9  | 21.2  |
| 14 | 18.58  | 29.70  | 36.25  | 0.82  | 0.1333  | 0.0030  | 7.1539  | 0.1499  | 0.3908  | 0.0042  | 2142.6  | 39.8  | 2130.8  | 18.7  | 2126.3  | 19.6  |
| 15 | 46.13  | 61.38  | 100.09  | 0.61  | 0.1338  | 0.0025  | 6.9973  | 0.1445  | 0.3782  | 0.0041  | 2150.0  | 31.9  | 2111.1  | 18.4  | 2068.0  | 19.1  |
| 16 | 22.01  | 22.53  | 45.72  | 0.49  | 0.1346  | 0.0033  | 7.3685  | 0.1770  | 0.3980  | 0.0046  | 2161.1  | 42.4  | 2157.2  | 21.5  | 2160.0  | 21.1  |
| 17 | 54.96  | 84.84  | 118.69  | 0.71  | 0.1329  | 0.0027  | 6.9632  | 0.1485  | 0.3790  | 0.0036  | 2136.7  | 35.2  | 2106.8  | 19.0  | 2071.5  | 17.0  |
| 18 | 23.39  | 23.23  | 48.23  | 0.48  | 0.1352  | 0.0031  | 7.5154  | 0.1811  | 0.4023  | 0.0043  | 2166.4  | 40.1  | 2174.8  | 21.6  | 2179.6  | 19.6  |
| 19 | 33.30  | 41.61  | 67.44  | 0.62  | 0.1356  | 0.0026  | 7.5003  | 0.1507  | 0.4003  | 0.0040  | 2172.2  | 33.3  | 2173.0  | 18.1  | 2170.3  | 18.2  |
| 20 | 16.41  | 19.70  | 35.20  | 0.56  | 0.1309  | 0.0031  | 6.8391  | 0.1538  | 0.3792  | 0.0034  | 2110.2  | 36.9  | 2090.8  | 20.0  | 2072.4  | 15.8  |
| 21 | 57.04  | 60.57  | 117.25  | 0.52  | 0.1309  | 0.0023  | 7.2418  | 0.1307  | 0.4000  | 0.0038  | 2110.2  | 31.5  | 2141.7  | 16.2  | 2169.1  | 17.6  |
| 22 | 44.82  | 44.42  | 92.47  | 0.48  | 0.1329  | 0.0027  | 7.3853  | 0.1519  | 0.4018  | 0.0042  | 2136.7  | 35.2  | 2159.2  | 18.5  | 2177.3  | 19.3  |
| L05 | 　 | 　 | 　 | 　 | 　 | 　 | 　 | 　 | 　 | 　 | 　 | 　 | 　 | 　 | 　 | 　 |
| 1 | 19.71  | 29.33  | 38.46  | 0.76  | 0.1310  | 0.0032  | 7.2845  | 0.1819  | 0.4022  | 0.0042  | 2110.8  | 37.8  | 2146.9  | 22.3  | 2179.2  | 19.4  |
| 2 | 19.65  | 18.13  | 41.34  | 0.44  | 0.1330  | 0.0028  | 7.2012  | 0.1455  | 0.3918  | 0.0041  | 2138.9  | 37.0  | 2136.7  | 18.1  | 2131.1  | 18.8  |
| 3 | 22.98  | 24.01  | 46.54  | 0.52  | 0.1331  | 0.0032  | 7.3978  | 0.1604  | 0.4026  | 0.0042  | 2139.8  | 41.4  | 2160.7  | 19.5  | 2181.2  | 19.4  |
| 4 | 24.40  | 29.27  | 51.31  | 0.57  | 0.1318  | 0.0028  | 7.1209  | 0.1591  | 0.3897  | 0.0044  | 2121.9  | 37.7  | 2126.7  | 19.9  | 2121.3  | 20.4  |
| 5 | 15.99  | 20.46  | 31.90  | 0.64  | 0.1344  | 0.0032  | 7.3774  | 0.1741  | 0.3970  | 0.0045  | 2166.7  | 42.0  | 2158.2  | 21.2  | 2155.4  | 20.6  |
| 6 | 28.04  | 36.65  | 58.34  | 0.63  | 0.1353  | 0.0031  | 7.1967  | 0.1654  | 0.3842  | 0.0042  | 2168.2  | 40.7  | 2136.1  | 20.5  | 2095.9  | 19.6  |
| 7 | 30.60  | 36.35  | 63.50  | 0.57  | 0.1318  | 0.0031  | 7.0911  | 0.1611  | 0.3889  | 0.0042  | 2121.9  | 40.7  | 2122.9  | 20.3  | 2117.5  | 19.6  |
| 8 | 24.54  | 30.09  | 47.17  | 0.64  | 0.1313  | 0.0029  | 7.5513  | 0.1682  | 0.4155  | 0.0040  | 2116.7  | 38.6  | 2179.1  | 20.0  | 2239.9  | 18.3  |
| 9 | 28.99  | 38.79  | 58.58  | 0.66  | 0.1326  | 0.0029  | 7.1481  | 0.1555  | 0.3898  | 0.0036  | 2133.0  | 38.7  | 2130.1  | 19.4  | 2121.9  | 16.9  |
| 10 | 21.47  | 30.56  | 40.92  | 0.75  | 0.1318  | 0.0031  | 7.4963  | 0.1754  | 0.4127  | 0.0051  | 2121.9  | 40.7  | 2172.5  | 21.0  | 2227.5  | 23.1  |
| 11 | 14.43  | 19.52  | 29.83  | 0.65  | 0.1311  | 0.0036  | 6.9161  | 0.1844  | 0.3833  | 0.0044  | 2113.3  | 48.3  | 2100.7  | 23.7  | 2091.9  | 20.4  |
| 12 | 40.25  | 52.44  | 81.01  | 0.65  | 0.1325  | 0.0027  | 7.3055  | 0.1533  | 0.3992  | 0.0039  | 2131.2  | 35.8  | 2149.5  | 18.8  | 2165.1  | 18.1  |
| 13 | 18.47  | 20.25  | 37.40  | 0.54  | 0.1334  | 0.0030  | 7.4129  | 0.1704  | 0.4021  | 0.0041  | 2143.5  | 38.9  | 2162.5  | 20.6  | 2178.6  | 19.1  |
| 14 | 19.64  | 25.08  | 40.41  | 0.62  | 0.1335  | 0.0029  | 7.1705  | 0.1583  | 0.3891  | 0.0041  | 2144.1  | 37.3  | 2132.8  | 19.7  | 2118.6  | 19.3  |
| 15 | 20.43  | 25.34  | 41.24  | 0.61  | 0.1312  | 0.0029  | 7.2415  | 0.1665  | 0.3995  | 0.0041  | 2114.5  | 38.9  | 2141.6  | 20.6  | 2166.6  | 19.0  |
| 16 | 79.33  | 97.30  | 164.88  | 0.59  | 0.1313  | 0.0022  | 7.0759  | 0.1170  | 0.3902  | 0.0031  | 2116.7  | 29.6  | 2121.0  | 14.8  | 2123.7  | 14.4  |
| 17 | 18.55  | 27.78  | 36.03  | 0.77  | 0.1322  | 0.0031  | 7.2141  | 0.1590  | 0.3971  | 0.0039  | 2127.8  | 40.7  | 2138.2  | 19.7  | 2155.9  | 18.1  |



附图1 忻州盆地花岗岩样品（L03）锆石U-Pb谐和图

Fig.1 Zircon U-Pb harmonic diagram of granite samples（L03）from Xinzhou Basin



附图2 忻州盆地花岗岩样品（L05）锆石U-Pb谐和图

Fig.2 Zircon U-Pb harmonic diagram of granite samples（L05）from Xinzhou Basin